



FINAL REPORT

For

Baseline Survey for the UNDP/GEF Project “Strengthening Biodiversity and Ecosystems Management and Climate-Smart Landscapes in the Mid to Lower Zambezi Region of Zimbabwe: Component 2 & 3.

By

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Although stakeholders consulted expressed their views and opinions, the Baseline Survey consultancy team is responsible for the final contents, including conclusions and recommendations, of this report.

Abbreviations

π	Profit
AA	Appropriate Authority
AGRITEX	Department of Agricultural Technical and Extension Services
APU	Anti-Poaching Unit
AWF	African Wildlife Foundation
CA	CAMPFIRE Association
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBO	Community Based Organization
CBWM	Community Based Wildlife Management
CEO	Chief Executive Officer
CGA	Carbon Green Africa
CMS	Charlton McCallum Safaris
CWC	Community Wildlife Conservancy
DAPU	Dande Anti-Poaching Unit
EMA	Environmental Management Agency
ESC	Environmental Sub-Committee
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FC	Forestry Commission
FGDs	Focus Group Discussions
GEF	Global Environment Facility
GHG	Greenhouse Gases
GIS	Geographic Information System
Ha	Hectare
HH	Household
HWC	Human Wildlife Conflict
ILMP	Integrated Land Management Plan
IWT	Illegal Wildlife Trade
KII	Key Informant Interview
KAP	Knowledge, Awareness Practice

LEAP	Local Environmental Action Plan
LGDA	Lower Guruve Development Association
MA & D	Market Analysis and Development
METHI	Ministry of Environment, Tourism and Hospitality Industry
MPI	Multi-dimensional Poverty Index
MWA	Mavhuradonha Wilderness Area
NGO	Non-Governmental Organization
NRM	Natural Resource Management
NPV	Net Present Value
NTFP	Non-Timber Forest Product
ODK	Open Data Kit
PA	Protected Area
PAC	Problem Animal Control
PPG	Project Preparatory Grant
PRAZ	Procurement Regulatory Authority of Zimbabwe
r	Discount Rate
RDC	Rural District Council
REDD+	Reducing Emissions from Deforestation and Forest Degradation plus conservation, sustainable management of forests and enhancement of carbon stocks
RM	Resource Monitors
RTGS	Real Time Gross Settlement
SAA	Sustainable Afforestation Association
SAFIRE	Southern Africa Alliance for Indigenous Resources
SAT	Sustainable Agriculture Trust
SFM	Sustainable Forest Management
SLM	Sustainable Land Management
SGP	Small Grants Programme
SO	Safari Operator
SOAZ	Safari Operators Association of Zimbabwe
SWOT	Strengths Weaknesses Opportunities Threats
t	time

TFCA	Transfrontier Conservation Area
TC	Total Cost
TR	Total Revenue
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
US\$	United States Dollar
USA	United States of America
VIDCO	Village Development Committee
WARDCO	Ward Development Committee
WWF	World Wildlife Fund
ZELA	Zimbabwe Environmental Law Association
ZimVac	Zimbabwe Vulnerability Assessment Committee
ZINARA	Zimbabwe National Road Administration
ZPWMA	Zimbabwe Parks and Wildlife Management Authority
ZRBF	Zimbabwe Resilience Building Fund
ZRP	Zimbabwe Republic Police

Executive Summary

The main purpose of the Baseline survey was to obtain socio-economic, wildlife, forestry, water and other biodiversity-related data that would inform the implementation of activities under Component 2 and 3 of the project.

Triangulation of quantitative and qualitative data, secondary data, and field observations was the methodological approach used. A total of 1043 people were involved in the survey. There were 583 household survey respondents from 12 wards in three districts, 40 Key informant interview participants and approximately 420 Focus Group Discussion participants.

Of the HH survey respondents, 55.5% were female and 44.5% were male. There were 73.9% household heads who were the respondents. Sixty-four percent of the HH were poor, with Mbire having the highest (67.2%) households classified as poor. Nutrition is the most important form of deprivation accounting for over 30% of multi-dimensional poverty in all the three districts.

Cooking/heating fuel was identified as one of the critical problems, reflecting an overreliance on forest-based fuel forms. Water scarcity is common across the three districts, but it is more prevalent in Hurungwe compared to the other two districts.

Maize, cotton and tobacco are the most common crops grown. There are three main forms of conservation agriculture being practiced which are: crop rotation, soil cover and minimum soil disturbance.

Most households are involved in cash crop production (mainly tobacco, cotton, and beans) with Hurungwe having the highest proportion of households involved in cash crop production. Trading mostly of fruits, groceries, fish, vegetables, livestock, crafts, and other Non-Timber Forest Products (NTFPs) both informally across national borders and locally is the second most common enterprise. Cross border activity is more common in Mbire, particularly in Kanyemba due to the vicinity to the Zambian and Mozambican borders.

In terms of biodiversity-friendly enterprises that can be done or expanded given the natural resources in the project areas and assuming financial resources are available, most of the of the sampled households (31.8 %) mentioned gardening as the most promising. Among the three districts, Hurungwe had the highest proportion of households who wanted to pursue gardening. Apiculture is second ranked (20.3%) with Mbire having the highest proportion of households selecting it. Small livestock production: poultry and goats - in order of importance – is ranked third (18.4%) with Muzarabani having the highest proportion of households (22.7%) who chose small livestock enterprises. Commercialization and value-addition of NTFPs is ranked fourth (6.61%) with Muzarabani contributing the highest proportion who believes it is a noble entrepreneurial idea. Other enterprises mentioned include aquaculture, craft making, woodlots and game ranching although the numbers were quite insignificant. About 15.5 % of the respondents indicated that they were not sure of what ideas could be viable.

Around 65 % of the households have not done any form of capacity training across the three districts. Except for natural resources management, Hurungwe seems to have had the least capacity building trainings. About 33.1 % of the households indicated to having done natural resources management training. Mbire had the highest proportion of people who received both business development and natural resources management trainings.

Forest cover per Community Wildlife Conservancy (CWC) is as follows: Mavhuradona (73%), Karinyanga (50%), Kanyurira (38%), Mbire North, ward 1 (60%) Pfundundu and Mukwichi (70%); Forests are key enablers for ecotourism across the 6 CWCs as they provide habitats for wildlife and should be sustainably managed. Insect damage, veld fires and tree cutting for various purposes including fuelwood (for tobacco curing and brick moulding) and construction were cited as major threats to forests. There are few interventions promoting the use of energy-saving technologies such as Tsootso stove, biogas and rocket barns. There is little or no commercialization of Non-Timber Forest Products (NTFPs) across the 3 districts due to amongst other reasons, lack of market information and low prices offered by buyers. Forest rehabilitation and restoration efforts are hampered by unreliable rainfall and insect damage.

For wildlife the key constraints in providing status and quality of wildlife populations were the lack of current data at both local and national level. The last wildlife aerial census was done in 2014 for the project landscape. Inadequate record-keeping and monitoring at community and Rural District Council (RDC) level also affected the availability of information on Human Wildlife Conflict (HWC), poaching and revenues.

Wildlife corridors, which are mostly used by elephants provide connectivity across the project landscape. There are settlements in wildlife corridors in the three districts thus increasing HWC incidences especially for Hurungwe (wards 8 and 9), Mbire (wards 1, 2, 3, 4, 11 and 16) and Muzarabani (wards 27, 5, and 3). Encroachment into the CWCs is occurring in the following wards: for Hurungwe (ward 7 and 9), Mbire (ward 4), and for Muzarabani (ward 20).

Key recommendations to address the challenge of increased human wildlife conflict include: human wildlife conflict mitigation through land-use planning, improving community livelihoods, elephant conflict mitigation (e.g. chilli fences, beehive fences), lion and hyena conflict mitigation, capacity building and training for HWC mitigation as well as HWC response and record keeping. Corridors and connectivity within the landscape need to be secured through promotion of co-existence between humans and wildlife. There is a need to enhance the CWCs through anti-poaching, law enforcement, water provisioning, reducing quota utilisation, and population monitoring which will contribute to connectivity, increased benefits and sustainability of wildlife populations in the long term. Diversifying the use of wildlife resources is key in the three districts and there is a need to spread the risk; by implementing sustainable, non-consumptive forms of delivering real wildlife-derived benefits to local communities.

In the Business analysis of the CWCs, models that were proposed by Safari Operators and RDCs that are viable include: hunting with water provision and enhanced anti-poaching (Mbire and Hurungwe); Game reintroductions with live game sales and ecotourism (Muzarabani). Other models are

ecotourism with a cultural and historical focus in Mbire; commercialization of NTFPs with some controlled harvesting from the CWC core area (Muzarabani).

Non hunting with women empowerment (Pfundundu) is an innovative model, but viability could not be assessed due to inadequate financial information.

In terms of governance structures, there is limited room for new options given the fact that all three RDCs have long running current contracts with the Safari Operators (10-30 years), although use of community trust at ward level is recommended since it would ensure that the intended community members would benefit from wildlife utilisation. Any investment within these concessions would have to be with buy in from the Safari Operators as the current legal lease holders to avoid potential legal conflict. However initiating processes of increasing community involvement, ownership and benefits can start now through different accountability structures at CWC level such as joint management and operational meetings quarterly with RDC, Safari Operator and the Ward Environmental Subcommittees (ESCs) or establishment of community trusts.

For the Integrated Land-use Management Plan (ILMP), the current status of Natural Resource Management (NRM) and land use planning is that it is practiced at local level informally with local leadership such as councilors, traditional leaders and the Ward Committees taking a lead. There is a strong bias towards Physical/Infrastructure planning at RDC level in all three districts.

Ongoing initiatives such as Land Use Planning in Mbire facilitated by the African Wildlife Foundation (AWF) and the Kanyemba Town /Mbire Master Plan need to be engaged with as the project starts its own processes.

Proper stakeholder identification is critical for the success of the initiation of the ILMP development processes by the project. Tools and techniques have been developed at international level through World Wildlife Fund (WWF), Terra Africa, Food and Agriculture Organization of the United Nations (FAO) and other agencies that can be used for the Zimbabwean context. Adequate long-term budget is required to ensure the process is completed.

Capacity building and training is required at wider community level, community leadership (ESCs, traditional leaders, councilors, NTFP groups, community garden members) in the value addition process, Sustainable Land Management (SLM) such as fire management and gully reclamation, SFM such as tree nursery management and assisted regeneration.

RDCs require capacity and training in contract design and management, monitoring and record keeping for wildlife, forestry and finances. There is over reliance on the office of the NRM Officer with only one officer in all three districts which can be detrimental to processes should this person leave. There is need for an understudy, capacitation of this office and succession planning within the RDCs for this portfolio.

Safari Operators need capacity in community engagement and communication to avoid disenchantment with their operations over minor cultural oversights such as formal introductions and regular face-to-face feedback to the community leadership (not just the councilor).

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1.0. Introduction and Background

This Baseline survey was undertaken as part of a project titled, “Strengthening Biodiversity and Ecosystems Management and Climate-Smart Landscapes in the Mid to Lower Zambezi Region of Zimbabwe” being implemented with funding from GEF 6, under the Global Wildlife Programme (GWP) in partnership with the United Nations Development Programme (UNDP) and the Ministry of Environment, Tourism and Hospitality Industry (METHI). The project covers seven Protected Areas (Charara, Chewore, Dande, Doma, Hurungwe, Sapi Safari Areas and Mana Pools National Park) under the jurisdiction of the Zimbabwe Parks and Wildlife Management Authority (ZPWMA) and community CAMPFIRE areas in the three districts of Hurungwe, Mbire and Muzarabani (Figure 1-1). The project area is part of the Mid Zambezi landscape.

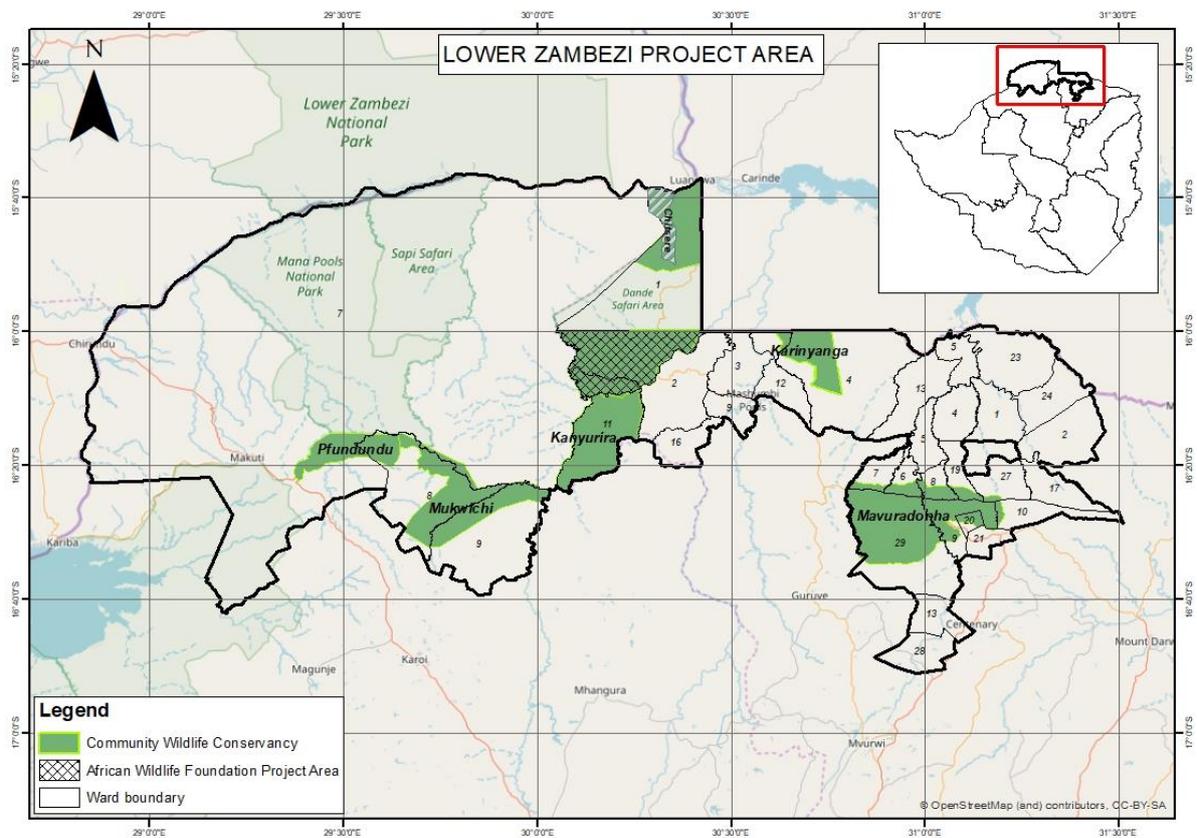


Figure 1-1: Project Area for GEF 6 project showing the Community Wildlife Conservancies, wards and the three districts

1.1. ZAMBEZI VALLEY LANDSCAPE AND LANDSCAPE APPROACHES

The Zambezi Valley Landscape is one of contrasts consisting of different land uses, terrain and agro-ecological regions. The Zambezi Valley/River Basin is the fourth largest basin in Africa covering some 1.3 million square kilometres. From its source, the Zambezi River cuts across seven countries namely Zambia, Angola, Namibia, Botswana, Zimbabwe, Mozambique and Malawi. The Zambezi Valley consists of four important biodiversity areas from a continental perspective namely; Lake Malawi/Niassa; Upper Zambezi Swamps in Zambia; Mid Zambezi Valley (Zimbabwe and Luangwa) and

Gorongosa/ Zambezi Delta in Mozambique. The Mid Zambezi Valley in Zimbabwe and Luangwa is an important biodiversity area as the area forms the, “the last remaining protected areas extensive enough to support large populations of large mammals”¹.

The project area lies in the Middle Zambezi, which is defined as the area between Victoria Falls to the eastern side of the Cabora Bassa in Mozambique. In Zimbabwe, the area is between Victoria Falls and the Luangwa on the Zimbabwe and Zambia border. Vegetation in the Mid Zambezi is mostly savanna with deciduous trees, grass and open woodland and Mopane woodland with the tree species *Colophospermum mopane* being predominant.

The climate of the Mid Zambezi Valley is hot and dry with a short rainy season between November and April. Temperatures are high with an average mean temperature of 36°C and high evapotranspiration which generally exceeds rainfall except during the peak of the rain season². The region cuts across four agro-ecological natural regions (NRs) of 2, 3, 4 and 5. The annual rainfall varies from less than 450 mm in region 5 and 4 to a high of 1000 mm in region 2 in the Highveld of Hurungwe. The area is prone to drought in region 4 and 5, which covers the greater portion of the area. Mbire and Muzarabani experience seasonal flooding along the major rivers (Hunyani and Musengezi). Muzarabani is affected by backflows from Lake Cabora Bassa and floods are an annual event in the district.

The landscape is generally low lying with Mbire and Muzarabani having the lowest altitudes of 350 m above sea level. The escarpment has a plateau of 1 200m in the east which is an undulating landscape with broad fertile interfluvies, interspersed with occasional massive granite inselbergs³. The plateau slopes northwards and is intercepted by the Mavhuradonha escarpment, which drops down into the ancient rift valley⁴.

Muzarabani, Hurungwe and Mbire provide important lessons in community based natural resource management under the Communal Areas Management Programme For Indigenous Resources (CAMPFIRE). CAMPFIRE was founded on the principles embodied in the Parks and Wildlife Act of 1975 that provided for alienated landholders to be given Appropriate Authority status (AA) to “own” and manage wildlife on their land and derive benefits from it. Within rural areas there were no legal sub-district community institutions and therefore communities in CAMPFIRE could not be granted the AA status. As a compromise and in order to go ahead with the programme, the formal control of wildlife was devolved to Rural District Councils (RDCs). This made the RDCs the legal custodians of wildlife with the responsibility to make contracts with wildlife industry players. Mbire was one of the first two CAMPFIRE districts to be granted Appropriate Authority in 1989⁵. Hurungwe district is adjacent to

¹ World Bank (2010): The Zambezi River Basin A Multi-Sector Investment Opportunities Analysis: Volume 3 State of the Basin

² Andy E. Moore, Fenton P.D. (Woody) Cotterill, Mike P. L. Main and Hugh B. Williams (undated) : The Zambezi River Basin

³ Chenje M (ed), 2000: State of the Environment Zambezi Valley, SADC/IUCN/ZRA/SARDC, Maseru/Lusaka/Harare

⁴ Chenje M (ed), 2000: State of the Environment Zambezi Valley, SADC/IUCN/ZRA/SARDC, Maseru/Lusaka/Harare

⁵ This was while it was still one district under Guruve.

Mana Pools National Park which is an important RAMSAR site and is an important bird area of global significance with over 450 bird species. Muzarabani is the first CAMPFIRE District to have its CAMPFIRE Area gazetted as a Wilderness Area. The project area has a United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage site and UNESCO Biosphere reserve within its landscape as well as being part of two Trans-Frontier Conservation Areas (TFCAs) of Mana – Zambezi and ZIMOZA TFCAs.

1.1.1. Landscape Approach

The landscape approach is important in the Sustainable Development agenda as it can potentially eliminate the challenge of sectoral approaches and trade-offs in large spatial entities (Reed et al., 2016). The term landscape and landscape approach can be applied at any scale depending on the problem or issue being addressed (CBD, 2011). However, in reality it is used for spatial scales covering several thousand square kilometres or more. The approach is important as it provides a framework for planning which avoids, “displacement pressure” by ensuring that successful activities in one area of the landscape do not cause unintended negative consequences in another (CBD, 2011). It provides a spatial scale for improved coordination of policies and sectors given that different land uses such as settlements, transport infrastructure, agriculture, forestry, mining, hunting and conservation usually co-exist and compete for the limited natural resources within the same landscape (CBD, 2011).

There are various definitions of the landscape approach. The United Nations (UN) Environment defines the landscape approach as, “a land use and management theory that seeks to simultaneously reconcile competing land uses to achieve social, environmental and economic goals. It focuses on multi-stakeholder participation in decision-making and management to understand the processes of change, providing solutions at multiple scales and improve the resilience of local communities and their environments”⁶.

1.2. NEXUS BETWEEN LIVELIHOODS, NATURAL RESOURCES AND PROTECTED AREAS

There is a close interdependence between society and natural systems, which complicates attainment of the sustainable development agenda in developing countries (Pahl-Washl, 2007). The evolution in the way key functions of protected areas are defined is a result of greater acknowledgement of this interdependence. In the early 19th Century Protected Areas were set-aside for scenic purposes, in the mid -1970s their main purpose was for scientific research, economic returns and culture. From 2000, their key function shifted to support ecosystem services, and promote climate change adaptation, resilience and mitigation using various governance models (Ervin et al., 2010).

In the Zimbabwean context, Protected Areas are located mostly in arid and semi-arid areas with communities living adjacent to these areas having high poverty prevalence rates due to poor agricultural yields. There is a greater reliance on natural resources as coping mechanisms. With the depletion of natural resources in the communal lands, Protected Areas become the next available source resulting in increased illegal activities (wildlife, forest crimes). In areas of high wildlife populations, there is greater interaction between people and wild animals resulting in conflicts as animals raid crops and attack people and livestock further affecting already strained livelihoods. Given

⁶ <https://www.unenvironment.org/zh-hans/node/24282>. Downloaded 18/06/2019: 2:44am

the increase in international illegal wildlife trade syndicates, the protected areas require cooperation and support from local communities to curb the Illegal Wildlife Trade (IWT). In this regard, Protected Areas and rural communities are in the same landscape and require coordinated planning and implementation to avoid displacement pressure.

1.3. EVOLUTION OF COMMUNITY WILDLIFE CONSERVANCIES IN ZIMBABWE

Community Wildlife Conservancies are a relatively new concept in Zimbabwe. The country has experience with privately owned conservancies based on large scale commercial farms coming together such as the Save Valley Conservancy in the South East Lowveld. The decline in the conservation and governance integrity of the CAMPFIRE approach over the last ten years led to a search for other approaches, which address the shortfalls of CAMPFIRE. A review of the CAMPFIRE commissioned by the Ministry of Environment with support from the European Union in 2017 made recommendations on the need for further devolution to Sub-District legal entities and producer

Box 1: Mucheni Community Wildlife Conservancy in Binga

Sinansengwe Ward in Binga is a CAMPFIRE ward, adjacent to Chizarira National Park and Chete Safari Area. Wildlife populations and benefits accruing to the community had nearly disappeared in the ward. The Community came together under the Ward Development Committee (WARDCO) with guidance from the Councillor and Chief Sinansengwe and decided to form a Community Conservancy as a solution. The process was initiated in 2014. Through the Chief, land was set aside and gazetted through RDC by-laws as a Community Conservancy. Process involved the Ward Councillor lobbying the District Natural Resources Committee to support the motion and have it tabulated at Full Council and approved. The approval process took two years. The community wrote its own constitution and initiated own Anti-Poaching patrols through two community volunteers. A website for the Conservancy was set up. This attracted a private entity Tokoloshe Safaris to express interest. The Community negotiated for a one-year lease renewable annually based on performance. Management is still through the CAMPFIRE model though for accountability the Councillor is not a signatory to the ward account. Budgets are done by the community through the Ward Committee. Any requisitions go through the Finance Committee before funds are released. Weekly meetings are held with the private partner. Investments made by the private partner include Camp construction, road network, water for wildlife and people (borehole drilled with water pump), uniform and equipment for community rangers. Trophy fees are paid upfront by the Safari Operator. Wildlife numbers have gone up, poaching has gone down and benefits are accruing to the community after four years.

communities / CBOs / trusts including criteria/requirements for Appropriate Authority eligibility. A pilot Community Wildlife Conservancy (CWC), Mucheni Conservancy was established in Binga, Sinansengwe Ward with the initiative of the community (Councillor and Chief) and support from Zimbabwe Environmental Lawyers Association (ZELA), ZPWMA and the Zimbabwe Resilience Building Fund (ZRFB). Box 1⁷ summaries key aspects of the Mucheni Conservancy which is the first substantive and wholly communally initiated conservancy in Zimbabwe. It provides key learning points for this Baseline survey and other CWCs to be established in Zimbabwe.

Community wildlife conservancies, provide an opportunity for further devolution, intensive management of wildlife areas and diversification of natural resource utilisation to other uses, other than safari hunting. Key lessons from Mucheni Conservancy experience are: the importance of community ownership, role of traditional leaders and utilising existing legal frameworks to devolve ownership, benefits and management to communities and increased negotiating power for communities in engaging with the RDC and private sector.

⁷ <http://www.africahunting.com> and pers. Comm. With ZELA Project Officer (June 2019)

1.4. SUMMARY PROFILES OF TARGET DISTRICTS AND CWCs

The Baseline Survey was conducted in Hurungwe, Mbire and Muzarabani districts, targeting four wards close to the 6 community wildlife conservancies in each district. Figure 1 shows the study districts, targeted wards and the CWCs.

For project implementation there are 21 wards that are participating in the establishment of the CWCs by virtue of their proximity to the CWC (sharing a boundary with the CWC), with a population of 131,012 (65,144 Male; 65,868 Female) and 29,056 Households. In Mbire there are 5 wards directly connected to the CWCS (Karinyanga – Wards 4 and 12; Kanyurira – Wards 2 and 11; Mbire North – Wards 1, 2 and 11). For Hurungwe there are 3 wards participating (Pfundundu – Ward 7; Mukwichi – Wards 8 and 9). In Muzarabani there are 13 participating wards (Mavhuradonha -5, 6, 7, 8, 9, 10, 13, 17, 19, 20, 27, 28, 29). Table 1-1 shows a summary of each district and the target CWCs within each district in terms of key demographics, size, and current private sector partners.

Table 1-1: Summary Profile of 3 Districts and 6 CWCs

District	CWC	Size (ha) ⁸	Ward	HH	Ward Population	Private Sector	Lease period	Activities
Hurungwe	Pfundundu	Projected: 30,000 Actual as of 2019: 20,217.1	7	3309	13857	Hurungwe Safaris -Jan Stander (Contract with RDC); IAPF - Damien Mander (33% shareholder-Funder & Active Partner)	25 years; 2017-2042; renewable for 25 years again	Non Hunting: Women Empowerment through all women Anti-Poaching Unit; Habitat and wildlife restoration, road infrastructure; community investments (water & employment), Anti-poaching
	Mukwichi	Projected: 20,000 Actual (2019): 46,201.2	8	3293	15388	HHK Safaris- Graham Hingeston	10 years; 2017-2027	Safari Hunting; Camp repairs;
			9	5280	24474			
Mbire	Karinyanga	Projected: 32,500 Actual (2019): 18,118.4	4	1594	7113	Charlton McCallum Safaris -Myles McCallum, Charlton McCallum Safaris	10 years; 2009-2018; Roll over contract for another 10 years (2018-2028)	Safari Hunting, Anti-poaching activities, water supply, road infrastructure
			12	1497	6763			
	Kanyurira	Projected: 60,000 Actual (2019): 65,572.9	2	1201	5537	HHK Safaris- Graham Hingeston	10 years; 2018-2028	Safari Hunting; Anti-poaching support, Road repairs
			11	333	1644			
	Mbire North	Projected: 132,000	1	687	3190	Charlton McCallum Safaris -Myles McCallum,	10 years; 2019-2029	Safari Hunting, Anti-poaching Activities

⁸ The sizes of the CWCs obtained in literature (projected) were calculated using the conventional method with 1:50 000 topographical maps. The actual sizes (GIS Area) for 2019 were obtained using the area calculation tool as part of the baseline survey.

District	CWC	Size (ha) ⁸	Ward	HH	Ward Population	Private Sector	Lease period	Activities
		Actual (2019): 135,401.8				Charlton McCallum Safaris		
			11					
			2					
	Mbire North Chitsere	Projected: 10,000 Actual (2019): 8,587	1			Huchi Tsere Pvt (Ltd) - Will Maberly, Squirrel Meredith and Will Battershill ;	30 years; 2017-2047	Manages the land and obligations to Council; Building & repairing existing camps for Ecotourism, Community support
						Mbire Community Conservation Trust-WL Battershill and CD Meredith		Managing Donor funding for community projects
Muzarabani	Mavhuradonha Wilderness Area	Projected: 60,000 Actual (2019): 70,276.9	5	1118	4988	Varden Safaris - James Varden. Nzou Safaris - George Seremwe (Shadow Financier -Andrew Anderson)	Not disclosed Eco Lodge since 2007 Not disclosed	Ecotourism- photographic, horse rides, restocking, Anti-poaching activities. Ecotourism- Mavhuradonha Eco camp; Safari Hunting - Not Operational, Anti poaching with RDC scouts

District	CWC	Size (ha) ⁸	Ward	HH	Ward Population	Private Sector	Lease period	Activities
			6	481	2169			
			7	286	1295			
			8	1390	5695			
			9	997	4562			
			10	1851	8466			
			13	610	2816			
			17	1329	5983			
			19	757	3359			
			20	234	1033			
			27	1013	4585			
			28	1219	5358			
			29	577	2737			

2.0. Approach and Methodology

2.1. OBJECTIVE OF BASELINE SURVEY AND SCOPE OF WORK

The purpose of the Baseline Survey was to provide the project team with detailed baseline information on the situation relating to the two components (2 and 3) of the project, identify and recommend priority actions based on feasibility assessments and provide implementation guidance to achieve the desired outcomes. The two components are: Component 2. Strengthening Zimbabwe's PA estate and Community Wildlife Conservancies in areas of global BD significance; Component 3. Mainstreaming BD and ES management, and climate change mitigation, into the wider landscape. The baseline will be used to inform Integrated Landscape Management Planning for the targeted landscape.

2.2. SPECIFIC OBJECTIVES OF THE BASELINE SURVEY

The following were the specific objectives of the baseline survey:

- To carry out comprehensive surveys in identified wards to assess the baseline scenario in terms of the status of CWCs,
- To conduct detailed feasibility assessments and identify and recommend investment priorities and viable business models for each CWC.
- To conduct a detailed baseline study of the status of NRM in particular Sustainable Forest Management, Sustainable Land Management, Human Wildlife Conflict, and threats to biodiversity in the targeted wards and recommend priority actions needed that can be supported by the project.
- To assess the current socioeconomic conditions and the livelihood activities of communities in the project area, identify economic opportunities recommend NRM related alternative livelihood priorities that can be supported within the scope of the project.
- To assess the current local level institutional arrangements for sustainable land management and NRM planning, sustainable forest management, human wildlife conflict management, fire control, and assess their capacity needs and recommend a plan of action for capacity support and training.
- To conduct a Natural Resource Inventory for the project area, map boundaries for Community Wildlife Conservancies and undertake Land Cover Mapping

2.3. EXPECTED DELIVERABLES

The team of consultants was expected to produce the following key deliverables:

- An inception report detailing the approach and methodology, work plan and outline of the report within one week of signing the contract
- A draft baseline report within 10 days after concluding field work
- A detailed final baseline report with the recommendations sections structured according to the Outcome areas and relevant outputs of the project document within one week after receipt of comments from UNDP. Baseline report will provide the following:
 - Details on the socio-economic and demographic characteristics of the surveyed population
 - Details on the livelihood status/economic activities of the surveyed population
 - Details on the institutional arrangements for NRM existing in the six areas and how they relate

to CWCs

- Natural resource base status of the different communities in the area
- Maps of the proposed CWC boundaries, including wards involved and their sizes
- Pictures, graphs and other illustrations showing relevant features or issues in the landscape including ecological or conservation status (wildlife, forestry, fires etc)
- Other maps showing spatial patterns in land cover (and land cover change), vegetation, fires, wetlands, soils and relevant features
- Information on the biodiversity habitats, wildlife movements or corridors and HWC hot spots
- Information on connectivity opportunities for the conservancies
- Information on the potential tourism business opportunities in the area
- Recommendations on viable business models
- Details of operations of the private sector already working in the areas (e.g. restocking, lease period) and Private sector partnerships;
- Details on the feasibility assessments of establishing the six CWCs
- Business analysis of the CAMPFIRE projects including benefits or barrier analysis, new value chains analysis and feasibility and financial viability

2.4. APPROACH TO THE BASELINE

This assignment was undertaken as a team effort, but with recognition of the areas of expertise of each consultant. In this regard, the Forestry, Wildlife, Livelihoods experts and Economist/Business Analyst provided distinct input into the process in terms of their methodology and deliverables, while the NRM and GIS/Mapping specialists provided cross cutting input during the assignment.

The assignment was conducted in four phases namely: Inception; Field Work/Data Collection; Data Entry and Analysis; Report writing and submission.

An all-inclusive participatory approach was applied to include stakeholders in Harare, local communities, local traditional and administrative authorities and all stakeholders in all the districts and targeted wards. Triangulation approach including qualitative and quantitative methods was used. Financial and Economic analysis was undertaken as part of assessing the business models for the identified CWCs' investments as well as Knowledge, Awareness and Practice (KAP) surveys in line with capacity and training needs analysis and awareness programming recommendations required within the scope of the project.

2.5. INCEPTION PHASE

This included initial inception meetings with the UNDP project team, team meetings of the consultants to discuss the TORs, methodology and other modalities. Literature review was conducted including review of project documents (Project Document, Progress reports) and relevant literature on the key topics and areas (see References). This included literature obtained from the project partners (ZPWMA, CAMPFIRE Association, EMA, Forestry Commission, Small Grants Programme – SGP). Discussions with project team were held to provide details on stakeholders and status of project implementation.

An inception report was produced detailing the methodology to be used, stakeholders to be consulted, field survey instruments and an outline of the final report. This was complimented by discussions with members of the project team to understand the comments provided on the draft Inception Report.

2.6. FIELD WORK/DATA COLLECTION PHASE

To provide the detailed assessments that are required as outputs to this assignment, the consultants undertook a field data collection mission in the three target districts covering the six proposed CWCs. Both quantitative and qualitative data collection methods were used in order to collect information to be used to determine socio economic status such as incomes, number of households involved in sustainable forest and wildlife management, consumptive and non-consumptive wildlife uses investments (such as hunting, ecotourism and other related businesses), nature of rural livelihoods, and status of biodiversity for each CWC. For each specific component (forestry, wildlife, livelihoods, business/financial) relevant questions and methods of data collection and analysis were applied.

2.7. TARGET POPULATION, SAMPLING STRATEGY

The target population was identified from the three districts of Hurungwe, Mbire and Muzarabani that are participating in the project. For each district, four wards were selected based on their proximity to the proposed Community Wildlife Conservancy. Proximity was defined in terms of the extent of the boundary shared with the CWC and intensity of wildlife activity based on wildlife corridors identified during the project development process. A sample size of 600 households for the three districts representing about 2% of the households in the project area (29,344 households in the target area), with 200 households drawn from each district was selected. This was considered by the team to be statistically sound taking into consideration the time constraints (4 days of field work per district), financial constraints and travelling distances involved. Other considerations were the differences in population densities (ZimStat 2015) compared to the number of participating wards and number of CWCs involved. Mbire has a low population density (17.54people/km²), 6 participating wards and three CWCs, Muzarabani is densely populated (28.78/km²), 12 participating wards and one CWC and Hurungwe is not densely populated (16.59/km²), with 3 participating wards and two CWCs. Based on these considerations, equal number of households were sampled from each district. Additional information was obtained from NGOs operating in the target districts to triangulate findings of the survey. Justification for the sample size was based on argument presented by Bailey (1994)⁹, that 30 respondents is the bare minimum sample for studies in which statistical data analysis can be done. Saunders et al. (2007)¹⁰ also emphasised that, a sampling intensity of 30 households is regarded to be a reasonable sample size usually used in social science study and statistically large enough to make scientific conclusion. However, Matata et al. (2001)¹¹ argued that having 80-120 respondents is

⁹ Bailey, 1D.K. (1998). *Methods of Social Research*. The Free Press Collier-Macmillian Publishers, London. 478pp.

¹⁰ Saunders, M., Lewis, P. and Thornhill, A. (2007). *Research Methods for Business Students*, 4th Edition. FT Prentice Hall, Harlow-England. 624pp.

¹¹ Matata, J. B. W., Anandajayasekarani, A., Kiriro, T. N., Wandera, E. O. & Dixon J. (2001). *Farming Systems Approach to Technology Development and Transfer: FARMESA*, Harare, Zimbabwe. 420pp.

adequate for social-economic studies in sub-Saharan African households. Table 2-1 shows the statistical samples based on a 95 % confidence interval and a 5 % error chance.

Table 2-1: Breakdown of Households by District for participating wards

District	CWCs	Participating Wards	Number of Household per CWC	Total No. of Households	Statistical Sample
Hurungwe	Pfundundu	7	3,294	15131	375
	Mukwichi	7,8,9	11,837		
Mbire	Karinyanga	4, 12	3,082	5922	361
	Kanyurira/Masoka	2, 11, 16	2,154		
	Mbire North	1	686		
Muzarabani	Mavhuradonha wilderness Area	3, 5, 6, 8, 9, 10, 13, 17, 21, 27, 28, 29	11,585	11,585	372
Total	6	21		29,344	1108

Source: Zimbabwe Poverty Atlas Survey, 2015

Wards that are within or adjacent to each CWC were identified from the project document, ZimStat ward maps and UNDP project Team field visit reports. From the participating wards in each CWC, wards that constitute the core area were purposively sampled, with some wards on the periphery also being selected. In areas where there were distinct demarcations of villages within wards participating, these were purposively selected (such as for Ward 8 in Hurungwe).

Of the four wards selected per district, three shared a boundary with the target CWC and were participating wards in the project, while the fourth ward did not share a boundary with the CWC, and were not considered to be directly participating in the project (except through small grants projects) but were potentially affected by human wildlife conflict issues based on their location within identified wildlife corridors.

In each ward, two villages were randomly selected; one village at the boundary of the respective CWC and the other village furthest from the CWC but within the same ward. Households within the selected villages were randomly sampled to get 50 households per ward. Each village was considered as the Enumeration area. Households were purposively sampled within the selected villages. Depending on

the layout of the villages, alternative homesteads were selected for enumeration. Table 2-2 shows the wards sampled.

Table 2-2: Households sampled by CWC and Ward

District	CWC	Ward	No. HH in Ward*	No. HH sampled	Villages
Hurungwe	Pfundundu	7	1072	50	Hotel 22A
	Mkwichi	8	2044	43	Mutungambara Katenaire
		9	1385	47	Pamudungwe Muswevenyoka
		26	833	45	Musokeri Mushinye
Mbire	Karinyanga	3	1351	50	Kanongo A Guvheya 2
		4	1594	48	Kadyamarunga Guti
	Kanyurira	11	333	51	Chenjerai Muzveba
	Mbire North	1	687	43	Mariga Chiruwe
Muzarabani		5	1118	51	Gunduza Ngaiso
	Mavhuradonha Wilderness Area	7	286	47	Murwira Dzapasi
		20	234	50	Jengamvura Chawarura
		27	1013	51	Museredza Mateu
Total			11,950	583	

*ZimStat (2012) Mashonaland Central and Mashonaland West Census results

Data was captured using the Open Data Kit (ODK) for faster data entry, cleaning and validation while in the field. The Livelihoods Expert provided input into setting up this system. The surveys were set up using XLSForm and Open Data Kit Collect which are both open source tools for online and offline data collection. The XLSForm is the standard language used in developing ODK based survey and allows the user to specify the questions, responses and the validation rules that are enforced when collecting data. Once the forms were completed, they were loaded onto an android based app in order to collect the data. To cater for network challenges, the survey used a combination of online and offline tools. A team of 10 enumerators were trained to use the tools. All enumerators were trained on survey techniques, sampling protocols and interviewing techniques. The enumerators were Interns drawn

from the project responsible parties [Ministry of Environment, Zimbabwe Parks and Wildlife Management Authority (ZPWMA), Environmental Management Agency (EMA), Forestry Commission (FC), CAMPFIRE Association (CA)]. These were trained in Harare (by the consultants for one day) and were involved in the pre testing of the questionnaire in Muzarabani (which is closer to Harare) before field data collection commenced.

Training of enumerators covered the following:

- Brief overview of the CWCs, SLM, SFM, HWC and CAMPFIRE concepts
- Survey methodology (including ethics, consent)
- Question-by-question review of the questionnaire (using paper questionnaires)
- Introduction to the tablets
- Practice administering the questionnaire using tablets (role play/mock interviews)
- Objective of the Baseline Survey
- Brief overview of the project

2.8. DATA COLLECTION

2.8.1. Quantitative Survey

Quantitative data was collected through a household survey conducted in the three districts over a period of three weeks. The household questionnaire was administered to 583 respondents, with 259 male and 323 female respondents respectively. The process involved 10 trained enumerators, and three of the consultancy team as supervisors. In each district, the team passed through the RDC offices for introductions and assignment of an official to accompany the team in its visits to the wards. At ward level, the Councilor was the initial point of contact, who in consultation with the secretary, village heads, the district natural resources officer and the team identified the two villages to be sampled within the ward, thus purposively selecting the villages. Once the villages were identified, two community members familiar with the area accompanied the two enumeration teams (consisting of five members each) to the villages. On arrival at the village, the village head was informed and gave permission for the enumerators to conduct the survey in the village.

In some areas where the households were sparsely located, enumerators were assigned guides to accompany them. Each enumerator was expected to administer five questionnaires per day. In some wards, this was not achieved due to local challenges encountered.

At the end of the day, a random quality check was conducted, before each enumerator uploaded data onto the server. Debriefing sessions were conducted to identify and discuss any challenges encountered.

Challenges encountered

In Muzarabani, the enumerators encountered a challenge of absent household members as the village selected was close to the venue of the Focus Group Discussion, so most of the community members came to the meeting, though they were not part of the selected participants.

In Mbire, in Ward 4, the enumerators encountered a challenge of hostile village heads to the concept of conservancies as they had disagreements with the boundaries demarcated for the conservancy

which they felt had encroached onto their agricultural land. The enumerators contacted the District NRM Officer, who with the ward councilor went to address the situation. Eventually the enumerators managed to start the survey, but not all managed to interview five households.

In both Muzarabani (ward 5) and Hurungwe (ward 8), the team encountered the challenge of deserted homesteads as there was a funeral in the selected villages.

2.8.2. Qualitative Data Collection

Qualitative data was collected through Focus Group Discussions (FGDs) at Ward level and Key informant interviews (KII) at national, district and ward level. The FGDs were conducted with Ward level leadership which included village heads, Councilor, Environmental Sub Committee members, CAMPFIRE Committees, leaders of various local groups (such as community gardens, women's groups, youth groups), ward based government officials (AGRITEX, Zimbabwe Republic Police (ZRP), School heads, Women's Affairs ward coordinators), Community Based Organisations (CBOs) and NGOs within the wards. In all 14 FGDs (Annex 1) were conducted in the 12 wards and one in a non-participating ward in Hurungwe to capture lessons learnt in a successful beekeeping initiative in Ward 13 under the NTFP component.

Key Informant interviews were conducted with Safari Operators operating in the six CWCs, District NRM Officers, Finance Officers, Senior Game scouts, District Physical Planners/Engineers, Forest Commission, EMA district Officers, Councilors, Selected village heads. The full list of KII conducted is shown in Annex 2. A total of 40 key informants were interviewed. Some of these KIIs were conducted remotely through telephone, skype and WhatsApp calls.

2.8.3. Documentary

Relevant baseline statistics at district and national level were collected and analysed. Data collected included demographic, human development, economic, ecological and other relevant project indicators. Key data was also obtained from vulnerability assessment reports, district risk profiles, strategic plans and state of the environment reports for the respective districts. Multiple sources were used to extract this data.

Reports, documents and charts from stakeholders in the project area were requested, reviewed and where possible captured electronically. These included records on wildlife populations, illegal wildlife and forest activities, HWC data, harvesting of NTFPs data, quota setting and utilization data, incomes, expenditure and revenue data at district and ward level from natural resources, budgets for conservation at district and ward level by laws, constitutions, any Agreements related to the CWCs and/or CAMPFIRE areas.

2.8.4. Consent Permission

Consent Permission to conduct fieldwork was sought from local leadership which included the Rural District Council (Chief Executive Officer (CEO) and Natural Resource Management (NRM) Officer), district administrators, ward councillors, and village heads. Consent was also sought from both FGD and household questionnaire respondents before proceeding with the discussions as well as taking photographs and voice recordings of proceedings.

2.8.5. Field Observations and Assessments (Forestry, Wildlife, Mapping)

These were undertaken by the Mapping/GIS team as well as the forestry and wildlife experts. Mapping Experts used Satellite images, input from the RDC senior scout and NRM Officer drawn on maps, coordinates gathered from the field visit with community scouts to show the actual CWC boundaries, key features of the CWCs (e.g. areas of critical biodiversity) and participating communities.

The forestry and wildlife expert conducted sample transect observations within the CWCs using existing road networks accompanied by a local community scout and a member of the Safari Operator's field team. They assessed corridors identified by the community key informants in terms of existence of human settlements, wildlife, vegetation types and availability of Non Timber Forest Products (NTFPs). They also took coordinates for the corridors, potential and existing water points within the wildlife areas.

2.9. DATA PROCESSING, ANALYSIS, QUALITY CONTROL AND ASSURANCE

Quantitative data was analysed using statistical packages. Data was automatically collated from the tablets into an Excel based database. The data was cleaned and analysed using STATA, Excel, SPSS and R Statistics.

The findings were interpreted by each expert for variables relevant to their component within the study. All information is presented descriptively using graphs, pie charts, tables (with percentages), and narratives. The percentages are used in order to determine both the nature and strength of some variables.

Qualitative data was used to interpret and supplement findings from quantitative data analysis throughout the report. Findings from qualitative analyses were integrated with quantitative findings to provide a more comprehensive and context-specific picture. Content analysis was also used to analyse such data.

The qualitative data from FGDs and KIIs was analysed using content analysis. Specific themes that are relevant to the study objectives were identified. Information collected were sifted through and classified/coded according to the identified themes to address objectives of the baseline.

Each expert conducted analysis specific to their component, which was consolidated for the financial and economic viability of the CWCs, the prioritization of options for alternative livelihoods and potential projects to be supported by the SGPs, overall status of natural resources within the CWCS, gap analysis to input into the recommended framework for the development of ILMPs for each district.

Data is presented as tables, figures, charts, quotes, maps and pictures throughout the baseline report.

2.10. CHALLENGES FACED DURING THE SURVEY

The following are the challenges that were faced during the survey:

- The Baseline survey was conducted in three districts, covering four wards in four days and doing district based KIIs in half a day. This was a significant amount of activities in a limited timeframe.
- Absence of key staff such as the Natural Resource Officer and the CEO in one district (Muzarabani) was a limitation as the team did not get the district natural resource records that were required or get to interview the NRM Officer who is well versed with the CWC and community based natural resource management within the area.
- Reluctance by some councils (RDCs) personnel to share information relating to incomes and contracts of Safari Operators delayed and limited the analysis and report writing process.
- Prior requests had been sent to the district NRM Officers specifying the composition of participants to the FGDs. In some cases these messages were not adequately relayed (Muzarabani and Mbire some wards), resulting in some FGDs consisting of village heads only with a few representatives of other groups within the wards. This affected the representation of opinions, attitudes and views captured within the FGD discussions.
- Distances of some wards from the RDC offices resulted in the enumeration team going into the field late, thus affecting the targeted 5 household interviews by each enumerator.
- Unforeseen events in the field such as funerals, activities by other NGOs in the same ward with the same participants affected the composition of FGDs and available households for interviews.
- Time constraints in terms of the window open for data collection and analysis.
- The gender disparity in all the FGDs with fewer representations of women as leaders within the respective districts.

3.0. Socio-Economic and Demographic characteristics

3.1 INTRODUCTION

In this chapter the socio-economic and demographic characteristics of the households which participated in the household survey are presented. Results are also drawn from the FGDs and KIs.

In this section, the format of the tables is as follows:

- All numeric or quantitative values are presented using the mean and standard deviation (in brackets).
- All categorical data is presented as a total number of responses followed by the percentage (in brackets).
- The last column shows the results of the chi-square (χ^2)^{and} which compares the distribution of scores across the main analysis categories.

3.2 EXPLANATION OF DATA TABLES AND INTERPRETATION OF FINDINGS

The descriptive statistics for each of the variable and the accompanying Chi-square (χ^2) which assesses whether the distribution of categorical variables differ from one another were reported, (χ^2), is used to check if the difference between expected results and observed results is significant i.e. whether any difference observed have occurred by chance or if these are a direct result of the intervention.

In addition to the categorical data, the numeric or quantitative variables are also reported on. All numeric values in the tables are presented using the mean and standard deviation in brackets. The Standard deviation is a measure of dispersion; it measures how spread out the data is from the mean. It is used to understand the spread of data from the mean. The greater the standard deviation, the greater the variation in the scores – suggesting the presence of extremely high and low scores.

The term statistically significant is used for p-values less than or equal to 0.1.

3.2 DEMOGRAPHIC CHARACTERISTICS

3.2.1 Characteristics of the respondents

The respondents in the survey were adult members from selected households whose responses were considered accurate and representative for their respective households. Table 3-1 shows the demographic characteristics of the respondents. A total of 583 respondents were interviewed and 323 (55.5%) were females while 259 (44.5%) were males. Most of the respondents (73.9%) were household heads. Only 4.63% of the respondents were formally employed. With regards to educational attainment most of the respondents attended primary school (25%) while 12.2 % did not have formal education.

Table 3-1: Characteristics of the respondent

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Gender					0.150
Female	323 (55.5%)	114 (60.3%)	109 (55.9%)	100 (50.5%)	
Male	259 (44.5%)	75 (39.7%)	86 (44.1%)	98 (49.5%)	
Age	43.8 (42.8)	44.7 (16.2)	39.3 (16.9)	47.5 (69.4)	0.156
Is respondent head of household?	431 (73.9%)	144 (76.2%)	135 (69.2%)	152 (76.4%)	0.187
Level of education:					.
None	71 (12.2%)	18 (9.52%)	36 (18.5%)	17 (8.54%)	
Attended Primary	146 (25.0%)	42 (22.2%)	59 (30.3%)	45 (22.6%)	
Attained Primary	112 (19.2%)	42 (22.2%)	43 (22.1%)	27 (13.6%)	
Attended Secondary	137 (23.5%)	39 (20.6%)	38 (19.5%)	60 (30.2%)	
Attained Secondary	112 (19.2%)	45 (23.8%)	19 (9.74%)	48 (24.1%)	
A Level	1 (0.17%)	1 (0.53%)	0 (0.00%)	0 (0.00%)	
College	4 (0.69%)	2 (1.06%)	0 (0.00%)	2 (1.01%)	
Is respondent formally employed?	27 (4.63%)	11 (5.82%)	7 (3.59%)	9 (4.52%)	0.580

3.2.2 Characteristics of the household head

Access to natural resources and community assets is gendered and thus has a bearing on the household's ability to cope with shocks. Access to both natural and physical assets is a critical determinant of a household's socio-economic wellbeing. In a patriarchal society women tend to have disproportionate access to these resources relative to their male counterparts. These systematic differences in access to resources can lead to gendered livelihood outcomes. As such development interventions should be sensitive to the needs of both men and women and the vulnerable groups. Table 3-2 provides key demographic characteristics of the head of the household. Approximately 36 % of the households in our sample are female headed. Hurungwe had the highest proportion of female-headed households (44.4%) while Mbire and Muzarabani had higher proportion of male-headed households (67.7% and 67.2% respectively) compared to Hurungwe and the difference is

statistically significant ($p = 0.1$). The greatest proportion (81.3%) of the household heads are married and Hurungwe had the highest proportion (22.2%) of heads who are widowed. As far as education is concerned, most of the household heads attended primary (23%) with the largest proportion of those who attended primary school are from Mbire (25.6%). Only 6.86% of the household heads from the entire sample are formally employed and Muzarabani has the least proportion (5.53%).

Table 3-2: Characteristics of the household head.

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Gender of household head					0.020
Female	212 (36.4%)	84 (44.4%)	63 (32.3%)	65 (32.8%)	
Male	370 (63.6%)	105 (55.6%)	132 (67.7%)	133 (67.2%)	
Marital status:					0.001
Divorced	9 (1.54%)	2 (1.06%)	5 (2.56%)	2 (1.01%)	
Married	474 (81.3%)	140 (74.1%)	170 (87.2%)	164 (82.4%)	
Never Married	15 (2.57%)	3 (1.59%)	4 (2.05%)	8 (4.02%)	
Widowed	82 (14.1%)	42 (22.2%)	16 (8.21%)	24 (12.1%)	
Education status:					.
None	78 (13.4%)	22 (11.6%)	37 (19.0%)	19 (9.55%)	
Attended Primary	134 (23.0%)	42 (22.2%)	50 (25.6%)	42 (21.1%)	
Attained Primary	115 (19.7%)	39 (20.6%)	52 (26.7%)	24 (12.1%)	
Attended Secondary	120 (20.6%)	34 (18.0%)	32 (16.4%)	54 (27.1%)	
Attained Secondary	127 (21.8%)	47 (24.9%)	23 (11.8%)	57 (28.6%)	
A Level	2 (0.34%)	1 (0.53%)	0 (0.00%)	1 (0.50%)	
College	4 (0.69%)	2 (1.06%)	0 (0.00%)	2 (1.01%)	
Employment status:	40 (6.86%)	14 (7.41%)	15 (7.69%)	11 (5.53%)	0.653

3.2.3 Family Demographics

On average, most households have settled in their respective areas for 24 years. The overall mean household size was 6 members which is in line with the nationally estimated figures. Household size represents both the consumption and production unit of the household and for the latter determining the stock of labour which can be exploited by a household to meet its production goals. Hurungwe and Muzarabani have more family members living in urban areas compared to Mbire. Having more people pursuing economic opportunities in urban areas could potentially mean higher income inflows through remittances. On the other hand, it could imply reduced development prospects due to the flight of labour and skills. There is no statistically significant difference ($\alpha = 0.390$) across the three districts on the number of family members living in the diaspora. **Error! Reference source not found.**

shows that there are statistically significant differences on three variables: number of family members above 18 years, number of females above 18 years and whether a household has a family member living in the urban areas.

Table 3-3: Family Demographics

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Number of years lived in the area.	23.6 (42.8)	24.6 (14.0)	19.1 (14.2)	27.2 (70.5)	0.158
Household size	5.73 (3.09)	5.91 (3.02)	5.85 (3.54)	5.45 (2.64)	0.283
Male members above 18 years	1.35 (0.96)	1.49 (1.07)	1.28 (0.95)	1.28 (0.83)	0.042
Female members above 18 years	1.37 (0.90)	1.48 (1.01)	1.22 (0.75)	1.41 (0.91)	0.012
Male members below 18 years	1.42 (1.22)	1.36 (1.18)	1.49 (1.16)	1.40 (1.31)	0.545
Female members below 18 years	1.34 (1.19)	1.41 (1.34)	1.30 (1.05)	1.30 (1.18)	0.563
% of households with at least one member living in an urban area.	271 (46.5%)	101 (53.4%)	69 (35.4%)	101 (50.8%)	0.001
% of households with at least one family member living in Diaspora?	82 (14.1%)	29 (15.3%)	22 (11.3%)	31 (15.6%)	0.390

Mbire has on average 1.22 female members above 18 years old which is significantly low compared to Hurungwe and Muzarabani ($\alpha = 0.012$). Hurungwe, on the other hand, has significantly more male members above 18 years of age (mean = 1.49, $\alpha = 0.042$). Mbire has the least proportion of households who reported having at least one family member living in urban areas (35.4%, $\alpha = 0.001$).

3.3. ACCESS TO EDUCATION AND HEALTH SERVICES

Access to proper education and health are important poverty dimensions. Access to education and good health collectively allow people to engage with different strategies and fulfil their own livelihood objectives. Access to education and health also determine the quantity and quality of the available workforce at the household level. The survey asked respondents to estimate distances from their nearest primary school and health infrastructure as a proxy of the quality of education and health. In addition, it also asked respondents to indicate the health and education user fees.

Error! Reference source not found. shows that there are significant differences in the distance to health centres and health fees across the three districts ($\alpha = 0.001$) and people in Hurungwe travel

longer distances (12.2 km) compared to an average of 8.69 km. On average, people pay a fee of Real Time Gross Settlement (RTGS) \$11.1 but these fees are low in Mbire (RTGS\$7.21) compared to the other areas due to a CAMPFIRE subsidy. Similarly, respondents in Mbire reported that they travel shorter distances to access health services ($\alpha = 0.001$) compared to Hurungwe and Muzarabani.

Table 3-4: Access to education and health services

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Distance to nearest primary school	10.1 (6.2)	15.6 (8.39)	11.3 (7.01)	3.88 (2.69)	0.177
School fees	26.1 (127)	24.1 (72.9)	14.1 (71.4)	39.8 (193)	0.131
Any members failing to attend school	137 (23.5%)	40 (21.2%)	45 (23.1%)	52 (26.1%)	0.507
Distance to nearest health center	8.69 (6.97)	12.2 (6.07)	6.06 (6.32)	7.94 (7.06)	<0.001
Health fees	11.1 (8.58)	14.8 (6.39)	7.21 (7.05)	11.5 (10.0)	<0.001

3.4. LIVELIHOODS ASSESSMENT

The UNDP's Sustainable Livelihoods Approach (SLA) informed the livelihoods assessment conducted in the three districts. UNDP's SLA is an asset-based approach which emphasizes the promotion of people's access to and sustainable use of the assets to reduce poverty. UNDP's SLA defines livelihoods as the means, activities, entitlements, and assets by which people make a living. The study also measured deprivations or the extent of household level poverty in the three districts.

Poverty is multidimensional and cannot be measured by a single indicator aggregate such as income or expenditure. To understand the multidimensional nature of poverty, we applied the Multi-dimensional Poverty Index (MPI) which uses a set of vulnerability indicators to determine the extent of deprivation (Alkire and Foster, 2007; Alkire and Foster, 2011; Alkire and Santos, 2014). One of the main features of the MPI is the identification of the dimensions of vulnerability and indicators in each dimension with equal weights for each dimension and equal weights for each indicator in each dimension. The sum of the weights for all the indicators adds up to one. The most popularly used index has three dimensions, namely education, health and standard of living and a total of 10 indicators of deprivations.

The MPI is tractable and flexible in that the number of dimensions and indicators can be adapted to different contexts (Vijaya *et al.* 2014). For each indicator, a dichotomous variable is computed equal to one if the condition applies and equal to zero when it is not satisfied. The MPI also allows a deeper look into the compositions of poverty i.e. how people are poor varies a lot-necessitating quite different policy response. Though the MPI is sometimes deeply constrained by data and limited in relevance by the tremendous diversity of people's lives, it managed to give the most detailed picture of poverty to date. According to Alkire *et al.* (2013), households are classified as poor if they are deprived in 33% of

weighted indicators and classified as ultra-poor if they are deprived in at least 50% of the indicators. Table 3-5 shows the elements and weighting in the construction of the MPI.

Table 3-5: Weighting and construction of the Multidimensional Poverty Index (MPI)

Dimension of Poverty	Indicator	SDG Area	Deprived if....	Weight
Health	Nutrition	SDG 2	Household failed to meet the MDD (Minimum Dietary Diversity) for the past 24 hours.	2/6
Education	Years of schooling	SDG 4	Household head did not complete primary level education.	1/6
	School attendance	SDG 4	Any school-aged child is not attending school up to the age at which he/she would complete primary school.	1/6
Living Standards	Cooking fuel	SDG 7	A household cooks with dung, agricultural crop, shrubs, wood, charcoal or coal.	1/18
	Sanitation	SDG 11	The household's sanitation facility is not improved (according to SDG guidelines) or it is improved but shared with other households.	1/18
	Drinking water	SDG6	The household does not have access to improved drinking water (according to SDG guidelines) or safe drinking water is at least a 30-minute walk from home, roundtrip.	1/18
	Electricity	SDG 7	The household has no electricity.	1/18
	Housing	SDG 11	The household has inadequate housing: the floor is of natural materials or the roof or walls are of rudimentary materials.	1/18
	Assets	SDG 1	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, refrigerator, car, or truck.	1/18

**A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet*

**A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole, or pump, protected well, protected spring or rainwater, and it is within 30 minutes' walk (round trip).*

**Deprived if floor is made of mud/clay/earth, sand, or dung; or if the dwelling has no roof or walls or if either the roof or walls are constructed using natural materials such as cane, palm/trunks, sod/mud, dirt, grass/reeds, thatch, bamboo, sticks, or rudimentary materials such as carton, plastic/polythene sheeting, bamboo with mud/stone with mud, loosely packed stones, adobe not covered, raw/reused wood, plywood, cardboard, unburnt brick, or canvas/tent.*

In this study, the ten indicators MPI framework were adapted (Alkire et al., 2007) to a nine-indicator framework since data on child mortality was not collected. However, each dimension still contributed the same weight (0.333 or 1/3) to the total MPI score. Particular interest was put on three things as

part of the poverty analysis namely: MPI which measures the proportion of the weighted deprivations being experienced, headcount ratio which shows the proportion of individuals who are classified as MPI poor and the graphical visualizations of what constitutes poverty in every district because how people are poor varies a lot – necessitating very different policy responses and interventions. Table 3-6 shows that overall, 64.3 % of the sampled households are MPI poor and they experience 39% of the deprivations.

Table 3-6: MPI and headcount ratios

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
MPI	0.39 (0.15)	0.38 (0.15)	0.42 (0.17)	0.36 (0.14)	<0.001
Headcount ratio	375 (64.3%)	124 (65.6%)	131 (67.2%)	120 (60.3%)	0.328

Mbire is the most deprived of the three districts with an average MPI score of 0.42 ($\alpha = 0.001$) and about 67.2 % of their households being classified as MPI poor. Fig 3-1 unpacks the MPI by giving a visual impression to help identify the most prevalent deprivations in each district.

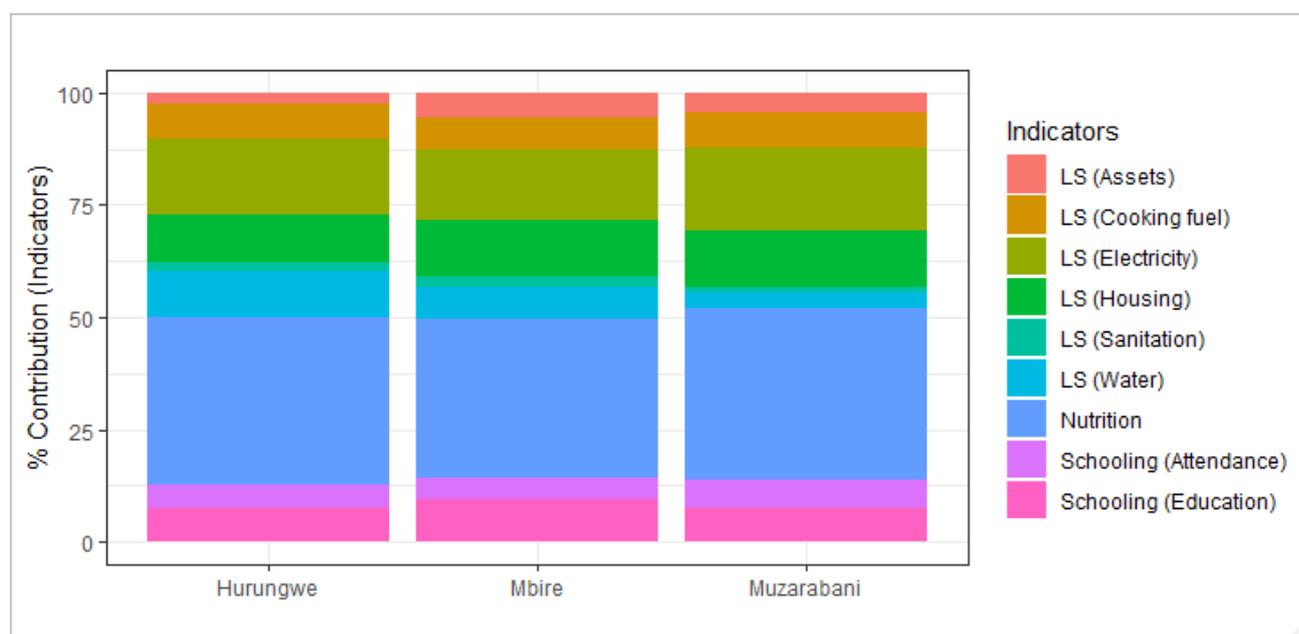


Figure 3-1: Percentage Contribution of Each Indicator to Poverty in Hurungwe, Mbire and Muzarabani

One of the key advantages of the MPI is that it can also be broken down by indicator to show which of the deprivations contribute to poverty in each district. Figure 3-1 shows that nutrition is the most important form of deprivation accounting for over 30% of MPI in all the three districts. Cooking fuel is also a critical problem, reflecting an overreliance on forest-based fuel forms. While water scarcity is common across the three districts, it is more prevalent in Hurungwe compared to the other two districts.

3.4.1. Livelihood activities

Table 3-7 shows the livelihood diversity index for the communities in the three districts. The Livelihood index was calculated using 21 items (see Annex 3) which shows the list of potential livelihood activities measured in the survey. Out of 21 potential activities, most of the community members on average rely on 2 to 4 livelihood activities. Our focus group discussions show that some of these activities are conducted seasonally and for subsistence purposes. Similarly, our survey findings show that most households do not produce surplus to sell as most of the food crops rarely meet the household food needs. Annex 3 details the livelihood activities across the three districts and the potential incomes earned from these activities. The table shows that tobacco farmers in Hurungwe earn most income averaging about RTGS\$5000 and this supports about 9.82% of the total sampled households. Conventional agriculture on the other hand earns households around RTGS\$1034 and while 89.5% of the households grow field crops, 61.1% can sell their crops for income. Livestock sales are also low (19.9%) across the three districts and households earn about RTGS\$ 434 annually.

Table 3-7: Livelihood Diversity Index

	[ALL]	Hurungwe	Mbire	Muzarabani	p. overall
	N=583	N=189	N=195	N=199	
Livelihood Diversity Index (Out of 21)	2.91 (1.56)	2.95 (1.41)	2.97 (1.47)	2.83 (1.77)	0.632

3.5. ECONOMIC ACTIVITIES

This section discusses the key economic activities conducted in the survey districts.

3.5.1. Agricultural production and production practices

3.5.1.1. Crop production

Error! Reference source not found. presents number of households, mean and standard deviation for the land area and harvest for the crops produced across the three districts in the 2018/2019 production season. . Maize is the main crop type grown by over 60 % of households across the three districts. The other crops include cotton (58.5% in Mbire) and tobacco (55% in Hurungwe). Sesame is a popular crop in Mbire with 10.8%.

Table 3-8: Crop types, hectarage and harvests

Crop Type	District								
	Mbire			Hurungwe			Muzarabani		
	N	land area (ha)	harvest (tons)	N	land area (ha)	harvest (tons)	N	land area (ha)	harvest (tons)
Maize	131 (67.2)	0.68 (0.51)	0.22 (0.61)	185 (97.9)	1.16 (0.95)	0.97 (1.93)	174 (87.4)	1.4 (178)	1.20 (7.70)

Sorghum	116(59.5)	0.96 (0.71)	0.57 (1.57)	8 (4.2)	0.24 (0.14)	0.13 (0.20)	38 (19.1)	1.06 (1.01)	0.25 (0.46)
Cotton	114 (58.5)	1.09 (0.77)	0.35 (0.61)	27 (14.3)	0.94 (0.96)	0.29 (0.43)	108(54.3)	4.28 (30.7)	0.33 (0.56)
Nuts	55(28.2)	0.29 (0.19)	0.13 (0.32)	73 (38.6)	0.37 (0.28)	0.14 (0.30)	69(34.7)	0.49 (0.55)	0.14 (0.29)
Sesame	21(10.8)	0.66 (0.42)	0.07 (0.13)	1 (0.5)	0.40 (.)	0.00 (.)	14(7.0)	1.42 (0.98)	0.11 (0.16)
Millet	5(2.6)	0.80 (0.71)	0.14 (0.28)	1 (0.5)	0.40 (.)	0.10 (.)	5(2.5)	1.33 (2.06)	0.04 (0.09)
Sunflower	3(1.54)	1.37 (1.06)	0.05 (0.05)	1 (0.5)	0.20 (.)	0.08 (.)	7(3.5)	0.40 (0.42)	0.17 (0.18)
Tobacco	2(1.03)	0.60 (0.57)	0.48 (0.04)	104 (55)	0.93 (0.74)	3.72 (29.4)	35(17.6)	0.71 (0.44)	1.31 (1.62)
Other	22(11.3)	0.25 (0.28)	0.04 (0.06)	28 (14.8)	0.39 (0.35)	7.17 (37.8)	65(32.7)	0.47 (0.51)	0.11 (0.30)

3.5.2. Crop production practices

The impacts of climate change, including increasing temperatures and shifting precipitation patterns will continue to undermine agriculture, particularly smallholder agriculture, which is core to livelihoods and food security. This underlines the need to prioritize practical solutions to agricultural water management. Climate¹² and water¹³ smart agriculture practices help reduce agricultural climate risk and build farmers resilience in a changing climate. Such practices begin with rainfall itself to fight its increasingly erratic behaviour, by making the most of every drop, and storing excess for use in times of need. They range from simple practices such as improved moisture retention to those that minimize water usage such as the production of crops that utilizes less water and to water-efficient irrigation systems.

Table 3-9 shows that among the three main tenets of conservations agriculture; crop rotation, soil cover and minimum soil disturbance, there are only statistically significant differences in the extent to which crop rotation is done. Crop rotation is mostly practiced in Hurungwe (83.1%) and Muzarabani (78.9%) as compared to Mbire (69.2%). Despite its immense potential in agricultural water conservation and nutrient recycling, agroforestry seems an uncommon agricultural practice with only an average of 5.5 % of households practicing it across the three districts. Significantly more people in Mbire (56%) grow small grains compared to the other two districts and the difference is statistically significant at the 5 % level ($\alpha = 0.044$). Although statistically significant differences exist, very few people also use drip irrigation across all the districts with an average of 7.35%. Gardening is quite

¹² Climate-smart agriculture (CSA) is an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate.

¹³ Water-smart agricultural practices are those that use water efficiently and minimize impacts to downstream water quality.

common in Muzarabani (33 %) compared to the other two districts. Of the three conventional unsustainable agricultural practices namely: burning of crop residues (except for cotton and tobacco ratoons), stream bank cultivation and shifting cultivation, shifting cultivation is the least practiced except in cases of encroachment into wildlife areas. Stream bank cultivation is practiced more in Hurungwe (43.4%) compared to Mbire (38.5%) and Muzarabani (16.6%) and the difference is statistically significant ($\alpha \leq 0.001$). FGDs in Ward 9 in Hurungwe showed that the lack of reliable supply of gardening water motivates people to farm along the stream banks.

Table 3-9: Agricultural practices

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Mulching	72 (12.9%)	26 (13.8%)	20 (10.3%)	26 (14.9%)	0.382
Crop rotation	442 (77.0%)	157 (83.1%)	135 (69.2%)	150 (78.9%)	0.004
Minimum tillage	179 (31.5%)	52 (27.7%)	63 (32.5%)	64 (34.4%)	0.350
Multiple Cropping	152 (27.3%)	57 (30.2%)	51 (26.6%)	44 (25.1%)	0.538
Agroforestry	31 (5.55%)	16 (8.47%)	6 (3.09%)	9 (5.11%)	0.068
Small grains production	270 (48.7%)	82 (44.3%)	107 (56.0%)	81 (45.5%)	0.044
Gardening	109 (19.5%)	16 (8.47%)	35 (17.9%)	58 (33.0%)	<0.001
Drip/Basin irrigation	41 (7.35%)	23 (12.2%)	14 (7.22%)	4 (2.27%)	0.001
Burning of crop residues	129 (23.0%)	34 (18.0%)	43 (22.2%)	52 (29.4%)	0.033
Stream bank cultivation	186 (33.3%)	82 (43.4%)	75 (38.5%)	29 (16.6%)	<0.001
Shifting cultivation	67 (12.2%)	26 (13.8%)	19 (10.1%)	22 (12.9%)	0.522

3.6. LIVESTOCK PRODUCTION: TYPES

Livestock constituted a major financial reserve for communities and is usually sold in times of need. Table 3-10 shows the mean ownership of different livestock species across the three districts. Overall, poultry, goats, and cattle were the three most common livestock types. There were no significant differences in the number of cattle, sheep, and pigs across the three districts. However, statistically significant differences were in the ownership of turkeys, guinea fowls, chickens, donkeys, and goats. Household in Mbire had the highest mean goat ownership (mean = 8.01). Furthermore, Tropical Livestock Units (TLUs) were estimated to get an insight on potential differences on total livestock endowment across the three districts. The TLUs are calculated to compare livestock numbers and types into a comparable index. Each livestock type is multiplied by a factor and then summed up to compute the TLU. The following weights were applied; cattle=0.7, goats=0.1, sheep=0.1, pig=0.2, and

chicken =0.01 based on the work of *Chilonda and Otte (2006)*¹⁴. There was no significant difference on the TLU across the three districts.

Table 3-10: Livestock owned

Livestock type	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Cattle	2.82 (4.34)	3.04 (3.53)	2.40 (4.64)	3.02 (4.71)	0.261
Donkeys	0.17 (0.72)	0.09 (0.48)	0.26 (0.93)	0.14 (0.66)	0.05
Goats	5.60 (15.0)	3.76 (4.55)	8.01 (23.8)	4.98 (8.86)	0.016
Sheep	0.41 (2.08)	0.27 (1.44)	0.43 (2.28)	0.51 (2.36)	0.518
Chickens	6.69 (7.90)	7.74 (8.86)	5.31 (6.81)	7.07 (7.79)	0.008
Guinea Fowls	1.23 (5.26)	0.38 (1.96)	0.85 (3.45)	2.42 (7.98)	<0.001
Turkey	0.17 (1.14)	0.39 (1.82)	0.06 (0.50)	0.08 (0.58)	0.006
Pigs	0.31 (1.64)	0.28 (1.27)	0.32 (1.62)	0.34 (1.96)	0.929
Ducks	0.14 (0.90)	0.06 (0.65)	0.15 (0.78)	0.20 (1.17)	0.311
TLUs	2.80 (4.16)	2.71 (2.80)	2.79 (5.27)	2.90 (4.04)	0.909

3.7. SOCIAL CAPITAL

3.7.1. Membership in associations

Membership and participation of households in various community associations was used as a measure of social capital and associational capital. Table 3-11 presents the findings of household level decision making in various community groups including farming associations, natural resources user groups, charitable, mutual help and civic groups, social groups, and other economic groups. Although 45 % of the households indicated having worked with others in the past 12 months, the level of community participation is low across the three districts. However, participation is comparatively higher in crop farming groups, religious groups, and social clubs. Muzarabani has a higher level of community participation across most of the community groups.

Table 3-11: Participation in community decisions and local associations

	[ALL] N=583	Hurungwe N=189	Mbire N=195	Muzarabani N=199	p. overall
Worked in group?	264 (45.3%)	86 (45.5%)	91 (46.7%)	87 (43.7%)	0.839
Farmer group (crops)	118 (22.1%)	34 (18.1%)	40 (20.7%)	44 (28.6%)	0.057
Livestock group	43 (8.24%)	7 (3.72%)	17 (8.81%)	19 (13.5%)	0.006
Savings/ credit group	46 (8.78%)	6 (3.17%)	20 (10.4%)	20 (14.1%)	0.001
Forestry & rangeland	13 (2.49%)	1 (0.53%)	5 (2.58%)	7 (5.00%)	0.028
Wildlife management	18 (3.44%)	1 (0.53%)	9 (4.64%)	8 (5.71%)	0.011
Disaster Risk Reduction	4 (0.77%)	2 (1.06%)	0 (0.00%)	2 (1.46%)	0.199

¹⁴ Chilonda P and Otte J 2006: Indicators to monitor trends in livestock production at national, regional and international levels. *Livestock Research for Rural Development. Volume 18, Article #117*. Retrieved June 17, 2019, from <http://www.lrrd.org/lrrd18/8/chil18117.htm>

Water user group	23 (4.43%)	7 (3.72%)	4 (2.08%)	12 (8.63%)	0.014
Trade/business association	22 (4.26%)	4 (2.13%)	8 (4.17%)	10 (7.30%)	0.074
Charitable groups	24 (4.62%)	9 (4.81%)	6 (3.09%)	9 (6.47%)	0.345
Mutual help (burial)	76 (14.8%)	29 (15.6%)	21 (11.0%)	26 (18.8%)	0.13
Civic groups	86 (16.4%)	29 (15.5%)	24 (12.4%)	33 (23.1%)	0.031
Religious groups	158 (29.8%)	59 (31.4%)	42 (21.8%)	57 (38.3%)	0.004
Social clubs	104 (19.7%)	29 (15.3%)	43 (22.4%)	32 (21.8%)	0.17

3.8. CBOs/NGOs SUPPORTING LIVELIHOODS AND CURRENT PROJECTS

There are several international and local CBOs/NGOs working in the three districts that are supporting various livelihoods, health, and market related activities. Table 3-12 is based on data collected during the survey and should not be taken as an exhaustive list of organizations and investments that are in the three districts. In addition, it is also based on a list that was provided by respective RDCs and includes both past and present organizations. For example, compared to the other two districts, we did not get a comprehensive list of interventions in Mbire and this is reflected in the data presented below. Each organization typically focuses on a different intervention group and locality (ward) but uniquely there is little investment in human and social capacity to develop and manage enterprises.

Table 3-12: Current interventions

Organization	Hurungwe	Mbire	Muzarabani
Action Aid		Supported with goats in 2017	
Adventist Development and Relief Agency	Nutrition, WASH	Supporting apiculture, Community gardening	
Africa Wildlife Foundation	Working to reduce deforestation??	Supporting apiculture, fishing	
Campaign for Female Education	Girl child education Support (fees; Uniforms, exercise books, sanitary wear), Young women empowerment, Stakeholders capacity building		School fees for children, poultry projects
Carbon Green Africa	Supporting gardens, supporting apiculture, Supporting value addition (wax, candles, and shoe polish)	Carbon trading, supporting aquaculture, Supporting apiculture	

Community Home Based Care	Rehabilitation, Education, Livelihoods, Psychosocial Support		
Childline	Child Protection		
Christian Care			Food hand outs, Cattle hand outs since 94/95
French Agricultural Research Centre for International Development		Honey (long back)	
Catholic Organization for Relief and Development Aid	Results Based Financing to all health institutions in the district. (RBF- purchasing health services provided by district health centres)		
DAAC	HIV/AIDS coordination, HIV & AIDS M&E		
Farmers' Association of Community self-Help Investment Groups	Agriculture		Seed handouts, other agricultural support
GOAL	Community gardens		
Help from Germany	Household food security, Farmers training, Emergency responses		Gardening projects, Helping with CA, i.e. growing of sorghum and other practices
Lower Guruve Development Association (LGDA)		Food handouts, Community gardens, Providing cannons for fishing	
MeDRA (Methodist Development and Relief Agency)	Construction of water harvesting tanks, Construction of Blair toilets, Community Livelihood Income Generating Projects (LIGP) (Carpentry, gardens, poultry, piggery, sewing, beekeeping), Education		Poultry, Piggery, Gardening, Tanks (2008)

Open Heart Disability Care Trust	Rehabilitation, Education, Livelihoods, Psychosocial Support		
Population services International Zimbabwe (PSIZ)	New start Centres, HIV/AIDS-VCT Services, Family Planning Services, HIV/AIDS Research, and self-testing 25/4/2019 (4, 10, 12, 14, 17 & 28)		
RCDC	Education		
Red Cross Zimbabwe	Integrated community, Disaster management, First Aid Training, Water and Sanitation, Emergency Relief, Water and Sanitation		Not specified
Southern Alliance for Indigenous Resources			Gardening
Sustainable Agriculture Trust			Pen fattening
St Albert's Mission Hospital			Poultry projects for women and community gardens
World Food Program		Community gardens, Food aid (recently 2019)	Food handouts
World Vision Zimbabwe	Education, Health, Water and Sanitation, Emergency Relief, ADP-25 years		Community Gardens
ZAIFO	Community Development		
Zimbabwe AIDS Prevention and Support Organisation	HIV/AIDS behaviour Change, ASRH		Abstinence education among boys and girls

3.9. CURRENT AND POTENTIAL ENTERPRISES IN CWCS

3.9.1. Current household enterprises

Table 3-13 shows the current entrepreneurial activities that each household is currently involved in. Important to note is that the level of entrepreneurial activity is quite low across the three districts, which is characteristic of most rural areas. Most households are involved in cash crop production (mainly tobacco, cotton, and beans) with Hurungwe having the highest proportion. Trading mostly of fruits, groceries, fish, vegetables, livestock, crafts and other NTFPs both informally across national borders and locally is the second most common enterprise. Cross border activity is more common in Mbire, particularly in Kanyemba due to the vicinity to the Zambian and Mozambican borders.

The potential in NTFPs commercialization is largely untapped. Communities are aware of such low-hanging innovations like making yoghurts from baobab pulp and feel that such activities should be supported to enhance their livelihoods. Gardening, artisanry and selling/value addition of NTFPs is the third most common enterprise. From the household survey, very few people keep bees (apiculture) which is contrary to findings of FGDs. The reason being that during FGDs, though a considerable number of people indicated they are involved in beekeeping, most are not getting significant incomes due to lack of competitive markets.

Beekeeping was introduced recently in Muzarabani when some community members received training from Forestry Commission and other organizations but no meaningful activity have started yet.

The FGD results show that there are vast opportunities for horticulture for farmers in Hurungwe to sell their produce in the Kariba and Chirundu areas. Horticulture can be supported through the available water sources such as weirs and dams along the Mukwichi River. Most people have community gardens and can supply the urban areas of Kariba and Chirundu. Some participants also pointed to the need for the communities to invest in crocodile farming, beekeeping, and commercial brick moulding using sand from the rivers. In Mbire (Kanyemba Ward), people cited the presence of fertile alluvial soils and feel these areas can be irrigated using water from the Zambezi River to provide incomes and jobs to locals. In addition, there are fishing cooperatives in Ward 1.

Table 3-13: Current household enterprises

	Respondents	Hurungwe	Mbire	Muzarabani	Start-up cost	Yearly returns
Cash crops	N=132	63 (47.7%)	51 (38.6%)	18 (13.6%)	172 (425)	633 (1125)
Traders	N=82	22 (26.8%)	44 (53.7%)	16 (19.5%)	152 (294)	908 (1217)
Gardening	N=44	13 (29.5%)	22 (50.0%)	9 (20.5%)	283 (922)	587 (1073)
Artisans	N=40	13 (32.5%)	13 (32.5%)	14 (35.0%)	119 (219)	436 (510)
NTFPs	N=32	6 (18.8%)	9 (28.1%)	17 (53.1%)	229 (622)	900 (1012)
Casual labor	N=23	5 (21.7%)	14 (60.9%)	4 (17.4%)	262 (362)	1059 (988)
Crafting	N=13	6 (46.2%)	2 (15.4%)	5 (38.5%)	70.0 (89.1)	785 (921)

Apiculture	N=7	1 (14.3%)	5 (71.4%)	1 (14.3%)	20.0 (34.6)	92.5 (29.9)
Formal work	N=6	2 (33.3%)	2 (33.3%)	2 (33.3%)	60.6 (88.9)	158 (156)
Livestock	N=4	0 (0.00%)	1 (25.0%)	3 (75.0%)	500 (.)	900 (.)
Aquaculture	N=3	0 (0.00%)	2 (66.7%)	1 (33.3%)	25.0 (35.4)	57.5 (60.1)
None	N=62	21 (33.9%)	13 (21.0%)	28 (45.2%)	105 (367)	443 (779)
p. overall					0.945	0.401

The FGD results show that most of the common activities in Hurungwe include vast opportunities for horticulture targeting markets in the Kariba and Chirundu areas. The activities can be supported through the available water sources such as weirs and dams along the Mukwichi River. Most people have community gardens and can supply the urban areas of Kariba and Chirundu. Some participants also pointed to the need for the communities to invest in crocodile farming (Shamrock Dam), beekeeping, and commercial brick moulding using sand from the rivers. In Mbire, people cited the presence of fertile soils and feel these areas can be irrigated and provide incomes and jobs. In addition, there are fishing cooperatives in Ward 1. FGD participants reported that there is an abundance of NTFPS that can be commercialized such *Z. mauritiana* (masau) and *Adansonia digitata* (baobab) to make different products such as yoghurts. Some nature-based interventions included the improvement of markets for crafts such as reed mats, weaving (hats), cross border trading, and the rehabilitation of game ranches such as Chivaraidze to improve local meat supplies and income flows. In Mbire there is potential for small livestock as it emerged from the FGDs, but people were also aware of the challenges associated with the presence of wildlife in the area. Muzarabani FGD participants also indicated that the area has potential to support commercial orchards, beekeeping, and craft markets. In addition, water harvesting projects were recommended to improve the small community gardens in areas such as Utete, Gumba and Chenuwe.

3.9.2. Entrepreneurship gaps/ needs

The survey measured entrepreneurial needs/gaps that can be supported by the GEF Small Grant Facility by asking households to indicate biodiversity-friendly enterprises that can be done or expanded given the natural resources in their areas and assuming financial resources are available. Although the questions were open ended in nature, the Open-Refine statistical package was used during data analysis for clustering to produce minimal categories of enterprises as presented in Table 3-14. Overall, gardening was chosen by most of the sampled households (31.8 %). Among the three districts, Hurungwe had the highest proportion of households who want gardening. Apiculture is second ranked (20.3%) with Mbire having the highest proportion of households selecting it. Small livestock production; poultry and goats-in order of importance-is ranked third (18.4%) with Muzarabani having the highest proportion of households (22.7%) who chose small livestock enterprises. Commercialization and value-addition of NTFPs is ranked fourth (6.61%) with Muzarabani contributing the highest proportion of those who believes it is a noble entrepreneurial idea. Other enterprises mentioned include aquaculture, craft making, woodlots and game ranching although the numbers were quite insignificant. 15.5 % of the respondents indicated that they were not sure of what ideas could be viable.

Table 3-14: Potential enterprises

Potential enterprises	[ALL] N=575	Hurungwe N=188	Mbire N=193	Muzarabani N=194
Gardening	183 (31.8%)	75 (39.9%)	63 (32.6%)	45 (23.2%)
Apiculture	117 (20.3%)	37 (19.7%)	46 (23.8%)	34 (17.5%)
Small livestock production	106 (18.4%)	33 (17.6%)	29 (15.0%)	44 (22.7%)
NTFPs	38 (6.61%)	5 (2.66%)	9 (4.66%)	24 (12.4%)
Crafts	22 (3.83%)	4 (2.13%)	9 (4.66%)	9 (4.64%)
Aquaculture	9 (1.57%)	2 (1.06%)	4 (2.07%)	3 (1.55%)
Woodlots	5 (0.87%)	4 (2.13%)	1 (0.52%)	0 (0.00%)
Game ranching	3 (0.52%)	0 (0.00%)	1 (0.52%)	2 (1.03%)
Other	3 (0.52%)	0 (0.00%)	1 (0.52%)	2 (1.03%)
None	89 (15.5%)	28 (14.9%)	30 (15.5%)	31 (16.0%)
Any supporting NGOs before? Yes	174 (29.9%)	35 (18.5%)	68 (34.9%)	71 (36.0%)

3.7. CAPACITY GAPS AND NEEDS

The study attempted to have an insight into potential capacity gaps/need among the sampled households. Table 3-15 presents the findings of the capacity assessment. Important to note is that over 65 % of the households have not done any form of capacity training across the three districts. Except for natural resources management, Hurungwe seems to have had the least capacity building trainings. About 33.1 % of the households indicated to having done natural resources management training. Mbire have the highest proportion of people who received both business development and natural resources management trainings.

Table 3-15: Capacity development

	N	Hurungwe				Mbire				Muzarabani				
Age-groups		25-35	36-45	46-55	55+	25-35	36-45	46-55	55+	25-35	36-45	46-55	55+:	p
Number of individuals	583	55	44	28	51	84	41	19	31	65	54	34	40	
Vocational/skills	127(21.8%)	12 (21.8)	6 (13.6)	6 (21.4)	9 (17.6)	22 (26.2)	9 (22.0)	3 (15.8)	5 (16.1)	14 (21.5)	16 (29.6)	9 (26.5)	9 (22.5)	0.837
Business development	85(14.6%)	5 (9.1)	2 (4.5)	2 (7.1)	1 (2.0)	22 (26.2)	6 (14.6)	4 (21.1)	4 (12.9)	10 (15.4)	13 (24.1)	8 (23.5)	2 (5.0)	0.001
Natural Resources Management	193(33.1%)	16 (29.1)	15 (34.1)	13 (46.4)	16 (31.4)	36 (42.9)	12 (29.3)	6 (31.6)	10 (32.3)	16 (24.6)	17 (31.5)	18 (52.9)	11 (27.5)	0.183
Adult education	82(14.1%)	4 (7.3)	7 (15.9)	3 (10.7)	6 (11.8)	17 (20.2)	6 (14.6)	2 (10.5)	2 (6.5)	9 (13.8)	7 (13.0)	6 (17.6)	6 (15.0)	0.749

3.8. LIVELIHOODS CONSTRAINTS OR CHALLENGES INCLUDING HWC, ACCESS ISSUES, CLIMATE CHANGE, DRM¹⁵

This section is based on District Risk Profiles compiled by the Government of Zimbabwe with the support of the Food and Nutrition Council and the World Food Program. This information was included here to provide additional hazards and risks reported across the entire landscape. While the GEF 6 project focus on selected wards, some of the reported hazards such as animal and crop diseases are likely to transcend wards and should be treated as risks for this project. Hurungwe faces severe water scarcity (highlighted in all FGDs), veld fires, malaria, mid-season dry spells, HIV/Aids, hail and windstorms, army worm and floods. Although the district is moderately prone to drought (UNDP Hazard Mapping, 2015), it is prone to prolonged mid-season dry spells. Veld fires are also rampant in the district which is becoming one of the major contributors to veld degradation. Siltation of water bodies emanating from the high concentration of gardens along streams and around dams across the district for vegetables and tobacco seedling production as well as gold panning is a common problem. Grazing conditions have deteriorated in communal areas whilst it has remained good in the former commercial areas. There are reported incidences of livestock diseases including heart water, red water, lumpy skin, gal sickness, senkobo, coccidiosis, and Fowl Ox.

In Mbire, the area is infested with tsetse fly which reduces the potential for extensive grazing systems. Increasing livestock numbers will also result in increased HWC. Cases of wildlife predation have increased in the past decade, but the trends suggest the need to balance wildlife and livelihood interventions. The Mbire District profile reports outline three main risks in the district which include crop pests, malaria, and endemic livestock diseases which include Newcastle and *Trypanosomiasis*. The periodic hazards in the district also include drought, flood, crop raids in specific wards, and tick-borne diseases. The survey found that people considered unavailability of water and lack of functional markets for NTFPs as the major constraints. These risks are reported in the baseline report to prioritize the interventions proposed in each district.

In Muzarabani, livelihoods are constrained by several factors including water scarcity, poverty, periodic droughts, flooding, limited grazing lands, livestock diseases and poor or lack of established markets for both livestock and crops. Over 30 % of boreholes have gone dry in recent years and communities have to walk long distances to fetch water from dams, wells, and rivers. Poverty is particularly prevalent in the northern-most wards (23, 24, 2, and 18) which are disconnected from major commodity markets. According to UNDP Hazard Mapping 2015, the district is classified as mildly prone to droughts with other wards experiencing droughts every 4-5 years directly affecting cereal production resulting in chronic food shortages. Livestock and cotton production are common activities due to their resistance to drought conditions. However, most wards in the district normally have depleted grazing areas during the lean season especially between July and October before the start of the rains, as the grass fails to mature because of high grazing pressure among other reasons. The worst affected wards include 8, 5, 3, 17 and 19. Supplementary feeding is a critical necessity in

¹⁵ The profiles presented here are adapted from District Risk Profiles developed by the Government of Zimbabwe WFP and FNC (2016) and supplemented by information collected from key informant interview and FGDs. The District Profiles based on more extensive consultations and we refer to them on wards that we did not cover.

these wards to keep the livestock in good shape. Livestock production is also constrained by disease including; lumpy skin, tick borne diseases e.g. *Anaplasmosis*, *Babesiosis* and internal parasites e.g. tapeworms, wireworms in sheep and goats, distant markets, low market prices and shortage of inputs. There are also no well-established markets for most crops in the district and farmers travel to Harare to sell. Muzarabani is also prone to flooding especially those areas that lie along major rivers (e.g. Wards 1 and 5) such as Musengezi, Nzoumvunda, Hoya and Mukumbura rivers where water levels can rise to above 1 metre inland, inundating fields and homesteads also causing livestock deaths. During flooding periods households lose most of their belongings including food, making them the more vulnerable to food insecurity and poverty. There is also massive siltation of water bodies due to poor land management that include stream bank cultivation and massive tree cutting.

3.9. CONCLUSION AND RECOMMENDED LIVELIHOOD INTERVENTIONS

The survey findings show that the major livelihoods deprivations are centred on nutrition, cooking and heating fuel and water (cooking and drinking) scarcity. Livelihood interventions in the three districts should aim at addressing nutrition, availing alternative heating energy sources and easing water scarcity. Nutrition can be addressed through such interventions like nutrition gardens, small aquaculture projects, and promoting the expansion of household crop production portfolios to incorporate more pulses and vegetables. Alternative energy sources like biogas, woodlots (for bamboo and other fast growing exotic tree species) and solar should be promoted as well as energy saving technologies such as Tsofso stoves, rocket barns. The project should also consider availing/ promoting water harvesting technologies and/or drilling deeper boreholes to ensure a reliable supply of drinking and cooking water.

Climate and water-smart agricultural practices were being practiced by a smaller proportion of households across all the three areas for e.g: mulching (12.9%), minimum tillage (31.5 %), and agroforestry (5.55%). There is need to raise awareness among households through for example establishing demonstration plots and/or availing water and climate-smart agriculture-related extension services. Vast potential also exists around small grains and other drought-resistant crops such as sesame, millet, and rapoko. Farmers need to be sensitized (through extension) on the long-term effects of unsustainable agricultural practices such as burning of crop residues and stream bank cultivation.

Regarding the household enterprises/ income-generating activities, the survey findings show that most people prefer gardens, apiculture and small livestock production (poultry and goats particularly). Other enterprises which were identified but are currently vastly untapped include commercialization of NTFPs and crafts. However, there are three pivotal enabling factors that need to be addressed before any investment is made in these sectors namely; water, human and social capacity and markets. The success of all these proposed activities hinges on investing in water infrastructure across all the three districts. Previously, organizations like MEDRA assisted with water harvesting technologies. Second, there are limited skills among the households to run effective enterprises and such capacity should be built as part of the investment in the small grants. Survey findings show that over 65 % of the households have been trained but more challenging is the lack of community participation. Concerted efforts should be directed towards building the capacity and willingness of households to work in groups. This can be achieved through tailored workshops. Lastly, it is imperative

that proper markets are established for the different interventions proposed. Below are recommendations (both at Community Based Organisation -CBO and Civil Society Organisation -CSO level) for undertaking the proposed enterprises is concerned.

3.9.1. Community gardens

Community gardens will be implemented at CBO or group level. The recommendation is that these groups are self-formed to ensure there is adequate cooperation. Local leaders in collaboration with EMA should identifying areas that are suitable for such gardens, source of water, avoid stream banks, and wildlife corridors. In Muzarabani and Hurungwe, there are some community gardens that were sited in previous projects and these should be considered (Ward 8 and 26 in Hurungwe; Ward 5 and 7 in Muzarabani). In cases where water is drawn from the rivers, the CBO committees will be responsible for applying for water abstraction permits from the Sub-Catchment Councils. Community gardens can serve both as a source of income and nutrition.

The respective CSOs in each district should focus on identifying markets for the CBOs, negotiate contracts with buyers, and secure long-term contracts for the respective CBOs. In addition, the CSOs will be responsible for providing training in crop management, selection of cultivars, and managing the production cycles to ensure the needs of the market are met. Several constraints such as water, disease, and appropriate siting of community gardens have been identified in the survey and respective CSOs should work to ensure these are addressed. In addition, the CSOs will also work to ensure that a wide range of government stakeholders participate in the project to ensure compliance with environmental regulations and disease and pest management. Enterprise management skills are important, and these should be provided to CBO by respective CSO to ensure transparent management of funds. Skills in quality management and standards are also essential to ensure the produce meets market specifications. Hurungwe has potential markets in Chirundu and Kariba and these need to be developed so that local farmers can sell their produce on a long-term basis. Sustainable Agricultural Trust (SAT) can be a useful partner in supporting climate and water smart agriculture as well as community gardens as they have worked in the project districts before.

3.9.2. Apiculture

Apiculture was identified as the second common intervention that can be implemented in the three districts. The intervention fits well with existing land uses such as wildlife management and carbon trading. Farmers can be organized as CBOs for training purposes, but the beehives need to be managed at the household level. There are several beekeeping initiatives underway some of which are funded by Carbon Green Africa, but observations from FGDs show that there is need to scale up beekeeping to include more households. The Kenyan Top Bar hives can be provided as it is low cost, easy to manage, and provides better yields. Apiculture projects also provide a good entry point for sustainable forest management as they tend to promote forest management practices such as fire management and the selective harvesting of trees. Markets for the honey or bee products should be in place, including value chains for other bee products such as candle and wax.

The potential for beekeeping as an enterprise is high but there is need to develop viable markets and increase the capacity of local producers. For example, CSOs can train local artisans to make KTB hives using locally available resources to reduce the costs associated with transporting raw materials. In addition, the CSOs will provide training on beekeeping, harvesting, and processing. The CSOs will also

train the CBO members on how to produce bi-products such as wax and shoe polish. Research on bee species and diseases is also an important function that should be done by the CSO through responsible authorities to reduce diseases. High-value honey needs to access the market but will require appropriate branding, storage, and marketing. Ideally, the recommendation is for one CSO to work across the three districts to ensure economies of scale and to reduce the number of value chain actors. This will increase local incomes and improve SFM practices across the landscape. Zimbabwe Apiculture Trust (ZAT) are already working in Hurungwe supporting farmers in production and marketing of honey.

3.9.3. Small livestock

Small livestock also offers a viable land-use option in the three districts and most people indicated the potential for small livestock mostly in Muzarabani and poultry across the three districts. Livestock, as well as community gardens, are prone to conflict with wildlife and need to be planned accordingly. For example, predation of livestock while in pens or at drinking points is a major challenge. Once these challenges are addressed, households should be supported with improved goat breeds (and these need to be kept within and sustainable use level) and sheep or pigs were also preferred investments. Regarding poultry, the communities proposed three types of investments which include broilers, layers, and indigenous breeds.

The respective CSOs in the sector should have strengths in animal husbandry and market development for different types of small livestock. Developing these meat value chains also requires the support of appropriate infrastructure such as cold rooms for holding meat before it is sold to the market. The additional support will also include ensuring an adequate supply of fodder during the drought periods and water supply. In addition, developing proper livestock management and grazing plans should be done to reduce potential conflicts among community members and with wildlife. MEDRA has worked in Muzarabani on small livestock support to communities in the lower Muzarabani area.

3.9.4. NTFPs

The common NTFPs in the area include indigenous fruits (*Ziziphus mauritiana* (masau), mauyu, matohwe), *Hyphaene pertesiana* (llala palm), which are usually marketed on the roadside. Little commercial value is currently being derived from the various NTFPs. The CBOs can be trained in various value adding processes to market these products locally and internationally. Such value-adding processes were in the past done through several CSO such as Phytotrade, Kaite. Currently SAFIRE and BioHub are actively supporting several NTFP value chains. There is need to explore how such local resources can be enhanced to benefit the local communities. In Muzarabani, a local tax is charged on *Ziziphus mauritiana* and this is channelled back into community development. While this is an important first step, there is need to add value to such resources to increase the benefits that accrue to local communities.

There are vast opportunities to develop several NTFPS from the three areas. Specialized CSO such as SAFIRE, should be engaged to work with locals to market and develop the value chains. This sector will also require that the CSO work with private companies and help broker fair contracts for the locals. The CSOs, should also provide extensive training on product development for local and international

markets. Such examples include the marketing of the devil claw plant in Namibia¹⁶, craft marketing in Kenya (the BEADWORKS project).¹⁷

3.9.5. Crafts

Crafts offer another viable source of income in the three districts. While the survey identified few craftspeople in the three districts, this enterprise can employ several people if a functional market exists. Given the proposed Master plan for Mbire for example, it is strategic to open local craft shops along main road to attract local buyers and traders. Several products such as hats, chairs, mats, and baskets are currently being produced from Ilala palm and reeds but there is need to support local crafts people to improve the quality to penetrate the urban and foreign markets. Proper management of the plants will need to be developed as well to ensure sustainability and availability of raw materials.

¹⁶ http://www.the-eis.com/data/literature/Devils%20Claw%20Value%20Chai_August%202012_FINAL%20REPORT.pdf

¹⁷ <http://www.beadworkskkenya.com/>

4. Institutional arrangements for Natural Resources Management

Institutional arrangements comprising organizational setup, rules and regulations, norms, and customs are critical for effective natural resource management especially for community level resources (Shahidullah et al., 2015). The system of natural resource management is generally governed by a framework of evolving processes that is commonly known as “governance” (Stoker, 1998). Institutions in Natural Resource Management (NRM) are divided into formal and informal categories (North, 1991). Natural resource governance involves interactions at multi levels of these formal and informal institutions creating various institutional arrangements/set ups. Lack of collaboration between the institutions can be detrimental to sustainable natural resource management (Rahman et al, 2017).

4.1. EXISTING INSTITUTIONAL SET UP FOR WILDLIFE/SFM FORESTRY/NTFP/LAND/CWC MANAGEMENT

Information on the institutional set up for natural resource management in the three districts was obtained from the FGDs and Key Informant Interviews. These are summarized for wildlife management, SFM, SLM and NTFPs.

4.1.1. Wildlife

Muzarabani, Hurungwe and Mbire Rural Districts are CAMPFIRE districts with Appropriate Authority under the Parks and Wildlife Act (Chap 20:14). Wildlife is managed by the RDC with community participation and involvement of the private sector partner (Safari Operator) and PWMA personnel from adjacent PWMA estates.

There are different institutional set ups for each district in terms of communal wildlife management, human wildlife conflict management, anti-poaching activities as well as business and benefit sharing aspects of wildlife. However most of these institutions are interlinked in terms of their composition and interactions in undertaking their responsibilities in the same geographical area (village, ward and district).

4.1.1.1. CWC Management

Figure 4-1 shows the general picture obtained from discussions with the Natural Resource Officers of the three districts and from FGDs in terms of institutions involved and their role. At RDC level, the main institutions that have a bearing on wildlife management decisions include the Environmental subcommittee of council, and the full council. Community level institutions involved in wildlife management in the three districts are the Environmental Sub Committees (and their associated structures)¹⁸, Ward CAMPFIRE Committees, Councilor, Village Development Committee (composed of village heads and their secretaries) and the WARD Development Committee. In Muzarabani (especially Ward 27) and Mbire (ward 4, 11 and 1) the spirit mediums (*Masvikiro*) and chiefs (Muzarabani, Hurungwe and Mbire (ward 1) have significant influence in the decisions made concerning wildlife and other natural resource management.

¹⁸ ¹⁸ In Mbire, Community game scouts are employed by the ESCs; in Muzarabani and Hurungwe community resource monitors report to the ESC although they operate on a voluntary basis.

RDC	Community	Safari Operator
<ul style="list-style-type: none"> • Appropriate Authority • Tenders & Contracts (in Liaison with PRAZ*) • Financial • Natural Resource Management • Policy • Oversight 	<ul style="list-style-type: none"> • Land user • Some aspects of management - APU personnel • -Fire Management • Community Awareness • Tolerance towards costs of living with wildlife 	<ul style="list-style-type: none"> • Marketing • Financial Investments • Business Management • NR Management -Anti Poaching-Water provision • Infrastructure development • PAC reaction

* Procurement Regulatory Authority of Zimbabwe (PRAZ)

Figure 4-1: Key Institutions involved in communal wildlife management and their roles in the three Districts of Hurungwe, Mbire and Muzarabani from FGDs and KIIs.

4.1.1.2. Human Wildlife Conflict Management

Mbire RDC is addressing the Human Wildlife Conflict aspect at policy level through its Natural Resource Management Plan (2011), which has clear demarcation of land set aside for wildlife, settlement and corridors. This was adopted at Full Council level in 2011. However, if communities encroach into the land set aside as wildlife corridors, the RDC will not in the end react to their problem animal reports (*pers. Comm. NRM officer, 2019*). This has resulted in some illegally settled households moving out of these areas. The district also has a WhatsApp group for problem animal reports, authorization for reaction and confirmation of action taken.

The normal channel for problem animal reporting for all the three districts are: Complainant Farmer/Community Member reports to the Ward Councilor. The ward councilor reports to the RDC (usually the NRM Officer), who informs either the Safari Operator to react to the incident, or to ZPWMA (for Hurungwe and Mbire -sometimes) or sends the Council game scouts to the incident scene. For Pfundundu in Hurungwe, the private sector operator does not respond to PAC incidents due to their non-consumptive use approach to conservation.

The main challenge is the long reaction time taken mainly due to lack of appropriate equipment by the RDC game scouts and other commitments by the Safari Operator.

4.1.1.3. Anti-Poaching Activities

Each district has a different approach of dealing with illegal wildlife activities based on its local context. For Mbire RDC the institutional set up is shown in Figure 4-2. The central institution is the Dande Anti-Poaching Unit (DAPU), which is a joint initiative of the RDC, communities, ZPWMA and the private sector operators. It consists of 33 dedicated community scouts, 18 RDC game scouts on call for patrols, 18 ZPWMA scouts on call and contribution towards operations by all partners. The safari operators manage the APU schedules.

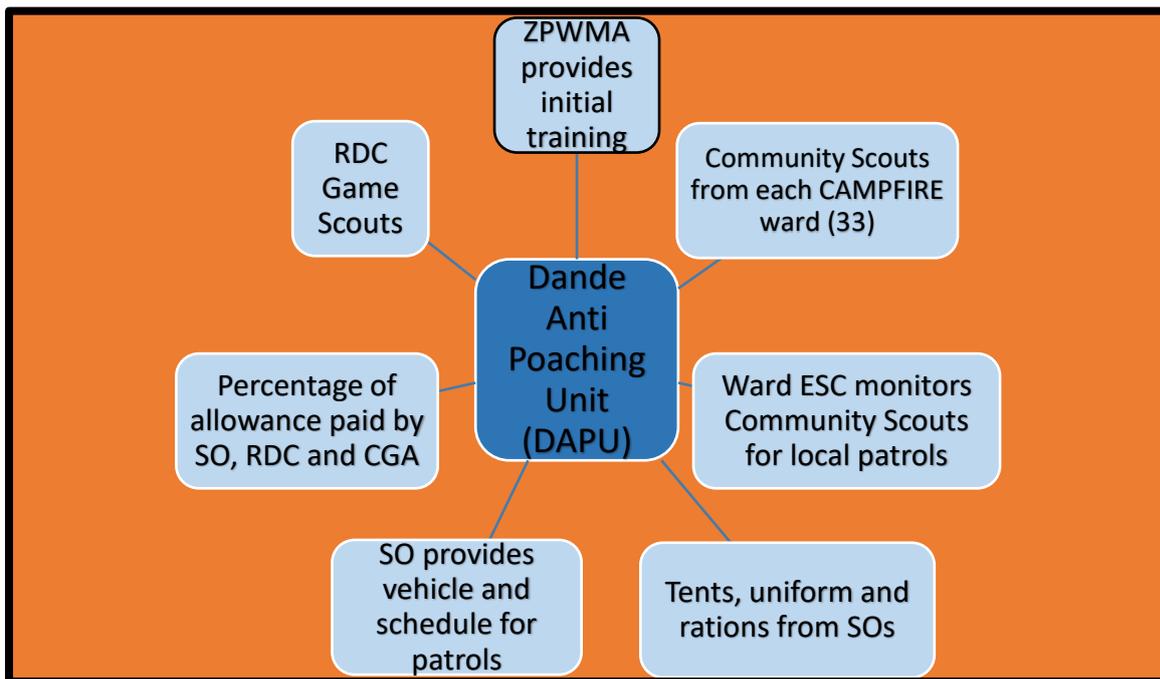


Figure 4-2: Mbire Anti-Poaching set up

The downside to the Mbire set up is the potential for the safari operators to personalize the unit given the investment being made into the operations of the unit. There is need to strengthen other structures (RDC scouts, Local patrols by ward scouts) as well for anti-poaching and empower the ESCs to manage and plan for anti-poaching at Ward and CWC level.

In Hurungwe, there are two approaches being used for Pfundundu and Mukwichi CWCs due to the different utilization models being implemented. The beneficiary ward for Pfundundu is Ward 7. The private sector partner is Hurungwe Safaris in partnership with International Anti-Poaching Foundation (IAPF). IAPF is the functional partner who is implementing non-consumptive utilization in conjunction with women’s empowerment as a conservation model. Young women from Ward 7 were trained as Anti-poaching scouts and patrol the conservancy and carry out community awareness. The unit is called Akashinga (Figure 4-3). IAPF manages the Anti-poaching activities with no direct involvement of other community or RDC structures. The community through the councilor and village heads was only involved in the identification of potential women candidates for the anti-poaching unit.

The main challenge of this approach is the little or no involvement of the Ward Environmental Sub Committee and RDC in the APU. Information collected from the anti-poaching activities is not publicly shared (*pers. observations Baseline Team*) as would be the case with a public entity.

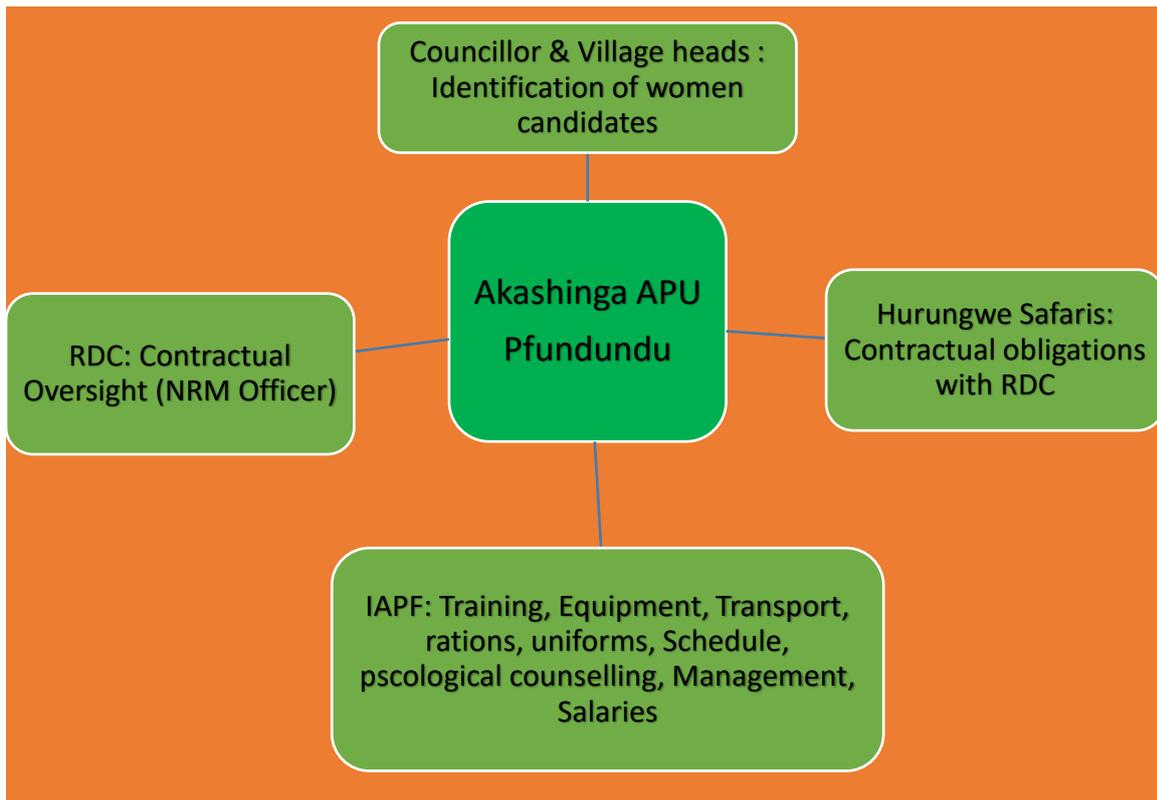


Figure 4-3: Pfundundu APU Institutional set up.

For Mukwichi CWC, the community through its Environmental Sub Committees for the beneficiary villages (close to the wildlife area) has community resource monitors (RM) who were selected by the community and received induction from the RDC with no formal training. The RMs cannot carry out anti-poaching patrols in the community side of the CWC as they are not allowed by ZPWMA staff. ZPWMA scouts sometimes conduct patrols in the ZPWMA side of Mukwichi. Resource monitors work on a voluntary basis as they are not paid by either the RDC or the community. Due to their proximity to the Hunting Camp of the Mukwichi Safari Operator, they are requested by the RDC to accompany the Safari Operator on hunts within the ZPWMA area, which RDC is leasing from ZPWMA. The RDC only has 3 game scouts who do not have any equipment, transport, ammunition or weapons. They only accompany ZPWMA scouts on monitoring Safari Operator’s hunts.

Muzarabani has one CWC- Mavhuradonha Wilderness Area demarcated into two utilization units for safari hunting and non-consumptive utilization through ecotourism. The RDC only has 4 game scouts who do not have any equipment or transport for patrols. The Safari Operator conducts own Anti-poaching patrols, although there is one scout who does patrols with the Council game scouts. Likewise for the ecotourism section, the private sector operator has eight scouts of his own staff conducting anti-poaching activities. There are no local patrols within the wildlife corridors, which still have wildlife that can be snared.

Overall the focus of anti-poaching activities across the districts is mostly patrols, except for Pfundundu where community awareness is undertaken as part of anti-poaching activities.

4.1.1.4. Benefits and Benefit sharing

Institutions involved in beneficiation from natural resource utilization within the three districts are explained below.

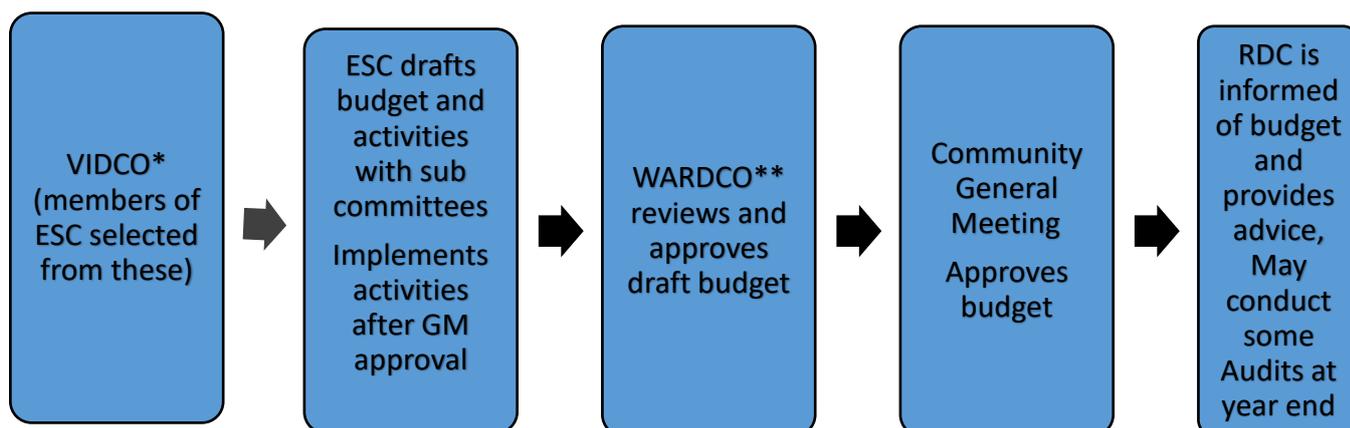
Mbire District uses the CAMPFIRE Revenue guidelines and applies the Direct Payment System. The diagram in Figure 4-4 provides an illustration of the institutions involved and their roles in the beneficiation. Mbire RDC has initiated some innovative ways of increasing the benefits accruing to communities and the council from the private sector operating within the conservation sector in the district. These include:

- **Right to Hunt:** A lump sum is paid by a new operator at the beginning of their lease. Amount agreed upon is shared 50% between the Council and wards. For Council, one of the requests has been that the operator purchases a new vehicle. The amount is spread over a number of years with various activities being undertaken.
- **Social Fund:** This is an agreed upon amount paid annually by the operator to beneficiary wards in a concession. The amount is used for infrastructure development projects. For each concession, Council gets 25% of the amount.
- **Trophy Fees:** Amount accrues to RDC and Community in the ward where animal was shot. These are shared as: Community -25%, RDC- 25%, CA- 4%, and SO- 46%
- **Daily Rates:** For one concession (Mbire South), the RDC has negotiated for a percentage of the daily rates. In previous contracts the Safari Operator retained the full amount.
- **Direct Payment System:** After each hunt, the SO pays due amounts directly into the accounts of beneficiary wards, RDC and CA. With the current economic downturn, benefits to communities have been reduced as payments are made in local RTGS at the rate of 1:1 until recently (2019) when the RDC negotiated for use of the Interbank market rate. Ideally both communities and the RDC would want to be paid in US dollars.

Community Institutions for Benefit sharing

At community level, the key structure is the ESC, which is chaired by the Councilor. The ESC is in some wards synonymous with the CAMPFIRE Committee. The ESCs in Mbire are functional meeting regularly whilst in Muzarabani and Hurungwe they are not functional. From the FGDs in Muzarabani, participants said they had ESCs but struggled to remember who was in the committee except for Ward 27, which had a newly constituted ESC whose formation was facilitated by Nzou Safaris. In Hurungwe, there was reference to CAMPFIRE committees in Ward 7, 8 and 9 and not ESCs. The ESC is responsible for budgeting and budget management, implementing capital projects, employing and managing community workers (scouts, clerks, casual labour) and general meetings as an accountability platform to the wider community. Capacity needs include general awareness for the ESCs and induction on roles and responsibilities.

Community members are involved in the General Meeting and through benefits from community projects. Key institutions are shown in Figure 4-4.



*Village Development Committee; **Ward Development Committee

Figure 4-4: Institutional set up for Community benefit sharing

Hurungwe RDC uses the CAMPFIRE revenue sharing guidelines where the community and RDC get 50% of trophy fees and SO gets 50%. Of the 50% accruing to communities and RDC, community gets 55%, CA gets 4% and Council gets 26% as management fee and 15% as Council Levy. However for Mukwichi (Council leases part of Mukwichi Concession from ZPWMA) where the RDC owes ZPWMA money (US\$178,000 as of 2017) for trophy fees from a previous contract, the trophy fee is set at two levels; fixed trophy fee for ZPWMA and trophy fee with mark up to SO. Council and communities get 50% of the mark up and 50% of the ZPWMA trophy fee goes to repay the amount owed. The amount that RDC and Communities share is therefore very little.

Hurungwe does not use the Direct Payment System, instead Safari Operator makes payments to Council, which transfers funds into the Ward accounts at year end. Given the current unstable economy, by the time communities get their funds they would have lost value. At time of the baseline survey in May 2019, ward 9 ESC was still discussing and waiting for their 2018 revenues. Both RDC and Communities are paid in RTGS as rate of 1:1. Council is negotiating for use of the Intermarket bank rate (*pers comm., NRM Officer, 2019*).

In terms of community benefits, not all the members of the ward benefit, but the communities/Villages living next to the hunting area are the beneficiaries' e. g. VIDCOs 18 and 19 in Ward 9.

For Pfundundu, there are no income generating activities currently as the operator is still building the wildlife population and infrastructure for ecotourism. In the meantime, the operator is undertaking community investments such as borehole drilling and repairs, local employment. Key institutions involved are the ESC, village heads through the WARDCO and RDC.

4.2. INSTITUTIONAL SET UP FOR SFM/NTFPs AND LAND MANAGEMENT

At ward level for all the three districts sustainable forest management (SFM) activities are undertaken by the ESCs as their mandate involves all natural resources within the ward. From the FGDs, the Councillor and Village Heads play an important role in raising awareness on protection of forests from fires, cutting of trees and mobilizing communities to fight fires in their locality. Firefighting committees were said to be in existence in all districts but with limited functionality in Muzarabani due to lack of feedback and follow up from the district EMA Office. In Hurungwe, Fire management committees have generally not been functional due to lack of incentives and lack of/inadequate enablers for firefighting (material and equipment). Mechanisms of taking care of the welfare of firefighting teams during the fire season are required.

EMA, AGRITEX and Forestry Commission District Officers play an important role in the awareness, although enforcement is limited due to lack of adequate resources (transport and human resources) as detailed in Section 5.6 of this report.

Sustainable Land Management (SLM) involves the adoption of land use systems with appropriate management practices that allow land users to maximize the economic and social benefits from the land in the face of changing human needs, while maintaining or enhancing the ecological functions of the land resources (TerraAfrica, 2005). Land resources include, soils, water, animals and plants.

The interaction between land resources, climate and human activities determine how sustainable and productive the land use system is. Existence of climate change and variability makes SLM important in order to minimise land degradation, rehabilitation of such lands, and ensuring resilience (FAO, 2019)¹⁹.

For the three districts SLM is not explicitly practiced or supported by any organisation. Components are supported by EMA through its identification of gullies and reclamation efforts working with communities through the village heads; AGRITEX through its promotion of conservation agriculture in partnership with NGOs like Lower Guruve Development Association (LGDA) (Mbire), Help from German in Muzarabani and Carbon Green Africa in Hurungwe (section 3.8.). AGRITEX and EMA were the two institutions mentioned in the FGDs as being involved in this aspect. Village heads through their role of land allocation within the ward are important in SLM.

4.3. INSTITUTIONAL GAPS/NEEDS

The institutional gaps/needs were identified at RDC, community and private sector levels from the FGDs, KII and the household survey. These are outlined below.

4.3.1. RDC

- The natural resource management departments of all three districts are grossly understaffed. There is one technical person (Agriculture and Lands Officer/ NRM Officer) who is supported by a senior game scout and the RDC game scouts. In terms of qualifications there is a huge gap between the NRM Officer and their second in command. Given the institutional memory and capacity invested in the NRM Officers, should they leave the district, the Senior game ranchers are not

¹⁹ <http://www.fao.org/land-water/land/sustainable-land-management/en/> downloaded 21/06/2019: 931am

equipped to step in. Mbire and Hurungwe have a system of getting University undergraduates as interns to assist.

- There is need for the NRM departments to have at least two technical persons working together.
- The NRM departments do not have adequate equipment and tools to deliver on their mandate. None of the three districts have a vehicle dedicated to the department to undertake APU and react to PAC in time.
- Support personnel: Hurungwe has 3 Game scouts with no equipment or uniforms and were last trained in 2006. They do not conduct any patrols, their main activity is reacting to PAC and undertaking safari hunting monitoring by accompanying the Mukwichi Safari Operator.
- Muzarabani has 4 district scouts who are not adequately equipped apart for uniforms and ammunition.
- Safari Hunting Management skills: There is lack of capacity at technical and policy level in terms of managing safari hunting businesses. This is shown by the poor contractual agreements that the RDCs have, challenges in negotiating with current safari operators to meet obligations or removing defaulting operators. A case in point is Hurungwe – Mukwichi Contract and Muzarabani nonfunctional Nzou Safaris hunting contract.

4.3.2. Community

At community level institutional gaps or needs identified in the FGDs and KIIs were at two levels; leadership institutions such as the ESCs, Firefighting Committees, Resource Monitors, Councillors and traditional leaders (especially village heads) and; the general community.

The ESCs are elected in accordance with the EMA Act (Chapter 20:27) guidelines every two years. The current ESCs in Mbire were elected in 2017, in Hurungwe some were recently appointed as , “they were wanted urgently by GEF 6” according to a Ward Councilor (Ward 26) during the Baseline, while others were elected in 2017 (Ward 7) and some they have not been elected in a long time (demonstrated by the effort FGD participants made to recollect who was in the ESCs in their respective wards) and are also referred to as CAMPFIRE Committees (Ward 8 and 9) while in Muzarabani some ESCs have been recently elected with Safari Operator’s facilitation (Ward 27), Ward 20, 7 and 5 also have ESCs which have been in office for some time.

Given this scenario, the ESCs require training every two years when a new committee is elected. Training of ESCs was identified as an important aspect in strengthening CAMPFIRE in the three districts especially Hurungwe and Muzarabani where the programme has not been active for the past 10 years.

Firefighting teams require ongoing training on firefighting techniques, awareness and equipment. Feedback from EMA for the ESC and Firefighting committees was considered to be an important motivation factor in Muzarabani as one FGD participant mentioned, *“We stopped because there was no feedback from the district on our reports”* (FGD female participant Ward 7: Muzarabani).

Councillors and village heads require training on all aspects of natural resource management as they have opportunities to conduct awareness for the wider community during other community gatherings such as funerals etc; make decisions impacting on natural resources such as land allocation within the villages. In some wards there was encroachment of arable land and settlements,

participants expressed the view that it was the village heads that was allowing such practices (Hurungwe Ward 8 and 9; Mbire Ward 4).

The general community requires awareness on CAMPFIRE concept, the CWC concept, and general NRM in Muzarabani and Hurungwe since benefits from wildlife have not been significant since 2008. Previously these benefits provided a link for the community with importance of conservation of natural resources.

4.3.3. Private Sector

In Hurungwe (ward 7 and 9) and Mbire (ward 1) the FGD discussions raised concerns about the lack of adequate engagement of the Safari Operator with the community in terms of updating them on his operations and formal introductory meetings. In Muzarabani only Ward 27 was aware who their safari operator was.

The safari operators need to have a community liaison officer to ensure adequate and continuous communication with the community they are operating in. Annual community-private sector-RDC meetings should be implemented to create a platform to discuss issues and plan for the following year. A case in point is Mucheni Conservancy, which has weekly management meetings with its safari operator (pers. Comm; 2019)²⁰.

²⁰ Highlighted in KII with Zimbabwe Environmental Law Association (ZELA) Officer working with Muchei Conservancy

5. Forest/Woodland and SFM

This section covers the Forest/woodland and sustainable forest management aspects of the baseline. Results are presented by key aspect for each district and where relevant for each CWC. Key aspects covered in the baseline under forests are land cover and vegetation type, illegal hotspots, threats to forests, utilization of forest resources, forest management, energy sources and alternatives and NFTP's.

5.1. LAND COVER AND VEGETATION TYPE

Land cover maps represent spatial information on different types (classes) of physical coverage of the Earth's surface, e.g. forests, grasslands, croplands, lakes, wetlands. Land cover maps provide information to help managers best understand the current landscape and for sustainable forest management. Key terms used in land cover maps are defined.

5.1.1. Definition of terms

Forest land : an area occupied with trees measuring a minimum of 0.5ha ,with a minimum height 5m and canopy cover of more than 10%.

Bushland land : an area occupied with trees measuring a minimum of 0.5ha ,with height of less than 5m and canopy cover of more than 10%.

Grassland : Area predominantly covered covered by grass.

Cropland :area under active cultivation and fallow for less than 5 years.

5.1.2. Methodology

The land cover maps produced for proposed conservancies were for the year 2018. Four land cover classes were identified namely Forest, Bushland, Cropland and grassland.

Data set

The land cover maps were produced after an interpretation of sentinel two satellite images. The processing was done using Google Earth engine platform. Sentinel 2 (10 m resolution) was chosen because of better resolution than landsat image (30 m resolution). A script that was used to download and process the imagery was developed specifically for the area of study. A mosaic showing a combination of bands that suites vegetation cover mapping was produced. The mosaic was processed in the google earth engine platform.

Ground Truthing

The ODK form was developed and used to collect ground truthing points. A total of 40 points were collected covering the proposed conservancies. The points were then uploaded to the server.

Land cover maps editing.

The draft map produced prior to ground truthing was then edited.The ODK points act as reference during map editing.The statistics for various land cover classes were generated and map layouts for each proposed conservancy was produced.

5.1.3. Muzarabani district

Muzarabani district is divided into two geographical locations (upper and lower Muzarabani), which present different vegetation types mainly due to variations in altitude, soils and rainfall.

Mavhuradonha Wilderness Area (MWA)

The baseline study sampled Ward 20 in upper Muzarabani and wards 5, 7 and 27 in lower Muzarabani.

Vegetation cover and types

The MWA falls in region III, which receives 650-800 mm of rainfall annually. The Mavhuradonha wilderness area, which is in upper Muzarabani is covered by almost pristine Miombo woodland which is dominated by the *Brachystegia spiciformis*/*Julbernardia globiflora* combination on the eastern part, managed by Nzou Safaris. The western part of the wilderness area is managed by Varden Safaris and is largely comprised of the *Brachystegia boehmii*/*Uapaca kirkiana* combination on the main escarpment and this changes to grasslands interspersed with *Diplorynchus condilocarpon* (Rubber tree) and other bushes along the mineral rich great dyke mountain slopes towards Guruve district. There is abundant *Uapaca kirkiana* (Wild loquat) trees whose fruits could be exploited by local communities under a controlled system.

The western part of the wilderness area is also home to the Tingwa Raphia Palm Botanical Reserve managed by the National Museums and Monuments since the Government of Zimbabwe declared Mavhuradonha Wilderness Area a national monument in January 2017. This is a potential tourist attraction with the ancient rock paintings, which are not far from the botanical reserve. There is also abundant *Syzygium cordatum* (Water berry) along rivers, which provide protective cover for river systems in the area. The western part of Mavuradonha has abundant springs/water, which makes it very ideal for wildlife. As shown by the map below (Figure 5-1) the area covered by forests represents about 73%, while bushland is 12.26% (associated with the mineral rich great dyke mountains). The area under cropland is estimated to be 4.88% which indicates elements of human encroachment. The lower part of the conservancy has more encroachment as compared to the upper part which is in ward 20.

Figure 5-1 shows the land cover map for the MWA.

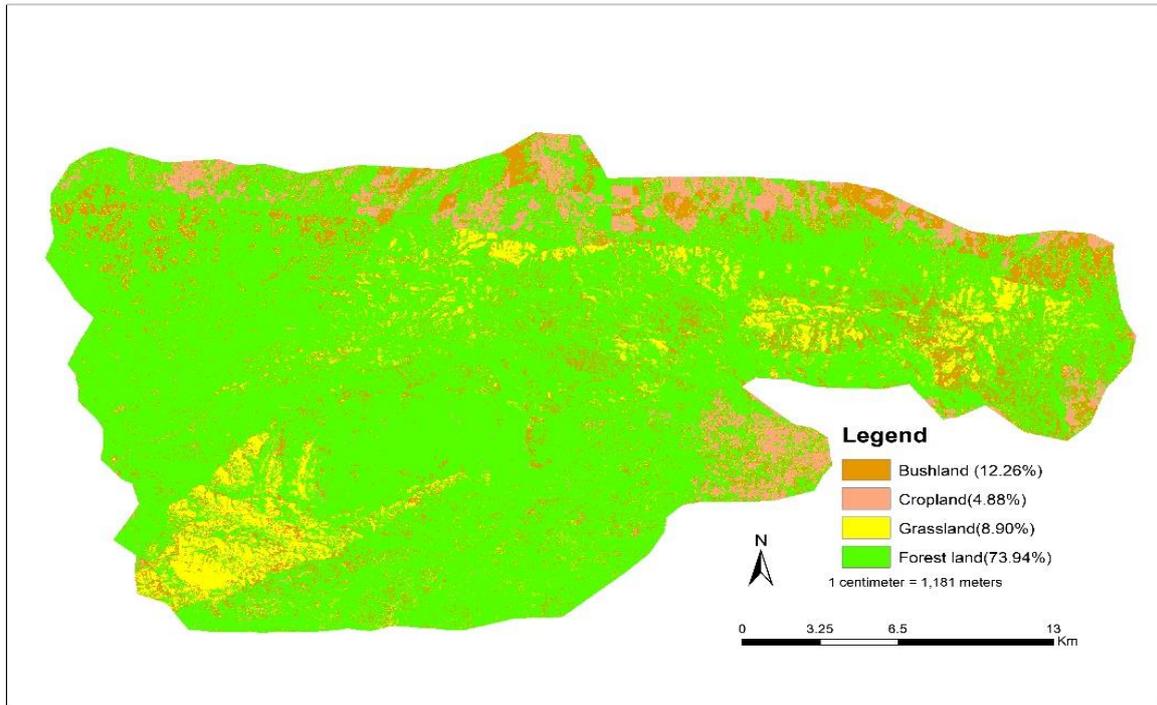


Figure 5-1: Mavhuradonha land cover map

The lower Muzarabani landscape, which borders Mavhuradonha Wilderness to the north is largely region IV, which receives 450-650mm of rainfall annually. The area is characterised by the sweet veld whose dominant tree species is *Colophorspermum mopane* (Mopane). There is also the mixed thicket and the *Combretum/Terminalia* association. This is confirmed by the Zimbabwe Vulnerability Action Committee report (ZimVAC, 2016), which states that the area can be classified as Sodic Veld, characterized by tree bush, or bush clump savanna with sparse short grass. The soils are sodic from granite parent material. Common grasses are in the genus *Sporobolus*, *chlorisvirgata* and the *Dactyloctenium aegyptium* commonly known as the Crow's Foot. These grass species associate well with *Colophospermum mopane*, *Senegalia gerrardii* and the *Senegalia mellifera* which provide browse/fodder for both wild and domestic animals, but the imbalance leads to thicket formation or bush encroachment. There is no grass-cover on areas with high salt concentration though these are favorable for mopane growth. The veld value is sweet veld with low carrying capacity and very sensitive to overgrazing with highly erodible soils. Bush encroachment is evident with a lot of invader weeds which are not palatable and a poor veld.

5.1.4. Mbire district

Mbire district is home to the Mopane woodlands (mainly in wards 1, 2 and 11) which dominate much of the terrain. Dry forest/bush lands and the *Combretum/Terminalia* associations are also spread over some wards mainly in the Kanyurira/Gonono (named after the *Terminalia* trees which are abundant in the area). Baobab trees are also found and are used by people for food (leaves used as vegetables and the fruit used to make porridge). Some plants are also used as vegetables.

The baseline study sampled wards 1, 3, 4 and 11 in this district. Mbire has 3 CWC namely Karinyanga, Kanyurira and Mbire North.

5.1.4.1. Karinyanga Conservancy

The Karinyanga area is largely made up of the *Terminalia* woodland from which the name Gonono is derived. There are however pockets of mixed thickets, Mopane and the *Combretum/Terminalia* woodlands. Common tree species are the *Terminalia sericea* (Silver tree), *Terminalia prunoides* (Purple pod Terminalia), *Combretum zeyheri* (Large fruited combretum), *Loncocarpus capassa* (Rain tree), *Tamarindus indica* (Tamarind: sold in Zambia for making a beverage), *Commiphora* and other species. There is a wildlife corridor around grid reference 16°21'799E/31°50'936S. A few settlements were observed in the corridor and most people are growing Sesame, which is believed to be not palatable to wildlife and livestock. The CWC is comprised largely of the sweet veld type, which ideal for livestock and wildlife ranching.

Figure 5-2 shows Karinyanga CWC, which is in ward 4. The area is comprised of four land cover types namely Forest land (49.64%), bushland (40.08%) (Probably associated with past land clearing and elephant activity) grassland 9.57% and cropland 0.70%. There is a very small portion which is under cultivation, however, the boundary in that area is not very clear and it was not easily accessible during the survey. The vegetation types in the area consists of mixed species dominated by *Commiphora* species, *Colospermum mopane*, *Terminalia* and *Combretum*.

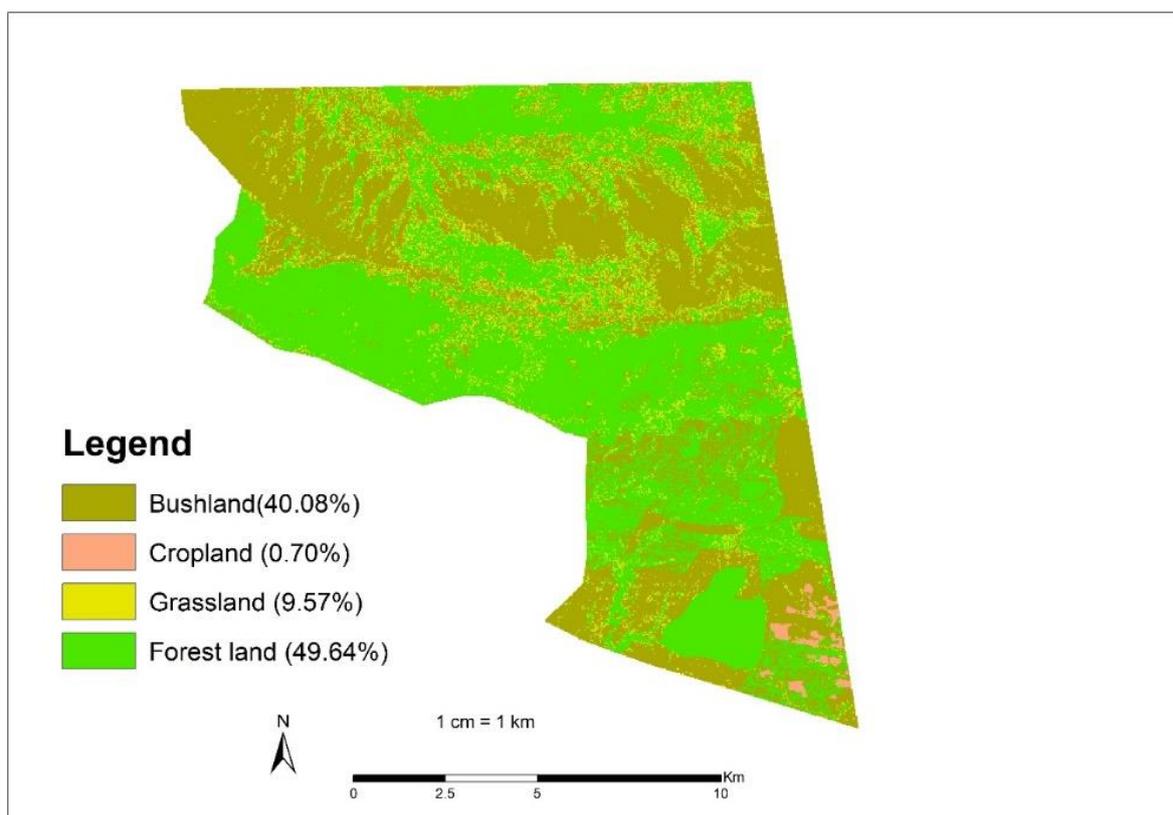


Figure 5-2: Karinyanga CWC land cover map

5.1.4.2. Kanyurira Conservancy (Mbire South)

The Kanyurira area is largely Mopane woodland particularly on the eastern part of the Masoka settlement where Mopane trees have grown into very huge trees. There is a dam on the eastern part, which is an important source of water for wildlife. The area to the west and along Angwa River is mixed woodland with bushes, *Combretum/Terminalia* and riverine vegetation along the river/streams.

Common tree species are the *Combretum* and *Terminalia*, a lot of *D mespiliformis* (Ebony), *Ximenia caffra* (Large sour plum), *D condylocarpon* (Rubber tree), *Pseudolachnostylis maproneifolia* (Duiker berry) as well as *L capassa* (Rain tree), *Trichilia emetica* (Natal mahogany) mainly along drainage systems. This is a sweet veld, which is ideal for both livestock and wild animals. Figure 5-3 shows Kanyurira CWC in Ward 11. The area is made up of 4 land cover types that is, forest land (37.83%0, Bushland (10.0%), Grassland (4.82%) and Cropland (48.0%). The vegetation is predominantly Mopane.

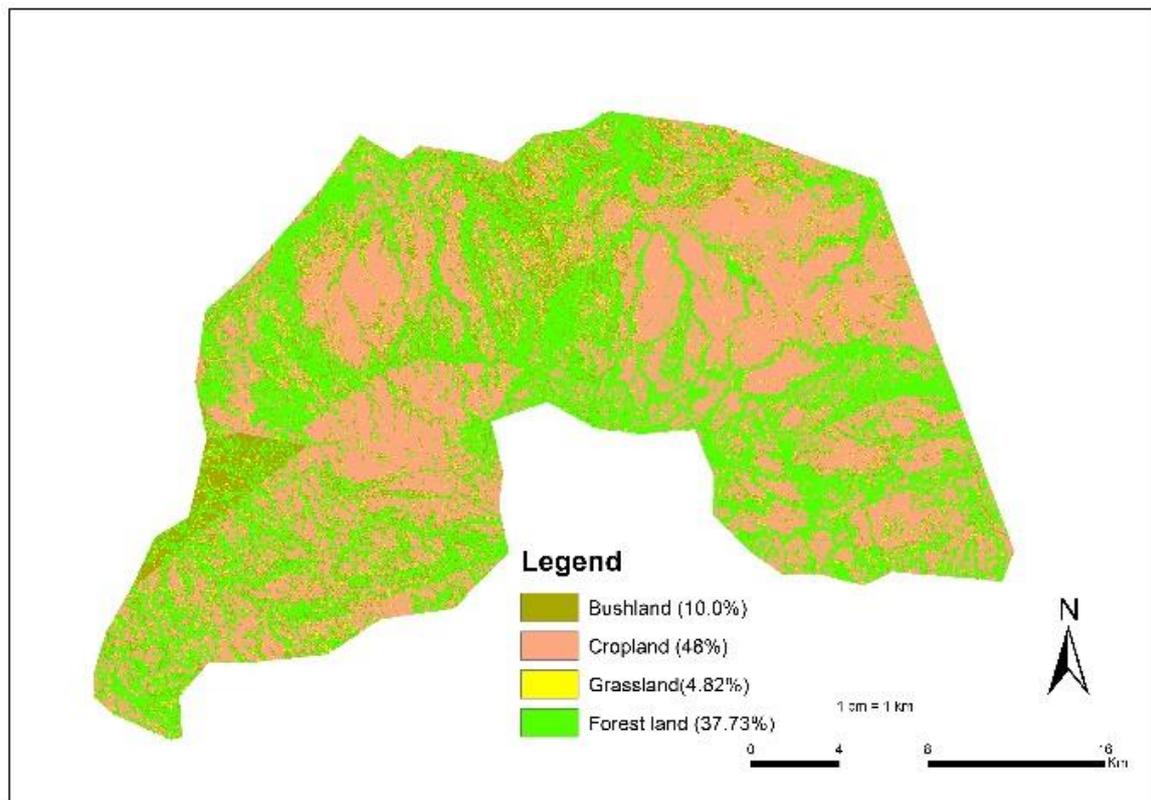


Figure 5-3: Kanyurira Conservancy Land cover map

5.1.4.3. Mbire North Conservancy

Ward 1 (Mbire North, Area along Zambezi River)

Vegetation is a combination of Mopane, Miombo (dominated by *J. globiflora*). There is also the unique all white truck tree (*Stechulia africana*), which locals poach for timber to make household furniture. The area overlooks the Zambezi River and therefore quite ideal for ecotourism.

There is a piece of land located along the Zambezi River and is managed by Beat the Drums Safaris focusing mainly on sport fishing.

Ward 2 (Mbire North)

This is an area between Angwa River and Dande Safari area (DSA). The area is largely Mopane woodland (Figure 5-4). Common species are *C. Mopane*, *Adansonia digitata* (Baobab), *Afzelia quanzensis* (Pod mahogany), *Kirkia acuminata* (White syringa), *Dalbergia nyase*. A few settlements of the Doma people are settled in the area, overlooked by the Jitimuchiti cliff; a scenic site with a good view and very ideal for photographic safaris.

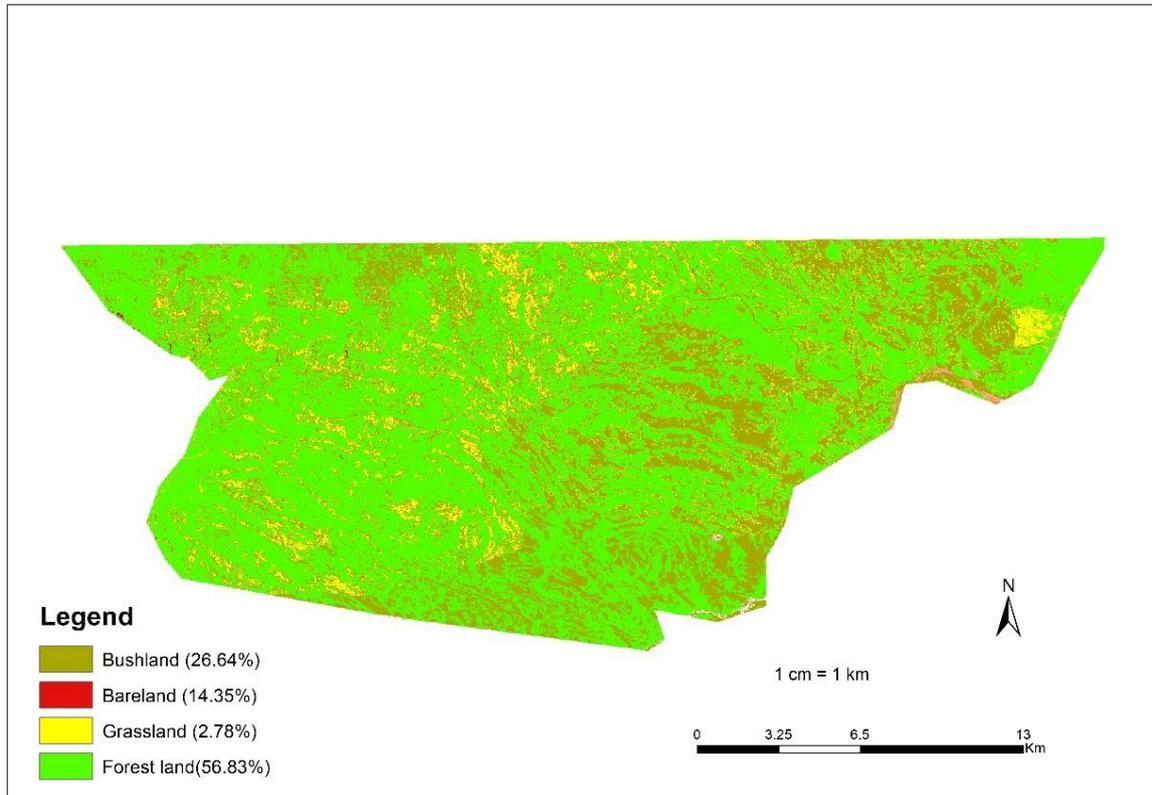


Figure 5-4: Land cover map for Mbire North Ward 2

This conservancy is ideal mainly for wildlife management.

Ward 1 (Mbire North)

The area is managed by CM Safaris. There is a combination of Miombo, Mopane and the *Combretum/Terminalia* woodlands with abundant *D. mespiliformis* (African ebony). The Safari Company is grading roads and carries out annual controlled early burning to reduce fuel load and encourage new grass to shoot. A dry natural water point was observed, there are plans to pump water from the nearby solar borehole (which is in DSA) into this water point to improve game water supply in the communal concession area. An area towards Kanyemba, which is part of the ward 1 concession area was cleared for agricultural purposes. The clearing has disturbed movement of animals in the area particularly elephants that move from Mozambique to Chewore Safari area and as well as crossing the Zambezi into Zambia.

Forest land accounts for 60.50% of the area, while cropland is 1.8%, bushland is 26.9% (probably associated with past land clearing by the Doma people) and grassland 10.22%. The area under cultivation is relatively small as shown on Figure 5-5.

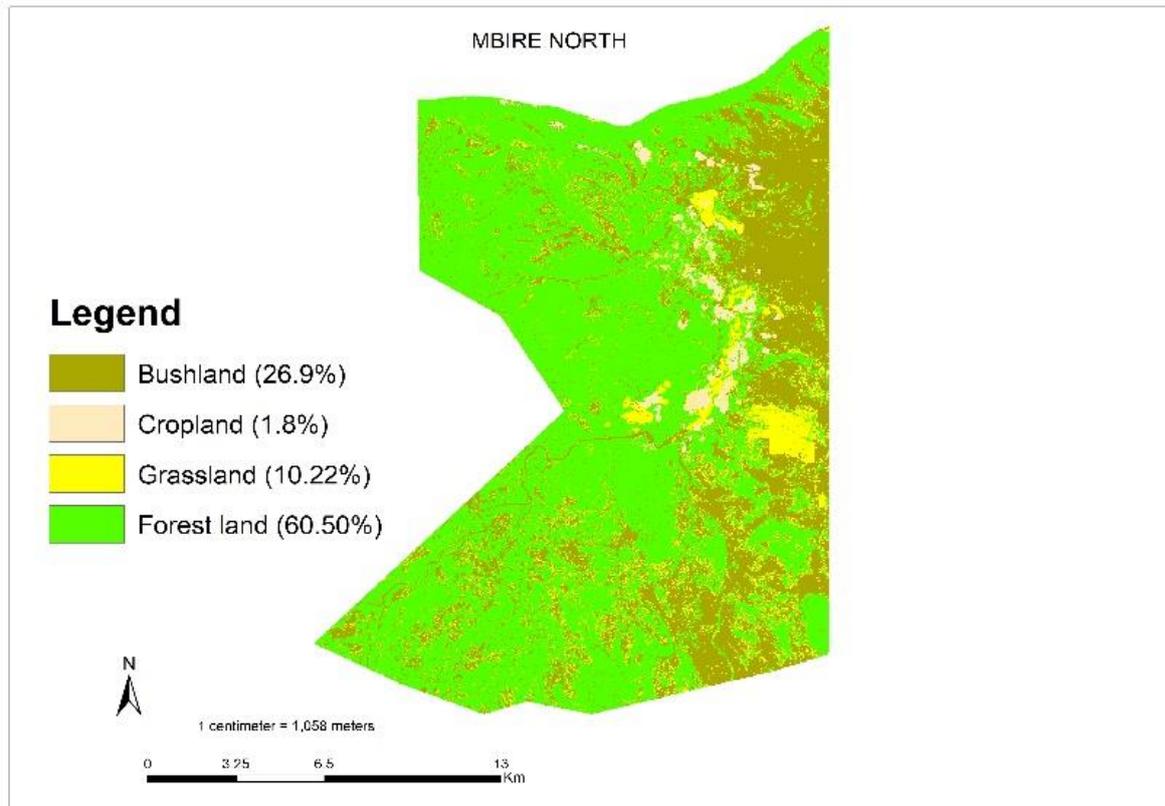


Figure 5-5: Mbire North Conservancy, Ward 1 land cover map

5.1.5. Hurungwe district

Hurungwe district has largely the Miombo type of woodlands which are dominated by *Brachystegia spiciformis/Julbernardia globiflora* association. *Brachystegia boehmii* (Prince of Wales feathers) and *Pterocarpus angolensis* (Mukwa) is also found in some of the Miombo situations. Most of the woodlands in the district have been degraded due to overexploitation by tobacco farmers who use wood to cure tobacco. There are forest restoration efforts through establishment of *Eucalyptus* woodlots some of which were observed in ward 8.

Tobacco merchants also promote the establishment of woodlots by providing farmers with gum tree seed and seedlings for propagation/planting. There has been limited success of tree planting promoted by Tobacco merchants mainly due to the fact that farmers prioritise the tobacco crop over the gum trees in addition, Tobacco merchants have not provided enough technical backstopping in the management of seedlings and planted trees.

The baseline study sampled wards 7, 8, 9 and 26.

The district has two conservancies (Pfundundu and Mukwichi), which are presented in Figure 5-6.

The area under forest land is estimated at 70%, bushland 16.65% (probably associated with human activity) and cropland is at 7.75%. The area under cropland suggests some encroachment into areas earmarked for conservancy. The vegetation type in the area is mainly miombo dominated with *B. spiciformis*. However, in some cases there is mixture of other vegetation types like *Combretum* and *Terminalia* species. Along the rivers there is presence of riverine tree species

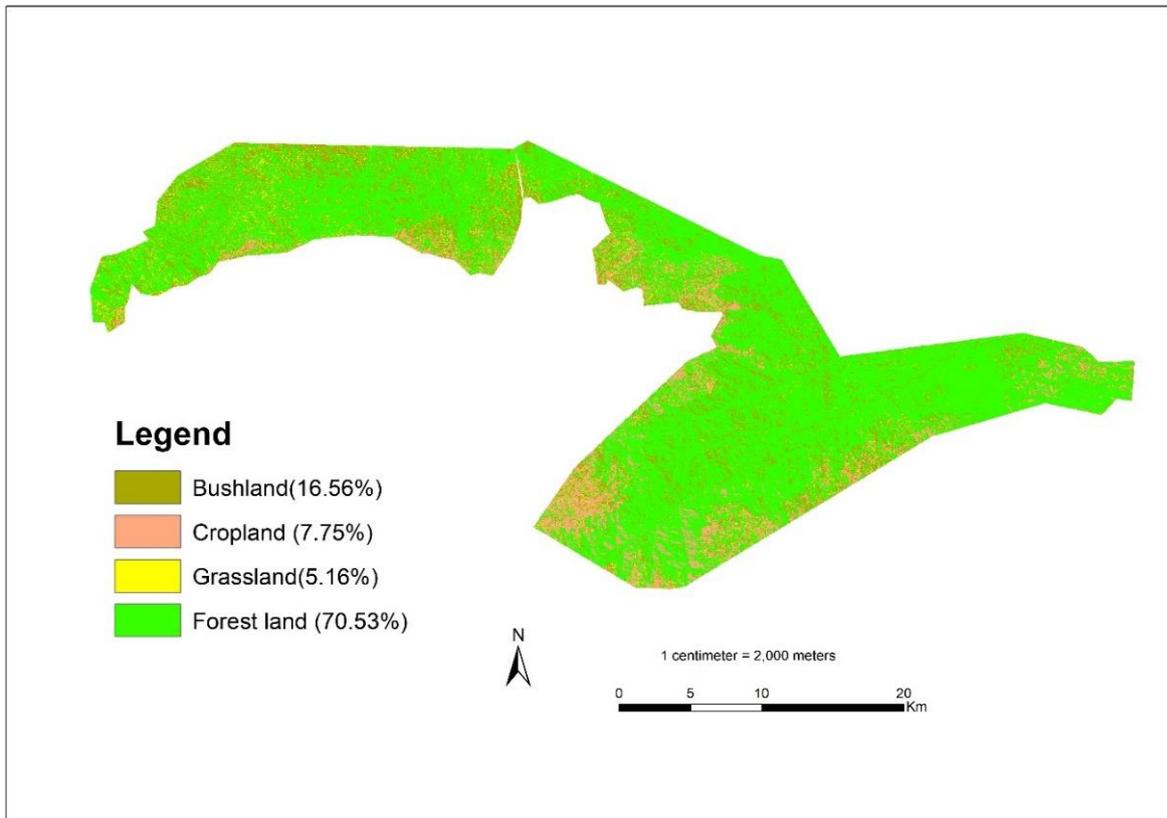


Figure 5-6: Land cover map for Pfundundu and Mukwichi

5.1.5.1. Pfundundu Conservancy

This was formerly a safari hunting area which has been turned into a non- hunting conservancy and is largely covered by Miombo woodland, which is characterised by a combination of the *Brachystegia* species and *Uapaca kirkiana* trees on the western part and a combination of the *Brachystegia* and other species including the *Combretum/Terminalia* association in the rest of the conservancy. *Rynchosia verulosa* known locally as Mukoyo produces tubers that are exploited dried and pounded into powder and sold in neighbouring Zambia.

5.1.5.2. Mukwichi Conservancy

Mukwichi conservancy is largely covered by a combination of Miombo and *Terminalia/Combretum* combination. The Miombo component is dominated by *Brachystegia boehmii*. Other species of significance are *D. condylocarpon*, *P. Pseudolachnostylis maproneifolia*, *Diospyros mespilliformis* and *Ximenia cafra*.

During transects, it was noted that shrubs had grown on some roads making it difficult to navigate through the conservancy. There were also no fire management activities that were in place; the team encountered a fire while on transect through the conservancy.

5.2. ILLEGAL USE HOTSPOTS

5.2.1. Muzarabani Illegal use hotspots

Tree cutting: There is rampant tree cutting in the district with most of the wood being used in tobacco curing. Observations were made of tree stumps (Photo 5-1) in the eastern part of Mavhuradonha

Wilderness Area, near the Wilderness lodge and along the Muzarabani-Harare highway, which is evidence of encroachment into the wilderness by wood poachers.



Photo 5-1: Tree cutting near Mavhuradonha Wilderness lodge by suspected wood poachers from ward 20

Encroachment by human settlements: Encroachment of human settlements into the eastern part of Mavhuradonha (ward 20) was observed during mapping of boundaries in that area. Land is being cleared for settlement and for cropping.

Charcoal production: According to the Forestry Extension Officer there is massive production of charcoal in neighbouring Mozambique, which is currently happening on a small scale in Zimbabwe. Given the vastness of Mopane in the project area there is risk of escalation of this activity which will be a serious threat to biodiversity conservation. Forestry Commission in collaboration with other government department is working very hard to control the situation.



Photo 5-2: Tree cutting observed in MWA Muzarabani



Photo 5-3: Bark stripped for beehive making in

5.2.2. Mbire and Hurungwe

Other illegal use hotspots were observed in Hurungwe. In Pfundundu there is encroachment into the CWC by communities in Ward 7 for fuelwood and settlement. In Mukwichi there is illegal firewood collection by communities from ward 8 and 9 mainly for tobacco curing.

In Mbire there are established settlements in the wildlife corridors in wards 3, 4 and 11 contributing to human wildlife conflict.

5.3. THREATS TO FORESTS

In all the three districts and their respective CWCs the main threat identified through KIIs and FGDs was that of veld fires mainly caused by poachers. Fire education by EMA has helped reduce fire incidents in Mbire and Muzarabani. Early controlled burning by Safari operators also reduces fire incidents in Mbire.

Reduced rainfall is affecting production of wild fruits in Muzarabani and Mbire as FGD participants mentioned that wild fruit yields had decreased in the past 2-3 years when rains have been scanty and erratic.

Figure 5-7 shows that the major threats to trees and forests are damage by insects (mainly termites in the case of planted trees), Veld fires and tree cutting in the case of natural trees/forests (28% of the respondents). Twenty two percent of the respondents also cited inadequate water as hampering their tree planting efforts.

Ziziphus mauritiana (Masau) has naturalised in the district and the tree forms pure stands in some areas. The tree produces the Masau fruits, which have been successfully commercialised. Discussions held in ward 27 revealed that there was very little income from the Masau fruits. Villagers felt that by selling a bucket of Masau for RTGS\$3 they were being ripped off by people from urban areas and not realising real value for their resource. They indicated that they need to be capacitated to be able to commercially exploit their Masau fruits. Currently individuals harvest various quantities of Masau and buyers pay a levy of \$5 to Council at the exit gate from lower Muzarabani.

A Masau processing facility was established at Centenary by the Forestry Commission under a project supported by the German Development Agent (GIZ). The processing centre is however, no longer functioning due to a number of reasons including long distance from lower Muzarabani, which is the main source of the fruit. There is need to understand issues around collapse of this project with a view of resuscitating it for value addition of Masau fruits.. The project could commission a study under the Market Analysis and Development approach (which is discussed in detail in a latter section), as part of understanding the feasibility of doing such a business.

Adansonia digitata (Baobab) was conspicuous in the areas visited. The Baobab fruit is exploited by locals for consumption as porridge/drink with little or no commercialisation. There is need for detailed ecological studies to determine tree populations, regeneration capacity and potential fruit production, this will inform possible value chain development around the Baobab fruit. In Chimanimani and Hwange, rural communities are harvesting and processing baobab into value-added products such as powder, coffee, cake and oil, which they sell for income. It was noted that most of the Baobab trees in the area covered by the study were not infested by the Baobab sooty mould; this is good for multiplication and growth of the Baobab tree. The Baobab tree is a dioecious (male and female flowers are borne on different trees. Therefore, not all trees in a forest produce fruits however, Venter and Witkowski, (2011) indicated that some male baobab trees produce very few fruit but they don't produce every year but generally, most of the males do not produce fruit at all. Average fruit production per tree is in the range of 50-300 (Killman *et al*, 2003).

Hyphaene pertesiana (Ilala palm) is abundant in the eastern part of lower Muzarabani particularly in ward 27. The ilala is harvested mainly by local women for weaving various artefacts. Some of the ilala is sold to people from urban areas for use in making basketry and other ilala woven products. Ilala has potential for commercialisation and could contribute to household incomes in the area. The ilala tree can be propagated from seed; so it could be raised in the proposed nurseries to compliment natural regeneration.

Sclerocarya birrea (Marula) is available in most of the areas covered by the study. The Marula fruits have limited use in Muzarabani with most of the fruits being consumed by wild animals such as baboons and elephants. This could explain why the tree was not mentioned in the household interviews carried out under the study. Marula is being commercially exploited in Matabeleland South where communities are realising incomes from the sale of marula jam, marula kennels and marula oil. There is need for an ecological study to establish the tree populations and fruit productivity/production including issues of natural regeneration of the species with a view of developing a sustainable marula value chain. The Marula nut is very hard and fibrous making it one of the most difficult nuts to crack. Past efforts on technology development for cracking have not yielded desired results as resultant products have not been effective, efficient and friendly to users who are

mostly women. There is need to develop appropriate and effective equipment for cracking the Marula nut for the success of the Marula value chain.

The Marula tree can be easily propagated from seeds and cuttings and can therefore, be easily domesticated and tree populations increased. On fruit production, it is important to note that the marula tree is dioecious. This means not all Marula trees found in a forest will produce fruits. There are no reliable studies on Marula tree fruit production that have been conducted in Zimbabwe. However, some studies done in Namibia and Botswana gave results of an average of 596 kg and 550 kg of fruit per season respectively. Detailed studies on tree fruit productivity would assist in informing enterprise development for the marula value chain.

Tamarindus indica (Tamarind tree) was observed particularly along rivers. The fruits of this tree are used for fortification of porridge and other foods. The commercial value of this tree has not been adequately evaluated. The fruits were reported to be sold in Zambia where they are used to make a beverage.

Honey production has great potential to contribute to incomes of rural households. The study revealed that there was little beekeeping going on in Muzarabani. Beekeeping was introduced only recently when some community members were trained by the Forestry Commission and the Ministry of Women Affairs, Cooperative Development and Gender; no activities have started since the training. Beekeeping could be a low hanging fruit for the GEF 6 project due to its short turnaround time; it only takes up to three months to start realising income from it. This is a potential intervention that the project could explore under the small grants initiative particularly in settlements around Mavhuradonha Wilderness Area where pure Miombo honey could be produced.

5.4.2. Mbire forest utilisation

5.4.2.1. Karinyanga Conservancy

From the FGDs, the NTFPs found in ward 4 are; *A. digitata* (Baobab), *Flacourtia indica* (Governor's plum), *Z. mauritiana* (Masau), *Vangueria infausta* (African medlar) *Strychnos* species (Monkey orange), Mushroom, Honey and grass. Masau fruits are dried and sold to outsiders to cover costs such as maize meal grinding and school books for children. A bucket of Masau was sold for RTGS\$4 last year. A bucket of Baobab fruits was also sold for RTGS\$4 per bucket in Harare but the market is not reliable. Women make baobab fortified drinks that are sold locally. Fruit production is being affected by low and unreliable rainfall over the past years, which is creating strong variations in year to year production of fruit.

Carbon Green Africa (CGA) is promoting beekeeping and there are a number of farmers involved in beekeeping from a previous project supported by CIRAD. These are continuing with the projects under CGA with others joining in. Comb honey is sold at RTGS\$50 per bucket.

Communities are implementing Sustainable Forest Management (SFM) and benefiting from Carbon credits through Carbon Green Africa. In 2017 the community received RTGS\$4 000 from carbon credits.

5.4.2.2. Kanyurira Conservancy

Fruit trees available in the area- *A. digitata* (Baobab), *T. indica* (Tamarind), *Z. mauritiana* (Masau), *Azanza garckeana* (Snot apple). Beekeeping has just started and communities have been trained in beekeeping by Forestry Commission and EMA. There is no trade in Masau and other wild fruits. Fruits are consumed locally and are food for elephants and other wild animals.

Reeds are harvested and used to make mats and they are sold locally. Ilala is available and used to make baskets and other artefacts that are sold locally.

The community has established a gum tree demonstration plot with support from Forestry Commission. Trees are being destroyed by animals due to lack of protection. Support with fencing is required to protect the gum plantation.

Communities are aware of Baobab pulping and making of yoghurt from the pulp but this is not happening in Mbire, the community felt such activities should be introduced to their area for enhancement of their livelihoods.

5.4.2.3. Mbire North (ward 1)

Sclerocarya birrea (Marula), Tamarind, *Vitex payos* (Chocolate berry) trees available. Fruit trees are just for consumption. *Z. mauritiana* (Masau) is now difficult to harvest due to competition with elephants.

Communities prepare porridge from Marula, Tamarind and Baobab fruits. They also mix baobab pulp with goat milk to make a sour drink.

There is limited honey production and trade. Beekeeping has just started with support from Carbon Green Africa. Community would like to be supported with beekeeping projects.

Ilala is available and used in construction. There is no trade in ilala due to lack of market. The little market available is offering very low prices of RTGS\$2 per stack of ilala.

There is need for proper land use planning in the area. There are good soils in the area, which if supported with irrigation could potentially contribute to improvement of livelihoods. Livestock and crafts could also contribute to improvement of livelihoods.

5.4.2.4. Ward 3- Wildlife Corridor

Indigenous fruits occurring in the ward are; *Z. mauritiana* (Masau), *A. digitata* (Baobab), *Azanza garckeana* (Snot apple), *Ximenia caffra* (large sour plum) Tsvanzva, *Flacourtia indica* (Governor's plum/Munhunguru), *Dioscorea steriscus* (Manyanya), *Berchemia discolor* (Nhacha/Nyii). Ilala, Broom Grass, Reeds and edible insects were also mentioned in the FGD sessions.

Masau are sold but at very low prices, RTGS\$2 per bucket. Baobab fruits are sold at Carter House, RTGS\$2.50 per bucket. Tamarind fruits sold at Carter at RTGS\$2 per bucket. Grass is sold locally at RTGS\$3 per bunch. Moringa leaves sold at RTGS\$2 per kg. Ilala is not sold.

Masau drink is made from Masau fruits. Baobab porridge is made from Baobab pulp. An alcoholic beverage is brewed from Masau. The community uses Baobab pulp to make a drink and Baobab seed is ground into coffee. Baobab leaves are used as relish. Baobab fortified drink is made but not sold. Marula kernels are used as nuts. There is a wide use of indigenous fruits for food by the community.

Ilala could be used to make products such as baskets and hats but there is no market. People from outside are buying products at very low prices.

There is need to add value to products but there is no capital and technology for processing. There is need for market information and training. Resources are not exploited on business lines.

5.4.3. Hurungwe forest utilisation

Common NTFP are honey, mushrooms and fruits (including the exotic Mango) Mukoyo (*R. verulosa*), which is sold in Zambia and used to make Mahewu (a traditional brew).

Forest based enterprises are Honey processing and Wood carving.

There is limited trade in forest products such as *Uapaca kirkiana* (Wild loquat), *Z. Mauritiana* (Masau), broom grass and Honey.

B. spiciformis, *Azalia quanzensis* (Pod mahogany) and *C. mopane* are main species harvested for charcoal making/firewood, wood carvings and tobacco tiers respectively. Mukwa trees are available and were exploited by Council at one time.

There are community members involved in beekeeping but yields are affected by lack of water and there is no market for honey. A local person was trained by Carbon Green Africa and is helping with training but there is no timber to make beehives. There are few hives, which are really not meant for commercial production of honey. Honey is just produced for subsistence purposes.

Carbon Green Africa supported some groups with training and provided timber for making beehives. With the current economic situation farmers have not been able to sell their honey. Training covers value addition to honey, there are some people who are already adding value to wax in the form of wax candles and shoe polish and sell locally. The Kenyan Top Bar Hive is being promoted to discourage use of traditional log and bark hives which are destructive to forests.

Honey, Mukoyo, mushrooms and wooden artefacts could potentially be commercialised. Wooden artefacts made from *Azalia quanzensis* were observed at Nyamakate, where they were being sold along the Chirundu highway. Wood carving has led to significant loss of some species such as *Pterocapus angolensis* (Blood wood), *Kirkia acuminata* (White syringa) and *Combretum imberbe* (Ironwood) in Hwange district. There is need for control of the activity as selective harvesting usually leads to species extinction.

Other natural resources occurring in the area are; Snot apple, Monkey orange, Chenje though its no longer available because of human population increase. Masau and Ilala do not occur in the district. NTFP are not found in abundance.

Reeds are used for making mats and baskets. Reeds were of benefit but are disappearing due to human population increase.

Other activities that could be done in Mukwichi are beekeeping, crocodile farming at the Shamrock Dam in Ward 9 and fish farming.

5.5. ENERGY SOURCES: CURRENT AND ALTERNATIVES

Current energy sources being used in the three districts were noted and extent of use for firewood estimated. Given the contribution of use of firewood for tobacco curing to deforestation, alternative energy sources become an important solution. Findings are shown by District and CWC in some cases in the sections below.

5.5.1. Energy sources

During the HH survey, 66% of respondents indicated that they use wood from natural forests (Figure 5-9) implying that there is a lot of tree cutting taking place in the study areas. The need for forests restoration and rehabilitation cannot therefore be overemphasised. Wood is used for cooking and heating as well as for tobacco curing and brick moulding with an estimated 20-25 m³ required to treat a hectare of tobacco using the conventional barn, which is commonly used by small scale farmers.

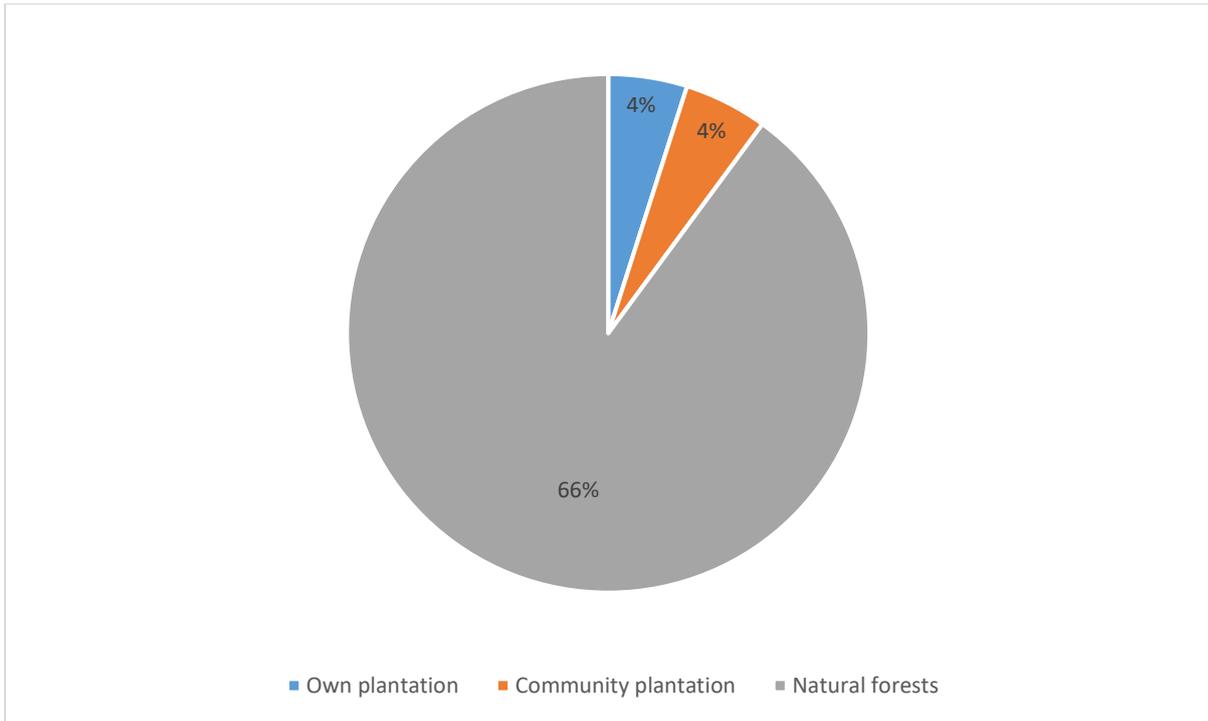


Figure 5-9: Source of fuelwood mentioned by HH survey respondents for 3 districts

The majority of respondents (66%) indicated that they had no other form of fuel other than wood, meaning that there is high demand for wood for all or some of the uses mentioned above. A few respondents indicated that they use solar (14%), gas (5%) and electricity (2%) as alternatives to wood (Figure 5-10).

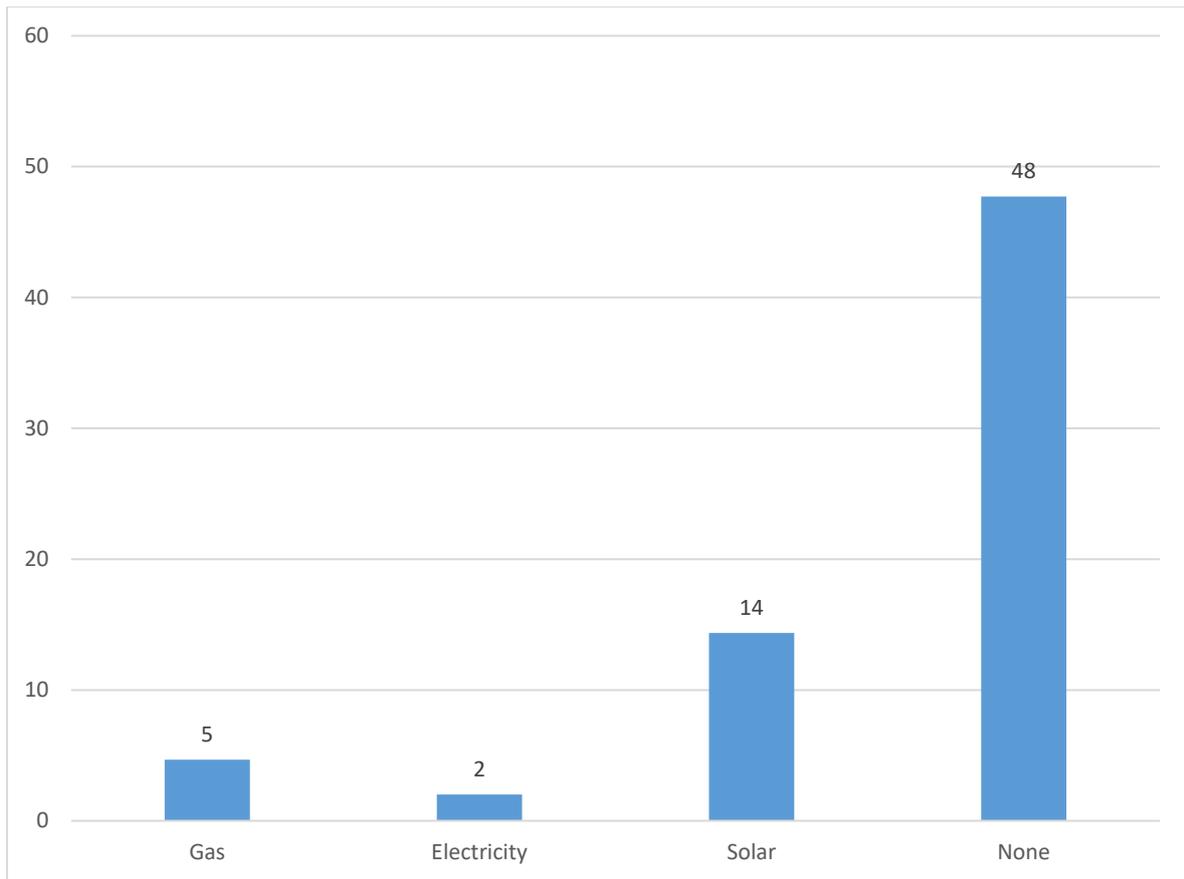


Figure 5-10: Alternative energy sources mentioned in HH survey

For future development of the energy sector respondents in the household survey suggested the need to tap into solar energy (38% of the respondents), connection to the national grid (22%) and production of biogas (15%) (Figure 5-11), the latter being very much linked to ownership of livestock, which is the source of organic material for feeding the digester for biogas.

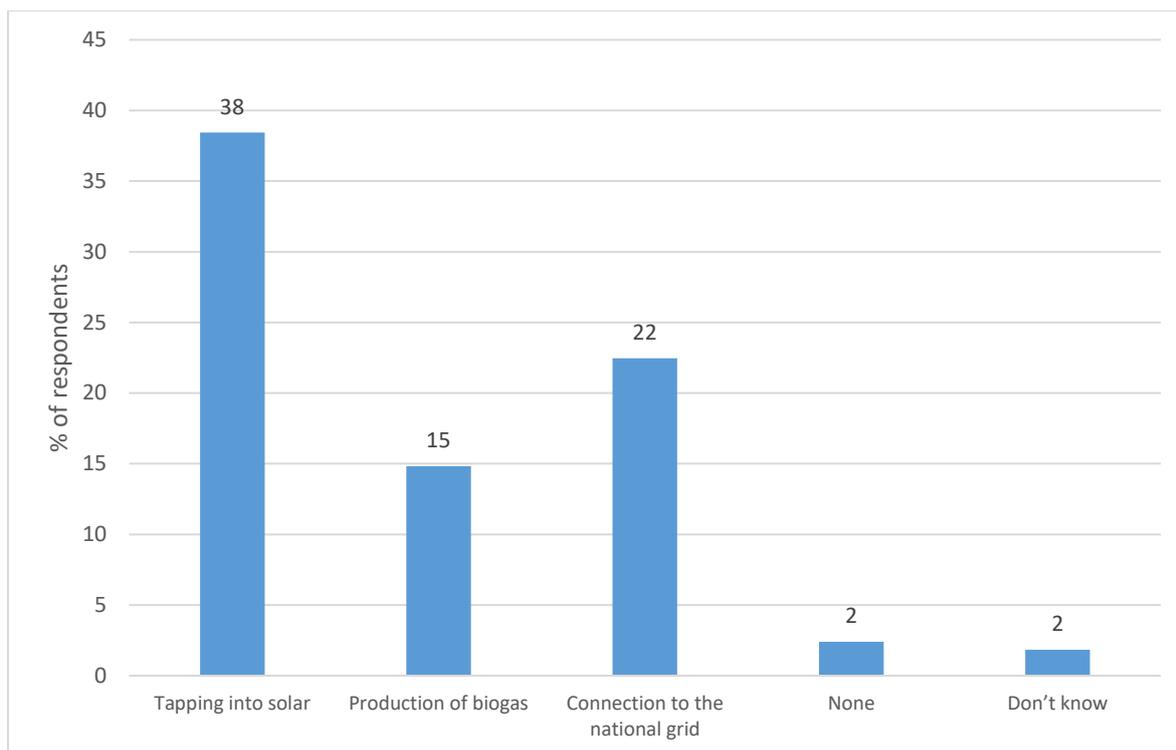


Figure 5-11: Opportunities in energy

5.5.2. Tobacco curing and energy saving technologies

Tobacco curing and wood energy saving technologies in Muzarabani

Tobacco merchants supply small scale farmers with coal under contract but the farmers do not use the coal they instead sell to large scale tobacco growers. Besides being a cheaper option, use of wood is also perceived as resulting in better quality tobacco when compared with coal. Use of coal also has an added challenge of fanning for it to burn and provide the heat required to cure tobacco. The small farmers therefore, continue going to the forest to cut fire wood. In the past, commercial farmers used coal to cure tobacco. The coal was delivered to Concession by rail and collected from there by trucks for delivery at the curing centres. Most of the small farmers cannot afford coal and therefore use wood fuel for curing their tobacco.

There is need to promote wood saving technology such as the rocket barns which consume about 15 m³ of wood to treat a 1ha tobacco crop as opposed to the conventional barns, which require 20-25 m³ of wood to treat the same amount of tobacco.

There is need to do budgets for tobacco and compare them with those of other crops to see if it's worthwhile for farmers to continue with tobacco given that the farmer has to work throughout the year on the crop. Although alternative crops to tobacco could be considered, the short to medium term will continue to see tobacco being produced with a possibility of moving to other crops in the long term.

The Forestry Commission is working with Zimbabwe Red Cross Society (ZRCS) in promoting wood saving Tsootso stove whose uptake has been poor probably due to the fact that people are used to

open fires for cooking and for warming themselves. The ZRCS is also promoting fruit tree planting in the district.

Tobacco and energy efficiency in Hurungwe

Tobacco is the major crop in the district but impacting negatively on forests and the Commission is partnering Council, EMA, Tobacco Merchants, Carbon Green Africa, Friends of the Environment and GEF 6 in promoting afforestation and reforestation programmes. The Commission also enforces the law on those who commit forest related offenses.

Some Tobacco Merchants provide coal but farmers prefer wood, which is cheaper.

The more wood efficient rocket barn, which uses less wood (about a quarter of what is used by an ordinary barn) costs RTGS\$3 000 to construct whereas the ordinary barn costs RTGS\$400. Farmers being rational, prefer to have the cheaper option, which however demands a lot of firewood.

The Chongololo model of barn uses coal and electricity and so it uses less wood than even the rocket barn but it is expensive to set up and maintain. It was used by the former white commercial farmers.

Collective curing of tobacco is not possible due to variations in the maturity of tobacco depending on when farmers plant their crops.

5.6. FOREST RESTORATION AND REHABILITATION ACTIVITIES

Forest restoration and forest rehabilitation are challenging long-term endeavours that require thoughtful planning, implementation and monitoring (FAO, 2011). While they are closely related, a conceptual distinction may be made between them. The purpose of **forest restoration** is to restore a degraded forest to its original state – that is, to re-establish the presumed structure, productivity and species diversity of the forest originally present at a site. The purpose of **forest rehabilitation** is to restore the capacity of degraded forest land to deliver forest products and services. Forest rehabilitation re-establishes the original productivity of the forest and some, but not necessarily all, of the plant and animal species thought to be originally present at a site.

5.6.1. Muzarabani forest rehabilitation

In Muzarabani, most of the activities taking place are of a rehabilitation nature through establishment of *Eucalyptus* plantations under tobacco mainly in the upper Muzarabani wards.

Communities indicated that tobacco merchants were either providing seedlings or seed for planting/propagation by farmers. The Tobacco Industry Marketing Board encourages merchants to provide seed/seedlings to farmers for propagation/planting.

During KIIs, some merchants have questioned why they should support farmers in forest rehabilitation when they are already paying levies to Sustainable Afforestation Association (SAA), which is an association of tobacco merchants promoting forest rehabilitation and restoration in tobacco growing areas. The SAA afforestation programme started in 2012 and it was projected based on the known Mean Annual Increment (MAI) that trees would be ready for harvesting in 5 years (that's around 2017) but up to now the trees are not ready for harvesting. The trees are now being harvested at 7/8 years. As at December 2018, SAA had planted 613ha of *Eucalyptus* plantations in Muzarabani district

(Centenary area). The trees have not reached harvestable stage as envisaged and so farmers continue to use natural wood for tobacco curing. The question is will the afforestation programmes address the farmers' needs for alternative wood sources?

The SAA model is targeting mainly A2 farmers who have more land than A1/communal who have limitations in terms of land that can be put under tree plantations. There is need to explore options that would avail more land in communal/resettlement areas for tree plantations. The *Zunde raMambo* concept/approach is an option that the project could consider whereby Chiefs could avail common land for afforestation purposes.

The Forestry Commission has not been able to enforce provisions of Statutory Instrument (SI) 116 of 2012, which requires farmers to establish woodlots of fast growing trees species for tobacco curing. This is because most small scale farmers do not have the land to plant trees.

The Forestry Commission has limited resources (mainly transport and manpower) to effectively deliver its mandate under SI 116 of 2012 and most of the wood poaching takes place at night and therefore difficult to monitor.

Coal is not a good alternative due to its footprint from carbon emissions.

The Forestry Extension Officer mentioned that the Commission is planning to resort to promotion of forest restoration through management of the existing degraded woodlands wherever they are located, at homesteads, along boundaries, in grazing areas and the like.

5.6.2. Mbire forest rehabilitation

In Mbire the district is experiencing vegetation cover loss mainly due to land clearing for agriculture and the Mopane tree was the main species lost with the wood being used as firewood at household level. There is little trade in Honey and wild fruits such as Baobab and Masau but these were cited as having great potential for commercialisation. There are only 2 tobacco farmers in ward 2 who are using wood for curing their tobacco. The Forestry Commission is regulating/monitoring use of wood by the 2 farmers by issuing permits and encouraging them to establish woodlots to satisfy their future wood energy requirements. Most fires in the district originate from land clearing, poachers and from neighbouring Mozambique. The Commission is working with Council, EMA, AGRITEX, Zimbabwe Parks and Wildlife Management Authority and Carbon Green Africa in afforestation and forest restoration activities and fire management programmes. The district has fire management trainings and campaigns and provide firefighting equipment to communities in the form of fire beaters knapsack sprays and others. Communities however, felt that more equipment should be provided for them to be more effective in pre-suppression and suppression activities. Some communities have also been trained to make their own fire beaters using locally available materials such as heavy duty sacks. The district authorities work in partnership with organisations such as the Zambezi Valley Alliance and Carbon Green Africa who provide both technical and financial support to Forestry programmes in the district.

5.6.3. Hurungwe forest rehabilitation

In Hurungwe there is forest rehabilitation through tree planting which is being done but with little success due to lack of follow up by Tobacco merchants on seed and/or seedlings supplied to farmers. Planted seedlings are also being attacked by termites. There are people implementing a Moringa project with support from Carbon Green Africa in ward 9. In Ward 8, there are individual farmers who

have established and maintained Eucalyptus woodlots for over 10 years and these could be used as community facilitators (similar concept as master farmer) to provide support and advice to other tobacco farmers on tree planting and nurturing.

5.7 RECOMMENDATIONS FOR THE FOREST RESOURCES UTILISATION, SFM AND IMPROVED ENERGY SAVING TECHNOLOGIES

5.7.1 NTFPs and Opportunities for forest based economic activities

There is opportunity for commercialization of Masau, Baobab, Ilala, Marula and Honey in Muzarabani district. The wild loquat (Mazhanje) could also be considered for commercialisation by communities in the western part of MWA given that the tree is abundantly available in the area. Modalities on how communities can have access to harvest wild loquat would need to be worked out. Communities in Mbire particularly in ward 1 are keen on honey production. The Baobab value chain could also be supported in this district. Hurungwe is famous for honey production and it was confirmed during the survey that there are individuals and groups in the targeted and non-targeted wards that are earning incomes and improving their livelihoods through beekeeping. Honey production should therefore be considered for Hurungwe. The following recommendations were made for value chain development in the 3 districts:

There is need for the project to consider adopting the Market Analysis and Development (MA&D) approach [(or similar approaches such as the Participatory Market Systems Development (PMSD))] as a framework for assessing feasibility and planning the setting up of suitable forest-based enterprises. Informed choices could be made from the range of NTFP available namely Masau, Baobab, Marula, Ilala and Honey. The defunct GIZ Masau project should be reviewed to understand what went wrong and what could be done to revive Masau processing.

The goal of the Market Analysis and Development (MA&D) approach is to assist individuals/groups living in rural communities to develop enterprises to generate and improve their incomes while ensuring the sustainable management of forest resources. The MA&D process takes social and environmental concerns into consideration as well as the technological, commercial and financial aspects of small enterprise development. Increasing demand for forest products often leads to over-exploitation of resources and abuse of harvesters. This leads in turn to degradation of resources and a downturn in economic conditions for local communities. Enterprises based on tree and forest products need to be financially viable as well as environmentally and socially sustainable. The MA&D approach has 4 main stages which are outlined in Figure 5-12.

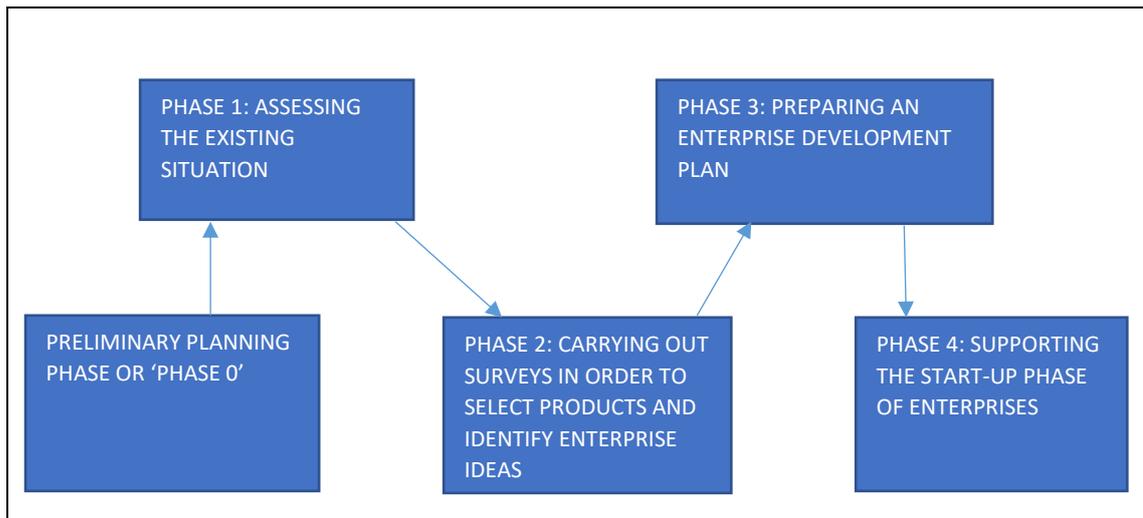


Figure 5-12: Stages in the MA&D approach. Source: FAO, 2011.

An assessment of the existing situation is meant to identify realistic enterprise prospects, with the aim of providing an overview of tree and forest resources and potentially marketable products and services, as well as of the constraints and opportunities for those resources, products and services. The net result will be a shortlist of potential resources and products. There is need to carry out surveys to assess the viability of short-listed forest products and the selection of those products and services most relevant to the new business. The formulation of an enterprise development plan that integrates all the strategies and services needed for the success of the new enterprise. Resource mobilization, and networking with business service providers. There is also need for continuous monitoring of operations and adjustments, as required, in the light of changes in any of the five areas of the business environment (i.e. market/economy/finance; environment; social/cultural; institutional/legal; and technology/product research and development).

The project should carry out detailed resource assessments for Masau, Ilala, Honey, Baobab, Marula, and Tamarind in that order of priority as part of situation analysis under the MA&D process.

5.7.2 SFM activities taking place/potential SFM

Muzarabani

The GEF 6 project has a component for the support of energy efficient methods of curing tobacco. The rocket and solar barns (whose estimated costs of construction is \$3 000) are potential candidates for consideration, which could help reduce the amount of wood energy used for curing tobacco and perhaps reduce pressure on natural forests. The project could support a few farmers to construct either of the two types of barns under the small grants scheme. These barns will act as part of demonstration on efficient use of wood energy for tobacco curing. The private sector should simultaneously be engaged with facilitation by the project in partnering farmers for construction of more energy saving barns some of which could be modelled around joint use of one barn by a group of farmers.

There is also need to consider alternative energy sources particularly for household use for example biogas. The CAMATERC design of biogas in Figure 5-13 below was found to be ideal for a family of 6-8

people although it is estimated cost of around US\$1 000 is beyond the reach of many rural communities. A revolving fund could be set up under the project whereby farmers receive financial and technical support to set up the biogas production facility and pay back after an agreed period. Criteria for selecting beneficiaries should be developed by the project including the beneficiaries' ability to pay back the advance and ownership of livestock, which produces the organic matter to feed the digester. The project should work with the Ministry of energy as well as NGOs such as Environment Africa on the alternative energy sources intervention.

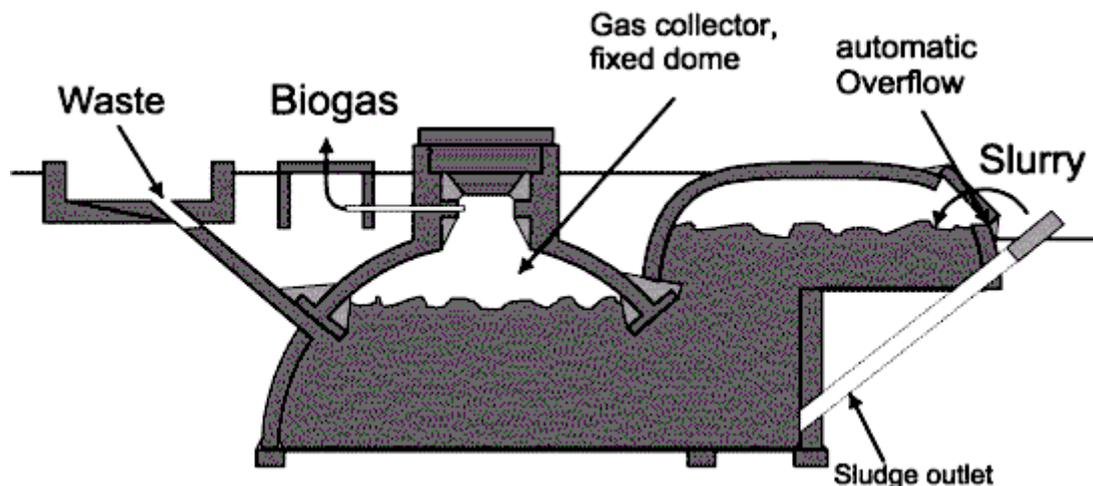


Figure 5-13: CAMATERC biogas production structure. Source: Environment Africa

Mbire

Detailed ecological assessments of Baobab and Masau to establish fruit quantities as part of situation analysis should be considered. Use of high resolution satellite imagery from Google earth and other methods to do inventories of Baobab trees to estimate the quantities of fruits that could be produced in a particular area is another consideration. It is estimated that a baobab tree produces 50-300 fruits per season. If the number of trees could be established it should therefore be possible to estimate annual fruit production. It is however important to take note of remarks from the community regarding reduced productivity of trees as a result of low rainfall probably caused by the Climate Change phenomenon. In addition, not all fruits on a tree would be accessed by people as wild animals such as elephants and baboons also thrive on the same fruits. Communities could realise incomes through production and marketing of Baobab powder and beverages as is happening at Gudyanga in Chimanimani district and Lukosi in Hwange district.

Tobacco growing should be discouraged as it is a potential contributor to deforestation as has happened elsewhere and promote the Sesame crop on existing fields and minimise on land clearing. Income from Sesame was said to be good, which is fetching a price of US\$1.00 per kg compared to the maize price of US\$0.25 per kg (US\$245 per tonne).

Review of the Natural Resources Management Plan as already proposed under the project should be supported.

Education programmes on fire and strengthen and/or promote establishment of fire committees and fire management plans at the ward level and where possible at village level. Support beneficiaries with basic firefighting equipment and promote use of local resources to make firefighting equipment. Also

promote use of local resources such as old tyres/rubber and heavy duty sacks to make firefighting equipment.

Hurungwe

Forest restoration and rehabilitation activities should continue and the setting up of a tree nursery under GEF 6 at Chitindiwa School in ward 8 is a welcome development. The proposed nursery should include fruit trees in its production plan, which could be planted by farmers for food security and for income generation in future and an incentive to care for the nursery. The Mango tree does well in Hurungwe and it would be good to promote this and other fruits under the project. From interactions with communities, it was noted that there are serious water challenges in the areas targeted by the project. Provision of water is therefore essential for interventions like nursery management and fruit tree planting.

There is however need to compliment the tree planting with beekeeping as intermediary income generating projects whilst farmers wait for their trees to mature. The restoration and rehabilitation programmes should be guided by the ten principles of good practice developed by FAO and given in Table 5-1:

Table 5-1: Ten Principles of good practice in forest rehabilitation and restoration

<ol style="list-style-type: none">1. Select a suitable site or landscape, including the analysis and evaluation of current land uses and land tenure/ownership, and identify involved stakeholders.2. Analyse and evaluate the drivers of deforestation or forest degradation.3. Engage stakeholders, discuss long-term goals of forest restoration considering the interests of all stakeholder groups, and draft a preliminary restoration/rehabilitation plan.4. Develop a restoration management plan, including:<ul style="list-style-type: none">• preparing a topographic land-use map, including a designation of forest functions, assessment of road accessibility, existence of natural regeneration and needs for planting;• agreeing on restoration/rehabilitation objectives• selecting the restoration/rehabilitation method• choosing the species to be used, and establishing a nursery and• assessing possible positive and negative social and environmental impacts.5. Collect seeds, produce seedlings in nurseries and prepare for planting.6. Plant trees.7. Assess capacity-building needs and plan for the necessary training.8. Establish realistic time schedules and plan for financial requirements.9. Monitor restored/rehabilitated areas, and conduct maintenance activities as required10. Consider possible climate-change impacts.
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Forest restoration programmes contribute to SDG 13 (Climate action) and SDG 15 (Life on Land)

During the field mission, the Forestry Expert visited ward 13 to appreciate how farmers were implementing their beekeeping projects. The WWF supported projects in ward 13 has capacitated 252

beneficiaries to generate income from production and selling of honey. Beekeeping projects have also inculcated a culture of protecting local woodlands as well as planting of trees, which are the source of forage for bees thus indirectly contributing to forest restoration and rehabilitation. With a hive occupancy of 70%, it would seem like swarms are available in this part of the district. This could be more so in wards 7, 8 and 9 given their proximity to the forage rich Pfundundu and Mukwichi Conservancies. The production of honey using the Kenyan type of hives should be considered under the project as there is scope for aggregation with existing projects for possible collective marketing. The MA&D approach is recommended for the honey value chain development. Look and learn visits to ward 13 could be organised for beneficiaries under the project.

There is need to have clear boundaries to avoid further encroachment for tree cutting and settlement in the two conservancies. This could be achieved through engagement of communities followed by erecting fences along boundaries with communities. Management at the two conservancies is for the idea of putting up fences along the boundaries without relocation of any settlers to minimise conflicts.

Evaluate procurement of a borehole drilling rig against seeking tenders for drilling of boreholes in the entire project area. There is shortage of water in the area, provision of the resource will not only improve water availability for game but also for people and their economic activities such as horticulture, fisheries as well as irrigation of field crops.

5.7.3 Collaboration in SFM activities

For effective SFM activities, collaboration with and among stakeholders in the sector is an important consideration. Some of the stakeholders in the forest rehabilitation and restoration activities are:

Tree Eco

They are in partnership with the Forestry Commission for growing, distributing and planting of indigenous and exotic fruit trees throughout Zimbabwe. Tree Eco has helped the resuscitation of nurseries at Fuller Forest and Watsomba.

Provides training on planting, maintaining and harvesting of trees using the specially produced Tree Eco manual. As a private sector entity they could implement activities at a faster rate.

Sustainable Afforestation Association

The Sustainable Afforestation Association (SAA) was established in 2013 by the tobacco merchants of Zimbabwe, with the purpose of tackling the effects of deforestation in Zimbabwe.

Although not the biggest contributor, the indiscriminate felling of forests for the curing of tobacco is a significant factor in deforestation. Recognising the environmental impact and the potential shortfall of timber with which to cure tobacco, The Tobacco Merchants in the country came together and decided to fund an Association through the voluntary payment of a levy, payable against the value of each member's purchases of tobacco from growers. The levy is set at 1.5% to enable SAA to plant approximately 3 500Ha per annum of trees, principally *Eucalyptus*.

The planting of trees has been SAA's focus since its inception, but the Association's Constitution lays out objectives which broaden its potential activities beyond the planting of trees:

- a. to provide a sustainable source of timber for use in the tobacco industry in Zimbabwe;
- b. to investigate and implement strategies for the conservation and rejuvenation of existing indigenous and commercial forests; and

c. generally to undertake such activities and projects directly or indirectly relating to the provision of sustainable sources of timber and the conservation and rejuvenation of existing timber resources, as shall be additional or incidental to attainment of the objects referred to in Clause a and b.

Forestry Commission

The Forestry Commission has a joint management committee with Tree Eco for establishment of nurseries, raising and distributing seedlings for planting.

Under GEF 6, the Commission is a Responsible Party and is going to set up 3 nurseries at Chitindiwa School in Hurungwe, Madzomba (Mbire) and Mavhuradonha Wilderness Area in Muzarabani.

Seeds of various indigenous trees have been collected in Mbire and Beitbridge for propagation in the proposed 3 nurseries. The Commission is in the process of preparing a bill of quantities for procurement of nursery material by the GEF 6 project.

Propose beekeeping in the Mavhuradonha Wilderness Area for commercial honey production as well as for HWC management through bees, which are feared by elephants.

The Masau processing centre in Centenary should be revisited with a view of resuscitated it for value addition to Masau fruits.

There is need for timely procurement of material and equipment for use in the project since seedling production and tree planting are time bound; “you miss the timing then you have missed a whole season”. Effective internal communication within the Forestry Commission and with the Project Management Unit will assist in the processing of Bill of Quantities and expeditious procurement of inputs for the project.

Pilot REDD+ project

The project area shows potential to develop a REDD+ project. The area has high deforestation rates mainly from tobacco curing and the emerging and fast-growing charcoal production. Even though parts of the entire project fall in Kariba REDD project, the area which is outside the existing REDD+ project has huge potential. The forest inventory exercise which was conducted by Forestry Commission in April has shown that the average carbon stocks in the area ranges from 15 -25t/C/ha. Proper steps of developing a REDD+ needs to be followed if the project is to pursue this opportunity.

- There is need to develop a forest monitoring system for the conservancies and the project area at large that is participatory and bottom up. There is certain information which cannot be easily detected by satellites; hence locals can collect data and information that will be sent to the centralised server for further processing. Given that satellite images are freely available; production of land cover maps on a yearly basis is recommended. Capacitation of RDCs personnel to play an active role in data collection using monitoring tools like ODK and tree identification application is also recommended.
- There is need to conduct a study to identify drivers of deforestation and forest degradation so that the approaches can be specific and targeted. However, Forestry Commission conducted in nationwide study on drivers of deforestation in February 2019 (funded by the UNDP which pointed out settlement expansion as a major driver. It's worth doing at project level as circumstances differ.

6. Sustainable Land Management

The UN 1992 Rio Earth Summit defined Sustainable Land Management as “the use of land resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions.”²¹ Sustainable Land Management addresses issues of degradation of water, soil and vegetation, as well as the emission of greenhouse gases (GHGs) that contribute to climate change. In this baseline issues considered under SLM are land degradation (gullies and fires), water resources and climate smart agricultural practices. These aspects are outlined below.

6.1. FIRES

There has been a general increase in the occurrence of veld fires in the project area with a total of 172 814ha burnt in 2018 (Figure 6-1). The majority of these fires were recorded in ward 7 of Hurungwe and ward 4 of Mbire. Generally, areas adjacent to National Parks and Safari Areas frequently experience veld fires as a result of poaching. According to the Hurungwe Local Environmental Action Plan (LEAP) document, some veld fires occur as result of Problem Animals Control as villagers use fire to chase away dangerous animals such as lions. In the resettlement areas, land clearing for agriculture is the major cause of veld fires while inland wards along the Chirundu highway, experience veld fires as a result of roadside activities such as smoking, overnight fires at bus stops, vehicle accidents and spillages of flammable substances. Over the years, animal and human lives were lost and interventions that include the construction of fireguards, integrated community conservation projects, training of community fire brigades and awareness programmes. Despite all these efforts veld fires have become a perennial challenge. The use of more sophisticated fire- fighting equipment such as helicopters and fire tenders especially in the protected areas will go a long way in extinguishing fires in some of the most inaccessible areas. Behaviour change is also key to influence environmentally sustainable practices that prevent the occurrence of veld fires.

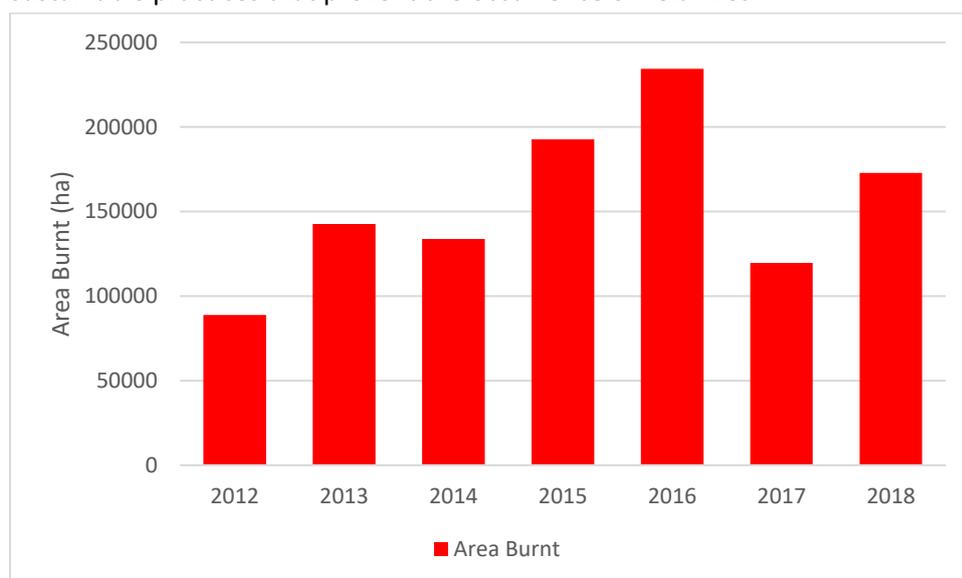


Figure 6-1: Fire Trends in the project area 2012 -2018

²¹ <https://knowledge.unccd.int/topics/sustainable-land-management-slm> downloaded 21/06/2019 at 443pm

Fire frequency for the project area (Figure 6-2) was conducted using historical fire information. Fire points for the past 10 years were used to identify areas that have a very high fire frequency. Fire frequency was highest in Mukwichi conservancy while Pfundundu and Mbire North also record more frequent fires. Human encroachment in Mukwichi is contributing to the high frequency through increased land clearing and poaching. Management of veld fires should therefore be concentrated in the high frequency areas.

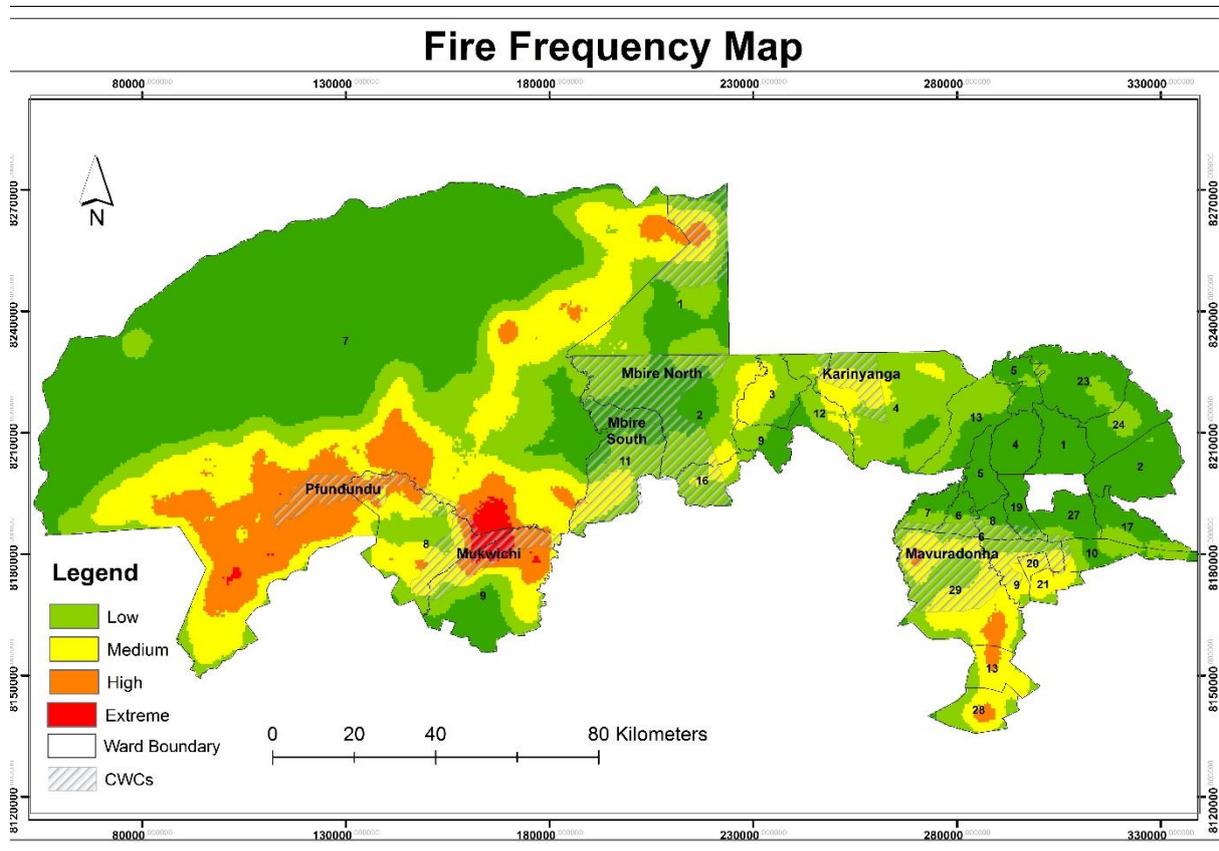


Figure 6-2: Fire Frequency Map for the Project Area including Hurungwe, Mbire and Muzarabani Districts

6.2. GULLY EROSION

Gully erosion is a widespread problem in Zimbabwe mostly driven by mechanical and chemical means that include poor soils (sodic and shallow Kalahari sands), deforestation, poor road construction and unsustainable agricultural activities. Within the project area, gully erosion is common in the communal and resettlement areas. Mapping in the protected areas was constrained by some traditional practices that regarded some areas as sacred or no go areas for women. Such areas include ward 27 of Muzarabani around the Dangarembizi area and some areas that were habitat to dangerous animals. Conservancies in Hurungwe and Muzarabani are highly prone to gully erosion as a result of deforestation for tobacco curing. In Mbire major infrastructure threatened by gullies in the district include Chitsungo mission Hospital, Mushumbi Pools Growth point, Neshangwe primary school, Masomo primary school, Dande Bridge Mushumbi, Majinga primary school (EMA, 2016). The Zambezi valley wildlife area has the least erosion hazard due to the presence of vegetation cover.

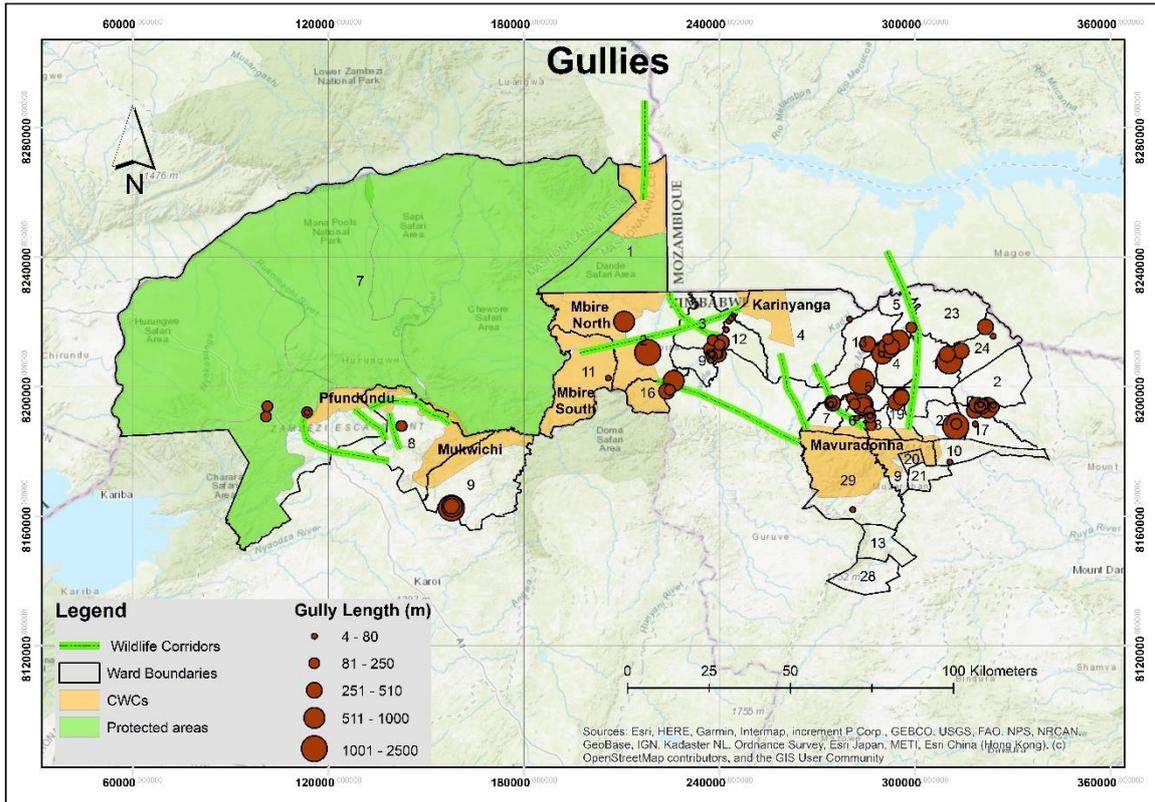


Figure 6-3: Gully erosion in the GEF 6 project area including Hurungwe, Mbire and Muzarabani

6.3. ENCROACHMENT

Human encroachment was evident in Mukwichi (Figure 6-4) and Mavhuradonha (Figure 6-5) conservancies. In Mukwichi, the local authority made efforts to regularise the settlements by creating a 1 km buffer with the new park boundary. Despite this regularisation encroachment continues beyond the 1 km buffer. Encroachment within the conservancy poses great human-wildlife conflict and affects tourism.



Figure 6-4: Encroachment in Mukwichi Conservancy



Figure 6-5: Encroachment in Mavhuradonha Conservancy

6.4. WATER RESOURCES

The project area lies within Manyame catchment and is characterised by numerous rivers. Most of these rivers are seasonal and have been silted due to poor land management practices such as stream bank cultivation and deforestation. Stream bank cultivation is fuelled by encroachment and competition for wet points to establish tobacco nurseries. Potential ground water development for primary water supply for the project area is low (Owen 1989). However, there is considerable potential to harness surface water as evidenced by the water harvesting mechanism around Njedza Mountains in Muzabarani. A borehole with highly polluted water was mapped in ward 27 of Muzarabani district. It is likely that the source of pollution is natural and testing of this water is recommended to safeguard the health of the community. Natural wetlands are scarce in the area but key to note are at the Mana Pools National Park that houses wetlands of international importance and the iconic Njedza wetland whose water is harvested from the mountains. Figure 6-6 illustrates location of the wetlands in the project area.

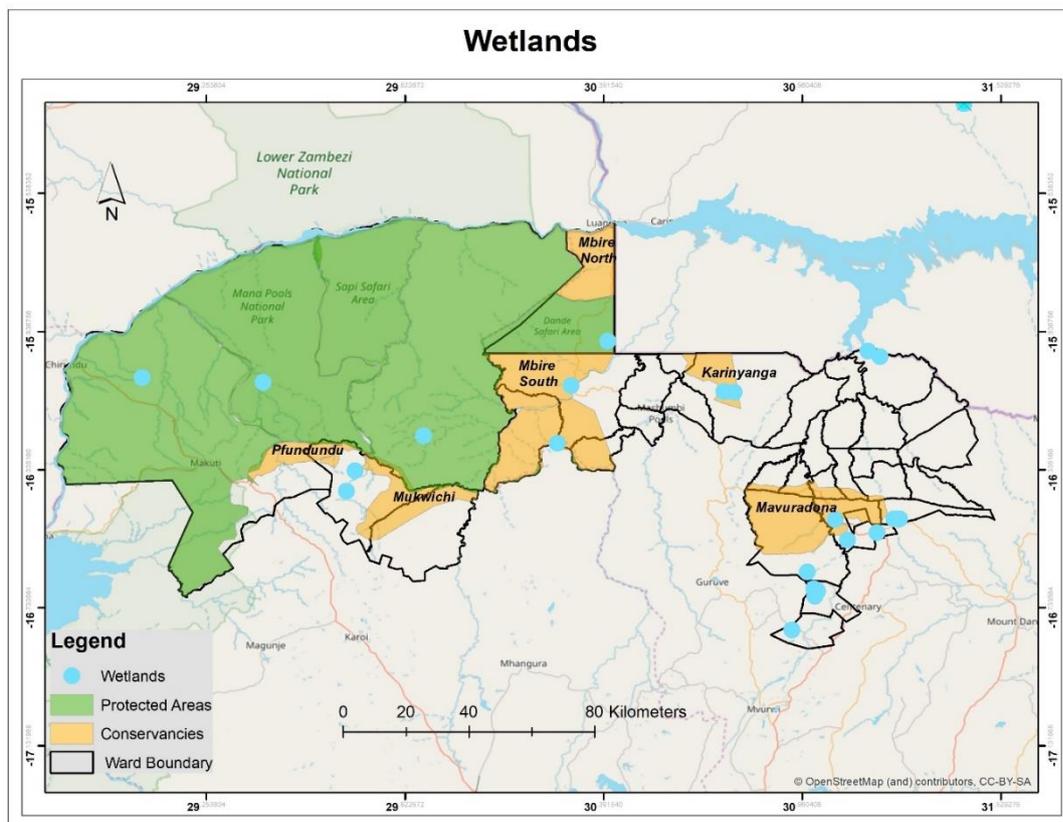


Figure 6-6: Wetlands in the GEF 6 project area including Hurungwe, Mbire and Muzarabani districts

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7. Community Wildlife Conservancy Profiles

7.1. SIZE, BOUNDARIES, BENEFICIARY WARDS, PARTICIPATING WARDS, PRIVATE SECTOR

There are six Community Wildlife Conservancies covered in this baseline survey. Their boundaries and sizes were assessed by the mapping team while the beneficiary wards were identified based on information in the Project Document and assessment of the maps for those wards directly bordering the CWCs. Participating wards were identified as those wards that are not directly next to the CWCs but experience costs of living close to wildlife areas such as human wildlife conflict as they are within wildlife corridors. The size for each CWC was calculated using GIS figures. The private sector operating within the CWCs was identified through the Project Document, consultations with the Project Team and RDC stakeholders. These are presented in Table 7-1 and Figure 7-1 respectively.

Table 7-1: Table showing the districts, CWCs size, wards and Private sector

District	CWC	Size (ha); Prodoc: Baseline	Beneficiary wards	Participating Wards	Private Sector
Hurungwe	Pfundundu	30000; Baseline: 20,217.1	7	26, 4, 1	Hurungwe Safaris -Jan Stander (Contract with RDC); IAPF - Damien Mander (33% shareholder-Funder & Active Partner)
	Mukwichi	Prodoc: 20,000 Baseline: 46,201.2	8, 9	26, 4, 1	HHK Safaris- Graham Hingeston
Mbire	Karinyanga (Mbire East Concession)	Prodoc: 32,500 Baseline: 17,400	4, 12	3	Mr. Myles McCallum, Charlton McCallum Safaris
	Kanyurira (Mbire South Concession)	Prodoc: 60,000 Baseline: 65,572.9	2, 11	?2, 11, 16	HHK Safaris- Graham Hingeston
	Mbire North	Prodoc: 132,000 Baseline: 135,401 (Includes 10,000 under Chitsere; 48,280ha earmarked as AWF operational area)	1, 2, 11	?1,2, 11	Mr. Myles McCallum, Charlton McCallum Safaris
	Mbire North Chitsere	Prodoc:10,000 Baseline: 8,000	1	1	Huchi Tsere Pvt (Ltd) - Will Maberly, Squirrel Meredith, Will Battershill ; Mbire Community Conservation Trust- WL Battershill, CD Meredith
Muzarabani	Mavhuradonha Wilderness Area	Prodoc: 60,000 Baseline: 70,274	5, 6, 7, 8, 9, 10, 13, 17, 19, 20, 27, 28, 29	1, 3, 4, 23	Varden Safaris - James Varden; Nzou Safaris - George Seremwe (Shadow Financier -Andrew Henderson)

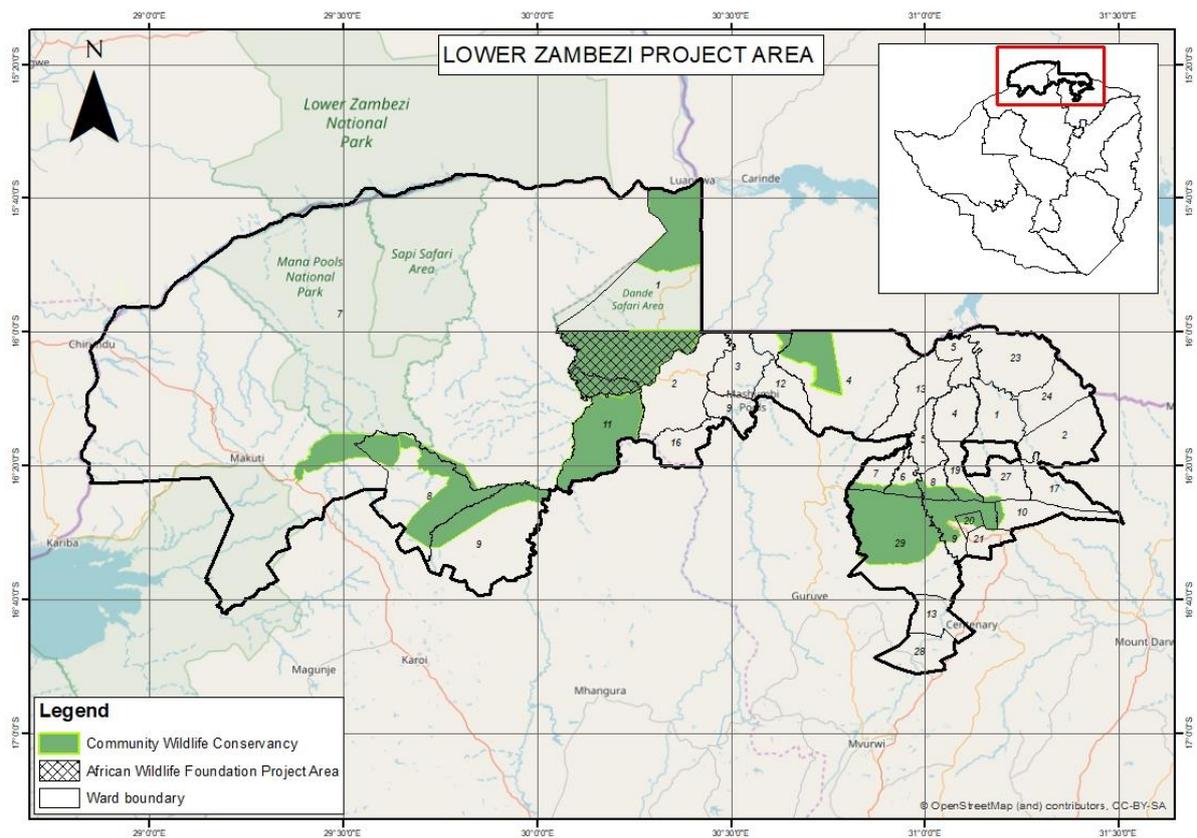


Figure 7-1: Map showing the six CWCs and wards in the three districts of Hurungwe, Mbire and Muzarabani

7.2. WILDLIFE- POPULATION

The results of the last aerial census (Dunham et al., 2015) done in 2014 across the Protected Areas showed that the population of key wildlife species that are important for the trophy hunting industry such as elephants, buffalos, eland and sable is quite low (Table 7-21). This was also the case for some of the surveyed communal areas where 366 elephants and 400 buffalos were recorded in Dande while 80 elephants and 100 buffalos were recorded in Mukwichi. These numbers are a cause for concern especially for the source areas (Chewore and Dande Safari Areas) for some of the Community Wildlife Conservancies in the project area. The last lion surveys (Loveridge, 2016) were done in 2016 and there were an estimated 267 lions in the project area (see Table 7-2). There is currently no wildlife population monitoring in the proposed Conservancies but key informant interviews with Safari Operators in the three districts revealed that the wildlife populations and trophy quality has been declining across all the conservancies and this has reduced the benefits that the communities previously received from the CAMPFIRE programme. This decrease in wildlife populations may have been caused by activities such as poaching and overhunting that happened some years back but whose effect on wildlife populations is being felt now as seen in the limited offtake due to unavailability of mature trophy animals. Effects of climate change such as water scarcity may also have contributed to a decline in wildlife populations. The land reform programme may also have contributed to a decrease in wildlife populations with people settling into A2 farms that were former wildlife areas for Hurungwe and Muzarabani.

Table 7-2: Population estimates for key herbivore species (2014 survey) and lions (2016 survey) in the Zimbabwe Parks and Wildlife Management Authority Estates in Zambezi Valley.

	Mana Pools	Hurungwe SA	Sapi	Chewore	Charara	Doma	Dande	Total
Elephant	2984	2698	578	3303	36	153	1082	10834
Buffalo	3465	2159	0	706	0	0	0	6330
Crocodile	399	9	121	0	0	0		529
Eland	136	9	0	0	0	0	0	145
Zebra	121	109	0	280	17	0	0	527
Sable	0	0	43	6	75	0	0	124
Hippo	2122	398	288	0	113	0	0	2921
Lion	58	32	--	32	--	--	21	267

During focus group discussions the communities confirmed that wildlife populations in the three districts were declining. They pointed out that the causes of population decline included poaching mainly through large-scale snaring of wildlife for meat, skins and external ivory poachers. The effect on wildlife populations is compounded by the major and escalating threats of human-wildlife and land use conflicts.

For their hunting concessions Charlton MacCallum Safaris estimates that there are roughly about 2 500 buffalos and 1 500 elephants in Mbire North and Dande S.A, while Mbire East has about 200 buffalos and 200 elephants (Table 7-3).

Table 7-3: Current wildlife population estimates for Charlton MacCallum concessions

Species	Mbire North & Dande S.A	Mbire East
Buffalo	2 500	200
Bush buck	200	6
Bush pig	200	30
Crocodile	100	30
Eland	50	10
Elephant	1 500	200
Hippopotamus	100	30
Hyena	150	50
Impala	500	100
Klipspringer	100	6
Kudu	500	150
Leopard	120	5

Lion	80	10
Roan	20	120
Sable	50	100
Warthog	500	30
Waterbuck	40	0
Zebra	150	10

The wildlife population in the Mavhuradonha Wilderness Area is increasing due to the restocking exercise that is currently taking place in the western part of Mavhuradonha Wilderness Area in the Varden Safaris concession. This exercise has to date brought into the area about 144 blue wildebeest among other wildlife species including roan, impala, zebras and giraffes.

The household interviews revealed that the wildlife species that communities come across more often in the three districts include baboons, elephants, hyenas, lions, monkeys and hares (Figure 7-2).

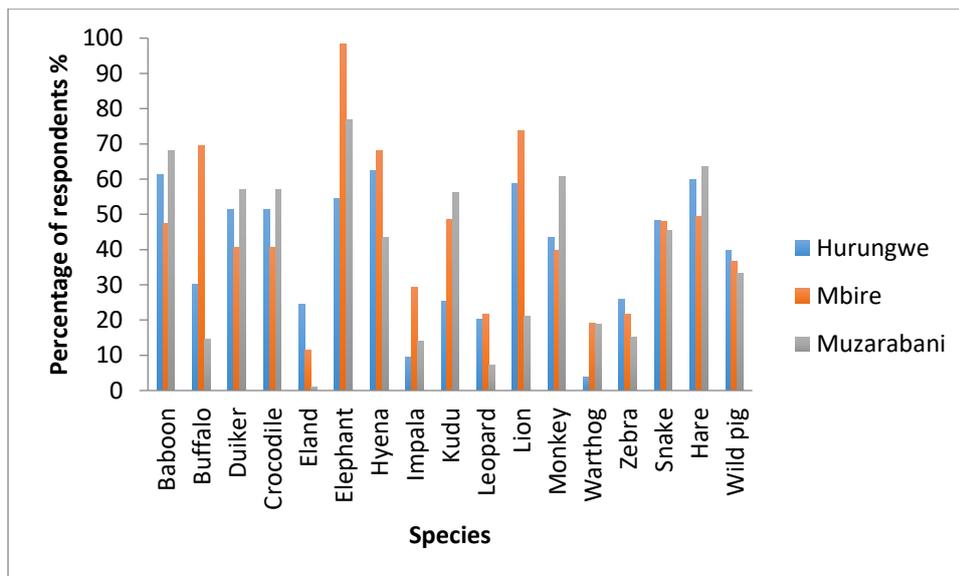


Figure 7-2: Wildlife species mainly seen by communities in the three districts; Hurungwe, Mbire and Muzarabani.

7.3. WILDLIFE CORRIDORS, MOVEMENT AND CONNECTIVITY

The Community Wildlife Conservancies in the project area can play an important role in wildlife conservation by providing protection to essential dispersal areas and migratory corridors outside the formal protected area network. However due to the increasing human population in the project area more land is being demanded for agricultural purposes and as a result people have settled in areas previously used by wildlife. A landscape with high connectivity is one in which individuals of a particular species can move freely between suitable habitats, such as favoured types of vegetation for foraging, or different habitats required for foraging, water and shelter. Alternatively, a landscape with

low connectivity is one in which individuals are severely constrained from moving between selected habitats. The wildlife corridors in the three districts were assessed to understand the level of connectivity and constraints to wildlife movement.

7.3.1. Muzarabani District

There are four major wildlife corridors in the northern part of Mavhuradonha Wilderness Area connecting the wilderness area to wildlife areas in Mbire district and Mozambique (Figure 7-3).

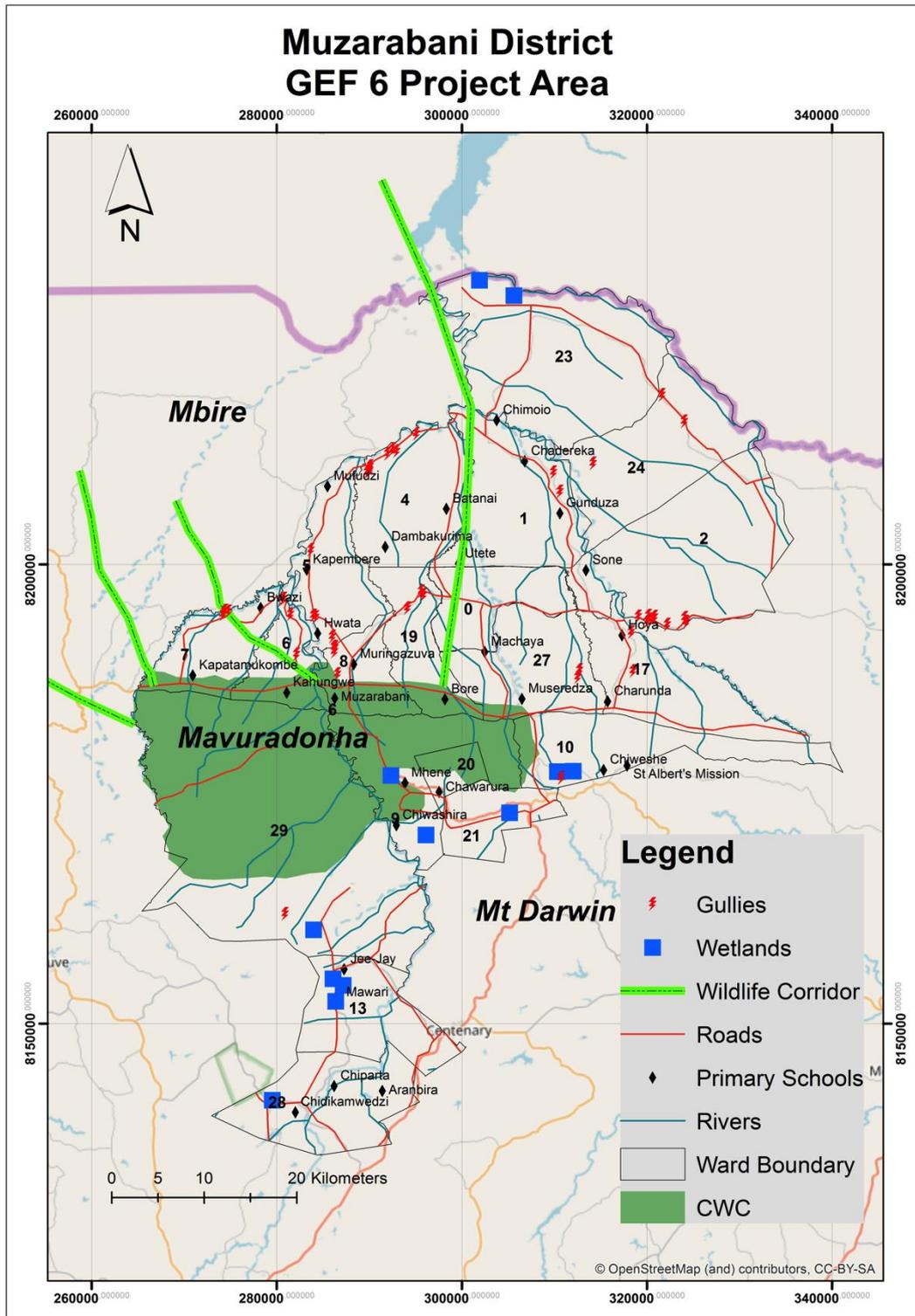


Figure 7-3: Wildlife corridors in Muzarabani district and Mavhuradonha Wilderness Area

One of these corridors “*Gwara renzou*” in Ward 7 is a conflict hot spot as it passes through homesteads and crop fields. Signs (spoor and dung) of elephants, kudu, baboon, bush pig and common duiker presence were found along this corridor. Elephants often pass through this corridor (Figure 7-4) destroying crops in the fields and raiding crop barns. On the 13th of May 2019, a day before the team’s

field visit, elephants had raided some maize cobs that were stored in a barn at one of the homesteads along the corridor.



Figure 7-4: Elephant dung next to a homestead that is located in the “*Gwara renzou*” wildlife corridor in Ward 7, Muzarabani district

Apart from elephants, large carnivores such as lions and hyenas use this corridor as well and predate on livestock for example cattle, goats and donkeys and this is also a source of conflict. The livestock pens at the homesteads visited are poorly constructed and this increases the susceptibility of livestock to predation by lions and hyenas. These carnivores scare the livestock, which panics, and escape from the kraal thus making it easier for the predators to attack. In ward 6 there is a wildlife corridor that passes through some homesteads and crop fields. Again the level of human-wildlife conflict especially elephant conflict is also high along this corridor.

The corridor passing through Ward 27 is a conflict hotspot in Muzarabani district. The villagers living along this corridor have been battling with elephants for many years. They used to make noise to chase elephants away from their homesteads and fields but this is no longer effective, as the elephants don't run away anymore in response to the noise. During the household interviews 18% of the respondents from Ward 27 had experienced attacks from wild animals, 73% had their crops destroyed by wild animals while 57% lost their livestock to wild animals. Crop destruction by elephants is having a huge impact on the crop yields and community livelihoods (Figure 7-5). Elephant movement along these corridors occurs throughout the year implying that conflict can also potentially occur year round. The methods that are currently being used to deal with the elephants that come into conflict with humans is by scaring the elephants away or by lethal means (shooting), which is carried out by the council scouts and the Safari Operator.



Figure 7-5: A farmer’s field after crop raids by elephants in Ward 27, Muzarabani district.

7.3.2. Mbire district

Of the three districts in the project area, Mbire has the highest levels of human-wildlife conflict as a number of communities have settled in wildlife corridors (Figure 7-6) and this exposes them to wildlife on a daily basis.

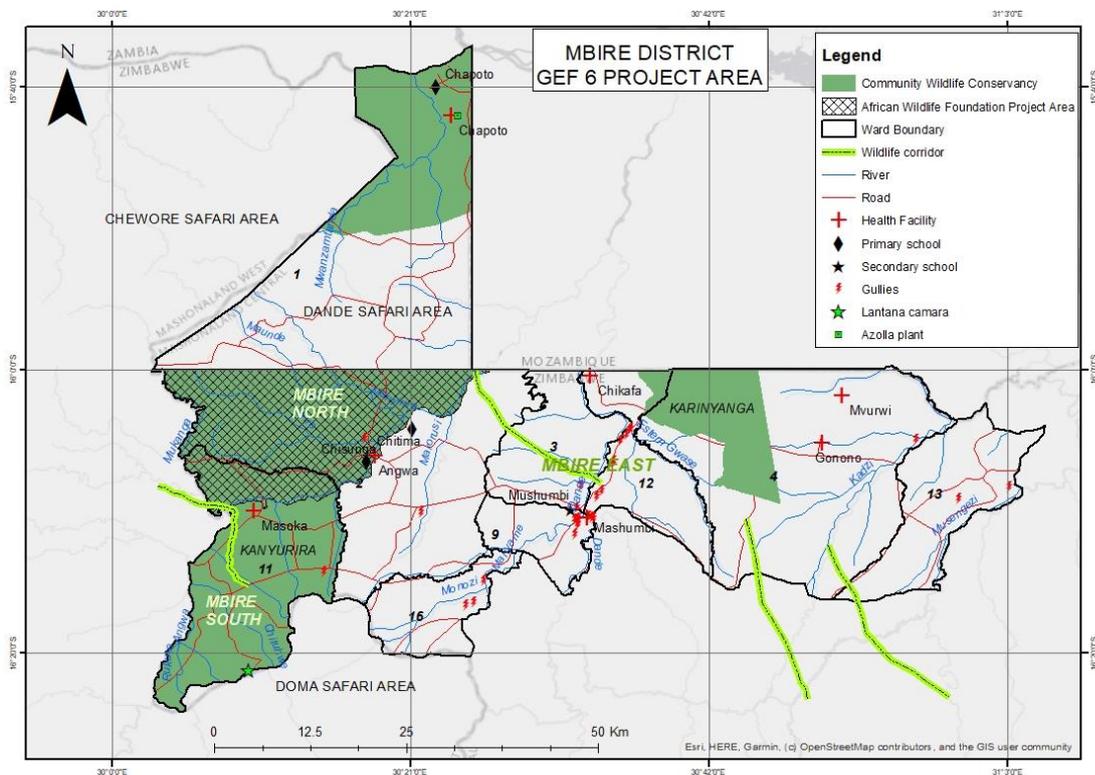


Figure 7-6: Wildlife corridors in Mbire district and the CWCs of Mbire North, Kanyurira and Karinyanga

The wildlife corridor in the Gonono area and Karinyanga Conservancy passes through some homesteads and signs (spoor and dung) of elephant presence were found along this corridor. The elephants pass through this area on their way to wildlife areas in Mozambique. The villagers have adapted to living with elephants by planting sesame (*Sesamum indicum L.*), which is a cash crop that elephants do not eat, and in this way the community avoids loss of crops to elephants while earning a living from selling the sesame.

Another wildlife corridor was found in the Madzomba area. This corridor comes out of the Shange Conservancy and goes to Karinyanga Conservancy. There are homesteads and crop fields along this corridor, which increases chances of conflict between humans and wildlife. The wildlife corridor between Ward 2 and 3 is being used by wildlife for movement from Kanyurira Conservancy through Shange Conservancy to Karinyanga Conservancy and Mozambique. There is another corridor in Ward 2 that connects Kanyurira to Shange then Karinyanga and Mozambique wildlife areas. There are homesteads and crop fields in this corridor as well and there have been reported cases of elephant and lion conflict in the area. The cattle kraals are also poorly constructed (Figure 7-7) and this puts the cattle at risk of predation by carnivores like lions and hyenas.



Figure 7-7: This poorly constructed cattle kraal in Ward 2, Mbire district places cattle at risk of predation by lions and hyenas

Ward 11, which borders Kanyurira Conservancy, is one of the human-wildlife conflict hotspots in Mbire district. The homesteads and crop fields are right in the elephant corridors that connect Chewore South Safari Area to Kanyurira Conservancy. The elephants would be seeking food in Kanyurira and refuge in Chewore and they also pass through human settlements on their way to Angwa River to drink some water. The community here encounters elephants on a daily basis and every year they lose their crops to elephants (Figure 7-8).



Figure 7-8: Elephants raided a cotton field in Ward 11, just at the edge of Kanyurira Conservancy, Mbire district

The wildlife corridor in Ward 1 is being used by elephants to move from Chewore North Safari Area through Mbire North and into Mozambique. This corridor passes through human settlements and crop fields. We found signs of elephants along the corridor. There are some plans for a town development in Kanyemba and that can potentially impede wildlife movement and use of wildlife corridors in this area. There is another wildlife corridor in Ward 1 that connects Chitsere Conservancy to Lower Zambezi National Park in Zambia. This corridor passes across the Zambezi River and elephants are often seen crossing the river and moving between Zimbabwe and Zambia.

7.3.3. Hurungwe District

The wildlife corridors in Hurungwe district are being used by elephants and other wildlife species to move between Pfundundu Conservancy, Mana Pools National Park and the surrounding wildlife areas, as well as the communal lands (Figure 7-9).

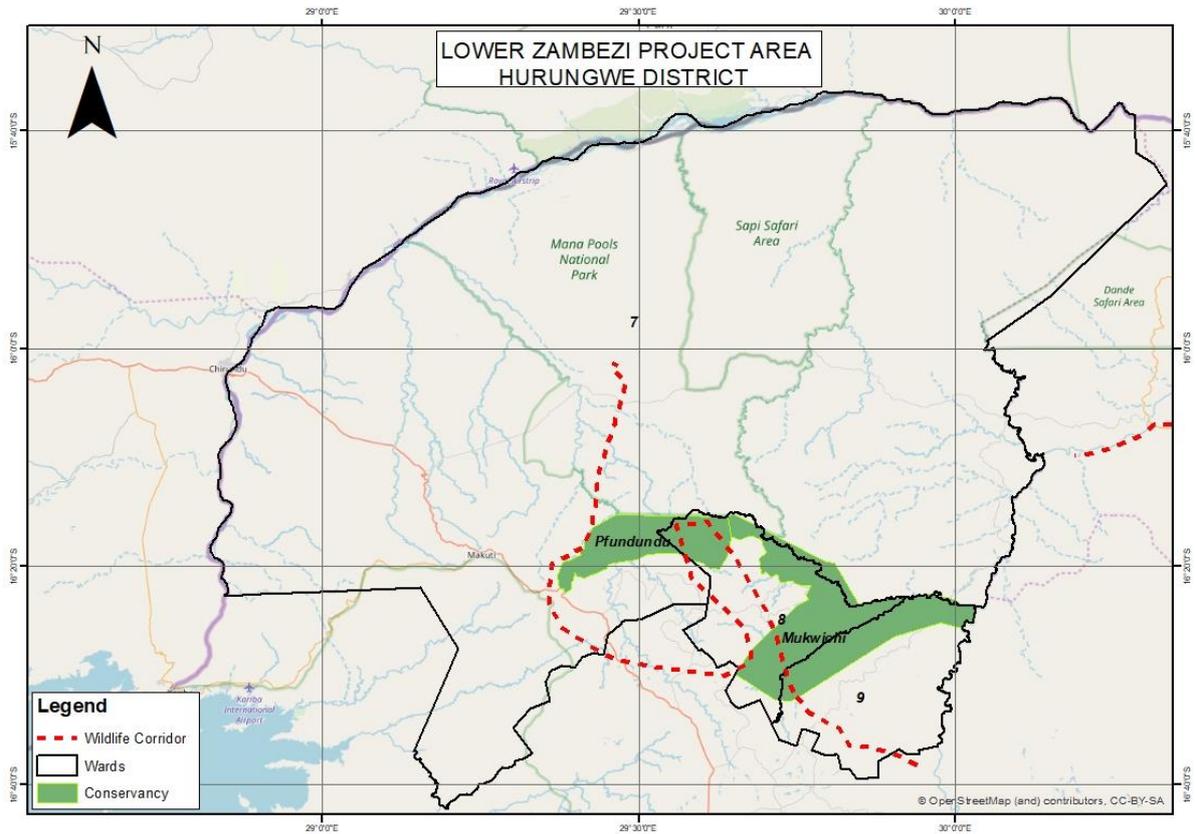


Figure 7-9: Wildlife corridors in Hurungwe district and the CWCs, Pfundundu and Mukwichi.

The wildlife corridor in Ward 7 passes through human settlements and crop fields (Figure 7-10). The wildlife, especially elephants often move from Charara Safari Area, through communal lands to Pfundundu Conservancy and into Mana Pools National Park. Another corridor in Ward 7 also passes through human settlements and crop fields and there are often cases of conflict with elephants when they raid crops in the fields. In ward 8 there is a wildlife corridor that animals use to move between communal lands and Pfundundu and into Mana Pools National Park. This corridor is often used by elephants and elands that move into the communal lands during the night to raid crops and go back into Pfundundu. This area is a conflict hotspot as the community settled right at the edges of Pfundundu Conservancy and there is no buffer between human settlements and the Conservancy.



Figure 7-10: Crop fields in Ward 8 that are at the edge of Pfundundu Conservancy, Hurungwe district.

Overall for the three districts there is an intersection between human settlements and wildlife corridors, which has contributed to the human wildlife conflict situations outlined in the above sections. Figure 7-11 below shows the distribution of settlements, wildlife corridors and the CWCs.

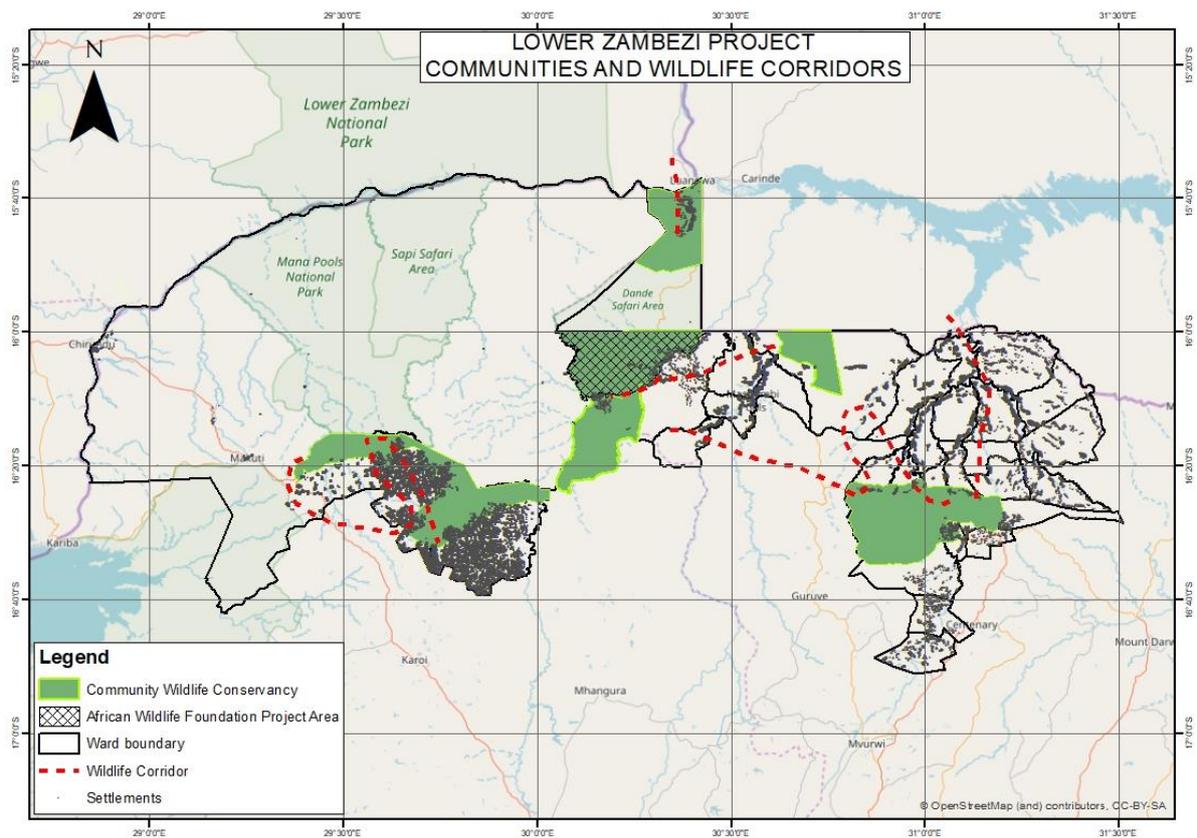


Figure 7-11: Map showing the settlement patterns, CWCs and wildlife corridors for the three districts of Hurungwe, Mbire and Muzarabani

The overlap in human settlements and wildlife areas including wildlife corridors has resulted in human-wildlife conflict hotspots and these are mostly found in Hurungwe (wards 8, 9); Mbire (wards 1, 2, 3, 4, 11 and 16) and Muzarabani (wards 27, 5 and 3) (Figure 7-11).

7.4. HABITAT STATUS AND WATER AVAILABILITY

Wildlife habitat is characterised by both physical and biological features including vegetation type and cover, terrain, water sources, soils and food. For this baseline survey vegetation cover, water availability and terrain were the main factors considered in the habitat status assessment.

7.4.1. Hurungwe district

The habitat in Pfundundu Conservancy is generally good and supports a wide range of wildlife species. The vegetation is mainly bushland composed of *Combretum/Terminalia* and miombo. There are a few small dams and pans in Pfundundu but these had very little water, which might not last through the dry season. Rukomechi River is one of the largest rivers in the area and it passes through Pfundundu Conservancy, however this river was dry. The terrain in Mukwichi Conservancy is very rugged and the habitat might not favour some smaller plains game species but is suitable for elephants and buffalos and other large carnivores especially leopards. The vegetation cover for Pfundundu and Mukwichi are shown in Figure 5-6 under Section 5.1.5. There is Shamrock Dam, which lies in the Mukwichi

Conservancy this is a source of water for wildlife and the community as well although its suitability for human use needs to be assessed.

7.4.2. Mbire district

The district has a total of six major rivers namely, Zambezi, Mwazamutanda, Angwa, Manyame, Dande and Musengezi. However only Zambezi and Manyame Rivers are perennial and provide water for wildlife throughout the year. The habitat quality across all three Conservancies; Karinyanga, Mbire North and Kanyurira is quite good and suited for a range of wildlife species. This is largely mopane woodland. However water is a major concern across the three Conservancies, there are a few sources of permanent water (mainly rivers) for wildlife. Some of the rivers that pass through the Conservancies dry up as soon as the rainy season ends. Most of these rivers and streams drain into Angwa River but the greater part of Angwa River that passes through these Conservancies was already dry by May. There are also a few water pans that hold water during the rainy season but they start to dry up as the dry season progresses. Karazi Dam in Karinyanga Conservancy is large and is one of the major sources of water for wildlife in the Conservancy.

7.4.3. Muzarabani district

The decline in habitat quality and the water shortages in some parts of the Mavhuradonha Wilderness Area are causing wildlife population to decline. Elephants are no longer resident in the area. There is a lot of movement with elephants going to Mozambique and Mbire district to seek for food, shelter and water causing conflict during these movements as people have settled in the corridors that elephants use. Water sources for wildlife in Muzarabani district include Muzengezi River and Mukorodzi River. The Southern part of Mavhuradonha Wilderness Area has more water sources than the north with a number of springs and streams scattered across the Conservancy. The northern part of Mavhuradonha Wilderness Area is quite hilly and this puts a restriction on the wildlife species that can occupy this area as smaller plains game like impala are not suited to this kind of habitat. The southern part is however flat and has high quality grazing areas. The vegetation is bushy grasslands interspersed with vleis and miombo woodland making this area well suited for all wildlife species including, wildebeest, zebras, impalas and giraffes.

The Safari operator is clearing fireguards using mechanical and chemical (herbicides) means. It is important that these are used with caution because depending on type, some (especially the persistent type) can remain active in the environment for long periods of time potentially causing soil and water contamination and adverse effects to non-target organisms. In some cases, compounds that result from herbicide degradation may continue to be significantly toxic in the environment.

7.5. HUMAN-WILDLIFE CONFLICT

Human-wildlife conflicts are a global problem, and are occurring in many countries where human and wildlife requirements overlap. Conflict occurs when the needs of wildlife encroach on those of human populations or the needs of human populations encroach upon those of wildlife. In the three districts of the project area, a high level of human-wildlife conflict is threatening wildlife resources and conservation efforts. The conflicts in these three districts are in various forms, but mainly wildlife species injuring or killing humans and livestock and wildlife species raiding crops. Mbire district is one

of the best models for an effective and successful CAMPFIRE initiative in the country. The communities in Mbire district especially those that live close to hunting areas appreciate the value of wildlife in their area and this is one of the districts in the country where the communities are receiving tangible benefits from wildlife and CAMPFIRE. Communities encounter wildlife especially elephants on a daily basis and have learnt to live with wildlife, although there are costs involved.

7.5.1. Loss of human life

The household interviews showed that of the 583 respondents, 6% in Hurungwe, 19% in Mbire and 12% in Muzarabani district had either been injured by a wild animal or had a member of their household injured or killed by a wild animal. The animal species involved in the attacks were baboons, buffalos, crocodiles, elephants, leopards, lions, warthogs, snakes and wild pigs (Figure 7-12).

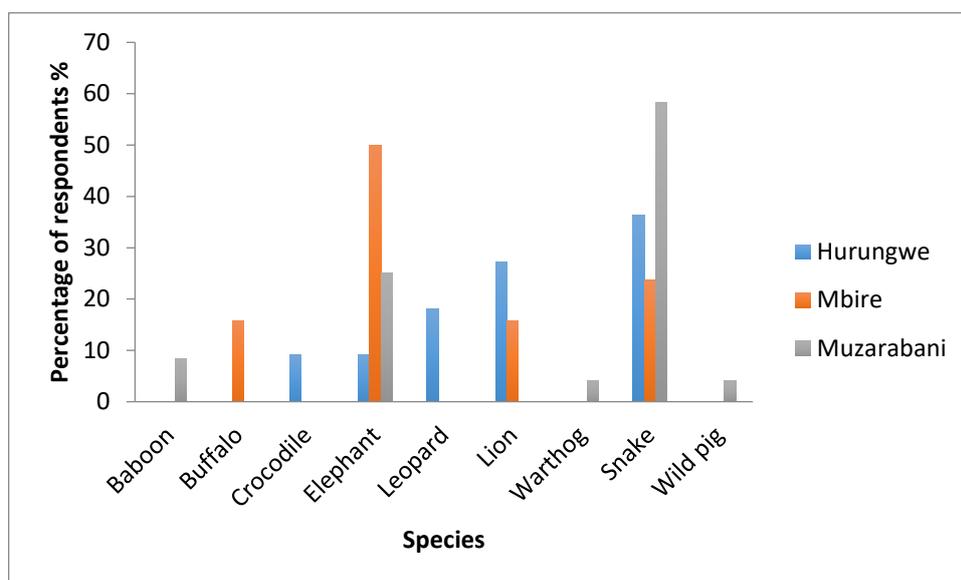


Figure 7-12: The incidences of wildlife attacks on humans from household surveys in the three districts; Hurungwe, Mbire and Muzarabani

Data on the cases of wildlife attacks on humans reported to the three district councils was also collected during this baseline survey. In Hurungwe district the data was very sparse. In 2015 the district council recorded two cases of injury and two cases of death caused by crocodiles. In 2017 one case of injury and two cases of death caused by buffalos and one case of death caused by a crocodile were recorded. The wild animals that caused injury and death to community members in Mbire district between 2015 and May 2019 included crocodiles, buffalos, lions, snakes, elephants, hippos, bees and a monkey (Table 7-4). Between 2015 and 2019, about 20 individuals were killed while 38 individuals sustained injuries from attacks by wild animals. Crocodiles usually target those fishing in the rivers or fetching water from the dams. In Muzarabani district the main wildlife species that caused injury and death to humans included elephants, buffalos, crocodiles, baboons and hippos (Table 7-5).

Table 7-4: Recorded cases of human injury and death caused by wildlife in Mbire district between 2015 and May 2019.

Year	Animal involved	Human Injury	Human death
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2015	Elephant	0	1
2015	Buffalo	0	1
2015	Lion	0	1
2015	Crocodile	5	4
2015	Snake	2	1
2016	Elephant	2	1
2016	Buffalo	0	1
2016	Crocodile	7	0
2016	Snake	1	0
2016	Hippo	1	0
2016	Bees	0	1
2017	Elephant	1	1
2017	Buffalo	2	0
2017	Lion	0	1
2017	Crocodile	1	1
2017	Hippo	2	0
2018	Elephant	3	3
2018	Buffalo	1	0
2018	Crocodile	2	0
2018	Snake	0	1
2018	Hippo	3	1
2018	Monkey	1	0
2019	Elephant	0	1
2019	Crocodile	3	0
2019	Snake	1	0
Total		38	20

Table 7-5: Recorded cases of human injury and death caused by wildlife in Muzarabani district between 2016 and May 2019.

Year	Animal involved	Human Injury	Human death
2016	Elephant	2	1
2016	Buffalo	4	0
2016	Crocodile	2	0
2017	Buffalo	4	0
2017	Crocodile	4	2
2017	Baboon	1	0
2018	Elephant	20	0
2018	Crocodile	0	1
2018	Hippo	1	0
2019	Buffalo	2	0
Total		40	4

7.5.2. Loss of crops

The household interviews showed that of the 583 respondents, 67% in Hurungwe, 90% in Mbire and

77% in Muzarabani district had experienced crop damage and loss. The animal species mainly involved in the crop raids were baboons, buffalos, common duikers, elands, elephants, hippos, kudus, monkeys, warthogs, zebras, hares and wild pigs (Figure 7-13). Elephants are the main cause of crop damage in Mbire district. The crop raids results in communities losing their yields and sometimes having not enough to feed their families and incurring debts as a result. The communities across the three districts are currently not receiving any compensation for crop loss.

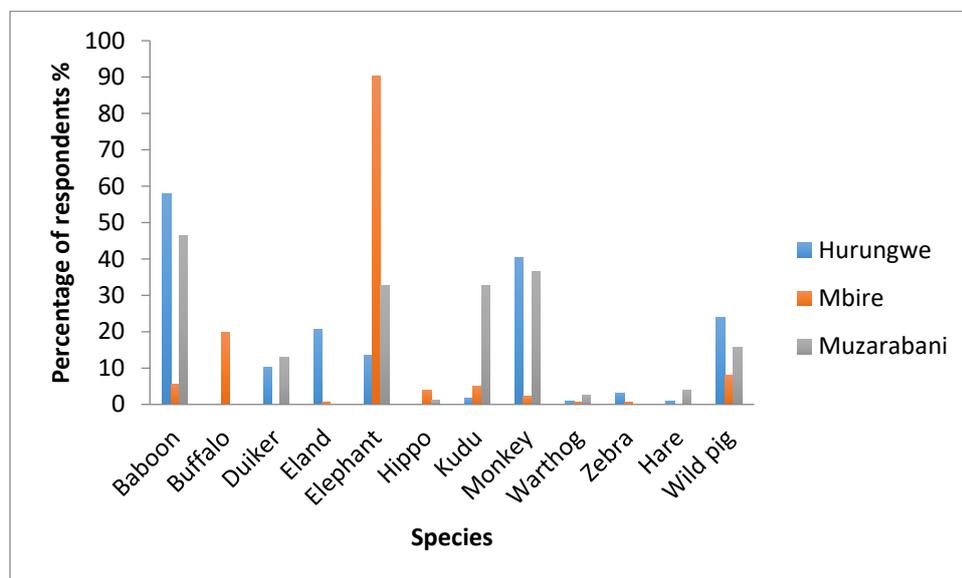


Figure 7-13: The incidences of crop damage caused by wild animals in the three districts; Hurungwe, Mbire and Muzarabani

Data on the cases of crop damage was also collected from the district council. The data was again very scanty and missed some details on the size of the hectares destroyed and the type of crops damaged. Hurungwe district recorded one case of crop raids by elephants in 2016 and 12 cases of crop raids by elephants, elands, bushpig, buffalo, kudu, bushbuck, hippos, and zebras in 2017. The records in Mbire district were better and more detailed. In 2015, elephants, buffalos, hippos, sables and kudus destroyed 473 hectares of crop fields and this increased to 494 hectares in 2016 (Table 7-6). In Muzarabani district elephants, hippos, zebras, baboons and wild pigs were the main species responsible for crops damage (Table 7-7).

Table 7-6: Crops destroyed by wild animals in Mbire district between 2015 and 2018

Year	Wards	Hectares Destroyed	Animals involved
2015	Ward 1, 2, 3, 4, 8, 9, 10, 11, 12, 15, 16	473	Elephants, Buffalos, Hippos, Sables, Kudus
2016	Ward 1, 2, 3, 4, 8, 9, 10, 11, 12, 15, 16	494	Elephants, Buffalos, Hippos, Sables, Kudus, Baboons
2017	Ward 1, 2, 3, 9, 10, 11, 12, 16	--	Elephants, Hippos, Kudus, Baboons
2018	Ward 1, 2, 3, 4, 8, 9, 10, 11, 12, 13, 14, 16, 17	--	Elephants, Buffalos, Hippos

Table 7-7: Cases of crop destruction by wild animals in Muzarabani district between 2015 and 2018

Year	Wards	Cases recorded	Animals involved
2015	Muringazuva, Utete	6	Elephants
2016	Muringazuva, Utete, Kairezi, Kanhukamwe, Museredza	7	Elephants
2017	Muringazuva, Utete, Chadereka, Kanhukamwe, Museredza, Gutsa, Vhuka, Runga, Mweredza	11	Elephants, Hippos, Zebras, Baboons
2018	Kanhukamwe, Museredza, Runga, Westbery Farm, Maclear Farm, Hwata	16	Elephants
2019	Utete, Museredza, Uchacha, Gatu	13	Elephants, Wild pigs

7.5.3. Loss of livestock

The household interviews showed that 56% of the 583 respondents in Hurungwe, 59% in Mbire and 62% in Muzarabani district had their livestock killed by wild animals. Hyenas and lions are the major causes of livestock loss across the three districts (Figure 7-14). It was however surprising that in the household interviews crocodiles did not come out as one of the predators responsible for killing livestock. This could be because cases of livestock loss to crocodiles were very few and the households interviewed in the three districts had not come across this problem. The communities in all three districts are currently not receiving any compensation for livestock loss.

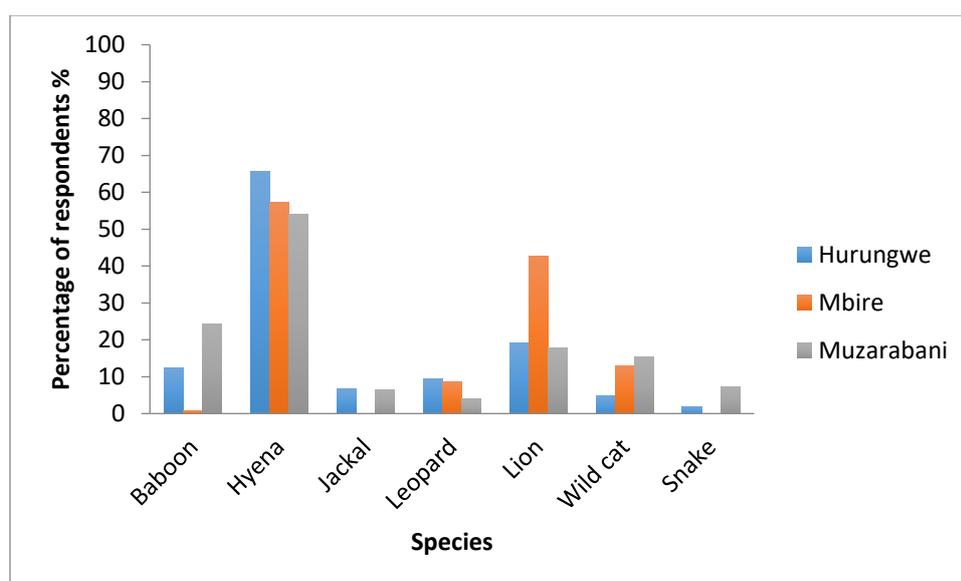


Figure 7-14: Wild animals responsible for killing livestock in the three districts; Hurungwe, Mbire and Muzarabani

Data on livestock loss that was collected from the district councils was again very scant and in some cases details on the number of livestock killed were not provided. In Hurungwe only one case of livestock depredation by crocodiles was recorded in 2016 and 6 cases of depredation by lions and crocodiles were recorded in 2017. Cattle, goats and chickens are the main livestock that communities in Mbire district are losing to predators (Table 7-8). A total of 18 cases of livestock loss were recorded for Muzarabani district in 2015; 4 in 2016; 15 in 2017 and 6 in 2018.

Table 7-8: Number of livestock killed by wild animals in Mbire district from 2015 to 2018.

Livestock	2015	2016	2017	2018	Total
Cattle	82	65	53	95	295
Donkey	13	9	9	14	45
Goats	186	149	177	170	682
Sheep	45	28	6	51	130
Chickens	387	253	351	474	1465
Pigs	3	7	2	--	12
Dogs	35	42	1	--	78

7.6. POACHING

Bush meat serves as a key protein source and provides an alternative to livestock meat. However, extensive bush meat hunting often causes pressures on various wildlife species, leading to their decline (Mfunda and Røskaft, 2010) and frequently involves illegal hunting. The lack of data on poaching incidences, location and distribution made it difficult to get a clearer understanding of the poaching hotspots across these three districts. The household interviews revealed that the poaching level in the three district was generally low with only 19% of the 583 respondents in Hurungwe district, 15% in Mbire and 19% in Muzarabani saying that there was poaching happening in their wards. The Safari Operators in these districts all highlighted that the poaching levels were very high in the previous years but were starting to decline now. Of the respondents that said poaching was happening in their wards, the majority thought that the level of poaching was low (Figure 7-15).

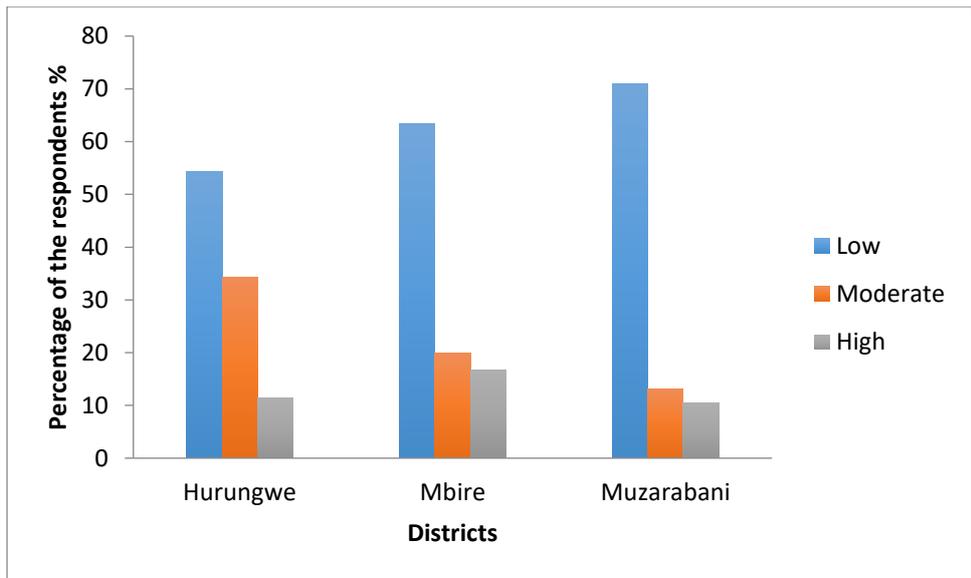


Figure 7-15: The level of poaching in the three districts; Hurungwe, Mbire and Muzarabani

The main wildlife species being targeted by poachers are buffalos, common duiker, elephants, kudus and hares (Figure 7-16). Elephants are especially targeted by international poachers who kill them for their tusks.

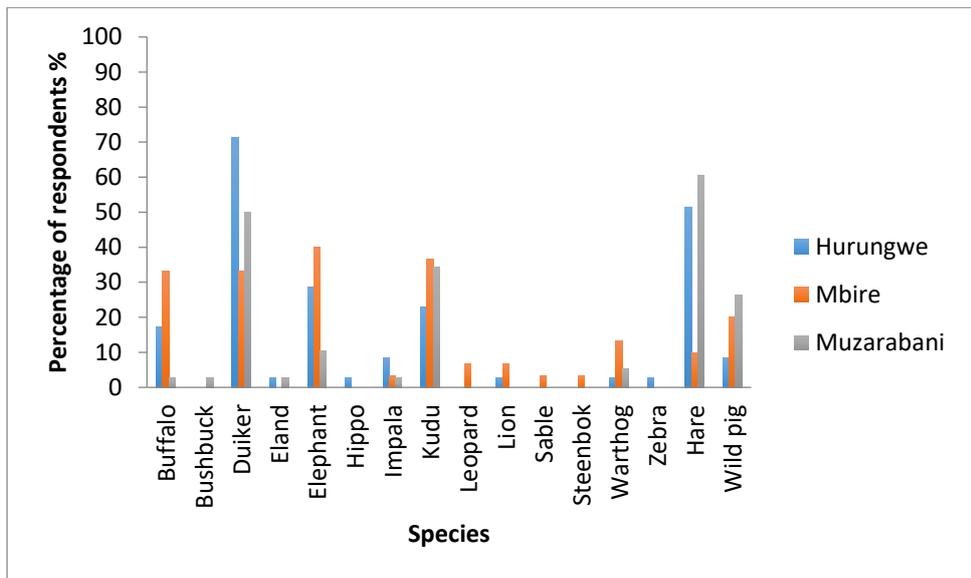


Figure 7-16: Wildlife species targeted by poachers in the three districts; Hurungwe, Mbire and Muzarabani

The increase in law enforcement efforts across the Zambezi Valley has resulted in a steady decline in the number of elephants killed by poachers in the project area (Figure 7-17).

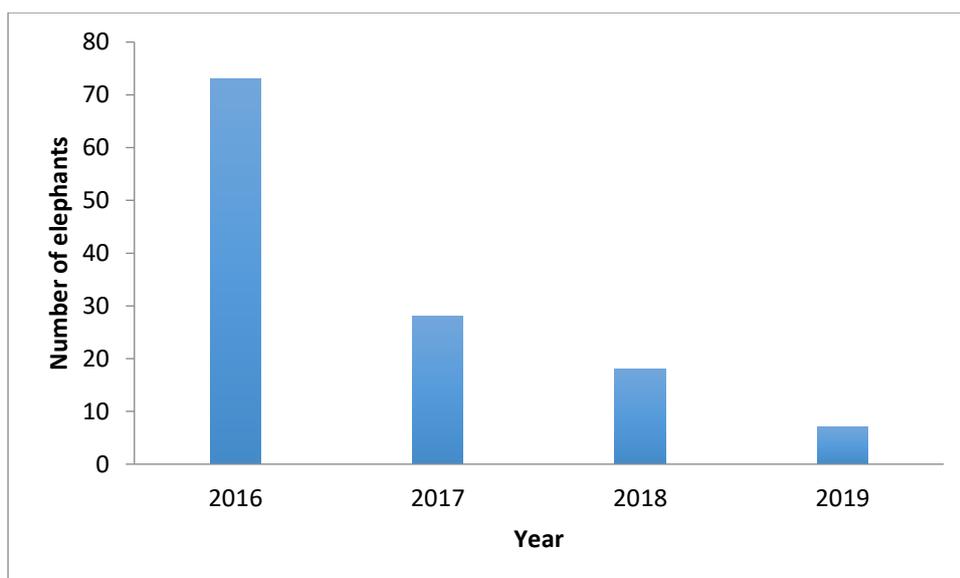


Figure 7-17: The number of elephants killed by poachers in the Project Area, Zambezi Valley.

In Pfundundu Conservancy in Hurungwe district, the Akashinga anti-poaching team started operating in late 2017 and managed to apprehend some poachers in the area. From November 2017 to February 2019, the team recorded 59 cases of wildlife crimes, from possession of firearms, wildlife meat and non-meat products to possession of poison (Table 7-9).

Table 7-9: Summary of poaching incidents from September 2017 to February 2019 in and around Pfundundu Conservancy in Hurungwe district

2017				
Month	Offenses	Sub-Total	Grand Total	
September	Killed a Duiker	1	2	
November	Possession of cyanide and spear	1		
2018				
January	Possession of dried Kudu meat and snares	2	41	
February	Possession of traditional weapons, Possession of cyanide	2		
April	Removal of Tortoise from PA	2		
June	Possession of dried Sable and fresh Kudu meat	5		
July	Possession of semi-dried Zebra meat, Unlawful hunt, Possession of .22 rifle	4		
August	Possession of traditional weapons	3		
September	Possession of a 308 rifle, ivory, Hyena skull and Hippo teeth, Possession of dried Buffalo meat, Possession of ivory, Warthog teeth and traditional weapon	8		
November	Possession of Duiker, Warthog and Hare meat	8		
December	Possession of Impala, Duiker, Buffalo and Warthog meat Possession of Genet, Leopard, Serval skin and Tortoise shells, Possession of a .22 rifle, skin and game meat Possession of ivory and cyanide	7		
2019				
January	Possession of ivory and Pangolin scales, Possession of Buffalo meat, Possession of python skin	12		

The Dande Anti-Poaching Unit (DAPU) began operations in early 2014 and in that first year they recovered a total of 2 375 snares in wildlife areas around Mbire district. The number of snares recovered increased to 2 655 in 2015 but began to decline rapidly thereafter (Figure 7-18) and this could be due to the presence of the anti-poaching team in the area.

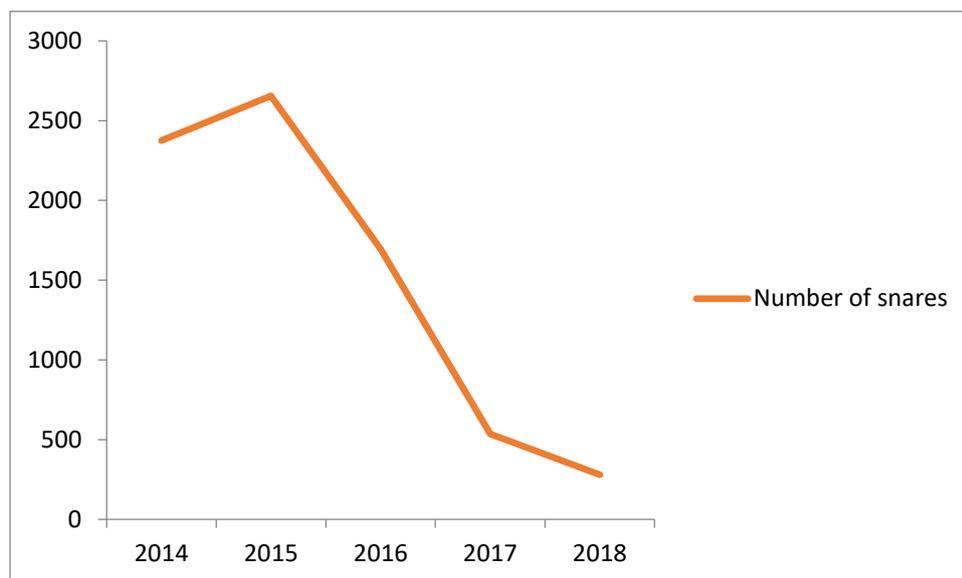


Figure 7-18: The number of snares recovered by DAPU in wildlife areas around Mbire district.

In Mbire district a total of 188 poachers were arrested from 2010 to 2019 and the main species taken by these poachers were elephants, buffalos, impalas, warthogs, kudus, bushbucks, leopards and sables.

7.7. QUOTA ALLOCATION AND UTILIZATION

The wildlife species mainly taken during trophy hunting in the three districts includes elephants, lions, buffalo, crocodiles, leopards, hippos, sables and roan antelopes. The effect that trophy hunting has on these wildlife populations can be variable and is shaped by the way trophy hunting is managed and wildlife is governed. When unmanaged or improperly managed, trophy hunting can have serious detrimental impacts on wildlife population status.

Quota utilization in Mbire district has been steady over the past 4 years and in most cases utilization has been below the allocated quota (Table 7-20). In the past 4 years Mukwichi Conservancy in Hurungwe district has been getting a quota allocation but the only animals hunted were 2 kudus and 2 leopards in 2017. The quotas allocated to Mavhuradonha Wilderness Area in Muzarabani district have been underutilised since 2015. The last hunts in Muzarabani happened in 2015 where 1 leopard and 2 elephants were taken. The underutilization of quotas allocated to Mukwichi and Mavhuradonha for the past 4 years, could be because there were a few animals available to hunt and the trophy quality poor.

Table 20: Quota allocation and utilization for Mbire North, South and East in Mbire district from 2015 to 2019

Species	2015	Utilized	2016	Utilized	2017	Utilized	2018	Utilized	2019
Mbire North									
Buffalo F	2	2	2	1	4	1	2	1	2
Buffalo M	20	16	20	3	20	17	20	13	20
Crocodile	3	3	3	2	3	3	3	4	3
Elephant M	5	5	4	2	5	2	4	2	4
Ele T/L	4	4	5	0	7	5	4	1	4
Hippo M	5	4	5	4	5	2	5	6	5
Hyena M	4	3	20	1	20	15	20	17	20
Kudu M	4	4	4	3	4	3	4	4	4
Leopard	5	4	4	4	4	3	4	5	4
Lion M	2	0	2	1	2	1	2	0	2
Zebra	6	2	6	0	6	3	6	0	6
Mbire South									
Buffalo F	2	1	2	1	1	1	1	--	1
Buffalo M	23	6	20	6	15	4	15	--	15
Crocodile	1	2	1	1	1	0	2	0	2
Elephant M	3	0	3	3	3	2	3	0	3
Ele T/L	5	1	5	5	5	2	5	1	5
Hippo M	3	1	3	2	3	3	3	0	3
Hyena M	20	5	20	5	20	7	20	1	20
Kudu M	5	2	5	3	5	3	5	0	5
Leopard	4	3	3	3	3	3	3	1	3
Lion M	2	1	1	0	1	0	1	1	1
Zebra	5	1	5	4	5	2	5	1	5
Mbire East									
Buffalo F	1	0	1	1	1	0	1	0	1
Buffalo M	6	2	8	1	8	2	8	6	8
Crocodile	2	0	2	0	3	1	2	1	2
Elephant M	6	3	4	2	4	4	4	0	4
Ele T/L	3	1	3	0	3	3	5	2	5
Hippo M	3	0	3	0	4	1	3	1	3
Hyena M	15	1	15	1	15	9	15	1	15
Kudu M	5	1	5	0	5	2	5	1	5
Leopard	2	1	2	2	2	0	2	0	2
Lion M	1	0	1	0	1	1	1	0	1

7.8. OPTIMAL POPULATION STATUS AND TROPHY QUALITY

Given the very limited data for each CWC on variables such as wildlife population dynamics (how populations grow and are affected by environmental conditions and different kind of human pressures such as hunting and poaching), habitat quality (including detailed vegetation classification) and

carrying capacity, it was difficult to determine the optimal wildlife population size for each CWC. The optimal wildlife population size would be the size that would maximize net benefits for society, which would comprise all stakeholders involved including the RDCs, Safari Operators and the community. A lack of data on the current wildlife population sizes means that there is no way of ascertaining if and how the current wildlife population size in these CWCs would deviate from the optimal level. Regarding trophy quality the general consensus among the Safari Operators, RDCs and Zimbabwe Parks and Wildlife Management Authority personnel is that the quality of key trophy species has been declining steadily across the three districts over the past few years. However, the trophy data available from Zimbabwe Parks and Wildlife Management Authority database had a lot of gaps and made it impossible to determine the changes in trophy size and quality among the key trophy species over the past few years. Nonetheless, analysis of trophy sizes and quality in other parts of the country showed a steady decline over the years e.g. (Muposhi et al., 2016) found that the trophy size of elephants in Matetsi Safari Area decline significantly between 2004 to 2015 and (Ngorima et al., 2015) found that elephant and buffalo trophy quality in Sengwa Research Area significantly declined between 2003 and 2013.

7.9. CURRENT CONSERVATION EFFORTS

7.9.1. Shift in land-use to non-consumptive

Some of the Safari Operators in the three districts are taking strides to shift land use of their concessions from hunting to ecotourism. In a bid to revive, conserve and increase wildlife populations in Pfundundu Conservancy the Safari Operator has at the moment stopped all trophy-hunting activities. Hunting is also currently not taking place in Chitsere Conservancy in Mbire South and the management is now focusing on reviving the wildlife populations for ecotourism. In Mavhuradonha Wilderness Area there is no hunting taking place in the Southern part of the Conservancy and currently wildlife translocations are being carried out to increase the wildlife population and make the area viable for ecotourism. There is a direct correlation between community benefits received and the support for wildlife conservation and non-consumptive uses by the community. Losses incurred by the community from problem animals, lack of compensation for these losses, and lack of community involvement in wildlife conservation can be major sources of local resentment for non-consumptive use of wildlife resources. These came out in the discussion with community members in wards surrounding Pfundundu and Chitsere Conservancy, where the community said they are not clear about the benefits they would receive since no trophy hunting was taking place.

7.9.2. Anti-poaching

The anti-poaching efforts in Pfundundu Conservancy in Hurungwe district that began in 2017 by setting up of the Akashinga anti-poaching team have already started to bring some improvements in the landscape and in wildlife populations. The Akashinga team removed more than 400 snares since 2017 and 98 arrests were made in the first 20 months of operation. Anti-poaching activities in Mbire North, South and Mbire East are conducted by the Dande Anti-Poaching Unit (DAPU), which was formed in 2014 as a result of the increasing pressure on wildlife populations especially from elephant poaching. Both these anti-poaching teams employ and train local people from the surrounding communities, which is resulting in improved community livelihoods

7.9.3. Human-Wildlife Conflict Mitigation

The most common methods used by communities in the three districts to deal with crop raiding are fencing the crops to prevent animals from entering the fields, making noise to chase the animals away and also guarding the crops in the fields (Figure 7-20).

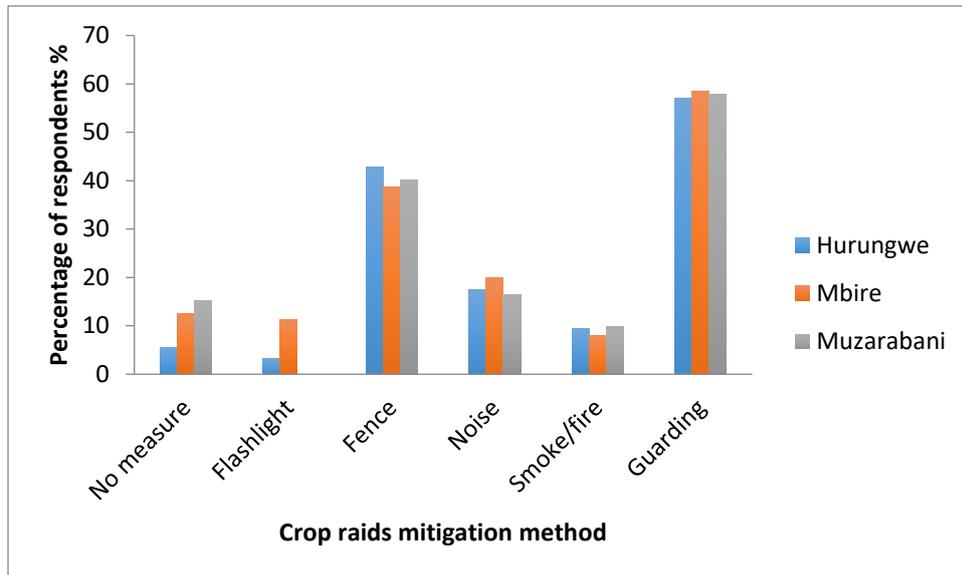


Figure 7-20: Crop raiding mitigation methods that communities are using in alleviating crop raids in the three districts; Hurungwe, Mbire and Muzarabani

Across the three districts individuals within the communities are making efforts to mitigate human-wildlife conflict. In some wards in Mbire district the farmers are now growing sesame, which is not palatable to elephants and is a cash crop with a viable market in Mozambique (Figure 7-21). This means that they do not lose their crops and livelihoods to elephants and other crop raiding animals.

Figure 7-21: A sesame crop field with a scarecrow along a wildlife corridor in Ward 4, Mbire district

Some farmers have put up fences with tins to deter elephants from entering their farms (Figure -22).



Figure 7-22: A farmer used wire fence and tins to protect his field from the elephants in Ward 11, Mbire district.

The household interviews revealed that communities in the three districts are mainly using livestock kraals as a method of protecting their livestock from attacks by predators (Figure 7-23). However these kraals are poorly constructed and weak and leave the livestock vulnerable to predation (see Figure 7-7).

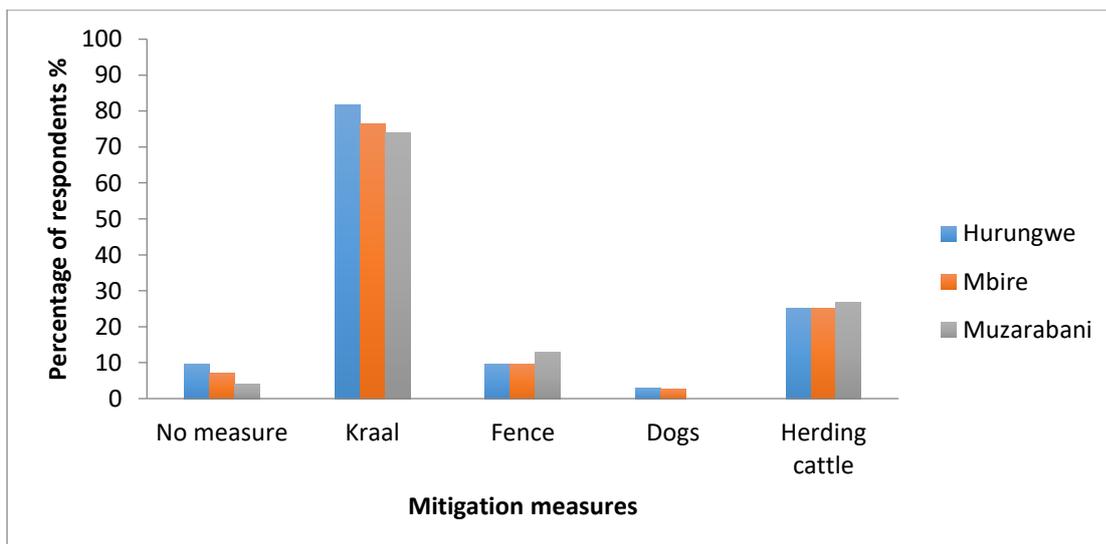


Figure 7-23: Conflict mitigation measures used by farmers to reduce livestock losses in the three districts; Hurungwe, Mbire and Muzarabani

7.9.4. Education and Awareness

Some education and awareness campaigns were conducted in the past through CAMPFIRE to educate communities on the importance of wildlife and how they can coexist with wildlife. The Environmental Management Agency (EMA) has also been involved in educating the communities about the dangers of veld fires and methods of fire management.

7.10. RECOMMENDATIONS FROM CWC PROFILE ASSESSMENTS

7.10.1 Non-consumptive use

Consumptive use of wildlife has begun to be a challenge and is receiving a lot of backlash from the international communities. Several organisations including some international conservation organisations like *Born Free* are campaigning for the banning of trophy hunting. Such pressure from the anti-hunting community is putting the future of trophy hunting at risk and there is need for some alternatives that involve non-consumptive use of wildlife. Diversifying is key in the three districts to spread the risk; it is increasingly becoming important to start looking into implementing sustainable, non-consumptive forms of delivering real wildlife-derived benefits to local communities. A good example is Mahenye CAMPFIRE community in Chipinge that set up tourism infrastructure (high end tourism lodge) resulting in the community having diversified forms of revenue generation, which increased the community benefits, even during the period of economic decline in Zimbabwe between 2000 and 2008 (Chigwenya and Chifamba 2010; Gandiwa et al 2013). Diversifying is also important especially in the face of climate change that is already affecting the three districts this will ensure that communities can continue to thrive even when wildlife populations and trophy quality declines.

The recommendation from this baseline survey is that the project should invest into ecotourism activities in the project area so as to increase and diversify the benefits that communities receive from wildlife resources. Ecotourism can be done as a stand-alone venture or it can be combined with trophy hunting where some sections of a concession are trophy hunted and others used for ecotourism. This is currently happening in Mavhuradonha Wilderness Area, where various land uses are taking place in different parts of the concession. Such a setup can be key in increasing the wildlife populations in an area, it would allow both the communities and the Safari Operator to benefit from non-consumptive utilisation in the short term while allowing the wildlife numbers and trophy quality to improve and then hunting in the long term. In Mavhuradonha Wilderness there are currently 2 ecotourism areas one in the north and another in the south. There is however need to increase the number of tourist activities in these areas, such as cultural tours, archaeological tours, hiking, bird watching and also uniquely package them. In ward 11 of Mbire district, a local man is running some chalets along the Angwa River for bird viewing. Birders specifically come to the area to watch Lilian's lovebird (*Agapornis lilliana*), which is endemic to only 5 countries in Africa. The chalets would need to be revamped so that more revenue can be acquired from this venture so as to increase community benefits in ward 11.

7.10.2 Land use planning

The GEF6 project need to engage with the local authorities in each district and assist them in coming up with a district land use plan. The main cause of human-wildlife conflict in the three districts is the

change in land use, with humans now occupying wildlife areas. Addressing such conflicts requires striking a balance between conservation priorities and the needs of people who live with wildlife. Most households in Muzarabani, Mbire and Hurungwe district depend on the land and their livestock for their subsistence. But the presence of many species of wild animals, combined with settlement patterns of people, leads to conflict between people and wildlife. It is therefore necessary that the project assist with the land use planning as a mechanism for rural communities and farmers to manage and benefit from wildlife and other natural resources. People have settled at the edges of Pfundundu Conservancy in Hurungwe and at the moment there is no buffer zone between the wildlife area and the communal land and some of these villagers have encroached into the Conservancy in search of arable land. The reason for the encroachment of people into the CWCs might have been heightened by the fact that communities are at the moment not benefitting from wildlife resources. Households in the buffer zone are also illegally exploiting natural resources in the Conservancy, evidence of tree cutting for tobacco curing was noted during the baseline survey and there is also a risk of subsistence poaching using snares. The land use plan would facilitate the eviction of people who have encroached into wildlife areas. The district councils in all three districts are already making some strides into removing these people from wildlife areas, although some keep going back particularly in Mbire where the Doma people keep going back to the wildlife areas in Mbire North Conservancy around ward 2. Mbire district council with assistance from African Wildlife Foundation (AWF) are currently formulating a new land use plan for the district.

7.10.3. Improving community livelihoods

The project will need to invest into community projects recommended by this baseline survey (see Sections 3 and 5) that improve community livelihoods. People tend to be more tolerant to conflict with wildlife when they have many avenues of income rather than relying only on crops and livestock. Improving community livelihoods is key to dealing with human-wildlife conflict and improving attitudes towards wildlife and also reducing poaching incidences. People that are injured or killed by crocodiles are usually those that will be fishing in the rivers. Some of these people usually spend days fishing and sleeping in the bush and this puts them at risk of attacks by crocodiles and other animals. Most people that fish do so to feed their family while others sell to other villagers to earn an income. It is widely accepted that current biodiversity loss and poverty are linked, and that poverty and conservation must be recognized and addressed as interlocking challenges (Adams et al. 2005). A sustainable livelihoods approach is required in the three districts and there is need to capacitate rural households to cope with crises such as food shortages, floods, droughts, and diseases. Poaching especially of elephants is still rampant in the project area and these poaching rates can be decreased if the community livelihoods are improved, a recent study by Hauenstein et al. 2019 has shown that poverty is one of the major factors that contributes to poaching. In the household interviews the main reasons given for why people are involved in poaching activities was for food and to get an income (Figure 7-24). Investment in law enforcement has the potential of reducing poaching but is unlikely to succeed without action that simultaneously reduces poverty. Therefore there is a need for the project to introduce alternative livelihood opportunities in all the three districts, as this is important for decreasing the dependence of communities on wildlife resources.

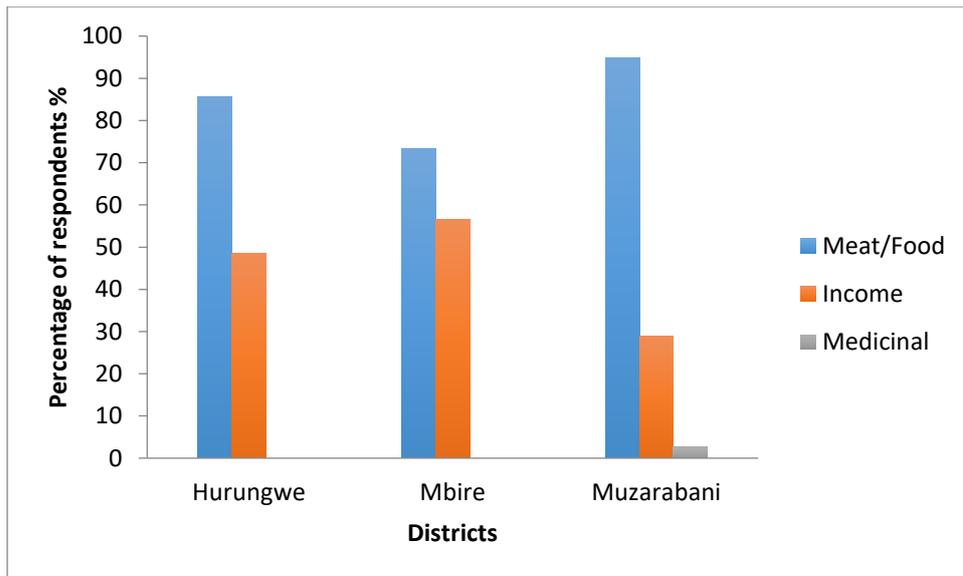


Figure 7-24: The reasons the community gave for why people are involved in poaching activities in the three districts; Hurungwe, Mbire and Muzarabani

7.10.4. Elephant conflict mitigation

Elephant is the main species involved in conflict with humans across the three districts. The GEF6 project can partner with organisations working on human-elephant conflict mitigation in implementing strategies to reduce crop damage by elephants. Before implementation of any elephant conflict mitigation strategies there is a need for the project or its partners to investigate and understand the causes, patterns and extend of the conflict. When coming up with conflict mitigation measures, it is important that the communities be consulted to understand the methods that they prefer and suits them best. There are four types of mitigation measures for elephants that can be implemented by farmers; these are prevention, detection, active chasing and regular monitoring (See Figure 7-25). For the mitigation to be effective a farmer may choose to implement several methods at the same time e.g. put up a chilli fence but also use noise to chase away elephants when they come close. The baseline survey recommends two human-elephant conflict mitigation measures that the GEF6 project can implement in the project area and these are the use of chilli fences and beehive fences.

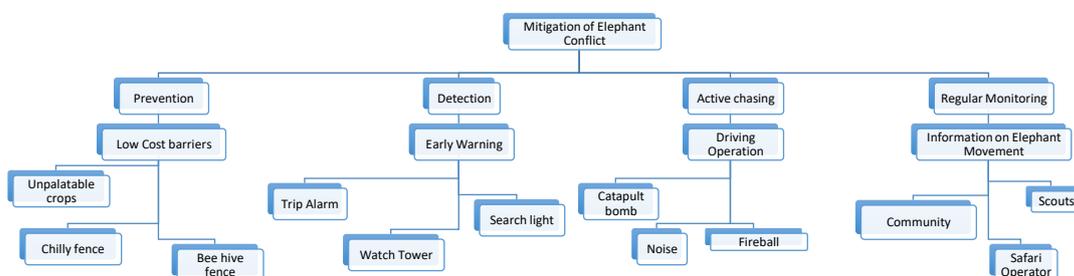


Figure 7-25: Some of the measures that farmers can implement to reduce crop damage from elephants



Figure 7-26: A kraal in Ward 7, Muzarabani district that is poorly constructed leaving the cattle vulnerable to carnivore predation

7.10.6. Human-wildlife conflict mitigation training

The household interviews revealed that the majority of community members in these three districts have not received any training on conflict mitigation measures. In Hurungwe district 98% of the respondents, 94% in Mbire and 93% in Muzarabani district said they had not received training on human-wildlife mitigation. In ward 11, Mbire district a few community members were trained on the use of fences, trenches and making noise to chase elephants from their fields and they are implementing these conflict mitigation methods in ward 11. The baseline survey recommends that the communities should receive training on the various measures of human-wildlife conflict mitigation and on good farming and husbandry practices, so that they can effectively protect their livestock and crops. Local participation in lion monitoring has been shown to reduce lion killings, and foster positive perceptions of lions (Dolrenry, 2013; Hazzah et al. 2014). Therefore the recommendation is that teams of game scouts and resource monitors be recruited and trained. The responsibilities of these teams would include among other duties, to monitor problem animal movements in their communities, record and report incidences of human-wildlife conflict as well as working with the communities in implementing conflict mitigation measures.

7.10.7. Human-wildlife conflict response and Records

The communities in the three districts pointed out that the relevant authorities often delayed in responding to conflict incidences and at times they would not respond at all. This has resulted in the community being reluctant to report incidences of conflict to the relevant authorities. Across the three districts the majority of the respondents that had encountered wild animal attacks said that they did not report the incidence to the relevant authorities (Figure 7-27).

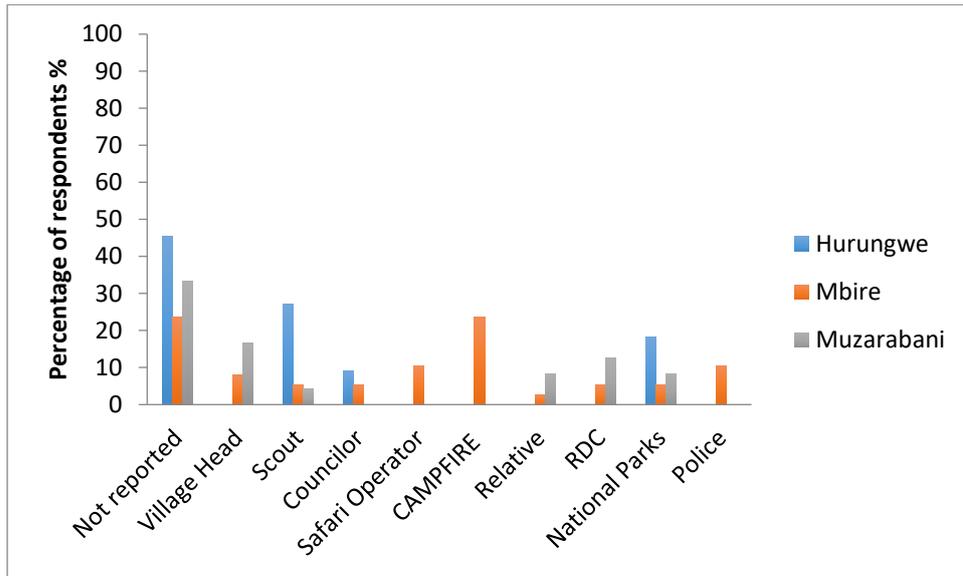


Figure 7-27: The authorities and individuals to whom incidences of human attacks by wildlife were reported in the three districts; Hurungwe, Mbire and Muzarabani

The unsatisfactory or untimely reaction by responsible authorities to human-wildlife conflicts cases can escalate the conflict and result in retaliatory killing by the community. The GEF6 project would need to assist the rural district councils or the Safari Operators with a vehicle/s that are dedicated to responding to cases of human-wildlife conflict, so that these are attended to timely and also recorded for monitoring and management purposes. Quite striking though was the fact that there was a general dissatisfaction in some wards with some of the mitigation measures to human-wildlife conflicts, for example, shooting of problem animals by the responsible authorities does not benefit the community. The community would prefer that a hunter be sought who can pay and take down the animal or the meat be sold and revenue shared among the community members. The community scouts and the district council rangers would need to be trained on collecting and recording information on incidences of human-wildlife conflict, poaching and illegal wildlife trade. Record keeping needs to be improved across the three districts as this is important for monitoring and evaluation and also for effective management and mitigation. Information on poaching incidences is very useful for monitoring trends and evaluating the impacts of anti-poaching efforts being implemented.

7.10.8. Anti-poaching and law enforcement

Although poaching levels seem to be on the decline there still is a need to further strengthen the law enforcement capacity of district councils and Conservancies. For all three districts the GEF6 project would need to facilitate the recruitment and training of more community scouts for anti-poaching and law enforcement so that each Conservancy can have its own dedicated anti-poaching team. In Mbire district the African Wildlife Foundation funded the training of community scouts at Mushandike College. A total of 33 community scouts were trained and deployed into the surrounding hunting concessions under the Dande Anti-Poaching Unit. Each anti-poaching team would need to be provided with a dedicated vehicle for patrols and this is critical for rapid response particularly for elephant poaching where response time is of the essence. Ammunition, radios, camping equipment and rations would also be required and important in the law enforcement and anti-poaching efforts.

Remuneration and incentives of the anti-poaching teams should be revised so that the scouts have the motivation to work. The number of women in the community game scout and anti-poaching teams should be increased as a way of empowering women and also encouraging the involvement of women in wildlife management and conservation. Employing community scouts does not only help protect wildlife but also improves community livelihoods and is a good way of involving local communities in wildlife management and conservation efforts. There is a need to advocate for tougher sentencing for wildlife crimes. The general feeling among the different stakeholders in the three districts is that the sentences for wildlife crimes are very lenient and this is not deterring poachers from killing wildlife as the gain for them currently outweighs the risk.

7.10.9 SMART Training

The GEF6 project should facilitate the training of law enforcement personnel and anti-poaching teams across the three districts and the six CWCs on the use of SMART (Spatial Monitoring and Reporting Tool). SMART training of anti-poaching teams was conducted in some parts of the project area but this needs to be scaled up. SMART Data Officers at the RDCs will also need to be trained on the effective use of Cyber Tracker Devices and software. SMART is an effective tool in addressing the emerging complexities of managing and monitoring poaching and wildlife crime and it will be crucial in helping Safari Operators and the RDCs curb poaching and allocate scarce resources effectively by identifying areas most at risks. Given the limited poaching data that is currently available in the RDCs, SMART will be important in addressing the problem as it would be able to integrate data from ranger patrols, analyse local poaching trends and measure progress in law enforcement to help rangers improve their effectiveness. The real-time SMART or SMART connect will further help provide real time access to, and integration of, information on locations of poachers, patrols, and key wildlife species. The SMART tool has the potential to transform how anti-poaching operations are coordinated and managed, improving the speed and effectiveness of law enforcement's response to poaching. The ability to detect and respond to threats in real-time will shift the focus from where poaching has happened to where poaching is most likely to happen. The use of SMART by the anti-poaching team members would empower rangers, boosts motivation, increase efficiency and promote credible and transparent real-time monitoring of the effectiveness of anti-poaching efforts (Lynam et al. 2015).

7.10.10. Water Provisioning

Water scarcity is a common problem across all the Conservancies in the three districts and this requires an urgent solution since unavailability of water is having a major impact on wildlife populations. The majority of the water sources in these Conservancies are temporary pools that fill with water during a rainy season and then dry up later in the year. Although the water supply from these pools is temporary, it is critical that they become enhanced so that they don't lose water fast through seepage and evaporation. The GEF6 project would need to assist the Safari Operators sink solar powered boreholes at strategic points within the Conservancies. This can alleviate water shortages and lead to an increase in wildlife populations; also more animals will become resident and not move in and out of the Conservancies. Water provisioning in the CWCs would also ease the human-wildlife conflict since elephants often come into conflict with humans when looking for water in the communities.

7.10.11. Reduction of quota utilization

Increased and unsustainable levels of hunting can result in biodiversity loss and decline in wildlife populations in these CWCs. Currently there is no population monitoring in place across the six conservancies, the quotas are set based on estimates and this has a danger of leading to overhunting as Safari Operators try to maximize on the returns on investment. It is recommended that the GEF6 project should facilitate population-monitoring across the Conservancies to monitor changes in wildlife population over time and this will be critical in aiding management decisions and setting of hunting quotas. There is also a need to monitor trophy quality and the success of hunts to determine the effect of utilization on the population. In Muzarabani and Hurungwe the quota off take has been greatly reduced with only a few animals being hunted in the past 4 years (see Section 7.7) and this was mainly because of the decrease in wildlife populations, and trophy quality. For CWCs in Hurungwe and Muzarabani the recommendation is a reduction in quota allocation and utilization to allow the population to recover and then increasing it again when the trophy quality and numbers improve. Temporal and spatial rotational resting of hunting areas within the CWCs is also recommended to create refuge that would facilitate an improvement in trophy quality (Muposhi et al. 2016).

7.10.12. Population monitoring

The GEF6 project would need to facilitate the carrying out of population monitoring surveys in the CWCs across the three districts. Population monitoring is critical for early detection of population changes of wildlife management concern, which would allow timely interventions to be put in place. The last large herbivore census was carried out in 2014 and lion population assessments were done in 2016. Population monitoring is also important in ensuring that trophy hunting is being conducted sustainably and also for identifying threats to wildlife populations. Methods used in population monitoring such as camera trapping, road transect counts (using distance sampling), spoor counts and aerial surveys are usually costly and this prohibits frequent population counts by the wildlife authorities and Safari Operators. Perhaps Safari Operators can partner with various, non-governmental organisations, research organisations and universities who can provide the equipment and expertise.

Local level monitoring can be supported by the project through the Management Orientated Monitoring System (MOMS) which allows community members to identify the parameters they want to monitor, develop the modules for monitoring, conduct monitoring, record, analyse and use the data. This is a simplified paper based system that was piloted in Mbire and Binga by the Zimbabwe CBNRM Forum, BioHub and WWF. This can be complimentary to SMART. Less expensive methods such as walked transects, problem animal reports and local knowledge can be used.

7.10.13. Education and awareness

Education and awareness of local communities can be key in promoting coexistence as well as increasing the understanding and acceptance of wildlife and ways that can be used to minimize risk or damage from wild animals. It is recommended that the GEF6 project should through various government departments such as EMA, Forestry Commission and ZPWMA facilitate the carrying out of education and awareness programmes across the three districts. There is a general need for education and awareness about use of natural resources, veld fires, human-wildlife conflicts, poaching, CAMPFIRE and importance of Conservancies. Some communities in the project area feel that they are not benefiting from the CAMPFIRE program in areas such as Pfundundu, Chitsere

Conservancy and Mavhuradonha Wilderness Area where trophy hunting has not been carried out in a long while. There is a general lack of understanding about how the community can benefit from non-consumptive use of wildlife and if they can understand and see these benefits then they can become more accepting of the shift in land-use. Education and awareness need to be enhanced to improve attitudes towards problematic animal species and to minimize the negative impacts of human-wildlife conflicts across the three districts.

7.10.14. Securing wildlife corridors and connectivity

As the landscape becomes increasingly more human-dominated, securing wildlife migratory routes and corridors is critical to sustaining ecological integrity as well as developing a tolerant relationship between man and wildlife. Conserving wildlife corridors is important for maintaining ecological and genetic connectivity in times of unprecedented habitat fragmentation. It is recommended that the GEF6 project should invest into the protection, management and restoration of wildlife corridors and the landscape patterns that promote connectivity for species, communities and ecological processes. Landscape connectivity in the project area can be achieved for animal species in two main ways; by managing the whole landscape mosaic to promote movement and population continuity, or by managing specific habitats within the landscape to achieve this purpose. The project would need to do a further assessment of connectivity loss to understand root causes and explore restoration options and then prioritize restoration goals for these wildlife corridors.

7.11. RECOMMENDATIONS FROM COMMUNITIES AND SAFARI OPERATORS

7.11.1. Compensation

The Focus group discussions revealed that communities would want to receive some form of compensation payments to offset the cost of predation on livestock, human death and injury and crop damage. Compensation can be very effective in increasing tolerance of people towards wildlife, however it's important to note that compensation can also encourage bad husbandry and increase predation rates (Ravenelle and Nyhus 2017). Compensation can also be challenging to set up and regulate. In both Muzarabani and Hurungwe district the community pointed out the need for compensation for livestock loss, human injury and death and crop loss. Mbire district is a very good example where compensation is working. The compensation that is available at the moment is compensation for injury and death. The council is paying hospital bills up to a maximum of RTGS\$300 and death assistance of RTGS\$300. If the deceased was a breadwinner, the school fees for the children are being paid for. Mbire district is currently carrying consultations with the various stakeholders with the aim of expanding their compensation scheme to include compensation for livestock loss. The compensation fund will be made up of contributions from all stakeholders, Safari Operators, RDC and the wards. Although the baseline survey does not recommended an investment by the GEF6 project into a HWC compensation scheme, it is however recommended that the GEF6 project should assist the RDC's in coming up with sound compensation plans for their districts.

7.11.2. Fencing

The communities and the Safari Operators indicated that they would want fences to be put up to separate the wildlife from people. Fencing off human settlements around wildlife corridors to allow

animals to move without impacting the communities around these corridors can be an effective way of mitigating human-wildlife conflicts and conserving wildlife species. In Masoka, ward 11 of Mbire district (Matzke and Nabane 1996) and in Tsholotsho District near Hwange National Park, western Zimbabwe (Vorlaufer 2002), fences were erected between wildlife areas and villages and were very effective in minimizing human-wildlife conflicts. Nonetheless, fencing is considered as one of the most pressing threats emerging in conservation globally. The shortcomings of fences is that they can act as barriers and can cause population isolation and fragmentation over time, however it is difficult to quantitatively predict the consequences fences can have on wildlife. Although fencing can be effective in separating people and wildlife and reduce human-wildlife conflict, these however need to be placed strategically so that they do not block the movement of animals between areas. In some cases fences can be vandalised and used to make snares, which are then used in bush meat poaching. Also issues of initial costs and maintenance should be taken into account when deciding on whether to use fences. In ward 11, Mbire district the fence and solar system were vandalized some years back and this has resulted in wildlife getting into conflict with villagers living around Kanyurira Conservancy (Mbire South). In areas such as ward 11 linear sections of a corridor can be fenced to funnel animals through more heavily farmed areas to reduce conflict (Graham et al. 2009). This baseline study does not recommend an investment by the GEF6 project into fencing. However if there is an interest in fencing off human settlements then the project will need to engage the implementing partners and the local authorities and find out more about the implications of such an intervention for each target area.

7.11.3. Restocking

In the key informant interviews some of the Safari Operators indicated that they would want the project to invest into restocking the wildlife populations in their concessions. Although restocking has the potential of increasing the population in the Conservancies, it is critical that an assessment of the causes of wildlife population decline in each area be understood first and then these threats addressed before more wildlife can be translocated to the area to avoid losing the introduced species as well. This baseline survey does not recommend an investment by the GEF6 project into restocking the depleted wildlife populations in the Conservancies. However, if the project and/or the Safari Operators are interested in restocking then wildlife population assessments to understand the current wildlife populations and assemblages should be done to get an idea of the populations available and how that can be enhanced. If restocking becomes an option in some of the Conservancies then Zimbabwe Parks and Wildlife Management Authority should be involved in the restocking process and in identifying suitable species, where they can be sourced and monitoring the re-introduction and acclimatising process to prevent loss of animals.

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8. Business Analysis of the CWCs

8.1. INTRODUCTION

To implement the second component of the project, “strengthening Zimbabwe’s Protected Area estate and CAMPFIRE Wildlife Conservancies in areas of global BD significance”, there is need to conduct detailed feasibility assessments and identify and recommend investment priorities and viable business models for each Community Wildlife Conservancies.

This section presents the investment options for each of the CWC, that is, Mavhuradonha Wilderness Area in Muzarabani district; Karinyanga (Mbire East), Masoka/Kanyurira (Mbire South) and Mbire North CWCs in Mbire district; and Pfundundu and Mukwichi CWCs in Hurungwe district. These areas have huge untapped ecological, socio-cultural and financial values as shown in Table below, play significant role as buffers between Protected Areas and agricultural territories or located on key wildlife migration routes, including transboundary between Zimbabwe and Mozambique. Also, all these areas have highly motivated communities and Safari Operators (critical for Conservancy sustainability) interested in Wildlife Adaptive Management and conservation.

8.2. TYPES OF ANALYSIS UNDERTAKEN

8.2.1. Investment Analysis

To enable to ascertain the investments that could be undertaken in the project area, information regarding investment plans, budget and revenue and cost projections were sent to the Safari Operators in the respective participating conservancies in the project area. The requests were sent to Nzou Safaris and Varden Safaris in Muzarabani District; Charlton McCallum Safaris (CMS), HHK Safaris, Chitsere Trust in Mbire District; and International Anti-Poaching Foundation (IAPF) and HHK Safaris in Hurungwe.

In response to the request, responses to enable full financial analyses were received from Nzou Safaris (for Mavhuradonha Wildlife Area in Muzarabani District), CMS (for Mbire East and North CWCs) and HHK Safaris (for Mbire South CWC) in Mbire District; and HHK (for Hurungwe District). Other response which were not adequate for full analyses were received from Chitsere Trust (for Mbire North) and IAPF (for Pfundundu in Hurungwe). They indicated that they did not have adequate time to prepare documents with all the information that was required. However their proposed investments will be presented. In addition Mbire RDC also presented a proposal for ecotourism, cultural and historical tourism.

The investments analysis that was carried out was based on their value to the community, to the district and in terms of their value to economy (economic analysis). Therefore the investment analyses performed is mainly appraisals of conservancy development plans and projected incomes, rather than ex post evaluations of past CWC performance.

The investment analysis is portrayed in the context of wildlife and natural resources’ ‘total economic value’, as described by Pearce and Turner (1990). Total economic value includes direct use, indirect use, and non-use (option, bequest and existence) values related to natural resources. Direct use values are derived from actual utilisation of the resource which contributes tangible value in the form of income (Barnes et al., 2001). Indirect use values are ecological or social in nature, for example erosion

protection, waste assimilation, political stability among others. On the other hand, option values mirror the values perceived in retaining the option to use the resource in the future. Bequest values indicate the value perceived in preserving or retaining the resource for others in the future, whilst existence values reflect the value perceived in retaining the mere existence of the resource (Barnes et al., 2001; Emerton, 2001).

This analysis focuses on direct use values and specifically the revenue derived from actual use of wildlife amongst other natural resources in Muzarabani, Mbire and Hurungwe Districts. There were no significant indirect use values that were captured and they were not explicitly considered. Non-use values were considered, but only as manifested in Safari Operator operations costs which could imply donor contributions aimed at conserving wildlife in conservancies, as they benefit communities. Some of the Safari Operators seek donor funds for their operations. Besides the Safari Operator employs members of the community, and their operations are carried out in the district, so whatever development they carry out in the district using the operations funds, e.g., infrastructure development indirectly benefits the communities in the district.

The requested amount of funds from the GEF 6 project was taken as the project costs that should be maximized for the benefit of the community, and the projected revenues from wildlife as the benefits from the project, then the revenue that accrued to the community was taken as direct benefits. The co-financing offered by the private safari operator was taken as a cost when dealing with the economic analysis but as benefit (indirect benefit) when dealing with at the district level analysis but was not included at the community level analysis.

8.2.2. Trend Analysis

Trend analysis was used to show the projections in revenue either for the total investments or revenue accruing to the communities and/or Rural District Council. The trends would show the pattern of the projections over time. They will also indicate the magnitude of the revenues over time in this case for a period of 10 years.

8.2.3. Viability Analysis

On investment analysis we use the following equation to assess the viability of each proposed investments, where we assume that the discount rate is zero:

$$\pi = TR - TC$$

Where π is profit, TR is Total Revenue and TC is Total Cost

We use the operations to calculate profit for the following three scenarios:

(a) Overall Viability (Economic benefits at national level)

This scenario is used only for the project where all the general revenues are explicit as given in the benefit sharing models were all parties (especially RDC, community and Safari Operator) are spelt out. However, we acknowledge the limitations that not all revenues that accrues especially to the Safari Operator are declared for fear of exposing business secrets. The total revenue is the sum of revenue for the RDC, community, Safari Operator and CAMPFIRE Association wherever applicable. The total cost here is represented by the operating costs of the Safari Operator and Requested GEF funding, which we presumed was the only capital for this investment and is being invested in trust on behalf of the community. This analysis represents the model as a proxy of the economic viability at national level but also represents the goal that the project is aiming for in the long run, where the community

will eventually and hopefully run the wildlife Safari operations on their own. It represents the opportunities that the communities might have from wildlife management in the long run.

(b) RDC plus Community Viability (Direct + indirect benefits to the community)

In this analysis, the total revenue is the sum of revenue for the RDC (indirect benefits to the community) and community (direct benefits to community) excluding revenue from Safari Operator and CAMPFIRE Association wherever applicable. The total cost here is represented by the Requested GEF funding excluding the cost from operating costs by the Safari Operator. The cost of the Safari Operator is taken as revenue since it is co-financing activities in the community, representing an indirect benefit to the community. We presume that, to the GEF 6 project, this is co-finance that has been attracted to the community as a result of GEF 6 project's investment. These analyses represent the model to some extent of the economic viability at district level.

(c) Community level viability (Direct benefits to the community)

The total revenue is the sum of revenue realized by the community excluding revenue from RDC, Safari Operator and CAMPFIRE Association wherever applicable. The total cost here is represented by the requested GEF funding excluding the cost from operating costs by the Safari Operator. The cost of the Safari Operator is not included. This scenario represents the effect of GEF 6 project on the community representing the direct benefits to the community. This analysis represents the extent to which the capital that was injected by the project has grown or shrunk due to channelling the funds through the private sector involved in wildlife management.

Payback period

For all the above economic levels, we then calculated the payback period. The payback period is the number of periods needed to pay back an initial investment with positive net income. Payback period is important because it is an effective indicator of investment risk. The project with a shortest payback period has less risk than the project with longer payback period. The payback period is usually used when liquidity is an important criterion to choose a project. Given the importance of getting revenues from the wildlife conservation, this is a good indicator for communities, RDCs and Safari Operators. However, the disadvantage of the method is that it does not take into consideration time value of money.

Net Present Value

We also assess the viability of the investments for all of the above scenarios by relaxing the assumption that discount rate is equal to zero. In this case the profit formula is substituted by the following equation:

$$NPV = \frac{(TR - TC)^t}{1 + r}$$

Where t is the time period from 0 to 10; r is the discount rate. We analyse the two further discount rate scenarios besides the above where r=0: (i) r = 12%; and (ii) r = 20%. A higher discount rate implies greater uncertainty and the lower the present value of the future cash flow, an investment that has positive NPV given a certain discount rate implies that the investment is worthwhile than that tends to negative.

Then for specific investments we carry out sensitivity analyses especially those which are riskier in this case the proposed ecotourism model in Mbire East. The four scenarios that we analyse are: (i) Pessimistic model with lower community stake; (ii) Pessimistic model with higher community stake;

(iii) Optimistic model with lower community stake; and (iv) Optimistic model with higher community stake.

Discounted Payback Periods

We also calculate the discounted payback period for each of the proposed investment and various discount rates, 12% and 20%. The discounted payback period measures the time needed to recover the original investment costs, but simultaneously accounting for time value of money. The decision rule is investments with shorter payback periods are more attractive, while those with longer payback periods are less rewarding. For the conservancies communities and investors would like investments which realize benefits in shorter periods of time.

Internal rate of return (IRR)

We will also analyse the investments using the internal rate of return. IRR is defined as the discount rate beyond which you can ensure that your investment makes more returns than its actual cost. IRR should exceed the cost of capital for the project to be attractive. The higher the IRR of a project the larger the amount by which it exceeds the cost of capital, and the higher the net cash flows to the investor. So this means those projects with higher IRR has capability of returning cost of investment faster, taking into consideration time value of money. In our case IRR will measure the discount rate beyond which cost of the capital invested by the project would be exceeded by benefits.

For other specific investments, we also analyse alternative investments, in this case Mbire North for CMS operator where we analyse: (i) Investment with wildlife translocation; and (ii) investment without wildlife translocation.

Table 8-1: The ecological, socio-cultural and financial potential values of the CWCs in the project area

District	CAMPFIRE Conservancy	Wildlife	How the CWC will assume value/i.e. what is the value proposition for each CWC? (Social, ecological, financial and other)
Muzarabani	Mavhuradonha Wilderness Area (MWA)		Intact; Pristine; Large area; Expansive; Historic ²² ; Various landscape (Grasslands; Bush; Rocky); Lot of species - Wildlife and excellent bird viewing (290 spp); guided walks; horse safari options. Adventurous driving and walking safari from the Mavhuradonha Mountains across the escarpment Social and cultural: Too many wards surrounding the Mavhuradonha Wildlife Area so benefits would cover a lot of wards including Mutota Ward in Guruve. The MWA was declared a protected area by the Muzarabani Rural District Council in 1988 in recognition of its scenic

²² Declared as a National Heritage Site by the National Monuments and Museums of Zimbabwe in January 2017

		beauty and conservation value; Exploration of bushman paintings; Waterfall dipping in Sohwe Falls, Kemavanga Falls and Bore Spring, Mutota's Kraal ruins.
Mbire	Karinyanga (Mbire East)	Safari Operator made significant investments (Camp site renovations; Water – solar pumping; Road network; Substantial national border with Mozambique; DAPU so visible; Interconnectedness of the CWCs in the District; RDC very supportive and dedicated to creation of CWCs.
	Masoka (Mbire South)	Wildlife area free from human settlement, with the exception of the Masoka Community; Resident populations of wildlife which includes elephant, buffalo, kudu, zebra, impala, warthog, waterbuck, eland, sable, lion, leopard, hippo and crocodile. Substantial national park borders (Doma Safari Area and Chewore Safari Area boundary). Anti-poaching activities through DAPU so visible and active; Interconnectedness of the CWCs in the District; RDC very supportive and dedicated to creation of CWCs
	Mbire North	Anti-poaching activities through DAPU so visible and active; Interconnectedness of the CWCs in the District; RDC very supportive and dedicated to creation of CWCs. Substantial national park borders (Chewore Safari Area and Dande Safari Area boundary). Corridor linking Zimbabwe Mid Zambezi with Zambia and Mozambique; Potential for freshwater activities in the Zambezi River which border with Zambia.
Hurungwe	Pfundundu	Safari Operator very active; Innovative new non consumptive and women empowerment model (AKASHINGA); RDC very supportive of the new model; Substantial national park borders (Hurungwe Safari Area and Mana Pools National Park). Adventurous driving and walking safari from the Zambezi escarpment.
	Mukwichi	Resident populations of wildlife ²³ which includes elephant, buffalo, kudu, zebra, impala, warthog, waterbuck, eland, sable, lion, leopard, hippo and crocodile. Substantial national park borders (Doma Safari Area and Chewore Safari Area boundary). The

²³ Bearing in mind that there are low populations in the CAMPFIRE /community section of Mukwichi. Numbers are in the ZPWMA section (FGD comms)

		escarpment has a lot of natural springs; Adventurous driving and walking safari from the on the Zambezi escarpment. Shamrock Dam with potential for water related wildlife activities
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8.3. SWOT ANALYSES FOR THE SAFARI OPERATORS IN THE PROJECT AREA

A SWOT analyses for the Safari Operators who are operating in the project area was carried out. Table 8-2 below shows the strengths of the operators.

Table 8-2: Strengths of the Safari Operators

District	CAMPFIRE Wildlife Conservancy	Strengths
Muzarabani	Mavhuradonha Wilderness Area (Nzou Safaris)	Vast experience in non-consumptive tourism; vast network with both local and international tourists; website, internet presence, as well as tour packages presence and tourism clients.
	Mavhuradonha Wilderness Area (Varden Safaris)	Very experienced in wildlife operation in Zimbabwe. Focused on the guiding and wildlife issues. Involved in issues that threaten wilderness values and areas. Involved in community Projects in the Mavhuradonha Wilderness Area, including Honey for Money.
Mbire	Karinyanga (Mbire East) (CMS)	The Safari Operator has been in wildlife business for 15 years and has been a member of Safari Club International for 14 years; SO hold a top 5 position in all of Africa in terms of hunting days sold
	Masoka (Mbire South) (HHK Safari)	Experience in operating on private land concessions, National Parks Safari Areas, and CAMPFIRE or Communal areas and in the African region. HHK is one of the oldest operators currently operating in Zimbabwe and could be the biggest operator in Zimbabwe. Wide national and international network. Economies of Scale. Dedicated staff. Offices in the USA and Europe assisting with marketing. Member of SOAZ, Dallas Safari Club. Won many awards both locally and internationally. Financially Sound: HHK is financially sound, with surplus cash reserves and no debt. Brand is well known within safari circles globally. Innovativeness in marketing (see marketing section)
	Masoka (Operator to be identified)	Prime location in Mbire District access to ecotourism, cultural and historical sites. Diversity of untapped ecotourism cultural and historical tourism products in

		the district. Support of the project from the Mbire Rural district Council.
	Mbire North (CMS)	The Safari Operator has been in wildlife business for 15 years and is a member of Safari Club International Dallas Safari Club, SOAZ, Professional Hunters and Guides Association; SO hold a top 5 position in all of Africa in terms of hunting days sold; SO has fully traceable payment history of Trophy fees, Daily rates and Social funds to the Mbire RDC, the ZPWMA
	Mbire North (Chitsere Trust and Mbire Community Conservation Trust)	One of the team members has been involved in the safari/tourism industry for over 35 years. He has also been directly involved in the Chapoto area and has extensive knowledge of the region and its people. Community development emphasis.
Hurungwe	Pfundundu (Hurungwe Safaris in collaboration with the International Anti-Poaching Foundation)	Innovative model, proven success, scalability, positive public and government perceptions, very strong positive support from HRDC, and the combination of women's empowerment, community development and conservation. One of the largest financial investors in the region.
	Mukwichi (HHK)	The same as for Mbire South but in addition: Economies of Scale: Their size of operation allows for economies of scale in running otherwise non-productive areas. For example Mukwichi is on its own and in its current condition it would not be a viable area to operate, the expected quota off take is too small to generate sufficient revenue, however within the HHK group they can absorb a lot of the non-direct operating costs such as marketing costs and head office expenses.

Table 8-3 below shows the weaknesses of the operators

Table 8-3: Weaknesses of the Safari Operators

District	CAMPFIRE Wildlife Conservancy	Weaknesses
Muzarabani	Mavhuradonha Wilderness Area (Nzou Safaris)	Unclear terms of cooperation with investors / partnerships
Mbire	Karinyanga (Mbire East)	Business oriented which might preclude altruism

	Masoka (Mbire South) (HHK)	Aging equipment: HHK requires capitalization of equipment – since they are self-funding it limits their ability to effectively manage systems such as Antipoaching, road maintenance.
	Masoka (Mbire South) (Operator to be identified)	Safari Operator might not be transparent in sharing of revenues.
	Mbire North (CMS)	Highly business oriented
	Mbire North (Chitser Trust and Mbire Community Conservation Trust)	New investment which is still to attract investors to support their projects.
Hurungwe	Pfundundu (Hurungwe Safaris in collaboration with the International Anti-Poaching Foundation)	No commercial operations at present as solely non-profit. Will start non-consumptive tourism operations in 2020.
	Mukwichi (CMS)	The same as for Mbire South

Table 8-3a below shows the opportunities of the operators

Table 8-3a: Opportunities of the Safari Operators

District	CAMPFIRE Wildlife Conservancy	Opportunities	
		Specific	Generic
Muzarabani	Mavhuradonha Wilderness Area (Nzou Safaris)	Undertaking both wildlife consumptive and non-consumptive uses	Increasing antipoaching Efforts; Development of Transfrontier Conservation Areas with Mozambique and Zambia; Creation of CAMPFIRE Wildlife Conservancies.
Mbire	Karinyanga (Mbire East)	Involvement in both Mbire East and North provides wider area that is continuous	
	Masoka (Mbire South) (HHK)	Creation of the Mbire South conservancy huge opportunity to build world	

		class safari destinations with long term and stable leases.
	Masoka (Mbire South) (Operator to be identified)	Access to a new segment of the market. Absence of strong competitors at the market. Potential for creation of new tourist routes. The development of the road and bridge linking Zimbabwe to Zambia and Mozambique provides market opportunities for ecotourism packages.
	Mbire North (CMS)	AWF operating in the area could provide synergies in project implementation
	Mbire North (Chitsere Trust and Mbire Community Conservation Trust)	Non-profit oriented might attract international philanthropists.
Hurungwe	Pfundundu (Hurungwe Safaris in collaboration with the International Anti-Poaching Foundation)	Alternative model to declining support to hunting at international level Associated with empowerment of previously disadvantaged Zimbabwean women.
	Mukwichi	Creation of the Mukwichi conservancies as a huge opportunity to build world class safari destinations with long term and stable leases.

Table 8-3b below displays the threats to the operation of the Safari Operators

Table 8-3b: Threats to the Safari Operators

District	CAMPFIRE Wildlife Conservancy	Threats	
		Specific	Generic
Muzarabani	Mavhuradonha Wilderness Area (Nzou Safaris)	Unclear terms of cooperation with investors / partnerships could disrupt project activities	Prolonged and turbulent national economic situation; Increasing Commercial and subsistence poaching; Veld fires disrupt wildlife habitats; Artisanal mining; Anti-hunting lobby (NGO's) Anti-hunting Governments from clients countries of origin); Competing land uses (agriculture, mining, settlement, urban development); Stiff competition from neighbouring countries with competitive products and economy. Unethical hunting practices. Government regulation and fees: over regulation by government in the future in terms of quotas, lease tenures, forex seizing. Negative publicity sections citing Zimbabwe as an unsafe tourist destination reduction in wildlife population resulting in decreased monetary benefits to communities; Trophy Bans: expansion on the ban of trophy shipment to key markets such as the USA and the EU. Currently only elephant and lion are affected, but there is a possibility leopard, sable and crocodile could be added. Weak and slow responding judiciary systems towards wildlife crimes
Mbire	Karinyanga (Mbire East) (CMS)	Business oriented. Limited interaction with communities. Community apathy.	
	Masoka (Mbire South)	There has been declining quota's and off takes, with income returned to the community and council from safari operations halved in the past 5 years.	
	Mbire North	Planned Kanyemba Town Development which would consume significant wildlife habitat ²⁴ ; If there is no cooperation with AWF operating in the same area, there could duplication or disruption of activities. There is potential risk of conflict between CMS and Chitsere over areas of operation due to overlaps in activities especially along the water front.	
	Masoka (Mbire South) (Operator to be identified)	Tourism Market growth at a low speed compared to hunting. Unstable socio-economic environment.	
Hurungwe	Pfundundu (IAPF)	Still in early stages.	
	Mukwichi	There has been no commercial safari operation for the previous 5 years; Increasing poaching	

²⁴ Estimated as only 10% of ward 1 would remain as wildlife area (Pers. Comms NRM Officer Mbire)

8.4. BENEFIT SHARING MODELS

The benefit sharing models vary with the district and also with the type of wildlife use. Table 8-4 below shows the benefit models being used for trophy hunting in the project districts. The benefit sharing model also varies with the type of activity that is being carried out.

Table 8-4: benefit sharing models in different districts in the project area

District	CAMPFIRE Wildlife Conservancy	Benefit Sharing Models			
		RDC	Community	CA	Safari Operator
Muzarabani	Mavhuradonha Wilderness Area (Nzou Safaris)	45%	51%	4%	45% then the RDC get the 50 which is shared as given in the RDC, Community, CA
Mbire	Karinyanga (Mbire East) (CMS)	26%	25%	4%	45%
	Masoka (Mbire South) (HHK)	26%	25%	4%	45%
	Masoka (Mbire South) (Operator to be identified)	20%	30%		50%
	Mbire North (CMS)	26%	25%	4%	45%
	Mbire North (Chitsere Trust and Mbire Community Conservation Trust)				
Hurungwe	Pfundundu (IAPF)		62% operation funds		38%

	Mukwichi (HHK)	41%	55%	4%	Not disclosed
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For example HHK has different contracts between the Hurungwe RDC and Mbire RDC. Hurungwe does not have a social fund fee, or daily rates, they just get trophy fees. This has a bearing on the trophy. The trophy fees to Hurungwe RDC they pay to council are double those they pay to Mbire RDC. For example trophy fees for Elephant in Mukwichi they pay US\$12,000 but for Mbire they share the \$12,000 with the council at the following ratios: 55% (25% towards community; 26% to council; and 4% to CAMPFIRE) then they get 45%. The benefit sharing model for daily rates is the same as the trophy hunting fees. For Mbire there have social funds which are shared between the community and RDC: Mbire East, South and North 30% RDC 70% Community.

8.5. DESCRIPTION OF CWCs IN THE PROJECT AREA AND ANALYSIS OF PROPOSED ACTIVITIES

8.5.1. Muzarabani District: MWA

Mavhuradonha Wilderness Area

For the Mavhuradonha Wilderness Area, there are two Safari Operators: Nzou Safaris and Varden Safaris. However we only got response from Nzou safaris and not from Varden Safaris, because Mr Varden was on Safari during the period of data collection Varden Safaris is involved in ecotourism and specifically walking trails and horse riding and other guided tours. Although we will not be able to present any more details about his activities due to lack of information, we feel that the GEF 6 Project should still consider his operations.

Safari Operator Name: Nzou Safaris

Nzou Safari Operators is owned by Mr George Seremwe. It is involved in Safari hunting through its brand Nzou Safaris. It is also involved in ecotourism through its Small World Eco-tourism arm. The current area of operation for Nzou Safaris is Mavhuradonha Wilderness Area and its surrounds in the lower Muzarabani area. The SO functions around the 600 square kilometres of the Mavhuradonha Mountain range, to maintain and improve the project area and also to provide the communities, which are adjacent with benefits. The thrust of the business is more directed to eco-tourism hence, the operator's precedent operations are in the Mavhuradonha Wilderness Area Eco-lodge which is owned by the RDC. Regarding the performance of the eco-tourism component in the past, the general observation is that the Mavhuradonha Wilderness Area used to attract many tourists in the 1990s but currently there is a decline in the number of tourists visiting the area due to the unfavorable socio-economic environment which is a potential threat to ecotourism development (Kasimba, 2017).

The information specific to Nzou Safaris on the performance is presented in Figures 8-1 and 8-2.

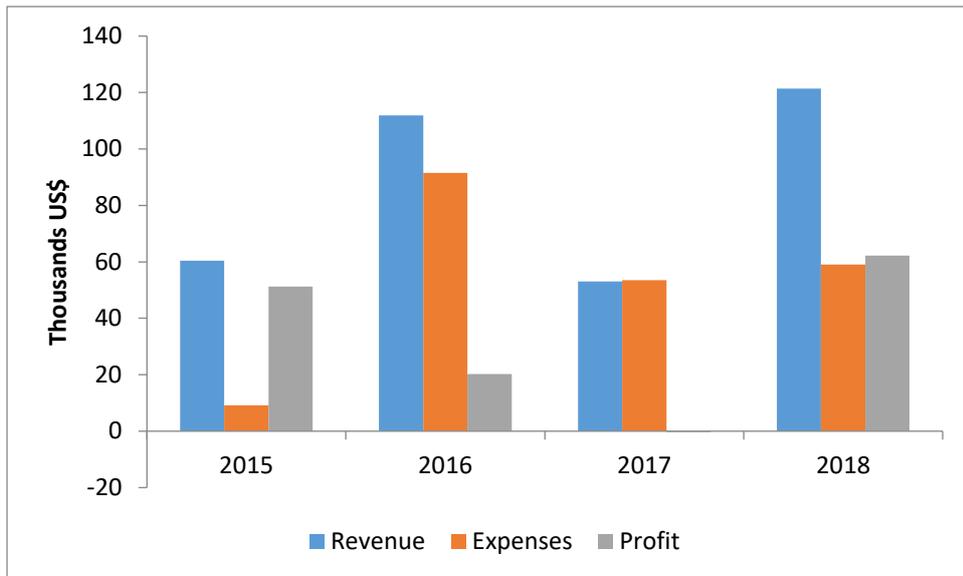


Figure 8-1: Ecotourism revenue for Nzou Safaris

As shown in Figure 8-1, revenue from tourism for Nzou Safaris peaked in 2018 (US\$121,000) which also the year where it realized the highest profit (US\$62,000). In 2017, Nzou Safaris realized a loss in its operations.

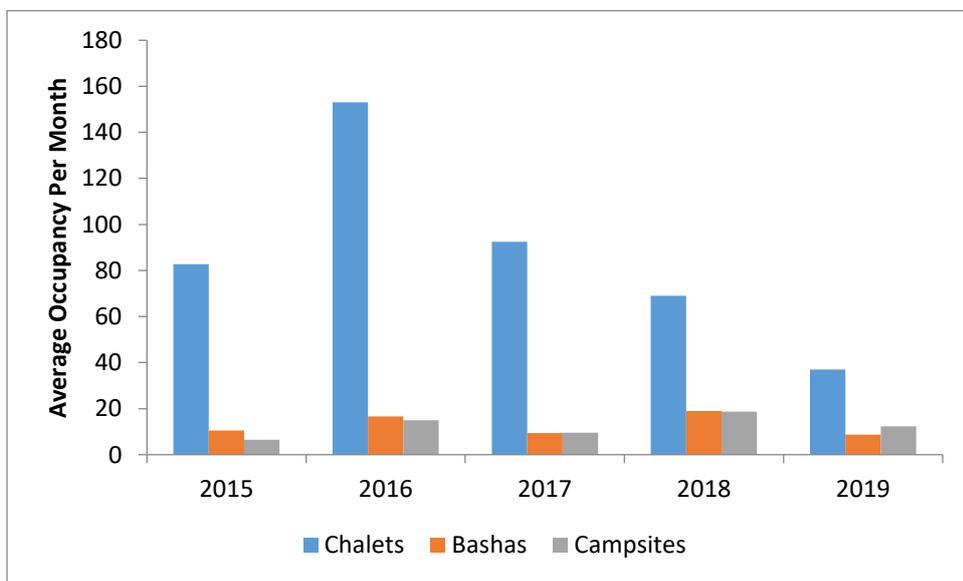


Figure 8-2: Nzou Safaris Average occupancy per month for various Accommodation types

Nzou Safaris popular accommodation type is the chalets. Nzou Safaris had its highest Chalets occupation rate per month in 2016 and the occupation rate decreased in the subsequent years showing the decrease in tourists visiting the Mavhuradonha Wilderness Area and the risky associated with tourism due to the unstable socio-economic environment.

Proposed activities for funding request from the GEF 6 Project

- (a) Organic fencing in the form of Bee hives by the communities which will be a means to deter in particular elephants in the area and also bring about a safety net to the community through the harnessing of the organic honey product
- (b) Tented accommodation
- (c) Game introduction/breeding Programme for sustainable hunting/live sales and ecotourism.

Management model which will be used

The Safari Operator will coordinate the investment projects. They will then hire expertise for specific activities. They will collaborate with communities through selection, training and capacitating the communities in production of unique Miombo honey. Furthermore, they will provide market and value addition services to the producers by branding the honey and taking it to premium markets. On the honey marketing the participating community members, they will use benefit sharing model where community will realize 80% of the revenue and Nzou Safaris will get 20%. On the live sales they will use the benefit sharing model of remitting 15% to the RDC, 50% to the community. They will do live sales of animals to other Safari Operators within and outside the country and they will also sell game meat to butcheries and communities once populations have been boosted. On the hunting component they will remit 55% of the revenue to the council which will be shared as follows 45% retained by RDC, community 51% and CA gets 4%. On the tented accommodation, the model that will be used by Nzou Safaris will also be in partnership with It's a Small World Backpackers

On activity 3 on Game introduction/breeding Programme for sustainable hunting/live sales and ecotourism, the Operator will also use the concept of Volunteering or volunteer tourist which applies to those tourists who for various reasons volunteer in an organised way to undertake holidays that include helping the material poverty of some groups in society, the restoration of certain environments or research into aspects of society or environment, among other reasons. Nzou Safaris would use this method to source assistance to the deprived communities. The model for benefit sharing in this case would be 15% to RDC, 50% to community and 35% to the Safari operator.

Benefiting wards

The wards that are going to benefit from each of the stated investment are given in Table 8-5 below

Table 8-5: Wards in Muzarabani District that would benefit from the proposed investments

Investment	Ward	Notes
Organic fencing	Museredza Chiweshe Bore Sohwe Machaya	Wildlife migrating to these wards are always reported as a problem, thus the introduction of these fences will be a first step to community involvement in non-lethal Problem Animal Control.
Game introduction/breeding Programme for	Palms Chidikamwedzi Maware	Ruindi camp is the focus of this investment, it was set aside as a game breeding zone, thus the communities sharing the same boundaries will benefit

sustainable hunting and ecotourism		
Tented accommodation	Runga Chawarura (20) Chiwashira	This idea drives the employment notion, to the adjacent communities who are well versed about the area and are deemed as custodians

Employment

Nzou Safaris employ Camp manager, drivers, and will employ 10 employees for the camp who will be trained in hospitality course. There will cooks, guards and general hands.

Targeted Customers for each of the proposed Investments:

Table 8-6: Targeted customer for each proposed investment

Investment	Targeted customers
Organic fencing	Tourist (local and international) Entrepreneurs who see in beekeeping a possibility to be a cash cow. Public institutions, i.e., schools and universities (educational trip itineraries focusing on wildlife and agro-production concepts), facilitated by the SO to the communities. The state (relevant Ministries).
Game introduction/breeding Programme for sustainable hunting and ecotourism	Local and foreign hunters (once populations have been boosted) Butcheries Communities (subsidised meat sales) Other safari operators (live sales)
Tented accommodation	Foreign tourists Local tourist (anchor awareness and appreciation of the area) Hikers (encourage non- invasive walking safaris) Schools/universities

Sales and marketing

The Safari Operator will use the following strategies in their sales and marketing component:

- a) Vigorous advertising and promotional campaigns will be set in the following means: through social media platforms (already we have a website), brochures, word of mouth, pamphlets and through the media (radio and Television) for all proposed investments, these can be conducted by the brand employees.

- b) Reasonable price policy on all sales so as to create traffic and a clientele base
- c) Relationship marketing through the creation of innovative packages which will co-brand all the investment activity (a unique method of cutting costs)
- d) Paid marketing to external agents that will rifle the activities to our international niche market.
- e) Co-branding- Nzou Safaris is a sister to a lucrative organisation that has already built its name; It's a Small world backpackers, which will help in boosting the awareness of the tented camp investment proposition.

Natural resources management and enhancement

Nzou Safaris is going to use the following natural resources management and enhancement

- a) Introduction of game counts (waterhole/walking transects), to understand and create trends in animal population as a first step to understanding our resources.
- b) Working together with relevant stakeholders in natural resources for collaborative monitoring programmes
- c) Community based resource management programmes
- d) Awareness campaigns
- e) Value-addition- to by-products of community non-forest timber products (honey).
- f) Implementation of result based management approaches in line with natural resource management.
- g) Strengthening of anti-poaching activities as means to curb illegal harvesting of resources.
- h) Applied research from volunteers to enhance the value of the resources (scientific backing and recommendations).
- i) Rehabilitation programmes

Envisaged competition

Nzou Safaris envisage completion to come from the following:

- a. Emerging players in the tourism and hunting industry (South Africa has already created other breeds for example, golden/black impala, thus this may attract hunters to divert from the holistic hunting approach)
- b. Well established visible brands (competitors of the organic honey)
- c. Well established honey producers
- d. Organisations for volunteer programmes have been there for a long time
- e. Other land use types such as agriculture expansion.

Nzou Safaris growth plans for the Mavhuradonha Wilderness Area

Nzou Safaris has the following plans for growth for the Mavhuradonha Safari Area:

- a. To advance tourism and economic development and contribute significantly to a tourism-led economy, through the provision of high quality sustainable hospitality service.
- b. To develop underutilized facilities in the CWC- Muzarabani as a district is known for natural hazards (floods, drought) therefore Nzou Safaris will demystify the negatives known about

the district by involving the communities and creating safety nets for them. In essence, the aspirations are that Mavhuradonha grows in visibility as a tourism destination due to reputable branding of all the products in line with it.

- c. To stimulate rural development through social responsibility and ploughing back into the rural community

Concerns and fears about the establishment of the CWC

The fears that Nzou Safaris has over the establishment of a CWC in Muzarabani district are given as:

- a. i. Agriculture expansion could be a concern for game restocking programmes
- b. ii. Facing resistance from other communities (those who are not going to directly benefit from the resource).

Risks and mitigation measure for the investment

Table 8-7 below shows the risk that Nzou Safaris envisage and how they plan to mitigate them

Table 8-7: Risk and Mitigation Measures

Risk	Mitigation
Inflation	The use of forex versus local currencies
Market risk	Strategic financial planning
Unpredictable natural hazards which may influence the established sites for the investments	Disaster, risk reduction to aid resilience
Misappropriation of funds in safety net programmes	Administrative body establishment and capacity building in accounts

Investment Analysis

For the investments proposed by Nzou Safaris these are the results of the analyses.

The Figure 7-1 below shows the projected revenue for the next 10 years for the three different investments proposed by Nzou Safaris.

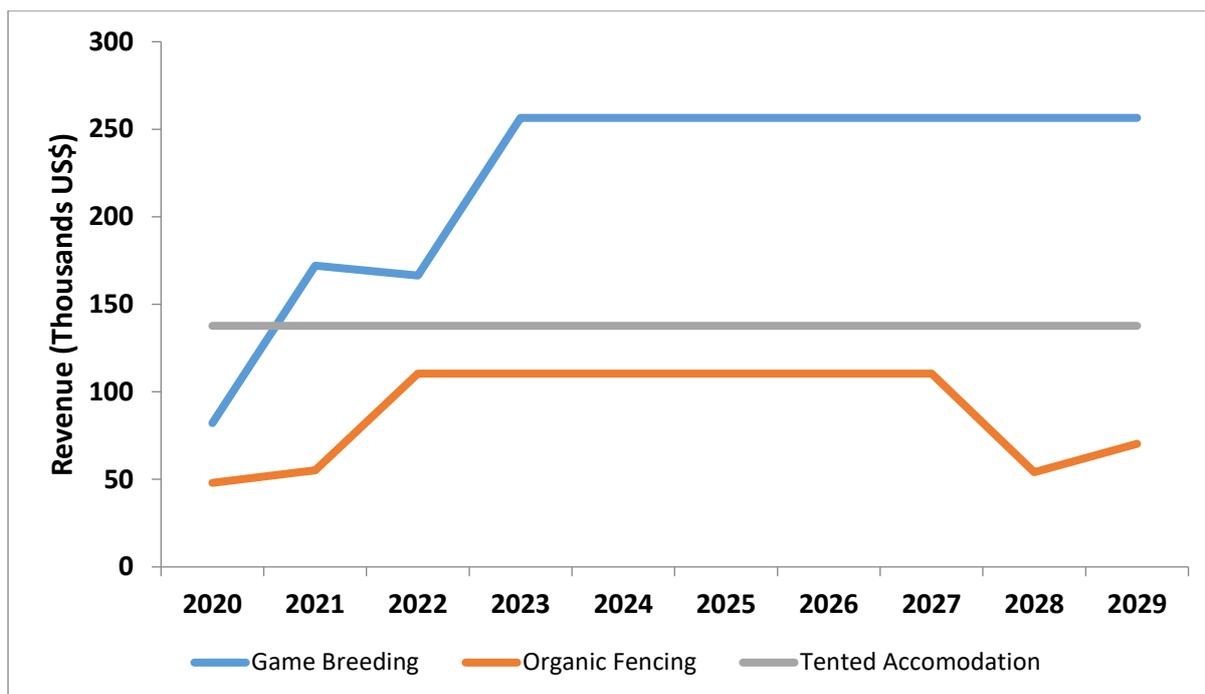


Figure 7-1: Projected revenues from the three investments proposed by Nzou Safaris

As shown in the Figure 7-1 above the more income is projected to come from Game breeding followed by tented accommodation, the organic fencing.

Table 7-8 below shows the financial and economic analyses for the three proposed investments by Nzou Safaris.

Table 7-8: Financial and Economic Analyses for the three Investment Options Proposed by Nzou Safaris (t = 10)

	Organic Fencing	Tented Camp Accommodation	Game introduction and Breeding Programme
GEF 6 Project Funding Request	US\$64,400	US\$246,600	US\$327,500
Co-financing (average per year for 10 years)	US\$16,980	US\$36,000	US\$36,050
Viability			
Overall economy	US\$617,800	US\$769,900	US\$2,120,768
District economy profit	US\$817,400	US\$1,008,950	US\$1,768,714
Community level profit	US\$647,600	US\$441,900	US\$919,849
Payback period (Year)			
Economic (Overall)	3	3	4

District economy	2	3	3
Community level	2	4	4
Internal Rate of return			
Economic (Overall)	76%	35%	32%
District economy	98%	44%	40%
Community level	78%	12%	18%

The total amount of capital that Nzou Safaris is requesting from the GEF project is US\$638,100 for all the proposed investments and it would provide a co-financing amount of US\$890,300 over 10 years. The game introduction investment is the most profitable in all aspects, and it is the one also that require the highest capital outlay and it would take more time for the payback. On game introduction, the question that might arise is over the decades, number of game was high and communities were benefitting from their utilization, but what caused the drop and what prevents the drop again this time. Mitigation measures should be put in place if this introduction of game is to be done. The other components that are in the investment like volunteership should be clarified on how they link to the investment since it is not clear.

The Organic Fencing is attractive given that on all the indicators are favourable. From the data provided, the organic fencing is also profitable and less risky given the high IRRs. One of the advantages is that is that it will involve the communities directly since they will be involved in the bee production but 30 individuals coming from 6 wards might be too little. However, the structure of the entity that would implement this model is not given, that is how Nzou Safaris is going to relate to the community is also not given. This applies also to the other investment options given by Nzou Safaris. They need to be clarified. During some of the focus group discussions it was indicated that some of the community members were introduced to honey production by NGOs but the scheme collapsed immediately after the exit of those NGOs. Nzou Safaris should indicate the mitigation measures that will ensure the project does not collapse. Markets are also critical for honey production. There is need to link the producers with market before and during the investment implementation (see the proposed MA & D model in Forestry Section 5.7.1.).

Nzou Safaris has been running the Lodge in Mavhuradonha Wilderness Area, so has some experience in the tourism industry therefore should not find it difficult to implement the Tented Camp Accommodation and from the analysis this shows that it is an attractive investment. However, one of the risk with this type of investment as mentioned in the threats by all the Safari Operators, is the low volume of tourists due to the bad socio-economic environment that has affected the tourism industry. Therefore care should be taken to ensure aggressive marketing of the investment.

Table 7-9 below compares the Organic fencing under three different discount rates.

Table 7-9: Comparison of the Economic and Financial Indicators Organic Fencing Investment under three Discount rates (t = 10)

Organic fencing	Undiscounted (r = 0)	Discounted (r = 12%)	Discounted (r = 20%)
Net Present Value			
Overall economy	US\$617,800	US\$318,726	US\$209,847
District economy profit	US\$817,400	US\$246,238	US\$289,549
Community level profit	US\$647,600	US\$333,193	US\$221,674
Payback Period (Years)			
Economic (Overall)	3	3	3
District economic level	2	2	2
Community level	2	3	3
Internal Rate of Return			

The table 7-9 above is showing the effects of increasing discount rates on the Net Present Values. There is a negative relationship between discount rate and the NPV. This implies that higher discount rates make it unattractive to reserve consume for the future – it encourages current consumption. This would discourage communities to participate in bee keeping since it would be less profitable.

Table 7-10 below compares the tented accommodation under three different discount rates.

Table 7-10: Comparison of the Economic and Financial Indicators for tented accommodation investment under three Discount rates (t = 10)

Tented Camp	Undiscounted (r = 0)	Discounted (r = 12%)	Discounted (r = 20%)
Net Present Value			
Overall economy	US\$769,900	US\$334,642	US\$187,347
District economy profit	US\$1,008,950	US\$455,917	US\$272,004
Community level profit	US\$441,900	US\$142,418	US\$42,052
Payback Period (Years)			
Economic (Overall)	3	3	4
District economic level	3	3	3
Community level	4	5	7

Table 7-10 above is showing the effects of increasing discount rates on the Net Present Values under tented accommodation. As discount rate increase, NPV decreases. This implies that higher discount rates will discourage investors from investing in tented accommodation. In addition, it lengthens the payback period especially for the communities – making it harder for them to realize benefits from the project.

Table 7-11 below compares the Game Introduction/Breeding Investment under three different discount rates

Table 7-11: Comparison of the Economic and Financial Indicators for the Game Introduction/Breeding investment under three Discount rates (t = 10)

Game introduction	Undiscounted (r = 0)	Discounted (r = 12%)	Discounted (r = 20%)
Net Present Value			
Overall economy	US\$2,120,768	US\$1,053,147	US\$641,514
District economy profit	US\$1,768,714	US\$842,301	US\$498,957
Community level profit	US\$919,849	US\$371,937	US\$161,689
Economic (Overall)	4	3	4
District economic level	3	3	4
Community level	4	5	6

The table above are shows the effects of increasing discount rates on the Net Present Values from the game Introduction/Breeding investment. As the discount rate increases, the NPV decreases. This means that higher discount rates make it attractive to consume now rather than later. This would mean, depleting wildlife and leaving nothing for the future. To ensure that the wildlife are conserved, there is need to ensure they are preserved and community benefit from their use through sharing of revenues like what is proposed by Nzou Safaris.

Comments on the Nzou Proposed Investment Projects

Although Nzou Safaris provided information on the proposed investment models, the background information provided was not adequate. The information on the benefit sharing models was also confusing getting one model from Nzou Safaris and another one from Muzarabani RDC providing different model. For example the hunting sharing model was given as 50% to community, 35% to Safari Operator and 15% to RDC by the Safari Operator but when we texted an SMS to one of the officers, he indicated that the sharing model was 50% to Safari Operator, then 50% for RDC, Community and CAMPFIRE Association which they share as 45%, 51% and 4% respectively.

For Mavhuradonha Safari Area there are unclear investments partnerships which should be dealt with before engaging the Safari Operator if a decision is made to engage the operator. The parties involved are George Seremwe of Nzou Safaris and James Varden of Varden Safaris, then there is Andrew Henderson who indicated is an investor to the former two. Although we met with Mr Seremwe and Mr Henderson except for James Varden who has an ecotourism concession, it showed that there was a deep mistrust amongst the partners. The council indicated that Nzou Safaris and Varden Safaris were the one recognized by council since they are the ones who signed concession contracts. But Mr Henderson indicated he was the investor for both those areas with signed contracts and had made substantial investments in the concession areas including game relocation and fencing. This is a potential risk situation to the project. The project team needs to convene a meeting with all the parties to map the way forward for the sake of the communities in Muzarabani.

8.5.2. Mbire District: Karinyanga CWC

Name of Safari Operator: Charlton McCallum Safaris (CMS)

Charlton McCallum Safaris is a partnership between Professional Hunters Buzz Charlton and Myles McCallum. CM Safaris owns hunting rights in the Dande²⁵ North including Dande Safari Area and Dande East safari areas which has approximately 500,000 acres of pristine Zambezi Valley wilderness which has some of the best game hunting in Zimbabwe (CMS Safaris Website).

Activities proposed to be undertaken in the Karinyanga CWC

The Safari Operator want to mainly concentrate on two activities for the Karinyanga (Mbire East) CWC:

- (a) CMS wants to boost game numbers through providing more water sources (piped water) in the conservancy. Since the SO will not put an emphasis on elephant and lion hunting he needs to boost buffalo, sable, roan, leopard and plains game populations to fill the gap. Game populations in Karinyanga are impressive early season but as the area dries up, mainly by early hunting season, the game moves back to Mozambique. The advantage of adding water is that the region will boost the population of the key species and also increase the earnings, and to do that without hunting as many elephants and lions.
- (b) Boost antipoaching unit in the Karinyanga CWC

Employment

The employment details are as follows: 1 Professional Hunter; 1 Area Manager; Assistant hunter; 4 Camp staff; 2 Camp minders; 8 scouts.

Targeted Customers

CMS target the following major clients from the following countries for the wildlife activities: 60% USA, 20% Europe, 20% New Zealand, Canada and Australia.

Sales and marketing

²⁵ Dande North and Dande East are referred to as Mbire North and Mbire East concessions in the report and in communication with the RDC

They conduct their sales through a well-established internet website. In addition they also have agents in target countries who assist in marketing their services.

Plans for growth

Increase the wildlife populations in the concession areas which would translate to more revenue for the communities living with wildlife.

Concerns and fears about the establishment of the CWC

CMS indicated that they fear being forced by authorities and donor community to adopt a business model that has no chance to be commercially viable or has no long term prospects by the RDC or any other interested person or institution.

Risks and mitigation measures

Table 7-9 below shows the risks for CMS and how to mitigate them

Table 7-9: CMS risks and mitigation measures

Risks	Mitigations
Competing land uses	Establish a competitive edge over other land uses
Poaching	Increase anti-poaching efforts
Human population growth	Zone carefully and help authorities with enforcement.
International politics.	Demonstrate best practices, lobbying & show benefits to communities.
Anti – hunting NGO’s	Demonstrate best practices, lobbying show benefits to communities.
The Zimbabwe factor	Manage as it comes. Most hunters support us through thick and thin unlike photo safaris.
International economies and market downturns.	Manage as it comes. Safaris are luxury commodities so are often first thing to feel the pinch. Extra aggressive pricing and marketing.

Management model to be used

Figure 7-2 below shows CMS management structure that is going to be used for both the project in both Mbire East and Mbire North CWCs.

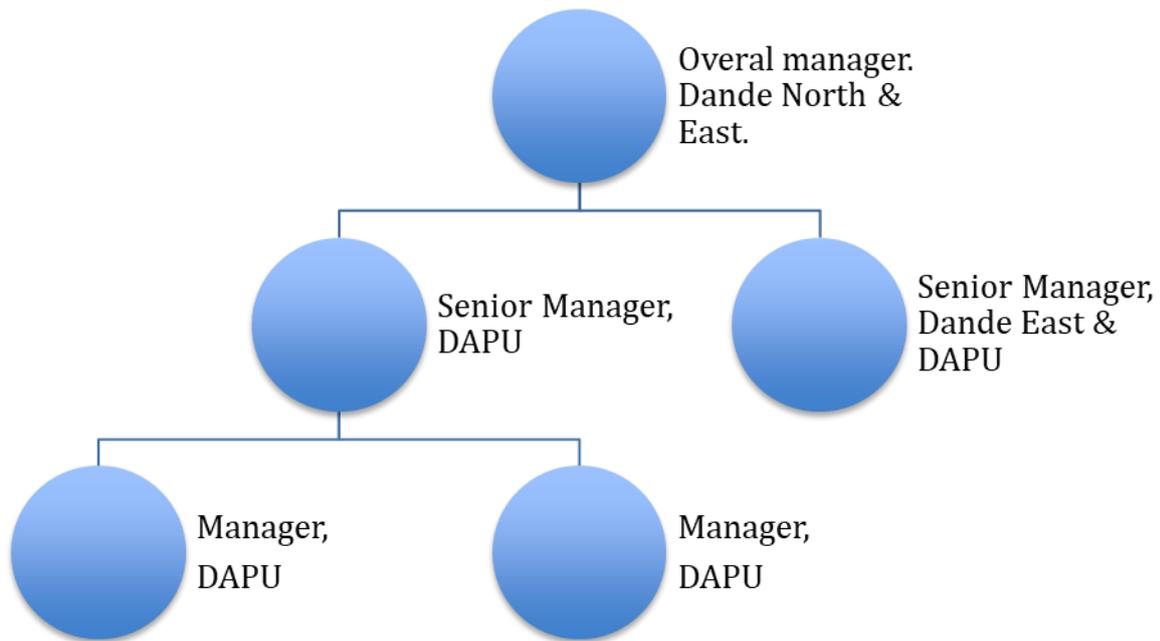


Figure 7-2: CMS Management Structure for Mbire South and Mbire East CWC

Partners in the investment

CMS partners in the running of the CWCs is the Council and communities

How communities are going to be engaged

CMS has contracts that are already running and have already specified partnerships. They believe these agreements were made by communities in favour of communities which is difficult to ascertain because we were not able to view the contract despite our request to view them. The wards that are going to benefit from their investments in Mbire East (Karinyanga) CWC are Wards 4 and 12.

Investment Analyses

For the investments proposed by CMS, we present the results of the analyses here. The projected wildlife total revenue for the Karinyanga revenue is shown in Figure7-3 below.

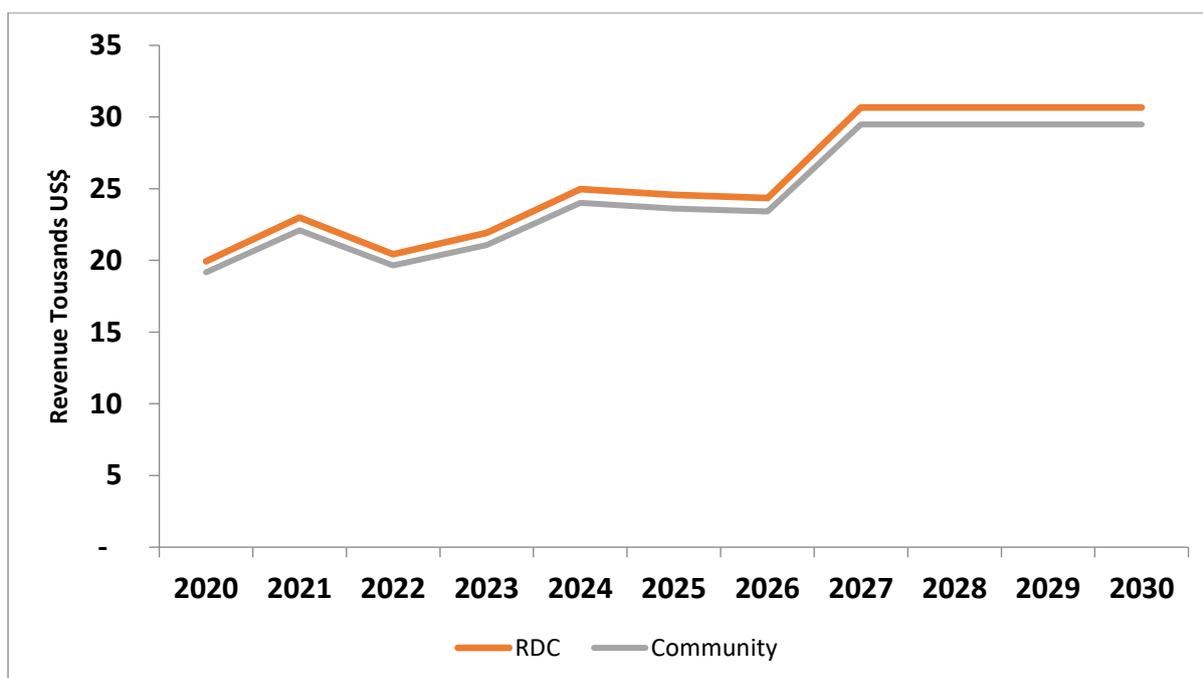


Figure 7-3: The projected wildlife revenue for the RDC, and community over a 10 year period from the Karinyanga CWC

Over the 10 year period, the community is projected to be getting around US\$25,000 per year. As indicated the communities that will be benefitting from this CWC are ward 4 and 12 with about 3,000 households (Zimstats, 2012). This means it would be not feasible to give households cash from the revenue, since it would translate to a dividend of less than US\$8 per household per year. The most feasible would be to spend in for a community investment.

Table 7-9a below shows the financial and economic analyses outcomes for the proposed investment options under three different discount rates.

Table 7-9a: Financial and Economic Analyses for the Investment by CMS under three discounts rates (t = 10)

Financing			
GEF 6 Project Funding Request	US\$306,692		
Co-financing (average per year for 10 years)	US\$152,462		
Viability			
	Undiscounted (r=0)	Discounted (r=12%)	Discounted (r=20%)
Overall economy	US\$304,680	-US\$673,177	-US\$991,691
District economy profit	US\$2,278,256	US\$1,795,558	US\$1,676,867
Community level profit	US\$290,308	US\$19,745	-US\$68,630
Payback period (Year)			

Economic (Overall)	7	Beyond 10 years	Beyond 10 years
District economy	2	3	3
Community level	6	9	Beyond 10 years
Internal Rate of return			
Economic (Overall)	-8%		
District economy	75%		
Community level	-4%		

Undiscounted profit at all economic levels show that the investment is profitable at all levels. The District economy profit is at about US\$2 million over the 10 years showing that the district would benefit through employment opportunities, maintenance of infrastructure in the district conservancy area. However the payback period for the community is 6 years meaning it would take 6 years for the investment done by the project to be offset by the benefits going to the community. The overall and community levels Internal rates of return are negative meaning that the proposed project or investment is expected to cost more than it returns, when we take into consider the time value of money, or lose value for the investment within the period specified in the analysis. This means the investment is not generating enough revenue worthy the capital used for the investment at the Overall Economy level) and also at community level. There are some reasons for this. At the economic level, the Safari operator would be co-financing the CWC to the tune of an average US\$152,462 per year but the exact amount of revenue he gets for investing is not disclosed, so the economic side might already be covered by the revenue he is undertaking in the district. Anyway Safari Operator's investment is benefiting the district given that at District community level the project is profitable and the IRR that level is very high 75%.

Then at community level, it means the number of hunts that would be realized would not be increasing quickly enough to generate the revenue despite the investments made by the Safari in water development and antipoaching efforts. It would require more than 10 years for the investment to have a positive IRR. This is because Karinyanga is relatively a smaller CWC, about 30,000ha (GEF, Government of Zimbabwe and UNDP, 2018). It would require more time to have the growth in wildlife populations and to get the right sizes of trophy. Historic data from the Safari Operator show that from 2011 to 2018, they have been hunting an average number of 3 buffalos, 2 elephants and sable in the Karinyanga area. So if the project decides to support this CWC, they should allow more time for the stock to build up and the project to have more impact. Alternatively, other interventions could be pursued to ensure that the communities realize more benefits in a short period of time.

Feasibility of the investments

From 2013 to 2017 CMS has managed to pay US\$1,568,105 trophy hunting, US\$137,500 social funds, US\$15,000 Camp rental and US\$12,500 bird quota (CMS report, 2019) to Wards 1, 2, 4, 10, 11, 12, in Mbire East and North which is an indicator that some the projected off takes they made in the report could be achieved *ceteris paribus*. The Safari operator pays directly into communities' bank accounts. However other districts first pay the RDC, the RDC would then pay communities. Although the hunting fees are in hard currency, the communities are paid in the local currency which is currently being affected by inflation.

8.5.3. Mbire District: Mbire North (CMS)

Name of Safari Operator: Charlton McCallum Safaris

The Mbire North is very well watered so only more game is needed.

There exists two investments options that the Safari Operator is proposing in their request to fund either one of them.

(a) Option A activities

- (i) Game translocation from South East Lowveld to Mbire North: translocating 300 impalas; 75 waterbuck; 240 zebras; 100 buffalos)
- (ii) Supporting antipoaching unit

(b) Option B activities

- (i) Purchase light aircraft and undertaking light aircraft surveillance
- (ii) Fire prevention measure
- (iii) Road maintenance
- (iv) Water development

The justification of Option A is that in Mbire North there is need to boost game numbers through restocking. Since Elephant and lion hunting is under international spotlight, there is need to boost buffalo, sable, leopard and plains game populations to fill the gap. Game populations in Mbire North are somewhat depleted through historic mismanagement. So the SO indicated the need to give those plain game populations a jump start so that their quotas can increase. The SO suggest that if there is aggressive stock the revenue can be doubled over a 10 year period.

Other details about the Safari Operator are covered in the Mbire East section which is also run by the same Safari Operator, so will not be repeated in this section.

Community beneficiaries of the project

In Mbire North CWC, Wards 1, 2 and 11 will benefit from the investments. CMS has the following staff who are working in the project: Professional Hunter; Area Manager; Assistant Hunter; 12 Camp staff; 2 Camp minders; 12 Game Scouts, giving a total of 17 people directly employed by the project.

Investment Analyses

For the investments proposed options by CMS, we present the results of the analyses here.

Figure 7-4 below shows the comparison of revenue projections from wildlife for the community and RDC under two scenarios (A) Game translocation and antipoaching; and (B) Air surveillance, antipoaching and water development but without game translocation.

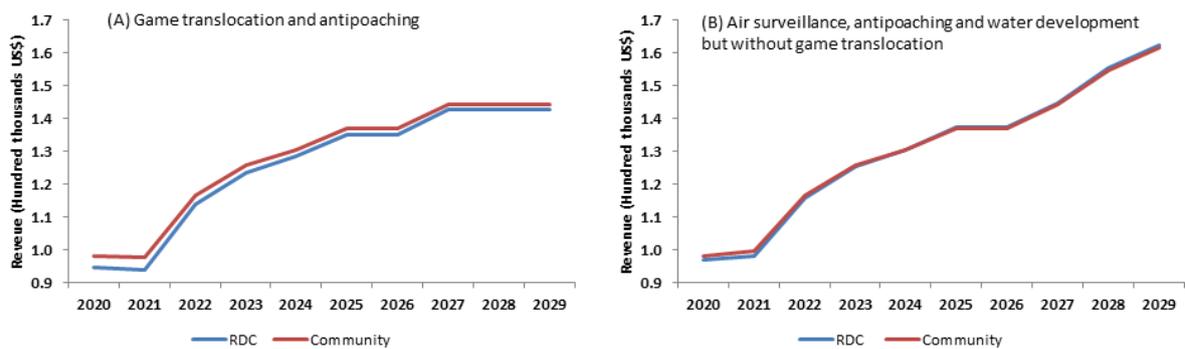


Figure 7-4: Wildlife revenue projections for two scenarios in Mbire North CMS

As shown in the figure above wildlife revenue for both scenarios would rise from under US\$100,000 for the communities and RDCs to over US\$1.4 million for Scenario A to over US\$1.6 million for Scenario B over a period of 10 years. This could suggest that with proper mechanisms in place revenues from wildlife management could increase. A steep rise in the Air surveillance could indicate its effectiveness of that method over ground surveillance. The revenue of both the investments seem very high. For CMS from 2013 to 2017 (a 5 year period), it managed to pay US\$1,568,105 trophy hunting, US\$137,500 social funds, US\$15,000 Camp rental and US\$12,500 bird quota to Wards 1, 2, 4, 10, 11, 12, in Mbire East and North when the wildlife numbers were down. These projections are for a 10 year period with improved anti-poaching efforts and good water management so, this might be feasible *ceteris paribus*. However, care must be taken not to overhunt, and this CWCs is larger (about 100,000ha) (GEF, Government of Zimbabwe and UNDP, 2018). Historical data from CMS shows that in Mbire North from 2013 to 2018 on average per annum, they were able to hunt 17 buffalos, 4 bull elephant, 4 tusk less cow elephant, 1 lion, 4 leopard and 1 sable (CMS Data, 2019).

Table 7-9b below shows the financial and economic analyses outcomes for the two proposed investment options.

Table 7-9b: Financial and Economic Analyses for the two Investment Options Proposed by CMS (t = 10)

	(A) Game translocation and anti-poaching		(B) Air surveillance, anti-poaching and water development
		Financing	
GEF 6 Project Funding Request	US\$305,000		US\$293,904
Co-financing (average per year for 10 years)	US\$16,191		US\$243,818
		Viability	
Overall economy	US\$6,323,215		US\$2,219,836
District economy profit	US\$3,842,893		US\$ 4,753,055

Community level profit	US\$971,055		US\$1,011,576
Payback period (Year)			
Economic (Overall)	1		2
District economy	1		1
Community level	3		3
Internal Rate of return			
Economic (Overall)	160%		60%
District economy	119%		143%
Community level	30%		32%

The viability values for both the investments are very high. The Air surveillance scenario has a huge co-financing component which results in a very huge value on the district economy viability but relatively low value for the overall economy viability. The latter is because the huge co-financing component is a cost to the overall economy. This becomes a risk if the Safari Operator is getting the finance from the bank or from an investment partner. If the partner fails to fulfil the financing obligations or the bank has not yet approved the loan, it means the project is put at risk. This therefore means the GEF 6 project should also ascertain the availability of co-financing funds to mitigate the co-financing risk.

To support what was observed on the revenue projections, the community level profits for both scenarios are very high about US\$1 million each although the air surveillance scenarios is higher. The IRR for at the overall level would highly favour Scenario A whilst District level economy would favour Scenario B, but the community level it would be in slightly favour of Scenario A.

Table 7-9c below compares the economic and financial performance of the Game translocation and Antipoaching Investment Option under three different discount rates

Table 7-9c: Comparison of the Economic and Financial Indicators for Game Translocation and Antipoaching Option Investment under three Discount rates ($t = 10$)

Game translocation	Undiscounted ($r = 0$)	Discounted ($r = 12\%$)	Discounted ($r = 20\%$)
Net Present Value			
Overall economy	US\$6,323,215	US\$2,621,339	US\$1,428,328
District economy profit	US\$3,842,893	US\$2,732,585	US\$2,375,458
Community level profit	US\$971,005	\$426,787	US\$251,725
Payback Period (Years)			

Economic (Overall)	1	1	1
District economic level	1	1	1
Community level	3	4	5

Table 7-9d below compares the economic and financial performance of the Air surveillance, antipoaching and water development investment Option under three different discount rates

Table 7-9d: Comparison of the Economic and Financial Indicators of Air surveillance, anti -poaching and water development investment option under three Discount rates (t = 10)

Air surveillance	Undiscounted (r = 0)	Discounted (r = 12%)	Discounted (r = 20%)
Net Present Value			
Overall economy	US\$2,219,836	US\$976,015	US\$ 557,951
District economy profit	US\$ 4,753,055	US\$ 2,492,076	US\$ 1,775,693
Community level profit	US\$ 1,011,576	US\$ 408,531	US\$ 213,085
Payback Period (Years)			
Economic (Overall)	2	3	3
District economic level	1	1	1
Community level	3	4	5

The two tables above show the effect of a higher discount rate on the viability of investment options, game translocation and air surveillance. Higher discount rates lower the NPV as shown in both scenarios. Higher discount rate emphasizes earlier cash flows nearer to when the expenses are incurred. So if the resource has a lower value in future, hence higher discount rate, it is better to consume it now when the investment is made rather than later. If communities find that they are not benefiting on a resource then they will not conserve the reserve rather they will consume it earlier because it will have lower value in future. On the other hand if they are assured that they will get to access the resource and benefit from it if they will be placing a low discount rate on it, thus actively taking part in its conservation because they are assured of benefiting in future. Investing in higher antipoaching efforts is one way of ensuring that the resources are kept safe for communities to derive benefits in future, which could be the reason why the option B, is faring higher due to the extra measures like air surveillance which would scare would be poachers. Ground antipoaching units would be complement by such efforts. In addition the small aircraft to be purchased would also be used for game counting,

Issues on investments

The basis for the data for both scenarios above was difficult to trace. Although we tried to engage the Safari Operator in the final week of the analyses he was in the field. So there is need to verify the data

so that correct projections are produced. However, the investment options presented have potential in ensuring communities benefit.

Both options seem to be highly viable. Realization of either of the investment option chosen would depend on strict adherence to the proposed activities and ensuring that there is no over-hunting which would derail the realization of sustainable wildlife management. CMS has strictly managed their operations and have good and traceable records of their hunts, revenues for the RDC and communities. This needs to be maintained. However the communities need to be more involved without compromising the operations and revenues from the wildlife.

There are issues regarding African Wildlife Foundation (AWF) which is also operating in the Mbire North concession area. Some of the components that are being implemented by AWF are similar to GEF project, e.g. support to the anti-poaching efforts. However, AWF project period is shorter (3 years) and they are left with a few years of project implementation. Although the consultants had some discussions with the AWF team regarding cooperation, there are some issues that require ironing out to avoid duplication and confusion in the project execution. The Project Management Unit needs to meet with them to elaborate areas of cooperation.

From the Focus Group and Key Informant Interview carried out, there is need for building a good and amicable relationship between the private sector and the community and ensure that there is trust between them. Recruitment of the scouts from the communities need to be transparent and professional and should not be based on personal basis but should be based on institutional backing.

8.5.4. Mbire North (Chitsere Trust and Mbire Community Conservation Trust)

Name of Operator: Chitsere Trust and Mbire Community Conservation Trust

Areas of Focus: Nutrition, Education, Medicine and Anti-poaching Unit Support

Structure of the Operator

They have set up two operating structures:

(a) Chitsere Trust:

- Operating company is Squarelake (Private) Limited
- Holds 30 year lease with Mbire Council, manages the land and obligations to the Council

(b) Mbire Community Conservation Trust

- Operating company Mbire Conservancy Projects (Pvt) Ltd
- Company manages all donor funding

Areas that they require GEF 6 Project Funding

The Chitsere Trust and Mbire Community Conservation Trust indicated that they required support for the components: Education support provision and increasing the size and effectiveness of the APU team

On the education component they require:

Upgrading Chapoto School – Support Chapoto School with water provisioning, Textbooks and Stationary; Solar System, Proper Toilets

On the Antipoaching Unit Support they require:

- 8 man team, with a Land Cruiser & motor bike
- Provision of a boat and driver to conduct weekly ad-hoc river patrols

They indicated that they had very little time to put together the financial model attached, so this needs to be viewed as an illustrative draft at this stage. The model would be refined and developed in conjunction with their donors & the community to meet collective goals.

However they indicated their funding requirements

For the activities as follows:

MBIRE Project PHASE 1

	FUNDING REQUIREMENT - USD					Grand Total
	Year 1	Year 2	Year 3	Year 4	Year 5	
Capital Expenses	\$ 234,300	\$ 131,200	\$ 71,700	\$ 61,200	\$ -	
Operating Expenses	\$ 144,980	\$ 142,480	\$ 122,480	\$ 87,480	\$ 82,480	
Total	\$ 379,280	\$ 273,680	\$ 194,180	\$ 148,680	\$ 82,480	\$ 1,078,300

Since no further information was given, the GEF 6 project could engage the Chitsere Trust for further information. We recommend that the education aspect could be considered by the other components of the GEF 6 project if relevant. However, the anti-poaching component could be considered under component 2, time and resources are permitting. Fish farming which is one area the Mbire Trust is interested in could be co-financed through the Small Grants component of the project. Concerns were raised in the Ward 1 FGDs on the community not being aware of what the private operator was doing and no benefits accruing to communities after 3 years of operation.

8.5.5. Mbire District: Masoka/Kanyurira CWC: Hunting Investment

Name of safari Operator: HHK Safaris (Private) Limited. HHK has been in operation since 1989, this is their 30th year in wildlife Safari business. They have operated on private land concessions, National Parks Safari Areas, and CAMPFIRE or Communal areas. They have also had operations in Mozambique and Cameroon.

Proposed Investments and Activities for the GEF 6 Project

In building the proposed conservancies, HHK has developed a four, stage model which encapsulates what is required to successfully establish the conservancies – they call it the DPDM model which stands for:

- **D – Define** – this involves identifying the area to be set aside for the conservancy, establishing the boundaries and physically marking these boundaries with either a road, a cut line or a fence.
- **P – Protect** – Once the area has been defined it is vital that adequate measures are taken to protect the area, the main threats being human encroachment, poaching, deforestation and bush fires

- **D – Develop** – Once the area has been defined and protection measures established it then needs to be developed. This takes the form of water development, radio and telecommunications, road network development and upgrades, safari lodge construction, training camp facilities and management housing.
- **M – Manage and Maintain** – Finally the area and systems needs to be managed and the equipment maintained. The anti-poaching program needs co-ordinating, the safari camps, the water points, the road network, the community relations, problem animal control and human wildlife mitigation are all aspects of the management.

The Proposed investments from the UNDP – GEF 6 project funding and the co-funding by HHK Safaris are based on implementing the above model. A lot of the requirements for each area (Mbire East and Mukwichi) are very similar and are based on the model above.

Defining the areas will require the physical demarcation of the boundaries by establishing roads and cut lines where natural boundaries such as rivers do not occur. This will require a tractor, tow grader, tow grass mower, up to 10 employees (road gang) per area for a minimum of 4 months per annum. Mobile accommodation in the form of tents and water bowser. In defining areas, there is need to involve RDC and the community, and there is also need for transparency as raised in Ward 8 and 9 in Hurungwe.

The core areas which require attention are:

- **Anti-poaching** – whilst there is already an anti-poaching program in both areas it is far from adequate. It is 100% funded by HHK Safaris and is restricted due to limited resources, particularly equipment and vehicles. There needs to be a training program for game rangers and Mbire South area requires a minimum of 12 permanent rangers and two supervisors. There is also a requirement for one general anti-poaching manager to oversee operations in both conservancies. Currently HHK Safaris employs 6 scouts in the Mbire South area.
- **Bushfire control** – area is prone to annual bushfires, usually started by poachers but also from agricultural field preparation burning in the adjacent communal areas. Bush fire control can be contained by early burning and adequate firebreaks.
- **Communication** – For effective antipoaching operations, it is crucial that there is a reliable and wide, ranging radio communication network which is linked by repeater stations. Each vehicle needs to be equipped with a radio, each patrol of 4 should have a minimum of two handheld radios and base or headquarters should have base sets.
- **Weapons** – Each scout should be armed with either a shotgun, handgun, rifle or semi- automatic AR15,
- **Equipment** – each ranger should be equipped with a full uniform comprising of trousers, shirts, boots, belts, hat, jacket, rain poncho, one-man tent, lightweight mattress, flashlight, cooking utensils, water bottle and backpack.
- **Vehicles** – The area requires two vehicles a Toyota land cruiser dedicated to antipoaching and protection operations and second 4 wheel drive pick-up for antipoaching management purposes inclusive of transporting captured poachers for detention and also for attending trials and hearings.
- **Water development** – Mbire South has a critical requirement for a comprehensive water point development plan. The area does not have sufficient permanent water which results in large numbers of wildlife migrating out of the area as the seasonal water dries up. A minimum of 10 solar boreholes is required to cover the proposed conservancy area.

- Bases – There is a requirement for a central main headquarters which can serve both areas and then smaller satellite bases from which patrols can operate. Mbire South will have a requirement for two satellite bases. Each satellite base will need 4 living quarters, one kitchen, eating area, a water tank and toilet and shower facilities.

Employment

HHK Safaris operates on a merit based manning system and is fully integrated, in this category. The following management / senior staff are based in the area for most of the year: area manager; employment : junior staff (permanent staff - 13 permanent staff, comprised mainly of cooks, waiters, trackers, skimmers, maintenance and general staff; Casual Staff - At the beginning of each season, approximately 10 casual staff are employed for about 2 months to assist with the repair and maintenance of our road network and camps; Casual staff are also employed as and when required for building projects or the opening of new roads etc.

Marketing and Clients

For the years 2012 to 2016 HHK clients for Mbire South were composed of the following: Americans (43%); Danish (23%); German (7%); Russian (4%); Austrian (3%); Dutch (3%); South African (3%); Argentinean (2%); Mexican (2%); Spanish (2%); Ukraine (1%); Norwegian (1%); Australian (1%); French (1%); Belgian (1%).

HHK has developed an extensive network of agents, clients and contacts around the globe, as such they operate to maximum bookings each year. HHK has been very innovative in their marketing. They have been able to adapt to changing market conditions and perceptions within the safari industry. For example the USA market has crashed over the past 10 years whilst the Eastern Europe market has flourished, they recognized this and focused more on Europe than the USA in their target marketing, this has paid dividends in their occupancy levels. Another example is that they have been the first operator in Zimbabwe to completely change the way safaris have been traditionally sold. They moved from high daily rates and low trophy fees to low daily rates and high trophy fees on key species such as lion, leopard, buffalo, elephant, hippo, crocodile and sable. They realized that hunters have become much more species oriented, that is, hunters will target one to four species on a safari as opposed to in the past where they wanted full bags of everything. The low daily rate/high trophy fees allow clients to focus on key species and if they fail in getting them they do not feel too aggrieved. In the past when hunters were after full bags it was not too bad if they did not get all of their animals.

This approach has made their marketing much more appealing to hunters as they now do not mind paying a higher trophy fee for their main animals and are not fleeced by a high daily rate if they fail. Mukwichi provides a good example of this, currently in Mukwichi it is reasonable for a client to expect to harvest a leopard and sable on a 14 day safari, the success ratio on these two species is over 90%, it is however unrealistic to expect to shoot for example a buffalo, Kudu, zebra, impala, warthog and waterbuck on the same safari. Their marketing approach allows them to target those clients who are mainly after leopard and sable, they place them in Mukwichi knowing they will shoot those species and have a happy client despite not getting lots of other species.

Future Investment Plans

In terms of the tender agreement and subsequent lease agreement signed between HHK Safaris and the Mbire RDC, HHK Safaris is committed investing in the area in a number of ways:

- Building and operating a small lodge in Mushumbi Pools
- Developing more permanent water points within the conservancy areas in the form of solar boreholes
- Increasing anti-poaching efforts.

Returns to the Communities and Council

Distribution of trophy fees and daily rates

Their model for benefit sharing is as follows:

- Safari Operator 46%
- Producer wards 25%
- Council 26%
- Campfire Association 4%

Bird Quota – to pay bird quota of \$2000 annually by 15th of July.

Social funds

YEAR	COUNCIL \$	WARD 11 \$	WARD 2 \$	WARD 3 \$	WARD 16 \$	TOTAL \$
Annual	4 000	6 000	3 000	1 000	1 000	15 000
Total/Annum	4 000	6 000	3 000	1 000	1 000	15 000

The other commitments that HHK has made for their operations are as follows:

- That meat shall be distributed to the communities of the Producer Ward through the ward wildlife committees, save that used as baits or camp requirements and that requested by the Council.
- That the Partner shall provide training as learner professional hunters and in the wildlife management and utilization to selected suitable person from the local Communities of the Producer wards.
- That the Partner shall employ local people for the posts below head cook and hunters.
- That the Partner shall assist the Council with Problem Animal Control and anti-poaching activities, by providing equipment and personnel. The makeup expenses and running of this operation will be met by the Partner.
- That the Partner shall facilitate and empower the Council and it's Communities with the capacity in marketing of hunts at Councils expenses, management of safari operations and management of finances.

Investment Analysis

Table below shows the financial and economic analyses outcomes for the proposed Support to anti-poaching efforts and water provision investment options by HHK Safaris under three different discount rates.

The projected wildlife revenue for the Mbire South CAMPFIRE Wildlife Conservancy is shown in the Figure 7-5 below.

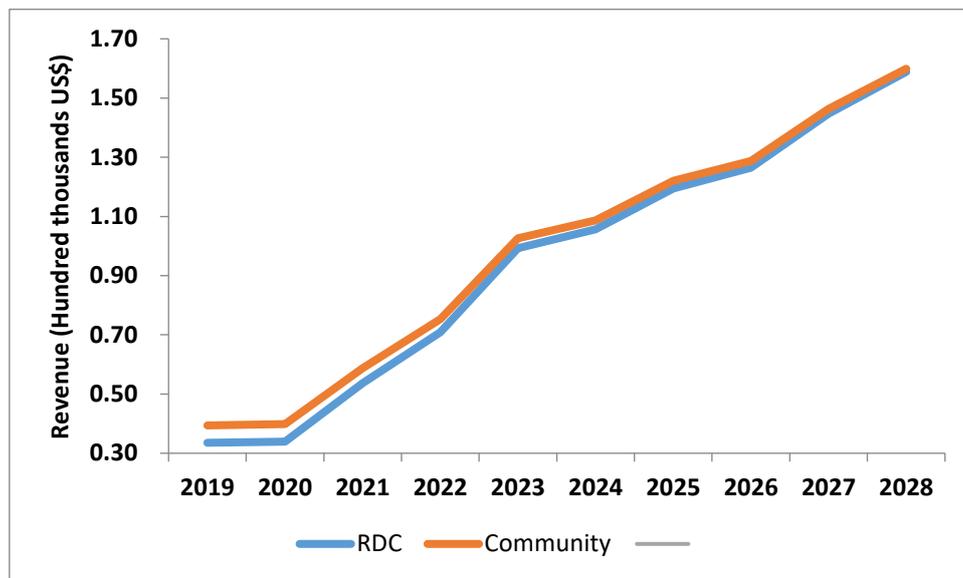


Figure 7-5: Projected wildlife revenue for the Mbire South CAMPFIRE Wildlife Conservancy from 2019 to 2028

The projected wildlife revenue for both the RDC and community is projected to rise from around US\$30,000 in 2019 to over US\$150,000 in 2028. This is quite feasible given the investments that would be done in water development and antipoaching efforts to be employed. Given that the Mbire South CWC is relatively large in size 60,000ha (GEF, Government of Zimbabwe and UNDP, 2018), the wildlife population could respond smoothly to the investment, translating to higher offtake and more revenue to the communities.

The quota utilization for selected major species, elephant, buffalo, hippo and hippo are shown in the figure below. There has been some decreasing trend over the years which should be reversed through the antipoaching and water developments as proposed by HHK Safaris.

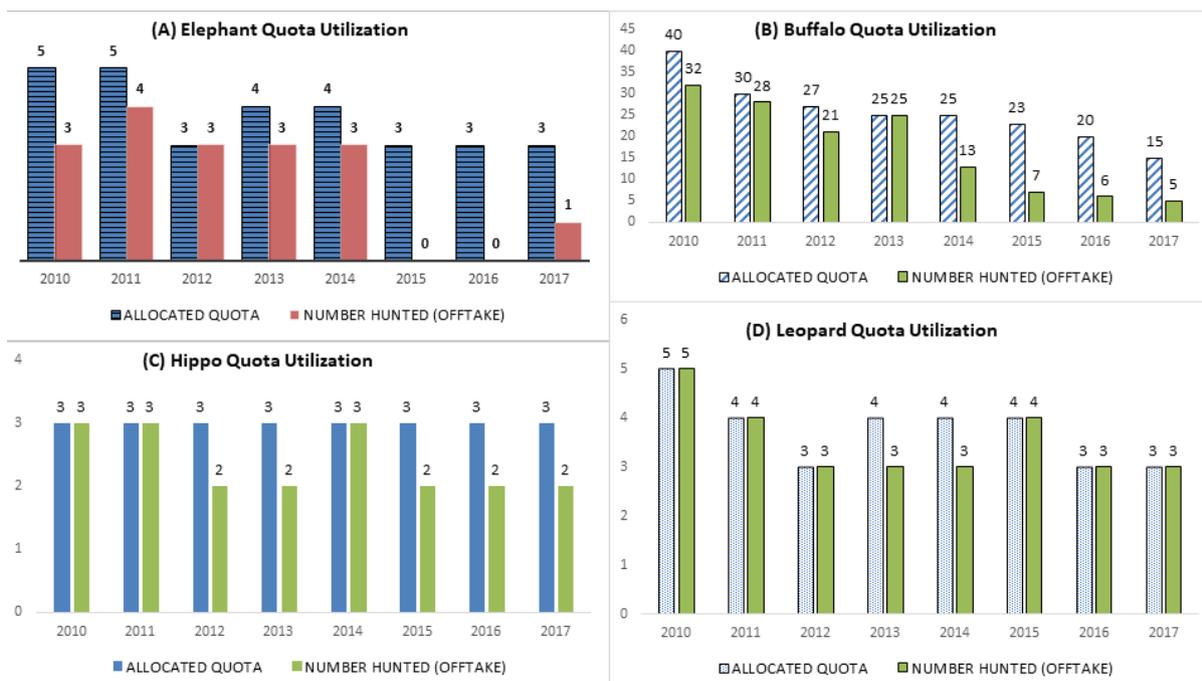


Figure 7-6: Quota utilization of (A) Elephants, (B) Buffalo, (C) Hippo, (D) Leopard from 2010 to 2017 in Mbire South Concession

The Financial and Economic Analyses for the Support to antipoaching efforts and water provision proposed Investment by HHK Safaris is shown in Table 7-6 below.

Table 7-10: Financial and Economic Analyses for the Support to antipoaching efforts and water provision Investment by HHK Safaris under three discounts rates ($t = 10$)

Financing			
GEF 6 Project Funding Request	US\$301,000		
Co-financing (average per year for 10 years)	US\$190,805		
Viability			
	Undiscounted (r=0)	Discounted (r=12%)	Discounted (r=20%)
Overall economy	US\$ 1,426,465	US\$245,202	US\$162,220
District economy profit	US\$ 3,535,342	US\$2,440,736	US\$1,229,761
Community level profit	US\$ 680,491	US\$147,781	US\$89,460
Payback period (Year)			
Economic (Overall)	7	8	10
District economy	2	3	2
Community level	5	7	8
Internal Rate of return			
Economic (Overall)	4%		
District economy	96%		
Community level	9%		

The overall economy is drastically reduced as the interest increase. The district economy profit is relatively high given the high co-financing by the Safari Operator, which at the same time might be a risk if the Safari Operator is still searching for funds for funds to co-finance. The community level profit is moderate but declining faster with increase in the discount rate implying a riskier investment as it responds to the interest rate. For example if the discount is 0% the NPV for the community profit of US\$680 but when its 20% it becomes US\$89,460 over 10 years. This means that the community might not find the wildlife resource valuable as much and might decide not actively contribute to its preservation because future benefits are not that attractive. The community level internal rate of return is also relatively smaller indicating that the benefit that would be realized by the community from GEF project capital investment through the Safari Operator is comparatively lower taking into consideration the time value of money. This is to be expected, wildlife requires time to build up. When investing in wildlife you will not get the returns faster hence the lower community IRR. As shown earlier, the projections show that the revenue for both the RDC and community is projected to rise from around US\$30,000 in 2019 to over US\$150,000 in 2028. This would not be a bad return to wildlife investment but the problem is that the IRR is biased towards quick returns to an investment rather than those which occur later.

8.5.6. Mbire Ecotourism, Cultural and Historical Tourism Investment

Proposed by Mbire Rural District Council

Operator: No operator yet. The project should invite a private player to partner community in reviving and running a lodge.

The proposed investment would be concentrated in Ward3 (Shange Forest) which is a wildlife corridor linking Karinyanga and Masoka/Kanyurira CWCs. It would benefit other wards along the proposed cultural and historic tourism trail.

Activities

Refurbishing and constructing new buildings at the Shange lodge: There are 10 Chalets at Shange that have a carrying bed capacity of 20 beds executive, require different levels of work, an office, and a conference centre. The conferencing facilities have a capacity of 100 people. There is also need to build a block with 20 new rooms that should cover standard and family rooms with a bed capacity of 80. Shange Conservancy and the lodges were handed over to the community of Ward 3 by CIRAD who had made the initial investments. Currently CGA is using the premises as its operational base in Mbire.

Mbire District is endowed with a lot of historical, cultural and heritage potential that needs exploitation as a way of complementing hunting and safari tourism that at present constitute between 70% and 75 % of council revenue. There are proposed Mbire East, Mbire South and Mbire North CWCs which will offer rich wildlife experiences during the hunting off-season. Further Mbire is rich in historical, cultural and heritage components which include: History on Mutota, Mutota Ruins and Mutota's grave site; Ancient Rock Paintings along Kadzi River; Chitako Hill; Tsokoto; Mazambara Petrified Forest; Dinosaur Spoons; Salt Pans in Kanyemba; Slave bay; Mass graves; Proximity to Kafalamanja Shrine; Zambezi Red Cliffs; The majestic Zambezi; Lady of the River; Where three countries meet (Mozambique, Zambia and Zimbabwe); Angolan Pitter Bird (*Agapornis lilianae*). Mutota, a Mbire ruler, is identified as the leader who led his people to establish a new kingdom, the Mutapa, in the Dande area in the Zambezi Valley where smaller Madzimbahwe were built. Mutota

applied an expansionist policy that gave rise to the creation of a vast empire the Mwene Mutapa state, which extended from the Zambezi valley into the Mozambique lowlands and towards the boundaries of the Kalahari Desert.

There is only one major accommodation facility for visitors who come to the area at Mushumbi Pools Growth Point, Lower Guruve Development Association Lodge. In addition, there is no major centre for holding conferences. Given the various developments happening in Mbire, there is need to provide a lodge which will offer accommodation for visitors, tourists and also used for conference facilities. The intended project is to be for the provision of medium class lodging and its related conferencing facilities, Restaurant/Bar, facilities. Meals of various cultures as per the clients' tastes would also be in the offering.

Aggressive marketing would be done through a host of promotional gestures like Billboards, Street poles' adverts, Brochures, Magazines, Television, Radio, Internet, Newspapers, Sign boards. Marketing would be done locally, nationally and internationally through Publicity Association.

The lodge should be for the community. There are various ways of running the lodge. Approaches to running the lodge, their advantages and disadvantages are given in the table below.

Table 7-11: Various ways of owning running the lodge with community partnership

Running and operating approach	Advantage	Disadvantage
(1) Joint venture PCPP – Public Community Private Partnership. Private sector operates then shares the bed nights sold with RDC and community. GEF 6 Project funds the investment. Private sector co-finances the operation costs	The RDC as a local authority will favour this and provide their full support, since they are ensured of a stake.	The community might be sidelined if there is a strong personality in the management who might overshadow the community
(2) Private sector investing in building the lodge on community land, then share profit with the community either through (i) Bed night sold levies and/or (ii) Percentage profit e.g. the Chilo Lodge Model in Chipinge. The RDC is a partner or gets levies – former being Public Community Private Partnership (PCPP) and the latter being Private Community Partnership (PCP)	Private sector good in attracting funding	Private sector only comes when the environment is attractive. Currently in Zimbabwe socio-economic and political environment is not conducive for private sector investments. Infrastructure like roads in Mbire are not good so Mbire not good for investments.
(3) Community owned and community operated. RDC	Community empowerment. For community to run, there	Community is poor to construct and run (but the

gets levies. (Possibility of GEF 6 Project funds the investment. Community co-finances the operation costs)	will be need for training which should take significant length of time	project could assist) the lodge. The community might be side-lined if there is a strong personality in the management who might overshadow the community. Might not be sustainable if the community manage the facilities in the short term but can work in the medium to long run when community is well capacitated.
(4) Community owned but private operated (Joint venture). The RDC get levies. Private Community Partnership (PCP)	Private sector is efficient in running	Private sector might not offer an attractive benefit sharing model to the community. The community might be side-lined if there is a strong personality in the management who might overshadow the community

Given the discussion in the table above, we recommend that in the short run model 1 is adopted if this project is attractive to the GEF 6 project priorities. Other type of model could be resisted within the RDC and stall or derail project implementation. The RDC is proposing a benefit sharing model of: RDC (40%), Community (20%), and Private Sector Operator (40%). However, the project should negotiate for a higher community stake leveraging on the funding from the GEF 6 project – we propose a benefit sharing model of: RDC (25%), Community (37.5%), and Private Sector Operator (37.5%). We present two scenarios in the investment analyses section. The project should lobby the RDC that in the medium term there should be a move towards Model 4 and then a move to model 3 in the long run.

The emphasis should be made that the project is funding to support in the refurbishing and building of the lodge on behalf of the community. Then the project and the RDC and community should search for the private operator to run the lodge on their behalf for a specified period of time which could be renewed until the community can run the lodge on their own. It should be specified in the contract that the private operator should recruit staff from local surroundings; should provide capacity building to the members of the community such that they would eventually run the lodge on their own.

Competition

This project’s only immediate competitor is the Lower Guruve Development Development Association Accommodation Facility, about 10 kilometres away located at the Mushumbi Pools Growth Point. It has 8 chalets of bedrooms each. They have bathrooms, kitchen facilities, and television and bar services.

Wards to Benefit from the investment

Basically all wards will benefit from the revival of Shange Lodges, however, at the core of the project are ward 3 and 2 since they are close to both projects in. Wards 1 will benefit from slave bay, Lady of

the River Artefact, Kafalamanja Shrine and the Zambezi Red Cliffs, while Wards 15 and 6 will benefit from Mutota Ruins, Rock paintings. Ward 11 will benefit in Rentals from Angolan Pitter Bird Viewing Camp.

Potential customers

- (a) Local NGOs, Government, Private Sector and any other visitor who visit Mushumbi Pools
- (b) Conference clients
- (c) Ecotourism, cultural and historical tourists local and foreign
- (d) Birdwatchers: experts or amateurs interested in bird watching coming from all over the world
- (e) Foreign tourists/travellers: visitors who come to Mbire (hopefully the road and bridge linking Zimbabwe to Zambia and Mozambique are developed)

Employment

The number of people envisaged to be employed in this business venture: Lodge manager; Conference Manager; 4 security guards; Lodge Staff: 2 Cooks; 2 Waiters; 2 Bedroom hands; 2 drivers; 5 general hands.

Risk factors

Road infrastructure to Mbire is still not attractive, hence tourist arrivals are still very low to this area. Government is moving very slow in undertaking the developments in the district. This might mean that the Lodge might be developed but would remain a white elephant due to lack of tourists and visitors. However hope is there given high donor and government activities occurring in the District. Addressing the key success factors below would ensure high chances of success. Other risk factors are discussed under weaknesses and threats in the SWOT analyses.

Key success factors

In order to achieve all the goals related to refurbishment and construction of Shange lodge the following are the success factors:

- A competitive private sector operator with strong national and international entrepreneurial, business acumen and marketing interested to partner with community in Mbire is found
- There is aggressive local, national and international marketing of Mbire as one of the interesting tourism destination.
- Development of infrastructure especially roads linking Mbire to Guruve.
- Strong partnership with tour operators in order to generate adequate sales
- Maintenance of high level of service quality and offering top of the notch facilities
- Competitive price and price policy
- Robust management handling costs, cash flow and other operations
- Support of the local authorities regarding the community project
- Strong participation of the community in the project
- Transparency amongst the RDC, private operator and community
- Community representatives with strong management skills, willing to learn and be hold accountable for their action

Sustainability of the project

Mbire District is a fairly new district in Zimbabwe established in 2006. Although it is one of the poorest districts, some developments are being done to uplift the district. Due to the developments that are happening in the district, there are huge opportunities that will ensure that the lodge operations are viable and sustainable. Mbire Rural District Council is one best performing rural council in the country,

due to sustainable consumptive wildlife management. However the council is keen to diversify into other forms of land management models, this is the opportunity that will get its support. In addition, having a private operator in its first period of operation who will transfer management and business skills to the community before handing over to the community will ensure the project sustainability.

Investment Analysis

There are four scenarios for this investment option given as follows:

- a) Pessimistic model with lower community stake (OptHighComStake)
- b) Optimistic model with lower community stake (OptLowComStake)
- c) Pessimistic model with higher community stake (PesHighComStake)
- d) Optimistic model with higher community stake (OptHighComStake)

The scenarios are based on the assumptions outlined in Table 7-11a below.

Table 7-11a: Assumptions for the stake and occupancy risk of the ecotourism, cultural and historical tourism.

Stake (benefit sharing model)	Low community stake (Proposes by the RDC)	High community stake (Alternative Model)
	RDC – 40% Community – 20% Private Operator – 40%	RDC – 25% Community – 37.5% Private Operator – 37.5%
Occupancy risk	Pessimistic	Optimistic
	(a) Total accommodation occupancy assumptions (Bed Nights Sold) 1st year up to 2nd year: 0.1 3rd year to 6th year: 0.15 7th year to 8th year: 0.2 9th and 10th year: 0.25 (b) Average conference facilities booking per month 1st to 2nd year: 1 3rd to 5th year: 1.5 6th to 10th year: 1.8	(a) Total accommodation occupancy assumptions (Bed Nights Sold) 1st year up to 2nd year: 0.2 3rd year to 6th year: 0.3 7th year to 8th year: 0.35 9th and 10th year: 0.4 (b) Average conference facilities booking per month 1st to 2nd year: 1 3rd to 5th year: 2 6th to 10th year: 2.5

The projected revenues for the four scenarios are presented in the Figure 7-7 below.

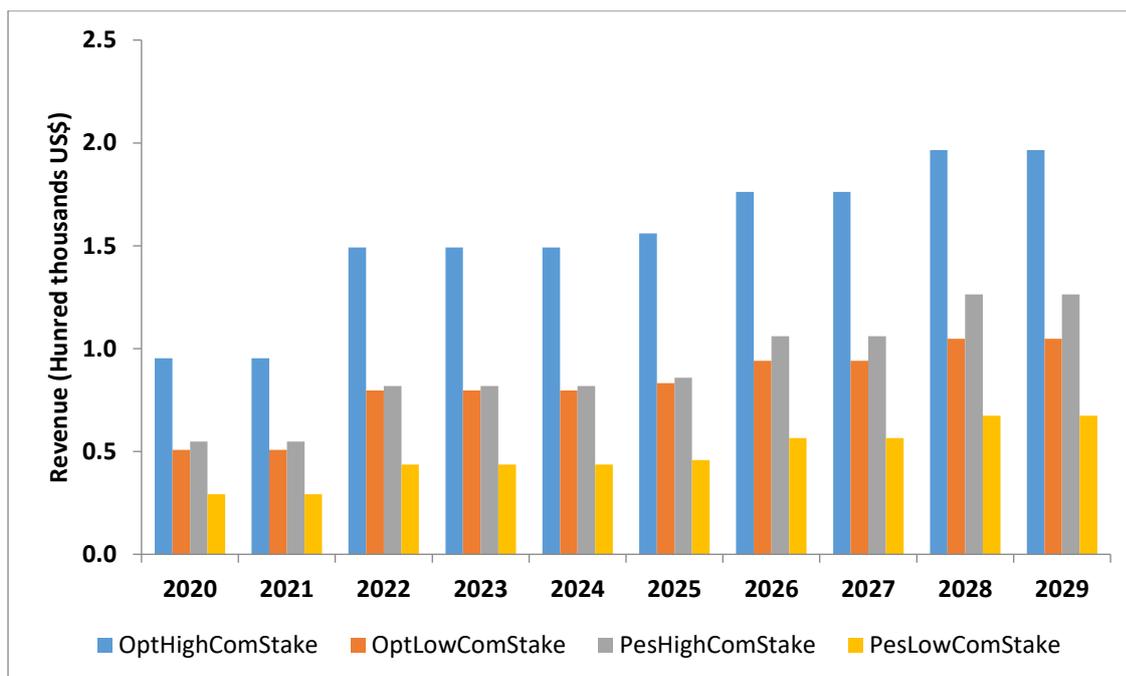


Figure 7-7: Projected community share revenues from refurbished Shange lodge for 10 year period

As expected the Optimistic model with high community stake is the one with the highest projected community revenue, followed by Pessimistic model with high community stake, then Optimistic model with lower community stake and lastly pessimistic with low community stake. The differences amongst different scenarios, the magnitude of the difference will depend on the assumptions of the model. Since this proposal was made by the council, the high community stake models are likely to be thrown out. The GEF 6 project might leverage on the funds to advocate for a slighter increase in stake for the community. The revenues to the community will also depend on the occupancy rates of the lodge, hence the need for aggressive marketing of the lodge.

The comparative analysis for the four models is shown in Table 7-11b below

Table 7-11b: Comparison of the financial and economic indicators for various model types of the ecotourism and cultural investment propositions

	Financing			
GEF 6 Project Funding Request	US\$223,900			
Co-financing (average per year for 10 years)	US\$82,150			
	Optimistic with higher community stake	Optimistic with lower community stake	Pessimistic with higher community stake	Pessimistic with lower community stake
	Viability			
Overall Economy	US\$3,060,845	US\$3,060,845	US\$1,368,845	US\$ 1,368,845

District economy	US\$3,164,003	US\$3,061,347	US\$2,106,503	US\$ 2,046,147
Community level	US\$1,315,942	US\$597,349	US\$681,442	US\$ 258,949
	Payback period (Years)			
Overall Economy	2	2	3	3
District economy	1	1	2	2
Community level	4	3	4	6
	IRR			
Overall Economy	94%	94%	41%	41%
District economy	113%	116%	83%	81%
Community level	21%	50%	23%	-3%

At the overall economy level and district economy levels, the optimistic models are more viable. However, at the community level, the higher community stake models outperform the lower community stake model. The Pessimistic model with lower community stake is actually negative meaning that the project under such scenario will not be able to recover the investment, in the 10 year period taking into consideration the time value for money. This is the reason why the GEF6 project should advocate for relatively higher community stake in the lodge if this investment is acceptable to the community.

Comment on the investment

If this investment is acceptable, its success will depend on quick identification of a private operator to form a joint venture with the RDC and community. The community would benefit from increased stake from the project, so there would need to negotiate for a bigger stake to the community. This might face stiff resistance to the RDC who give excuses that community projects have higher chances of failure which is not true. Rather, projects that are not institutionalized that rely on one person are the ones that are bound to fail even the RDC ones. The critical success factor here is not to let individuals run the show but there is need to have good governance structure within the community that will manage resources on behalf of the communities. Let the committee or trust be accountable to the community. Whatever model is adopted there should be transparency in the running and operations.

The lodge could be an opportunity to put a permanent mark in the project area. Given the pressure that is coming with international ant-hunting lobbyists, consumptive use of wildlife is facing a bleak future. So the future of wildlife is non-consumptive. Therefore if the project also diversify its approach to cover non-consumptive uses of wildlife through establishing the lodge and support the establishment of structures to operate it which includes a higher stake for the community it would be one of its great achievements.

8.5.7. Hurungwe District: Pfundundu CWC

Name of Operator: International Anti-Poaching Foundation (Non-Profit), and Hurungwe Safaris (Commercial. 33% owned by IAPF, but solely funded by IAPF).

The Safari Operator had been around the Pfundundu Wildlife Area for 4 years and has 21 years remaining on the lease.

The International Anti-Poaching Foundation (IAPF), is a non-profit organization committed to protecting endangered wildlife species across the world. It has just launched a new program with a special name: Akashinga. Akashinga is a project intended to provide disadvantaged women in Zimbabwe with effective employment opportunities as wildlife rangers and managers. The women in the program come from various backgrounds: some once gained income through trophy hunting, and some orphans or widows, victims of violence or unemployed wives of imprisoned poachers.

The first Akashinga project is being implemented, with a recruited complement of 35 women responsible for protecting the Pfundundu CWC. The women in the program receive similar training sessions and are required to perform the same role as male rangers. Their training comprises learning leadership skills, unarmed combat, patrolling, camouflage and concealment, first aid, dangerous wildlife consciousness, human rights, crime scene safeguarding, firearm safety and conservation ethics. IAPF's goal is to expand the programme so that it covers over 2,000 women warriors across a span of 30 million African acres by the year 2030.

Women's empowerment is one of the most potent tools for improving the world. The Akashinga project provides many benefits, not only for the women involved, but for biodiversity, communities, and, ultimately, the entire planet.

Over 70 percent of the operating costs go directly back into the participating communities involved. This approach, which invests the power of conservation in the local communities, guarantees that they are empowered. The pilot program began with Stage 1, with 16 women, and has expanded to include 35 in Stage 2.

Proposed Activities

They are requesting support for a period of 1.5 years

- (a) Salaries and bonuses for antipoaching staff
- (b) Rations, food supplies
- (c) Payment of labour for operations Centre construction
- (d) Fuel for road maintenance
- (e) Payment of lease fees
- (f) Construction of community boreholes
- (g) Dam construction
- (h) Management, communications and meetings
- (i) Non-profit fundraising through an international donor network

Sales and marketing

They will undertake their marketing in Australia, USA, Europe and the UK to raise funds through their existing and registered entities. Much of the fundraising is done through the media, which they have a global presence in, including an 18 page feature article in the June 2019 National Geographic

Magazine²⁶. They envisage that there is no effective competition at the moment. In the plans of growth for the CWC they will continue acquisition of long term land leases in strategic areas of the Lower Zambezi ecosystem. They are aiming to have 20 reserves managed and protected by 1000 women by 2025.

Concerns

The concerns that they have are that there is lack of long term investment from other key stakeholders in the region; and also corruption and misappropriation of funds is a big concern. They also fear that continued investment into the Lower Zambezi will improve wildlife numbers which increase human wildlife conflict, and no fencing has been scoped for the lower boundary of the ecosystem where the affected communities live. Another ongoing threat is that the pressure tobacco farming places on regional vegetation is unsustainable. Unless a long term solution is scoped, much of the area will eventually be lost.

Risks and mitigation measure for the investment

To address the risk of HWCs, they have a heavy involvement (daily) with the local community, dealing with HWC issues. They have 16 female scouts stationed in the villages who are responsible for dealing with HWC. However, on the ground there was an indication that that IAPF does not undertake or respond to PAC.

Management model they are going to use

They are implementing a new initiative/model of conservation called Akashinga which has already been introduced. This puts female empowerment at the centre of the strategy. This gives the greatest traction in community development and relationships, and conservation becomes an automatic no-product.

Partners in these investments

They are going to partner with the Hurungwe Rural District Council, HRDC Ward 7, and staff. All their funding comes from overseas through donations.

Involvement with the Community

They are working with the local communities to help them achieve goals set out in 2018 as part of their (IAPF) 5 year strategic development plan. This process involves consultation between all communities in the area with the local council. In addition nearly 100% of the Akashinga staff are from the local community. In terms of benefit sharing 62% of the operational budget is going back into the community, with 80% of that at household level into the hands of women through salaries paid to the Akashinga APU scouts. Women's empowerment is reported to be the most effective tool for rural development. Funds spend on Akashinga go three times as far: Rather than just be spent solely on conservation, they are first spent on women's empowerment (reportedly the most effective dollar for dollar spend on development), secondly on community (as the women are from the local community), and third, on conservation which is far more effectively protected by happy communities than antagonistic and militarised anti-poaching operations.

They have 16 scouts (Community Liaison Officers) stationed in the communities outside Pfundundu and Nyaodza (however, Nyaodza is not a GEF 6 Project area). The wards that are going to benefit from the investment are Ward 7 and 9.

²⁶ <https://www.nationalgeographic.com/magazine/2019/06/akashinga-women-rangers-fight-poaching-in-zimbabwe-phundundu-wildlife-area/>

How they will manage the natural resources enhance the value of the resources:

They are protecting the area through good relationships with the local community, law enforcement patrols and basic reserve management (roads, boundaries, fire breaks, water). This is helping to bring in more wildlife into an area which is heavily protected.

Returns to investment

For their wider area of operation, they are expecting \$1.5 million dollar investment per year into areas under their management in HRDC by the end of 2020, and \$3-5 million per years by 2023. 28% of this will be spent on capital improvements in the communities and reserves. They are aiming to have a workforce across both reserves and communities of 100 by mid-2020.

Co-financing contribution to the project

They are requesting \$75 per acre per reserve (Pfundundu and Nyaodza) for 6 years. This is a total of \$90,000 towards roads, fire control, fencing and water in Pfundundu and Nyaodza. This will free up much resources for them to focus on community development and conservation.

The projected cash flow for the next 5 to 10 years:

Non-profit and tourism. Their non-profit income in 2019 will be \$2 million USD. They anticipate this to grow to \$10 million by 2025. Tourism opportunities will be a second source of income and they anticipate an income of \$50k in 2020, rising to \$250,000 by 2025. This is for both Pfundundu and Nyaodza.

Comments on the investment

They did not give their annual profit projection, so it is difficult to carry out an analysis of their operations. Their information is combining Pfundundu and Nyaodza, of which the latter is not GEF 6 project area. The requirement for their support is not well detailed. It was difficult to meet with them because of busy schedules. When we finally met the time was too short. They are carrying out relevant project which could converge with the GEF6 project activities. However, other components like payment of lease fees cannot be covered under the GEF 6 Project. So there is need for the GEF 6 Project to continue discussing with them to streamline relevant initiatives that could be supported by the project.

8.5.8. Hurungwe District: Mukwichi CWC**Hunting**

Name of safari Operator: HHK Safaris (Private) Limited. HHK had the lease for Mukwichi for the past two years.

Description of the model to be used by the Safari Operator has been done under the Mbire South section, the CWC in which the SO is also working. Defining the areas will also require a tractor, tow grader, tow grass mower, up to 10 employees (road gang) per area for a minimum of 4 months per annum. Mobile accommodation in the form of tents and water bowser.

The core areas which require attention are:

- Anti-poaching: HHK Safaris employs 4 in the Mukwichi area.
- Bushfire control
- Communication
- Weapons
- Equipment
- Vehicles

- Bases – There is a requirement for a central main headquarters which can serve both areas and then smaller satellite bases from which patrols can operate. Mukwichi will have a requirement for 3 bases. Each satellite base will need 4 living quarters, one kitchen, eating area, a water tank and toilet and shower facilities.
- Water development - Mukwichi has less of a requirement for boreholes since the area mainly falls in the Zambezi escarpment which has a number of permanent springs and pools in the rivers. Up to 4 solar boreholes should be installed and some small concrete weirs constructed on some of the small streams.

For the past two years HHK has invested in the following:

- Rebuilding the safari camp which was partially burnt down by suspected poachers. The new lodge consists of two main client rooms, with bathroom en-suite. A manager’s room, a professional hunter’s room, a main entertainment area and dining area, a small swimming pool. Staff quarters, kitchen and store rooms, butchery/skinning facilities.
- HHK has embarked on expansive road opening program. The area had been neglected for five years and virtually every road in the concession was impassable. To date in excess of 55km of roads have been re-opened.
- Together with National Parks, HHK has instigated an anti-poaching program, mainly targeting gold panning which is rampant in the Mukwichi and Angwa rivers.

Investment Analysis

Figure 7-8 below shows the 10 year projected wildlife revenue streams for RDC and Communities for the Mukwichi CWC.

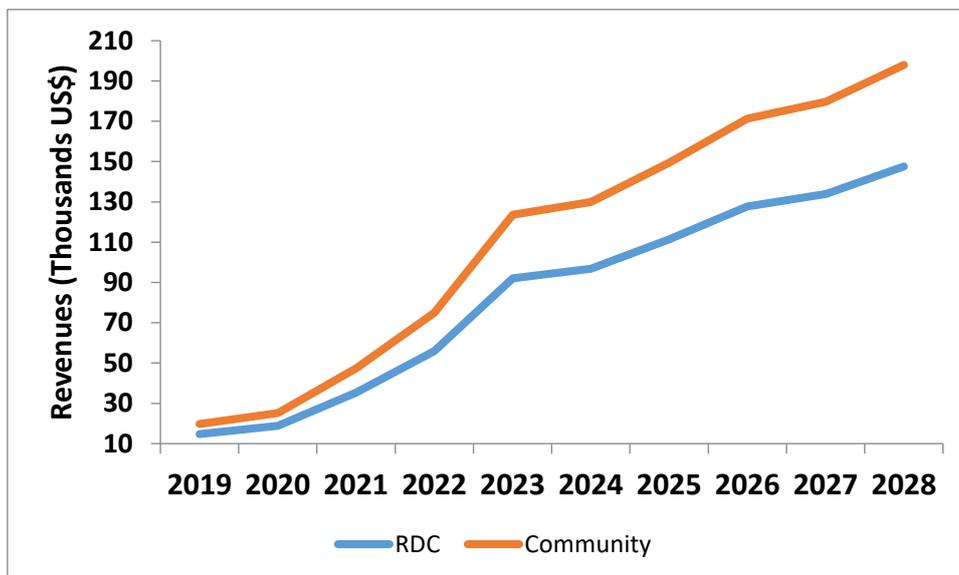


Figure 7-8: Ten year projected wildlife revenue streams for RDC and Communities for the Mukwichi CWC

Figure above shows that the Mukwichi CWC 10-year projection of wildlife revenue for communities and RDC would increase gradually from below US\$20 thousand to around US\$150,000 for the

community and around US\$200, 000, which seems to be feasible. Since HHK Safaris only started operations in August 2017, nothing much can be said about their past performance in this CWC. However, they since 2017 they have hunted three male leopards, 1 bull elephant and 1 sable male. The trend being depicted above gives an impression on how revenue is going to grow given increased anti-poaching efforts and bushfire control. Given that Mukwichi is relatively small area, 20,000 ha (GEF, Government of Zimbabwe and UNDP, 2018), we do not expect tremendous increase in wildlife revenue as in the other bigger areas.

Hurungwe RDC is leasing the Chewore Safari area from PWMA, but it has accumulated debt over the years. We did not factor in the debt repayment to PWMA by Hurungwe RDC for an amount of US\$178,000 owed in trophy fees. There is a premium on trophy fees on what RDC and community get (e.g. for a US\$10,000 elephant at PWMA rate; RDC will charge HHK US\$12,000 and the US\$2,000 is what RDC and community get but with 50% of that amount going towards debt repayment (*pers. Comm; Hurungwe NRM Officer*). If the animal is killed in the buffer area – CAMPFIRE area, the full amount goes to RDC and community but not many animals in that section of the concession. However, HHK is optimistic that through their interventions, they could ensure the increase of wildlife population in the CAMPFIRE area, such that communities could start benefiting from it, hence the projection that we included in the analysis.

Table 7-10 below shows the financial and economic analyses outcomes for the proposed Support to anti-poaching efforts and water provision investment options by HHK Safaris under three different discount rates.

Table 7-10: Financial and Economic Analyses for the Support to anti-poaching efforts and water provision Investment by HHK Safaris under three discounts rates (t = 10).

Financing			
GEF 6 Project Funding Request	US\$301,000		
Co-financing (average per year for 10 years)	US\$ 188,850		
Viability			
	Undiscounted (r=0)	Discounted (r=12%)	Discounted (r=20%)
Overall economy			
District economy profit	US\$ 3,540,675	US\$1,423,079	US\$ 1,145,227
Community level profit	US\$ 818,007	US\$ 219,277	US\$38,000
Payback period (Year)			
Economic (Overall)			
District economy	1	2	3
Community level	6	7	9

Internal Rate of return		
Economic (Overall)		
District economy	86%	
Community level	9%	

The district economy profit is relatively high given the high co-financing by the Safari Operator, which at the same time might be a risk if the co-financing is not yet secured. The community level profit is moderate but dwindling faster with increase in the discount rate. This means that the project is much riskier. For example, if the discount is 20% the NPV for the community profit is just US\$38,000 over 10 years. This means that the community might not find the wildlife resource valuable as such might not actively contribute to its preservation. The community level internal rate of return is also relatively smaller implying that the benefit that is realized by the community from GEF project capital investment through the Safari Operator is relatively lower taking into consideration the time value of money. In other words, the community revenue streams are relatively lower. This is to be expected, wildlife requires time to build up. When invest in wildlife you will not get the returns faster hence the lower community IRR. As shown earlier, the projections show that the revenue for communities and RDC would increase gradually from below US\$20 thousand to around US\$150,000 for the community and around US\$200, 000. This would be a relatively good return to wildlife investment but the problem is that the IRR is biased towards quick returns to an investment rather than those which occur later.

Comments on the investment

This is a good investment for the community with returns to wildlife increasing gradually due to increase in antipoaching efforts and improved wildlife management. Whether the investment is going to realize the benefits depends on increasing wildlife numbers in the CWC. This has higher chance of success because of the proximity to the Mana Pools National Park and Chewore Safari Area which is the source wildlife populations in the area has great potential for fast wildlife restoration. However, care should be taken not to over hunt otherwise the efforts will come to naught.

8.6. RECOMMENDATIONS ON INVESTMENT BUSINESS AND INVESTMENT OPTIONS

8.6.1. Possible Institutional arrangements in relation to CWCs²⁷

The proposed institutional arrangements in relation to CWCs are as given in the Table 7-11 below as adapted from by King et al. (2015).

Table 8-11: Proposed Institutional arrangements in relation to CWC

	Advantages	Disadvantages
Community Based Organization (CBO): non-profit groups that	Easy to Register Governed by its elected Members	Not a legal entity Cannot own property; cannot enter into contracts • No

²⁷ This would need a legal person to make the appropriate recommendations

work at a local level to improve life for community		power to sue or be sued • Annual registration required
Trust: Trust is formed when a trustee controls the assets and operates the business, distributes incomes to beneficiaries, and follows the provisions in the trust deed.	<p>Legal entity</p> <ul style="list-style-type: none"> • Can enter into contracts and own property • Trustees may be individuals (local or foreigners) or body corporate • Trustees can only use property in the interest of beneficiaries of the Trust. If Trust comes to an end, any property reverts to the beneficiaries • Liability limited to value of capital • Can apply for tax exemption on donations and income, and stamp duty • Preferred by donors • Annual returns simpler than for Companies 	<ul style="list-style-type: none"> • Lengthy registration process • Trustees personally liable • the Trust can be expensive to establish and maintain • the powers of trustees are restricted by the trust deed
Environmental Sub-committee; Sub-Committee of the council responsible for environmental issues in the ward	Currently recognized in all the districts and its part of the Natural Resource Management Committee at RDC level. Mandatory for every RDC in terms of the Rural District Councils Act	Not a legal entity. Chairman of the Sub-committee is the councillor who might unilaterally make decisions on behalf of the committee and community. Activities depend on the proactivity of members and chairperson. No budget support for operations except where it is managing CAMPFIRE activities and revenues. Term of office for members is 2 years which might be too short to make significant contributions. Prone to manipulation by local authorities.
CAMPFIRE Committee: Sub-Committee of the ESC responsible for CAMPFIRE issues in the ward	Part of CAMPFIRE set up. Where CAMPFIRE activities are very numerous in the ward, the committee is relevant since there will be need to meet often than the Environmental Sub Committees. In most districts these have been converted or replaced by ESCs	Not a legal entity. Activities depends on the proactivity of members and chairperson. Councillors or traditional leadership might interfere with selection of members. Budget support for operations based on CAMPFIRE Revenues.

Comment on the institutional arrangement:

The Environmental Sub Committee and CAMPFIRE committee are the institutional structures that are being used at ward level in the project area to run CAMPFIRE and CWCs activities. Either the Environmental Sub Committees or CAMPFIRE committees are active in Mbire District whilst in Muzarabani and Hurungwe they are not active. The main disadvantage of these committees as institutional structures running CWCs are that they are not legal entities and could easily be manipulated by local authorities which jeopardizes community benefits. On the other hand, the community trusts are legal entities and could ensure that communities benefit. We therefore recommend the GEF 6 project to support the establishment of these community trusts in the project area. The risk that might be faced is that the local authorities might not support the idea fearing that the Community Trusts could take over the role of Safari Operators who are already appointed to run NRM business in the CWCs in the medium to long term (10-30 years). It is important to note, educate and lobby local authorities that formation of Community Trusts will neither displace the Safari Operators nor replace RDCs as Appropriate Authorities on Communal Land, but would rather serve to empower local communities to manage the benefits accruing from the various NRM enterprises in accordance with the benefit sharing models presented in the report. The Trusts would also serve to empower communities to make decisions over NRM business through the proposed business models. Formation of Trusts is also one step towards capacitating local communities within the context of devolution of authority to local communities, without overlooking the role of Safari Operators/Private Sector players and RDCs. CAMPFIRE has successfully established a number of Community Trusts in a number of Districts (Chipinge, Chiredzi and Binga) in Zimbabwe with the support of local authorities (<http://www.wild-africa.org/jamanda-conservancy/4588094811>). Community Trusts can be formed irrespective of whether there is a consumptive or non-consumptive form of tourism in the area. Community Trusts would serve to manage the benefits accruing to communities from either the utilization quota or the lodge.

Characteristics of a strong Conservancy

According to King et al. (2015) the following are the characteristics of a good conservancy:

- Good leadership, united selfless leaders
- Strong support from Conservancy members, community and neighbours
- Clear vision and objectives, with clear strategy of how to achieve these
- Respect and consideration of community rights, customary rules and governance by traditional institutions
- Good populations of wildlife and healthy ecosystems
- Equitable and transparent sharing of benefits
- Strong partnerships for technical support and business development
- Diversified income sources; varied business revenue, donor and Government income
- Adherence to carefully developed land-use plans produced with participation of land-owners and key stakeholders
- Clearly defined boundaries, agreed and accepted by members and neighbours
- Good infrastructure such as headquarters, outposts, road network.
- Motivated, skilled and adequate staff.
- Strong brand; good communications, name and logo recognized by members and partners.
- Monitoring system in place to measure impact and inform adaptive management.

8.6.2. Project Risks and mitigation

8.6.2.1. Intangible community benefits

If the communities are to dedicate their land for wildlife and place a value on them, they need to realize tangible benefits from those resources. One of the reasons why CAMPFIRE experienced a downward trend was that communities were no longer realizing tangible benefits from the programme, hence poaching and HWC increased amongst other multitude of problem. If the communities will not realize solid returns from the CWCs the GEF 6 project investment is bound to fail. There are several avenues the project could undertake to ensure concrete proceeds accrue to the communities and thus increased ownership of resources surrounding them. We analyse some of the measures and outline associated barriers in the Table 8-12 below.

Table 8-12: Measures that could be undertaken by the project to ensure tangible benefits trickle to the communities and proposed mitigation

Measure	Barrier and how to mitigate
Increase community stake in investments	For most proposed investments, long term contracts already signed between RDC and Private Operators. This could be mitigated by active involvement of communities in operational activities and capacitating them for eventually taking over or to be active overseers of use of their natural resources. Termination clauses in the contracts if revealed could be used where contracts are not being fulfilled or are detrimental to community benefits and involvement (Muzarabani as a case in point)
Ensure that most of the investments directly benefit individual households rather than benefitting indirectly from CAMPFIRE through public investments (e.g. roads, schools)	Due to dwindling CAMPFIRE proceeds and poor local governance in the past, the revenues have not been meaningfully benefitting individual households. This could be mitigated through involving community members in deciding the fate of the revenues. In addition transparency in the use of the revenues is required. As much as possible, investment of the revenue should be on community income generating project. The GEF 6 project could assist in training the communities in business, entrepreneurial and marketing skills so that they do not only acquire knowledge how to decide to use their money but to make it grow in the process. This could be one of the major contributions that the project could make.
Change the governance model for CWCs through establishment of community Trusts	However, RDC are reluctant to go this direction indicating they fear mismanagement by communities since they are incapacitated. RDC should be told that this would be the most ideal way to allow community to take charge of resources in their areas and could ensure sustainable wildlife utilization. However, this is a medium to long term goal. This should be done through capacity building of communities in business, entrepreneurial, and marketing skills.

	<p>This could be done through the following model:</p> <ul style="list-style-type: none"> • Since RDC owns land, it would need to transfer ownership to community by charging lease fee, management fees for services they would provide. • Community could partner an investor through a Community Private Sector Partnership • Community should be empowered with management Initially the community should give short term lease to first to study the partner, then afterwards if satisfied a medium term lease • When the community is capable of running the operations on their own, could now takeover running of the operations. <p>Another way to resolve this problem would be to educate RDC councillors about CAMPFIRE principles. If councillors were better informed about the programme and its principles, it would empower them understand the desirability of devolution. Therefore, there is need to invest some resources in educating councillors on CAMPFIRE and its principles. Formation of community trusts does not mean replacement of Safari Operators or replace RDCs as Appropriate Authorities on Communal Land (refer to Sub-Section 8.6.1)</p>
<p>Management substructure with greater Community-RDC-SO collaboration in planning and implementation</p>	<p>RDC reluctance to allow such a model in fear of community will fail. There is need to the Councillor to be proactive in lobbying the Natural Resource Committee; and the Chief to be involved in gazetting the land as a Community Conservancy. The private sector should be willing to support the formation of CWCs. However, the leases have already been signed between the SO and RDC – so it will be difficult to change the arrangement. However, this can be done when the current lease expires. The GEF 6 Project should assist in kick starting the lobbying in having the RDC to buy in the idea.</p>

8.6.2.1. Reluctance of RDCs to let Community effectively participate in decision making on activities happening in the wards

RDCs are reluctant to let communities take charge of the projects fearing that communities do not have capacity, and they argue that the communities are represented by the councillor. Although this is true to some extent, there is no deliberate attempt to allow the communities acquire capacity through negotiating for contracts that allow the private sector to capacitate the community as a condition of their service. The main fear from the council is that they will lose their source of revenue. So the risk is that if there is any source of investment support that comes to the districts without significant revenue base for the council but favouring the community, the chances of the council supporting such models are slim and they would tend to collapse. This is the same issue that the GEF

6 project should be aware of and address prudently and in a tactical approach otherwise the investment will not be sustainable. The idea of CAMPFIRE Wildlife Conservancies is that the community should run these conservancies eventually. The project should emphasize transparency and community benefit as key to the interventions. RDCs should be engaged and lobbied to for them to see why communities should be at the front of the project so that they buy in the idea. Lobbying for community involvement should be key in the interventions. However, the taking over of running the CWCs by communities should not be a short term goal rather it should be a medium to long term goal. Anyway all the councils in the project area have already signed contracts with the Safari Operators which are long-term ranging from 10 to 30 years. Breaching these contracts arrangements might result in lengthy and messy litigation processes which might derail the project. The council should be shown that in the long run, when they leave communities to run the CWCs they will have more time to concentrate on their core business. When communities are managing the conservancies they will have sense of ownership hence there will be sustainable wildlife management resulting in more income for the community. This will translate to more levies for the RDC which will offset the loss that came with their stepping aside.

8.6.2.2. Equipment placement and operations

The project is going to procure several equipment which includes: vehicles, tractors and other equipment. The question that was raised is where will the equipment placed. The ownership scenarios are indicated in Table 7-13 below which also shows the advantages and disadvantages, thus risks to the project.

Table 7-13: Project Equipment ownership scenarios

Placement of the Equipment	Advantages	Disadvantages	Mitigation Options
Community	Empower the community	The big question is who will be the person to oversee the equipment, maybe ESC members – the management of the vehicle will be tough. The Safari Operators might not like the arrangement as shown in the Key Informant Interviews.	Train selected community members in vehicle management and maintenance and second them to SO
Rural District Council	It is the appropriate authority for the District	RDC might find it difficult to maintain the vehicles. The vehicles might also be used for other activities outside the project. Safari Operators might not	Capacitate the RDC to set up a vehicle fund for vehicle replacement and maintenance

		like the arrangement as shown in the Key Informant Interviews; given difficulty in accessing them	
Safari Operators	Given that there are private entrepreneurs chances are high that use and maintenance will be optimal	Questions on community empowerment given that private sector is being empowered.	Provide SO with use and maintenance responsibilities but with payment for use (mileage) which will contribute towards vehicle replacement fund for the project vehicles

Given all these arguments, the project should consider placement the equipment with either the RDC or Safari Operator. However, memorandum of understanding should be established for strictly use of the vehicle for project use. What will happen to the equipment and vehicles after the project also have a bearing on which option to use.

8.6.2.3. Socio-economic risk

Zimbabwe economic and social climate: current Business conditions in Zimbabwe are extremely difficult to operate efficiently, prices and availability of supplies, fuel etc. are unreliable and expensive. Negative perceptions about Zimbabwe because of the economic state are also an issue in terms of marketability of Zimbabwe as a destination.

8.6.2.4. Anti-hunting lobby groups

Social media has made hunting more and more a taboo sport, the Cecil saga is a good example of how powerful this can be. The banning of elephant and lion trophies in USA and Europe is another blow to the wildlife hunting industry. Banning of more wildlife species will have a devastating effect to the industry as a whole. There is need to demonstrate best practices, and continue lobbying showing how communities are benefiting. The project should support such efforts by supporting the best hunting practices and publishing them to the world to see. Another mitigation measure of this risk is to focus on other markets in the Eastern Europe, South America and even within the African continent specifically South Africa. This is a big risk for the project. Diversification to other wildlife uses is a good mitigation measure. This means the project should also actively support wildlife non-consumptive use.

8.6.2.5. Quota utilisation

The success of the project interventions in the conservancies will mainly depend on quota utilisation by the Safari Operators in the CWCs. Due to rampant poaching and human encroachment especially in Hurungwe and Muzarabani Districts, quotas have been on a declining side and proportion of quota utilized has been poor (see section 7.7). The underutilisation of quotas is a critical risk to the project

especially if the marketing is not effectively done especially in those areas that hunting tourists are not made aware of. The investments in the project areas will be successful if the projected take-off is achieved. This will ensure that the wildlife conservation efforts are sustainable. Overutilization of quotas is also a risk which would result in unsustainable wildlife population reductions and would result in dropping of wildlife numbers. Antipoaching efforts as proposed in the investment proposal should be effectively done.

8.6.2.6. No measures of ensuring continuity - Only one person responsible for the NRM portfolio at RDCs

The Natural Resources Executive Officer in the RDC is the sole person responsible for the office and the next junior person under him is the senior scout. The Natural Resource officers for Mbire and Hurungwe (for Muzarabani we were not able to meet him) are very knowledgeable in terms of issues on natural resources. But the risk is that if they leave employment immediately there will be a very big knowledge void left which might be difficult to close. For example, in Muzarabani, the NRM Officer was on leave during the field work and there was no one to effectively assist us on the issues regarding to the CWC. The GEF project is going to be interacting much with the NRM officer at RDC level during the period of implementation. This will demand more input from the NRM Officer, but the project activities might be delayed because he is somewhere else and no one can attend to the business issues besides him. Therefore, there is need to have an understudy for institutional memory e.g. in the form of Junior / Assistant Natural Resource Officer. The council budget might be a limiting factor in recruiting some staff who will be understudying the NRM Officer. The GEF project could assist in this. The project could first pay the assistant officer, then share the costs with the RDCs after 2 years, then in the 4th year handover the officer to the council. The risk is that is the council might not have resources to sustain the officer after the end of the project. The officer would in those circumstances leave the RDC after the end of the project. . Another option would to have shared contributions from the SOs and RDC towards costs of this person with justification of improved NRM operations within the district.

8.6.2.7. A personalized systems big-men allocate resources based on their will and personal procedures

We realized that some of the community development projects that were being implemented in the project district collapsed due to some dominating people who had much power and used it to make unilateral decisions and in the process run down the community projects. To avoid such developments, there is need to institutionalize decision making and implementation, by ensuring that no one person has so much power to make some decisions for community properties by creating checks and balances at community and RDC level.

Overall Recommendations (Suggest we link this to each Output)

The recommended business models for each of the CWC are given in the Table7-14 below.

Table 7-14: The recommended business models for the CWCs

District	CAMPFIRE Wildlife Conservancy	CWCs model
Muzarabani	Mavhuradonha Wilderness Area (MWA)	Bee keeping; Ecotourism – horse riding, bird viewing, guided walks, adventurous driving and walking safari

		from the Mavhuradonha Mountains across the escarpment; Hiking; Historical and Cultural tourism Exploration of bushman paintings; Waterfall dipping in Sohwe Falls, Kemavanga Falls and Bore Spring; Managed harvesting of Mazhanje (Wild loquat) in the western part by local communities as an enterprise.
Mbire	Karinyanga (Mbire East)	Hunting; Cultural and historical tourism, camping
	Mbire cultural and historical tourism (wildlife corridor Shange)	Bird viewing, Cultural tourism, Hunting
	Mbire North	Hunting, Cultural (slave trade); Fisheries
	Overall Mbire	Hunting off season ecotourism; tourism in the historical/cultural route throughout the year but using alternative venues e.g. Shange, Masoka community campsite, DDF Kanyemba or Chitsere lodges
Hurungwe	Pfundundu	Ecotourism, Adventurous driving and walking safari from the on the Zambezi escarpment
	Mukwichi	Hunting; Crocodile farming; Bee keeping

If the project is going to achieve its objective of ensuring that the communities benefit from the wildlife conservation through increase revenue and other ecological and socio-economic benefits, that would be very important. However, if the communities do not know what to do with the benefits or if they just use the benefits for consumptive purposes then the gains by the project could be reversed and become unsustainable. The revenues from wildlife could be relatively low for individual dividends. There is need for the communities to jointly decide what to use with the revenues.

The project could also empower the RDCs and communities to negotiate for better terms of contract like what Mbire RDC has already done, in terms of advocating for Social Funds and sharing of Daily rates. Look and learn tours could be arranged by the project to Mbire and other districts with successful business models.

A platform for lesson sharing amongst key institutions of the three districts should be included under Component 4. Target group would include; District NRM, Agric and Lands Officers, Council Environment Committees including Council chairperson, Ward Environmental Sub Committees, SOs and Senior game scouts.

For the proposed ecotourism, cultural and historical tourism model proposed for Mbire East there is need to advocate for a higher stake for the community. However, this should be done prudently otherwise it might jeopardize the project in the District. This is because there is high resistance to let communities take charge, the RDC feels that they are the ones who should represent communities.

Wildlife consumptive use is under heavy threat. So if all the proceeds from wildlife are sunk without further investments, the communities might find out themselves with nothing if there is a total ban on hunting. There is need for the project to assist in training the communities in business, entrepreneurial and marketing skills so that they do not only acquire knowledge on how to decide to use their money but also make it grow in the process diversifying their income sources. This could be embedded in the project activities.

To ensure the communities get the value for money there is need to ensure that they are paid in time, they access the funds in foreign currency given the inflationary pressure on the local currency. The communities should be assisted to open local Nostro Bank accounts. Arrangements should be made to let the Safari operator to directly pay into their account. This is happening in Mbire district but no other districts have not adopted this practice.

The communities should be trained in the following: business, entrepreneurial, financial management, marketing, and business (should include business planning, management, evaluation) skills.

9. NRM planning, needs and gap analysis to inform Integrated Landscape Management Planning

9.1. INTEGRATED LANDSCAPE MANAGEMENT

Integrated Landscape Management (ILM) has been identified as one of the important approaches that will contribute towards the attainment of the SDGs (Thaxton et al., 2015). It has become a popular approach in addressing development, climate change, food security and biodiversity loss issues due to recognition of the limitations of sectoral approaches (Scherr et al, 2013)²⁸. Several terms are used which incorporate ILM such as biological corridors, integrated watershed management, climate smart agricultural landscapes, community based NRM to name a few.

Integrated landscape management is “the long-term collaboration among different groups of land managers and stakeholders to achieve the multiple objectives required from the landscape” (DANIDA, 2014). Multiple objectives required of a landscape include: agricultural production, provision of ecosystem services (such as water flow regulation and quality, pollination, climate change mitigation and adaptation, cultural values); protection of biodiversity, landscape beauty, identity and recreation value; and local livelihoods, human health and well being (Scherr et al., 2013).

To inform ILM planning to be supported by the project, this baseline survey identified the existing NRM planning, land use planning and physical planning processes in the three districts through KILs (Agritex, Ministry of Local Government Headquarters, Physical Planners and Engineers) and Household surveys. The findings are presented in the subsequent sections.

9.2. STATUS OF NRM PLANNING

Currently planning is undertaken based on the land classification. In communal land, the Department of Physical Planning and local authorities (RDC) are responsible for planning; in resettlement areas it is the Ministry of Lands and protected areas its ZPWMA.

The key legislative frameworks are provided under the Regional Town and Country Planning Act, RDC Act, Urban Councils Act, Communal Lands Act, Mines and Minerals Act, EMA, Parks and Wildlife Act. The Act that is applied is dependent on the land classification.

At RDC level (for communal land) the Physical Planner and Engineer are involved in the planning but with a bias towards infrastructure especially roads and buildings. Communities are involved in planning and NRM Planning through their ward councilors. At ward level general planning was done by general allocation of land for grazing, cropping, settlements and social amenities (schools, business centres, clinics) either at onset of resettlements (in the case of Muzarabani and Hurungwe) or with the initiative of traditional leaders as they realized emerging land use conflicts over grazing and arable land (Hurungwe ward 26).

²⁸ <https://ecoagriculture.org/publication/defining-integrated-landscape-management-for-policy-makers/>

The process of planning starts at ward level, which channels its request to the RDC through the Councilor. This is presented to the relevant committee of council then onto full Council for approval and then passed onto Department of Works. Funding for development of infrastructure comes through the government departments as donors and other players present their portfolios for the district.

For NRM planning community request comes through the Councilor to the Lands and Agriculture Committee then to full Council for approval. Before implementation, Council will conduct community consultations with village heads and community. If communities do not request for services, the Council will not take action to avoid potential conflict or rejection of the service.

In the household survey, 69% of the respondents had not participated in any land use or NRM planning, while 30.7% indicated they had participated. In terms of awareness on NRM/Land Use Planning, 51% of respondents were aware, while 49% were not aware of such planning in their wards. Muzarabani had the highest awareness, followed by Hurungwe then Mbire. This could be related to the Mid Zambezi resettlement planning conducted in the early 1990s for Lower Muzarabani and Hurungwe.

In terms of which institution was leading NRM and land use planning, 48% of the household survey respondents, identified the Ward Committee, 31% the councilor, 8% traditional leaders especially village heads. Other institutions identified as facilitating land use/ NRM planning were the RDC (8%), NGOs, Government (EMA, AGRITEX).

In Mbire, due to the planned Kanyemba Town development, a master plan for the district is being developed since 2018 and it was indicated that it would be complete by end of 2019. Layout Plans for Mushumbi, Kanyemba, Chitsungo and Mahuwe have been finalized. Entry point for the GEF 6 project could be through GIS support. African Wildlife Foundation (AWF) is assisting the RDC in the development of a more comprehensive Land Use Plan, which should be completed before end of 2019. Consultations at community level have already been done. Resources permitting, GEF 6 should provide similar support to Hurungwe and Muzarabani.

9.3. KEY STAKEHOLDERS IN ILM PLANNING

In terms of ILM planning the key stakeholders that were considered to be important and should be involved were:

Department of Physical Planning, Local authorities including Engineer and Physical Planner, Zimbabwe National Road Administration (ZINARA), Ministry of Transport, Ministry Lands, Agriculture, Water, Rural resettlement and Climate, ZPWMA, FC, EMA, Agritex, Business fraternity, pastors fraternity, local communities (through Chiefs, Village heads and councilors), NGOs. However, this should be determined by the specific context of the landscape.

9.4. NEEDS AND GAP ANALYSIS

Major gaps identified by the Ministry Local Government during consultation were as follows:

- Lack of manuals and development of guidelines on the implementation of plans at local level.

- The Physical Planning Department were not involved in full Council discussions and as such, some decisions are made without their involvement.
- Lack of awareness on Land Use planning at general community level, local traditional leaders and policy makers (Full Council).
- Planning is biased towards infrastructure development at all levels (community, RDC).

9.5. ILMP KEY GUIDING POINTS

ILM Planning is process orientated and should be considered as a long term undertaking due to the multiple stakeholders, levels and sectors involved. It involves consensus building, negotiating and lobbying across sectors and different land authorizes in the landscape.

Ownership of the process and ensuring that the ILMP developed has an official endorsement is important for implementation and monitoring of the ILMP.

The key steps to be followed in the ILM Planning process as outlined by Landscapes for People, Food and Nature Initiative²⁹ are:

- Generating an agreed vision among stakeholders of landscape goals;
- Adopting practices that achieve multiple objectives;
- Devising strategies to manage spatial and seasonal interactions across different land uses and users;
- Linking institutions and establishing mechanisms for stakeholder dialogue,
- Negotiation and action;
- Shaping markets, planning frameworks and policies to support desired outcomes; and,
- Monitoring and evaluation plan

9.6. KAP ASSESSMENT AND AWARENESS ACTIVITY OPPORTUNITIES

A detailed Knowledge Awareness Plan (KAP) assessment was not undertaken due to limited data availability. However, knowledge and awareness status was assessed for each component and an awareness and knowledge sharing plan is given under the overall recommendations.

²⁹ An international collaborative initiative of knowledge sharing, dialogue and action to support integrated landscape management to achieve three simultaneous goals of improved food production, ecosystem conservation and sustainable livelihoods. Initiative is composed of over 60 international organisations including UN agencies

10. Main Conclusions and Recommendations

10.1 MAIN CONCLUSIONS

Main conclusions are provided for each key component of the baseline namely: livelihoods, forestry, wildlife, CWC business analysis and integrated landscape management.

Livelihoods: Livelihoods are mostly centered on agriculture. Out of 21 potential activities, most of the community members on average rely on 2 to 3 livelihood activities. There are no statistically significant differences in as far as livelihood diversification is concerned across the three districts.

Access to other forms of livelihoods support systems including health, education, sanitation, water, cooking/heating energy, shelter and other assets was elicited through the Multidimensional Poverty Index (MPI). Using this index, 64.3 % of the sampled households are MPI poor and they experience 39% of the deprivations and Mbire is the most deprived of the three districts.

Nutrition is the most important form of deprivation accounting for over 30% of multi-dimensional poverty in all the three districts. Cooking/heating fuel is also a critical problem, reflecting an overreliance on forest-based fuel forms. While water scarcity is common across the three districts, it is more prevalent in Hurungwe compared to the other two districts.

Maize, cotton and tobacco are the most common crops grown in the three districts, although tobacco is not grown extensively in Mbire.

Among the three main tenets of conservations agriculture; crop rotation, soil cover and minimum soil disturbance, there are only statistically significant differences in the extent to which crop rotation is done

Of the three conventional unsustainable agricultural practices namely: burning of crop residues (except for cotton and tobacco ratoons), stream bank cultivation and shifting cultivation, shifting cultivation is the least practiced except in cases of encroachment into wildlife areas.

Important to note is that the level of entrepreneurial activity is quite low across the three districts, characteristic of most rural areas. Most households are involved in cash crop production (tobacco, cotton, and beans mainly) with Hurungwe having the highest proportion. Trading mostly of fruits, groceries, fish, vegetables, livestock, crafts and other NTFPs both informally across national borders and locally is the second most common enterprise. Cross border activity is more common in Mbire, particularly in Kanyemba due to the vicinity to the Zambian and Mozambican borders. Gardening, artisanry and selling/value addition of NTFPs are some of the notable enterprises.

On potential biodiversity-friendly livelihood options: Overall, gardening was chosen by most of the sampled households (31.8 %). Among the three districts, Hurungwe had the highest proportion of households who want gardening. Apiculture is second ranked (20.3%) with Mbire having the highest proportion of households selecting it. Small livestock production; poultry and goats-in order of importance-is ranked third (18.4%) with Muzarabani having the highest proportion of households (22.7%) who chose small livestock enterprises. Commercialization and value-addition of NTFPs is ranked fourth (6.61%) with Muzarabani contributing the highest proportion who believes it is a noble entrepreneurial idea. Other enterprises mentioned include aquaculture, craft making, woodlots and

game ranching although the numbers were quite insignificant. 15.5 % of the respondents indicated that they were not sure of what ideas could be viable.

Over 65 % of the households have not done any form of capacity training across the three districts. Except for natural resources management, Hurungwe seems to have had the least capacity building trainings. About 33.1 % of the households indicated to having done natural resources management training. Mbire have the highest proportion of people who received both business development and natural resources management trainings.

Forestry: In terms of forestry, Forest cover per Communal Wildlife Conservancy is as follows:

Mavhuradonha (73%), Karinyanga (50%), Kanyurira (38%), Mbire North, ward 1 (60%) Pfundundu and Mukwichi (70%); Forests are key enablers for ecotourism across the 6 CWCs as they provide habitats for wildlife and should be sustainably managed;

Insect damage, veld fires and tree cutting for various purposes including Fuel wood (for tobacco curing and brick moulding) and construction were cited as major threats to forests.

Tree cutting of natural trees/forests for charcoal production is an emerging threat in Muzarabani which the Forestry Commission has identified and needs to be addressed with project support.

There are few interventions promoting use of energy saving technologies such as Tsootso stove, biogas and rocket barns.

There is little or no commercialisation of Non-Timber Forest Products (NTFPs) across the 3 districts due to amongst others, lack of market information and low prices offered by buyer.

Forest rehabilitation and restoration efforts hampered by unreliable rainfall and insect damage.

Wildlife: For wildlife the key constraints in providing status and quality of wildlife populations were the lack of current data at both local and national level. The last wildlife aerial census was done in 2014 for the project landscape. Inadequate record keeping and monitoring at community and RDC level also affected availability of information on HWC, poaching and revenues.

Wildlife corridors connect the three districts mostly for elephants. Settlements exist in wildlife corridors in the three districts thus increasing HWC incidences especially for Hurungwe (wards 8 and 9), Mbire (wards 1, 2, 3, 4, 11 and 16) and Muzarabani (wards 27, 5, and 3).

Encroachment into the CWCs is occurring for Hurungwe (ward 7 and 9), Mbire (ward 4), Muzarabani ward 20.

Key recommendations to address these challenges include: Human wildlife conflict mitigation through land-use planning, improving community livelihoods, elephant conflict mitigation (e.g. chilli fences, beehive fences), lion & hyena conflict mitigation. Capacity building and training for HWC mitigation and HWC response and record keeping. Corridors and connectivity within the landscape needs to be secured through promotion of co-existence. Enhancing the CWCs through anti-poaching, law enforcement, water provision, reducing quota utilisation, and population monitoring will contribute to connectivity, increased benefits and sustainability of wildlife populations in the long term. There is also a need to diversify sources of revenue from wildlife resources by venturing into non-consumptive uses such as ecotourism.

Business: In the Business analysis of the CWCs, models that were proposed by Safari Operators and RDCs that are viable are hunting with water provision and enhanced ant poaching (Mbire and Hurungwe); Game reintroductions with live game sales (Muzarabani) with ecotourism. Other models are ecotourism with a cultural and historical focus in Mbire; commercialization of NTFPs with some controlled harvesting from the CWC core area (Muzarabani).

Non hunting with women empowerment (Pfundundu) is an innovative model, but viability could not be assessed due to inadequate financial information.

In terms of governance structures, there is limited room for new options given the fact that all three RDCs have long running current contracts with the safari operators (10-30 years) but use of community trust at ward level is recommended since it would guarantee that the intended community members would benefit from wildlife utilisation. Any investment within these concessions would have to be with buy in from the safari operators as the current legal lease holders to avoid potential legal conflict. However, initiating processes of increasing community involvement, ownership and benefits can start now through different accountability structures at CWC level such as joint management and operational meetings quarterly with RDC, Safari Operator and the Ward ESCs.

Integrated Landscape Management Planning: For ILMP, the current status of NRM and land use planning is that it is practiced at local level informally with local leadership such as councilors, traditional leaders and the Ward committees taking a lead. There is a strong bias towards Physical/Infrastructure planning at all RDC levels.

Ongoing initiatives such as Land Use Planning in Mbire facilitated by AWF and the Kanyemba Town /Mbire Master Plan need to be engaged with as the project starts its own processes.

Proper stakeholder identification is critical for the success of the initiation of the ILMP development processes by the project. Tools and techniques have been developed at international level through WWF, Terra Africa, FAO and other agencies that can be used for the Zimbabwean context. Adequate long term budget is required to ensure process is completed.

Capacity Building and Training: Capacity building and training is required at wider community level, community leadership (ESCs, traditional leaders, councilors, NTFP groups, community garden members) in the value addition process, SLM such as fire management and gully reclamation, SFM such as tree nursery management and assisted regeneration.

RDCs require capacity and training in contract design and management, monitoring and record keeping for wildlife, forestry and finances. There is over reliance on the office of the NRM Officer in all three districts which can be detrimental to processes should this person leave. There is need for an understudy and succession planning within the RDCs for this portfolio.

Safari Operators need capacity in community engagement and communication to avoid disenchantment with their operations over minor cultural oversights such as formal introductions and regular face to face feedback to the community leadership (not just the councilor).

10.2 RECOMMENDATIONS

Overall recommendations are aligned to the project components and outcomes related to this baseline survey. These are:

Component 2. Strengthening Zimbabwe’s PA estate and CAMPFIRE Wildlife Conservancies in areas of global BD significance; **Outcome 2.** Improved capacity of PA network and CAMPFIRE Wildlife Conservancies to protect globally significant biodiversity of the mid-lower Zambezi region over a total area of 1,616,900 ha.

Component 3. Mainstreaming BD and ES management, and climate change mitigation, into the wider landscape [site level]; **Outcome 3.** Increased area under sustainable management and benefits for local communities from CBWM, SFM and SLM in established CWCs.

Component 4. Knowledge Management, M&E and Gender Mainstreaming; **Outcome 4.** Lessons learned by the project through participatory M&E and gender mainstreaming are used nationally and internationally

Recommendations are provided by key project output for each Component and Outcome. For Component 2, only Output 2.2 is considered, while under Component 3, Outputs 3.1, 3.2, 3.3 and 3.4 will be considered. For Component 4, recommendations are provided for Output 4.2.

10.2.1. Overall Recommendations aligned to Project Components

10.2.1.1. Recommendations for Component 2 - Output 2.2: (CWCs)

The Total GIS area for the CWCs obtained for the baseline survey is 355,066.2 ha. Proposed business models for each CWC and the governance structure are shown in Table 11-1. This is based on the financial and economic analysis undertaken in Section 9 of the report. Proposed governance structure are confined to the existing contractual arrangements where RDC and SOs have signed lease agreements for 10 to 30 years.

Table 10-1: Proposed business models and governance structures for the proposed CWCs

District	CAMPFIRE Wildlife Conservancy	CWCs model	Governance Structure
Muzarabani	Mavhuradonha Wilderness Area (MWA)	<p>Bee keeping: (including for HWC mitigation), viable and less risky; Ecotourism: viable but with high uncertainty – horse riding, bird viewing, guided walks, adventurous driving and walking safari from the Mavhuradonha Mountains across the escarpment; Hiking; Historical and Cultural tourism</p> <p>Exploration of bushman paintings; Waterfall dipping in Sohwe Falls, Kemavanga Falls and Bore Spring; Managed</p>	<p>Beekeeping, Masau and Mazhanje and Ilala: Individual harvesting but with an Association at Ward level for bulking for value addition and marketing purposes. External buyers pay a fee to VIDCO and permit to RDC (for fruits and Ilala). Local fee ploughed back as social fund.</p> <p>Ecotourism/Hunting: ESCs, RDC and Safari Operator to have a</p>

District	CAMPFIRE Wildlife Conservancy	CWCs model	Governance Structure
		<p>harvesting of Mazhanje (Wild loquat) in the western part by local communities as an enterprise.</p> <p>Live game sales from reintroductions: most profitable but riskier with longer payback period of 4 years</p> <p>Hunting- possible but not factored in due to lack of data from SO</p>	<p>joint management Committee meeting quarterly.</p> <p>Revenue distribution: Direct and prompt payment by SO to participating wards for hunting and ecotourism instead of through RDC</p>
Mbire	Karinyanga (Mbire East)	<p>Hunting with water provision: profitable but with longer payback period due to the smaller area of the CWC.</p> <p>Cultural and historical tourism, camping: Not factored</p>	<p>RDC, Community (ESC) and SO have joint operational and management meetings quarterly.</p> <p>Revenue sharing: 37.5% Community; 37.5% private sector; 25% RDC</p>
	Mbire cultural and historical tourism (wildlife corridor Shange)	<p>Bird viewing, Cultural and Historical tourism and conferencing: viable with higher community stake, long payback period due to nature of the business</p>	<p>RDC, Community (ESC) and SO have joint operational and management meetings quarterly.</p> <p>Revenue sharing: 37.5% Community; 37.5% private sector; 25% RDC</p>
	Mbire North	<p>Hunting: Viable options for Anti-poaching & water provision or game translocations. Anti-poaching with air surveillance risky if co financing is not fulfilled.</p> <p>Cultural (slave trade); Fisheries- Options not assessed</p>	<p>RDC, Community (ESC) and SO have joint operational and management meetings quarterly.</p> <p>Hunting : 46% SO, 25% Community, 25% RDC and 4% CA</p>

District	CAMPFIRE Wildlife Conservancy	CWCs model	Governance Structure
	Overall Mbire	Hunting off season ecotourism; tourism in the historical/cultural route throughout the year but using alternative venues e.g. Shange, Masoka community campsite, DDF Kanyemba or Chitsere lodges: Not assessed	RDC, Community (ESC) and SO have joint operational and management meetings quarterly. Revenue sharing: 37.5% Community; 37.5% private sector; 25% RDC
Hurungwe	Pfundundu	Ecotourism: Adventurous driving and walking safari from the on the Zambezi escarpment Non Profit with community investments: Viability not assessed due to lack of data from SO	RDC, Community (ESC) and private sector have joint meetings quarterly Revenue sharing still to be determined after 5 years of investment
	Mukwichi	Hunting: Antipoaching and water provision; viable with gradual increase over 10 year period Crocodile farming; To be initiated Bee keeping: To be initiated under SGP	RDC, Community (ESC) and SO have joint operational and management meetings quarterly. Revenue sharing: Direct and prompt payment to Community at 55% community 4% CA, 26% management, 15% Council levy (Based on 50:50 ratio with SO and RDC/Community)

Collaboration between AWF and GEF 6 project

Given that AWF is operating in the same project area for the GEF 6 project in Mbire North, there is need for cooperation between AWF team and GEF 6 project. In addition there are some issues that require ironing out to avoid duplication and confusion in the project execution. The Project Management Unit needs to meet with them to elaborate these areas of cooperation.

CWCs Institutional Structure at Community Level

Given the potential advantages of community trusts as the institutional structure at community level, that is, they are legal entities and ensuring benefits accrue to the communities, we recommend setting up of these community trusts in the project area. However the project should engage a law expert for

guidance. In addition the establishment of the community trust should be gradual process preceded by training community members and local authorities about the benefits of the community trusts. In addition lobbying should be done at the local level. The final set up of these community trusts should be done transparently and should exclude undue interferences of the elite.

Benefit Sharing Models

In order for the communities to actively participate in wildlife conservation, they need to realize direct and increased benefits from the wildlife resources. There is need to continuously negotiate for higher benefits for the community. For example for daily rates is the same as the trophy hunting fees. For Mbire there have negotiated for daily rate and social funds which are shared between the community and RDC. The other districts should negotiate for inclusion of such components in the new contracts. The GEF 6 project should capacitate the RDCs and community on negotiation, business, entrepreneurial and marketing skills.

Placement of Equipment Procured by the Project

The project is going to procure equipment such as vehicles, tractors, trailers, etc. Where the equipment is placed is going to directly affect the running of the project. We recommend that the METHI, UNDP and the PMU to seriously discuss the placement of the equipment with all the stakeholders involved and agree on the placement and put in place mechanisms that will prevent misuse of these project equipment.

Dealing with anti-hunting lobby groups

Given the strong voice from the anti-hunting lobby groups, there is need to demonstrate best hunting practices, and continue lobbying through demonstrating benefits accruing to the marginalized communities. The project should support such efforts through backing the best hunting practices and publishing them to the world to see. Diversification on wildlife consumptive markets and diversification to wildlife non-consumptive uses should be also be sought by the project.

Quota utilisation

The success of the project interventions in the conservancies will mainly depend on quota utilisation by the Safari Operators in the CWCs. There is need for the project to put in place strong monitoring and evaluation mechanisms that ensure that there is no over-hunting, or rampant poaching is arrested and ensure that communities are optimally benefiting from the wildlife.

Ensuring continuity for the NRM portfolio at RDCs

The Natural Resources Executive Officer in the RDC is the sole person responsible for the office and the next junior person under him is the senior scout. Since the GEF project is going to be interacting actively with the NRM officer at RDC level during the period of implementation, there is need to have an understudy of the NRM Officer for institutional memory in the form of Junior / Assistant Natural Resource Officer. The budget of this officer should be negotiated amongst RDC, GEF 6 Project and possibly Safari Operator.

10.2.2 Priority needs and ideas for small grants projects under Component 3: Output 3.2

Water availability, capacity of communities and markets are prerequisites for successful enterprises under small grants projects. A major priority need for the three districts especially Hurungwe is water provision for wildlife, humans and livestock. UNDP should partner with UN agencies with a mandate for water and sanitation to increase water provision within the target wards for household and livestock use as this has implications for most of the activities that will be undertaken under the small grants projects. Concerted efforts should be directed towards building the capacity and willingness of households to work in groups. This can be achieved through tailored workshops. Lastly, it is imperative that proper markets are established for the different interventions proposed.

Community gardens will be implemented at CBO or group level. We recommend that these groups be self-formed to ensure there is adequate cooperation. Existing groups such as the credit and savings groups can be used to channel support such as input and fencing. Community gardens sites were mentioned in Muzarabani (ward 7 Hwata)-Rujeko community garden- World Vision; Kapembere – MEDRA, Museredza), Hurungwe (Ward 7-CGA, Ward 26-GOAL-not functional, Ward 8-CGA, Ward 9-GOAL) and Mbire (Ward 4-Kadzibonga (WFP) & Kadembo (Action Aid), Masoka- LGDA & pending council nutrition gardens). For Hurungwe markets exist in Chirundu and Kariba and potentially for Mbire if the Kanyemba Border post is opened. The project needs to work with local leaders in collaboration with EMA in identifying areas that are suitable for such gardens, source of water, avoid stream banks, and wildlife corridors. Alternative water sources are required to fully support community gardening. In cases where water is drawn from the rivers, the CBO committees will be responsible for applying for water abstraction permits from the Sub-Catchment Councils. Community gardens can serve both as a source of income, nutrition and climate change adaptation strategy for the household.

Apiculture was identified as the second common intervention that can be implemented in the three districts which fits well with existing land uses such as wildlife management and carbon trading. It can address nutrition, income and HWC mitigation (proposed investment for MWA) at community level. Farmers can be organized as CBOs for training purposes, but the beehives need to be managed at household level.

Small livestock also offer a viable land-use option in the three districts and most people indicated the potential for small livestock mostly in Muzarabani and poultry across the three districts. Livestock, as well as community gardens, are prone to conflict with wildlife and need to be planned accordingly. For example, predation of livestock while in pens or at drinking points is a major challenge. Once these challenges are addressed, households should be supported with improved goat breeds (and these need to be kept within and sustainable use level) and sheep or pigs were also preferred investments. Regarding poultry, the communities proposed three types of investments which include broilers, layers, and indigenous breeds.

Commercialization of NTFPs in the three districts for beekeeping, wild fruits (Masau, Mazhanje (for MWA), marula, Baobab, Tamarind) and Ilala is a viable option for support under the SGP. There is need for the project to consider adopting the Market Analysis and Development (MA&D) approach [(or similar approaches such as the Participatory Market Systems Development (PMSD))] as a framework for assessing feasibility and planning the setting up of suitable forest based enterprises. The project should carry out detailed resource assessments for Masau, Ilala, Honey, Baobab, Marula, and Tamarind in that order of priority as part of situation analysis under the MA&D process.

Crafts offer another viable source of income in the three districts. While the survey identified few craftspeople in the three districts, this enterprise can employ several people if a functional market exists. Given the proposed masterplan for Mbire for example, it is strategic to open local craft shops along main road to attract local buyers and traders. Several products such as hats, chairs, mats, and baskets are currently being produced from Ilala palm and reeds but there is need to support local crafts people to improve the quality to penetrate the urban and foreign markets. Proper management of the plants will need to be developed as well to ensure sustainability and availability of raw materials.

10.2.3 Recommended priority activities for training and capacity building for SFM, SLM, and HWC management under Outputs 3.1 - 3.4.

Recommended training activities

The following training of trainers workshops are proposed to address some of the gaps identified during baseline study.

Issues of lack of market knowledge would be discussed during the MA&D training, which seeks to empower communities to identify and develop relevant and appropriate forest based value chains and enterprises.

Gaps in propagating and managing trees will be addressed through the nursery and agroforestry/tree planting training that seeks to capacitate beneficiaries to raise their own tree seedlings and plant them for forest rehabilitation and restoration.

Capacity of communities in fire management and general Disaster Risk Reduction (DRR) is required and this would be addressed through trainings that cover fire, DRR and issues related to Climate Change.

Training of ESCs was identified as an important aspect in strengthening CAMPFIRE in the three districts especially Hurungwe and Muzarabani where the programme has not been active for the past 10 years.

Education programmes on fire and strengthen and/or promote establishment of fire committees and fire management plans at the ward level and where possible at village level. This should include supporting beneficiaries with basic fire fighting equipment and promoting use of local resources to make fire fighting equipment such as old tyres/rubber and heavy duty sacks.

Firefighting teams require ongoing training on firefighting techniques, awareness and equipment.

Feedback from EMA for the ESC and Firefighting committees was considered to be an important motivation factor in Muzarabani as one FGD participant mentioned, *"We stopped because there was no feedback from the district on our reports"* (FGD female participant Ward 7: Muzarabani).

Councilors and village heads require training on all aspects of natural resource management as they have opportunities to conduct awareness for the wider community during other community gatherings such as funerals etc.; make decisions impacting on natural resources such as land allocation

within the villages. In some wards there was encroachment of arable land and settlements, participants expressed the view that it was the village heads that was allowing such practices (Hurungwe Ward 8 and 9; Mbire Ward 4).

The general community require awareness on CAMPFIRE concept, the CWC concept, and general NRM in Muzarabani and Hurungwe since benefits from wildlife have not been significant since 2008.

Table 10-2: Proposed training plan for the MA&D process

What to be done	Where	Potential Partner	How	Resources (US\$)
Training of 40 beneficiaries in the MA & D process	Muzarabani	Practical Action, FAO	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in the MA & D process	Mbire	Practical Action, FAO	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in the MA & D process	Hurungwe	Practical Action, FAO	Workshop for 40hrs	\$20 000
Total				\$60 000

Table 10-3: Proposed training in Nursery management and Agroforestry/Tree planting

What to be done	Where	When	How	Resources
Training of 40 beneficiaries in Nursery management	Muzarabani	TBA	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in Nursery management	Mbire	TBA	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in Nursery management	Hurungwe	TBA	Workshop for 40hrs	\$20 000
Total				\$60 000

Table 10-4: Proposed training in fire management, DRR and Climate Change (Fire management could be ongoing)

What to be done	Where	Potential Partners	How	Resources
Training of 40 beneficiaries in Fire management	Muzarabani	Practical Action, EMA, FC	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in Fire management	Mbire	Practical Action, EMA, FC	Workshop for 40hrs	\$20 000
Training of 40 beneficiaries in Fire management	Hurungwe	Practical Action, EMA, FC	Workshop for 40hrs	\$20 000
Total				\$60 000

Training on the setting up and use of the biogas production systems and the wood saving Rocket and Solar barns should also be considered by the project.

Table 10-5: Proposed awareness activities

Activity	Period	Suggested partners	Remarks
Fire awareness campaigns	May: Fire week and throughout the fire season	EMA, Forestry Commission and Environment Africa	This could be done within communities and in schools.
Tree Planting events	December and through the entire rain season	Forestry Commission, EMA and Tree Eco	Promoted in communities and schools
Promote management of degraded woodlands	Throughout the year	Forestry Commission and Tree Eco	Demonstration sites should be set up and Look and Learn to ward 13 where communities are combining beekeeping

			with woodland management.
Community awareness undertaken as part of anti-poaching activities		ZPWMA, AWF	

Proposed woodland restoration plan

This should be implemented in accordance with international principles of good practice in forest rehabilitation and forest restoration.

According to FAO, (2011) Forest restoration and forest rehabilitation are challenging long-term endeavours that require thoughtful planning, implementation and monitoring. While they are closely related, a conceptual distinction may be made between them. The purpose of **forest restoration** is to restore a degraded forest to its original state – that is, to re-establish the presumed structure, productivity and species diversity of the forest originally present at a site. The purpose of **forest rehabilitation** is to restore the capacity of degraded forest land to deliver forest products and services. Forest rehabilitation re-establishes the original productivity of the forest and some, but not necessarily all, of the plant and animal species thought to be originally present at a site. Both forest restoration and forest rehabilitation are implemented on sites or in landscapes where forest loss has caused a decline in the quality of environmental services. They aim to strengthen the resilience of forest sites and landscapes and thereby to keep future land-use and management options open.

Emphasis in forest restoration is use of native species in the recovery of degraded land or lost forest and this includes woodland management.

Whilst forest rehabilitation is also about recovery of degraded land/lost forest it includes use of exotic species or species that are not native to the area and this includes plantation establishment and orchards of exotic species. This also planting along boundaries at homesteads, home gardens and other places.

The following is a suggested plan for forest restoration programmes:

Activity	Responsibility
Identify and demarcate local forests for management	Traditional leadership with technical support from the Forestry Commission and Council
Define the objective of management	Traditional leadership with technical support from the Forestry Commission and Council
Gazette the area as per council procedures/by laws	Local leadership and Council with FC guidance
Adapt the 10 principles for good practice in forest restoration	Communities, Council and Forestry Commission.

- Possible private partners are SAA who already have policy/commitment to support programmes on forest restoration.
- Other members of SAA could also provide support in their individual capacities

- Tree Eco are already supporting nurseries and they should also be engaged for support to the forest restoration programmes.
- Friends of the Environment now have experience in the forest rehabilitation and they could also be engaged for support to forest restoration activities.
- Develop a communication programme for drumming up support for forest restoration in the 3 operational districts.

Recommendations for alternative energy sources and energy saving equipment

The following are recommended energy type and equipment that the project could evaluate for adaption/adoption.

Energy type	Energy equipment	Possible partners
Solar		
	Solar barns some used by individuals and others by group of farmers for comparisons on wood use efficiency	SAA members,
Biogas	Camaterc biogas structures	Ministry of Energy and Power Development, Environment Africa who have implemented solar projects in Hurungwe, Mutoko and Mudzi
Wood	Wood efficient stoves (e.g. Tsotso stove)	Zimbabwe Red Cross Society who are currently implementing a project on wood efficient stoves in Muzarabani.

Recommendations for sustainable land management

Gully erosion identified in the CWCs and adjacent wards in Mbire should be addressed as part of the project implementation.

There is potential for ground surface water harvesting in the Mavhuradonha Wilderness Area which should be explored to provide water to project target wards.

Recommendations for Monitoring

Forest Monitoring System: There is need to develop a forest monitoring system for the conservancies and the project area at large that is participatory and bottom up. There is certain information which cannot be easily detected by satellites; hence locals can collect data and information that will be sent to the centralised server for further processing. Given that satellite images are freely available; production of land cover maps on a yearly basis is recommended. Capacitation of RDCs personnel to play an active role in data collection using monitoring tools like ODK and tree identification application is also recommended.

There is need to conduct a study to identify drivers of deforestation and forest degradation so that the approaches can be specific and targeted.

Local Level Monitoring: Local level monitoring can be supported by the project through the Management Orientated Monitoring System (MOMS) which allows community members to identify the parameters they want to monitor, develop the modules for monitoring, conduct monitoring, record, analyse and use the data. This is a simplified paper based system that was piloted in Mbire and Binga by the Zimbabwe CBNRM Forum, BioHub and WWF. This can be complimentary to SMART. Less expensive methods such as walked transects, problem animal reports and local knowledge can be used.

Participatory Quota Setting at CWC level: Participatory Quota setting allows all stakeholders in the wildlife management of a particular hunting concession to participate in the setting of quotas but with an opportunity to review previous quotas and offtake as well as other parameters such as trophy quality, community and SO observations, any locally collected data such as from walked transects

Wildlife population monitoring in the CWCs is an important investment that the project needs to make to ensure that impacts of its interventions can be measured. There is a huge information gap on wildlife population status due to lack of monitoring and record keeping at community, RDC and national levels. The project can support through an aerial survey, participatory road counts using existing road networks in the CWCs, establishment of walked transects as well as local level monitoring through MOMS.

District Councils require support in creating and maintain a data capturing system and analysis for the NRM department to support monitoring and decision making. This should be augmented with similar support to Wards in each CWC.

Recommendation on Human Wildlife Conflict management: The project can support human wildlife conflict management measures for key problem animal species such as elephant, lion, hyena and crocodile. These include Chilli and beehive fences for elephants; improving livestock kraals/housing for predators for communities living in and adjacent to wildlife corridors.

This should be in tandem with training on human wildlife conflict mitigation for communities. Chilli and beehive fences can be linked to the other value chains that the project will support to create a source of income for communities.

10.3.4 Recommended actions with plans to roll out the development of ILMPs in 2019:

Output 3.1

In 2015, WWF and its partners³⁰ developed a framework to present a case for organizations across a range of sectors to focus on integrated landscape management. Five essential elements needed to

³⁰ Global Canopy Programme, EcoAgriculture Partners, IDH The Sustainable Trade Initiative and The Nature Conservancy

achieve sustainable landscapes under varied conditions in different places were identified. These are outlined as the recommended actions that the project needs to undertake as part of its planning for the development of ILMPs in Table 10-6.

Table 10-6: Actions for Development of ILMPs

Objective	Activity	Responsibility
Establish Multi stakeholder Platform	Identify various interest groups through Stakeholder Mapping	PMU/ Facilitator familiar with landscape
	Find ways in which stakeholders can meet and interact in neutral territory (a landscape stakeholder platform).	PMU in collaboration with Govt, research institutions
Build shared understanding	Share understanding amongst stakeholders of issues and drivers, spatial relationships	PMU/ Independent Facilitator
	Assess the natural and social capital in the landscape, and (2) identify longer term trends and root causes of any problems (land use changes and drivers analysis. Gather information on stakeholder perspectives, socio-economic incentives for action and institutional and policy context.	PMU/Consultants
Shared multifunctional objectives are agreed among stakeholders and a collaborative action plan prepared. Spatial relations of activities is agreed to maximise social, economic and environmental benefits	Agreement on a landscape vision between stakeholders, Creating integrated spatial planning on how to achieve the vision, Completing detailed action plans for the work	PMU and identified stakeholders; Skilled Facilitator
	Ensure governance basis for implementation	
Effective implementation Ensure plans get carried out effectively and on time, adapting as necessary by drawing on lessons learned.	Plan for carrying out the work plan through development of budgets, securing long term funding, monitoring, identifying strong leadership and quick wins and developing a communication plan.	PMU, stakeholders, Facilitator
Monitor, evaluate and learn for adaptive	Plan for monitoring and evaluation through a monitoring budgets of about 5-10 per cent of the overall budget.	PMU and stakeholders, M & E expert

management and accountability	Approaches to monitoring should be agreed in the planning stage and budgets agreed between partners.	

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