Okavango Delta
Management Plan
2021-2028

MINISTRY OF ENVIRONMENT, NATURAL RESOURCES, CONSERVATION AND TOURISM

OKAVANGO DELTA MANAGEMENT PLAN

2021 - 2028

THE OKAVANGO DELTA MULTI-INTERNATIONALLY DESIGNATED AREA (MIDA) LANDSCAPE

FINAL PLAN

JULY 2021

DEPARTMENT OF NATIONAL MUSEUM AND MONUMENTS
MINISTRY OF ENVIRONMENT, NATURAL RESOURCES, CONSERVATION AND TOURISM

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Traditional homestead in the Okavango ..... **B. N. Ngwenya**

Cattle drinking and grazing from Okavango floodplains.....**Dave Tihelo; Cryptic Avenue**

PREFACE

This is the Okavango Delta Management Plan (ODMP), which will guide the management of the Okavango Delta Multi Internationally Designated Area (MIDA) landscape (i.e., Okavango Delta Ramsar Site – ODRS and the Okavango Delta World Heritage Site – ODWHS) from 2021 to 2028. The plan is a 2nd revision motivated by the 2014 inscription of the Okavango Delta as a World Heritage Site. The ODMP is thus an integrated plan guided by both the Ramsar and World Heritage Conventions and their corresponding guidelines. The plan was also developed following the Government of Botswana's policy, legal and planning frameworks, and systems. The management plan comprises eleven sections, which are briefly highlighted below.

Chapter 1 introduces the Okavango Delta Management Plan (ODMP) by giving a brief description of the Okavango Delta, a key feature in the Okavango Delta MIDA landscape, originally the ODRS. The chapter also explores the institutional, administrative, and organizational setting within which the ODMP and the Okavango MIDA landscape are functioning. It highlights the rational for the review of ODMP. The Chapter further outlines the planning approach, methodology and process followed during the review of the first ODMP of 2018 and the development of the current ODMP.

Chapter 2 sets the scene for the Okavango Delta MIDA landscape in the context of local, district and regional setting. It briefly highlights the land tenure and land use systems of the landscape, which are predominantly tribal land, with wildlife management areas housing community and commercial controlled hunting areas (CHAs). The Chapter ends by giving an overview of the demographics in the district.

Chapter 3 presents an overview of policies, legislative and key strategic planning documents relevant to the Okavango Delta MIDA landscape and their relevance to the development, implementation, and monitoring of the ODMP. The review enlisted i) district planning documents and national policies, legislation, and planning documents, ii) regional and international protocols, conventions, and agreements relevant to the ODMP and its implementation. Policy frameworks and instruments are discussed based on the context, content, actors, and process.

Chapter 4 focusses on detailing the land use and socio-economics within the Okavango Delta MIDA landscape. These are presented in the form of infrastructure types existing within the landscape and socio-economic livelihoods prevalent in the area. The Chapter ends by expounding on land use, challenges, and conflicts.

Chapter 5 presents the biophysical and biological aspects within the landscape, addressing climate, physiography, hydrology, soils, biodiversity, and the trends. The Chapter broadly describes the renewable resource base which forms the foundation of the WHS, the ODRS and the economy and livelihoods of northern Botswana. Status and trends of important taxa are reported, and the need highlighted for maintaining an open ecosystem and functional connectivity to the wider Kavango-Zambezi (KAZA) and Cubango-Okavango River Basin landscapes.

Chapter 6 explores climate change and outlines how the environment, biodiversity conservation and climate change adaptation can be integrated. The Chapter demonstrates the vulnerability to climate change of the Okavango Delta MIDA landscape; the impact of climate change on economic sectors, livelihoods, habitats, and biodiversity dependent on the delta; and provides coping and adaptation strategies aimed at 'climate proofing' livelihoods, increasing the adaptive capacity of institutions that govern the delta and conserving the biotic and abiotic components of the delta as an ecosystem.

Chapter 7 presents a tourism situational analysis of the Okavango Delta MIDA landscape as the key economic sector at both national and district level. It highlights tourism categories, products and activities in the district including community based natural resources management initiatives and community-based tourism. The Chapter gives a snapshot of cultural heritage in the Okavango Delta MIDA landscape and how the cultural resources can be harnessed, broadening the mainstream tourism to include cultural tourism.

Chapter 8 highlights gender mainstreaming within the context of global strategic frameworks, ecosystem services and biodiversity conservation. It outlines how gender analytical frameworks and approaches are relevant to the implementation of ODMP. The Chapter ends by exploring how the ODMP may link and fit within international frameworks.

Chapter 9 presents a strategic analysis of the Okavango Delta MIDA landscape based on its significance, challenges, and threats. It presents the signifcance of the landscape in terms of conservation, cultural heritage and the socio-economics.

Chapter 10 outlines the ODMP strategic planning framework. The framework presents the plan vision, mission, goals and stratergic objectives. The strategic goals were guided by the four priority areas identified for the landscape for the next seven years. The framework presents recommendations for specific strategic objectives and actions.

Chapter 11 presents monitoring matrices as tables detailing parameters to be monitored, indicators, targets and recommended actions to guide management planning and monitoring. The monitoring matrices cover the ODMP thematic areas, being the biophysical, socio-economic, tourism, and the cross-cutting gender and climate change.

LIST OF ABBREVIATIONS AND ACRONYMS

BB	Business Botswana
BDF	Botswana Defence Force
BTO	Botswana Tourism Organisation
CBD	Convention on Biological Diversity
CBNRM	Community-Based Natural Resources Management
CBO	Community Based Organisation
CBPP	Contagious Bovine Pleuro-Pneumonia
CEDA	Citizen Entrepreneurial Development Agency
CHA	Controlled Hunting Area
COMPACT	Community Management of Protected Areas Conservation
CORB	Cubango-Okavango River Basin
DDC	District Development Committee
DEA	Department of Environmental Affairs
DeGA	Department of Gender Affairs
DMS	Department of Metrological Services
DNMM	Department of National Museum and Monuments
DWAF	Department of Water Affairs and Forestry
DWMPC	Department of Waste Management and Pollution Control
DWNP	Department of Wildlife and National Parks
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FGD	Focus Group Discussions
FMD	Foot and Mouth Disease
FR	Forest Reserve
GABHIC	Gabinete para Administração da Bacia Hidrográfica do Rio Cunene
GAN	Gender Alliance Networks
GEF	Global Environment Facility
HIV/AIDS	Human Immuno-deficiency Virus – Acquired Immune Deficiency Syndrome
HWC	Human-Wildlife Conflict
ICT	Itekeng Community Trust
MLEAA	Multi-Lateral Environmental Agreements Authority
IPCC	Inter-governmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
JVP	Joint Venture Partnership
KAZA TFCA	Kavango Zambezi Transfrontier Conservation Area
KAZA	Kavango Zambezi
LAC	Limit of Acceptable Change
LCB	Local Consultative Body
LCIP	Local Communities and Indigenous Peoples

LEA	Local Enterprise Authority
MADFS	Ministry of Agriculture Development and Food Security
MENT	Ministry of Environment Natural Resources Conservation and Tourism
MFED	Ministry of Finance and Economic Development
MGR	Moremi Game Reserve
MIDA	Multi Internationally Designated Area
MITI	Ministry of Investment, Trade and Industry
MLG	Ministry Local Government
MLGLH	Ministry of Local Government, Lands and Housing
MLGRD	Ministry of Local Government and Rural Development
MLH	Ministry of Lands and Housing
MLHE	Ministry of Land, Housing and Environment
MLMWSS	Ministry of Land Management, Water and Sanitation Services
MNIGA	Ministry of Nationality, Immigration and Gender Affairs
MoBE	Ministry of Basic Education
MoHW	Ministry of Health and Wellness
MOMS	Management Oriented Monitoring System
MTR	Mid-term Review
NBSAP	National Biodiversity Strategy and Action Plan
NCONGO	Ngamiland Council of Non-Governmental Organisations
NDP	National Development Plan
NES	National Ecotourism Strategy
NGO	Non-Governmental Organisation
NPCWTNRCC	National Portfolio Committee on Wildlife, Tourism, Natural Resources and Climate Change
NTDP	Ngamiland Tourism Development Plan
NWDC	North West District Council
OCT	Okavango Community Trust
OD	Okavango Delta
ODIS	Okavango Delta Information System
ODMP	Okavango Delta Management Plan
ODRS	Okavango Delta Ramsar Site
ODWHS	Okavango Delta World Heritage Site
ODWHS	Okavango Delta World Heritage Site
OKACOM	Permanent Okavango River Basin Water Commission
OPCT	Okavango Panhandle Community Trust
ORB	Okavango River Basin
ORI	Okavango Research Institute
OUV	Outstanding Universal Value
OWMC	Okavango Wetland Management Committee
PA	Protected Area
SADC	Southern African Development Committee
SAP	Strategic Action Programme

SARAMSAR	Southern Africa Ramsar Sites
SAREP	Southern Africa Region Environmental Programme
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
TAC	Technical Advisory Committee
TDA	Tourism Development Area
TDN	Tourism Development Node
TLB	Tawana Land Board
TOCaDI	Trust for Okavango Cultural and Development Initiatives
UNDP	United Nation Development Programme
UNESCO	United Nations Educational, Scientific & Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VDC	Village Development Committee
WCMP	Wildlife Conservation and Management Policy
WH	World Heritage
WHC	World Heritage Committee
WHS	World Heritage Site
WMA	Wildlife Management Area
WWF	World Wildlife Fund

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EXECUTIVE SUMMARY

Background

The revised Okavango Delta Management Plan (ODMP) is developed to cater for developments that occurred within the Okavango Delta Ramsar site (ODRS) since the initial ODMP in 2008. The 2008 plan was developed following the Ramsar Convention requirements. Key developments that took place after 2008 include the listing of the Okavango Delta, being part of the ODRS, as the 1000th World Heritage Site (WHS) in July 2014. The inscription of the Okavango Delta as a WHS therefore necessitated that the ODMP be aligned also to the requirements of the World Heritage Convention guidelines. The World Heritage Site listing, together with other post 2008 emerging issues and new threats (such as mining, upstream and downstream developments and increasing land-use and human-wildlife conflicts) that may impact the socio-ecological integrity of the ODRS, now a Multi-Internationally Designated Area (MIDA), motivated for the review of the 2008 ODMP.

Furthermore, the ODMP mid-term review (MTR), completed in 2014, also highlighted and recommended key issues that were overlooked in the 2008 management plan development and implementation. Some of these issues include climate change, gender, and emerging stakeholder voices such as the youth in the management process of the ODRS. It is against this backdrop that the review of the 2008 ODMP was initiated to develop a revised integrated plan that will guide management and use of the Okavango Delta MIDA landscape for the next seven years, effective 2021. The review followed a four-staged process, being, 1) inception, 2) scoping, 3) draft revised plan and 4) the final plan. This plan document is the culmination of this process. As the ODMP was conceived as an integrated overall plan that draws together all sector plans and activities into an overarching planning framework for the sustainable use, conservation, and management of the resources of the Okavango Delta Ramsar Site, the revised plan also embraces the same ideals in its design and implementation.

Policy Framework and Governance

The establishment, protection and management of the OD MIDA landscape is guided by several enabling policies, legislation, plans, and other strategic documents such as regional and international protocols and conventions. These ensure that that the ecological character and the outstanding universal values (OUV) of the Okavango Delta MIDA landscape are maintained. The Okavango Delta MIDA landscape derives its global significance from the conventions and protocols, which significance also comes with obligations. Key among these are, at global level; the Convention on Wetlands of International Importance of 1971 and the current 4th Ramsar Strategic Plan (2016-2024); the Convention on the Protection of the World Cultural and Natural Heritage of 1972 together with the Operational Guidelines for the Implementation of the World Heritage Convention of 2019. At regional level, the SADC Protocol on Shared Water Courses of 2000, the Permanent Okavango River Basin Water Commission Agreement of 1994 and the KAZA TFCA Treaty of 2011 play a key role. The Wetland Conservation and Management Policy of 2008, the Monuments and Relics Acts of 2001, the Ngamiland Integrated Land Use Plan of 2009, and the Strategic Environmental Management Plan of 2013

are some of the key instruments at country and local level. It is envisaged that the revised ODMP will serve as an overarching strategic instrument guiding and informing all plans, programmes and development activities through its common and shared vision.

The Ministry of Environment, Natural Resources Conservation and Tourism (MENT) is the custodian of the RAMSAR and World Heritage Conventions in Botswana, and hence directly responsible for the implementation and/or coordination of the ODMP using policies housed within its varied Departments and agencies. Coordination within MENT is further enhanced as most environmental related agencies are housed within, making implementation smoother. Currently, coordination within the ODRS in the district is vested with the Department of Environmental Affairs (DEA) while within the ODWHS, it is with the Department of National Museum and Monuments (DNMM). The plan recommends establishment of a Multi-Lateral Environmental Agreements Authority (MLEAA) and an accompanying Secretariat within the MENT to strengthen coordination of the Okavango Delta MIDA landscape because it now has two implementation departments. It also calls for the empowerment of the Okavango Wetland Management Committee (OWMC) at district level, which will include linking it to appropriate district-based structures for reporting and accountability.

The Okavango Delta MIDA Landscape

The Okavango Delta is a Ramsar site designated in 1996 through the Ramsar Convention on Wetlands. Under the Convention, the Delta is considered a wetland of international importance and of significant local and global value. The Ramsar site covers 55,374Km^2, which translates to 49.6% of the entire Ngamiland (111,650 Km^2) and is one of the largest Ramsar sites in the world. Part of the ODRS was inscribed as the 1000th World Heritage Site in June 2014. The inscribed World Heritage property encompasses an area of 20,235.9 Km^2 with a buffer zone of 22,866.3 Km^2. As a World Heritage site, it is a protected cultural and natural heritage of international importance under the United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Heritage Convention (WHC). This double international designation status underscores the global importance of the Delta and demonstrates the integration of conservation and preservation with sustainable use of the wetland and the need to maintain the OUV of the property.

The Okavango Delta MIDA landscape also houses the first WHS of the Tsodilo Hills in Botswana and the world known Moremi Game Reserve, otherwise also regarded as the first community-initiated Game Reserve in Botswana. The game reserve is a home to the 'big five' and it attracts tourists from all over the globe. The Okavango Delta MIDA landscape is a haven of recreational, ecological, cultural and livelihood activities for its inhabitants. It is a source of water for human livelihoods and wildlife.

Biophysical

The biophysical environment of the Okavango Delta MIDA landscape is characterised by very high variability in the major forcing parameters (drivers) such as hydroclimate. Conversely, many of the foundational aspects such as subsurface geology, insolation (amount of sunlight

reaching the ground), species richness, and overall terrain are very stable at the system scale. The variability in drivers causes variations in biota: large changes in wildlife populations or total extent of inundation of wetlands are observed often in the medium-term. In a worldwide biodiversity comparison of seven globally important wetlands, of which six are in tropics and sub-tropics, the Okavango Delta had a low number of fish species, but the second highest number of plants and mammals, third highest number of amphibians, and highest number of reptiles and birds. The number of large mammal species and their high abundance are outstanding in the Okavango Delta. Botswana is home to approximately a third of the global population of African elephants – a species which is under huge poaching pressure throughout most of its range. The population in Botswana is therefore vital to the survival of the species albeit a growing opinion that the pressure exerted by such a large population of elephants could be having detrimental effects, particularly on large tree species.

Land Use and Land Tenure

The Okavango Delta MIDA landscape falls almost entirely under tribal land, administered through Tawana Land Board (TLB), with the exception of NG41, which is a community use controlled hunting area (CHA) in a State Land allocated to the Mababe Zokotshama Community Trust (MZCT). The Wildlife Management Areas (WMAs) within the landscape houses 36 Controlled Hunting Areas (CHAs), which are administrative land blocks used by the Department of Wildlife and National Parks (DWNP) to allocate hunting quotas. Ten (10) of these CHAs are zoned for and are under community management with the rest being either commercial photographic and/or hunting concessions (formerly multi-purpose areas), communal areas with livestock, or a game reserve.

Communal and state-owned land are the prevailing land tenure systems in Ngamiland where communal land constitutes 79.3% of the entire land in the district. Prominent among many competing interests for land use in the Okavango Delta are tourism-based activities and livestock management issues. Although land use objectives in the delta were guided by the ODMP of 2008, many anomalies still exist in the appropriation of land resources.

Socio-economic Livelihoods

Socio-economic or livelihood activities across the length and breadth of the Okavango Delta MIDA landscape are as diverse as the natural resources (NRs) available in the area. These activities include farming, fishing, tourism, animal husbandry, arts and crafts. Regardless of the abundant resources available in the Okavango Delta, people's inability to adequately take advantage of the available economic opportunities has been a major challenge as result of internal and external factors facing communities in the river basin.

Tourism and Cultural Heritage

Ngamiland district is a hub of tourism activities with the main attraction being the Okavango Delta (wetland), its water, wildlife, and wilderness. The Okavango Delta MIDA landscape is the most visited area by tourists visiting Botswana for vacation and holiday purposes. The

CBNRM programme was introduced to empower local communities who live alongside natural resources, specifically wildlife, to benefit economically from what their local environments offered. This positioned local communities to participate in tourism ventures and compelled them to sustainably utilise resources from which they derive their livelihoods. There have been concerns by citizens generally, and local communities in particular, about their limited participation in the lucrative tourism industry. The limited participation of Batswana in the industry is often attributed to such factors as limited skills, financial barriers and insufficient policy framework or regulation which led to the exclusion of citizens in favour of non-citizens. Limited participation of Batswana is also attributable to a lack of deliberate strategies to ensure citizen empowerment and capacity building.

The Okavango Delta MIDA landscape is endowed with a vast wealth of tangible and intangible heritage and cultural products. Several cultural heritage sites were identified and documented throughout the Okavango Delta and its environs. The Delta has been inhabited for centuries by various indigenous people who adapted their cultural identity and lifestyle (e.g., fishing, hunting, and gathering) to the exploitation of resources available at the time. The Basarwa communities of the Okavango Delta, namely the //aniKhoe (River San), the BugaKhoe (in the east of the Okavango River), and the Tsega are direct descendants of people who inhabited the region more than forty thousand years ago.

Although both the ODMP of 2008 and the ODMP MTR called for diversification of the tourism product through tapping into the region's cultural tourism products, stakeholders and communities highlighted that the cultural tourism remains largely underutilised. There is, therefore, the need to tap into cultural tourism as an alternative tourism product by packaging and promoting tangible and intangible heritage and cultural products in the region. Similarly, another way of diversifying the tourism product in the Okavango Delta MIDA landscape is through the declaration of Lake Ngami as a bird sanctuary. The development of Lake Ngami as a tourism destination will benefit the local economy of the surrounding villages, create alternative forms of employment and promote nature conservation by local communities.

Infrastructure

Rural infrastructures comprise social (facilities ranging from educational, health, hospitality communication to water and electricity supply); physical (such as transportation, storage, processing, irrigation, flood control and water resources development facilities); and institutional infrastructures (which include rural credit and financial institutions, farmers organizations, agricultural extension institutions, community development or self-help organizations, cooperatives and marketing services). The state of infrastructure (especially physical infrastructure) in the Okavango Delta is still relatively rudimentary in nature.

Climate Change Adaptation

The need to promote integration of environment, biodiversity conservation and climate change adaptation continues to receive global attention. Integration is imperative for facilitating resilience of the environment, biodiversity, and livelihoods to climate change. Studies have

shown that the Okavango Delta is vulnerable to climate change. There is, therefore, a need to develop climate change adaptation strategies that enhance protection of the environment, biodiversity, and livelihoods in the delta. Several issues on biodiversity and climate change were identified in the ODMP MTR of 2014 to help in drafting the new management plan. The main issues are categorised as information and data availability; vulnerability to climate change; impact of climate change on economic sectors, livelihoods, habitats, and biodiversity; monitoring of climate change trends; coping and adaptation strategies.

Strategic Framework

The Okavango Delta MIDA landscape faces several local, internal, and external challenges and threats. Challenges and threats affect institutions and governance, biophysical resources, socio-economics, and tourism. These served as priority areas in the strategic planning framework to guide management of the Okavango Delta MIDA landscape for the next seven years, effective 2021. The revised plan envisions a well-functioning multi-internationally designated socio-ecological system that equitably and sustainably provides benefits for local, national, and international stakeholders. The overall goal is to 'integrate natural resources and cultural heritage management in the Okavango Delta MIDA landscape to ensure its long-term conservation and cultural preservation for the provision of benefits to support and build more resilient communities through stakeholder engagement and accountability in the sustainable use of its natural and cultural assets'. Four strategic goals, addressing the priority areas and the accompanying objectives were derived from the vision and mission to support and guide management and implementation over the next seven years.

The monitoring framework was developed following the plan thematic areas, being the biophysical, socio-economic, tourism, and the cross-cutting climate change. The framework covers resource bases, threats, issues and the monitoring actions needed for guiding management and implementation of the ODMP. The recommended actions and interventions must be implemented to mitigate against the threats to ultimately realise an envisioned 'well-functioning multi-internationally designated socio-ecological system that equitably and sustainably provides benefits for local, national and international stakeholders'.

CHAPTER 1: BACKGROUND AND INTRODUCTION

1.0 OVERVIEW

1.1 DESCRIPTION OF THE OKAVANGO DELTA

The Okavango Delta (OD) (Figure 1.1) covers a total surface area of 28,000Km^2 (Mendelsohn *et al.*, 2010) and is recognized nationally and globally for its biodiversity and wildlife, as an important protected area. It contains approximately 1,300 plant species, 89 fish species, 33 amphibian species, 64 reptile species, 482 bird species and 130 mammal species (Ramberg *et al.*, 2006a; Meskell, 2014). The Delta is characterized by a mosaic of habitats that range from permanent swamps to seasonally flooded swamps and grasslands, riverine woodlands and dry savannas that are never under water (Ramberg *et al.*, 2006a). According to the 2011 population census, there are 152,284 people living in the Delta (Botswana and Statistics, 2016).

The OD covers several Wildlife Management Areas (WMA), which are further subdivided into Controlled Hunting Areas (CHAs). Moremi Game Reserve (MGR) is one of the CHAs and is managed by the Department of Wildlife and National Parks (DWNP). As a national wetland, its governance also falls within the mandate of the Department of Environmental Affairs (DEA). Furthermore, as a river system that spans three riparian states its governance falls within the mandate of the Department of Water Affairs (International Waters Unit). Governance of the property is shared with local communities through community-based organizations and the private sector who respectively manage concessions in the area. Regionally it is part of the Okavango River Basin and the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA).

As part of the Okavango River Basin, it is managed through the Permanent Okavango River Basin Commission Agreement (OKACOM) of 1994. The Okavango Delta is also part of a Ramsar site designated in September 1996. After designation, the Botswana Government ratified the Convention on Wetlands: The Ramsar Convention, in April 1997, thereby validating the listing of Okavango Delta as a wetland of international importance. In 2014, the Okavango Delta was inscribed as the 1000th natural World Heritage Site (see Figure 1.1 for the two boundaries circumscribed by these conventions). The importance of the OD nationally, regionally, and internationally is based on its natural values and these have been the basis for its protection and management.

1.2 GOVERNANCE AND MANAGEMENT OF THE OKAVANGO DELTA

The Okavango Delta is a multi-layered landscape with multiple stakeholders. The different stakeholders include government departments at both central and local government, traditional leaders, political leaders, local communities, non-governmental organizations, community-based organizations, academia, and the private sector (tourism operators). Its management is coordinated by the Department of Environmental Affairs in the Ministry of Environment, Natural Resources Conservation and Tourism (MENT). The governance and management of the Okavango Delta is anchored on structures of the Okavango Delta Ramsar Site (ODRS) and

its management planning documents. The ODRS is managed through the Okavango Delta Management Plan (ODMP) of 2008. The Okavango Wetlands Management Committee (OWMC) is a district multi-sectoral structure responsible for guiding the implementation of the Okavango Delta Management Plan.

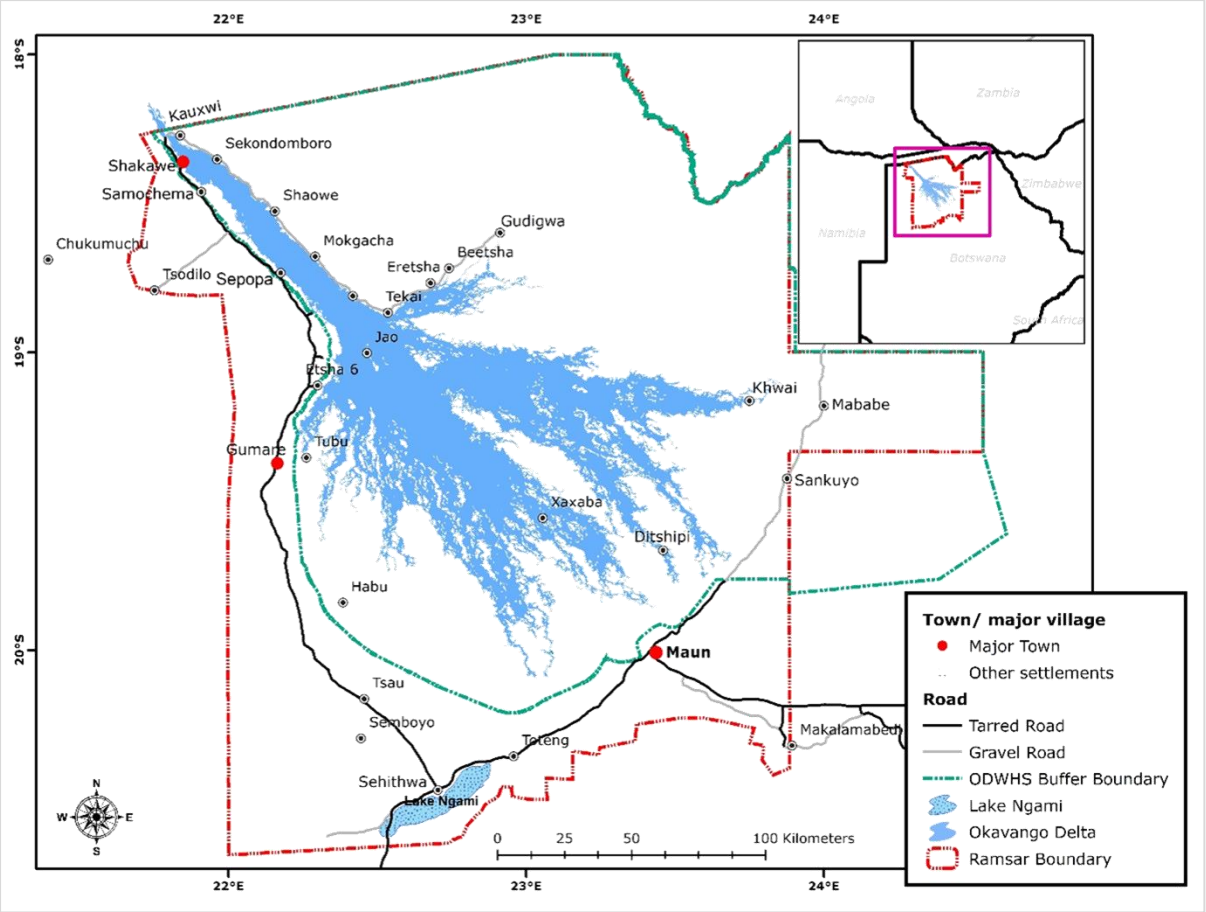

Figure 1.1 Map of Okavango Delta with Ramsar and World Heritage Sites

The ODMP has been in use since 2008 guiding the management of the ODRS. However, plans for the nomination of the Okavango Delta as a World Heritage site were still underway. At the same time, a mid-term evaluation of the ODMP was in the process and a Strategic Environmental Assessment for the ODRS was also conducted.

1.2.1 Institutional Arrangements

When the ODMP was adopted in 2008, the Department of Environmental Affairs (DEA) was tasked to lead the coordination and monitor implementation of the ODMP. At the start of the ODMP implementation in 2008, there were 12 implementation sectors and number has since increased to include agencies and Departments which were either not established in 2008 or their role was minimal (Table 1.1).

Table 1.1: The 2008 and Post 2008 ODMP Sector Components

Component	Lead Agency
2008	
Policy, Planning, and Strategy (Coordination)	DEA and IUCN
Research, Data Management & Participatory Planning	ORI
Hydrology and Water Resources	DWA
Wildlife Management	DWNP
Sustainable Tourism & CBNRM	DoT and NWDC
Fisheries Management (and Animal Health)	DAHP (DWNP)
Vegetation Resources Management	DFRR
Physical Planning	NWDC, Physical Planning Unit
Land Use Planning and Land Management	TLB and DLUPU
Local Authorities Services' provision	NWDC
Waste Management	NWDC, Environmental Health
Sustainable Livestock Management	DAHP
Post 2008	
Tourism marketing, branding and grading	BTO
Cultural and natural heritage	DNMM

It has since been realised that DEA regional office was not adequately resourced to handle the responsibility in terms of staffing, funding and equipment, as well as capacity to coordinate the sectors. This resulted in fragmented approach to the ODMP implementation. The Mid-Term Review noted that the piece-meal implementation of ODMP tasks by the respective individual Departments defeated the integrated approach espoused by the ODMP. The issue-driven implementation was blamed for duplication and overlapping of functions, which further strained the already limited resources.

Another compounding challenge with DEA as the coordinator was that it lacked enforcement powers for most ODMP issues, together with other institutional structures. The practice has been that after the ODMP, individual institutions and departments revert to 'business-as-usual', than inter-agency collaboration. Some of these problems have hampered effective implementation of the ODMP. Owing to this, the mid-term review called for ODMP recommendations to be 'based on the availability of capacity to implement' that 'wish-list.'

The Department of National Museum and Monuments, whose mandate is to preserve and promote Botswana's cultural and natural heritage for sustainable utilisation, was not among the initial twelve ODMP implementation sectors identified in the 2008 ODMP. With the inscription of the ODWHS and the Tsodilo Hills, which are within the ODRS, their role and participation becomes not only mandatory but also necessary. This is so because DNMM is the custodian of the Convention Concerning the Protection of the World Cultural and Natural Heritage of Outstanding Universal Value, which was adopted by UNESCO in 1972. Through this instrument, nations of the world have agreed to inventorise, recognize and protect unique and irreplaceable properties of universal outstanding value. The DNMM is therefore responsible for ensuring the implementation of the requirements of the convention at the ODWHS and Tsodilo hills.

1.3 RATIONALE FOR THE REVIEW OF THE OKAVANGO DELTA MANAGEMENT PLAN

The Okavango Delta Management Plan (ODMP) was prepared in 2008 for the Okavango Delta Ramsar Site (ODRS). The plan specifically catered for the Ramsar Convention requirements. Since the development of the ODMP, part of the ODRS was declared a World Heritage Site in July 2014, thereby necessitating alignment to the requirements of the World Heritage Convention guidelines. The 2014 inscription and other emerging issues within the ODRS that impact on the conservation, protection, management and utilisation of the site made it necessary for the ODMP to be revised. Since 2008, new threats such as mining; upstream and downstream developments; and increased threats such as tourism, invasive species and conflicts in land use have emerged in the ODRS.

Other significant changes that occurred since 2008 include production of multiple management planning documents for the management of the Delta at both national and regional level, increased international status and requirements; and increased voices of multiple stakeholders of the Okavango Delta, especially indigenous peoples and local communities and new institutions such as the Botswana Tourism Organisation (BTO), and the Department of National Museum and Monuments (DNMM). The inclusion of the DNMM as a key player into the ODMP sectors is now very significant. The DNMM is the custodian of the UNESCO 1972 Convention on the Protection of the World Cultural and Natural Heritage of Outstanding Universal Value. It is therefore directly responsible for facilitating implementation of the requirements of the Convention in the ODWHS and the Tsodilo Hills, which are part of the ODRS. The DNMM, in collaboration with DEA served as the clients in the review of the 2008 ODMP.

As for the indigenous and local communities, the need for recognition of their cultural heritage within the World Heritage property, user and access rights to resources and benefit from tourism in the property as underscored by the World Heritage Convention guidelines need to be considered. The World Heritage Committee, during its 39th session requested the State Party to ensure issues of governance and management, be addressed, including active participation of indigenous and local communities in the management of the ODWHS. These new developments, therefore, warranted the need to develop a comprehensive and integrated management plan and system to effectively address them.

To come up with a revised management plan for the property, there was a need to assess the current existing management system of the property, the institutional framework, and the management planning documents. Currently there exists a variety of management planning documents that contribute to the conservation and management of the ODWHS and the ODRS. These need to be harmonized into a management planning document that will guide conservation and management of the property, taking into consideration the conservation, governance and management issues currently affecting the property and the entire ODRS. The review of the 2008 ODMP intended therefore to consider options for an integrated management of the site under both the Ramsar and World Heritage conventions designations, which has now become a multi-internationally designated area (MIDA). As the ODMP was conceived as an integrated overall plan that draws together all sector activities into an overarching planning

framework for the sustainable use, conservation, and management of the resources of the Okavango Delta Ramsar Site, now the Okavango Delta MIDA landscape, the revised plan will embrace the same ideals in approach, design, and implementation.

1.4 APPROACH

The development of the plan embraced closely related concepts and approaches espoused by both the Ramsar and WHS Convention guidelines. The principles guiding the concepts are very similar in goals, while each focus on certain specifics. These are broad-based multi-stakeholder participation and engagement, adaptive management, landscape and ecosystem approach and Integrated Water Resources Management (IWRM). These served as guiding pillars in plan development. These must also guide implementation, and monitoring.

1.4.1 Participation

The ODMP review process followed a highly participatory and engagement approach to enhance ownership, accountability, and input. The planning approach was guided by the New Guidelines for Management Planning for Ramsar Sites and other Wetlands (2002), Guidelines for Establishing and Strengthening Local Communities' and Indigenous People's Participation in the Management of Wetlands (1999) and the Operational Guidelines for the Implementation of the World Heritage Convention (2019). These strategic documents advocate for a multi-stakeholder, and gender-balanced participation, human rights-based approach, active involvement of local communities and indigenous peoples (LCIP), civil society, local and central governments, and political structures. The success of the revised ODMP will hinge on the continued support of these multiple stakeholders, including local communities and indigenous peoples in the stewardship of the Okavango Delta MIDA landscape within their immediate environs and beyond.

Stakeholders were consulted using different methods, fora, and platforms. These included the general public, mainly local communities through Kgotla meetings, and resource users in the form of focus group discussions, key informants in the form of key informants' interviews and experts using stakeholder workshops. The decision makers and political leadership at district level were consulted through their existing district meeting structures such as the District Development Committee (DDC) and District Council meetings, respectively. The choice of the fora was based on cultural acceptability, relevance, and appropriateness.

1.4.2 Landscape

The landscape approach acknowledges connectivity among ecosystems and the increasingly widespread and complex environmental, economic, social and political challenges that transcends traditional and man-made boundaries (Arts et al., 2017). A piece-meal approach towards addressing these will not be effective and sustainable, but rather 'taking conservation to scale' is regarded as the way forward. In the landscape approach, all areas matter in ensuring connectivity across the landscape. For the ODMP, the landscape approach is considered critical because of the site's position in the Cubango-Okavango River Basin (CORB), and the site's vulnerability to upstream change in hydrology and land use. The ecological functioning of the site is driven by hydro-climate pulsing derived from seasonal rainfall in the distant catchment in Angola. The Landscape approach to management explicitly acknowledges this dependence

and link, and ODMP managers must prioritise outreach to, and engagement with river basin managers (OKACOM), Protected Area managers from the Basin states (e.g., Bwabwata (Namibia) and Luiana (Angola), and the managers of river basin sections within each Basin state (e.g., GABHIC (Angola Cuando-Cubango Province), DWAF Namibia – Zambezi Province) and KAZA TFCA.

1.4.3 Adaptive Management

Adaptive management is described as a rigorous approach for learning through deliberately designing and applying management actions as experiments to better understand the ecosystem to achieve results in uncertainty (Murray & Marmorek, 2004). Okavango Delta MIDA landscape will continue to evolve within time and space with new emerging environmental, socio-political and economic challenges. The rigorous application of adaptive management techniques to the ODMP will generate rich rewards in term of learning about system responses to management interventions. Such interventions, however, must be designed as experiments, with hypothesized outcomes, and a methodological system for checking whether the outcome is achieved. This will require deliberate and careful planning of all interventions. Adaptive management is not simply "adapting" the management in a reactive manner to developing situations. It is a systematic way of using management to learn about the system (Holling 1978, Walters, Holling 1990).

1.4.4 Ecosystem Approach

The Ecosystem Approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is the primary framework for action under the Convention on Biological Diversity (CBD) and comprises 12 Principles.

The 12 principles of the Ecosystem Approach according to IUCN:

1. The objectives of management of land, water and living resources are a matter of societal choice.

2. Management should be decentralized to the lowest appropriate level.

3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

4. Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: (i) reduce those market distortions that adversely affect biological diversity; (ii) align incentives to promote biodiversity conservation and sustainable use; and (iii) internalize costs and benefits in the given ecosystem to the extent feasible.

5. Conservation of ecosystem structure and functioning, to maintain ecosystem services, should be a priority target of the ecosystem approach.

6. Ecosystems must be managed within the limits of their functioning.

7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

9. Management must recognize that change is inevitable.

10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations, and practices.

12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

1.4.5 Integrated Water Resources Management

The Integrated Water Resources Management (IWRM) is an approach that ensures that the limited water resources are managed and sustainably developed efficiently and equitably through co-ordinated development and management of water, land and other related resources for socio-economic benefits. Botswana has an Integrated Water Resources and Water Efficiency Plan guided by the three principles of IWRM; social equity, economic efficiency and environmental sustainability. OKACOM is also in the process of facilitating development of Integrated Water Resources Management Plan for the Cubango-Okavango River Basin. The development of the IWRM plan by the country and the basin wide IWRM through OKACOM fit into the Ramsar Convention guidelines requirements and will be a toll to bring CORB stakeholders together to dialogue towards achieving adequate water allocation to the wetland.

1.5 METHODOLOGY

The ODMP review employed a mixed-method design for data collection, using primary and secondary data sources. Mixed-method design entailed using stakeholder consultative approaches such as *Kgotla* meeting, expert workshop, focus group discussion, key informants' interview, GIS mapping techniques and tools, and desk top research.

1.5.1 Stakeholder Consultations

For an informed and meaningful ODMP revision, genuine stakeholder consultation, engagement, active participation, and dialogue is critical to the development, formulation, and implementation of the plan. The key stakeholders highlighted in the Terms of Reference and additional ones were consulted for dialogue and input. These included sectoral government departments, researchers, local government, Tribal and cultural institutions/organizations, community-based organizations, non-governmental organizations, local communities, parastatals, the private sector (e.g., hospitality and tourism), the general public and the international community.

The aim of stakeholder participation and engagement was to create dialogue with stakeholders, provide effective information, and solicit inputs from the stakeholders to inform the development of a revised plan. This was necessary because the mid-term review of the ODMP (SAREP, 2014) underscored the importance of embracing all stakeholders during the

implementation stage. The stakeholder consultation and/or involvement is a key component of the ODMP review to ensure that the assessments and recommendations made do not only reflect the broad spectrum of stakeholders in the ODRS and the ODWHS, but also create a framework for a buy-in of recommendations thus ensuring future sustainability of the ODMP.

Stakeholder consultations were undertaken using different approaches, methods, and fora such as Kgotla meetings, stakeholder consultative workshop, focus group discussions (FGDs), and key informants' interviews.

1.5.1.1 Kgotla Meetings

A series of Kgotla meetings were conducted in selected Ngamiland communities within the ODRS. Fourteen (14) villages (Figure 1.2) within the Okavango Delta MIDA landscape were consulted for input during the review of the ODMP.

In every Kgotla meeting, participants made comments and recommendations that have informed the ODMP review process. Comments were captured and where necessary, requisite responses made to some of the comments. The Kgotla meetings deliberations were captured in writing and presented as part of the Scoping report. Kgotla meetings by nature provided a general overview of issues and concerns, which might help to guide key informants' interviews and focus group discussions (FGDs).

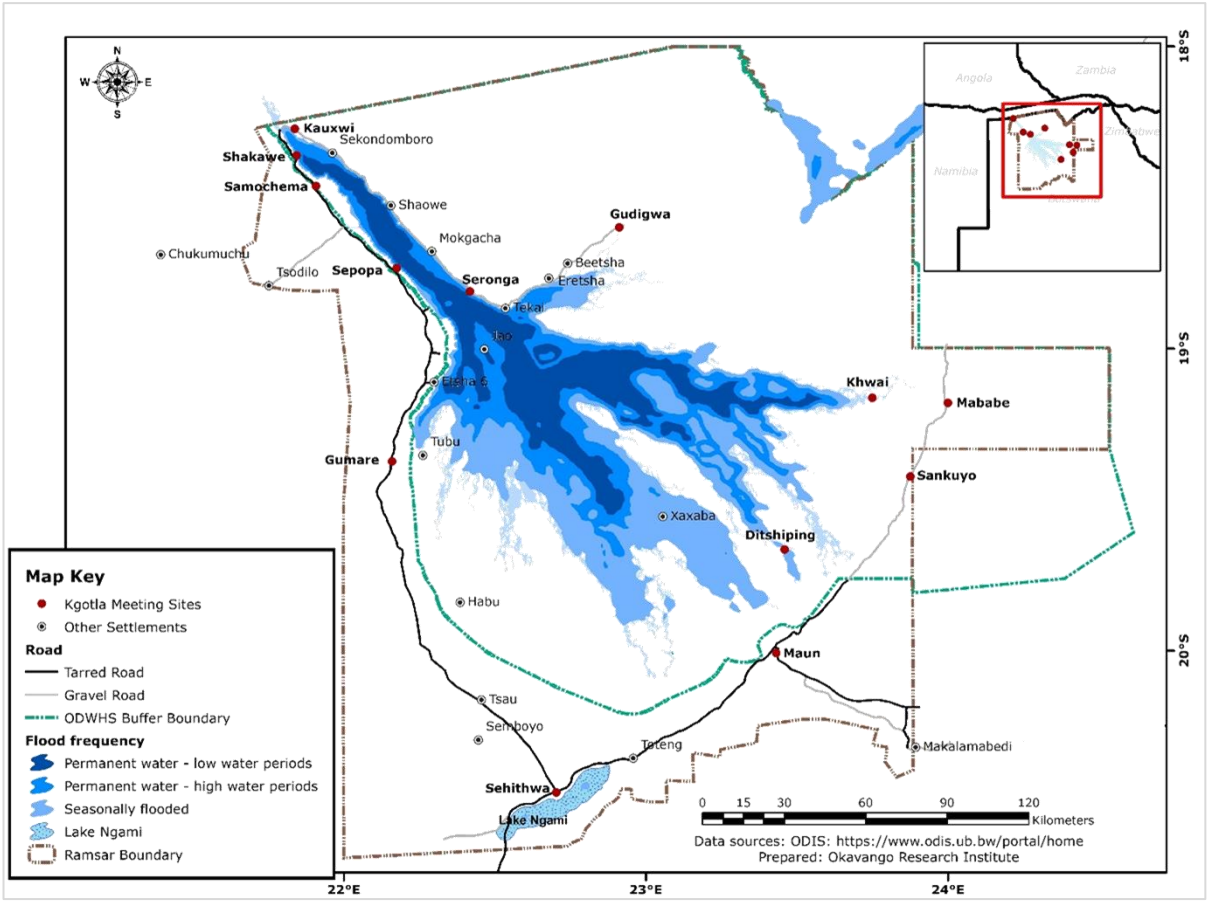

Figure 1.2: Places of Kgotla Meetings Consultations in the Okavango Delta MIDA landscape

1.5.1.2 Focus Group Discussions

FGDs were conducted at two levels, one being through the traditional stakeholder consultative workshops and the other approach often used in academic research, comprising 6-15 discussants (Neuman, 2007). These followed the completion of a series of Kgotla meetings held within the Okavango Delta MIDA landscape. Seven (7) FGDs were conducted, some comprising heterogeneous groups (Ngarange, Shakawe, Sehitwa, Maun and Sankuyo) and other homogenous (Shakawe – San communities, and Samuchima (Fisheries) from within the Okavango Delta MIDA landscape. The need to cater for language barrier and facilitate freedom of expression among participants motivated for the use of a homogeneous FGD with the San community; as the San people generally tend to shy away from public meetings and forums. The Samuchima FGD, comprising fishers only, was meant to capture a unique livelihood activity within the Panhandle area. The attendance of the FGDs ranged from 8-15.

The cluster members of the Okavango Wetland Management Committee (OWMC), which is a governance structure within the ODMP, participated in all the FGDs. The FGDs helped in clarifying, extending, qualifying and probing issues raised during Kgotla meetings or those identified in literature review, hence triangulation (Gill, Stewart, Treasure, & Chadwick, 2008; Morgan & Spanish, 1984). The exercise provided an in-depth understanding of the Okavango Delta MIDA landscape issues and concerns.

1.5.1.3 Stakeholder/Expert Workshops

Expert/Stakeholder

The stakeholder/expert consultative and engagement workshops with representatives from Community Based Organisations (CBOs), mainly community Trusts, traditional leadership, and Village Development Committees (VDCs) from the Okavango Delta MIDA landscape were held in Maun. Other participants included representatives from the Central and Local Government, non-governmental organizations, media, and academia. The purpose of the expert stakeholder workshops was to create awareness on the ODMP review, facilitate stakeholder participation and input into the planning and development of the revised ODMP.

The stakeholder/expert workshops were organised around the three main themes of the ODMP review process, which are biodiversity, tourism and land use and socioeconomics. The last expert stakeholder workshop targeted the Public Sector within the District. These were mainly ODMP and potential ODWHS implementers.

Decision Makers/Political Leadership

The ODMP review was presented to the most senior decision-makers in the District during the District Development Committee (DDC) meeting in March 2020. The DDC comprises Heads of Departments and Parastatals within the district. This was followed by another presentation to the political structure within the District, being the North West District councillors.

1.5.2 Key Informants

Initial consultative meetings were held with the client as per the Terms of Reference and these were further expounded in the Inception Report. These included officers from the Department of National Museum and Monuments (DNMM), and the Department of Environmental Affairs (DEA) as key implementing agencies. Others included local non-governmental organisations (NGOs), such TOCaDI, NCONGO, local and traditional authorities, VDCs, fishers and fishers associations, tour operators, private researchers, and some of the individual researchers at ORI.

1.5.3 GIS Tools for Mapping

A global positioning unit was used as a tool to capture places in the field for mapping purposes. The Garmin Map 64S GPS was used to locate cultural sites of significance in key areas namely, Xakao, Ngarange, Gudigwa, Sankuyo, Mababe and Khwai. Spatial locations were mapped with the help of pathfinders and elders who were knowledgeable about the places visited. The mapped locations were first imported into google earth for visualization, later transferred to ArcGIS where maps for the different locations were produced.

Additional locations and descriptions were obtained from secondary data. Views from community members that were interviewed were consistent in seeking recognition and bestowment of land rights over what they perceived as their ancestral land areas. A non-comprehensive list of places that were deemed culturally significant to them were documented together with descriptions of significant events that occurred there.

The cultural sites of significance were named using different features, landmarks, and livelihood sources. Water sources were named mainly after plants, animals and landscape features. Trees next to water sources of outstanding importance, also memorialized as part of place by images that depict the importance of each as a landmark. Environmental features, in most cases of animals or plants are the most appropriate sources of names. Some places are named after significant or memorable events that took place in the past (accounts of happenings), observed or experienced by hunters or women (LLHC, 2012).

1.5.4 Desktop Research

Literature relevant to the study area was reviewed to provide background information on the project site and documentation with relevance on the Okavango Delta MIDA landscape and the Okavango River Basin. This included both published and grey literature reposting mostly within government institutions. Relevant studies conducted in the Okavango Delta by the Okavango Research Institute (ORI), national and independent researchers were explored to inform and contribute to the situational analysis and development of the revised plan. The desktop research analysis provided a situational and gap analysis.

1.6 PROCESS

The review of the ODMP followed a similar process used during the mid-term review of the ODMP, conducted in 2013. In the mid-term review of the ODMP, SAREP (2014) split the review procedure into a four-stage process: (i) inception; (ii) scoping/gap and situational analysis; (iii) draft report and review; and (iv) the final report. Similarly, these four stages were followed during the ODMP review. The process is summarised in Figure 1.3.

All the four stages of the review process were sequential and sanctioned by the Reference Group, which mostly comprised members of the OWMC. The revised plan is the culmination of this exercise.

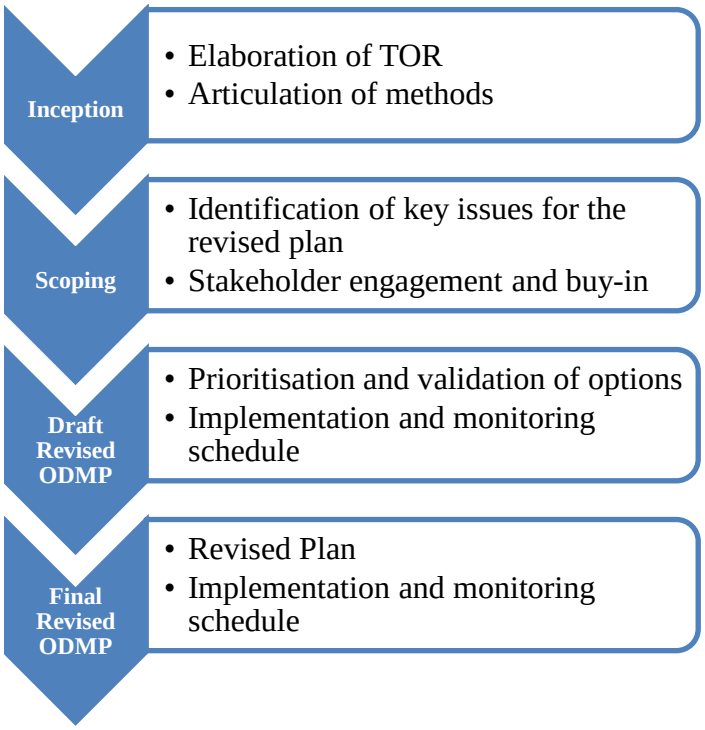

Figure 1.3: ODMP four-stage review process.

CHAPTER 2: OKAVANGO DELTA MIDA LANDSCAPE CONTEXTUAL SETTING

2.1 REGIONAL SETTING

The multi-internationally designated area (MIDA) landscape of the Okavango Delta is made up of the Okavango Delta Ramsar Site (ODRS), the Tsodilo Hills World Heritage Site, and the Okavango Delta World Heritage Site (ODWHS) and is part of the broader Okavango River Basin (ORB) that has the bulk of its catchment area in Angola (Figure 2.1). The origin of the ORB can be traced to two main water sources, being the Cubango and Cuito to the east. The upper catchments of these, being the Cubango and Cuito Rivers, supply almost all water to the Okavango River. The two-river system join to form the 1,500 Km long Kavango River and flows briefly through Namibia's Caprivi Strip before entering Botswana at Mohembo from where it flows within the Panhandle to become what is known as the Okavango River. The Panhandle plays a key role as a conduit of water and sediments to the Delta fan.

The Panhandle area is situated between the Popa Falls on the Kavango River in Namibia, being the northern terminal end of the Panhandle, and extends downstream for about 100Km to Seronga in Botswana (McCarthy, 2013, MEWT, 2013). Towards the end of the Panhandle, the waters of the Okavango spread out in the form of an alluvial fan creating a huge inland delta. Generally, the ORB can be classified into three zones, being i) the northern active catchment areas of Cubango and Cuito; ii) the middle reaches where the Okavango River flows with minimal run-off; and iii) the Delta (Figure 2.1).

The ORB waters are shared by Angola, Namibia, and Botswana at the terminal end. Noting the importance of collaboration among the riparian states, a tripartite agreement, the Permanent Okavango River Basin Water Commission (OKACOM) was established in 1994. OKACOM was established to promote coordinated and environmentally sustainable regional water resources development, while addressing the legitimate social and economic needs of each of the riparian states (OKACOM, 2011).

2.2. DISTRICT SETTING

The Okavango Delta MIDA landscape is situated within the Ngamiland District in north-western Botswana (Figure 1.1). The district is endowed with other iconic natural resources sites and protected areas such as the Moremi Game Reserve, part of Makgadikgadi-Nxai Pans National Park, and the Tsodilo Hills, making the District a hub of tourism.

2.3 LOCAL SETTING

The Okavango Delta, part of the MIDA landscape, is regarded as a relatively pristine wetland and the largest in the southern African region (Mendelsohn and el-Obeid, 2004), with diverse of habitats supporting floral, animal, and human life. The entire Okavango Delta region can be classified into three major structural sites: i) the Panhandle; ii) The Delta (the alluvial shaped fan); and iii) the southern Boteti (McCarthy, 2013). The Delta section comprises the permanent

swamps (2500 Km^2), seasonal swamp (3,300 Km^2) and occasional swamps (7,100 Km^2) (MEWT, 2013) [Figure 2.2].

The Panhandle starts in Namibia, from Popa falls, with the Botswana section starting from the Botswana boarder with Namibia, where the Okavango River enters Botswana at Mohembo, and flows downstream south to the Gumare fault (Mendelsohn & Obeid, 2004). The Gumare fault divides the Panhandle from the alluvial fan (Figure 2.3). The Panhandle section of the Delta, which is the Okavango River, is about 120 Km in length and 15-20 Km wide. It consists of a single meandering river surrounded by vast floodplains. In the upper Panhandle reach, the channel is about 3-5 m deep, and decreases to about 4 m deep at the lower end (McCarthy, 2013). The total area of the Panhandle is 820 Km^2 (Ramberg et. al., 2006).

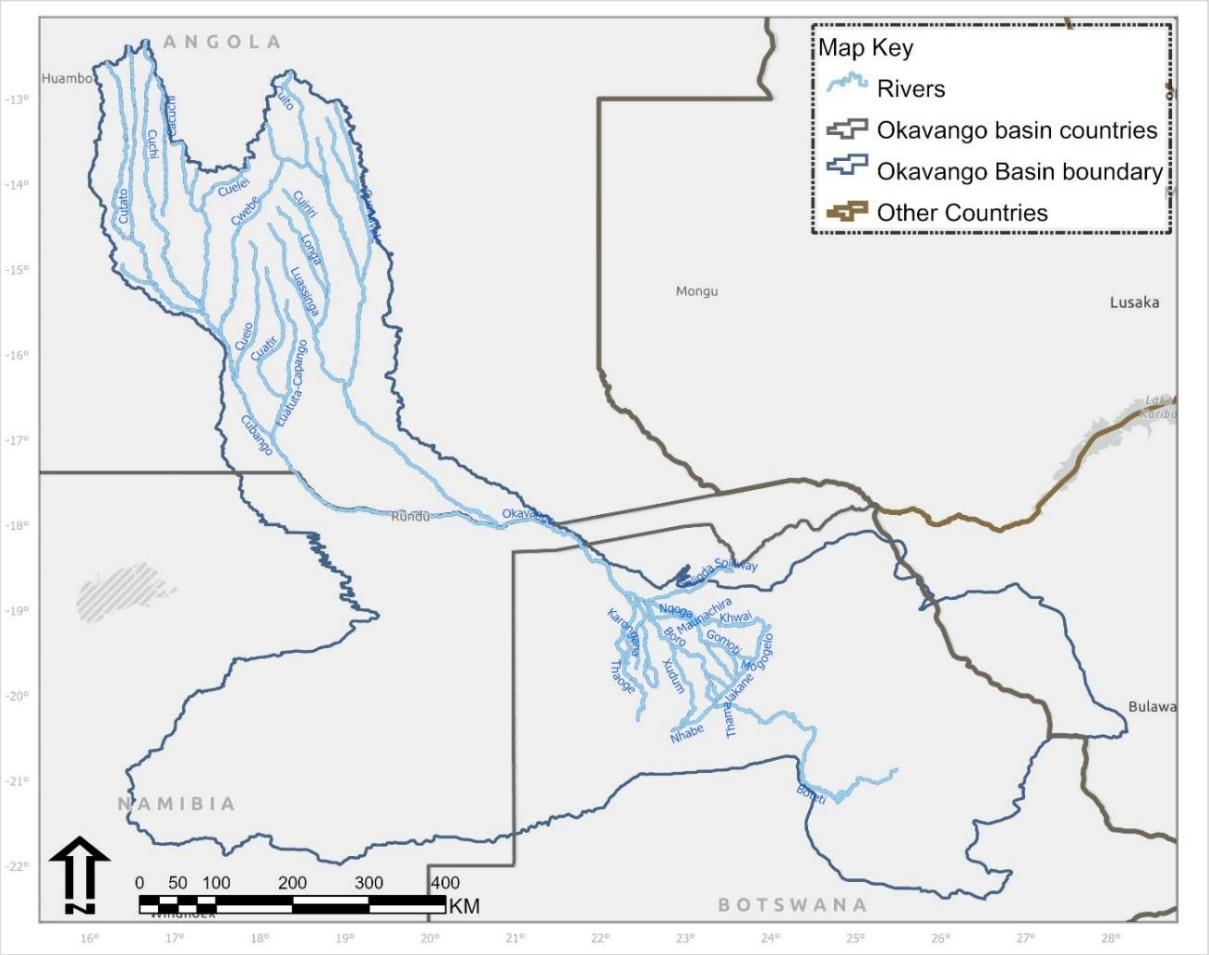

Figure 2.1: Okavango River Basin

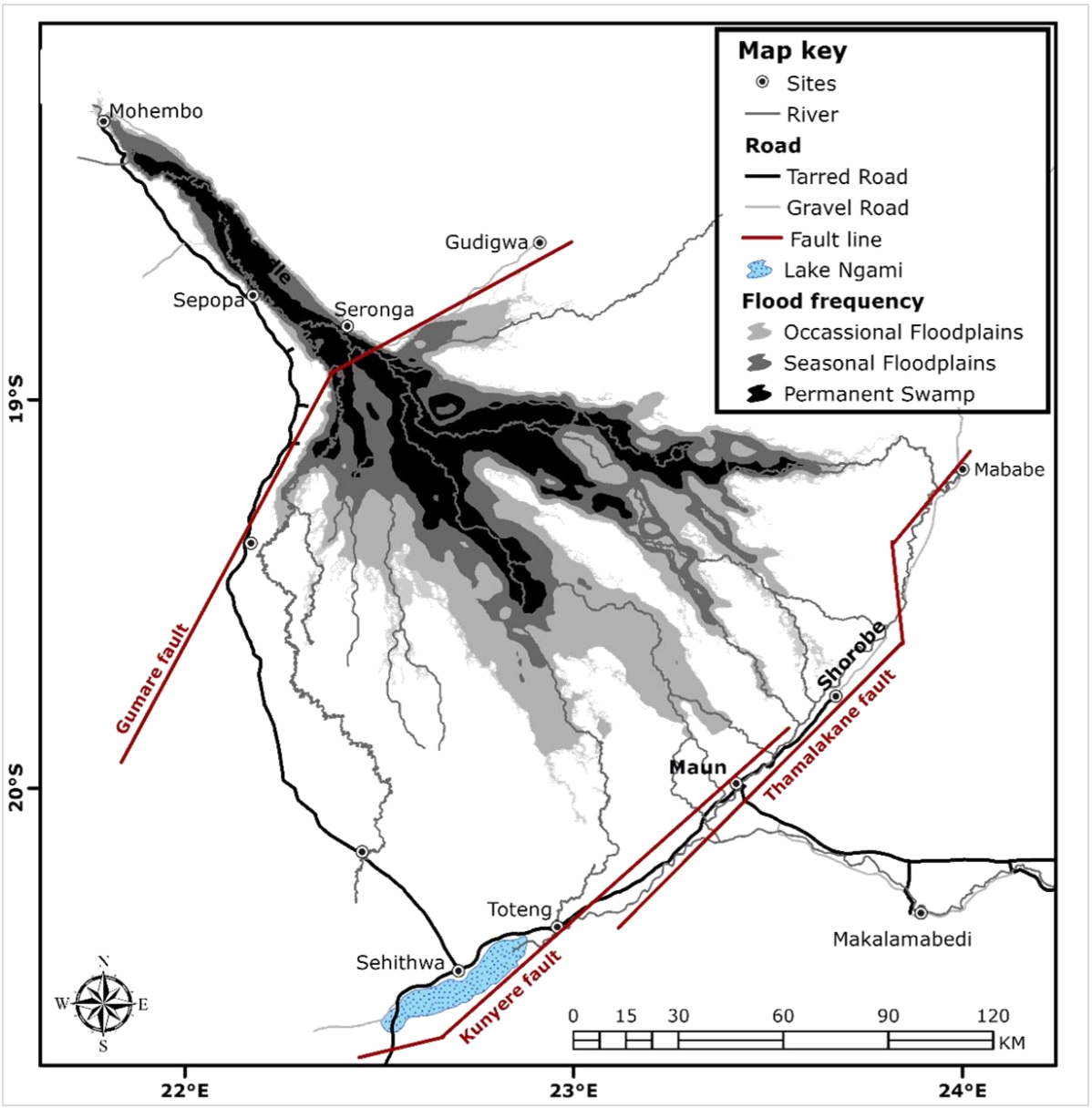

Figure 2.2: The Okavango Delta

The main channel splits and rejoins at some locations. The Swamps, consisting of permanent and seasonal swamps follows the Gumare fault until the Kunyere and Thamalakane fault lines (Figure 2.2), extending to about 150 Km in length. From the Panhandle, the Delta spreads widely to the south and east near Seronga. Towards the lower end of the Panhandle, the Thoage and Jao tributaries diverge from the Okavango (McCarthy, 2013). The permanent swamps, found mainly in the upper region of the alluvial fan, are fed by waters from three main tributaries, being Thaoge, Jao and Nqoga while the seasonal swamps are in the lower region of the fan (McCarthy & Ellery, 1998). The flood pulsed nature of the Okavango River system and seasonal flooding creates a complex and dynamic system leading to mosaic of sandbanks, lagoons, oxbow and relict channels.

2.4 Land Tenure and Land Use

The MIDA landscape falls almost entirely under Tribal Land, administered by Tawana Land Board (TLB), with the exception of NG41, which is a community use controlled hunting area (CHA) in a State Land allocated to the Mababe Zokotshama Community Trust (MZCT). The ODWHS is situated in Tribal Land, also administered by TLB. The ODRS also houses the first WHS in the country, the Tsodilo Hills.

Settlements and agriculture accounts for 8% of land use in the district, with Wildlife Management Area (WMA), where the primary form of land use is wildlife management, constituting about 19% of the district [Figure 2.3]. The two main WMAs within the landscape are the Kwando (12,530 Km²) and the Okavango (8,655 Km²).

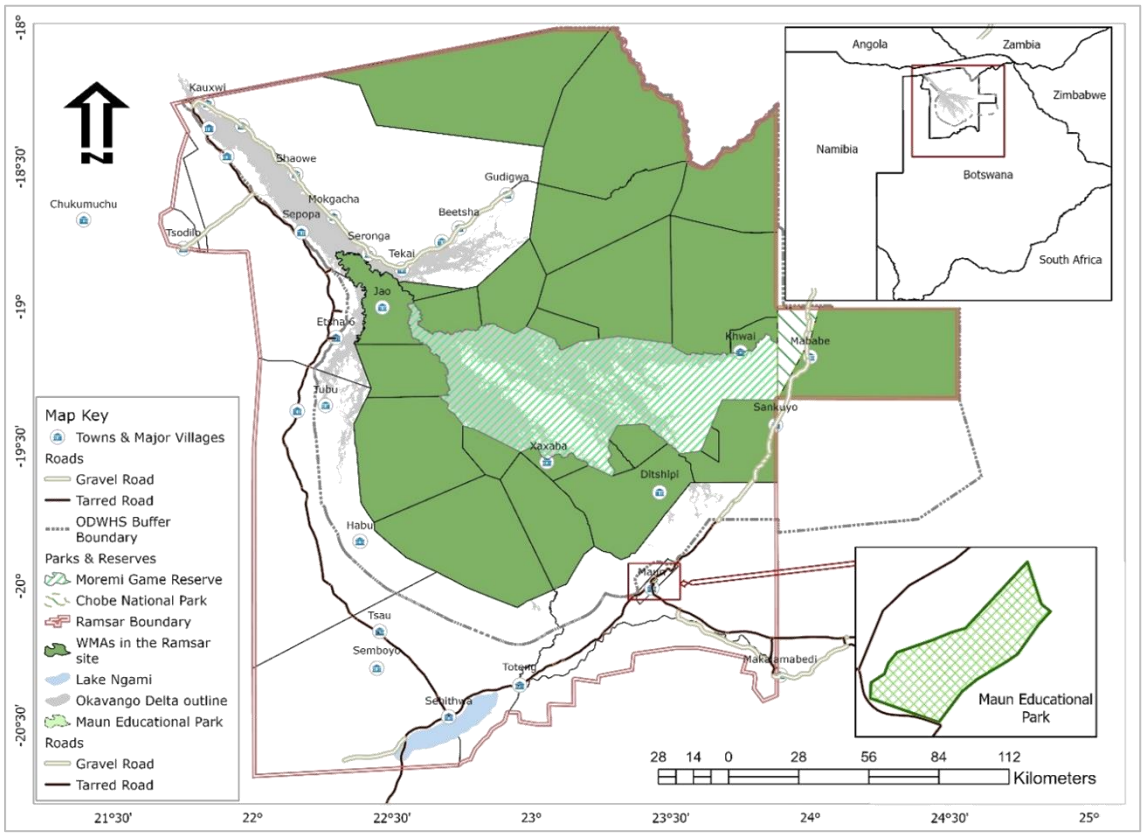

Figure 2.3: Wildlife Management Areas within the Okavango Delta MIDA landscape.

WMAs within the Okavango Delta MIDA landscape house 36 CHAs, which are administrative land blocks used by the DWNP to allocate hunting quotas. Ten (10) of these CHAs are zoned for and are under community management with the rest being either commercial photographic and/or hunting concessions (formerly multi-purpose areas), communal areas with livestock, or a game reserve. Other distinct areas in the Okavango Delta MIDA landscape include Moremi Game Reserve (4,871 Km^2) (MLGRD, 2017) [Figure 2.4] and Lake Ngami. Moremi Game Reserve is a protected area, wholly utilized for non-consumptive (photographic) tourism. It is protected under the Wildlife Conservation and National Parks Act of 1992. Land use cover in the entire District is tabulated in Table 2.1.

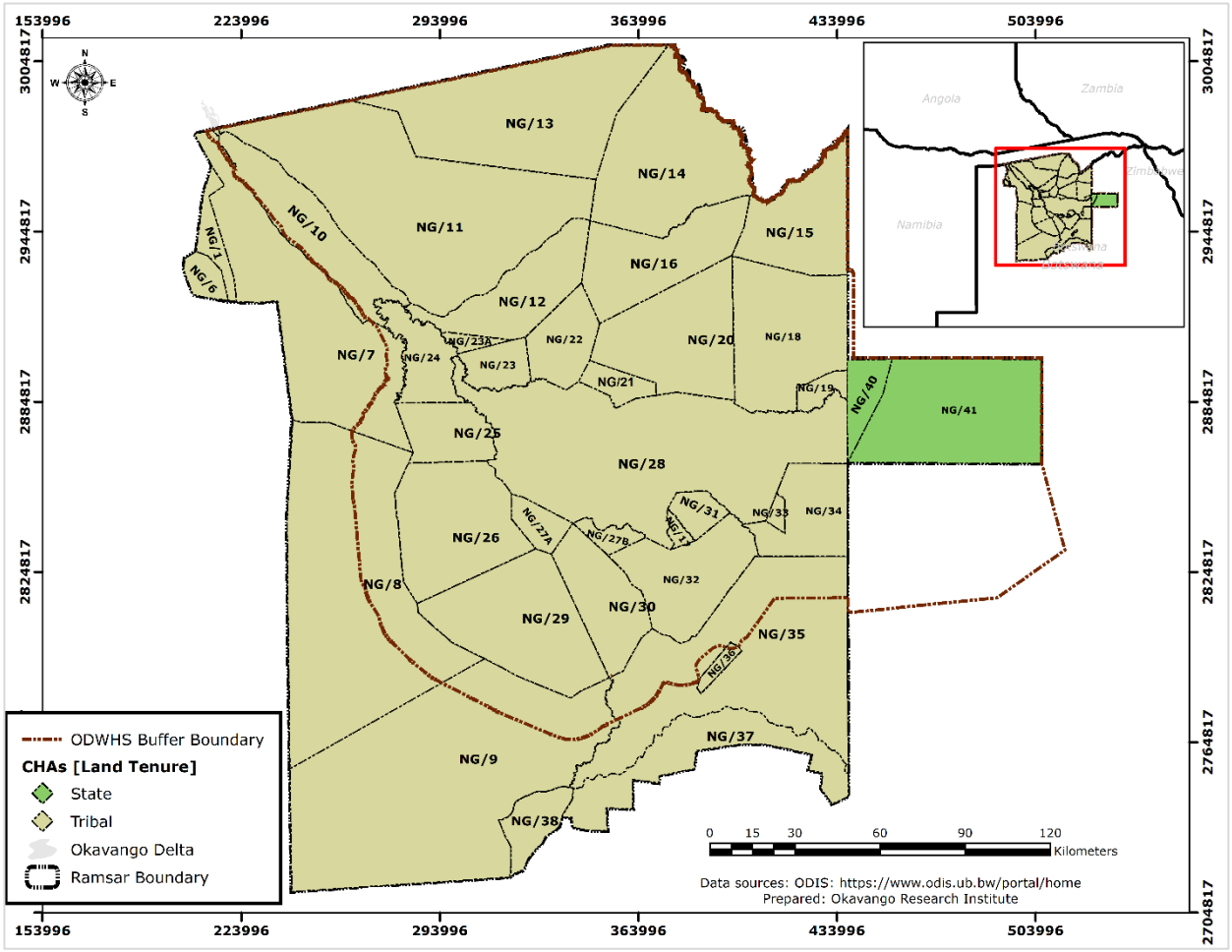

Figure 2.4: Land Tenure within the Okavango Delta MIDA landscape.

Table 2.1: Land tenure/use within the District

Land Tenure/Land use Category	Area (Km^2)	% Total
TRIBAL LAND	**86,495**	**79.3**
Communal areas	54,040	49.6
TGLP ranches	6,950	6.4
Game reserves	4,610	4.2
WMAs	20,895	19.1
STATE LAND	**22,635**	**20.7**
WMAS	16,606	15.2
Leasehold farms	2,444	2.2
National Parks and Game Reserves	3,650	3.3
TOTAL	**109,195**	**100**

Source (MLH, 2009)

The Ngamiland Integrated Land Use Plan presented eight district planning zones, of which five (5) falls within the Okavango Delta MIDA landscape [Table 2.2]. The planning zones prioritise areas for development, land use and resource assesment (MLH, 2009).

Table 2.2: Ngamiland District Planning Zones within the Okavango Delta MIDA landscape.

PLANNING ZONE NAME	ZONE	AREA Km^2	DISTRCT AREA %	MAJOR SETTLEMENT
Okavango	1	5,750	5.27	Shakawe, Seronga, Sepopa
Ngami West	2	4,650	4.26	Gumare, Etsha 6, Nokaneng
Ngami	3	8,250	7.56	Sehitwa, Toteng, Tsau
Maun	4	5,550	5.09	Maun, Matlapana, Shorobe
Delta	8	17,640	16.16	Sankuyo, Mababe, Khwai

Source. MLH, 2009

2.5 DEMOGRAPHICS

The entire Ngamiland District has a total population of 149,755 with an annual growth rate of 1.9 percent (Central Statistics Office, 2011). In terms of gender distribution, 51.7 percent of the population were females and 48.3 percent were males (Statistics Botswana, 2014). Population distribution by gender and age group for Ngamiland East and Ngamiland West are shown in Figure 2.5a and Figure 2.5b, respectively.

As delineated during the 2010 Census exercise, the North West District (Ngamiland) comprises three Census districts, which are Ngamiland East, Ngamiland West and the Okavango Delta (Statistics Botswana, 2015). The Ngamiland West has a population of 59, 421 people with the highest proportion (15.1%) of the population in Gumare settlement. Ngamiland West registered a population growth of 1.9 between 2001 and 2011. This is followed by Shakawe and Etsha 6 accounting for 12.5% and 8.8%of the population, respectively. Mohembo West accounts for the lowest proportion, which is 0.9% of the population in the sub-district (Statistics Botswana, 2015a). Ngamiland East sub-District has a population of 90,334 people indicating an increase of 6.6 percent from the 2001 count of 72,382. The Sub District had an annual growth rate of 0.8 percent between 2001 and 2011 (Statistics Botswana, 2015b). The largest village in Ngamiland East is Maun, which has more than half of the total sub district's population. Maun's population grew by an estimated 6.6 percent between 2001 and 2011.

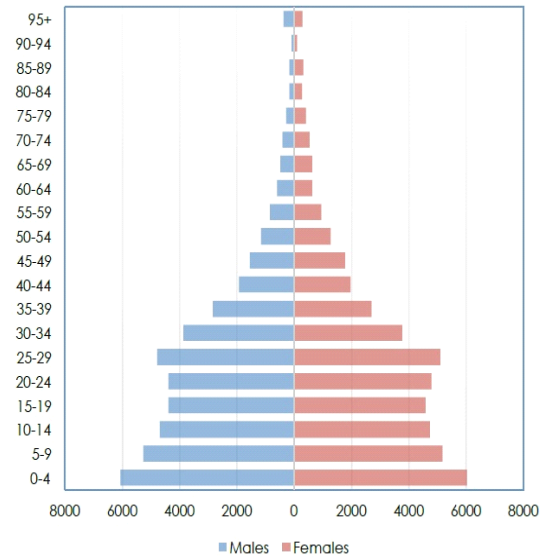

Figure 2.5a. Population Pyramid of Ngamiland West

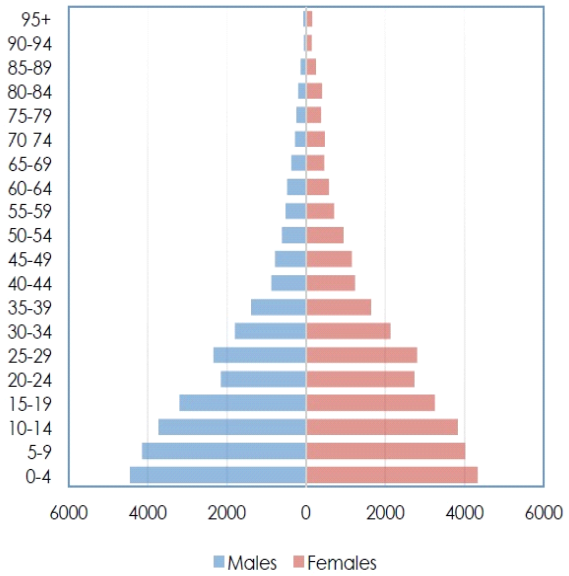

Figure 2.5.b. Population Pyramid of Ngamiland East

Source: Statistics Botswana (2015)

While children aged between 0–14 years account for 37.7% of the population, youths comprising those in the age category of 15–39 constitute 43.2% of the population. Some 5.4% of the district's population comprises the elderly aged at least 64 years and above. Also, 13.7% of rest of the active population constitutes those within the age brackets of 40-64 years (NDDP-8, 2017). This analysis reflects a predominantly young population comprising children and youths in both Ngamiland East and West.

CHAPTER 3: POLICY, PLANNING AND LEGAL FRAMEWORK

3.0 OVERVIEW

Management of the Okavango Delta MIDA landscape is guided by several policies, legislation, plans, and other significant regional and international protocols and conventions for effectiveness and ensuring the ecological character and the outstanding universal values are maintained. Key among these are: the Convention on Wetlands of International Importance of 1971 and the current 4th Ramsar Strategic Plan (2016-2024); the Convention on the Protection of the World Cultural and Natural Heritage of 1972 together with the Operational Guidelines for the Implementation of the World Heritage Convention of 2019 at global level. At regional level, the SADC Protocol on Shared Water Courses System of 2000, the Permanent Okavango River Basin Water Commission Agreement of 1994 and the KAZA TFCA Treaty of 2011 play a key role. The Wetland Conservation and Management Policy of 2008, the Monuments and Relics Acts of 2001, the Ngamiland Integrated Land Use Plan of 2009, and the Strategic Environmental Management Plan of 2013 are some of the key instruments at national and district level. It is envisaged that the revised ODMP will serve as an overarching strategic instrument at district level that will guide and/or inform all plans, programmes and development activities through its common and shared vision.

The need to review and explore the legislative environment within which the Okavango Delta MIDA landscape operated is very important, more so that the continuity of the landscape is based on compliance to these relevant instruments. The Okavango Delta MIDA landscape obtains its global significance from the conventions and protocols, which come also with obligations. The legislative and policy frameworks also guided the establishment of the MIDA landscape at both international, regional, national and local level. The enabling framework for the Okavango Delta MIDA landscape was reviewed and explored based on context, content, actors, and processes. The key and overarching enabling frameworks are highlighted in this section, with a full overview of other relevant enabling instruments in Appendix I.

3.1 INTERNATIONAL AND REGIONAL PROTOCOLS AND CONVENTIONS

At the international level, the Okavango Delta MIDA landscape subscribes to several key international and regional conventions, protocols, and treaties.

3.1.1 Ramsar Convention

The 1971 Convention on Wetlands of International Importance, also known as the Ramsar Convention, serves as an international treaty providing the framework for national action and international cooperation for promoting conservation and wise use of wetlands and their resources. The Convention works to prevent, stop and reverse wetland loss and degradation.

The management of the ODRS must adhere to the principles of the Convention which promote wise use of wetlands and their sustainable utilization for the benefit of humanity, without compromising their ecological integrity. The Convention, together with its auxiliary guidelines and other strategic documents, guided the designation of the ODRS as a Wetland of

International Importance on 12 September 1996. Development of the 2008 ODMP and subsequent implementation were guided by the requirements of the Ramsar Convention. Implementation of the revised ODMP will also continue to be guided by the Convention's requirements.

3.1.2 World Heritage Convention

The 1972 UNESCO Convention on the Protection of the World Cultural and Natural Heritage (World Heritage Convention) is a global instrument aimed at identifying and protecting the world's natural and cultural heritage considered to be of Outstanding Universal Value. It was established to facilitate an effective system of collective protection of the cultural and natural heritage of outstanding universal value, organized on a permanent basis and in accordance with modern scientific methods. The Convention recognizes the important role of indigenous peoples and local communities in conservation of WHS, hence the adoption the fifth strategic objective on 'community' to facilitate community development. The Convention guides the inscription process of properties and consequent management of WHS through The Operational Guidelines for the Implementation of the World Heritage Convention.

The Okavango Delta was inscribed WHS and hence its management must be guided by the Convention's operational guidelines. The review of the ODMP to cater for the WHS and its management is a compliance measure to the requirements of this convention. The two WHS inside the Okavango Delta MIDA landscape, i.e., the Okavango Delta WHS and the Tsodilo Hills, will continue to be guided by this Convention, together with its auxiliary guidelines and strategic plans and documents.

3.1.3 Convention on International Trade in Endangered Species

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) of 1973 serves as a global agreement among governments to regulate international trade in species for the protection of endangered species of wild fauna and flora against over-exploitation through international trade. The Convention ensures that international trade in protected plant and animal species is conducted in a sustainable way so as not to threaten their survival. This is done by granting varying degrees of protection species of animals and plants.

The key goals of the Convention speak directly to the aspirations of the Okavango Delta MIDA landscape, which is a hotspot of biodiversity and a source of life for local communities upstream and downstream. The area, being part of the larger KAZA TFCA houses a significant population of elephants, which are listed on Appendix II of CITES.

3.1.4 Convention on Biological Diversity

The Convention on Biological Diversity, 1992, being one of the most widely ratified international treaties on environmental issues, has three main goals: conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits from the use of genetic resources. The Convention is dedicated to promoting sustainable development, the ecosystem approach, with emphasis on building partnerships to help shape

global action on biodiversity. It served as a pragmatic tool for translating the principles of Agenda 21 into reality. The Convention recognizes and places people as belonging and part of biological diversity.

The key goals of the Convention speak directly to the aspirations of the Okavango Delta as a MIDA landscape, hotspot of biodiversity and a source of life for local communities upstream and downstream. The convention talks about equitable sharing of the benefits from the use of genetic resources and local communities stand to benefit.

3.1.5 SADC Protocol on Shared Watercourses

The regional protocol, revised in 2000, fosters closer cooperation for judicious, sustainable and coordinated management, protection and utilization of shared watercourses and advance regional integration and poverty alleviation within the region. The protocol calls for equitable utilisation of shared water resources, monitoring of the implementation of water resour*ces* developments within the SADC region.

Botswana, being a signatory to this protocol, and the quest to ensuring equitable utilization of the Cubango-Okavango River Basin, of which the Okavango Delta is a part, makes this protocol relevant in the management of the Okavango Delta MIDA landscape.

3.1.6 The OKACOM

The Permanent Okavango River Basin Water Commission Agreement (OKACOM), 1994, was established to guide Member States on matters relating to the conservation, development and utilization of water resources of common interest to the Member States. Specifically, the Commission determines the long-term safe yield of the water available from all potential water resources in the Basin; the reasonable demand for water from consumers in the Basin; and develop criteria for the conservation, equitable allocation and sustainable utilization of water resources in the Okavango River Basin.

The Okavango River and the Okavango Delta, are part of the larger Cubango-Okavango River Basin and hence promotion of regional dialogue, understanding of member states of the need to conserve water, and coordinated interventions for sustainability of the Delta are very important. The OKACOM subscribes to the principles of Integrated Water Resources Management (IWRM) in the ORB. OKACOM is currently facilitating the development of an Integrated Water Resources Management Plan for the Cubango-Okavango River Basin. The plan will go a long way ensuring IWRM principles are enhanced within the ORB.

3.1.7 Sustainable Development Goals

The Sustainable Development Goals (SDGs) established in 2015 address the three pillars of sustainable development, being economy, society, and environment in a holistic manner by focusing on the overall ecosystem and human well-being. The role of tourism in poverty eradication is central to SDG8 which calls for decent work and economic growth. SDG12 advocates for responsible tourism through responsible consumption and production. Further,

SDG11 calls for making cities and communities inclusive, safe, resilient and sustainable, with a specific target made towards strengthening efforts to protect and safeguard the world's cultural and natural heritage.

SDG13 calls for urgent action to combat climate change and its impacts. Target 13b for example, calls for the integration of climate change measures into national policies, strategies, and plans.

Noting that poverty eradication is a highlight of the SDGs, and that Government of Botswana recognises tourism as an engine of economic growth, the revised ODMP is paramount towards contributing to these aspirations. There are resident communities in Okavango Delta MIDA landscape, and their lives depend on natural and cultural resources of the area. As local communities expand, the need for more inclusivity in developments, equitable sharing and conservation becomes more paramount.

The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants, taking into consideration climate change adaptation and SDGs targets, thereby contributing both to the realisation of national and global aspirations.

3.2 KEY NATIONAL AND LOCAL LEGISLATION AND STRATEGIC PLANNING DOCUMENTS

3.2.1 Vision 2036

The Botswana Government's Vision 2036 is a transformational agenda that explains the goals and objectives of the people of Botswana. It aims to transform Botswana from an upper middle-income country to a high-income country by 2036, and is informed by four main pillars, being; 1) Sustainable economic development, 2) Human and social development, 3) Sustainable environment, and 4) Governance, peace and security.

While all the pillars are of relevance to the Okavango Delta MIDA landscape and its residents, Pillar 3 on sustainable environment has direct relevance to the plan, as it aspires for sustainable and optimal use of natural resources for the upliftment of the socio-economic conditions locally and nationally. The Vision also calls for inclusion of climate change vulnerability assessments, adaptation and mitigation into development plans in order to ensure a low carbon footprint, climate resilience and disaster risk reduction. The document further envisions a society that is aware of and is resilient to the consequences of climate change.

The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation. Moreover, the ODMP revision is exploring the ODRS ecosystem's carrying capacities, the limits of acceptable changes, optimal use of renewable resources for a sustainable maximum yield, communities' active participation and involvement in management, allocation, utilization and benefit distribution of natural resources within the Okavango Delta MIDA landscape to alleviate poverty and improve livelihoods, and continued CBNRM implementation and its extension into protected areas.

Other noteworthy issues of relevance to the ODMP include the determination and observance of ecosystem carrying capacities in every development initiative; development within the limits of acceptable changes; optimal use of renewable resources for a sustainable maximum yield; creation of non-discriminatory structures and frameworks that promote environmental protection and minimization of environmental pollution; active involvement of communities in management, allocation, utilization and benefit distribution of natural resources to alleviate poverty and improve livelihoods; implementation of Community Based Natural Resources Management program in the host communities to optimize benefits and enhance resilience to climate change; and the development of sustainable policies that promotes local community empowerment and enterprising of community based projects.

3.2.2 NDP 11

The National Development Plan (NDP) 11 notes the listing of the Okavango Delta as the 1000th UNESCO WHS and underscores its significance in enhancing the socio-economic and livelihoods of local communities living in the Delta. The Plan further advocates for continued development, preservation and opening of monuments and cultural heritage sites for cultural tourism to benefit and empower local communities.

The Plan mandates opening of monuments and cultural heritage sites for cultural tourism. This will further broaden and diversify the tourism product within the Okavango Delta MIDA landscape through the promotion and support of cultural activities. This will increase benefits to the local communities and the international community, as well as preservation of the local culture.

The National Development Plan 11 recognizes that Botswana's key economic sectors such as agriculture and tourism are vulnerable to the impacts of climate change. Furthermore, NDP 11 notes that the ability to adequately commit resources and capacity to respond to the impacts of climate change is at present inadequate. According to the plan, there is no doubt that global climate change has implications for human survival. Other key components of NDP 11 with relevance include the economy, employment creation, social upliftment, and the quest for a sustainable environment.

The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation. The revised ODMP is a guide towards ensuring a sustainable environment for a healthy population and sustainable management of natural resources. NDP11 further outlines how tourism and agriculture will be harnessed to boost the economy and create employment, thereby contributing to poverty eradication, food security and social protection.

3.2.3 National Wetlands Policy and Strategy

The National Wetlands Policy and Strategy (NWPS) of 2000, as a natural resource management and conservation policy, provides guidance on the conservation, sustainable management and restoration of Botswana's degraded wetlands for the benefit of citizens. The

Policy goal is to conserve, manage and, where necessary, rehabilitate Botswana's wetlands to sustain their ecological and socio-economic functions as well as providing benefits for the present and future wellbeing of the people. The Policy highlights the quest to safeguard traditional rights of wetlands users, promote wise use of wetland natural resources and support investment in natural resources-based enterprises. The Policy further calls for measures to incentivise communities to engage in participatory wetland conservation and management, in-turn deriving socio-economic benefits. The management of wetlands, as outlined by the Policy, will be guided by an ecosystem approach, will be science-based, transparent and will follow participatory processes, even espousing international and regional transboundary cooperation in wetland management.

The Okavango Delta is a wetland of regional and global importance. Locally, it is a perennial source of surface water, and a biodiversity hotspot supporting abundant and high diversity of animals and plants, as well as people of different ethnic groups. Sustainable management and conservation of natural resources therein is therefore critical. Regionally, the Okavango Delta is part of the Cubango-Okavango River Basin (CORB) and the end point of all surface waters from the basin. Proper conservation ethics by people downstream and existence of strong institutions is paramount in motivating people upstream to use water sustainably. Internationally, the Okavango Delta is the 1000th World Heritage Site, recognizing the importance of local peoples' participation and culture in driving conservation of protected areas. The relevance of the NWPS is in guiding and informing practices done at local, regional and international level for sustainable conservation of natural resources. With the Policy emphasis on community participation and benefit, the management of wetland resources by communities and other relevant stakeholders will be greatly enhanced within the scope of existing CBNRM regulations.

3.2.4 Monuments and Relics Act

The 2001 Monuments and Relics Act makes provisions with respect to the protection and conservation of national monuments and protected heritage areas. It also outlines steps and processes to be undertaken for listing and recognition and acquisition of any national monument, recent artefact, recent historic monument or protected heritage area, for its protection or preservation that is under private individuals.

Cultural and heritage sites within the Okavango Delta MIDA landscape have been identified, mapped, and documented as part of the ODMP review. This Act will provide legal guidance on listing the sites for preservation and/or protection for community (local), national and international benefit. These sites may have significant potential for cultural tourism.

3.2.5 The Ngamiland District Settlement Strategy

The overall goal of the Ngamiland District Settlement Strategy, 2003-2027, is to facilitate intergrated spatial planning for guiding and shaping human settlement developemnts within the District. Among the 10 goals of the Stratergy, the two most relevant include the establishment of broad land use (agro-ecological) zones in the District for various uses and determine how

they could be rationally and sustainably utilised and the protection and preservation of the environment and sustainable utilisation of the natural resources.

The settlement strategy has identified parts of the Okavango Delta MIDA landscape as an environmentally fragile; deserving protection and conservation.

3.2.6 Ngamiland District Tourism Development Plan

The vision of Ngamiland Tourism Development Plan, 2007, is 'to strive for the development of a world class nature-based tourism destination that is economically sustainable and optimizes benefits to local communities and the nation within agreed limits of acceptable change'. The vision will be realized through conservation of the tourism resource base and optimizing economic returns of the Okavango, increased citizen participation in the tourism industry and ensuring high quality visitor experience in the Okavango Delta. The plan identified five Tourism Development Areas (TDA) in the Delta. It calls for branding the Panhandle area as a tourist destination area focused on river-based activities.

The Plan, though already integrated into the Ngamiland Integrated Land Use Plan, has made specific guidance on strategies to promote, brand and market tourism in the Okavango Delta MIDA landscape.

3.2.7 Ngamiland Integrated Land Use Plan

The Ngamiland Integrated Land Use Plan, 2009, is meant to boost environmental conservation and biodiversity management in the District. Having synchronized different District plans into one, the plan is anticipated to facilitate production of better results. Through the plan, land use activities are zoned based on optimal use in terms of soil suitability, environmental and ecological sensitivity, resource availability and community livelihoods options. The Ngamiland Integrated Land Use Plan presented eight district planning zones, of which five (5) fall within the Okavango Delta MIDA landscape. The planning zones are; Okavango, Ngami west, Ngami, Maun and the Delta. The planning zones prioritise areas for development, land use and resource assesment.

The Plan has synthesised and validated key recommendations pertinent to the development of tourism in the Okavango Delta MIDA landscape and livelihoods options of local communities. It addresses the Ngamiland District livelihoods plan. It speaks to all the land-use and management plans in areas in and around the Delta.

3.2.8 Strategic Environmental Management Plan

The Strategic Environmental Management Plan, 2013, outlines targets that will ensure that the long-term ecological integrity of the ODRS system is maintained and/or improved. The Strategic Environmental Assessment (SEA) that preceded the plan found that the Ramsar Site is facing a significant threat of losing its semi pristine and ecologically fully functional wetland state. The SEMP cautions on the need for significant changes in the broader basin, ecosystem linkages and within the Ramsar Site to offset the critical thresholds that may be destructive to

the ODRS. The SEA warns against the current prevailing 'business as usual approach' towards ODRS management as it would be detrimental to the long-term viability of the system. The SEA recommended an approach with 'a vision that ensures that the objectives and requirements of the Ramsar site are considered prior to sector developments. It also calls for flexibility in sector strategy implementation, adaptive management approach and improved feedback mechanisms to facilitate and support the development of the ODRS effectively and efficiently.

On a positive note, the SEA found that there is general awareness at the district level concerning the ODRS and responsibilities. Notwithstanding this, the SEA indicates that the sustainability of ODRS will also depend on the critical changes required from external stakeholders outside the ODRS, mainly the upstream and mid-stream basin nations. Key drivers and underlying causes undermining the long term integrity and survival of the ODRS are discussed at three levels; i) global, such as climate change, international treaties and global economic system; ii) basin level factors (population increase, land use changes and increasing water requirements and poverty) and iii) within the ODRS such as population increase, mushrooming settlements and land use, tourism, national policies and strategies, erratic changes to policies and programs and governance. In terms of the latter, the SEA recommends 'for a single and effective planning authority to manage settlement within the ODRS'.

The SEMP gives strategic direction and guidance at various spatial scales on targets and mitigations to be done to safe guard the integrity of the Okavango River and the Okavango Delta as a whole. The SEMP highlights areas of the Okavango Delta with varying sensitivities and provides thresholds on indicators of the status of the ecosystem and on human-elephant conflict. The SEMP provides the much-needed strategic planning guidelines which will safeguard biodiversity in the Okavango Delta MIDA landscape.

3.3 General Policy, Legislative and Planning Framework Analysis

3.3.1 Context

In terms of policy context, the ODMP review of 2014 revealed that the national conservation policies and legislations enacted were initiated to address the challenges and threats facing natural resources conservation. Furthermore, they also underscored the need for broad-stakeholder involvement and participation in natural resources conservation. In terms of the development and implementation of the revised ODMP within the Okavango Delta MIDA landscape, most instruments reviewed are relevant and contextual to guide, support and inform the ODMP.

The policies reviewed within the context of the country, region and other international treaties are deemed relevant in terms of context to inform the ODMP and guide its implementation. The implementers, therefore, need to see how best to harness the supportive policy and legislative framework for effective and efficient ODMP implementation. Concerns have been raised in the past that the problem with Botswana policy and legislative framework is not its inadequacy, but rather implementation and/or enforcement bottlenecks.

For effective and efficient implementation of ODMP, practitioners and decision-makers must not adopt a 'business-as-usual' attitude but rather must take advantage of the enabling policy environment for the benefit of conservation and management of Okavango Delta MIDA landscape and its people. The effectiveness of the management plan requires harmonization and synergy of different institutional frameworks. The other challenge is the erratic and haphazard decision-making, which has characterized policy implementation in the recent past in Botswana.

In terms of coordination of the ODMP, the policy and legislative environment in Botswana is supported by the fact that most environment-related agencies are housed under the same parent Ministry, which is the Ministry of Environment, Natural Resources, Conservation and Tourism (MENT), making potential implementation smoother. The MENT is the custodian or management authority of both the RAMSAR and World Heritage Conventions in Botswana, hence directly responsible for implementation and coordination of the ODMP using policies housed within its various departments and agencies. Currently, coordination within the ODRS in the district is vested within the Department of Environmental Affairs (DEA) while the ODWHS is with the Department of Museum and National Monuments (DMNM). It necessary that under the current double designation, a coordination office dedicated to the current and future internationally designated areas (IDA) in Botswana is created.

3.3.2 Content

Most policies reviewed had strategies and implementation plans, monitoring and evaluation statements or frameworks, which under normal circumstances must facilitate smooth execution. Nonetheless, there are some key strategic documents such as the Botswana Tourism Master Plan that are deemed to lack practical feasibility, operational parameters, and guidelines for implementation ((Leechor and Fabricius, 2009; Mogomotsi, 2019).

However, existential challenges are lack of dedicated resources to implement policies based on timelines. The mid-term review of the ODMP revealed that the ODMP lagged in implementation due to resource constraints. A commitment must be made to review policies and other strategic documents with a view to updating their implementation plans and providing requisite resources.

3.3.3 Process

A pertinent concern with policies within the government sphere is that policy review process takes time to complete. Some policies, having been acknowledged as being outdated, have long been reviewed but are not yet approved. An example is the Wildlife Conservation Policy of 1987, which was revised in 2013 is still awaiting approval. While the CBNRM strategy is recent in terms of drafting, it is necessary that its approval is expedited together with other policies pending approval. Some policies and strategies such as the Wildlife Conservation Policy, and the National Conservation Strategy have outlived their time span, as they were formulated almost three decades ago. The Tourism Policy, which also took long through the review process, was approved in Parliament in 2021. Other policies such as the CBNRM Policy

(2007) and the Tawana Land Allocation Policy (2012) lack legislative support, making them difficult to enforce and easy to challenge in the courts of law. It is therefore necessary that legislation be enacted to regulate and provide a framework for effective implementation of these policies.

There is a need to review other policy documents to align them with the current challenges and threats and infuse within them emerging issues such as biodiversity challenges, global issues, climate change and gender. Some polices, such as the Land Policy has recently been reviewed and approved within a span of five (5) years to align with the current demands. Some legislative instruments such as the Fish Protection regulations of 2016 have undergone frequent amendments over the last five (5) years, indicating that with adequate political will, policy and legislative instruments can be frequently reviewed to fully support ODMP implementation. The same must apply to all policies awaiting reviews to enable them to offer effective guidance on the implementation of the revised ODMP.

3.3.4 Actors

The policies reviewed embrace multi-stakeholder and ecosystem approach in policy implementation as espoused by the Ramsar and the World Heritage conventions. The frameworks at district, national, regional, and international level highlight the important role of multi-stakeholder participation and involvement in policy formulation and implementation. The policies and legislations even advance further by making provisions for the different actors or stakeholders to have committees that will give them voice. The structures are provided such that they are at national, district, sub-district, and local-level setting. Most policies specifically highlight the importance of multi-sectoral approach to implementation, which is the basis of the ODMP. Participation of other stakeholders such as the local and indigenous peoples singled out by the Ramsar and WH conventions, the NGO and private sector have also been underscored in the implementation of the ODMP.

Notwithstanding the well-intended multi-sectoral approach in the ODMP implementation, the Mid-term review revealed that ‘the present arrangement limits integration and fosters an issue-driven approach to the implementation of the ODMP on a department-by-department basis’. Dissonance exists in the way plans are implemented, leading to ‘…duplication of effort and overlapping of functions...’. The plan was implemented in a ‘piece-meal’ approach as individual departments independently focussed on their specific tasks in the ODMP plan. It is necessary that there is better coordination at national level to ensure intended integration during the implementation of the ODMP.

CHAPTER 4: LAND USE AND SOCIO-ECONOMICS

4.0 OVERVIEW

The enhancement of socio-economic opportunities of the people in the Delta is pivotal to the realization of the strategic objective of the ODMP (USAID and OKACOM, 2014). Accruable benefits from land use in the Delta are premised on sustainable access to land resources by local communities. However, there are many challenges associated with how this critical resource in the Okavango Delta MIDA landscape is accessed and utilised by local people. Land use conflicts have always been a pervasive issue in the area. The delay witnessed in land allocation and the unstructured way land is allocated coupled with poor record keeping by the Tawana Land Board have been a major issue in the realization of sustainable socio-economic wellbeing of the people in the Ramsar site (ODMP, 2008).

While it is evident that the Delta's ecosystem services are important for the socio-economic development of its riparian communities, incessant conflicts and lopsided prioritization of issues continue to jeopardize the realization of people's potential in the Okavango Delta MIDA landscape. This chapter describes the state of infrastructures in the delta, land use and socio-economic issues, which affect how local people benefit from the ecosystem services (natural resources) available within the landscape. It underscores the conflict situations and potential benefits associated with resource use, which were highlighted during literature review and stakeholder consultations of the ODMP mid-term review.

4.1 EXISTING INFRASTRUCTURE

Rural infrastructures comprise social (facilities ranging from educational, health, hospitality communication to water and electricity supply); physical (such as transportation, storage, processing, irrigation, flood control and water resources development facilities); and institutional infrastructures (which include rural credit and financial institutions, farmers organizations, agricultural extension institutions, community development or self-help organizations, cooperatives and marketing services) (Kolawole, 2014; Ekong, 2003). Perhaps due to the government intention to keep the Okavango Delta environment pristine, the state of infrastructures (most especially physical infrastructure) in the Okavango Delta is still relatively rudimentary in nature.

4.1.1 Social Infrastructures

While social infrastructures such as educational institutions ranging from primary to university level are available in the Maun village, which is the headquarters of the North-West District Council where the Okavango Delta is situated, the scenario is completely different in other villages in the delta (Kolawole, 2014). It is apparent that functional social infrastructures in the delta area are still inadequate even though records show that 90 percent of the remote settlements in Ngamiland District are provided with schools/health posts and potable water (NDDP-7, 2009: 43). For example, the congestion witnessed in certain primary and secondary schools with dysfunctional and inadequate facilities (NDDP-7, 2009: 43, 48) is a proof that the area partly lacks adequate social infrastructure. There are rural health posts in many

settlements, but people rely on the main health facilities in relatively urban settlements (which could be as far as 121 Km) for serious health issues, which demand urgent specialists' attention and better Medicare (Kolawole, 2014; see also, Ngwenya, 2009: 35). Being a global tourist destination, hospitality business is a commonplace in and around the Okavango Delta. Nonetheless, most of the lodges situated within the delta independently provide suitable social infrastructures for the comfort of their guests. Although they obtain water supply from boreholes in near-surface aquifers, they in turn dispose of their wastewater through soak-away, which might constitute a potential risk of contamination to the water bodies in the area (McCarthy, 2004).

While rural telephony is available in many rural communities in the area, postal services are only limited to major settlements (Kolawole, 2014). Many rural communities in the delta have electricity but a significant number are still without power supply. Wood is mainly used as the source of energy and for household cooking by 82.0 percent of households in Ngamiland West sub-district. Households, which used liquefied petroleum gas (LPG) and the electricity grid in the area constituted 10.4 percent and 5.9 percent, respectively (Statistics Botswana, 2015b).

Although there are indications that many people in the area still rely on water from the river channels for domestic needs, NDDP-7 (2009: 162) reports that pipe-borne water supply poses no challenge in the Okavango sub-District. While 84.7 percent of the households is indicated to have access to portable water in Ngami East sub-District (Statistics Botswana, 2015c), only 38.5 percent of the households in Ngami West has access to a communal tap, followed by households, which use piped water either indoors (12.5%) or outdoors (12.3%) (Statistics Botswana, 2015b). Records show there are no toilets in more than half of the households in Ngamiland West (NDDP-7: 2009: 163). Access to sanitation facilities poses a serious challenge to a significant number of households in Ngamiland Delta and Ngamiland East (see MLH, 2003: 285), which might imply the pollution of water bodies in the area (Kolawole, 2014). In terms of general access to toilet facilities (such as flush toilets, pit latrines and dry compost) in Ngami West, while Shakawe had the highest access (55.7%) closely followed by Ikoga (54.5%), Mohembo East (2.6%) and Xhauga (0.9%) had the least access (Statistics Botswana, 2015b). The Ngami East has one of the lowest access to sanitation in Botswana. Available information indicates that '…73.4% of households in the sub-district had access to improved methods of waste disposal, which included toilet, both flush and pit latrines. Based on the degree of access in the district, Maun village having the highest number of households has 85.9% access to improved sanitation followed by Matlapana (82.6%) and Komana (73.5%). However, 'Toteng and Sekapane had the lowest proportion of households with access to sanitation at 24.2 and 24.4 percent, respectively' (Statistics Botswana, 2015c).

4.1.2 Physical infrastructures

Access to the interior part of the delta is always a challenge due to the nature of the terrain (NDDP-7, 2009: 45). Generally, poor road network connectivity is a major challenge confronting Ngamiland (NDDP-8, 2017). Available records show that only about 5 percent of the 21 roads in Ngami sub-District are paved with bitumen. While approximately 62 percent of the roads is categorized as sands, about 24 percent constitutes gravel roads. About 24 percent

of the 42 roads in the Okavango sub-District is paved while the rest of them either constitute sands (36 %), gravel (31%) or earth (~10%) (Kolawole, 2014; MLH, 2003: 287-290). Remote communities are difficult to access during flooding episodes and raining season because of the nature of the roads. The major mode of transportation in riparian communities is by water; people use dug-out canoes (Mokoro) to move from one location to the other. This is in some cases complemented by some tourist companies ferry services that are primarily meant for tourists in the area. The ongoing bridge development at Mohembo will also help transportation and traffic flow within the area to facilitate tourism.

4.1.3 Institutional infrastructure

Unlike in the remote settlements in the Okavango Delta, there is an abundance of financial and credit institutions (banks and credit/loan financing agencies) in major commercial centers such as Maun and Gumare (Kolawole, 2014). Social institutions available in the Okavango Delta communities are in the form of community-based organizations (CBOs) such as Community Trusts (CTs) and Village Development Committees (VDCs). District Development Committees (DDCs) straddle the Local Governments Councils (LGCs) and the VDCs. Twenty-five (25) of the 55 VDCs in gazetted villages in Ngamiland are found in the Okavango sub-District (Ngwenya, 2008). Also, 12 (7.2%) of the 166 cooperative societies in Botswana are in Ngamiland. There is an indication that the cooperatives are not viable because of the stringent legislative framework, which established them, making the societies to have challenges in creating job opportunities and providing social protection for their members (Kolawole, 2014; Sekele and Lekorwe, 2010).

While multiple government departments are responsible for the implementation of specific tasks in the ODMP plan, findings show that 'the present arrangement limits integration and fosters an issue-driven approach to the implementation of the ODMP on a department-by-department basis. Dissonance exists in the way plans are implemented, leading to the '...duplication of effort and overlapping of functions.' The mid-term review findings also indicate that 'officers stationed in Ngamiland are frequently transferred when their acquired experience and knowledge would be most valuable' (USAID and OKACOM, 2014).

4.2 LIVELIHOODS AND ECONOMICS

Socio-economic or livelihoods activities across the length and breadth of the Okavango Delta are as diverse as the natural resources (NRs) available in the area. These activities include farming, fishing, tourism, animal husbandry, arts and crafts, etc. (Bendsen, 2003; Darkoh and Mbaiwa, 2009; Kgathi *et al*., 2011; Kolawole *et al*., 2017; Kolawole and Olebile, 2019; Mbaiwa, 2003; Mosepele and Ngwenya, 2010; Ngwenya and Mosepele, 2008). Regardless of the abundant resources available in the Okavango Delta, people's inability to adequately take advantage of the available economic opportunities as result of internal and external factors has been a major challenge confronting communities in the river basin.

A range of institutional, environmental and other personal-related issues (including unfavourable government policies on access to NRs, soil infertility, drought, climate variability

and change, animal and human diseases) may have adversely affected community livelihoods in the delta (see, for instance, Kolawole *et al*., 2017; Kolawole *et al*., 2016; Kgathi *et al*., 2007). Although the ODMP was developed in 2008 to address these pertinent issues, its conceptualization and implementation may have largely jeopardized the realization of its objectives of enhancing NRs conservation and community socio-economic wellbeing. For instance, agriculture did not receive any major priority in the ODMP project, resulting in less emphasis on the sector in the ODRS. Even though several themes in the ODMP action plan have some bearing with agriculture (such as overgrazing by livestock; the risk of tsetse re-infestation; and livestock/wildlife interactions and maintenance of veterinary fences), the lack of attention on '...arable agriculture on which a large part of the rural population in the ODRS depend for their livelihood' is a major failing of the implementation plan (USAID and OKACOM, 2014). Current poverty estimates show that both the Ngamiland West and the Okavango Delta are still some of the areas in Botswana having high poverty rates. Specifically, while the poverty rate in Ngamiland West is 38 percent, Okavango Delta alone presently has a poverty rate of 35 percent (Statistics Botswana, 2015b). Communities were apt to underscore their deprivation situation during the consultative Kgotla meetings held in various settlements in the delta between November 2019 and January 2020.

Pertinent issues, which were highlighted during a consultative workshop with officials from various government department Ministries, include the development of agro-tourism and game farming, value additions of certain Mongongo fruits (to produce vegetable oil) and processing of Mosu shrubs/trees into fodder and charcoal; profiling villages and settlements for the natural resources available in them (e.g. soap and oil from milk and perfumes, which are products of the Baherero indigenous technologies); and the promotion of indigenous skills such as packaging of wild fruits, *go dupa metsi*, etc.

Although the mid-term review of the ODMP affirmed that there were considerable accomplishments recorded in the implementation of recommended socio-economic programs and projects, many of the action plans are yet to be addressed. These include the preparation and implementation of guidelines for mainstreaming of HIV/AIDS, gender, and poverty into the ODMP implementation process. The capacity building action component, which is meant to enhance the effective performance of communities in CBNRM activities would still require a capacity needs assessment of communities, and which is yet to be implemented. Findings showed that local capacity development in the management of local resources have not fully achieved and that 'community enterprise investments' have not achieved their objective and the delivery of social services has not been sustained in most cases (USAID and OKACOM, 2014).

4.2.1 Synchronizing Inter-agency Roles

The Citizen Entrepreneurial Development Agency (CEDA), which, among others, offers services in loan finance, credit guarantee and training in entrepreneurship development (CEDA, 2015) needs to work in tandem with the Local Enterprise Authority (LEA) with a view to achieving the above objectives. LEA, on the other hand, needs to go beyond its traditional

role of providing services in the development of business plans, rendering assistance in the application for finance and access to market, and growing the business (Magombeyi and Odhiambo, 2017; LEA, 2015) to offering expertise on identifying potential entrepreneurs and providing them training and guidance as well as monitoring fledgling, small businesses at least in the first 5-10 years of their take-off.

4.2.2 Developing and Strengthening Local Institutional Infrastructures

Institutional infrastructures include rural credit and financial institutions, farmers' organizations, agricultural extension institutions, community development or self-help organizations, Cooperatives, and marketing services (Kolawole, 2014; Ekong, 2003, pp. 358-360). The district councils are most ably situated within the context of developing institutional infrastructure at the local level. Specifically, the North-West District Council can consider the possibility of identifying existing institutional infrastructures (such as the Cooperatives, women groups, farmers' associations, other community-based organizations, CBOs, etc.) within the district with a view to identifying their felt-needs and mobilizing them to drive rural entrepreneurship development and employment promotion in their various localities. Some of the needs might entail training in entrepreneurship development, group dynamics and managerial skills, and funding of small businesses.

As laid out by Kolawole and Ajila (2015), implementing entrepreneurship development and employment promotion initiatives among local associations would entail a 10-stage process. The ten stages include:

i. Identification of organized CBOs and co-operative groups at the community level.

ii. Conduction of a social survey exercise to obtain information on the demographic/socio-economic attributes and immediate needs of grassroots' organized groups.

iii. Collation and analyses of data and selection of appropriate and viable community associations/groups.

iv. Requisition for feasibility reports of the proposed projects from the potential beneficiaries.

v. Invitation of key officials of selected groups to a round-table discussion and interview to ascertain the veracity of their submissions.

vi. Finalization of the selection of appropriate projects.

vii. Training of members of the selected groups in preparation for project execution, wherever and whenever applicable.

viii. Signing of the Memorandum of Understanding or Agreement (MOU/A) and funding.

ix. Implementation of project; and

x. Monitoring and evaluation of the funded projects.

4.3 LAND USE IN THE OKAVANGO DELTA

Communal and state-owned land are the prevailing land tenure systems in Ngamiland (West, East and the Delta) where communal land constitutes 79.3% of the entire land in the district (MLH, 2003). Prominent among many competing interests for land use in the Okavango Delta are tourism-based activities, wildlife management and agricultural production (Figure 4.1). Although land use objectives in the delta are supposed to be guided by the 2008 ODMP, many anomalies still exist in the appropriation of land resources. The Ngamiland Integrated Land Use Plan, which emanated from the 2008 ODMP process, is guided by four principles. These principles include (i.) land use capability and land use conflict resolution; (ii.) safeguarding of livelihood strategies and promotion of economic growth; (iii.) compliance with national and international policies and conventions; and (iv.) ecological and environmental considerations (see MLH, 2009).

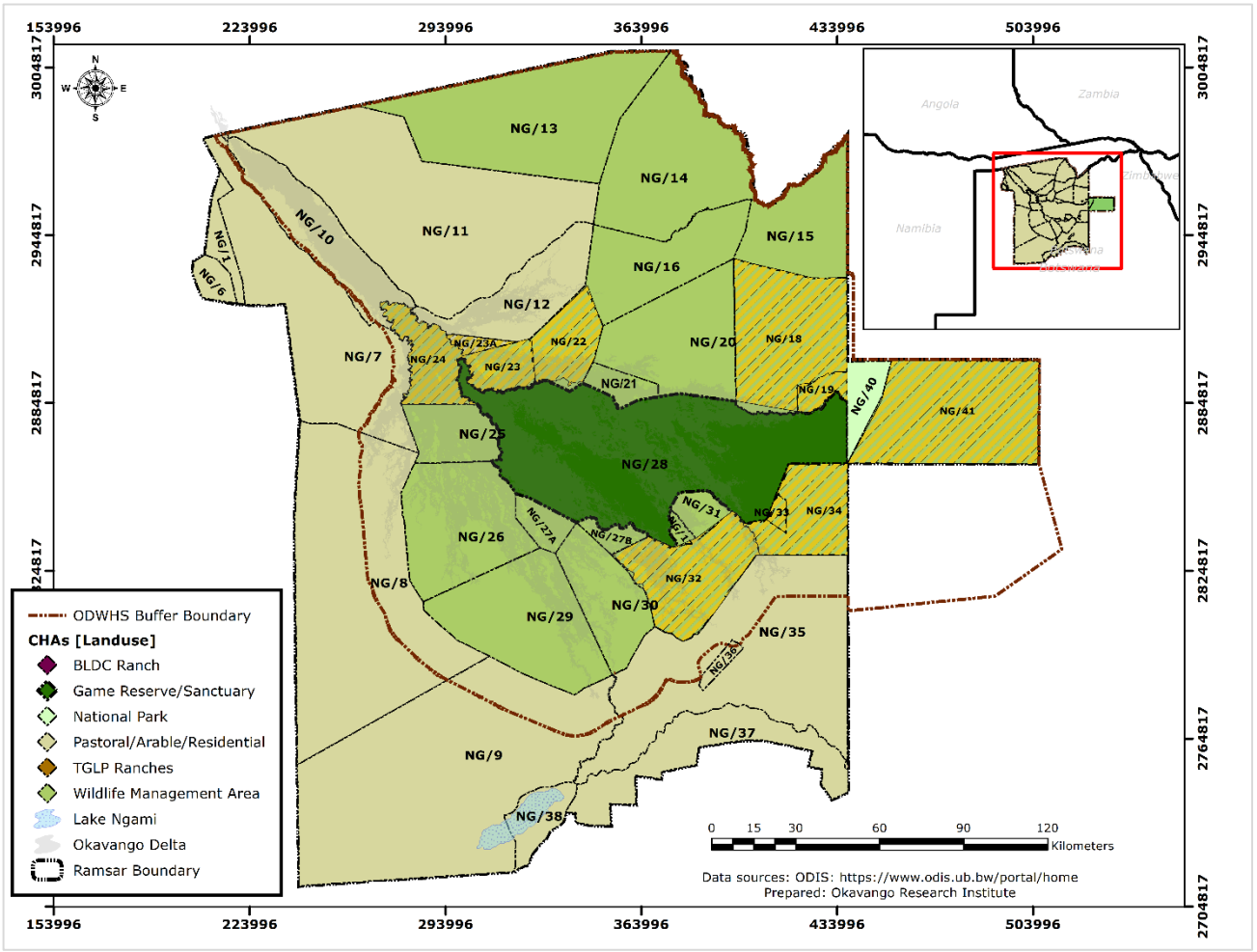

Figure 4.1: Land use in the Okavango Delta MIDA landscape

In sum, these principles emphasize the need to strike a balance between land use, people's socio-economic wellbeing and environmental conservation.

Putting land to competing use in the delta is an uphill task because of the interaction and conflicts between wildlife and people, tourism and agricultural production. Although the ODMP recognizes the need to effectively zone land for effective use while also conserving natural resources, unhealthy competition for land use among stakeholders has remained a daunting problem in the Okavango Delta. This may have been connected with the lack of proper community consultations witnessed during the development of the ODMP in 2008 (see, OKACOM, 2009). While land is crucial for enhancing agricultural employment, income generation and food production in sub-Saharan Africa (Jerneck and Olsson, 2013), other priorities seem to have outweighed agrarian interests in the delta.

Based on the preliminary, consultative Kgotla meetings held in the panhandle area of the Okavango Delta from November 2019 – January 2020, various communities largely expressed displeasures in the way land has been allocated and used. Specifically, some of the pertinent issues on land use and reform that emerged during the interactive sessions include: unwholesome allocation of ancestral lands to individuals for development of campsites and cultural tourism; conflicts between domestic livestock and photographic safaris; the need to relocate cattle posts to the sand veldt; the need to provide access roads to agricultural areas; the need to designate and gazette cultural sites in the Okavango Delta; the need to optimize the use of current community areas as they are deemed underutilized and too large; unfettered grazing of livestock in NG22; and the need for land reforms.

Other issues emphasized the need to provide land certificates for Molapo farmers and lifting of ban on farming activities in Molapo farms; the need to promote traditional rights in concession areas and access rights as well as respect cultural heritage of the people; the need to align land use zoning with traditional pastoral management systems and practices; and ensuring that land use zoning and allocations in the delta do not unjustifiably favour foreign investors in comparison with citizens/nationals. While 75 percent of the issues raised in the Panhandle area of the Okavango Delta bordered on land use and reforms, only 25 percent addressed physical and social infrastructures (such as access roads, provision of potable water, etc.) and other systemic issues.

Throughout the outer and inner distal area (such as Ditshiping, Sankuyo, Mababe and Khwai communities), lack of land ownership, infrastructures and human wildlife conflicts are recurrent issues. All participants (100%) in these communities opined that they had been deprived access to natural resources (NRs) while human-wildlife conflicts had surged significantly because of the hunting ban. This singular move, according to the communities, has created a ripple effect on the environment and people's livelihoods. For instance, the destruction caused by elephants on veldt products (e.g., reeds, crafts, edible natural resources, and wild fruits) used to supplement livelihood is now a major environmental and socio-economic challenge in riparian communities. Indeed, long standing, knotty issues on NRs use remain (see, for instance, Darkoh and Mbaiwa, 2009, p. 264). The desires to have access to and control over natural resources as found in protected areas such as the Moremi Game Reserve (MGR) are still a commonplace in all the communities in the area, implying that nothing has changed significantly even after the implementation of the ODMP over a decade ago.

CHAPTER 5: BIOPHYSICAL ENVIRONMENT AND STATUS OF BIODIVERSITY

5.0 OVERVIEW

Given the stated aim of an ecosystem-management approach for the ODRS, the concept of scale is extremely important in formulating management plans. This concept is used as a structuring framework in the following assessment of the current status of the biophysical environment of the Okavango Delta MIDA landscape. Conserving and managing the biophysical environment through the ecosystem approach addresses the concerns of and aligns the ODMP with SDG 15, which is designed to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". It is important to note in this context that SDG 15 covers global freshwater ecosystems and well as the purely terrestrial.

The biophysical environment of the Okavango Delta MIDA landscape is characterised by very high variability in the major forcing parameters (drivers), such as hydroclimate. Conversely, many of the foundational aspects are very stable at the system scale. These include subsurface geology, insolation (amount of sunlight reaching the ground), species richness, and overall terrain. Variability in these drivers results in variations in biota: large changes in wildlife populations or total extent of inundation of wetlands are observed, for example, in the medium-term and should be expected.

A synopsis of the biophysical environment is presented in this section. Because many aspects of the biophysical environment have not changed significantly since the original ODMP inventory and assessment was made, the material which is still relevant is not repeated in this chapter. Where change has occurred, we present and discuss these changes in the preliminary part of this chapter. This is followed by a series of tables which present the recommended actions and status quo from the Mid-Term Review (MTR), and summaries of the current state of implementation of these actions.

Long-term variables (e.g., climate, geology, and terrain) are discussed first, followed by the hydrological results of the interactions between these, and finally the biota.

5.1 CLIMATE

The climate within the Okavango Delta MIDA landscape is semi-arid with rainfall (in Maun) ranging from 195 to 940 mm per annum. The monthly mean temperature ranges from 16 to 26°C in June and October, respectively. The winds are generally light easterlies. Annual potential evapotranspiration (class A pan with appropriate, seasonally varying pan coefficient) is high at nearly 1850 mm.

5.1.1 Climate Controls

The climate of the Cubango-Okavango River Basin (CORB) (which provides both river inflows and rainfall to the Delta) is affected by the interaction of three large air masses: cold

dry air from the southern Atlantic, warm moist air from the southern Indian Ocean and warm moist air from the equatorial Atlantic. It is also influenced by the seasonal north-south movement of the Inter-Tropical Convergence Zone (ITCZ) and the Zaire Air Boundary (ZAB). In addition to controlling ambient temperature, these interactions drive the production of rainfall over the CORB. The rainy season occurs during the austral summer (October–April) and accounts for 95% of total annual rainfall (Snowy Mountains Engineering Corporation, 1989; Wolski *et al.*, 2014).

Cyclicity

There is evidence in the long-term climatological record of oscillatory behaviour in the climate of central southern Africa (Tyson *et al.*, 2002; Wolski *et al.*, 2012), and indications are that these oscillations will continue to drive multi-decadal variations in rainfall over the CORB. Consequently, the CORB is expected to experience extended sequences of years producing wetter and drier conditions in the Delta. The historic record of inflows reflecting this is shown in Figure 5.1. Note the 2019 lowest inflow in the long-term (87 years) record. More information on inflows is given in the section on hydrology.

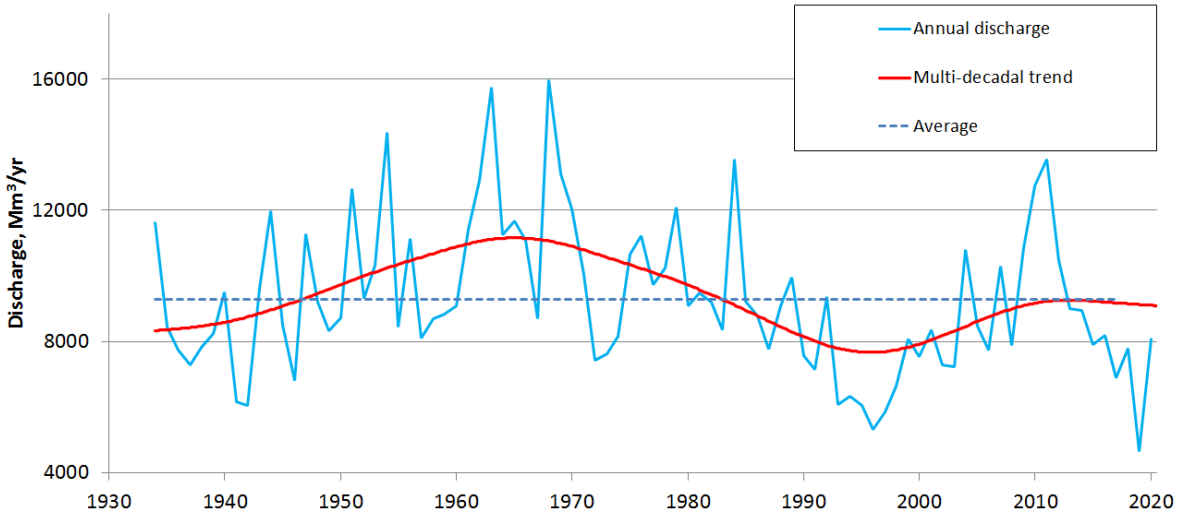

Figure 5.1: Long Term Inflow at Mohembo 1933-2020.

5.1.2 Temperature

The monthly mean temperature range is from 16-26°C in June (winter) and 28-40°C in October (summer), the highest daily maximum temperature of 34-39 °C in October and the lowest of 24-25 °C in July. For July, the mean minimum temperature during the night is however 8 °C (Mendelsohn and el Obeid, 2004). Frosts do occur but are uncommon in winter and thin ice may form occasionally on very shallow waters in the Delta.

5.1.3 Rainfall

Rainfall occurs in the summer months (November to March), with a mean annual amount of 455 in Maun and 480 mm over the Delta. Characteristic of a semi-arid environment, the rainfall is highly variable, with a coefficient of variation of annual rainfall of 35%.

5.1.4 Evapotranspiration

Potential evapotranspiration (PET, the "depth" equivalent of water that would be lost if available) is high, estimated at 1850mm/annum (Snowy Mountains Engineering Corporation, 1987). PET is driven by temperature, relative humidity and wind speed, and consequently will be affected by increasing temperatures associated with anthropogenic global warming (Moses and Hambira, 2017).

Recent research on water use by riparian tree species in the ODRS/WHS (Lubinda *et al.*, 2017) has essentially corroborated (27% vs 24%) the estimates of Wolski *et. al.* (2003) for the contribution of evapotranspirative losses from riparian woodland (which were based on subtractive water balance assumptions) of the overall water budget of the Delta.

Climate Change

The IPCC 2014 5th Assessment Report chapter (IPCC, 2014) on Africa found (with high confidence) that evidence of warming over land regions across Africa, consistent with anthropogenic climate change, has increased.

Prognosis

Mean annual temperature rise over Africa, relative to the late 20th century mean annual temperature, is likely to exceed 2°C by the end of this century (medium confidence) according to the Special Report on Emissions Scenarios (SRES) A1B and A2 scenarios. This rise in temperature will drive an increase in potential evapotranspiration, increasing the flux and flow of water from soils, plants and open water to the atmosphere.

Projected rainfall over sub-Saharan Africa in the mid- and late 21st century is uncertain, although the IPCC (2014) study found that a "reduction in precipitation is likely over the southwestern parts of South Africa by the end of the 21st century under the SRES A1B and A2 scenarios (medium to high confidence)". Carvalho et al (2017) found that precipitation in the Angolan catchment might decrease by ~2% by 2100, but that further work is needed to reduce uncertainty in modelling.

Adaptation Options

Maintaining resilience of ecosystems (both biotic and abiotic components) in the context of climate change appears to be primarily dependent on the continuation of the hydro-climatic variation in the system. Research has shown that the production and diversity of floodplain vegetation communities is driven by intra-, inter-annual and multi-decadal variations in the

inflow and local rainfall (Murray-Hudson *et. al*., 2014). Since wildlife is dependent on grazing and water resources provided by wetlands, the surest way to maintain resilience of wildlife populations is to ensure continuity in the natural flow regime (Poff *et. al*., 1997, Poff, 2018). Clearly, since the ecosystem relies on water sources beyond Botswana's borders, rapid action to is required to engage with our upstream neighbours to advocate for the minimum of river-based infrastructure, to minimise disruption of the natural flow regime. Trends induced by climate change must be accommodated by incorporating the concept of non-stationarity (Poff, 2018) into management procedures and development strategies.

5.2 PHYSIOGRAPHY

5.2.1 Geology

As described in the ODMP in 2008, the Delta consists of 20-300m geologically recent Kalahari sediments overlying older igneous, metamorphic and sedimentary rocks:

1. Palaeoproterozoic (approx. 2.05 thousand million years old) comprising gneiss, granites and amphibolites exposed in the Qangwa area and granulites exposed in the Gweta area.

2. Mesoproterozoic (approx. 1.2-1.1 thousand million years old) gabbros, granites and meta-rhyolites and meta-basalts which are exposed in the Kgwebe and Ngwanalekau Hills.

3. Karoo supergroup comprises (approx 180 million years old) silica rich sedimentary rocks with mafic lava and dolerites which are less exposed close to Tsodilo Hills and around areas east of Ngamiland.

These are covered by the Kalahari Group sediments comprising silica rich sands and carbonates such as calcretes and occasionally silcretes.

As the older rocks may be intruded by mineral rich ores (such as kimberlite pipes) the possibility of mining occurring in the Ramsar site over the longer term should not be discounted. The older rocks are aligned on two trends, an older NW-SE trend, and a younger NE-SW trend. Renewed movement along this latter trend has caused the Okavango Delta to form in a down faulted depression.

The Damara and Ghanzi-Chobe mobile belts join beneath the graben but are covered by sedimentary or igneous rocks of the Karoo Supergroup. The orientation of the Okavango Graben faults follows the same trend as the structural features of the Ghanzi-Chobe fold belt (Figure 5.2).

5.2.2 Economic Geology

The level of understanding and geophysical data available for northern Botswana has increased in the years since the ODMP was first drawn up. Numerous deposits of economic minerals have been identified and some deemed worthy of development. Exploitation of the copper deposits (e.g., Boseto, Khoemecau) is in progress. Iron ore deposits to the west of the Panhandle are also being assessed, while a recent license has been issued for hydrocarbon

exploration in the area to the west of the Panhandle. Exploration in adjacent areas in Namibia appears to indicate the presence of hydrocarbons but reserves have yet to be delineated and assessed. The distances involved (~60 Km south of Rundu, 240Km west of Shakawe) make direct (i.e., groundwater pollution) impacts on Kavango-Okavango surface water unlikely, but there is potential for development and exploitation of the resource to increase local water demand. This will likely increase pressure for abstraction from the Kavango river to meet this demand. There appears to be little likelihood of resource development within the core or buffer zones of the WHS or ODRS.

Locally calcretes, silcretes and sand are quarried for construction of buildings and roads all around the periphery of the Delta, and for airstrips within the Delta.

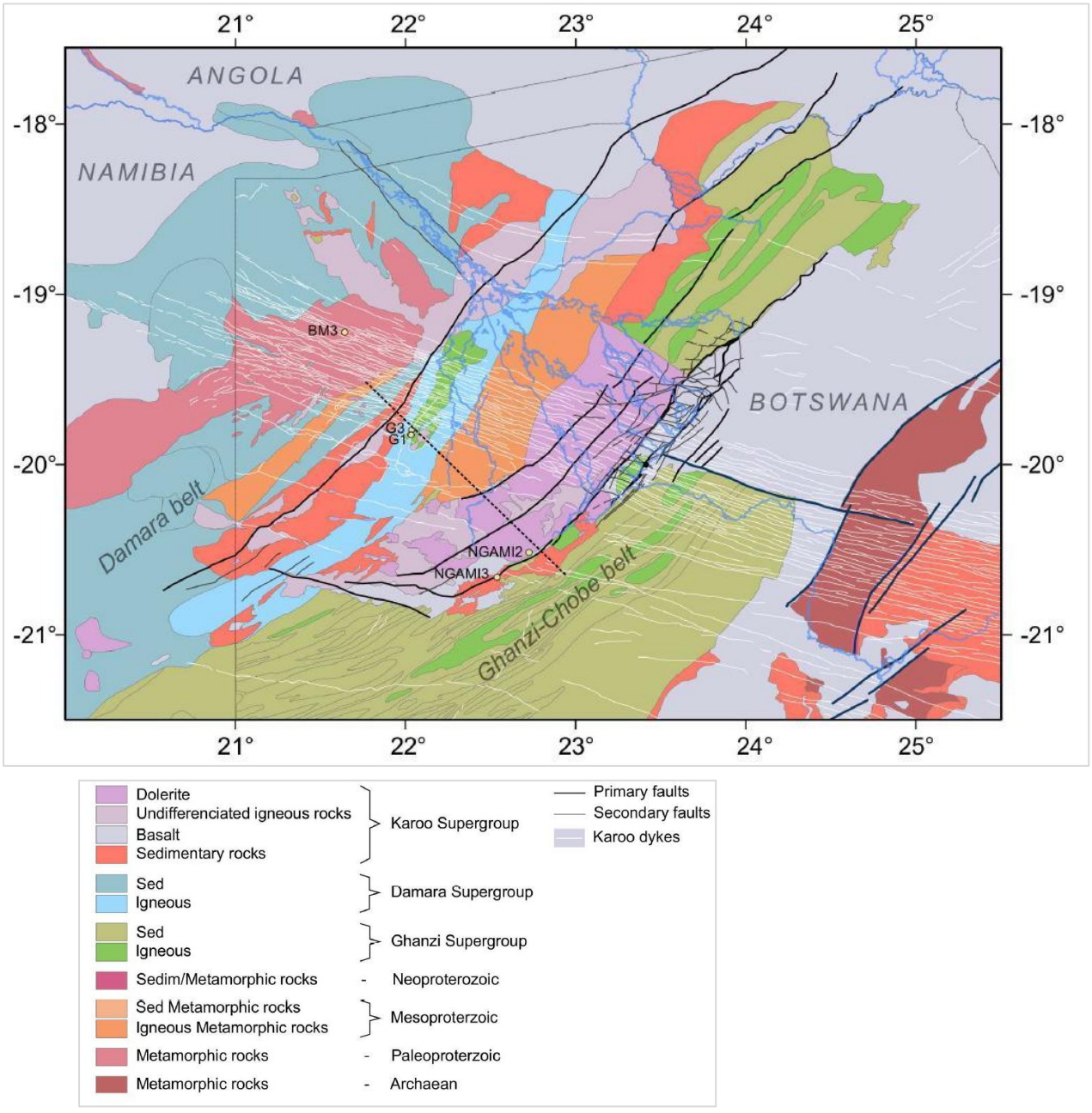

Figure 5.2: Simplified sub-Kalahari geology (Source: Haddon, 2005 and Pastier, 2018).

5.2.3 Tectonics

The older rocks are aligned on two trends, an older NW-SE trend and a younger NE-SW trend. Renewed movement along this latter trend has caused the Okavango Delta to form in a down faulted depression which is itself an extension of the East African Rift system. The significance of the rift lies in the fact that this fault system is presently active and may well lead to renewed earthquake activity in the foreseeable future. The most noteworthy faults are Gumare, Kunyere and Thamalakane.

There has been much discussion of the potential role of tectonic activity in the control of the distribution of river flows in the Delta. Recent research using high-resolution GPS data (Pastier *et. al.*, 2017a; Dauteuil *et. al.*, 2018) demonstrates that there is very little vertical movement across any of the major fault zones of the Delta. There does appear to be some very limited lateral dextral (right-wards, horizontal slippage) movement along the Gumare fault, in the order of ~1mm/annum.

Recent re-assessment of the seismic record has also shown that the previously described high levels of activity associated with the bounding faults of the Delta were an artefact of the filtering of the record (Pastier *et. al.*, 2017b); most of the activity is along larger faults many kilometres to the south-east of the Delta.

5.2.4 Surface Geology and Geomorphology

The present land surface in the Okavango Delta MIDA landscape consists of fluvially-reworked aeolian sands of the Kalahari geological system. The Kalahari Group sediments contain some calcretes and silcretes which occur because of strong evaporation following past or present hydro-climatological processes. “Fossil” linear dune-interdune systems to the east and mainly west of the fluvial landscapes are remnants of prior arid episodes, while extensive sand stringers and to a lesser extents clay and silt flats (e.g., Makakung, Nokaneng/Habu, and the Moremi tongue) were generated during periods of higher inflow than under current conditions. Lacustrine sediments including diatomaceous earth layers occur in the Mababe depression and Lake Ngami, the present “sumps” of the system.

5.3 HYDROLOGY

While inflows to the Delta have been the subject of careful monitoring since 1933, the current network of sites which are monitored (either for water level or for discharge) has declined significantly since the 1970s when a useful network of sites was established. Data from the wide network permitted the construction of spatial models of flood propagation in the Delta, which have subsequently proved essential for assessment of impacts of upstream developments.

Variability of inflows at multiple times scales (within a year, between years, and between multiple sequences of years) has been shown to be the primary driver of habitat diversity, biodiversity, and biological production in the Delta. A summary of the flow regime brought up to date is given below (Table 5.1a; 5.1b), and the inflow time series.

Table 5.1a: Summary of long-term flow characteristics at Mohembo 1933-2019

Long-term Annual Average (Mm^3)	**Maximum Annual Inflow (Mm^3)**	**Minimum Annual Inflow (Mm^3)**	**Maximum Interannual Range (Difference between one inflow and the next)**	**Coefficient of Variation (%) (Average ÷ Standard Deviation)**
9,288	15,977	4,632	7,284	25%

Table 5.1b: Estimated Water Balance

Annual Average	**Inflows** Mm^3	**Outflows** Mm^3
River	10,000	20
Rainfall	6,000	
Evapotranspiration		15,980

Note. Values are rounded.

The inflow of 2019 established a record for the lowest in the entire record, and there are indications that the multi-decadal wetting trend identified by Mazvimavi and Wolski (2006) may be foreshortened and possibly shifting downwards in discharge volume. In order to confirm these trends, more careful and detailed monitoring is needed.

It is critical to note that while these values may serve to characterise the long-term and large scale hydrological behaviour of the system, they may not help in assessing (for example) the impacts of upstream abstractions. In the context of man-made changes to the system, it is very important to consider intra-annual variation, too. Between years, the baseflow is relatively consistent (Figure 1). Within a given hydrological year (one hydrological cycle, normally taken from 01 October to 30 September), inflow rises from the base flow (between 80 and 110 m^3 per second, through one or more peaks ($250m^3/s$ to $1{,}000m^3/s$) around April, and then declines to base flow levels again. The base flow is clearly more consistent than peak flows, and this is mainly driven by groundwater discharge into the source springs, seeps, and streams.

5.4 HYDROGEOLOGY

The 2008 ODMP identified three major aquifer formations in the Okavango Delta MIDA landscape. These are the Basement rocks, Karoo, and Kalahari Group sediments, as described in the geology section. Karoo and Basement rocks, where they occur at shallow depth, form locally important aquifers. The Kalahari Group sediments comprise the most important known aquifers. These aquifers are at shallow depth, typically less than 100 m. Although at places several distinct aquifers can be distinguished within the Kalahari Group profile, they are usually hydraulically connected. The groundwater table is present at 5-30 m below ground in non-floodable areas and is shallower (typically 0-10 m) within contemporary and recently flooded floodplains.

Recent research and advances in gravity measurement indicate that there appears to be a strong regular recharge event associated with the annual rainfall across the entire Okavango and Zambezi catchments (Pastier *et. al.*, 2017a). This is augmented by the annual inflow across the Delta which refills the phreatic zone.

A very important initiative in this regard is the recent groundwater assessment of the Cubango-Okavango River Basin (CORB) instigated by OKACOM, and currently being finalised. This should provide us with a broad overview of the groundwater resources of the ODRS/WHS, their relationship with surface water, and their potential for utilisation as a non-obstructive water storage system.

5.5 SOILS

As indicated in the 2008 ODMP, soils in the Okavango Delta landscape are mainly sandy arenosols (Figure 5.3) with low moisture and nutrient retention capacity. Some localised luvisols are found, and in areas prone to flooding under the current hydro-climatic regime, organic matter may accumulate in the surface horizon for short periods. Soils are characteristically nutrient-poor, but conservation-agriculture approaches have been shown to be more effective than shifting fields when yields decline (Pröpper *et. al.*, 2015).

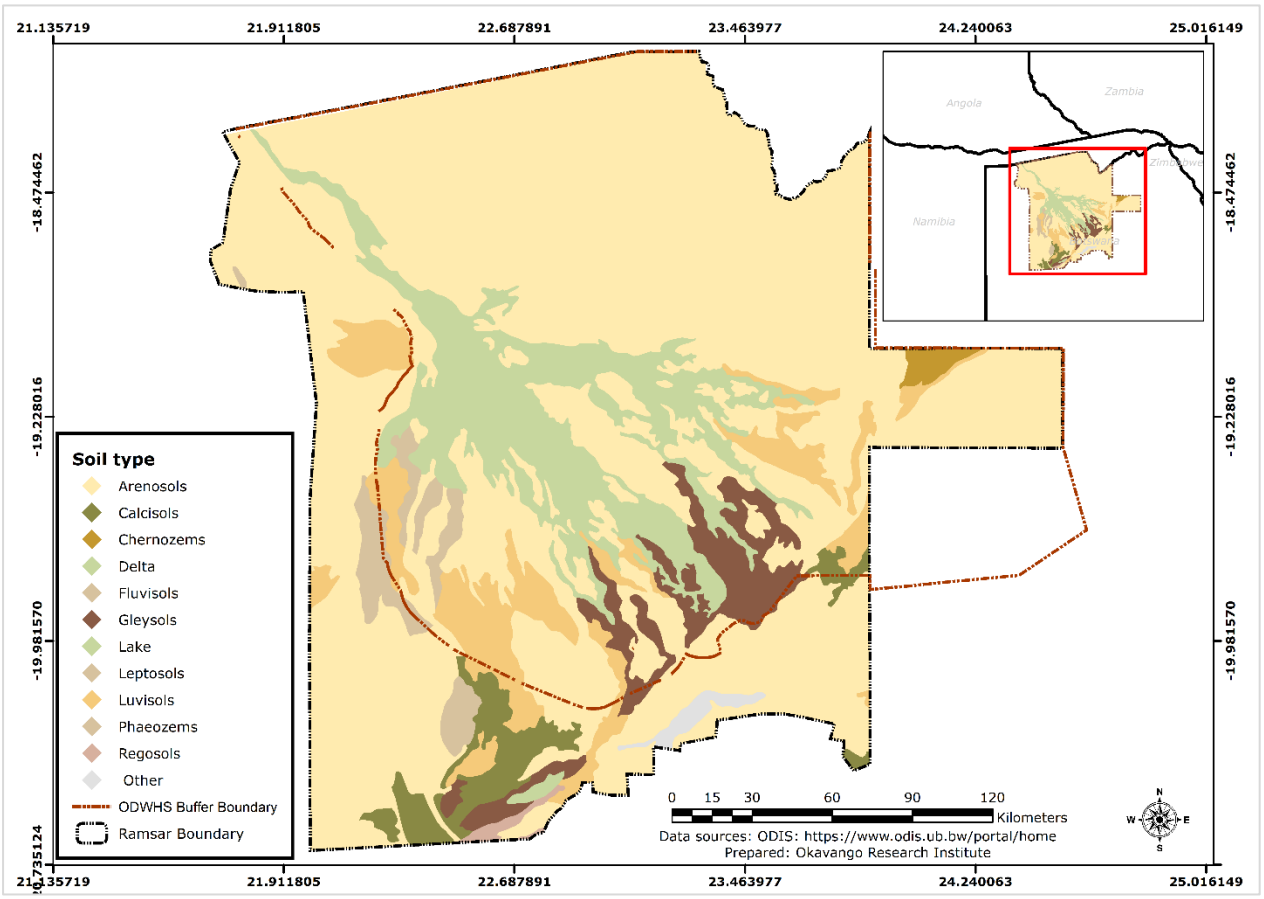

Figure 5.3: Soils of the Okavango Delta MIDA landscape.

5.6 HABITATS

The 2008 ODMP provided a description of Delta habitats, which were classified based on a combination of plant life-form characteristics and dominant species. In total 46 habitats were identified. In the Delta study area, the specific habitat size is small, 0.05 Km^2. The number of different habitat types in 9 Km^2 "cells" varies from 1 to a maximum of 31. These areas with exceptionally high vegetation variability are mostly located along the perimeter of the wet

Delta, along the Panhandle, and along the major flow channels to the east and west. The highest habitat diversity is found in the fringe areas of the Delta and it is highly likely that the total species diversity is highest here. The implications for the management of biodiversity in the Delta are immense since conservation efforts should not concentrate on preserving a core area but the entire habitat pattern, including the fringes. This is further complicated by the fact that these fringe areas with high biodiversity are under pressure from human exploitation.

5.7 BIODIVERSITY STATUS AND TRENDS

In a worldwide biodiversity comparison (Junk *et. al.*, 2006) of seven globally important wetlands, of which six are in tropics and sub-tropics, the Okavango Delta had a low number of fish species, but the second highest number of plants and mammals, third highest number of amphibians, and highest number of reptiles and birds. The *number of large mammal species and their high abundance are outstanding* in the Okavango Delta.

Table 5.2: Number of species in taxonomic groups of originally terrestrial origin observed in each major habitat in the Okavango Delta

Taxonomic group	Total Number of species	Percent habitat overlap	Aquatic/ Perennial swamp	Wetland/ Seasonal swamp	Dryland/ Terrestrial	Sum of species observed in each habitat
Plants	1,061	35%	205	519	704	1,428
Reptiles	64	0%	7	5	52	64
Birds	444	0%	112	57	275	444
Mammals	122	10%	3	21	110	134

(Adapted from Ramberg *et.al.*, 2006).

5.8 VEGETATION

The Okavango Delta is in the Zambesian Phytochorion (an area having more than 50% endemic plant species and more than 1,000 species in total). This area predominantly includes the Okavango and Zambezi river basins. It is important to note that because of the intracontinental situation of the Delta, and its episodic hydrological connection with the Zambezi aquatic system, there are no known endemic plants in the Okavango Delta MIDA landscape; the species composition has similarities with the large wetlands in the middle and upper Zambezi river basin such as the Kafue and Barotse (Liuwa) wetlands.

5.8.1 Plant Species Number and Composition

As described in the 2008 ODMP, there are about 1,260 species of plant in the Okavango Delta MIDA landscape. They belong to 530 genera and 134 families. The most diverse families are the Poaceae (grasses), Cyperaceae (sedges), followed by the Asteraceae and Fabaceae, each of which have more than 20 genera and 50 taxa of species and lower ranks. Most genera (73%) are represented by one or two species only, whereas a small number of genera (7%) are represented by 10 or more taxa of species and lower ranks. Calculations of species density following Rosenzweig (1995) show that the Okavango Delta has a species density of 210

species per Km^2, similar to the dryer and colder southern and western biomes in Southern Africa, while the species densities are more than twice as high for the better watered and warmer grasslands and savannas in the eastern and northern parts of the sub-continent (Ramberg *et. al.*, 2006b). Of the total number of taxa present in the Okavango Delta, a significant proportion of about 60% occur in dryland settings on islands or sandveld tongues.

However, despite their terrestrial character many of these taxa are absent in the surrounding savanna habitats as they require a different air humidity or soil moisture regime or higher ground water table. Thus they are intimately associated with the wetland environments of the Okavango Delta (Conservation International, 2003; Sliva *et. al.*, 2004). Many species occur in the permanent swamps (about 220 taxa), and many are connected to the flooded grasslands (about 90 taxa) or to the combination of flooded grasslands and dryland settings (80 taxa). A small number of species are parasitic (18) or insectivorous (12). Of the 147 plants classified as aquatic and semi-aquatic only 10 are woody of which only three are trees. The palm *Phoenix reclinata* and *Syzygium guineense* are true trees that occur in patches fringing islands or termitaria, while the shrubby *Ficus verruculosa* lines the lower reaches of river channels in the perennial swamp (Conservation International, 2003, Sliva *et. al.*, 2004).

5.8.2 Vegetation Communities

The vegetation communities and their extents have been carefully described in the 2008 ODMP. A classification of plant communities based on quantitative data covering a considerable part of the Delta habitats was done by Sliva *et. al*. (2004). Similar but more recent work on floodplains generally supports this classification (Murray-Hudson *et. al.*, 2011; Tsheboeng *et. al.*, 2014a; Tsheboeng *et. al.*, 2014b) and the finding that the primary driver of floodplain vegetation is hydroperiod.

Aside from probable changes in extent of some communities in response to land use pressures such as livestock grazing, and the extensive and intense wildfires of the last decades, this classification system is considered adequate for current management purposes.

The main reason for the high plant species diversity of the Okavango Delta as well as for the exceptionality of this ecosystem from a nature conservation point of view, lies in the interaction of periodical natural phenomena – the annual flood in the dry season and the distinct rainy season in time of low water level – with the shifts in flooding pattern over short and long periods. Succession processes at different phases of development are therefore ongoing in all plant communities in the Delta. These processes are the main driving forces for the species and habitat diversities in the Okavango Delta and must be conserved in order to maintain the uniqueness of this system.

5.8.3 Vegetation Spatial Coverage

Ten different major vegetation units were distinguished within the Okavango Delta Ramsar Site (ORI, unpublished data). Table 5.3 shows the spatial coverage for each of the ten classes

throughout Ngamiland District with a total land coverage of 107,906 Km^2 including the Linyanti floodplain.

It can be seen that a large proportion of the district is covered by tracts of *Colophospermum mopane* and tree shrubland dominated by Acacia species especially *Acacia erioloba* and *Acacia mellifera*. The latter class is found mainly in areas used for livestock farming along the southern and western edges of the Delta. This might suggest signs of bush encroachment due to overgrazing and over exploitation of resources as these areas are heavily populated. The third largest vegetation grouping consists of open shrubbed grasslands which overlaps with the tree shrubland described above. This class also occurs on areas that appear to have been overgrazed and showing significant levels of erosion.

Table 5.3: Spatial coverage of each vegetation grouping for the entire Ngamiland District.

Zone	Description	Area (Km^2)
1	Grassed Shrubland in Dune Valleys with Terminalia & Baphia	10,419
2	Shrubbed Woodland with mixed Mophane	20,063
3	Treed Shrubland with Acacia	22,959
4	Treed Grassland on former Floodplain	8,460
5	Shrubbed Grassland on former Floodplain	3,258
6	Shrubbed Woodland of Riparian zones	1,816
7	Dry Floodplains and Island Interiors	2,857
8	Swamp vegetation with fringing emergents	8,531
9	Shrubbed towards Dune Crests with *Burkea africana* and *Baikiaea plurijuga*	10,519
10	Shrubbed Grassland with Sagebrush	17,186
11	Cloud and Shadow/Unclassified	1,838
Total	**Ngamiland (Includes Linyanti)**	**107,906**

(Source: HOORC Vegetation Map – 2004.)

5.8.4 Alien and Invasive Plant Species

The most common alien invasive species in the ODRS is the free-floating water fern *Salvania molesta* (Mochimbama). It occurs mainly in the eastern parts of the Delta and is kept under control by the introduced weevil *Cyrtobagous salviniae*. The control is effective but lags plant growth in the cool winters when mats can form.

At the moment there is limited information on the distribution of other alien plant species that can be potentially invasive in the project area, though there have been complaints by various stakeholders on the introduction of such species in the Okavango Delta especially for ornamental purposes and through various tree planting activities. However, attempts are being made to computerize the species lists distributed as part of National Tree Planting Activities since 1999 to date to input this data in the planning process.

A recent register of "Introduced and Invasive Species in Botswana" has been published on GBIF: https://www.gbif.org/dataset/1a98ef74-885b-403b-8337-e530493c8cc2. It should be noted that the impact of these species has neither been quantified, evaluated, nor the distributions of almost all of them mapped.

In relation to the Ramsar Site, there have been reports of occurrence of the alien grass *Cenchrus biflorus* already common in parts of the Kalahari, which is harmful due to its spiny seeds that tend to attach to the mouth and eye region of grazing livestock. These occur mainly in Okavango Sub-District, but the extent of their distribution has never been mapped.

Other potentially invasive terrestrial species include *Xanthium strumarium*, the cocklebur, and *Ailanthus altissima*, the Prison Tree. The latter has started to disperse via seeds and has been observed in the western Panhandle. This poses a major threat to Delta ecosystems, and control methods should be instigated as soon as possible.

5.8.5 Rare and Endangered Plant Species

As reported by the 2008 ODMP, a total of 20 plant species occurring within the Okavango Delta MIDA landscape have been identified for Red Data List status using recognized IUCN Red Data List criteria (ODMP, 2006). Of these 20 species, 7 are listed as threatened, i.e., at a very high to extremely high risk of going extinct in the wild (at the local level). Recent investigation indicates the following status for these species (Table 5.4).

Table 5.4: Red Data flagged plant species.

Status	**Species**	**Current information (IUCN Red Data List, 2020)**
Critically endangered	*Zeuxine Africana*	N/A
Endangered	*Eulophia angolensis*	N/A
	Habenaria pasmithii	N/A
Vulnerable	*Acacia hebeclada* subsp. chobiensis	Least concern
	Aldrovanda vesiculosa	Endangered
	Eragrostis subglandulosa	Least concern
	Erlangea remifolia	Vulnerable
Near threatened	*Ansellia africana*	Vulnerable
	Eulophia latilabris	N/A
	Harpagophytum zeyheri subsp. sublobatum	N/A
Potentially endangered	*Eragrostis leptotricha*	Data deficient

5.8.6 Plant Community Dynamics

Floodplains

Considerable research has been carried out on the dynamics of floodplain vegetation in the Okavango Delta MIDA landscape since the 2008 ODMP. This work has clearly showed that the hydroperiod (seasonal and long-term flood regime) is the strongest control of species diversity and distribution in the wetlands, with clear compositional gradients reflecting medium- and long-term flooding frequency and mean duration (Murray-Hudson *et. al.*, 2006; Murray-Hudson *et. al.*, 2014). Species distribution modelling has allowed the propagation of hydrological change into community change models, which in turn permit scenario testing (Murray-Hudson *et. al.*, 2019). Given the vulnerability of the Okavango Delta MIDA landscape ecology to upstream alteration in flow (from abstraction or impoundment), this is a critical tool for managers to appreciate and understand.

Riparian woodlands

As has been pointed out in the original 2008 ODMP, and the 2014 ODMP MTR and elsewhere, evapotranspiration driven by riparian trees is an essential function in the sequestration of dissolved salts in the Delta ecosystem. Here again, extensive research driven by the potential threats of deforestation, elephant damage and the almost complete lack of understanding of the population dynamics of these diverse and complex woodlands has given us some baseline information (Sianga and Fynn, 2017; Sianga *et. al.*, 2017; Tsheboeng *et. al.*, 2017a, b; Tsheboeng, 2018; Tsheboeng *et. al.*, 2020a; Tsheboeng *et. al.*, 2020b)

5.9 WILDLIFE

Mammals are the most studied taxa in the Okavango Delta, as well as the most important for tourism. Regular surveys are therefore carried out by DWNP and by non-governmental organisations (NGOs) to record population estimates.

5.9.1 Herbivores

5.9.1.1 Population Estimates

The Department of Wildlife and National Parks (DWNP) has been conducting aerial surveys since the early 1980s. In 2010, 2014 and 2018, a Botswana-based NGO, Elephants Without Borders (EWB), conducted aerial surveys, most recently in conjunction with the DWNP. The most recent population estimates are from the 2018 survey, which covered northern Botswana, not just the Okavango Delta (Table 5.5). Estimates for large, gregarious animals are likely to be more accurate than those for smaller-bodied and solitary species.

Table 5.5: Large herbivore population estimates in northern Botswana, 2018.

Species	Estimate	No. seen	Std. Error	CI	% CI	Lower CL	Upper CL	Density No/Km^2
Elephant	126,114	22,565	5,054	9,923	8	116,191	136,036	1.22
Buffalo	28,534	28,534	0	0				0.28
Duiker	303	34	66	132	44	170	435	0.003
Eland	2,098	275	544	1,077	51	1,021	3,175	0.02
Gemsbok	3,302	370	720	1,537	47	1,766	4,839	0.03
Giraffe	8,343	1,307	587	1,154	14	7,190	9,497	0.08
Hippo	13,232	2,307	1,015	2,001	15	11,231	15,233	0.13
Impala	77,694	13,371	3,884	7,679	10	70,015	85,374	0.75
Kudu	7,473	1,168	521	1,024	14	6,449	8,497	0.07
Lechwe	88,584	15,799	4,845	9,633	11	78,951	98,217	0.85
Reedbuck	2,620	452	227	452	17	2,168	3,072	0.03
Roan	833	132	138	272	33	561	1,106	0.01
Sable	2,872	484	799	1,631	57	1,242	4,503	0.03
Sitatunga	875	159	85	169	19	706	1,045	0.01
Springbok	120	69	52	655	547	69	774	0.001
Steenbuck	1,561	168	217	427	27	1,134	1,988	0.02

Tsessebe	3,650	628	384	760	21	2,891	4,410	0.04
Warthog	5,723	970	403	794	14	4,930	6,517	0.06
Waterbuck	993	186	182	365	37	628	1,358	0.01
Wildebeest	17,017	4,260	3,788	7,778	46	9,240	24,795	0.16
Zebra	60,170	11,182	9,247	18,399	31	41,771	78,569	0.58

Note: CI = Confidence Interval; CL = Confidence Limit
Source. Chase *et. al.* (2018)

Chase *et. al.* (2018) also compared wildlife population estimates between 2014 and 2018 (Table 5.6). Most wildlife species showed no change in their populations, although there were significant increases in hippo, lechwe, reedbuck, sitatunga, fish eagle and wattled crane populations - all of which are water-dependent species. In contrast, populations of sable and saddle-billed stork decreased. Cattle populations increased over the same period.

The Management Oriented Monitoring System (MOMS) was designed as a simple means for communities to collect monitoring data on wildlife through driven transects divided into block counts. However, very few communities are implementing the protocols and the data are not being utilised effectively (Mbaiwa, 2015). The Southern African Regional Environmental Program (SAREP) developed a standardised monitoring protocol for Botswana that required all concession holders to drive transects and record wildlife sightings, including opportunistic predator sightings. However, this protocol has not been taken up widely and very little information is being collected. SAREP's successor program, Resilient Waters, is currently reviving the protocol and there are plans to train lodge guides and environmental departments at safari businesses in the data collection protocols.

Table 5.6: Changes in wildlife populations in northern Botswana between 2014 and 2018.

Species	2018 survey		2014 survey		2014 to 2018 change			
	Population estimate	SE	Population estimate	SE	Change in estimate	SE of change	Z	P
Buffalo	28,534	0	26,467	0	0			
Elephant	122,831	4,769	122,634	5,101	197	6,983	0.03	0.98
Giraffe	8,340	550	9,268	608	-928	819	-1.13	0.26
Hippo	12,660	881	8,680	608	3,981	1,071	3.72	<0.001
Impala	77,697	3,869	72,337	5,231	5,359	6,506	0.82	0.41
Kudu	7,116	471	6,645	514	471	697	0.68	0.50
Lechwe	88,585	4,835	57,691	3,220	30,894	5,809	5.32	<0.001
Reedbuck	2,620	227	1,498	132	1,122	263	4.27	<0.001
Roan	834	129	1,379	277	-545	306	-1.78	0.07
Sable	2,871	792	5,164	821	-2,293	1,140	-2.01	0.04
Sitatunga	875	84	637	70	238	109	2.18	0.03
Tsessebe	3,650	382	3,220	333	430	506	0.85	0.40
Warthog	5,723	399	5,087	315	636	508	1.25	0.21
Waterbuck	994	181	602	188	393	262	1.50	0.13
Wildebeest	16,485	3,674	8 945	1,909	7,540	4,140	1.82	0.07
Zebra	59,592	7,756	47,075	5,136	12,517	9,303	1.35	0.18
Fish eagle	2,242	129	1,221	93	1,021	159	6.41	<0.001
Ground hornbill	411	82	439	97	-28	127	-0.22	0.83

Ostrich	3,043	354	2,587	287	456	456	1.00	0.32
Saddle-billed stork	552	62	953	92	-401	111	-3.61	<0.001
Wattled crane	1,372	201	775	137	597	243	2.46	0.01
Cow	105,805	6,605	148,191	12,062	-42,386	13,752	-3.08	0.002

Source. Chase *et. al.* (2018)

5.9.1.2 Recent Research

Other than elephant, relatively little research in Botswana focuses on herbivores, despite their vital role within the ecosystem and their vulnerability to human activities such as bushmeat poaching. Poaching has increased under the 2019 drought and the 2020 COVID-19 pandemic, when resources became scarce and, in the latter case, income from employment was drastically reduced.

Buffalo

Studies have been undertaken on buffalo ecology in the Okavango Delta, focusing on group interactions (Bennitt *et. al.*, 2018), habitat (Bennitt *et. al.*, 2014), micro-habitat selection (Bennitt *et. al.*, 2015) and migration (Bennitt *et. al.*, 2016). Buffalo are also being studied in the context of disease, particularly foot and mouth disease, with the Department of Veterinary Services sampling several buffalo herds to determine disease prevalence. The veterinary fence originally designed to keep buffalo and livestock separate has not been maintained, such that there are several thousand cattle estimated to live in the designated wildlife area. Buffalo regularly leave the designated wildlife areas and are generally herded back across the fence, with stragglers being shot by DWNP to prevent disease transmission to livestock.

Elephant

Two NGOs, Elephants without Borders and EcoExist, are studying elephants in the Okavango Delta. Elephants without Borders have GPS data from collared elephants moving across and beyond the Okavango landscape over the last decade. In recent years, their scope has also included documenting elephant poaching events and trends, which have been increasing in frequency (Schlossberg *et. al.*, 2019). EcoExist are promoting human-elephant coexistence in the Panhandle region of the Okavango Delta and facilitating training of several post-graduate students.

Elephant populations and their impacts are hotly debated, with the overall impression in local communities being that populations are increasing. Human-elephant conflict certainly appears to be increasing and approximately 40 people have been killed by elephants in northern Botswana in the last decade. Trophy hunting of elephants (and other species) was re-opened in 2019, initially with a small number of licenses issued to citizens according to a raffle system. The full hunting season expected for 2020 did not materialise because of restrictions related to COVID-19. The international response to Botswana re-instating hunting was highly negative, despite the relatively small elephant quota of maximum 400 adult males. Local communities are strongly in favour of hunting as a source of income and, with appropriate management,

trophy hunting for elephants could be used to discourage elephants from approaching communities, thereby reducing human-elephant encounter rates.

The provision of artificial water in areas that would not naturally have any surface water during the dry season has enabled elephants, particularly bulls, to expand their home ranges and take up residence in sensitive areas away from permanent water, which could also increase conflict and lead to vegetation damage, with knock-on effects on herbivores.

Botswana is home to approximately a third of the global population of African elephants, which are under huge poaching pressure throughout most of their range. The population in Botswana is therefore vital to the survival of the species, but there is a growing opinion that the pressure exerted by such a large population of elephants could be having detrimental effects, particularly on large tree species. Elephants de-bark and knock over adult trees, while browsing on younger individuals, thereby reducing recruitment rates and preventing replacement of adults. This could have severe consequences for other species that rely on large trees, and for the functioning of the Okavango Delta overall, which requires large trees to filter nutrients and concentrate salinity into islands, thereby maintaining low salinity in the waters of the Okavango. Ideally, the large elephant population in Botswana could be spread out over the Kavango-Zambezi landscape through restored connectivity between protected areas in neighbouring countries, but these movement routes are currently disrupted by human activities, including developments and poaching pressure.

Botswana has developed an Elephant Management Plan and was launched in Maun on 30 April 2021. The plan is key to biodiversity conservation and protection of values that ODMP seeks to achieve.

Giraffe

A recent study on giraffe ecology in the Okavango Delta demonstrated that home range sizes vary with resource availability (McQualter *et. al.*, 2016). Giraffe could be vulnerable to poaching for tail hairs, but so far there is little evidence of this practice occurring in the Okavango Delta.

Hippo

Very few studies have been undertaken on hippos in the Okavango Delta, which is surprising given their role as ecosystem engineers, affecting channel trajectories and flow patterns. A recent study determined that Unmanned Aerial Vehicles (UAVs) could be used to assess hippo populations without disturbing them (Inman *et. al.*, 2019), a technique that may prove valuable for studying hippo population dynamics.

Lechwe

Lechwe numbers may well have fallen during the 2019 drought, when extensive areas of wetlands dried up for several months. Various sources reported increased sightings of predators killing lechwe on dry land when they could not escape to the water.

Roan and Sable

Roan and sable antelope are dryland specialists that rely on habitats far from permanent water, including during the flood season in the Okavango Delta, when most other herbivore species graze on productive floodplain vegetation (Hensman *et. al.*, 2012; Hensman *et. al.*, 2014; Havemann *et. al.*, 2016). These rare antelope species are vulnerable to changes in surface water availability that can allow water-dependent herbivores and their predators to access dry back-country habitats (Owen-Smith, 1996). Many tourism operators are seeking to expand their game drive routes by providing artificial water to concentrate species in otherwise low wildlife density habitats, and such developments could have severe implications for rare antelope such as roan and sable.

Tsessebe and Wildebeest

Relatively little work has been carried out on tsessebe and wildebeest in the Okavango Delta, although their populations could be vulnerable to environmental changes because of their high levels of specialisation and small home ranges (Bennitt *et. al.*, 2019).

Zebra

Zebra are relatively resilient to environmental change, as habitat generalists with high capacity for adaptive movement (Bennitt *et. al.*, 2019). There are several zebra migrations in northern Botswana, although only one includes the Okavango Delta. Zebras migrate from the Okavango to Makgadikgadi Pans National Park during the rainy season (Bartlam-Brooks *et. al.*, 2011), although this migratory population is estimated to number only a few hundred animals. For several decades, this migration route was blocked by a veterinary fence, which was removed in 2006, after which the migration is assumed to have resumed, one of very few examples globally of a restored migration. Zebra movement patterns demonstrate the importance of maintaining connectivity between the Okavango Delta and neighbouring protected areas.

Rhino

Rhino population numbers are never presented, since they are sensitive data. Two organisations have been working with Department of Wildlife and National Parks (DWNP) and Botswana Defence Force (BDF) to monitor and protect rhinos. Rhinos without Borders, supported by Great Plains and Beyond safari operators, imported approximately 70 white rhinos into Botswana when poaching was lower in the Okavango Delta than elsewhere in the rhino range. Rhino Conservation Botswana has been assisting the government with collaring and monitoring rhinos, including having multiple monitoring patrols on the ground that work with BDF and DWNP.

In the last five years, rhino poaching has escalated, with most of the black rhino population being poached for their horns and the remainder evacuated out of the Okavango Delta to private reserves with higher security. White rhinos are also being poached at a high rate, such that rhinos will be locally extinct in the Okavango Delta MIDA landscape within a few years if poaching continues at its current rate. All rhinos have been dehorned to reduce their appeal for

poachers, but this has not had the desired effect, since the small amount of horn left by the dehorning procedure is still worth a large amount of money. The 2019 drought opened access to poachers since there was less water in the delta to hinder them, and the Covid-19 pandemic greatly reduced tourism activities in 2020, so fewer people were moving around in the concessions and poachers have been less deterred and detected. BDF, DWNP, RWB and RCB have maintained their presence, including using aerial and ground patrols to monitor rhinos and respond to any carcasses located.

5.9.2 Large carnivores

5.9.2.1 Population estimates

Cozzi *et. al.* (2013) estimated spotted hyaena and lion densities in a 1,800 Km^2 area of the south-eastern Okavango Delta from calling stations. Spotted hyaena density was estimated at 14.4 adults/100 Km^2 and lion density was estimated at 5.8 individuals/100 Km^2.

Since 2017, WildCRU, from the University of Oxford, have been conducting large scale camera trapping efforts in protected areas across Botswana. Similar surveys have been undertaken (i) on Chief's Island, (iii) in NG/21-NG/23, and (iv) in NG/31-NG/32 and (v) Moremi Game Reserve. Population estimates from these surveys will be available following analysis. Future plans include surveys in NG/25-NG/26, to be completed by 2021.

5.9.2.2 Recent research

In 2016, a workshop bringing together carnivore researchers in Botswana resulted in the establishment of the Botswana Carnivore Forum, which has been working closely with government to identify research gaps and provide summaries of current research. For example, in 2020, the BCF provided population estimates for leopard across the country, including extrapolated estimates for understudied areas.

Lion

WildCRU, of Oxford University, have studied dispersal mechanisms and connectivity between protected areas in the KAZA landscape, identifying key movement corridors that require protection (Figure 5.4).

Lions are under increasing poaching pressure for their claws and teeth, which are exported to Asian markets, and several carcasses have been found in recent years that have had their paws and heads removed, indicating that they were poached for this purpose. Lions are also commonly poisoned by livestock farmers that poison cattle carcasses, with severe knock-on effects for non-target species, such as vultures.

The DWNP policy of translocating problem lions from conflict areas into protected areas has resulted in disruption to existing predator systems, resulting in new lions either killing other predators or being killed themselves. Translocation of predators generally fails, so this practice should be discontinued.

Lions are responsible for a large amount of human-wildlife conflict, since they regularly kill livestock. Multiple projects have been initiated in the last five years to work with communities to reduce human-lion conflict, including a project through Tau Consultants in Habu and one in Shorobe by Wild Entrust (formerly Botswana Predator Conservation Trust). The latter assessed the viability of using eye marking painted onto cows to deter predators (Radford *et al.*, 2020), an idea that has since been taken up by several organisations across the world. Lions are often blamed for depredation since the DWNP offers 100% compensation for livestock killed by lions, and sometimes less for livestock killed by other predators, such as hyaenas.

Leopard

Leopards are relatively resilient to environmental change and are highly adaptable, able to exist in a wide variety of environments. Recent research has focused on leopard interactions with other predators (Rafiq *et. al.*, 2020) and how citizen science can be used to monitor leopards in tourism areas (Rafiq *et. al.*, 2019).

Cheetah

Cheetah Conservation Botswana, based in Ghanzi, have been involved in translocation of cheetahs caught in farmlands, and concluded that very few translocated cheetahs survived and the translocation did not reduce depredation in the farmlands, so the practice should not be encouraged (Boast *et. al.*, 2015). Cheetah in the Okavango Delta avoid encounters with larger predators, such as lions and hyaenas, but their movement patterns are generally guided by prey availability (Broekhuis *et. al.*, 2013).

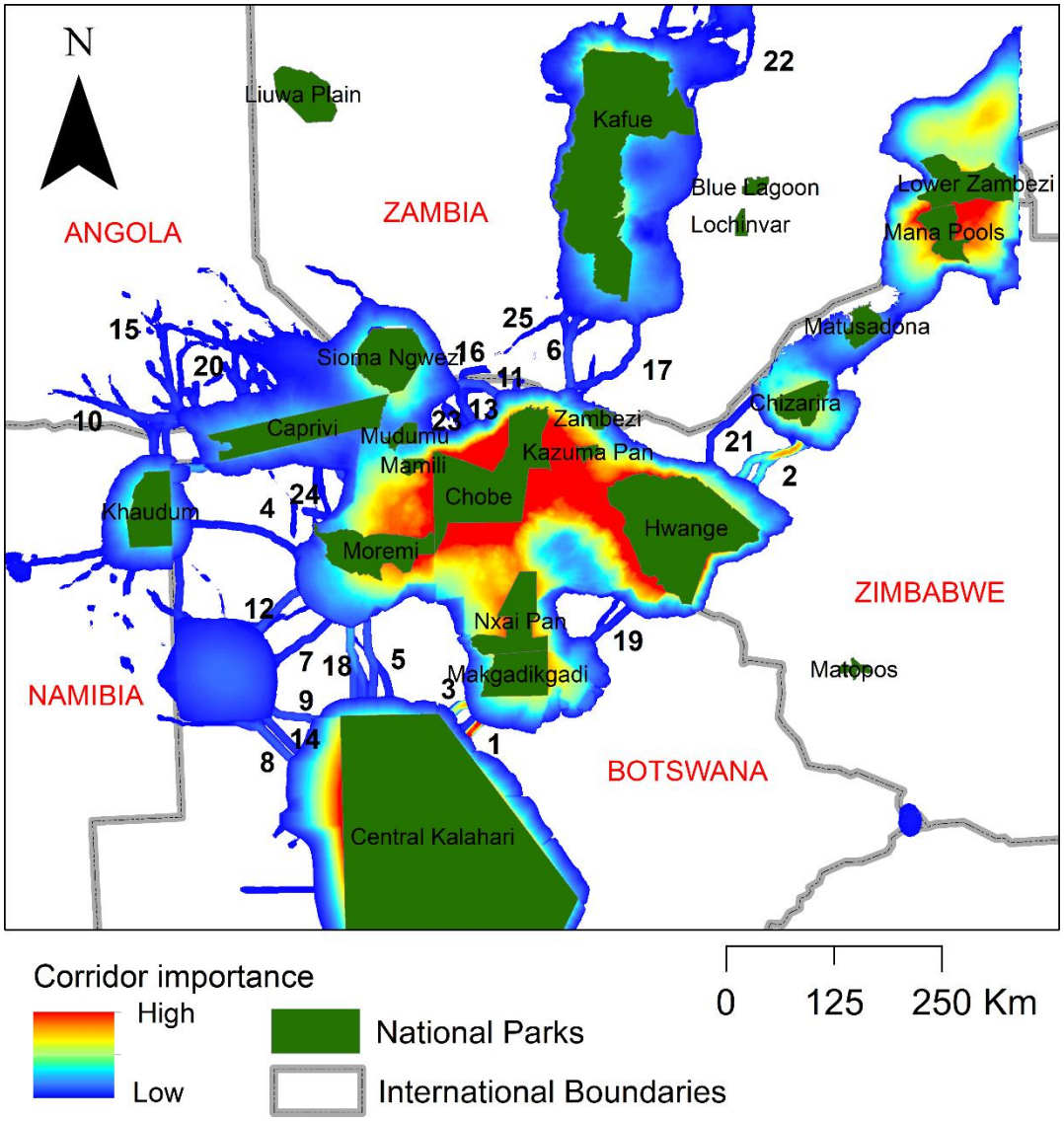

Figure 5.4 Lion movement corridors connecting to the Okavango Delta.
(Source. Cushman et al., 2018)

African Wild Dog

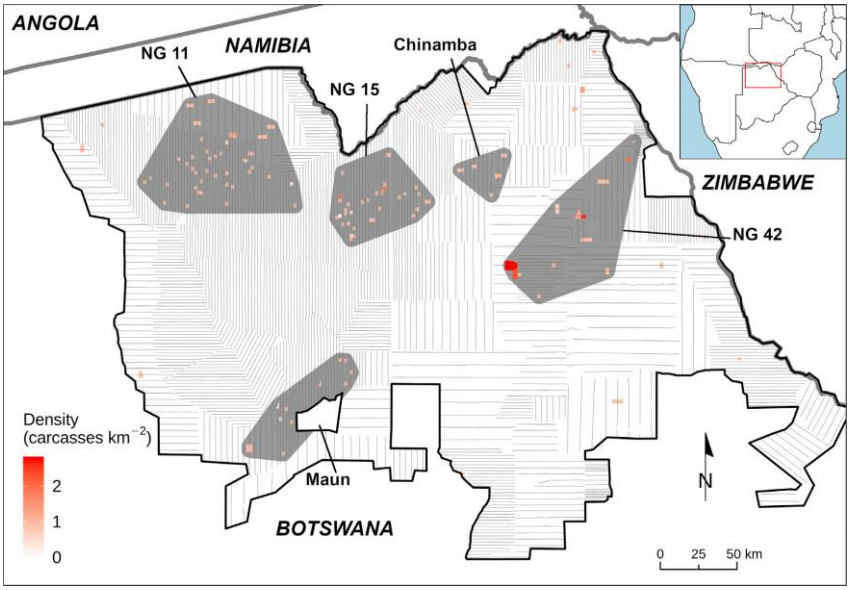

Figure 5.5: Elephant poaching hotspots in northern Botswana (Schlossberg *et. al.*, 2019).

Wild Entrust (previously Botswana Predator Conservation Trust) have been studying African wild dogs in the Okavango Delta since the late 1980s. Recent research has demonstrated that wild dog breeding success might be threatened by rising temperatures predicted by climate change (Woodroffe *et. al.*, 2017). Dispersal studies of young wild dogs have highlighted the importance of the Okavango Delta as a source population, with wild dogs traveling into Zimbabwe and to other protected areas (Cozzi *et. al.*, 2020), demonstrating the value of maintaining landscape connectivity.

Spotted Hyaena

Anecdotal reports suggest that spotted hyaena populations and distribution were affected by the banning of elephant hunting. Elephant carcasses left by trophy hunters provided an importance source of meat for hyaenas, and this disappeared in 2014, which could have led to a hyaena population decline. Increased elephant poaching may well have had the opposite effect, such that hyaena populations around poaching hotspots are reported to have increased. The distribution of elephant carcasses under hunting and under poaching is very different, since poachers tend to favour locations far from tourism activities and roads, for example in large expanses of mopane woodland.

5.9.3 Other carnivores

Very little research has been undertaken on carnivores other than the large five species. Some information on population estimates is likely to emerge from camera trapping studies (Rich *et. al.*, 2016), although these smaller species are rarely the primary focus of such efforts.

Small mammals

No studies have been undertaken on small mammals, although some species should be targeted given their roles in the ecosystem or their rarity. Bats are known to be ecosystem indicators, such that monitoring populations can provide indications of the state of an ecosystem, but no bat research has been undertaken. Pangolins are the most trafficked wildlife species in the

world and the ground pangolin occurs in the Okavango Delta, but no research has been undertaken on it. There is no information on the pangolin population, nor on the rate of illegal harvesting in the area, but the latter is likely to be increasing. Studies focused on small mammals should be encouraged to fill knowledge gaps.

5.9.4 Birds

Birdlife Botswana and DWNP undertake regular counts of bird species, including assessing populations in known heronries. However, birds overall are understudied, with very few projects undertaken on them, representing a gap in knowledge for Botswana that should be addressed.

5.9.4.1 Recent research

Garbett *et. al.* (2018) found that almost half of the species of raptor in Botswana had declined significantly from a survey completed 20 years before. Raptor populations declined inside and outside of protected areas, possibly reflecting anthropogenic disturbances and increased mortality from interference such as poisoning. Raptors Botswana was established in recent years, particularly to study vultures and their movement patterns, and to try to reduce poisoning instances. Vulture populations are declining rapidly, being affected by lead poisoning from bullets in hunted animals, and susceptible to mass poisoning events. Livestock farmers poison cattle carcasses to kill lions and vultures die as an unintended consequence. Some trophy poachers intentionally poison elephant carcasses to kill vultures in a bid to prevent them giving away the location of carcasses.

A PhD student from the University of New South Wales, Australia, in collaboration with ORI, is currently undertaking an assessment of waterbird breeding success in relation to flooding levels in the Okavango Delta. Birdlife Botswana is also sponsoring a student undertaking a study on wattled crane. Results from these studies should be available within a few years.

5.9.5 Reptiles and amphibians

Very little research is undertaken on reptiles or amphibians in the Okavango Delta, with no studies on lizards and snakes. African rock pythons are protected in Botswana, but there is no information available on their population status, ecology or threats. Amphibians are highly vulnerable to environmental changes, including temperatures and water quality, but there are no efforts in place to monitor their populations. Research on reptiles and amphibians should be encouraged.

Recent crocodile surveys in the Okavango Delta have used spotlight counts, whereby observers travel slowly by boat at night with a spotlight and record every crocodile eyeshine that they encounter. Experienced observers can estimate full crocodile length by the length of the head, which is usually visible above water at night, enabling a classification by age. The most recent survey, in 2016, estimated the crocodile population in the Panhandle of the Okavango Delta to be 1931 individuals, equivalent to 1.63 crocodiles/Km (Shacks and Bourquin, unpublished report).

5.9.6 Fish

DWNP monitor fish stocks at several sites across the Okavango Delta. Several tourism operators and NGOs have reported an anecdotal reduction in fish stocks, but experts believe that the floodplains can sustain healthy, breeding populations of most fish species. Occasionally, there are large fish die-offs, and these appear to occur when dissolved oxygen (DO) levels fall below tolerance capacities of some fish species. This phenomenon is associated with the arrival of new flood waters in the system. Recent research has shown that deficiency in dissolved oxygen may persist for up to 6 weeks after the arrival of the new flood each year (Edwards *et. al.*, 2020).

5.9.7 Invertebrates

Many invertebrates in the Okavango Delta are vulnerable to environmental changes linked to climate change and variation in water quality and inflow. Conservation International (Alonso and Nordin (Eds.), 2003) carried out a rapid assessment in 2000. A checklist of taxa found is included in the report. They found that while the diversity of macroinvertebrates was high, it was very uniform in the four sites surveyed. There was little evidence that the diversity of macroinvertebrate taxa changed as habitat diversity increased from the perennial flooded Panhandle to the seasonally flooded distal reaches. The taxa Heteroptera (true bugs, 38 species) and Odonata (dragonflies, 78 species) were more diverse in the Delta than in other southern African wetland systems. The Okavango Delta has been recognised as having "one of the richest and most interesting Odonata ecosystems in southern Africa". They also found that the macroinvertebrate fauna of sediment was depauperate and ascribed this to the anoxic conditions of the sediment due to its high organic matter content. Aquatic macroinvertebrates are widely recognised as good indicators of water quality and this applies the Delta, too (e.g., Dallas and Mosepele, 2020). Monitoring of various taxa of aquatic macroinvertebrate has recently (2018) been initiated by ORI at the Field Station at Nxaraga.

5.10 Current Status of Biodiversity Assessment and Monitoring

Apart from monitoring activities identified under the Department of Wildlife and National Parks section, the Department of Forestry and Range Resources undertakes inventories of Botswana's forest resources. Since 1995, Botswana has subscribed to the Convention on Biological Diversity, and the Department of Environmental Affairs submits regular reports in accordance with CBD requirements. Botswana developed a revised National Biodiversity Strategy and Action Plan in 2016 that highlights the current biodiversity status, trends, and plans to secure current biodiversity levels.

DEA identify underfinancing as one of the critical challenges to biodiversity conservation, with government department revenues lower than their expenditures. A lack of ecosystem-level biodiversity assessment is also a barrier to effective monitoring: currently biodiversity assessments are undertaken separately by different council districts, which can lead to disjointed outputs. Insufficient institutional and technical capacity poses issues with relation to implementation of the NBSAP. Government departments experience high staff turnover and

low retention of technical experts, who are generally found in institutes of higher learning and NGOs. Lack of communication and dissemination of information relating to biodiversity can be a challenge for the NBSAP, leading to a lack of coordinated activity and information sharing between government departments.

The Environmental Information System was designed to provide information about biodiversity in Botswana, but it has not been maintained and is not currently operational. At present, there are no national biodiversity data repositories, a gap that urgently needs to be filled.

5.11 KEYSTONE AND INDICATOR SPECIES

In the ODMP MTR of 2014, three taxa of wildlife were identified as "important indicator species for the Okavango Delta ecosystem". These were some species of dragonfly, and a terrapin, but included the West African pygmy crocodile. It is certain that this species does not occur in the OD, and it is not clear why this suggestion was made. Since top carnivores are widely recognised as being important controlling influencers of ecosystems, they probably intended to put forward the Nile crocodile (*Crocodylus niloticus*, the only species of crocodile in the Delta)

Taxa of wildlife identified as ecosystem engineers or keystone species have good potential utility as indicators of system functionality. Mound-building termites (*Macrotermes michaelsenii*), and hippopotamus (*Hippopotamus amphibius*) have been named as ecosystem engineers (Schuurman and Dangerfield, 1997; Dangerfield, 1998; McCarthy *et. al.*, 1998a; McCarthy *et. al.*, 1998b), while Nile crocodile (*Crocodylus niloticus*) has been recognised as a keystone species in the Olifants River system in South Africa (Joubert, 2007 in Ashton, 2010), and is highly likely to fill this role in the Okavango system (Bourquin, 2008).

CHAPTER 6: ENVIRONMENT, BIODIVERSITY CONSERVATION AND CLIMATE CHANGE ADAPTATION

6.0. OVERVIEW

The need to promote the integration of environment, biodiversity conservation and climate change adaptation continues to receive global attention. This is imperative for facilitating the resilience of the environment, biodiversity and livelihoods to climate change. Studies have shown that the Okavango Delta is vulnerable to climate change (Burg, 2007; Hambira, 2011; Hambira *et. al*., 2013). There is, therefore, a need to develop climate change adaptation strategies to enhance the protection of the environment, biodiversity and livelihoods in the delta. In the 2014 ODMP mid-term review (MTR) commissioned partly to help inform the revision of the ODMP 2008, key issues on biodiversity and climate change were identified. Overall, the MTR noted that "nearly all stakeholders agreed that the climate change issue in the ODMP is very vague, bearing in mind that there were no attempts and/or elaboration (prescriptions) of what mechanisms such as adopting coping strategies might entail related to anticipated climate changes" (USAID & OKACOM, 2014: p.64). The main issues are categorised as information and data availability; vulnerability to climate change; impact of climate change on economic sectors, livelihoods, habitats, and biodiversity; monitoring of climate change trends; coping and adaptation strategies. The specific issues for each category are outlined in Appendix II.

6.1. INSTITUTIONAL STRUCTURES FOR CLIMATE CHANGE MATTERS IN BOTSWANA

Issues pertaining to climate change are coordinated by the Department of Meteorological Services (DMS) within the MENT. The department also acts as the United Nations Framework Convention on Climate Change (UNFCCC) liaison and leads the implementation of government's obligations to the UNFCCC. The National Climate Change Committee has also been established to play an advisory role based on technical expertise. At parliamentary level, oversight for work on climate change is provided by the National Portfolio Committee on Wildlife, Tourism, Natural Resources and Climate Change (NPCWTNRCC), which is a select committee made up of eight parliamentarians (Crawford, 2016). The newly enacted Climate Change policy of 2021 proposes two additional structures: the National Climate Change Unit, which will be responsible for the implementation of the Climate Change Response Policy; and Focal Points who are to be appointed by various entities in Government and private sector.

6.2. BIODIVERSITY AND CLIMATE CHANGE ADAPTATION BASELINE

Biodiversity and associated ecosystem services of the Okavango Delta are the impetus of communities' livelihoods in the area. Agriculture, tourism, and fishing, which are the main livelihood activities, are vulnerable to climate change and variability. The focus of the scoping in this section therefore entails 'climate proofing' biodiversity and livelihoods, which are dependent on the delta, and enhancing socioeconomic opportunities through appropriate adaptations. Climate change adaptation strategies are dependent on local vulnerability

indicators drawn from the following four categories: climate change vulnerability indicator, nature vulnerability indicator, socio-economic vulnerability indicator, and institutional vulnerability indicator (Aall and Hoyer, 2005).

While the climate change vulnerability indicator refers to changes in weather parameters (e.g. changes in precipitation and temperature), the nature vulnerability indicator entails changes in the physical environment and ecosystem effects. The socio-economic vulnerability indicator denotes the effects on the local economy and social life through changes in their physical environment and ecosystems triggered by climate change. Institutional vulnerability indicator refers to the capacity of local institutions to carry out climate change adaptation measures. The issues of concern from literature review as well as those raised during consultation meetings in line with each of the above aspects are outlined below. It should, however, be noted that some of them are not a direct result of climate change, but their impacts may be indirectly exacerbated by climate change.

6.3 VULNERABILITY AND ADAPTATION CAPACITY

6.3.1 Climate Change Vulnerability Indicator

Moses (2018) analysed observational data on mean annual precipitation and temperatures of selected stations in Maun, Shakawe, Sehithwa, Seronga and Gumare. The results revealed that the mean annual precipitation for the selected stations range from 332mm (Sehithwa) to 491mm (Shakawe) and the causes of the variability in precipitation over the years include the El Nino -Southern Oscillation phenomena. The study revealed that the trends are decreasing though not statistically significant at 10% significant level. The results were found to be consistent with others done earlier countrywide by New *et. al.* (2006), Shongwe *et. al.* (2009) and Batisani and Yarnal (2010). The mean minimum and maximum temperatures over the area were 11 and 35 degrees Celsius, respectively, and the temperatures generally have rising trends while seasonal variability was evident (Moses, 2018).

The study projections of future changes in precipitation revealed that in the near term climate (2016-2035), the change in precipitation will be in the range of -10-0% at the 25% quartile; from mid-21st to late 21st century (20-2065 & 2081-2100), precipitation is projected to further change by a constant range of -20 to -10% (Moses, 2018). With regards to temperature, warming is projected to be greatest in the late 21st Century as temperatures are expected to increase by 1.0 to 1.5 degrees Celsius and 2-4 degrees Celsius in the periods 2016-2035 and 2081-2100 respectively. Moses (2018) results are in line with the regional study conducted by Tadross *et. al.* (2011). The 2008 ODMP also identified climate change as a potential threat to the functioning of the ODRS. The report posited that the impacts would include reduction in rainfall and inflows from upstream as well as increased temperatures and evapotranspiration. These trends make both biodiversity and human communities to be vulnerable to climate change as key functions and sectors will be affected respectively. For example, warming may result in vector-borne diseases such as malaria and this may deter tourists from visiting the delta (Hambira, 2011).

Similarly, weather parameters observed by residents of various delta villages that were consulted were increased temperatures and inadequate rainfall. The residents decried frequent heat waves and changing rainfall seasons and patterns. This status quo according to the residents leads to extreme droughts, high livestock mortalities, declining water supply and migration of bird species to areas where water is available. Some residents appeared to have no confidence in modern scientific weather forecasting and blamed it on the weather and climate vagaries, which they faced. For instance, a Mababe community member opined that "meteorological projections are making things worse". The residents also decried neglect of indigenous rainfall making rituals as one of the reasons why rainfall has become unreliable and heat waves have become frequent. They also felt the situation was compounded by smoke from bush fires and fires along the Okavango River as well as technological advances.

6.3.2 Nature Vulnerability Indicator

Studies have revealed some changes in the physical environment and ecosystem effects of the delta including variation and reduction in hydrological flow; changes in sediment dynamics; water quality, abundance, and distribution of biota; channel distribution (OKAKOM, 2011; McCarthy *et. al.*, 2003). The changes are driven by a combination of factors including climate change, population dynamics, land use change and poverty (Mosepele *et. al.*, 2018). The 2008 ODMP noted that "The combined water resources developments with climate change have the most severe impact on the Delta." (DEA, 2008, p. 77). The report further noted that scenario testing involving water extraction plans and climate change predictions revealed that these factors, particularly climate change, will reduce the value of the ODRS. Some of these changes may affect animal distribution. For example, large mammals such as the *lechwe* are sensitive to the degree of flooding in the delta (Mendelsohn and el Obeid, 2004, cited in Turpie *et. al.*, 2006, p. 9). Similarly, these observed changes in the delta are a threat to riparian communities' livelihoods, rendering them more susceptible to the effects of climate change.

Changes in the physical environment observed by participants in the *Kgotla* consultation meetings include decline in the availability of veld products, over population or declined population of some animal species, land degradation, dry tributaries, and vegetation destruction. The communities raised concern that wild fruits such as *Mokapana (*African horned cucumber or Cucumis metuliferus), *Moretlwa (*wild berry, *Grewia flava*) *Motsentsela* (bird plum, *Berchemia discolour*) are no longer available due to competition from elephants and baboons who feed on them. Some grass species such as *Bojang jwa Dipitse* (Adrenaline grass, *Vetiveria nigritana*) are also reported to be extinct in some areas such as Kauxwi. Residents also observed that while elephant's population has bloated over time, wildcat populations have declined, and those of lions, hippos, crocodiles, and buffalos have increased. For instance, the residents of Ditshipi claimed that hippos and crocodiles that were relocated to their area following the drying up of the Thamalakane river in Maun have now become a menace as witnessed in the destruction of *mekoro* (dugout canoes) by hippos.

Residents in the consulted villages also raised concern that overpopulation of elephants affects the ecosystem balance such that some small game have disappeared due to vegetation

destruction; some protected species such as the baobab plant species have been destroyed; and other economic sectors such as hand-crafts have been affected due to the destruction of reeds by the elephants. Loss of natural appeal in protected areas is also exacerbated by developments comprising accommodation facilities, use of generators for power supply and lighting.

Most of the tributaries of the Okavango River were also reported to have run dry. Examples include the Sankuyo river which is said to have dried up due to the blockage of the Mogogelo tributary, whose flow was last recorded in 1978/9). The community, however, ruled out climate change as the main cause and believe that the river flow was interfered with when authorities were attempting to arrest the spread of *Salvinia molesta* at Mogogelo. Another tributary which is said to have dried up is one known as *'mogobe wa Makoba'* along Savuti-Gobatshaa. Khwai river on the other hand is said to be drying up due to the development of the Mohembo Bridge as well as Okavango river along Seronga, Shakawe and Gudigwa. According to the residents, the drying up of the river and its tributaries has led to birds' migration. High prevalence of invasive species was also raised as a concern.

6.3.3 Socioeconomic Vulnerability Indicator

The 2008 ODMP noted that sectors such as tourism, agriculture, subsistence and commercial use of vegetation resources, water and fisheries are likely to be affected by the impact of climate change. As observed by the residents, the effects on the local economy and social life through changes in their physical environment and ecosystems include a decline in agricultural production, decline in fisheries, decline in availability of veld products, and restrictions in land ownership. According to them, agricultural production has been negatively affected by extreme droughts leading to high livestock mortalities and tick infestation. One major outcry by the communities is of invasion of agricultural fields by elephants due to overpopulation while predators such as lions and leopards terrorise their livestock. Fisheries decline, on the other hand, is blamed on the blockage of major tributaries of the river and this has also deprived some communities of other aquatic food.

Communities also complained that they are not allowed to access veld products in protected areas and private concessions. Some communities (such as Mababe) are located on state-land and this is restrictive in terms of their livelihood activities. While a Gudigwa resident lamented "we cannot conserve when we are hungry. We need a full stomach to conserve", a resident of Seronga bluntly said "we can't conserve animals because we do not benefit from them. Maybe animals should do so because they benefit". Indeed, some of these issues of concern raised by the communities may be compounded by climate change as the natural environment is pivotal to their survival. This implies that there is need to develop coping strategies to mitigate the effect of unfavourable climatic conditions.

6.3.4 Institutional Vulnerability Indicator

Institutions can either constrain or enable behaviour (Hodgson, 2006). Consequently, the capacity of local institutions to carry out climate change adaptation measures has a bearing on the extent to which communities are exposed to climate change and how they cope with the

effects thereof. Management structures, legislative instruments and availability of information are important for determining the capacity of local institutions to carry out climate change adaptation efforts (Hambira, 2011).

Key issues that arose from the scoping exercise include unfavourable laws and policies, poor implementation of laws and policies, inadequate human resource capacity, and restrictive property rights in relation to land and other resources. With regards to unfavourable polies and laws, communities protested that some policies put in place do not lead to improved livelihoods. They gave an example of the land bank directive of 2014 as an example and pointed out that communities were disempowered because lucrative land was set aside for investors at the detriment of communities who 'own the land.' The hunting moratorium of 2014 was also perceived as impoverishing communities.

The regulations associated with harvesting veld products were perceived by communities to be too restrictive because approval could only be obtained in Maun whereas the permits must be renewed every month after the first approval. The residents also claimed that some permits are granted at the prerogative of the JVP (e.g., in NG32). They also decried the allocation of fishing permits through raffles instead of being allocated on community location basis. They asserted that because of the unfavourable procedure, only three people from Ditshipi were successful in the last fishing season. Molapo farming regulations were also said to be restrictive. Sentiments expressed at the public officers' workshop were that the legislative framework is adequate and only needs harmonisation and enforcement.

With regards to poor policy implementation and weak law enforcement, an example given was of the poor implementation of the CBNRM policy by implementers thereby resulting in community disempowerment. The communities claimed that their land was no longer leased to them for business ventures as enshrined in the CBNRM policy; investors were perceived as riding roughshod over communities. Environmental Impact Assessments conducted for projects were also perceived by communities as mere formality since there was no monitoring to ensure implementation of Environmental Management Plans. Concerns were also raised by communities that research was not monitored and blamed the decline in wild cat populations on private researchers.

With regards to human resource capacity, the residents complained that some expertise and supporting resources are not available in the region. An example given was the lack of capacity for soil testing such that farmers are referred to Gaborone. Consultations with public officers confirmed the inadequate human resources especially understaffing. Community trusts were also purported to have too much power such that they could take major decisions without community involvement.

Property rights were a big issue especially with regards to land ownership. For example, communities had restricted access to state land resources such as protected areas. Some villages such as Mababe were said to be residing on state land which meant communities could not own fields, and residential plots as they would under the tribal land tenure. Competition for land between agriculture and tourism was also raised as a concern. Communities felt agriculture has

been relegated in favour of tourism which is a new way of life for them and requires large sums of capital thus making it easy to exclude poor people. For example, a Maun resident lamented that "We do not need to despise our beef industry. The livestock sector is the mainstay of the economy in Ngamiland". These concerns need to be addressed in the context of climate change adaptation as they may be exacerbated by climate change.

The above vulnerability screening exercise has shown that biodiversity and associated ecosystem services of the Okavango Delta are vulnerable to climate change given the observed changes in climatic parameters, biophysical environment, socioeconomic context, and inadequate institutional capacity all of which have a bearing on community livelihoods in general. Problem definition (screening assessment of vulnerability) through community/stakeholder consultations constitutes the initial steps towards identifying adaptation options for biodiversity conservation for the benefit of community livelihoods.

6.4 ADAPTATION STRATEGIES

It is necessary to devise means of adaptation to contend with the identified climate change impacts and vulnerabilities. This will help ensure sustainable biodiversity and livelihoods in the delta. In other words, the identified vulnerabilities form the basis for the need to protect the environment and biodiversity considering climate change adaptation. Climate change adaptation refers to actions targeted at the vulnerable system in response to actual or expected climate stimuli with the objective of moderating harm from climate change or exploiting opportunities (McCarthy *et. al.*, 2001). This implies action undertaken to accommodate, cope with or benefit from the effects of climate change (Becken & Hay, 2007). In other words, these are strategies through which affected stakeholders are cushioned against the effects of climate change such that they find means of survival under the circumstances and continue to benefit from the natural environment under threat (Hambira, 2017).

Adaptation strategies are aimed at 1) maintaining resilient biotic and abiotic functions of the Delta and its biodiversity 2) 'climate proofing' livelihood strategies dependent on the Delta and enhancing socioeconomic opportunities and 3) improving the adaptive capacity of the institutions involved in the management of the delta. The scoping exercise identified the following adaptation options through community and public officers' consultation as well as literature review (See Selvaraju *et. al.*, 2006; Christie and Kusler, 2009; ENVIRONET, 2010; Association of state wetlands managers, 2012; Chishakwe *et. al.*, 2012; Moomaw *et. al.*, 2018; IIED, IUCN & UNEP, 2019). It is worth noting that a few mitigation measures have been included even though the TOR is specifically on adaptation. This was necessitated by a concern raised during public officers' consultation meeting, which indicated that communities also embark on activities that contribute to climate change. The adaptation options are detailed in the strategic planning framework.

CHAPTER 7: TOURISM

7.0 OVERVIEW

Tourism is the fastest growing sector in Botswana's economy. It is the second highest contributor to the country's gross domestic product (GDP). In 2017, the travel and tourism sector contributed 11.5% to the country's GDP (WTTC, 2019). The sector also directly contributed 26,000 jobs in 2017 (WTTC, 2019). In 2018, Botswana's tourism sector expanded by 3.4%, leading to an estimated contribution of US$ 2.7 billion to the GDP (WTTC, 2019). The tourism sector contributed 8.9% to the country's total employment in 2018 (WTTC, 2019). Overall, the sector has been consistently growing over the years as illustrated in Figure 7.1.

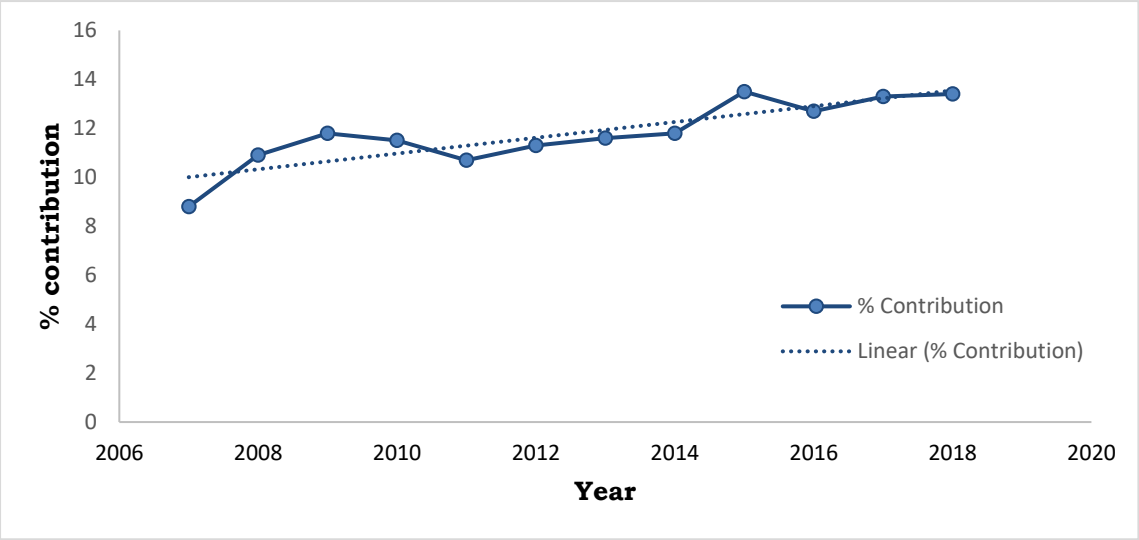

Figure 7.1: Percentage contribution of the travel and tourism sector to the GDP of Botswana. (Source: WTTC, 2019)

The tourism sector plays a key role in generating government revenue (both local and foreign currency), creating jobs, and providing incomes for a significant proportion of Batswana directly and indirectly. It has been identified as an avenue to diversify the economy away from the capital-intensive diamond mining sector. Through Botswana's long-term Vision 2036, the country positions the tourism sector as an important engine for the economy. The country aims to develop a diverse tourism industry leveraging on its vast wildlife, natural and cultural resources to offer meetings, incentives, conferences, and events (MICE) tourism, as well as sports, adventure, and lifestyle tourism by the year 2036.

Furthermore, through the National Development Plan 11 (NDP 11), the government acknowledges the potential for economic growth through tourism. It is highlighted that the listing of the Okavango Delta as a world heritage site will improve the socio-economic lives of local communities living in the Delta. To ensure the trickling down of benefits to local communities, the NDP 11 enlisted sustained development, preservation and opening of cultural heritage sites for cultural tourism.

In Botswana, tourism is largely concentrated in the northern part of the country, particularly in the Okavango Delta, Chobe National Park and Moremi Game Reserve. This is because tourism is mainly wildlife and wilderness based. These areas are endowed with a vast variety of natural resources, which serve as an attraction to international tourists. The country's high value - low volume tourism policy aims to attract a limited number of tourists with high expenditure patterns. Consequently, Botswana's tourism sector is largely dependent on the international market. In 2018, European countries dominated the list top ten leading overseas countries with the highest number of tourists in Botswana (Figure 7.2). The statistics reveal that Botswana is a popular tourist destination for international tourists, predominantly those from North America and Europe.

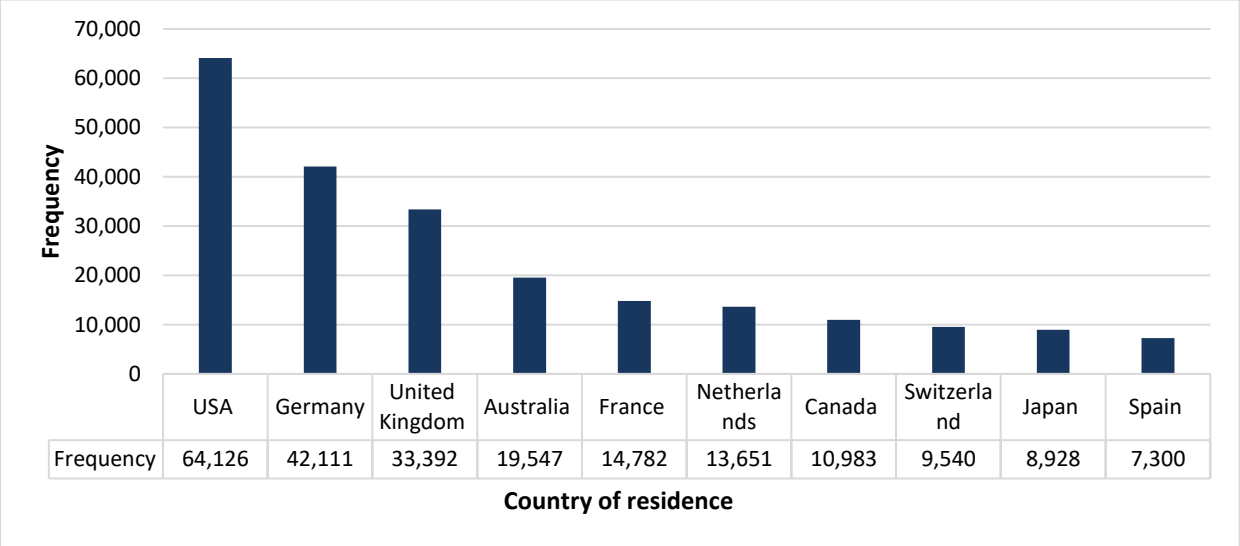

Figure 7.2. Top ten leading overseas countries with the highest number of tourists in Botswana – 2018. (Source. Statistics Botswana, 2020)

Generally, there has been a low emphasis on the development of domestic tourism market base. It is for this reason that international tourists' arrivals exceed domestic arrivals by many folds at key protected areas such as the Moremi Game Reserve. For example, only 7,151 of the 44,044 tourists who visited Moremi Game Reserve in 2015 were locals (Table 7.1). Similarly, the number of international tourists at Moremi Game Reserve exceeded Batswana and other residents of Botswana by 34,088 in 2017. Domestic tourism to natural spaces is low due to several factors. These include high prices, difficulties in accessing areas and the nature of the products on offer which domestic tourists feel is undiversified and is more suited for international tourists (Stone & Nyaupane, 2019). There must be deliberate strategies for tapping into the local market by promoting domestic tourism. These could include pricing using market segmentation and diversification of the tourism product in line with the tastes and preferences of the domestic market.

Table 7.1. Visitation by Domestic and International Tourists to Moremi Game Reserve

Year	Locals	International Tourists	Total
2007	3,035	33,771	36,806
2008	3,939	48,125	52,064
2009	3,100	24,261	27,361
2010	3,544	31,914	35,458
2011	2,747	32,751	35,498
2012	3,408	32,294	35,702
2013	4,350	47,314	51,664
2014	5,628	30,457	36,085
2015	7,151	36,893	44,044
2016	8,358	39,190	47,548
2017	9,275	43,363	52,638

Source: Department of Wildlife and National Parks [DWNP], 2019

According to the Tourism Statistics Annual Report of 2018, the Okavango Delta is the most visited area by tourists who came to Botswana for vacation and holiday purposes (Statistics Botswana, 2020). In 2018, holiday tourists using air transport entered the country through Maun and Kasane airports mainly, with Maun accounting for 62.6% (37,057) while Kasane received 21.2% (12,535). These are summarised in Figure 7.3.

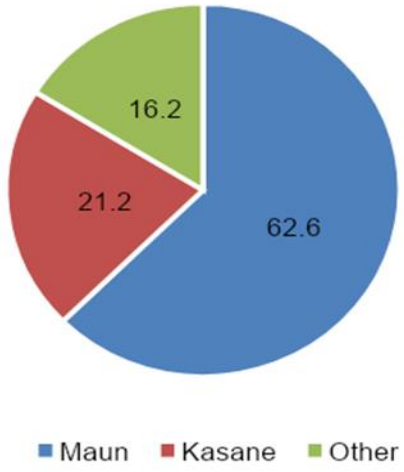

Figure 7.3: Distribution of arrivals for holiday by air – 2018. (Source: Statistics Botswana, 2020).

7.1 Types of Tourists in Ngamiland District

The Ngamiland region is characterised by a diversity of tourists, ranging from high-end to budget depending on their tastes, preferences, and geographical locations of their interest. There are two broad categories of tourists in the region, namely day tourists and overnight tourists. Overnight tourists are "visitors who stay at least one night in a collective or private accommodation" while day visitors are "visitors who do not spend the night in a collective or private accommodation" (Department of Tourism, 2010).

High-end tourists pay for the exclusivity of the tourism product they are buying from the Okavango Delta. They are usually international tourists from Europe, the USA and Canada, among others. Their preference leans more towards lodging at high-cost lodges located in pristine areas with minimal human activities and no permanent structures. Such areas are often owned by private operators.

Another class of tourists is mobile safari tourists. These are tourists who prefer privately guided safari experience. The 2008 ODMP classifies these tourists as the second most important after high-end tourists for Ngamiland District. Safari tourists lodge in campsites registered under the Hospitality and Tourism Association of Botswana (HATAB), privately owned facilities or those under the joint venture partnership arrangement.

Low and medium cost tourists are a class of tourists who spend low to medium expenditure while touring the District. While medium-cost tourists may use medium-priced fixed accommodation facilities within the region, low-cost tourists usually use public facilities such as campsites run by DWNP in protected areas. The latter group mostly comes from neighbouring countries such as South Africa, Namibia and Zimbabwe.

One of the comparative advantages of the Ngamiland District is its capacity to accommodate a diverse group of tourists. However, the core of the Okavango Delta seems to be exclusive to high-end international tourists. This is because of prohibitively high prices which are supported by the country's high value-low volume tourism policy. Consequently, domestic tourism is almost non-existent at the core of the Delta.

7.2 Tourism Products and Activities

The tourism activities in the Ngamiland are classified into two main categories. The first category is consumptive tourism. Trophy hunting as a form of consumptive tourism finds roots in the country's historical footprints. Historically, subsistence hunting was perceived as a customary right for many tribes in pre-colonial Botswana with some ethnic groups having it entrenched in their culture and way of life. Post-independence, the government of Botswana started regulating hunting through the introduction of the Unified Hunting Regulations of 1979 and associated Special Game Licences. The special hunting licenses which conferred legitimacy to subsistence hunting were replaced by CBNRM and a quota system from the year 1996.

The second category of tourism in the Ngamiland region is non-consumptive tourism. It is often called photographic tourism in several tourism studies about the Okavango Delta. It takes place in concession areas that do not support consumptive tourism. Non-consumptive tourism activities include game viewing, bird watching, *mekoro* trails, recreational fishing, and mobile safaris.

The 2008 ODMP recommended a periodic review of products and services offered by the tourism industry. It also recommended the appointment of consultants to identify alternative products to be offered by private operators and encourage them to diversify their product mix in that direction.

The mid-term review concluded that the product offering is generally diversified by various industry players. It further noted that the overall responsibility for market surveillance for market intelligence purposes is the statutory responsibility of BTO. Therefore, it is for BTO to decide whether to engage consultants to do that.

The reality is that even BTO cannot impose on the private sector on how to run their business. It is the responsibility of each entrepreneur to see it through that their product offerings are diversified either doing it individually or collectively through HATAB. The advent of the novel coronavirus (COVID-19) has demonstrated the importance to diversify product offering from being largely dependent on international tourist arrivals to have deliberate plans to accommodate domestic tourists. However, this might be largely restricted by Botswana high value-low volume tourism strategy which naturally outprices most citizens and residents. Notwithstanding the pricing concerns, it is certain that each enterprise has experienced the inbuilt risk associated with over-dependence on international arrivals as the bulk of the consumers of safari tourism in Botswana.

Another way of diversifying the tourism product away from the Okavango Delta in the Ngamiland could be the designation of Lake Ngami as a bird sanctuary. Lake Ngami is a natural sanctuary for various birds. Its declarations as such by the Government of Botswana will help package a tourist destination for bird watching enthusiasts around the world. The development of Lake Ngami as a tourism product will undoubtedly benefit the local economy of the surrounding villages and create various forms of employment. However, such declaration is yet to see the light of day.

Additionally, efforts should be made towards meaningfully exploring the potential of optimally using the heritage, cultural and archaeological resources of Ngamiland District to promote cultural tourism. The region is endowed with a vast wealth of tangible and intangible heritage and cultural products. Although both the 2008 ODMP and the mid-term review of the Plan called for diversification of the tourism product through tapping into the region's cultural tourism products, and stakeholders highlighted that, as did communities, cultural tourism remains largely underutilised.

7.3 COMMUNITY-BASED INITIATIVES IN NATURAL RESOURCES MANAGEMENT

Community-based initiatives in natural resources management within the Okavango Delta MIDA landscape are being pursued through the Community Based Natural Resources Management (CBNRM) programme and the recently introduced Community Management of Protected Areas Conservation (COMPACT).

7.3.1 CBNRM

Community participation in conservation was initiated in northern Botswana in 1989. Northern Botswana, especially Ngamiland district, is a hive of active CBNRM CBOs, most of which are operating within the Okavango Delta MIDA landscape. The CBNRM programme was introduced to empower local communities who live alongside natural resources, specifically wildlife, to benefit economically from what their local environments offered. This positioned local communities to participate in tourism ventures and compelled them to sustainably utilise the resources from which they derive their livelihoods.

In August 2013, the government of Botswana through the Ministry of Environment Wildlife and Tourism (MEWT, as it was called then), announced a moratorium on hunting of wildlife in all CHAs effective January of 2014. Due to the trophy hunting moratorium, human-wildlife conflicts rose leading to an increase in the compensation budget from P4 million (US$ 348,240.08) in 2014 to P21 million (US$ 1,828,260.42) in the 2018/19 financial year and the collapsing of 44 CBNRM trusts because of the loss of hunting quotas (Stone *et. al.*, 2020). After consultations with community members, in 2019, the country re-introduced trophy hunting to counteract the loss of income experienced by communities involved in CBNRM. Lifting of the hunting moratorium in Botswana is therefore good to the national economy and local communities. The hunting moratorium did not consider that while it was noteworthy to promote photographic tourism, some areas such as NG4, NG49 are marginal in terms of photographic tourism. Only hunting tourism are ideal for some areas such as these. Future policy decisions similar to these must consider optimal suitability of the respective CHAs.

Some hunting quotas were sold in some concession areas in 2021 in anticipation of a boost to the local economy through hunting tourism, especially since photographic tourism had been adversely affected by the COVID 19 pandemic. However, due to the movement restrictions imposed to curb the spread of COVID-19, the hunting activities are yet to take place.

7.3.2 COMPACT

Community Management of Protected Areas Conservation (COMPACT) was initiated in Botswana in 2019, being piloted at the Panhandle of the Okavango Delta WHS. COMPACT was established as an innovative approach towards community engagement and co-management of WHS and protected areas. The model has been piloted globally, including six (6) World Heritage sites in Africa. It was thereby being replicated within the Okavango Delta WHS, under a project "Engaging Local Communities in the Management of the World Heritage Sites in Africa". The COMPACT replication project came as an initiative to expand and strengthen programmes which accommodate traditional resource use for livelihoods, user access rights, cultural rights and access to opportunities to participate in the tourism sector, while keeping up with the World Heritage site's Outstanding Universal Value (World Heritage Committee, 2014). The project will further "continue efforts to address a range of other protection and management issues including governance, stakeholder empowerment, management planning, management capacity" (World Heritage Committee, 2014, p. 7).

The project is being implemented through Department of National Museum and Monuments collaborating with the GEF Small Grants Programme, and the UNESCO World Heritage Centre. A strategy to guide the implementation of the COMPACT replication project at the Panhandle of the Okavango Delta WHS and the COMPACT conservation programme has been developed and is being implemented. Implementation of COMPACT replication project in the Okavango Delta WHS is done mostly within local communities either already engaged in the CBNRM program or are aware of the program.

Communities in the Panhandle have formed Trusts to benefit in the CBNRM program within the region, and the implementation of the COMPACT will enhance their feasibility and consequently community participation and benefit. There are 14 CBO Trusts in the Panhandle

area established to benefit from the areas adjoining NG10 (Table 7.2) and other resources within the Panhandle. Among these, only Okavango Community Trust is fully operational with the rest being either partially or non-operational. The Okavango Community Trust and Okavango Jakotsha Community Trust were established as part of the initial CBNRM community-based organisations (CBOs) guided by the land use and development plans for WMAs in tribal land (1991) and the management plan for CHAs allocated to communities in Ngamiland wildlife management areas (1995). They were among the first CBOs established under the CBNRM programme in the Ngamiland District.

COMPACT implementation must initially work towards resuscitating the non-operational Trusts in the Panhandle. Shaikarawe Community Trust and Makgobokgobo Youth Trust are not yet registered. Registration of the former was delayed by a requirement to procedurally resign its membership from Teemashane Community Trust (Table 7.2). The latter, that is Makgobokgobo Youth Trust, is new and was allocated NG23A in September 2019 through a Presidential Directive.

While communities are ready for CBNRM implementation through the COMPACT replication project in the area, it is necessary that prior to implementation, existing Trusts must be harmonised to ensure that there is no overlapping membership across villages and Trusts. The current Trusts set-up have revealed overlaps in village/settlements membership, hence the need of addressing these prior to implementation. Much of the overlap is found between Itekeng and Teemashane Community Trusts (Table 7.2).

Table 7.2: Community Trusts in the Panhandle area of the Okavango Delta MIDA landscape.

Trust	Villages/Settlements	Controlled Hunting Area	Trust Status
1. Okavango Jakotsha Community Trust	Jao, Ikoga, Etsha 3, Etsha 6, Etsha 13	NG 24	Operational
2. Okavango Community Trust	Seronga, Gunotsoga, Eretsha, Beetsha, Gudigwa	NG 22, 23	Operational
3. Bukhakhwe Cultural Conservation Trust	Gudigwa	Gudigwa, NG 12	Not operational
4. Tcheku Community Trust	Kaputura, Tovere, Kyeica	NG 13	Not operational
5. Okavango Panhandle Community Trust	Shakawe, Mohembo West, Samochima, Nxamasere, Xhauga	Game farm at Tsitalaga island	Not operational
6. Itekeng Community Trust	Ngarange*, Mogotho*, Sekondomboro*, Xakao*, Kauxwi*, Mohembo East*	NG 11	Not operational
7. Teemashane Community Trust	Mohembo East*, Mohembo West, Kauxwi*, Xakao*, Sekondomboro*, Tobere, Ngarang*e, Mogotho*, Shaikarawe	NG 11	Not operational
8. SETHAMOKA Community Trust	Sepopa, Tamachaa, Mowana, Kajaja	NG 7	Partially operational
9. Okavango Polers Trust	Seronga	NG 10, 11	Partially operational
10. Makgobokgobo Youth Trust	Seronga, Gunotsoga, Eretsha, Beetsha, Gudigwa	NG 23A	Partially operational
11. Okavango Panhandle Nature Conservation	Samochima, Xhauga, Nxamasere, Kajaja	NG 7	Not operational
12. Okavango Knowledge Trust[1]	Etsha 1 to Gudigwa	Shakawe	Not operational
13. Shaikarawe Community Trust	Shaikarawe	NG 7	Formation stage
14. Ngamiland Basket Weavers Trust	Etsha 6	-	Partially Operational

Note. [1]Trust coverage is beyond the Panhandle as it incorporates all settlements and villages in the Okavango Sub-district. *Settlements/Villages with overlapping membership within Trusts

7.4 Ownership of Tourism Operations in Ngamiland

The majority (177) of registered tourism operations in the Ngamiland are citizen owned (Figure 7.4). However, it must be noted that these operations are mostly classified as bed and breakfast (B&B), guesthouse, lodge and hotel and they are mostly located in built-up areas such as Maun, Sehithwa, Shakawe and Gumare, among other areas. Joint venture and non-citizen owned tourism operations are mainly concentrated in concession areas, Khwai and Moremi Game Reserve among other prime areas. They comprise primarily of camps and lodges.

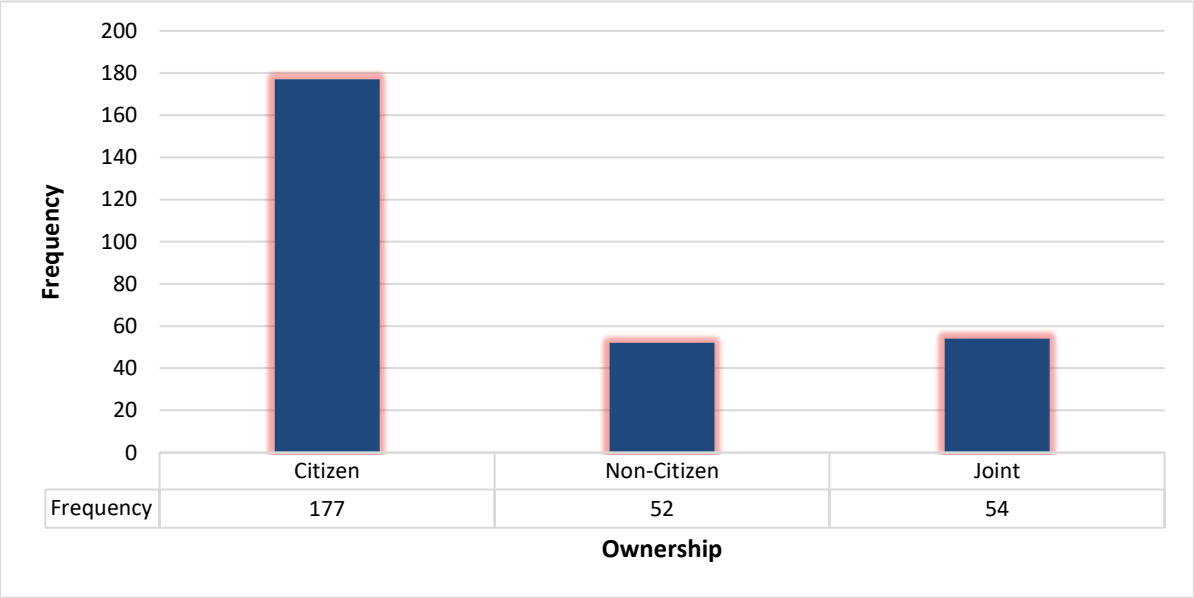

Figure 7.4: Ownership of tourism operations in Ngamiland.

7.5 Categorisation of Tourism Operations in Ngamiland

Most of the tourism operations registered in Ngamiland are classified under the licensing category B (Figure 7.5). The category comprises of camps and lodges. It defines operations that offer facilities on and off site (e.g., accommodation and game drives, boat trips etc.). These are mostly based in the Okavango Delta and its surrounding areas (Figure 7.5).

The licensing category A is the second-highest category with 121 operations. It comprises of hotels, motels, guest houses, B&Bs and apartments. These are operations that offer facilities on-site only (accommodation). These are mostly based in Maun, Shakawe and other built-up areas

The licensing category J comprises of house boats (Figure 7.6). They are based mostly in Seronga and Shakawe. It must be noted that the data obtained from BTO did not include mobile safaris.

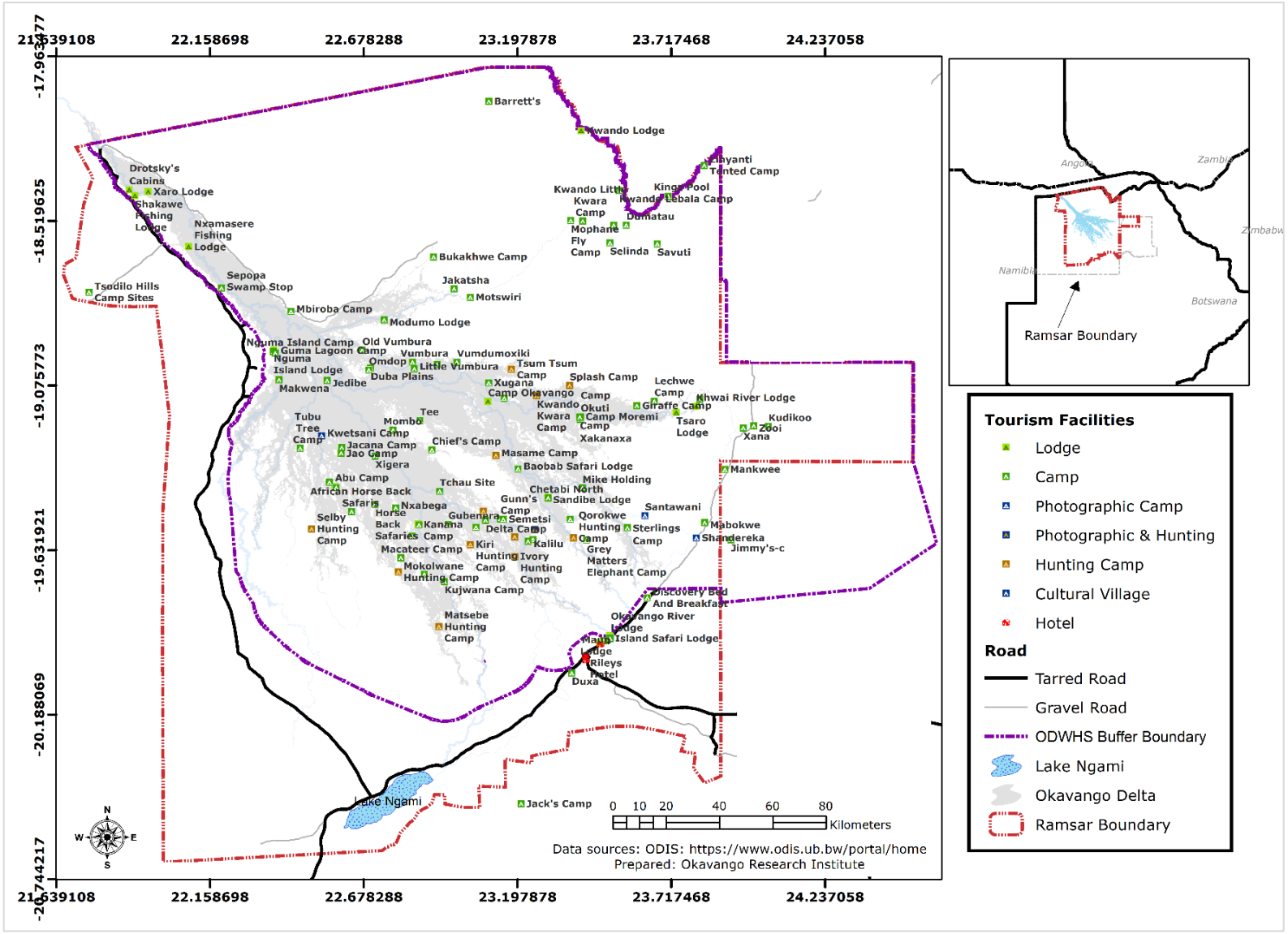

Figure 7.5: Tourism facilities in the Okavango Delta MIDA landscape.

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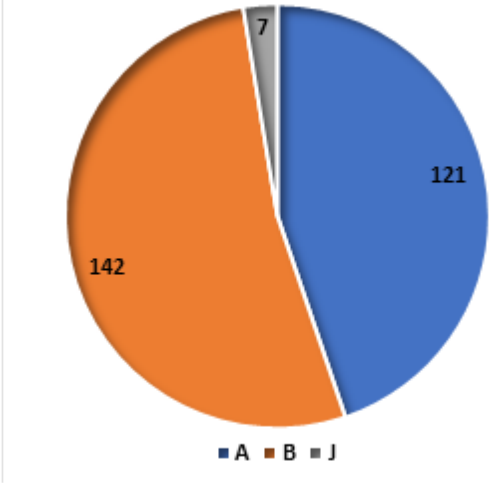

Figure 7.6: Categorisation of tourism operations in Ngamiland.

7.6 Grading of Tourism Operations in Ngamiland

Twenty-four (24) of the registered tourism establishments have star ratings of 3 and better as reflected in Table 7.3. This implies that only a few of the tourism establishments in the Ngamiland offer a broad range of amenities that exceed above-average accommodation needs, predominantly targeted to high-end tourists. The 2 star rated establishments equally offer good quality in the overall standard of furnishings, service and guest care. The star grading system is mandatory as per the provisions of Botswana Tourism Organisation Act (Cap. 42:10), and it is conducted every two years by BTO. The eco-certification is currently voluntary but there are plans to make it mandatory in the future. The majority (107) of the operations are, however, not graded yet.

Table 7.3: Grading of tourism operations in Ngamiland.

Grade	Frequency
1 Star	5
2 Star	10
3 Star	7
4 Star	7
5 Star	11
No grade	107

Source: Botswana Tourism Organisation, 2020

7.7 Conflicts and Linkages Between Tourism and the Local Economy

The emergence and development of contemporary land use in the region, such as WMAs and tourism, have created conflicts between traditional land uses and modern ones. As a result, rural livelihoods are negatively affected by the conflicts. Moreover, the farmers perceive that the development of tourism in their areas conflicts with both arable and pastoral farming. When managing natural resources amid conflicting activities, such as tourism and agriculture, it is necessary to understand the current levels, directions, and strengths of relations between the activities to propose mutually beneficial synergies that could promote coexistence. The diversity of tourism and agriculture specifically, and traditional and contemporary land uses broadly, may lead to conflict between stakeholders and inhibit rural livelihoods.

In a study that quantified the linkages between tourism and the local economy in the Okavango Delta, Mogomotsi (2019) used employment and the sale of livestock and farm produce as proxies for local economic activities. Only 8.6% of the household heads were formally employed in tourism-related establishments. The proportion of the sample employed informally in the tourism sector (39.4%) was slightly higher than those employed formally. Considering the proportion of the labour force in the region, 39.4% is relatively low. The value implies that the sector absorbs and involves the locals in the provision of labour services on an occasional basis. Therefore, in some periods, those involved do not have earnings. The economic linkages generated by informal employment opportunities for local subsistence farmers are therefore mostly sporadic. Moreover, the economic benefits derived by the farmers through employment are generally low.

The low and weak linkages of tourism with local small-scale farmers were further analysed using earnings from the sale of agricultural output, including livestock, as indicators of economic benefits. Only 10.9% and 9% of the respondents have sold agricultural produce and livestock to tourism-related establishments in 2018, respectively. The sales generally generated low earnings, reflecting that tourism-related businesses are low-priced channels. Overall, the results imply that local communities in the Okavango Delta seldom have direct economic benefits from tourism in their localities. These results were verified through the kgotla meetings.

The enclave nature of tourism in the Ngamiland region has arguably resulted in weak linkages between tourism and local communities. It was noted that tourists who pass through the villages in the region rarely ever stop to buy craftworks such baskets and other craftwork produced by the locals. This, consequently, results in weak linkages between the tourism industry and both craft makers and other suppliers of products and services for casual earnings.

Through key informant interviews, tourism businesses noted that farming in the Ngamiland District is often done in small-scale basis for subsistence purposes. As a result, there is little, if ever, excess left for sale. Secondly, due to the exclusivity of the tourism product offered in by some establishments in the core of the Delta, businesses often look for superior quality produce for their high-end customers. The local small-scale farmers are unable to match the quality. Thirdly, the businesses often require a consistent supply of the produce to match the demands of their clientele. However, local small-scale farmers lack consistency in supplying due to several reasons, including human-wildlife conflict which affects their yield.

To strengthen the linkages between the tourism sector and the local economy, the government of Botswana through the National Strategy Office (NSO) in collaboration with BTO has classified the Ngamiland District as special economic zone in favour of tourism. Consequently, the NSO started the Bojanala Cluster, making Ngamiland a pilot for Tourism Economic Zone to reinforce the competitiveness of the value chain of the tourism cluster in Ngamiland District. This is aimed to promote the sourcing, purchasing and development of locally sourced goods by the tourism sector.

7.8 CITIZEN AND COMMUNITY PARTICIPATION IN TOURISM

There have been concerns by citizens generally, and local communities about their limited participation in the lucrative tourism industry. The limited participation of Batswana in the industry is often attributed to such factors as limited skills, financial barriers and insufficient policy framework or regulation which led to the exclusion of citizens in favour of non-citizens. It is also attributable to a lack of deliberate strategies to ensure citizen empowerment and capacity building. Through community and stakeholder engagement, licensing processes of tourism enterprises were described as long, complex, expensive and protracted, leading to inhibition of citizen participation in the tourism industry.

Various interventions aimed are addressing this concern were recommended including:

- The CBNRM Action Plan
- Establishment of Industry Specific Financing Mechanism
- Establishment of a parastatal to manage the Tourism Development Fund.

The mid-term review established that none of the main recommendation directed towards increasing or improving citizen and community participation in the tourism industry was implemented. Consequently, the industry remains dominated by foreign-owned establishment especially the high-end and lucrative concession tourism in the Okavango Delta.

In 2007, the Ngamiland Tourism Development Plan was formulated. This is a thirty-year strategic plan formatted as a Tourism Development Manual that includes more detailed development plans for several Tourism Development Areas (TDAs) within the region. The plan reiterates the concern about low citizen participation in the tourism industry within Ngamiland. According to the plan, the use of expatriate labour in high paid and skilled positions is one of the contributory factors to low citizen participation in the tourism sector. The other factors include the procurement of tourism inputs from foreign suppliers and the remittance of profits outside the region. These consequently lead to leakages from both the local and national economies.

Parliament was recently informed that the Ministry of Environment, Natural Resources Conservation and Tourism intends to enact CBNRM Act to enforce the CBNRM policy of 2007. It is imperative that at comment and public participation stages, key stakeholders should actively take part to ensure that citizen participation is a core aspect of this proposed legislation. Further, the current administration has undertaken to pass a law on Citizen Empowerment Act which would not be industry or sector-specific but is expected to address the issues raised with respect to the tourism industry.

The establishment of sector specific CEDA-like statutory body although desirable, is unnecessary and expensive especially at a time where the government has considered to dissolve some repetitive parastatals. The administration of a Tourism Development Fund is capable of being done by an existing statutory financing institution such as CEDA or National

Development Bank which have structures and human capital in place. The recent roadshow by CEDA dubbed "*Ke mogaka ka* CEDA" has debunked the perception that it is not useful in financial tourism enterprises. In fact, the opposite seems to be true and the perception not supported by evidence.

7.9 TOURISM AND THE ENVIRONMENT

With respect to the tourism industry, the ODMP provided for the formulation of industry-specific guidelines or standards conforming to international best practice ensuring that the services and products offered are environmentally sustainable. It was further recommended that the guidelines should be freely accessible to the wider public on the internet. In the same spirit, the ODMP recommended for the establishment of a Regulatory Authority responsible for enforcing environmental laws and regulations for the protection of the Okavango Delta.

During the mid-term review, it was found that there are inadequacies of what it is expected of each tourist operator to deem them to the environmentally sustainable. Further, the review found out that there is no public register which the public, especially environmentally conscious international tourists can vet the level of compliance to international enviro-ecological standards by tourist operations. Notwithstanding some gaps and delays, the ODMP mid-term review process found that in overall, the tourism component of the ODMP was largely implemented.

Botswana Tourism Organisation (BTO) is a parastatal established by an Act of Parliament responsible for the implementation of the said statutes. Besides establishing BTO, the Botswana Tourism Organisation Act provides for the regulation of the tourist industry to promote its development and well-being. Although BTO can be deemed to be the industry Regulatory Authority which was advocated for in the ODMP, it works together with related governmental departments such as the Department of Tourism (DoT), Department of Environmental Affairs (DEA), Civil Aviation Authority of Botswana (CAAB) among others. Each one of these entities has an important role to play in ensuring an efficient tourism industry and its compliance to certain environmental standards.

As stipulated in the ODMP Mid-Term Review, various measures addressing waste management in accommodation establishment were recommended. Further, the North-West District Council developed waste management guidelines for ensuring compliance with sustainable tourism development by operators. Although these measures are laudable, there is an apparent lack of capacity in ensuring implementation and compliance by individual tourism operators to the standards and guidelines. It is important to ensure that there are regular and extensive compliance inspections by DEA especially in ecologically sensitive concession areas to ensure that the EIA Plans are implemented as approved. Further, there is no role clarity in each of the concerned stakeholders in monitoring and supervising continuous compliance with various legislative and regulatory instruments.

The more than 240 standards covered by the Botswana Ecotourism Certification System implemented by BTO are arguably de facto voluntary. Although the BTO Act provides that all

businesses should be graded, the majority have not been star graded. In the context of the pristine Okavango Delta, it would be useful if eco-certification, grading and compliance are made mandatory to all operators. That requires enforcement of the BTO Act.

Furthermore, there was less emphasis in the ODMP and the review report on ensuring that the tourism industry is not used as an active spreader of Invasive Alien Species (IAS) in Botswana. This is concerning due to the indisputable reality that tourism activities and international arrivals are common vectors for the spread of non-native seeds and pathogens. It is imperative that in the revised ODMP the Ministry of Agriculture and Food Security and the Department of Forestry should feature prominently with a role to play in the tourism industry as standard-setters and compliance supervisors in combating the spread of IAS.

The amended Environmental Assessment Act has recently received Presidential Assent in November 2020. This statute seeks to streamline some processes relating to the Environmental Impact Assessment. In overall, the amended law reduces some timeless and introduces exemption for public participation during the EIA development. This will require community vigilance to be able to partake and participate in the EIA process especially in the ecologically sensitive areas. Community liaison with DEA becomes an important village-level governance aspect to ensure that communities are kept informed at all material times of the proposed development which might have negative impacts on the environment.

7.10 WASTE MANAGEMENT AND TOURISM

Improper disposal and management of solid and liquid waste were identified as one of the concerning practices by the ODMP. Several interventions to address this problem were recommended being:

- Engaging the private sector licensed by DWMPC to collect and dispose of both liquid and solid waste.
- Ensuring that tour operators comply with provisions of waste management as contained in their lease agreement;
- To construct a landfill in Gumare.

Construction of a landfill in Gumare was the only activity achieved during the mid-term review. The lease agreements of tour operators did not make it mandatory on them to comply with the Waste Management Act and NWDC waste management guidelines. However, this failure to adopt the recommendation should not be a cause for concern as the provisions of the Waste Management Act are legally binding. Department of Waste Management and Pollution Control is legally empowered to act against any operator, individual or entity violating the law. Further, NWDC acting under the Trade Act has the authority to inspect, ensuring compliance with environmental and public health laws. The revocation of a trade license, issuing of a fine, or both are some of the measures available.

7.11 LIMITS OF CAPACITY FOR TOURISM DEVELOPMENT

Limits of Acceptable Change framework developed by Stankey *et. al.* (1984) is a tourism management concept that serves as guidelines for the control of progressive tourism development. Unsustainable socioeconomic activities in tourism areas can be detrimental to balanced biophysical systems and processes of such special ecosystems as the Okavango Delta and consequently compromising the provision of natural resources to the community and tourists. The framework helps to set a threshold of tourism-induced change (impact) that is acceptable. Moreover, LAC provides feedback mechanism within management decision-making processes regarding the extent of impact of tourism activities on biophysical environment, and the extent of satisfaction tourists/visitors experience from such an area over time. The basic premise of the LAC concept is that change is a natural, inevitable consequence of recreation use. Both environmental and social changes are involved. The feedback enables management authorities to respond to unsustainable activities in the tourism area and devise corrective measures to address the impact.

As expressed by Stankey *et. al.* (1984), acceptance of this premise immediately redefines the traditional question about carrying capacity from "How much use is too much?" to "How much change is acceptable?" Therefore, LAC is viewed as simplified management tool especially for protected areas as compared to the previously employed "carrying capacity" concept. In that regard, given the afore-mentioned optimal advantage of LAC, a 6-step LAC framework (Glasson *et. al.*, 1995) was adopted from the original ODMP to analyse and review the current limits of capacity for tourism development in the Okavango Delta. An important element of LAC is the development of a series of use zones that delineate where the type of and limits of specific activities can be carried out (e.g., types of permitted activities, facilities and access).

Through communities and stakeholder engagement, a lot of issues and concerns directly related to limits to acceptable change were raised. These include high population of self-drive vehicles into PAs and WMAs, crowding of campsites in particular concession areas, human noise in camps, noise pollution from power generators, lighted and electrified environment in some campsites, crowding of tourists in Moremi Game Reserve especially during peak seasons, unmonitored aircraft movements in the Delta and uncontrolled and increased number of boats among others. These factors not only disturb wildlife behaviour but also threaten the sustainability of the environment. The ODMP mid-term review has revealed that LAC in NG/19, NG/12 and NG/41 are largely not observed by the operators.

7.12 COVID-19 AND TOURISM

The outbreak of the Novel Coronavirus (*SARS*-CoV-2) commonly known as 'COVID-19' has negatively impacted on most sectors of the economy with the tourism and hospitality industry being one of the hardest hits. The imposition of travel restrictions to curb the spread of the virus has resulted in low tourism demand and a downward spiral of international arrivals (Polyzos *et. al.*, 2020). Due to restrictions imposed, the tourism sector has suffered great losses as borders remained closed for a good part of the year 2020. Consequently, the local tourism sector has been trying different strategic interventions as a way of adapting to the rapid changes.

One of the notable adaptation attempts is the promotion of domestic tourism through reduced pricing of up to 70% for citizens (Ker & Downey, 2020). By late-October 2020, Botswana was one of the 93 destinations (43% of all global destinations) that still had their borders completely closed to international tourists (UNWTO, 2020a). Travel restrictions due to COVID-19 resulted in the collapse of the sector with some hotels in the country operating at 10% capacity.

COVID-19 has resulted in the loss of jobs due to the collapse of some businesses. As a result of the loss of business, many tourism facilities have laid-off workers (Gössling, 2020). In the context of Botswana, some tour operators and related establishments had put their workers on paid and unpaid leave and others' wages have been reduced (Presidential [COVID-19] Task Force Bulletin, 2020). A preliminary study by the HATAB showed that the sector experienced huge financial losses, with some hotels operating at less than 10% of their capacity by mid-March 2020 (United Nations Botswana [UN], 2020). By April 2020, of the 26 000 workers employed in the tourism sector, only 300 were at work mainly working in facilities offering quarantine services for COVID-19 and related patients (BTO, 2020). Only those facilities contracted by the government to provide accommodation for essential services personnel and mandatory quarantine were able to remain afloat, make reasonable earnings and retain some of their employees. The BTO report on the impacts of COVID-19 on tourism estimates that tourism establishments lost approximately P1,283,422.74 (US$ 111,734.81) on average during the first two months of the travel bans and trade restrictions (Presidential (COVID-19) Task Force Bulletin, 2020).

The surge in advertisements offering "affordable rates" aimed at attracting citizens and residents to patronise the normally out of bounds luxury tented camps in the Okavango Delta has shown the importance of expanding the domestic tourism base. It is critical to observe that price reductions come at a cost because that will require a change in policy from high value-low volume to low cost-high volume which may have negative impacts on conservation if left unchecked. Therefore, the changes adopted by various operators to remain operational during COVID-19 and beyond should be done within the parameters of sustainable tourism development in a manner that does not jeopardise the integrity of the natural environment and temper with the pristine aspect of the Okavango. Furthermore, COVID-19 has highlighted the need to diversify CBOs revenue away from both consumptive and non-consumptive tourism. This is critical to ensure that they are insulated from the volatility of the sector. The hunting ban has previously shown that the dependence of communities on tourism and related activities is not sustainable. COVID-19 is merely highlighting a reality that the communities have been living with for the past 5 years.

To prepare for movement and tourism post the pandemic, Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA) has put together Harmonised COVID-19 Safe Travel Guidelines to guide tour operators and other stakeholders in the tourism industry on how to minimise the exposure to the virus (KAZA TFCA, 2021). This is necessary for building the confidence of tourists not only in Botswana, but also within the KAZA TFCA region.

7.13 CULTURAL HERITAGE

An Internationally Designated Area (IDA) is a natural area internationally recognised by a global or regional designation mechanism. Based on both cultural and natural criteria, the area is listed as Ramsar Site and or a World Heritage Site. World Heritage cultural landscapes express human interaction with the environment and the presence of tangible and intangible cultural values in the landscape.

7.13.1 Culture, Memory and Significance

7.13.1.1 Significance of Culture

The concept of culture is often reified, that is, represented or considered as something material or concrete. The reification (that is the act of changing something abstract (existing as a thought or idea into something real) views culture as a set of ideas and norms belonging to a group or nation (Baldwin et al. 2006) often fails to consider more complicated implications of culture and the global-local nexus. As Anderson-Levitt (2012) clearly argues, anthropologists define culture as the making of meaning, with an emphasis on the process itself as contested and with attention to the contest over meaning between more and less powerful actors. The author opines that it follows that world culture is locally produced in social interaction, and that meanings are then reconstructed in the global/local nexus.

What is more insightful in Aderson-Levitt's argument is the concept of power (implicit or explicit) and that it matters in complicated global-local nexus to make resources for meaning making widely available in the construction and diffusion of ideas. Salazar (2005) has argued against globalization and localization conceptualization as a binary opposition and describes intimately intertwined process as "glocalization". This implies that different actors invariably succeed or fail in claiming ideas as global and how, locals strategically in the global/local nexus and or the exercise their power within the world polity. Local and global are thus two ends of a more complex continuum. Anderson-Levitt (2012) defines the 'local' as particular people who have the possibility of interacting regularly in particular places (including electronic sites). The 'global' involves travelling and translation (Salzaar, 2005). In this sense, the global refers to the movement of people or ideas or things, which travel from one locality to another and require translation in the new setting. As such, because travelling, people and ideas may be widespread; they may also be claimed as widespread or universal even if they are not so widely shared (Anderson-Levitt, 2012). People or ideas may or may not fall into both categories simultaneously.

Some anthropologists have proposed treating 'culture' as a verb, (Street, 1993), while others propose the adjective 'cultural' to allow for a more fluid, less reifying discussion (Appadurai 1997). Focusing on meaning making as a process also makes it easier to consider the operation of power. Levitt-Anderson (2012) reminds us that any definition of culture as meaning making whether focused on the meanings or on how meanings are made, implies that culture does not act. Culture does not do things to people; rather, people do things, and one important thing they do is make meaning. Human beings are the actors in global/local interaction.

The cultural significance means aesthetic, economic, educational, environmental, historic, religious, or social value of a place (including setting associated with historical shrines/burial sites, landmarks, open spaces, and rivers identified with cultural significance). Cultural conservation includes preservation, restoration, reconstruction and adaptation or a combination of any one of these processes enumerated. Cultural preservation means continuously maintain the fabric of the historic place in its existing and present state to retard/ avert further deterioration in its fabric. Cultural restoration means returning the fabric of a historical building, a landmark, a monument, a shrine to a known earlier state by removing additions or reassembling existing components without introducing new material and without altering its cultural significance. Cultural reconstruction means returning the historical building, a landmark, a monument, a shrine, a street or a plaza to nearly as possible to its known earlier state. It is differentiated from restoration by the introduction of new material as fabric but does not preludes the use of old material into the fabric of the place.

7.13.1.2 Collective Memory and Cultural Heritage

Memory is a source of knowledge (Vogt, 2010; Hautaniemi, Jerman & Macdonald, 2007). Memory is constantly in the process of being made, it is vivid and based on a dialogue of forgetting and remembering. Past and present societies in Botswana and the world, have been, and still are daunted by a great deal of uncertainty due to vulnerability to environmental and anthropogenic induced changes (Phillips and Orlove, 2004; Suarez and Patt, 2004; Ngwenya *et. al.*, 2017). Contemporary communities in the Okavango Delta, either individually or collectively, continue to struggle to find ways to preserve historically compelling memories of them adapting to these environmental and anthropogenic changes within the local-global nexus (Ngwenya, 2017). Individual and collective memories of historical and or contemporary change form the basis for local knowledge. These memories include ways in which people define themselves (cultural identity) as members of a social group and or community (Mitroiu, 2012).

The historical nature of sites of cultural significance embodies the very fabric of the fusion of traditions, practices, arts, crafts including all the physical materials and attributes perceived by memory of different ethnic groups from its early beginnings to designation of these as outstanding site of international value. The concept of cultural heritage includes all evidence of human creativity and expression (documents and instruments and so on either as individual objects or as collections). Moreover, cultural heritage is not only limited to material objects, but also consists of immaterial elements such as traditions, oral history, performing arts, social practices, traditional craftsmanship, representations, rituals, knowledge and skills transmitted from generation to generation within a community. Memories of change and resilience do not sit still in cold storage. There is internal plasticity, continual filtering, deformation, revision and melding of representations. Remembering therefore is a context-sensitive and is influenced by a variety of present factors independent of any mediated residues of past events themselves.

Several cultural heritage sites can be found throughout the Okavango Delta and its environs. The Delta has been inhabited for centuries by various indigenous people who adapted their cultural identity and lifestyle to the exploitation of resources (e.g., fishing, hunting, and

gathering) The Basarwa communities of the Okavango Delta, namely the //aniKhoe (River San), the BugaKhoe (in the east of the Okavango River), and the Tsega are direct descendants of people who inhabited the region more than forty thousand years ago.

7.13.2 The Eastern Okavango Panhandle

The Eastern Okavango Panhandle spans an area of 8,732 Km^2 (Pozo *et. al.*, 2018). This area covers four Controlled Hunting Areas (CHAs) called NG/10, NG/11, NG/12, and NG/13. While there are several settlements on the eastern Panhandle, only Xakao, Ngarange, and Gudigwa cultural sites were mapped. About four (4) cultural heritage sites and artifacts were identified in Xakao. There were several sites identified at Ngarange (Table 7.4), with the iconic and unique Ncoagom (red soil), commonly referred to as 'Red Cliff". The site is a XaniKhoe cultural site and is located approximately between Mogotho and Ngarange along the Okavango river floodplain, marked by a steep bank. The area is relatively undisturbed with low human population density and human activity and is an ideal area for community cultural and heritage initiatives.

Table 7.4: Cultural Sites at Ncoagom.

Site	Cultural significance
Gweca (white reeds)	Historical site for hunting hippo with spears
Gathering and food seasonality	Gathering of edible wild foods area for Ncoagom people
Chamagweni (stalking hunting)	200m downstream from salt lick is chamagweni river access point for wildlife, water lily (xgoma) harvesting area for Ncoagom people.
Channel used for hunting	Gweni'nga small channel used for hunting. Gau is the main channel intersected by this small channel.
Burial grounds	Inaccessible burial site for rain chiefs: Ncukwa and Soloka.
Cultural site for non-rain making Baxanikhoe	Cultural site. burial area for non-rainmaking BaXanikhoe (families of Goro Mangasha)
Cultural site where chief X'gai and his sisters were buried	Cultural site. Burial site for BaXanikhoe chief, X'gai and his sisters also buried nearby
Historical village of chief Ncukwa	Historical village of chief Ncukwa

In Gudigwa, Tiuyemooko, which is 70Km from Gudigwa village was identified and mapped as a cultural site of significance. The area has baobabs with wide crevice with occasional mystical occurrences at the site, such as beating of drum and hanging of white clothing from invisible beings. The community relocated from this place due to droughts and moved to Divundu near Kwando. It was a place they were familiar with before they were relocated to the current village.

7.13.3 The North-Eastern Okavango Delta

Communities residing in the villages of Sankuyo, Mababe and Khwai were visited. These were villages that were consulted through the Kgotla meetings and later visited to identify cultural heritage of significance to the community. Two sites were identified in Sankuyo (Haya and place closer to the current South Gate into the Moremi Game Reserve – Maqwee). The Sankuyo community elders indicated that they settled at Maqwee, but prior to settling at the current

village site, they settled at Haya. Haya, a hand dug *lediba* (pool) by the residents of Sankuyo, is a historical landmark, which is 6 Km from the current Sankuyo village.

The BaTsega ethnic group at Mababe retraced their historical roots around the Chobe National Park, in places such Savuti, Googha hills, Gubatshaa, Sedungua\\bamukuni and Gurubamanza. There affirmed the presence of artefacts in the place to date. It was reported that old pottery shards were discovered during construction of the firebreak cutline.

From Sedungu they moved near the river at Nxwega, then on to \\do, then Makgalo in the late 60s to early 70s. Their old hunting grounds are Xakanaxa and Zimboyane. Other places of cultural significance include \\baora (letshwago la Tlhware) and Sankuyo. Some of the cultural heritage sites described through oral history were mapped in Figure 7.7.

In Khwai, while cultural heritage sites abound in the Moremi Game Reserve, the areas were inaccessible by road. However, secondary data sources were used to document and map the areas of cultural importance.

Sites of cultural importance located along the Okavango Delta Panhandle and north-eastern Okavango Delta were mapped. Additional locations and descriptions were obtained from secondary data. A non-comprehensive list of places mapped is shown in Figure 7.8.

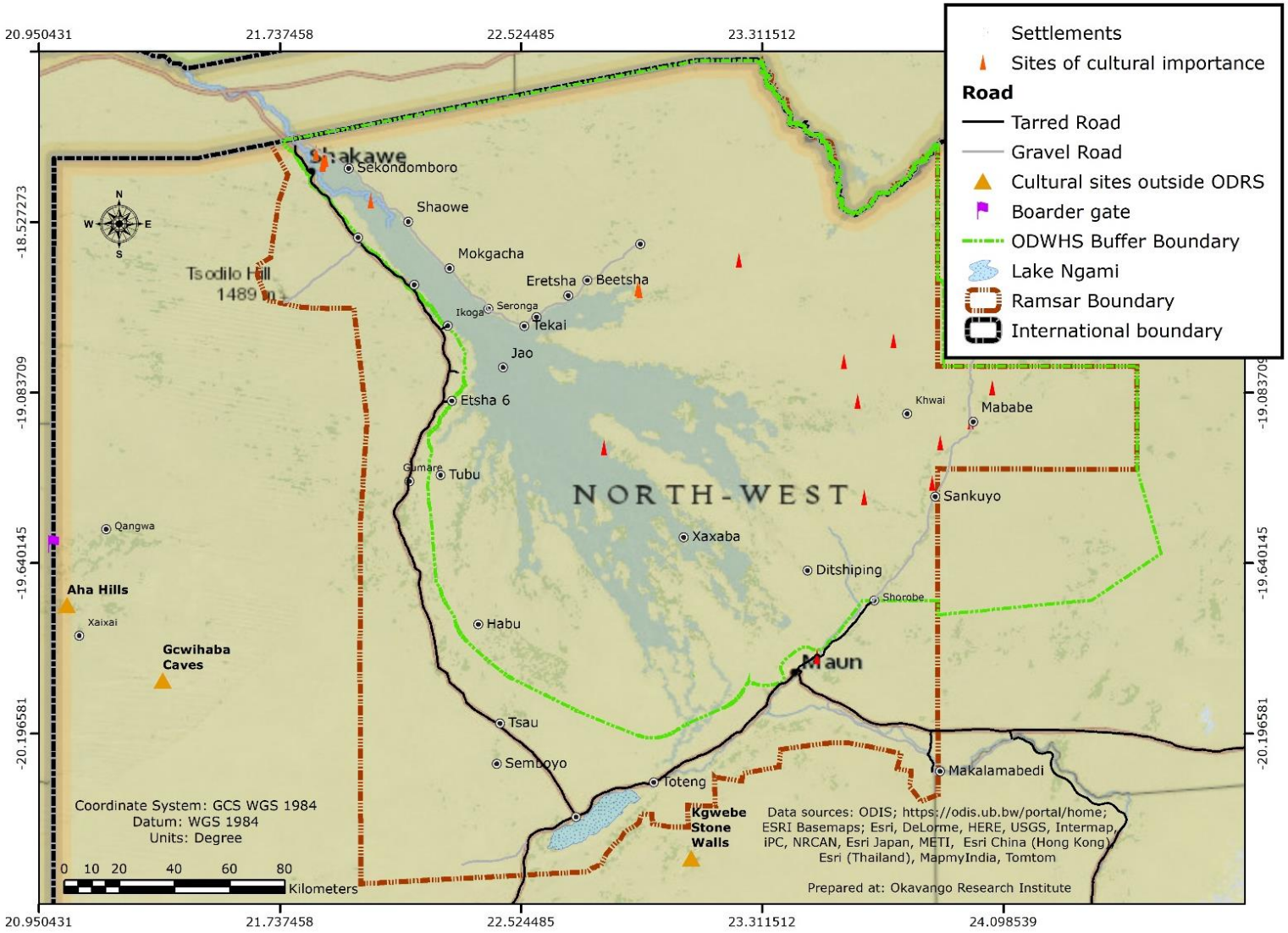

Figure 7.7: Cultural Heritage Sites in the Okavango Delta MIDA landscape.

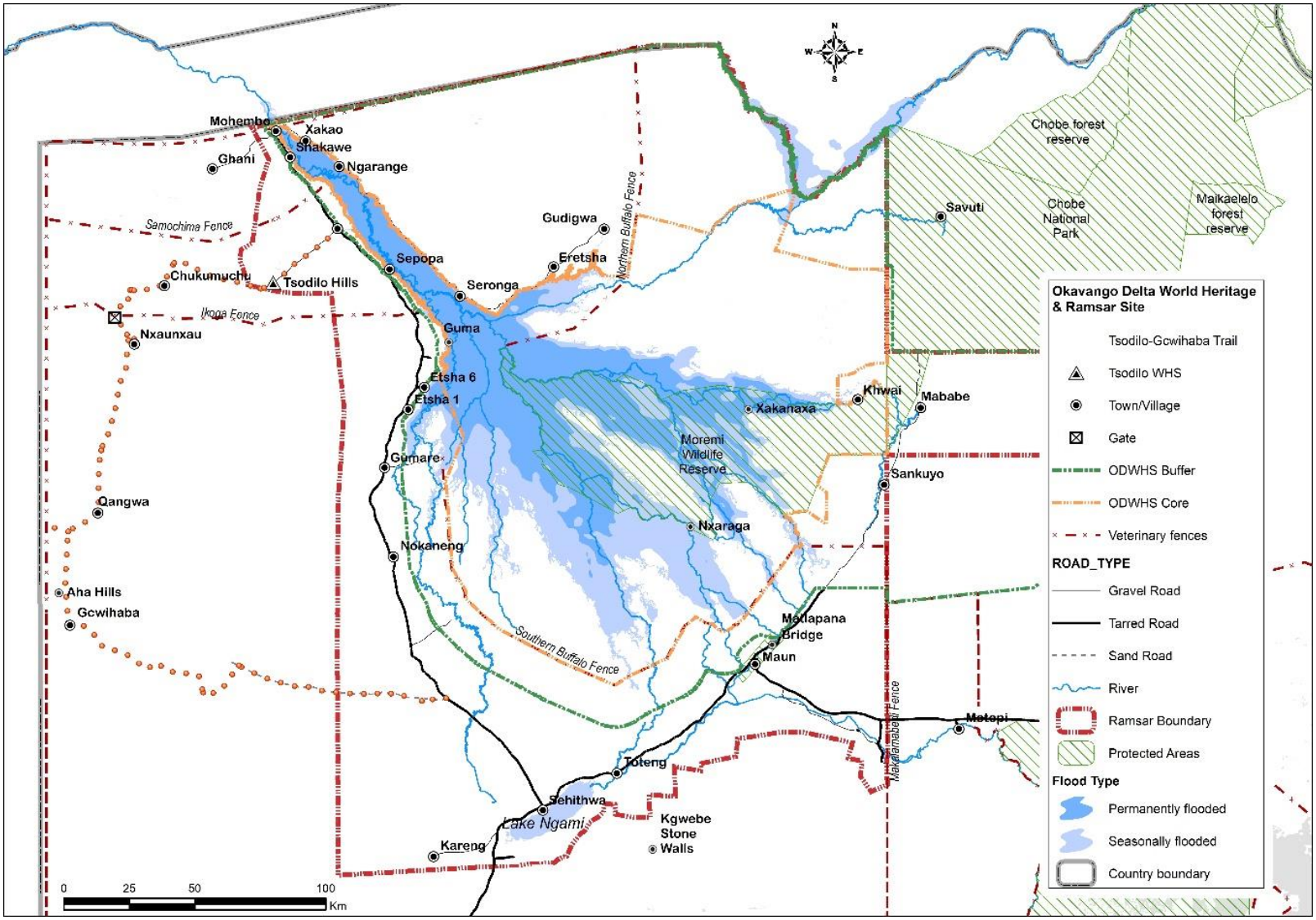

Figure 7.8: Tsodilo-Gcwiihaba Trail.

CHAPTER 8: GENDER MAINSTREAMING

8.0 OVERVIEW

Sex is the biological differences between women and men particularly about their bodies such as production of sperms, menstruation, childbearing, breastfeeding and so on, and is generally unchanging. Gender refers to the socially constructed roles and responsibilities of women and men in each culture or location and the relationship between them, including changes over time. Botswana has put in-place both institutional and policy mechanisms and program processes to address gender issues spanning over twenty-five years based on the national Vision 2016 of 1996. The Vision clearly states that no citizen of Botswana would be disadvantaged as a result of, among others, gender. Vision 2016 seeks to promote prosperity by promoting equal opportunity for women and men, boys and girls. Special attention is given to land allocation to women headed households, and to increase their income and employability.

Institutionally, from as far back as 1981, a Women's Affairs Unit was established, and was in 2013 transformed and renamed Gender Affairs Department (GeAD) under the Ministry of Nationality, Immigration and Gender Affairs. The Gender Affairs Department (GeAD) is mandated to coordinate and manage a national gender response, and to pursue a gender equality and equity agenda by providing guidance to government ministries, departments, parastatals, the private sector and non-governmental organization. A 15-member board, Botswana National Council on Women, was put in place to monitor implementation of the gender equality agenda. With regard to policy evolution, starting off with the 1996 national policy on Women in Development (WID), major policy directions were engendered through the Gender and Development policy (GAD) whose responsibilities included the promotion of gender equity, the coordination and facilitation in various aspects of gender and development as articulated in the 1999- 2003 National Gender Program and the National Development Plan 10 (2010 – 2016) and subsequent continuation in National Development Plan 11. A detailed legislative and policy framework for gender mainstreaming is provided in Appendix V.

Within the Millennium Development Goals, the third goal (MDG 3) is about gender equality and women's empowerment. More broadly, poverty reduction calls for the eliminating gender inequality and closing the gender gap in the labour market. This is central to promoting gender equality, is an important cornerstone to advance women's empowerment and a principal determinant in attaining MDG3. Gender bias originates in patterns of socialization based on socio-cultural norms. A Human Rights approach undergird the GeAD development programming and advocates for gender mainstreaming as a core strategy. This makes gender a cross-cutting issue, and an imperative factor for the achievement of sustainable development goals. The national development areas for gender mainstreaming as stipulated by GeAD include:

- Economic development and poverty elimination.

- Social protection and social services (health, education, sanitation, information, housing, energy and climate change).
- Political power, democratic governance, and decision-making.
- Access to justice, protection of human rights and freedom from violence.
- Targeting vulnerable groups.

During the Mid-Term Review of the 2008 ODMP, it was generally agreed by stakeholders "that mainstreaming gender into the ODMP implementation process should be a deliberate policy decision and, where possible, 'should be applied to all sectors of the national economy to address issues of gender equality with regard to health, poverty, unemployment, education etc. (and that mainstreaming tools should be developed" (SAREP, 2014, p. 47). Gender and poverty were highlighted as constituting a threat to sustainable use of the delta's ecosystems services.

A detailed national, regional and international legislative and policy framework for gender mainstreaming through existing relevant legislative framework and government policies will be presented separately. Before defining what gender mainstreaming entails, it is worth pointing out that the process starts by asking simple questions; the who, what and how questions to probe gender issues potentially silently embedded in legislative frameworks and policy frameworks as Figure 8.1 below suggests**.**

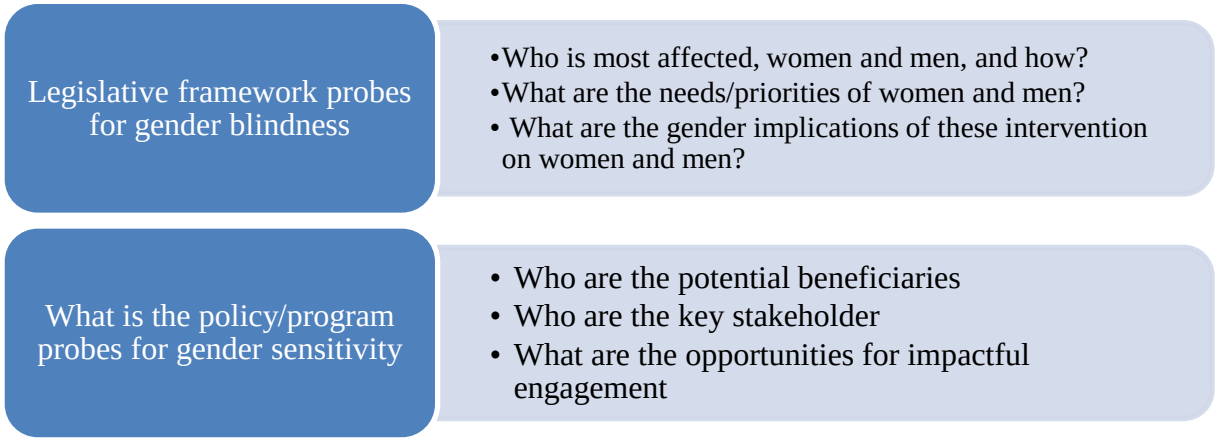

Figure 8.1 Excavating gender bias in legislation frameworks and policy/programs

8.1 Gender Mainstreaming and Ecosystems Services

Gender analysis is a process of assessing the implications for women and men of any planned action, including legislation, policies, and programs/projects in all areas and at all levels. It is intended to make concerns and experiences of women and men an integral dimension of all stages in project development. ***Gender mainstreaming*** is a process of assessing the implications for women and men of any planned action, including legislation, policies, and programs/projects in all areas and at all levels. ***Gender equity*** means fairness and justice in the distribution of benefits, resources, power and responsibilities between women and men according to their respective needs. Gender equity recognizes that women and men have individual needs, power and access to resources, and that these differences should be identified

and addressed in the manner that rectifies the imbalance between the sexes. ***Gender equality*** means the absence of discrimination based on the person's sex in opportunities, allocation of resources or benefits and access to services. Gender norms that result in mistreatment of one group or sex over the other, or that results in differences in power and opportunities, lead to gender inequality. ***Gender discrimination*** is a measure of gender inequality on any socio-economic indicator. It may be defined as differences in any aspect of the socio-economic status of women and men.

Gender mainstreaming is a human right (internationally guaranteed and legally protected) and lack of gender mainstreaming in ODMP implementation framework violates GeAD strategy for sustainable development across sectors of the Ramsar Site and World Heritage sites, hereafter referred to as the Multiple-Internationally Designated Area (MIDA). Gender mainstreaming matters for effective governance and management of MIDA natural resources such as land, water, forests, fisheries, and flora. Key ecosystems services (ESSs) in MIDA include: *regulating* (climate, water and soil and other environmental processes (flooding, diseases and bush-fires); *supporting services* (ground water discharge and nutrient cycling to maintain biodiversity, soil formation and photosynthesis); *supporting services* (indirectly contribute to human wellbeing); *provisioning services* (important to household economy through products harvested and traded (such as fish and firewood), natural resource products, medicine and foods, energy, water, flood and cultural service (in the form of recreational experiences, ecotourism, spiritual and intellectual inspiration).

Biodiversity plays an intermediate role in the production of other ecosystems services as well as the final role of being an important source of provisioning and cultural services. Why is gender mainstreaming implementation key to sustainable ecosystems services in MIDA important, primarily in order to:

- To address inequalities that emerges between men and women in the context of project implementation and climate change.
- Maximise and harness capacities of women and men through involvement in decision making and planning processes.
- How to use men and women differently as agents for change basing on their own sensitivity, needs and priorities to strengthen adaptive capacity to climate change.
- Maximise the use of scarce resources.
- Ensure success of the intervention – address the differentiated needs and priorities.

A holistic gendered approach is in line with the global agenda for sustainable development to eradicate poverty and achieve prosperity for all by 2030. Lack of harmonized legal or administrative framework to enable coordination of gender sensitive policies and intervention activities by various institutions pose specific challenges for the managers and stakeholders at the national level (ministries and affiliated national authorities and others) and decision-making bodies at international. The sustainable management of the Okavango Delta MIDA landscape should therefore be holistic by not only be focusing on mainstreaming gender to maintain sustainable use of ecosystem services for sustainable livelihoods.

8.2 Gender Analytical Framework and Ecosystems Services

As a cross-cutting theme, gender analysis is a systematic process of identifying and examining gender differences (impacts, gaps, and discrimination). The tool enables natural resources mangers to define and understand how culture or society defines rights, responsibilities and identities of men and women in relation to one another in different developmental scenarios.

ODMP implementers should be able to:

- Assess gender differentiated environmental, socio-economic and cultural impacts of legislative and policy implementation structures and processes.
- Understand, appreciate and explain the importance of gender-based analysis in their implementation of projects and programmes.
- Identify challenges associated with implementation.

A gender analysis is vital for promoting multi-sector dialogue with MENT, and by drawing input from stakeholder ministries such as those responsible for water, energy, agriculture and forestry (Figure 8.2).

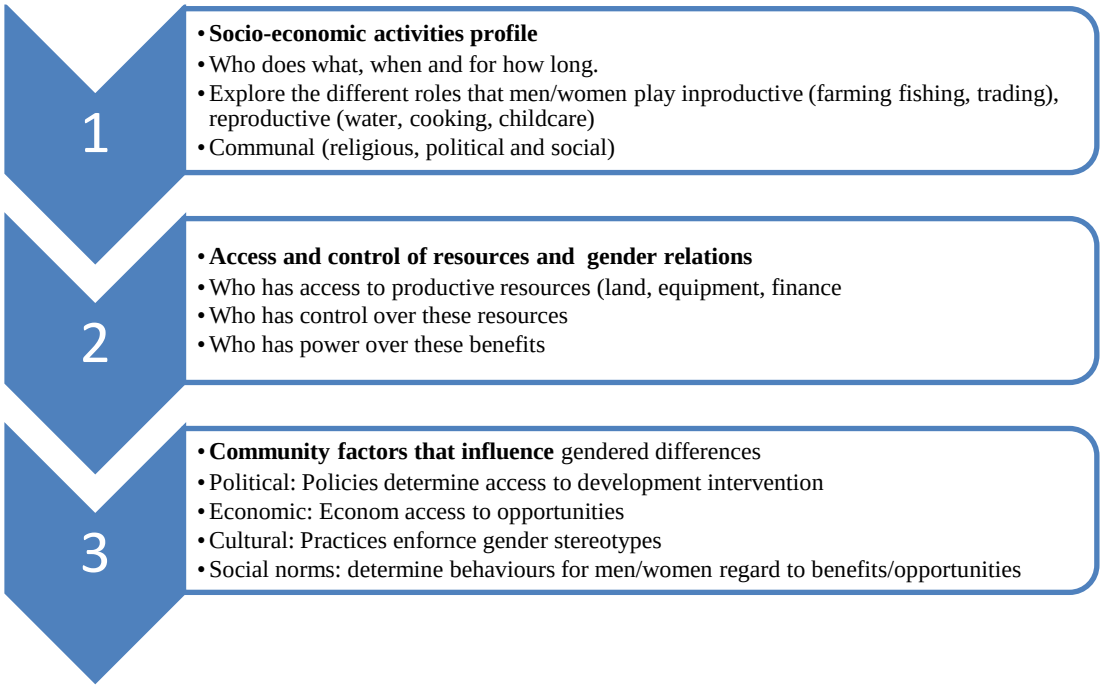

Figure 8.2: Gender Analysis Approach

Appendix III gives a synopsis of why gender analysis matters and provides a framework for interrogating gender issues in development interventions with specific reference to climate change, biodiversity, agriculture, energy, water, fisheries and aquaculture, forestry, tourism, medicinal plants, protected areas, poverty and environment. These sectors are obligated to promote gender equality and equity in development. Often, legislative and policy instruments are indeed weak on mainstreaming gender issues. For example, the 2014 National Policy on Agriculture, the 2002 Revised National Policy on Rural Development, the 2011 Forestry Policy, the National Food Program and many others.

8.4 CONSTRAINTS ON IMPLEMENTING GENDER MAINSTREAMING IN OKAVANGO DELTA MIDA LANDSCAPE

Observations reveal that implementation of gender mainstreaming has been inconsistent rather than a coherent process across departments and tends to evaporate in the planning process. Without high level commitment reflected at national and sectoral levels, there is bound to be lack commitment at local operational level. Success, if any, is likely to be dependent on the commitment of skilled individuals. Gender issues therefore are more likely to be diluted through non-committed decision makers and male resistance. In some departments, specialized gender focal points have been instituted. However, focal points advisers are often junior staff, who have limited or no power to influence policy direction and or resources allocation. They therefore can be marginalized from gender mainstreaming activities. Other factors hindering effective implementation of gender mainstreaming activities include male-biased organizational structures, procedures, and culture in terms of attitudes and working conditions which discriminates female staff. (Caglar, 2013; Lombardo and Mergaert, 2013; Moser & Moser, 2005). Types of resistance (either overtly or covertly, implicitly or explicitly, general or specific), by individuals or institutions to processes of change emerges because of challenges to the norms, practices and assumptions concerning the relations between women and men. Implementation of gender mainstreaming requires high level of gender awareness among policy makers who are not experts. Specific competencies are required among civil servants who are also not necessarily trained. These include, *inter alia;*

- Employment is a field where most development of gender equality practices occur, take on board matters directed against direct and indirect impacts gender discrimination in budgeting and labour market. Employment is key because of the centrality of economic development of women and men.
- Gender equality in government finance decision-making is a process of disaggregating budgets by gender to discover the extent to which policies have gendered implication.
- The arena of gender-based violence against women into human rights discourse and thereby to a range of policies.
- Human rights and gender entail a complex hybridization and development of variations of gender mainstreaming in different locations. The mainstreaming strategy includes advocacy by civil society groups, expert networks, legal compulsion from trans-national polity, a mix of law and targets.
- Gender awareness capacity building among politicians and civil servants to mitigate gender mainstreaming resistance by subjecting all policy areas to gender equality practices.

Empowerment is the expansion of people's ability to make strategic life choices in the context of where this ability was previously denied. Women's empowerment can be measured qualitatively and quantitatively at various levels of disaggregation, from individual, household, community to broader national, regional and global levels. Women's empowerment dimensions include:

- Economic
- Socio-cultural

- Familial/interpersonal, legal
- Political, and
- Psychological

8.7 ALIGNMENT OF ODMP WITH INTERNATIONAL BEST PRACTICES

Different government authorities and regional coordinating bodies such as OKACOM oversee national and transboundary issues in the Ramsar and World Heritage site in Botswana. The Department of Environmental Affairs (DEA) and the Department of Museums and National Monuments play key coordinating roles by involving other national agencies and NGOs. Given the complexity of institutional and legislative arrangement, harmonizing these brings about challenges in the management of Okavango Delta MIDA landscape from various institutions for the same site. These include but are not limited to inter-agency information flows and policy/program prioritization via national authorities. Each government entity has its own primary objectives and approaches, and sometimes these are not necessarily compatible with the geographical extents for the sites. Also, international designation could evoke resistance among local communities and multiplicity of recognition risks confusing them, particularly regarding land-use restrictions and access to natural resources.

Given these complexities, at its 35th Session (UNESCO Paris, 2011), the World Heritage Committee (Decision 35com12D.7) requested the World Heritage Centre to: explore ways of recognizing and rewarding best practice through on-off initiative. A template was developed to guide answering the question of why the site should be considered as an example of a best practice and to demonstrate the successful management and sustainable development of the World Heritage Site property (Appendix IV).

CHAPTER 9: STRATEGIC ANALYSIS OF THE OKAVANGO DELTA MIDA LANDSCAPE

9.0 Overview

The Okavango Delta MIDA landscape is a Ramsar site designated in 1996 under the Ramsar Convention on Wetlands. Under the Convention, the Delta is considered a wetland of international importance and of significant value locally and globally. The Ramsar site covers 55,374 Km^2, which translates to 49.6% of the entire Ngamiland District (111,650 Km^2) and is one of the largest Ramsar sites in the world (SARAMSAR, 2016).

Part of the Okavango Delta Ramsar Site (ODRS) was inscribed as the 1000th World Heritage Site in June 2014. The inscribed World Heritage property encompasses an area of 20,235.9 Km^2 with a buffer zone of 22,863.3 Km^2. As a World Heritage site, it is a protected cultural and natural heritage of international importance under the United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Heritage Convention (Keitumetse & Pampiri, 2016). This double international designation status underscores the global importance of the Delta and demonstrates the integration of conservation and preservation with sustainable use of the wetland (Ramsar Convention Secretariat, 2014), making the ODRS a MIDA landscape.

The MIDA landscape also houses Botswana's first WHS - Tsodilo Hills and the world reknowned Moremi Game Reserve, otherwise also regarded as the first community-initiated Game Reserve in Botswana. The game reserve is a home to the 'big five', attracting tourists from all over the globe.

The Okavango Delta MIDA landscape is a haven of recreational, ecological, cultural and livelihood activities for its inhabitants. It is a source of water for human livelihoods and wildlife.

9.1 SIGNIFICANCE OF THE OKAVANGO DELTA MIDA LANDSCAPE

9.1.1 Conservation

The Okavango Delta MIDA landscape is a Ramsar site, and within the Ramsar site are two World Heritage Sites, being the Tsodilo Hills and the Okavango Delta.

9.1.1.1 Ramsar Site

The ODRS was declared a Ramsar site, i.e., wetland of international importance in 1996. The ODRS is considered one of the world's largest Ramsar site, constituting "nearly 10% of the total area of the world's Ramsar sites and almost 50% of the area designated in Africa" (Frazier, 1999, p.13). The ODRS includes the Okavango River (i.e., the Panhandle), the entire Okavango Delta, Lake Ngami; and parts of the Kwando and Linyanti River systems that fall west of the western boundary of the Chobe National Park. The ODRS was designated a Ramsar site based on six (6) of the nine (9) criteria (Table 9.1).

Table 9.1: Criteria Used to List the Okavango Delta as a Ramsar Site.

Group	Criteria	Description
A	*Sites containing representative, rare or unique wetland types*	
	1	A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region
B	Sites of international importance for conserving biological diversity	
	Criteria based on species and ecological communities	
	2	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities
	3	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region
	4	A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions
	Specific criteria based on waterbirds	
	5	A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds
	6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird

Source. (Gardner & Davidson, 2011; Ramsar Sites Criteria, 2020)

9.1.1.2 Tsodilo Hills

The Tsodilo Hills, located in Ngamiland district, comprises massive quartzite rock formations, and is considered one of the highest concentrations of rock art in the world. It is estimated that it contains over 4,500 paintings in an area of about 10 Km^2 and was inscribed as a WHS site in 2001. The size of the property is 48 Km^2, with a buffer zone of 704 Km^2. The Tsodilo Hills were inscribed based on three UNESCO criteria (Table 9.2)

Table 9.2: Criteria Used to Inscribe Tsodilo Hills on the World Heritage List.

Criteria	Description
i	Represent a masterpiece of human creative genius. *For many thousands of years, the rocky outcrops of Tsodilo in the harsh landscape of the Kalahari Desert have been visited and settled by humans, who have left rich traces of their presence in the form of outstanding rock art.*
iii	Bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living, or which has disappeared. *Tsodilo is a site that has witnessed visits and settlement by successive human communities for many millennia.*
vi	Directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. *The Tsodilo outcrops have immense symbolic and religious significance for the human communities who continue to survive in this hostile environment.*

Source: UNESCO, 2001

9.1.1.3 Okavango Delta

The Okavango Delta was listed as the 1000th World Heritage Site in June 2014. The inscription was done based on three criteria from the Operational Guidelines for the implementation of the World Heritage Convention (UNESCO, 2019), shown in Table 9.3.

Table 9.3: Criteria Used to Inscribe the Okavango Delta World Heritage Site.

Criteria	Description
vii	Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance. *Permanent crystal-clear waters and dissolved nutrients transform the otherwise dry Kalahari Desert habitat into a scenic landscape of exceptional and rare beauty and sustain an ecosystem of remarkable habitat and species diversity, thereby maintaining its ecological resilience and amazing natural phenomena. The Okavango Delta WHS displays an extraordinary juxtaposition of a vibrant wetland in an arid landscape and the miraculous transformation of huge sandy, dry and brown depressions by winter season floods triggers spectacular wildlife displays.*
ix	Outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals. *The Okavango Delta WHS is an outstanding example of the complexity, inter-dependence, and interplay of climatic, geo-morphological, hydrological, and biological processes. It exemplifies several ecological processes related to flood inundation, channelization, nutrient cycling and the associated biological processes of breeding, growth, migration, colonization, and plant succession.*
x	Contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation. *The Okavango Delta World Heritage property sustains robust populations of some of the world's most endangered large mammals such as Cheetah, white and black Rhinoceros, Wild Dog and Lion, all adapted to living in this wetland system. The Delta's habitats are species rich with distinct species composition comprising all the major classes of aquatic organisms, reptiles, birds, and mammals. It is recognized as an Important Bird Area, harbouring 24 species of globally threatened birds and supports the world's largest population of elephants.*

Source: World Heritage Committee, 2014; UNESCO, 2019

9.1.1.4 KAZA Transfronteir Conservation Area

The Okavango Delta MIDA landscape is part of the Kavango Zambezi Transfronteir Conservation Area (KAZA TFCA) - a conservation initiative between Angola, Botswana, Namibia, Zambia, and Zimbabwe (Figure 9.1). The KAZA TFCA covers the Okavango and Zambezi river basins where the borders of the five countries converge, and is considered "the largest of its kind, the KAZA TFCA is an extraordinary example of international conservation cooperation" within the SADC region (TFCA, 2014, p. 5). Botswana portion of the TFCA accounts for 30%, translating into 153,662.72 Km^2, the largest amongst the member states.

The KAZA TFCA embraces most of the Okavango River Basin, an integral part of an ecosystem that is connected to the Upper Zambezi River Basin (Figure 9.1). Two of the three major tourism attractions in the KAZA TFCA, being WHS, are in the Okavango Delta MIDA landscape, the Tsodilo Hills and Okavango Delta. The third is the Mosi-oa-Tunya (also called Victoria Falls) along the border between Zambia and Zimbabwe. The Moremi Game Reserve is also part of the KAZA TFCA and the Okavango Delta MIDA landscape. The KAZA TFCA is hotspot biodiversity area of global biological significance, with large-scale migrations of mega-fauna and diversity of animal species. It is of economic and ecological importance to the region. The KAZA TFCA is a home to the largest contiguous population of elephants in Africa, with a 2012 aerial census suggesting that Botswana hosts over 130,000 elephants (TFCA, 2014).

The KAZA TFCA has identified six Wildlife Dispersal Areas (WDAs), two (Kwando River and Khaudum-Ngamiland WDAs) being part of the Okavango Delta MIDA landscape. The WDAs create essential links between adjacent land use types and across international boundaries.

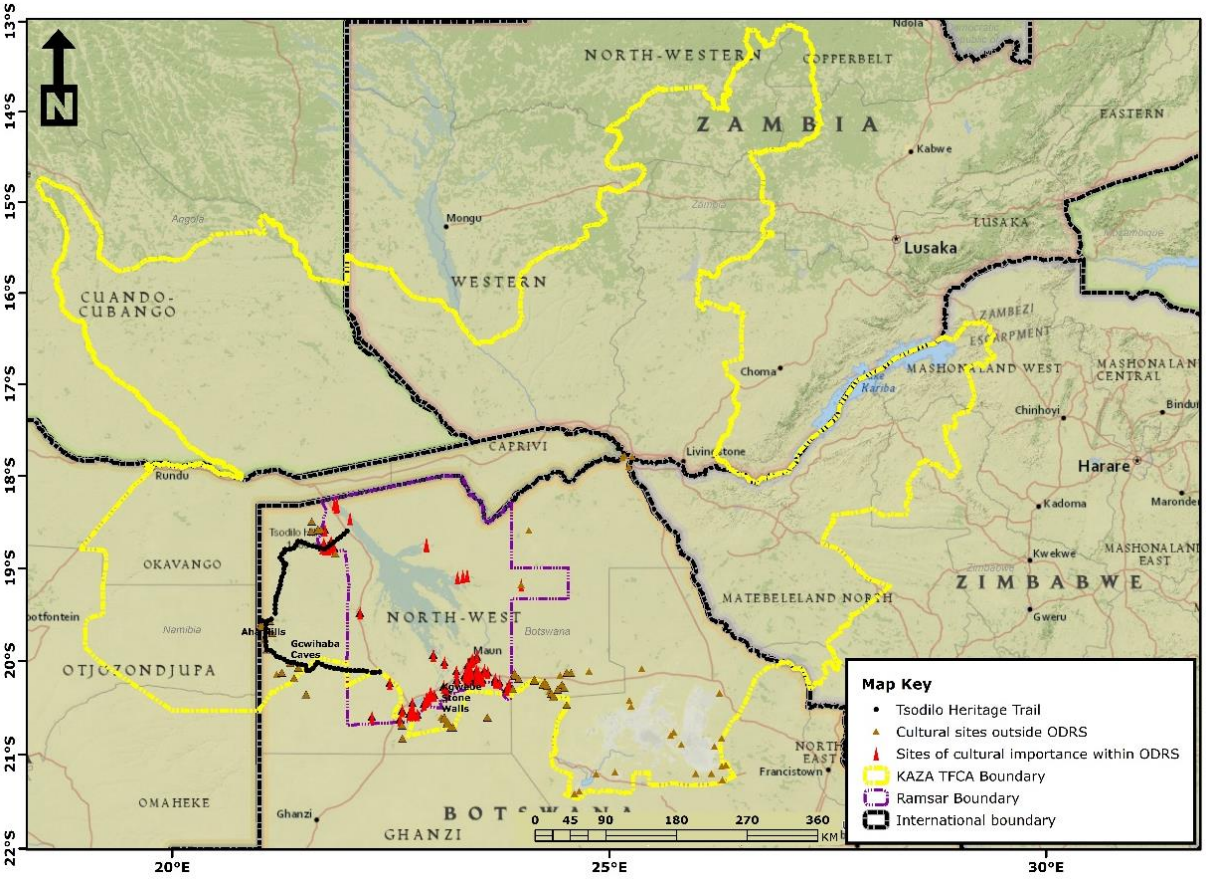

Figure 9.1: The Okavango Delta MIDA landscape in the Context of KAZA TFCA.

9.1.2 Cultural Heritage

The Okavango Delta MIDA landscape is of immense cultural and historical significance, though not yet fully tapped. Several cultural heritage sites can be found throughout the Okavango Delta MIDA landscape and its environs (Figure 9.2). The Delta has been inhabited for centuries by various indigenous people who adapted their cultural identity and lifestyle to

the exploitation of resources (e.g. fishing, hunting, and gathering). The Basarwa communities of the Okavango Delta, namely the //aniKhoe fRiver San), the BugaKhoe (in the east of the Okavango River), and the Tsega are direct descendants of people who inhabited the region more than forty thousand years ago.

After the influx of other ethnic migrants in the area, the //aniKhoe, BugaKhoe and Tsega descendants were either assimilated or dispersed within and beyond the length and breadth of the Okavango Delta MIDA landscape through conquest, kinship, and marriage alliances but also due to forced removal from resource-rich areas to make way for establishment of protected areas. These ethnic groups have accumulated and used local ecological knowledge of the natural landscape of Okavango Delta not only to survive through diverse riverine natural resources-based livelihood sources but also to forge unique cultural identities and collective memory around specific sites of cultural importance or more specifically, cultural heritage sites. The Okavango Delta is therefore inhabited by different ethics groups of people who have used their socio-cultural understanding of their natural environment to interact with the natural landscape. Each group in the Okavango Delta, there was one or more mode of subsistence.

The rock engravings and paintings found in the Tsodilo Hills, show the diversified livelihoods, such as hunter-gatherer, herder, and agriculturalists traditions (Deacon, 2002). Tsodilo Hills, comprising of four main hills contains over 4,500 rock paintings, one of the largest concentrations of rock paintings in the world. The area represents an important spiritual and cultural signification of local people, with archaeological record providing a unique, chronological account of human settlement and environmental changes over millennia.

Several cultural heritage sites were mapped as part of the development of the ODMP. These include cultural heritage sites in Xakao, Ngarange, Gudigwa, Sankuyo, Mababe, Khwai and other places (Figure 9.2).

The Okavango Delta MIDA landscape is also an area of archaeological significance. A recent study tabulated and described archaeological sites of significance such as Matlapaneng, Lotshitshi, Qogana and Xaro (Matswiri, 2017) as well as key cultural and sacred landscapes of the San in the Panhandle. The latter were mapped during the development of the Okavango Delta MIDA landscape plan (Figure 9.1). Another study identified and mapped cultural heritage sites in the Moremi Game Reserve (Keitumetse, 2016). The current mapping of sites of cultural heritage significance, and previous studies shows the rich cultural heritage of the Okavango Delta MIDA landscape. These places must continue to be identified, documented, and mapped as they hold unique values to the people of the Okavango Delta MIDA landscape.

The cultural heritage sites mapping within the Kavango Zambezi TFCA portion of the Okavango Delta MIDA landscape shows even more sites of historical, archaeological, religious, and anthropological interest [Figure 9.2] (TFCA, 2014).

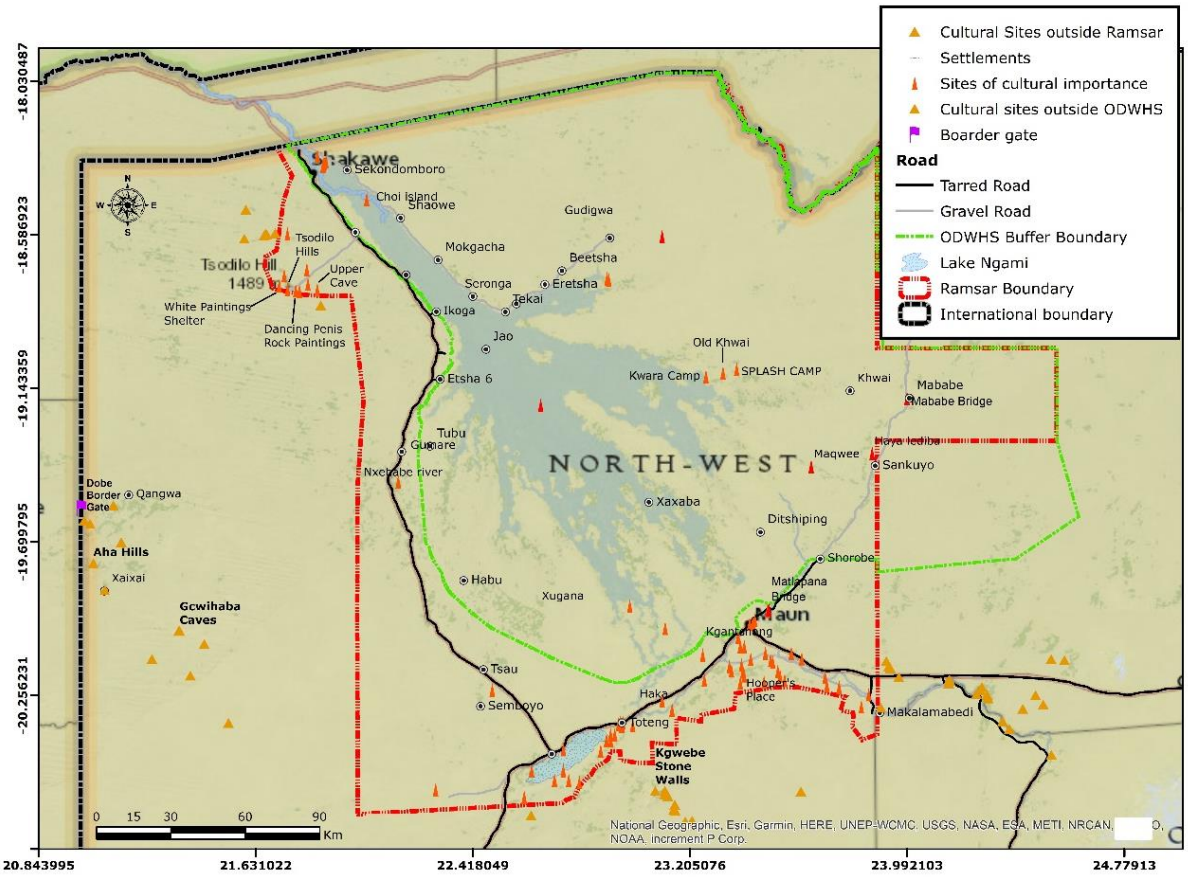

Figure 9.2: Cultural Heritage Sites of Significance in the Okavango Delta MIDA landscape.

9.1.3 Socio-economics

The Okavango Delta MIDA landscape is a home and source of livelihood to communities living within and outside. Ngamiland district houses the largest and lucrative Community-Based Natural Resources Management (CBNRM) projects. The wetland, its water, wildlife, and wilderness nature of the Okavango Delta MIDA landscape made the district a hub of tourism activities. The northern Botswana is well known for its tourism appeal, promoted by rich biodiversity and diversity of with diversity of habitats supporting floral, animal, and human life.

Botswana tourism is largely concentrated in the northern part of the country, particularly in the Okavango Delta, Moremi Game Reserve, and the Chobe National Park, with the former two making part of the Okavango Delta MIDA landscape. These areas are endowed with a variety of natural resources, which serve as an attraction to international tourists. The country's high value - low volume tourism policy aims to attract a limited number of tourists with high expenditure patterns. Consequently, Botswana's tourism sector is largely dependent on the international market. Botswana is a popular tourist destination for international tourists, predominantly those from North America and Europe. Tourism in Botswana is regarded as "an engine of economic growth", with a contribution of the sector being 8.9% of the country's total employment in 2018 (WTTC, 2019) and 5% to Gross Domestic Product, second to diamonds (Stone *et. al.*, 2017). The economy of Ngamiland is largely depends on tourism (MLGRD, 2017).

The Okavango Delta MIDA landscape, mainly the core area, houses high value tourism facilities (attracting high-end international tourists), which offers a diversity of tourism activities such as game viewing, nature walks, water-based activities and others.

9.2 Challenges and Threats Facing the Okavango Delta MIDA Landscape

The MIDA landscape faces several local, internal and external (e.g., climate change) challenges and threats. The challenges and the threats are presented in Tables below and the corresponding solutions as a guide towards addressing and resolving them. The threats must be mitigated to ensure that the overall ecological integrity of the Okavango Delta MIDA landscape is not eroded. The threats are presented, and their proximal causes, impacts, implications, and recommendations for addressing them (Table 9.4a-c; Table 9.5-9.6). It is often more efficient to prevent damage than to repair it.

Table 9.4a: Biophysical Parameters - INTERNAL (Local, National) Threats.

Threat	Underlying Causes	Main Impacts	Key Implications	Recommendations & Key Interventions	Responsible Implementing Partners
Habitat destruction, habitat conversion & disturbance	Changes in land use (e.g., settlement expansion, agricultural expansion	• Increased dispersal of people & wildlife to new areas. • High levels of human-wildlife conflict (HWC) & livestock predations (problem animal control & poaching) • Prevention of seasonal wildlife movements • Disturbance of communally nesting birds' nesting sites • Low air & water quality • Loss of biodiversity • Loss of tourism potential	• Reduced likelihood of some WMAs being legislated. • Reduced populations of migratory or mobile species • Reduced quality of ecosystem services in aquatic & terrestrial environments, especially for rural poor • Poverty & reduced resilience to climate change •	• Gazette remaining WMAs. • Implement zoning & land use plans (incl corridors) • Initiate Outreach & Education campaigns to enlist help of communities in conservation for improved resilience. • Re-examine movement corridors for utility	• MLEAA • Ministry of Lands • Tawana Land Board • NWDC • DWNP and Research Community for corridors
Barriers to wildlife movement	Need to control veterinary diseases, EU subsidies, increased fencing of rangelands through ranch creation, and separation of cattleposts from croplands.	• Reduction in populations of migratory species • Isolation of protected areas (PAs) and loss of functional connectivity. • Increased pressure on wildlife in PAs. • High wildlife mortality along the fences • Reduced resistance and resilience to environmental change	• Reduction of direct benefits from natural resources by communities, & rise in HWC, reduced quality of rural livelihoods. • Warming & erratic rainfall requiring that links between dry & wet season wildlife ranges be maintained.	• Re-examine connectivity between different forage areas and required habitats. • Legally gazette areas of connectivity and reflect in all plans. • Re-examine cordon fences locations & purpose; remove non-essential fences. • Re-examine wildlife-friendly cordon fences.	• MoA Vet Services • MLEAA • Ministry of Lands • Tawana Land Board • NWDC • DWNP

Threat	Underlying Causes	Main Impacts	Key Implications	Recommendations & Key Interventions	Responsible Implementing Partners
				• Initiate Outreach & Education campaigns to enlist help of communities in conservation for improved resilience. • Implement Commodity-based trade for livestock management	
High populations of elephant	Dispersal into new ranges, reduction of range in neighbouring countries Low offtake levels (illegal & legal hunting)	• Habitat modification and disturbance • Reduction of biomass, and plant & animal species	• Loss of habitat diversity, loss of biodiversity, undermining of the ecotourism potential of the country. • Increased HEC.	• Implement Elephant Management Plan • Strengthen transboundary species management initiatives. • Strengthen liaison between Basin State wildlife management authorities. • Initiate Outreach and Education campaigns to enlist help of communities in conservation for improved resilience.	• MLEAA • DWNP • DEA
High poaching incidence	• Loss of benefits from wildlife • Increased rural poverty. • Penetration of illegal international wildlife trade • Loss of management presence in remote areas	• Decline in populations of large mammals, including globally threatened species. • Increased social conflict.	• Breakdown of rural support for conservation •	• Resuscitate CBNRM involvement in PA CHA & WMA management[1] • Initiate Outreach & Education campaigns to enlist help of communities in conservation. • Create rewards system for information leading to arrests. • Improve clarity of Enforcement Responsibilities	• MLEAA • MENT

[1] The entire structure of the management and mechanisms for community involvement need to be re-evaluated in some depth, and we want to push for this to happen as an explicit output of the ODWHS MIDA Authority...

Threat	Underlying Causes	Main Impacts	Key Implications	Recommendations & Key Interventions	Responsible Implementing Partners
Disruption of natural fire regime	• Unmanaged use of fire, unauthorised fire use as the legislation prohibits it. (Fires used to stimulate sprouting for grazing, clear bush to improve visibility, etc.)	• Unseasonal fires, and in some areas too-frequent fires, affect recruitment of key tree species, and disturb bird breeding, especially in riparian zones	• Catastrophic fire events in areas deprived of fires for years. • Development of dense woodlands or degraded terrestrial lands due frequent fires. Dominance of few plant species adapted to fire and thinning of woodlands.	• Liaise with DFRR on the study of community fire management (do not know the actual name of the project) • Initiate Outreach & Education campaigns to enlist help of communities in conservation. • Provide funding for research into fire and its effects on flora, and secondly fauna. • Advocate with Tourism Operators to reduce fires in Commercial CHAs.	• DFRR • DEA • MLEAA
Unsustainable use of wild plant species	• Poverty • Weak management & enforcement of laws. • Low environmental awareness	• Localised impacts • Local extinction, • Pressure on certain valuable or medicinal species	• Potential loss of key species, but also ultimately reduction in availability of resources important to rural livelihoods	• Revive CBNRM involvement in PA CHA & WMA management • Outreach & Education campaign to draw communities into conservation. • Develop sustainability plans for natural resource harvesting	• MENT • MIDA Authority & DFRR
Alien invasive species	• Habitat degradation (e.g., overgrazing, nutrient loading in riparian systems)	• Displacing of indigenous species • Change in water quality. • Low quality of rangeland	• Potential loss of key species, but also ultimately reduction in availability of resources important to rural livelihoods	• Re-assess priority species (e.g., *Ailanthus altissima*) • Engage Land Managers (Tourism Operators, Community Trusts) in control campaigns. • Support DWS in aquatic weed control – ensure continued funding for the Aquatic Vegetation Control Unit.	• MLEAA • DWS • DEA • DFRR • MENT • MOA • Land Managers (Concession holders, Community Trusts, Village Dev Committees, etc.)

Threat	Underlying Causes	Main Impacts	Key Implications	Recommendations & Key Interventions	Responsible Implementing Partners
				• Establish a network of Institutions responsible for management of invasives to ensure coordinated approaches and mutual support. • MLEAA to advocate for secured funding streams to responsible institutions for invasive management.	

Table 9.4b: Biophysical Parameters - EXTERNAL Threats.

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions	Responsible Implementation Parties
Climate change	• Global carbon emissions, overconsumption of fossil fuels • Consumerism, Greed and inequality • Historic economic dependency on cheap energy and outdated economic planning approaches. • Deforestation and unsustainable agricultural practices in the region • Anthropogenic uncontrolled bush fires in the basin	• Warming, particularly over the dryland ecoregions, especially the Kalahari xeric savannas. Increase in extreme weather events and increasing weather unpredictability. • Increase in PET (equivalent to increased water demand for plants) • Desertification	• Reduction in ecosystem services & natural resource availability, affecting livelihoods • Increased pressure for controlling infrastructure for water resources (e.g., dams). • Increased need for wildlife homerange connectivity. • Multi-lateral agreements with strict regulations on resource extraction & unsustainable land management practices covering even local communities.	• Increase resilience of rural livelihoods by: o Economic diversification o Increase climate change education & outreach. o Improve & manage household water security. o Monitor subsistence livelihoods. o Deliver adequate health & education services. o Promote climate-smart agriculture. • Alternative: incentivize urban migration to ensure easier service delivery • Secure corridors for movement between resource areas (water, forage) for wildlife and livestock. • Facilitate & monitor wildlife movements (e.g. migrant birds) & fish. • Monitor aerosol dispersions [smoke & dust quality] over the basin.	• MLEAA to advocate with all parties to follow Paris Agreement. • OKACOM • KAZA • NGOs [ACADIR, SAREP, Chemonics, NCONGO) • Ministries of Foreign Affairs, Agriculture, Environment and Health in Member States • Energy policy (Bots - Ministry of Minerals and Green Energy?) • MLEAA • OKACOM • KAZA • NGOs [ACADIR, SAREP, Chemonics, NCONGO) • Ministries of Foreign Affairs, Agriculture, Environment, Health, and Energy in Member States

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions	Responsible Implementation Parties
				• Full national support to global initiatives e.g., Paris Agreement. • Proactive involvement & engagement with transboundary resource management institutions: OKACOM, KAZA.	• World Bank through Cooperation in International Waters in Africa (CIWA) program
Changes to hydrology & water quality of inflowing rivers	• Nutrient runoff in catchment in neighbouring countries • Increased development, industrialisation, mining, and urbanization, leading to increased water demand (e.g., for development of hydrocarbon deposits or iron ore deposits). • Land & resource use practices (e.g., irrigated agriculture and water harvesting) • Leaching of soil salts and nutrients due to poor irrigation practices	• Decreasing variability in flow, cessation of low season flow, eutrophication, decreasing water quality, decrease in sediment inputs, decrease in sediment carrying capacity. • Change in the timing, duration, quality, and extent of annual floods. • Decrease in inflow quantities due to abstractions for mining and industry. • Algal blooms & proliferation of alien aquatic plant species • Desiccation and increased mortality of aquatic life	• Loss of flood pulse leading to loss of extensive seasonally flooded floodplains needed for wildlife, fish, and birds. • Change to character & functioning of a primary biodiversity hotspot, leading to loss of ecosystem services and natural resources for both rural livelihoods & the national tourism industry [Diminished recreational opportunities & erratic supplies of aquatic food resources] • Change from fresh water to more saline conditions.	• Ensure proactive involvement and engagement with transboundary resource management institutions: OKACOM, KAZA. ○ ODWHS/RS Management Authority to have a seat in OKACOM. ○ Promote political will at the national leadership level. • Botswana Government Advocacy at Basin level for ○ low-impact development approach Basin-wide ○ Focus on development which does not impact natural flow regime or water quality. ○ Consideration of PES approaches to securing low impact on both on hydroperiod and water quality. ○ Consideration of co-development of solar	• MLEAA to advocate for actions and approaches with Basin States partners • OKACOM • KAZA • NGOs [ACADIR, SAREP, Chemonics, NCONGO)

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions	Responsible Implementation Parties
	• Water pollution due to effluents from commercial industries and enterprises. • Deforestation and proliferation of alien plant and animal species • Alterations to natural flow regime from storage infrastructure			power as alternatives to hydropower • Advocacy for all future industrial agricultural and mining developments to be high efficiency (both water and nutrient use). • Advocacy for future industrial agricultural development to be designed with nutrient trapping where runoff or infiltration might occur due to over-application.	• OKACOM • KAZA

Table 9.4c: Biophysical Parameters: SYSTEMIC Threats, Issues, Impacts, Implications and Recommendations

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Action	Implementing partner
Lack of implementation of ODMP and other legislation	Limited responsibility and funding	ODMP ineffective; no progress towards goals	Deterioration of OD in terms of biodiversity and ecosystem functioning, with knock-on effects for tourism and livelihoods	• Formation of an active Okavango Wetland Management Committee, responsible for management oversight and coordination. Representatives from multiple stakeholders should be a part of the committee, to which agencies such as DEA and DWNP would need to report to on progress towards recognised goals. • Stimulate ownership of ODMP and empower local and central government land use planning authorities (i.e. Tawana Land Board, NWDC Planning Unit, DLUPU, Tourism land bank authority, etc.	• MLEAA • MENT
Poorly coordinated large scale management efforts	Lack of communication between transboundary and national institutions Lack of large-scale vision in management decision making	• Unclear regulations relating to resource access. • Conflicts between resource users	• Potential for over-exploitation of resources • Disregard of resource use (land, natural resources) legislations and making them ineffective. • Emergence of transboundary resource conflicts • Lack of partnerships & cooperation in	• Okavango Delta management committee responsible for liaising with stakeholders (among other tasks). • Increased participation in and communication with all multi-national agencies and other governments • Implementation of the KAZA protocols on management of transboundary resources.	• MLEAA • OKACOM • KAZA

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Action	Implementing partner
			management of transboundary resources (e.g., fire management, anti-poaching activities, creation of open borders/removal of fences to facilitate animal movements, etc.)		
Unsustainable harvesting of veldt resources, including subsistence hunting	Lack of benefits to communities from natural resources, particularly through tourism	• Low accountability for veldt product extraction • Over-harvesting resources. • Resentment towards government and tourism operators	• Decrease in biodiversity. • Reduced ecosystem services	• Devolution of natural resource management to community level • Initiate Outreach & Education for Sustainability with Communities	• MLEAA • MENT
Increasing levels of wildlife crime	Poverty; Covid-19; Greed, Minimal consequences, Rising markets unmet through legal trade.	Unsustainable harvesting of natural resources Shifting of focus and resources to fighting poaching Militarisation of the conservation efforts and diminishing community-based interventions	• Declining wildlife populations • Extinction (local or total) of some rare and endangered wildlife species.	• Harmonisation of legislation across borders & implementation of KAZA principles & protocols. • Cooperation between countries to investigate & prosecute criminals across borders. • Promote CBNRM in local communities living along international borders (both sides) • Build relationships & invest in economic development of local communities living adjacent to international borders.	• MLEAA • MENT • BDF • KAZA • OKACOM
Increasing disturbance to wildlife & degradation of	• Tourism infrastructural development and expansion	• Rising disturbance, displacement & degradation of habitats	• Displacement of sensitive wildlife species. • Loss of biodiversity, ecosystem functioning	• Revision of Limits of Acceptable Change for tourism infrastructure development and expansion.	• MLEAA • BTO

Issue (Threat)	Underlying Causes	Main Impacts	Key Implications	Recommended Action	Implementing partner
natural resources due to tourism and resource harvesting	• Increasing demand for fisheries resources	for rare & sensitive floral and faunal species • Changes in breeding sites & population dynamics of waterfowls • Increase in anthropogenic/ uncontrolled fires. • Loss of high-quality tourism potential due to uncoordinated human movements, aircrafts/ scenic flights, and other human activities • Noise pollution & introduction of invasive species from aircraft.	and services, & tourism potential	• Review of Botswana's tourism strategies (on high quality-low impact tourism or high value-low volume tourism) to guide proper zoning and limit developments and disturbances within core areas. • Empower local communities to issue and regulate fishing permits and activities. • Establish mechanisms to facilitate effective communication & mutual relationship between fishers, private/government visitors, and tourism operators in private tourism concessions.	

Table 9.5 Socio-economic livelihoods, environmental and cultural assets - Threats

Threat	Underlying Causes	Main Impacts	Key Implications
Poverty, environmental degradation and other tourism related anthropogenic challenges.	• Lack of access to assets (financial, information technology, human capital and skills, productive assets, markets), decision-making, social protection and safety, access to services (health and education).	• Local/external ownership bias and unequal distribution of natural and financial capital resources (investment opportunities) and land tenure insecurity • Moderate and severe child malnutrition especially among pre-primary school going children. • Misuse or misallocation of community resources and political manipulation/influence/corruption. • Violation of community heritage rights. • High levels of illiteracy and unemployment • High levels of susceptibility/ vulnerability to severe impacts of natural disasters • Poor access to credit • Low wages/over representation of female in semi/unskilled jobs and lower management positions in tourism industry • High level of participant in informal sector economy.	• Exclusion and social, cultural, and economic marginalization • Weakened household/community cohesion and networks of support, alienation, despair and self-harm (e.g., alcoholism) • Increased vulnerability to market fluctuation, job insecurity and financial insecurity • Lack of insurance against risk (personal and eco-tourism business). • Increased rural-urban disparities. • Increased vulnerability to risk of exposure and multi-dimensional severity of environmental change impacts
Under-representation in decision-making and leadership in key natural resources management sectors notably: o Biodiversity o Water o Fisheries/ aquaculture	• Lack of recognition/affirmation of ethnic groups indigenous to the WHS landscape perspectives ón natural resources management regimes, environmental sustainability, and equitable distribution of benefits. • Limited access to financial capital to convert/transform natural capital to enhance market opportunities and sustainable livelihoods.	• Marginalization/exclusion and gender bias indigenous knowledge systems • Marginalization/exclusion of women in management of natural and cultural resources • Unequitable access and distribution of benefits, increased poverty. • Significant differences in ownership and control of productive resources and	• Breakdown of rural support for conservation and sustainable utilization of natural resources. • Environmental degradation • High levels of poverty and vulnerability to diseases due to poor health outcomes • Unsustainable livelihood strategies

Threat	Underlying Causes	Main Impacts	Key Implications
○ Forestry and range resources ○ Tourism ○ Protected Areas	• Limited access to platforms to address natural resource allocation inequality. • Lack of participation and representation of in conservation and administration of water resources • Low understanding of interactions with natural resources, and cultural and historical • Anthropogenic challenges to the integrity of sites of cultural significance and heritage posed by the tourism industry. • Lack of platforms for negotiating fair benefit sharing derived from biodiversity genetic resources. • Limited participation of communities in key activities of management and use of natural and cultural resources.	economic/market and entrepreneurial opportunities/profitability. • Increased household food and nutritional insecurity and child malnutrition • Ethnic bias/discrimination in water resources management/leadership roles (the use, supply, conservation, and administration). • Limited access to aquatic resources vital for arts and craft making. • Criminalization of natural resource access activities (such as illegal collection of reeds, grass, firewood, and non-timber products). • Unsustainable harvesting of edible and medicinal plants • High rural-urban migration • High youth unemployment	• Potential loss of key species, but also ultimately reduction in availability of resources important to rural livelihoods
• Cultural marginalization through non-committed decision makers.	• Cultural resistance/biased organizational structures/procedures/ in terms of attitudes which discriminates points of views. • Cultural and international bias against local concerns and priorities.	• Instituted points in some departments are often junior staff with limited or no power to influence policy direction and or resources allocation.	• Resistance to culture sensitive decision-making activities (either overtly/covertly, implicit/ explicitly) by individuals or institutional processes for they challenge dominant norms, practices, and assumptions. • Low significance of the role of cultural diversity awareness and environmental sustainability.

Table 9.6 Climate change threats

Threat to cultural sites of significance	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions
Climate change	• Global pollution (air and water), overconsumption of fossil fuels, genetic resources pirating, illegal offtake and trade of wildlife. • Impacts of structural global socio-economic inequality and disproportionate imbalances; eco-tourism and cultural tourism under development and international trade on biodiversity genetic resources.	• Local communities in biodiversity-rich areas are often dependent on climate sensitive natural resources and are often disproportionately vulnerable to climatic risk of exposure and disasters. • Donor driven competing funding interests and national government priorities are often not aligned to livelihood concern of local communities in terms of, for example, food security, water, human health, biodiversity, water and forest resources management and equitable distribution of benefits.	• Less attention given to community representation to articulate climate change concerns/impacts in decision making especially important in addressing disproportionate impacts of extreme events. • Develop proper guidelines for culture and development agenda in the context of climate change adaptation and mitigation measures drawing from the recently approved Botswana Climate Change Response Policy (2021).	• Training and capacity building on cultural diversity and human rights based approach to development interventions in the context of climate change effects, community adaptation capacity and resilience, strategies to enhance livelihood, food/nutritional security and promote health and wellbeing outcomes. • Cultural adaptations to be related to climate disaster risk-reduction and household resilience.

Non-Compliance to international instruments and frameworks	Mechanisms for monitoring, translating & implementing MIDA agreements to promote equitable access & benefits are ineffective & unaccountable. Failure to fulfil local communities' equal rights to economic resources and financial services.	• Lack of political will • Non-gender budgeting • Limited gender experts • Low level social power capabilities in addition to low economic power 'opportunities' (wages, employment, and access to resources • Poor development sector monitoring and progress reporting	• Social exclusion, political and economic marginalization	• Contributing towards poverty alleviation is a core function of empowerment strategies include ownership, job creation, information-sharing and training. • Initiate interventions for sustainable community access to natural resources and the delivery of benefits and attaching values to the aesthetic, spiritual, social, and educational attributes to cultural significance and heritage value.

CHAPTER 10: STRATEGIC PLANNING FRAMEWORK

10.0 OVERVIEW

The management and implementation framework are informed and guided by a vision statement, mission, strategic goals and objectives, with the former specific to the thematic areas. In developing the vision and the mission, the OUV statements of the Okavango Delta WHS and the Ramsar Convention pillars (wetland, ecological integrity and adaptive management) were considered important for inclusion, as well as socio-economic livelihoods and the resources, together with the culture and well-being.

10.0.1 Vision

A well-functioning multi-internationally designated socio-ecological system that equitably and sustainably provides benefits for local, national, and international stakeholders.

10.0.2 Mission

To sustainably manage the Okavango Delta MIDA landscape outstanding universal value, its wetlands, natural, and cultural heritage resources based on best internationally, nationally, and locally accepted conservation models for continued provision of nature's benefits to people towards achieving sustainable development.

10.0.3 Overall Goal

To integrate natural resources and cultural heritage management of the Okavango Delta MIDA landscape that will ensure its long-term conservation and cultural preservation that will provide benefits to support and build more resilient communities through stakeholder engagement and accountability in the sustainable use of its natural and cultural assets.

10.1 STRATEGIC GOALS AND OBJECTIVES

Strategic Goal 1. To establish efficient and accountable institutional and governance structures and frameworks to support integrated natural and cultural heritage management in the multi-internationally designated area landscape of the Okavango Delta region.

Strategic Objective 1.1. To establish an efficient and an accountable management institution for governance and sustainable management of the Okavango Delta MIDA landscape.

Strategic Objective 1.2. To improve the planning and regulatory framework for sustainable management of the shared natural resources and cultural heritage across the Okavango Delta MIDA landscape.

Strategic Objective 1.3. To promote co-management and co-learning for natural and cultural resource management among key stakeholders through taking advantage of all potential synergies in natural and cultural resources management within the Okavango Delta MIDA landscape and at transboundary level.

Strategic Objective 1.4. To ensure provision of adequate and sustainable resource and budget allocations to facilitate effective and efficient management of the ODMP while maintaining appropriate monitoring systems for reporting of accounting and management information.

Strategic Objective 1.5. To ensure adequate, appropriately skilled human capital to implement the ODMP within coordinating institutions.

Strategic Objective 1.6. To promote data sharing and management, information exchange and synergistic interactions between and among different sectors implementing the ODMP.

Strategic Objective 1.7. To improve the adaptive capacity to climate change of institutions involved in the management of the Okavango Delta MIDA landscape.

Strategic Objective 1.8. To promote gender mainstreaming and equality across all the ODMP institutions and implementing bodies.

Strategic Goal 2. To ensure the long-term conservation of the Okavango Delta MIDA landscape and the continued provision of nature's benefits to people.

Strategic Objective 2.1. To maintain the ecological integrity (biotic and abiotic functions) of the Okavango Delta MIDA landscape, and the interactions between them.

Strategic Objective 2.2. To conserve the different habitats, ecosystems, species and the Outstanding Universal Value of the World Heritage Site and the Ramsar site.

Strategic Objective 2.3. To maintain continued flow of ecosystem services to local and national stakeholders

Strategic Objective 2.4. To build, maintain, and safeguard the resilience to climate change and other external drivers of biotic and abiotic functions of the Okavango Delta MIDA landscape and its biodiversity.

Strategic Goal 3. To sustainably use the natural and cultural heritage of the Okavango Delta MIDA landscape equitably to support livelihood of all stakeholders.

Strategic Objective 3.1. To promote equitable use and access to natural and cultural heritage resources and flow of benefits to support livelihoods of local stakeholders.

Strategic Objective 3.2. To identify existing and emerging socio-cultural and economic opportunities for generating sustainable economic returns.

Strategic Objective 3.3. To identify and promote programmes and enterprises that support value addition in natural and cultural resources.

Strategic Objective 3.4. To climate proof livelihood strategies dependent on the Okavango Delta MIDA landscape and enhancing socioeconomic opportunities.

Strategic Goal 4. To develop, manage and enhance diverse environmentally sustainable tourism-based ventures and related developments in the Okavango Delta MIDA landscape for maximized contribution to local and national economy.

Strategic Objective 4.1. To promote development of responsible, sustainable, optimal and diversified tourism products within designated zones of the Okavango Delta MIDA landscape.

Strategic Objective 4.2. To increase and optimise meaningful citizen and local participation in tourism through proactive citizen empowerment, reservation and effective SMMEs policies and support.

Strategic Objective 4.3. To support development of meaningful community-private sector joint ventures in community managed areas.

Strategic Objective 4.4. To promote the development of cultural heritage tourism for the benefit of the custodians of the cultural heritage assets.

Strategic Objective 4.5. To streamline tourism enterprises processes and procedures to facilitate investments in the tourism industry.

Strategic Objective 4.6. To promote the ecological integrity of the Okavango Delta MIDA landscape and its social carrying capacity for sustainable tourism development.

Strategic Objective 4.7. To encourage and promote the adherence to limit of acceptable change by all tourism sector stakeholders.

10.2 PRIORITY AREAS AND RECOMMENDATIONS

10.2.1 Institutions and Governance

10.2.1.1. Efficient and Accountable Institutional, Governance Structures and Frameworks

Strategic Goal 1. To establish efficient and accountable institutional and governance structures and frameworks to support integrated natural and cultural heritage

management in the multi-internationally designated area landscape of the Okavango Delta region.

Strategic Objective 1.1. To establish an efficient and an accountable management institution for governance and sustainable management of the Okavango Delta MIDA landscape

When the ODMP was adopted in 2008, the Department of Environmental Affairs (DEA) was tasked to lead the coordination and monitoring implementation of the ODMP. DEA was the rightful choice as the ODMP was specific to the Okavango Delta Ramsar Site (ODRS), managed under the requirements of the Ramsar Convention. Preliminary audit of the DEA regional office has noted that it is not adequately resourced to handle the responsibility in terms of staffing, funding, and equipment, as well as capacity. Another compounding challenge with DEA as a coordinating agency is that it lacked enforcement powers for most ODMP issues. This incapacitates DEA to enforce implementation among the implementing sectors and agencies. It is worth noting that DEA operates at par if not lower with all other implementing sectors at district level, making it difficult for the Department to play an oversight or coordination role over them. The scenario has often resulted in individual institutions and departments reverting to 'business-as-usual', instead of inter-agency collaboration during the implementation of the ODMP. These problems have hampered effective implementation of the ODMP.

The Mid-term review noted that the piece-meal implementation (or lack of implementation) of ODMP tasks by the respective individual Departments defeated the integrated approach espoused by the ODMP. The issue-driven implementation was blamed for duplication and overlapping of functions, which further strains the already limited resources. Owing to this, the mid-term review called for ODMP recommendations to be 'based on the availability of capacity to implement' instead of a 'wish-list' – that is, based on reality.

The Department of National Museum and Monuments (DNMM), whose mandate is to preserve and promote Botswana's cultural and natural heritage for sustainable utilisation, was not among the initial twelve (12) ODMP implementation sectors identified in the 2008 ODMP. With the inscription of the ODWHS and the Tsodilo Hills, which are within the ODRS, their role and participation becomes not only mandatory but also significant and necessary. This is so because the DNMM is the custodian of the Convention Concerning the Protection of the World Cultural and Natural Heritage of Outstanding Universal Value, which was adopted by UNESCO in 1972. Through this instrument, nations of the world have agreed to inventorise, recognize and protect unique and irreplaceable properties of universal value. The Convention provides a permanent framework - administrative and financial for international cooperation in safeguarding mankind's cultural and natural heritage and introduced the specific notion of a "world heritage" whose importance transcends all political and geographic boundaries. The DNMM is therefore responsible for ensuring the implementation of the requirements of the convention at the ODWHS and Tsodilo Hills.

The DNMM has been effectively managing the Tsodilo Hills since inscription. It now has an additional site to manage under the World Heritage Convention. Preliminary audit has revealed

that the Regional office in Maun is not adequately equipped to handle the additional responsibility of the vast property, when compared with the Tsodilo Hills, which was far smaller. Compounding this, DNMM operates at Regional level, also targeting Chobe and Boteti districts. This further overstretches the already thin staff on the ground. The office therefore needs to be capacitated in terms of all resources to effectively manage the ODWHS.

Considering the challenges experienced during the ODMP implementation, the inscription of the WHS, it has become necessary to re-think governance and coordination both at district and national level. The ODRS is now a MIDA landscape, it is necessary to consider a more effective coordinating structure with full powers of implementation and enforcement. This coordinating structure can take the form a Coordinating Authority, housed within the Ministry of Environment, Natural Resources Conservation and Tourism (MENT). The Okavango Delta MIDA landscape deserves this level of recognition as its proper management and implementation now involves two Departments within the Ministry and entails the management of ecosystem services which provide Botswana with her second biggest source of foreign revenue. Coordination by DEA was acceptable previously because the bulk of the area (ODRS), was under the Ramsar Convention and DEA could single-handedly coordinate and implement, notwithstanding the coordination and implementation challenges already noted.

Under the current arrangement, i.e., double designation status, there is a need for an umbrella structure to bring the two Departments together. Over and above the complexity brought about by the two Departments, the multiplicity of institutions from different Ministries and diverse agencies in the form of Departments, parastatals and local authorities that undertakes implementation means that a central governance structure that will facilitate implementation is essential. The structure must be above the level of the implementing institutions for effectiveness.

This single coordinating structure will be advantageous in that it will have a clear mandate, clear reporting lines and implementation powers. This recommendation was mooted in the Mid-term Review, though it was dismissed based on cost-effectiveness, potentials for overlaps and duplications. The listing of the Okavango Delta as a World Heritage Site has brought in a complexity, in that it adds another significant role that must be played by the DNMM. For smooth, effective implementation, there is a need for a Multi-Lateral Environmental Agreements Authority (MLEAA) with a Secretariat office headed at Director level within MENT. The structure, operating at National level, will coordinate future sites of international importance in Botswana such as additional Ramsar sites and WHS and may even be extended to Trans-Frontier Conservation Areas (TFCAs) and Trans-Frontier Protected Areas (TFPAs). The MLEAA would be constituted by high-ranking senior level management from relevant Central and Local Government departments, parastatals, civil society (NGOs), CBOs and other associations such as HATAB, BOGA and academia (Figure 10.1). Among Central Government departments, the Department of Mines must be actively involved and fully participate as a member of the Authority as issues around mining have become topical around WHS and Ramsar sites nationally and elsewhere. The World Heritage and the Ramsar Conventions prohibits mining in world heritage and Ramsar sites. Department of Mines will also be

instrumental in issuing mining rights in the context of CBNRM to CBOs for sand, clay, rocks and other non-precious minerals.

At District level, it has been recognized that the ODRS's Okavango Wetlands Management Committee (OWMC) lacked proper institutional linkages to the district structures to facilitate flow of information within the District. The OWMC serves as a structure in which all the ODRS implementing sectors and stakeholders ensures implementation of the ODMP and sustainable use of natural resources within the ODRS. It is this important committee that lacks institutional linkages to fit in the functional structures and processes within the District. Noting the structure will still play a significant role at District level to provide oversight, it is recommended that the OWMC be made a sub-committee of DLUPU. This will ensure that all matters relating to the Okavango Delta MIDA landscape discussed by the OWMC are reported to the DLUPU and the DDC (Figure 10.1), ultimately reaching District Council and other responsible Ministries and national structures such as the National Strategy Office (NSO). In this way, there will be a flow of information from the OWMC through to the relevant and upper structures within government at District and national level. The DEA and the DNMM will continue to play a significant role in the OWMC as alternating Secretariat of the OWMC, i.e., DEA one period then DNMM next or vice versa. At National level, the MLEAA will continue to monitor and evaluate progress reports from the OWMC.

Still drawing from the Mid-term review report, below the OWMC is a need for the Scientific Advisory Committee (SAC). The SAC will be responsible for designing and conducting research and monitoring activities to meet the needs of the implementing sectors. The Okavango Research Institute (ORI) would lead the Scientific Advisory Committee, which would be constituted by academic institutes working within the Okavango Delta MIDA landscape, private researchers, and other relevant representatives from the implementing sectors' research units and/or divisions. The ORI will also serve as a training centre to build capacity of implementing sectors to effectively manage and monitor projects undertaken with the landscape. To this effect, it is recommended that a detailed research, capacity building and training needs assessment study be undertaken for implementation sectors and other collaborators involved in the management of the revised ODMP.

<table>
<tr><th colspan="4">Strategic Objective 1.1</th></tr>
<tr><td colspan="2">Action/Recommendation: Governance and Institutional structures</td><td>Priority</td><td>Lead agency</td></tr>
<tr><td>A1</td><td>Establish an MLEAA and Secretariat office within the MENT.</td><td>High</td><td>MENT
DA
NWDC</td></tr>
<tr><td colspan="4">The roles of the MLEAA will, among others, be to:
Monitoring and implementation of multi-lateral environmental agreements
Coordination of the IDA such as Ramsar sites, World Heritage Sites, Transfrontier Conservation Areas and Protected Areas at national level
Oversee and coordinate implementation of the OD MIDA plan (revised ODMP) by local, central government agencies, and other stakeholders and partners.
Facilitate implementation and monitoring the OD MIDA plan through the OWMC.
Monitor utilization of public and other partner resources.
Exercise oversight responsibility and policy making.</td></tr>
</table>

Strategic Objective 1.1			
Action/Recommendation: Governance and Institutional structures		**Priority**	**Lead agency**
A2	Formalise the OWMC within district structures by designating it a sub-committee of DLUPU	High	DA CS DDC
A3	Empower the OWMC with adequate resources to provide advisory role at district level to the MLEAA Coordinating Office	High	MENT DA
A4	Establish a Scientific Advisory Committee	High	MENT/MLEAA OWMC ORI

The roles of the Scientific Advisory Committee will, among others, be to:

- Facilitate the design of research and monitoring within the OD MIDA landscape.
- Provide scientific information about resources in the OD MIDA landscape.
- Guide and develop research protocols for implementation and monitoring within the OD MIDA landscape.
- Provide quality control and rigor in research and data management within the OD MIDA landscape.
- Provide oversight in the development of the OD MIDA landscape research strategy.

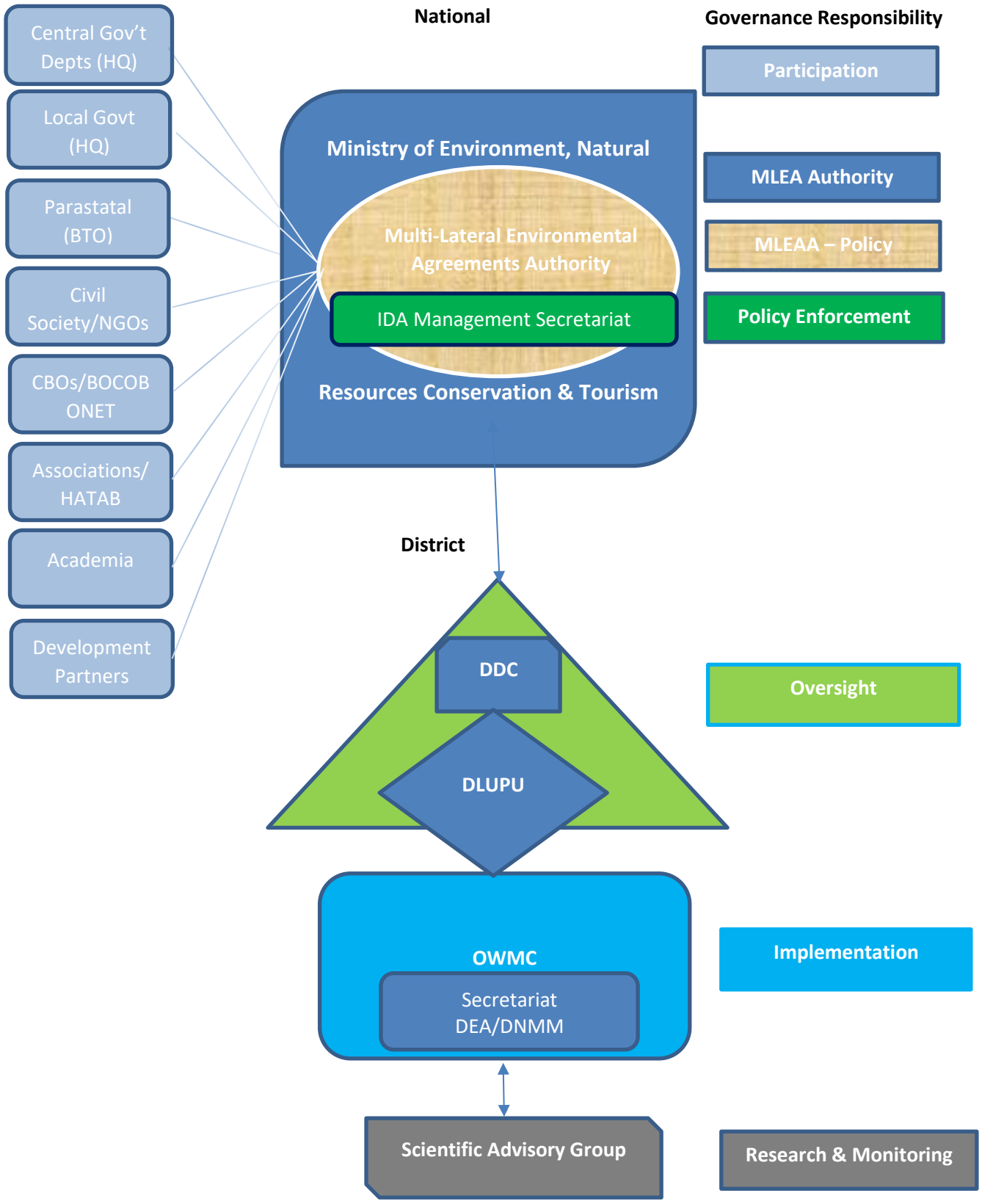

Figure 10.1. The Okavango Delta MIDA Landscape Governance Structure

Strategic Objective 1.2. To improve the planning and regulatory framework for sustainable management of the shared natural resources and cultural heritage across the Okavango Delta MIDA landscape.

The Okavango Delta MIDA landscape has multiple stakeholders, implementing institutions, land use and planning documents. The 2008 ODMP Mid-term review (MTR) noted that one of the challenges which promoted lack of implementation of the ODMP was inflexible regulatory framework and lack of coordination among planning authorities. Stakeholders also raised concerns on the laxity of regulations governing the natural resources exploitation (such as the fisheries resources) and livestock numbers permitted per borehole. During consultations, stakeholders raised concerns over several malpractices in the Okavango Delta MIDA landscape such as unmonitored houseboats within the Panhandle, night fishing, the need to preserve cultural heritage sites, environmental degradation, uncontrolled sand mining, unsustainable natural resources harvesting, ineffective veterinary cordon fences, amongst others.

The proliferation of settlements in the Okavango Delta MIDA landscape is also another cause of concern. If unabated, this will lead to settlement sprawl within the Okavango Delta MIDA landscape in the long run. The mid-term review categorically indicated that 'no new settlements should be allowed to develop in the Delta, while the growth and expansion of existing settlements should be stringently restricted' (p. 70). This was advanced as a way of reducing the pressures on land and other natural resources. It was further recommended that 'no further expansion of those settlements like Ditshipi, Khwai, and Jao (and Xaxaba – current addition) should be allowed' (p. 70). The revised National Settlement Policy promotes proliferation of settlements when the minimum threshold of people is reached. While the North West District Development Plan 8: 2017 – 2023 acknowledged the role of the revised National Settlement Policy of 2004, it further cautioned against comprising its implementation, mainly in environmentally sensitive areas such as the North West District.

Another factor with potential to contributing to mushrooming of settlements in the Okavango Delta MIDA landscape is the application by individuals to claim their ancestral lands (*matlotla*) within the Delta. Tawana Land Board is inundated with claim applications dating back to 2012 which are still pending consideration by the Board. The Board formulated a policy, the Tawana Land Allocation Policy in 2012, which amongst other things laid procedures for regularizing inheritance plots and indicated that all *matlotla* (ruins) not claimed and used from a minimum of 5 years shall not be regularized. Enforcement of this policy without accompanying legislation is doubtful and renders it easily challenged in the courts of law. It is therefore necessary that a legislation be enacted to support this policy and it will help reduce mushrooming of settlements inside the Delta.

The need to monitor and control development of settlements in the core area of the Okavango Delta MIDA landscape is an imperative. An ideal way to do so is to implement the recommendations of the 2008 ODMP, the 2009 Ngamiland Integrated Land Use Plan, the North West District Development Plan 8: 2017 – 2023, the ODMP mid-term review – 2014, which all echoed the need for all gazetted settlements within the ODRS to prepare settlement development plans to facilitate and guide orderly growth and developments. These planning documents further recommended that for smaller rural settlements, 'simple land use layout

plans should be initiated by the VDCs and assisted by Council and Land Board officials for the preparation'. Only a hand full of villages has so far done this, being Maun, Gumare, and Shakawe.

The overarching approach towards averting the legal, policy and implementation challenges compromising effective control in the Okavango Delta MIDA landscape and its future ecological integrity, is to declare the Okavango Delta MIDA landscape a planning area. This was proposed in the 2008 ODMP and further emphasized in the 2014 MTR. The MTR noted that the non-declaration of the ODRS as a planning zone, now the Okavango Delta MIDA landscape, "has made it very difficult for land use allocation and control processes to operate effectively and fairly" (p. 88). It further noted that without extending the Town and Country Planning Act to the ODRS, "any spatial development plan is not legally binding, and therefore the communities and implementing authorities are not necessarily obliged to adhere to and implement the plan's guidelines and recommendations" p. 88). Heeding to this call is more relevant now than ever as it will strengthen enforcement, development controls and land management in the Okavango Delta MIDA landscape.

However, noting the poverty levels within the Ngamiland district, demanding planning permissions and standards may be expecting much from the general populace. It may also be a taunting task for implementers to monitor and enforce the same effectively across the district. It is therefore recommended that while the planning requirements will be imposed for development enterprises (business and tourism facilities, i.e., commercial activities) within the district, all traditional/domestic developments (e.g., residential, *masimo* and *meraka*) and small-scale subsistence enterprises for residents must be waived. Furthermore, imposition of planning requirements may be restricted only to the core and buffer area of the Okavango Delta MIDA landscape core area.

Against this backdrop and the mid-term review, the following recommendations are made.

Strategic Objective 1.2			
Action/Recommendation: Planning and Regulatory Frameworks		**Priority**	**Lead Agency**
B1	Escalate the approval of the Okavango Delta MIDA plan to Cabinet level to make it statutory	High	MENT (DNMM, DEA) NWDC
B2	Declare the ODRS as a Planning Area in terms of TCPA of 1997	High	MLWS
B3	Enforce planning requirements on development enterprises (business and tourism facilities, i.e., commercial activities) within the district and exempt all traditional/domestic developments (e.g., residential, masimo and meraka) and small-scale subsistence enterprises for residents	High	NWDC Physical Planning Unit TLB
B4	Ensure that plans, programmes and development activities in the Okavango Delta MIDA landscape are guided and/or informed by a common and shared vision for the ODMP.	High	Local Authorities (DA, NWDC, TA)

Strategic Objective 1.2			
Action/Recommendation: Planning and Regulatory Frameworks		**Priority**	**Lead Agency**
B5	Enact legislation to enforce the Tawana Land Allocation Policy of 2012.	High	MLWS, MDJS, DoL, AoJ, National Assembly
B6	Control proliferation of settlements in the Okavango Delta MIDA landscape core area though: • Implementing the Tawana Land Allocation Policy (2012) which prohibits regularization of *matlotla* (ruins) not claimed and used from a minimum of 5 years. • Restrict development of new settlements in the Delta, while the growth and expansion of existing settlements should be stringently restricted. • Restrict further expansion of existing settlements in the core zone like Ditshipi, Khwai, Jao and Xaxaba. • Prepare settlement development plans for all gazetted settlements and simple layout plans for small rural settlements within the Okavango Delta MIDA landscape to facilitate and guide orderly growth and developments.	High	MLWS TLB VDC RDC
B7	Prohibit allocation of ancestral lands identified or with potential of being cultural heritage sites to individuals. The sites must be promoted for community use.	High	MLWS TLB

Strategic Objective 1.3. To promote co-management and co-learning for natural and cultural resource management among key stakeholders through taking advantage of all potential synergies in natural and cultural resources management within the Okavango Delta MIDA landscape and at transboundary level.

Effective management of the Okavango Delta MIDA landscape will require active engagement of all stakeholders, including the general publics. This calls for effective methods of partnership, engagement and agreement between public authorities, the general publics, voluntary organisations and interest groups to promote sustainable landscape management, protection and planning.

Effective stakeholder engagement will require constant awareness raising on the links between the state of the Okavango Delta MIDA landscape, natural assets and sustainable socio-economic livelihoods. The need to promote awareness and knowledge of environmental stewardship among all stakeholders having direct and indirect interest in the Okavango Delta MIDA landscape is imperative. This strategic objective will therefore raise and instil environmental awareness, consciousness and actions that can be taken by individuals to protect natural resources and values espoused by the Ramsar and World Heritage Conventions.

Due to the transboundary nature of Okavango River, being part of the Okavango River Basin, the need to foster collaborations with upstream and headstream communities and institutions

cannot be overlooked. This will be pursued through existing structures such as the OKACOM. OKACOM has structures in place that fosters transboundary collaborations and peer dialogue on issues affecting the Okavango River Basin. The transboundary collaboration is strong at technical level and this must be continued.

There is a need also to continue to support grassroots transboundary collaboration. Every River Project (ERP), implemented from 2007 to 2012 is an ideal model that must be resuscitated for grassroots transboundary collaboration initiative. The ERP goal of promoting 'the sustainable management of natural resources in the Okavango River Basin for the benefit of basin residents and states by promoting and facilitating the effective participation of stakeholders in natural resource decision-making and management, particularly related to water resources' (Every River has its People Project, 2007, p. 1) is still relevant. The project was multi-faceted in approach in that it addressed issues of socio-economic livelihoods for the basin communities, capacity building, environmental education, community participation and empowerment, creating community horizontal and vertical linkages with OKACOM structures, and development of natural resources-based enterprises and business opportunities and supporting local and basin wide institutions. A structure like Every River Project targeting the Okavango River Basin communities within the Okavango River Basin must be put in place to fit into the technical structures operating within the OKACOM.

Strategic Objective 1.3			
Action/Recommendation: Stakeholder co-management and co-learning		**Priority**	**Lead Agency**
C1	Develop and implement a communication strategy in support of the ODMP.	High	MLEAA MENT (DNMM, DEA)
C2	Develop, implement, and support programmes (e.g., environmental education) to communicate the benefits of Okavango Delta MIDA landscape to all stakeholders	Medium	MENT (DEA DNMM)
C3	Develop and implement awareness campaigns for the communities and other relevant stakeholders on use and the control of bush fires	High	DFRR
C4	Identify appropriate partners for further development and implementation of its communication and public awareness strategy	Medium	MENT (DNMM DEA)
C5	Establish working partnerships with NGOs, government organizations, development assistance agencies and the private sector to roll environmental education	High	MENT NGOs Private Sector
C6	Raise awareness of the landscape's natural and cultural values, the threats and opportunities for management among different stakeholder groups	High	MENT (DNMM DEA)
C7	Develop and implement programs to increase understanding about good natural and cultural resources management practices	High	MENT (DNMM DEA)
C8	Promote transboundary dialogue in natural and cultural resources management across boundaries both at Technical and grassroots	High	MENT OKACOM

Strategic Objective 1.3			
Action/Recommendation: Stakeholder co-management and co-learning		**Priority**	**Lead Agency**
	(e.g., Every River has its People Project) level to enhance transboundary governance.		NGOs
C9	Utilise opportunities for collaborative meetings to promote and advocate for transboundary river basin management	High	MENT (DNMM, DEA) OKACOM

Strategic Objective 1.4. To ensure provision of adequate and sustainable resource and budget allocations to facilitate effective and efficient management of the ODMP while maintaining appropriate monitoring systems for reporting of accounting and management information.

The Okavango Delta is approximately about 5.5 million hectares (55,372 Km^2) and assessment indicated that the resources allocated to management of the ODRS were not adequate to fully implement the ODMP as well as manage the ODRS. There are no resources dedicated for management of the ODRS and other operational activities needed for the optimal implementation of the ODMP in terms of budget, monitoring of budget allocations and financial reporting. This is evidenced by insufficient support from the implementing partners, in terms of non-compliance to the ODMP in their daily operations, and lack of dedicated resources towards implementation of the ODMP. There is no budget drawn up towards travel, consumables, equipment, outreach, advertising and marketing, promotional materials, workshops and annual meetings, office supplies etc., now, there are 2 vehicles, no water-based transport, though the area being managed is a wetland. Annual plans are drawn without budgetary allocations for implementation and monitoring.

The Isimangaliso Wetland Park (IWP) in South Africa, which is also a World Heritage and Ramsar site was reviewed for benchmarking when reviewing the current Financial and Human resources capacity to effectively manage the Okavango Delta MIDA landscape. IWP is about 358 534ha (3 585.34 Km^2) of marine and terrestrial protected area, and they have dedicated resources (Finances, Human and Assets) to monitor and manage the MIDA landscape. The 2018-2019 annual report shows total revenue of R163 million, whereby 79% was government grants, 14% collected from the Park activities and 7% other funding agencies. Their motor vehicle costs were about R2.5 million, which demonstrate commitment to their course of implementing their MIDA landscape strategy.

The lack of resources and commitment from the implementers of the ODMP is a cause of concern and has been articulated in the Midterm Review. Failure to pay attention to ensuring proper, adequate, and dedicated resourcing of the Okavango Delta MIDA landscape may have long term implications. The costs of restoring wetlands could so phenomenal, as demonstrated from Comprehensive Everglades Restoration Plan (CERP) – a 4,662Km^2 area in Florida, United States of America, which is projected to take about 50 years, and is expected to cost over $16 billion. Degradation of the Okavango Delta MIDA landscape through anthropogenic activities may even lead to the delisting of the landscape. Prevention is always better than cure.

To safeguard the ecological integrity of the Okavango Delta MIDA landscape and its Outstanding Universal Value, it is necessary to dedicate adequate and sustainable resources for its management.

Strategic Objective 1.4			
Action/Recommendation: Adequate and sustainable resources		**Priority**	**Lead Agency**
D1	Annual plans to be drawn up from the existing strategy with a dedicated budget to cover the Human Resources, Assets, Capital, and daily operations with consideration to the size of the MIDA landscape and the amount of work that needs to be done	High	MLEAAMENT (DNMM, DEA)
D2	Put in place a monitoring system to track expenditure and ensure that spending is according to the approved budget	High	MLEAAMENT (DNMM, DEA)
D3	Develop and use an accounting system that allows for financial reporting, where general ledger can be printed at any point in time to monitor allocations and expenditure, with clear lines of subversions	High	MLEAAMENT (DNMM, DEA)
D4	Develop clear policy on accounting and finance procedures	High	MLEAAMENT (DNMM, DEA)

Strategic Objective 1.5. To ensure adequate, appropriately skilled human capital to implement the ODMP within coordinating institutions.

The ODMP ideally should be implemented by several government departments. The reality is, however, that there are only two people who are faced with the responsibility of coordinating the activities of the ODMP to ensure its implementation. These officers are employees of Department of Environmental Affairs (DEA) whose responsibilities and scope of work is 80% DEA related activities, thereby dedicating only about 20% for the ODMP. There is also no authority that directly makes implementing departments accountable. As a result, several government departments involved in the implementation of the ODMP face challenges such as duplication of functions, unclear and undefined roles, lack of support from the leadership or management of the implementing departments.

An analogous multi-dimensional protected area, Isimangaliso Wetland Park, despite its size, is operated as an independent entity, with a dedicated staff and resources for the running of the organisation. The approved establishment of Isimangaliso in accordance with the 2018-2019 Annual report was sixty-eight and they had managed to fill thirty-nine (39) of the positions which equates to 57%. The positions filled at Isimangaliso showed an equal distribution comprising of four (4) in management, thirteen (13) Professionally qualified, twenty (20) Skilled Technical, three (3) Semi-skilled (3), and had no unskilled employees. Their reports

also indicate that on a regular basis they employ temporary staff and interns through the different grants or projects they undertake.

The Okavango delta, though very large compared to Isimangaliso Wetland Park landscape, has far less capacity to run or manage the implementation of the ODMP. It is therefore necessary to capacitate the implementing agencies and the proposed national coordinating office within the MENT to enhance implementation of the ODMP.

<table>
<tr><th colspan="4">Strategic Objective 1.5</th></tr>
<tr><td colspan="2">Action/Recommendation: Capacity enhancement of the IDA coordinating office</td><td>Priority</td><td>Lead agency</td></tr>
<tr><td>E1</td><td>Capacitate the MLEAA coordination office with human and capital resources</td><td>High</td><td>MENT
DPSM</td></tr>
<tr><td colspan="4">The Office must:
Ensure that all activities done by other implementing departments affecting the different components of the ODMP are in accordance with the ODMP annual and long-term plan.
Be adequately and fully empowered to make and hold government departments accountable thereby help improve enforcement of the legislative and regulatory frameworks relevant to the management of the Okavango Delta MIDA landscape.
Ensure commitment, cooperation and coordination between all the parties managing the Okavango Delta MIDA landscape</td></tr>
<tr><td>E2</td><td>Resource the coordinating office with adequate requisite qualified and skilled staff members dedicated solely towards the coordination of the implementation of the Okavango Delta MIDA landscape management plan and ensure implementation of subsequent sector plans</td><td>High</td><td>MENT
(DNMM, DEA)
DPSM</td></tr>
<tr><td>E3</td><td>Prepare a detailed research, capacity building and training needs assessment study for the implementation sectors and other collaborators involved in the management of the revised ODMP plan</td><td>High</td><td>MENT
(DNMM, DEA)
MLEAA</td></tr>
</table>

Although, it may be considered costly to execute the above recommendations, it is important to also note that the current arrangement limits the implementation of the ODMP. The implications this can have on the Okavango Delta might be way too costly than if the above recommendations are not considered. The MLEAA will guarantee that there is ownership, responsibility, and accountability by prioritizing the activities of the plan and ensure that there are outputs. It must have clearly defined goals and therefore will be able to provide detailed plans and ensure their execution. The entity will be able to make policy decisions and present issues within the Okavango Delta MIDA landscape with ease to the relevant authorities better because it will be well within their sole mandate unlike the current status where officers responsible for the implementation have other priorities and their respective departmental obligations.

Strategic Objective 1.6. To promote data sharing and management, information exchange and synergistic interactions between and among different sectors implementing the ODMP.

The ODMP noted that information on the Okavango Delta was scattered across the different sectors. The information was in different formats and inaccessible as it was housed in different entities. Hence the plan recommended a development of a comprehensive and user-friendly data and information management system for development and implementation of ODMP. The rationale to create the system was to provide access to key datasets through a map interface to support the ODMP. The system was developed in the form of the Okavango Delta Information System (ODIS), housed, and managed by the Okavango Research Institute (ORI), University of Botswana. The Institute was chosen as they have the requisite capacity to assist in implementation of the ODRS in areas such as research, environmental monitoring, auditing of project progress, a robust IT infrastructure, database management and training.

It was initially not accessible via the internet and only functioned as a desktop application hosted at the ORI Geographic Information Systems (GIS) laboratory. The Okavango Delta Information System (ODIS) operated on very simple workflow in which data and information was received and curated at ORI and then shared to government officers and other stakeholders on portable storage media such as compact discs and handheld storage drives.

However, the mid-term review revealed that utilisation of the ODIS was still minimal as stakeholders did not either input data or source data there for the ODMP's core business processes. This status quo points to the need for strong support for the improvement of ODIS, capacity development and its eventual conversion into an overall ODRS data gathering and analysis framework, as it was echoed in the mid-term review.

The ODIS still houses much of the outdated data and documentation initially generated to support the ODMP development process and its implementation. Overtime, additional data have been added to ODIS by GIS Lab personnel. In 2008, some funds for upgrading ODIS were secured through the BioKavango Project and additional upgrades were affected in 2018, again with external funding from the JRS Biodiversity Foundation. However, the GIS Laboratory has not been able to keep up with the planned upgrades for full web GIS functionality allowing easier access of the data and information to users through a browser-based interface due to lack of funding.

Botswana has experienced rapid growth in mobile phone and internet subscriptions that necessitate a response in the ability of government agencies to meet the massive data and information needs of decision makers and planners. Current Geographic Information Systems (GIS) are a powerful platform for facilitating dialogue between experts and non-experts in natural resources management because they can combine visual spatial-enabled information with other media to allow effective user interaction. For instance, SAREP introduced a method called LUCIS to the Tawana Land Board, which was adopted as a tool for central planning and land allocation mechanism for its sub-land boards. This was after it was demonstrated to ensure that land for agriculture was allocated in areas with the best soil and near villages, while also far from elephant pathways to reduce human-elephant conflict.

Furthermore, the learning curve for using web-based technologies is very low, as proven by the exponential growth in the use of smart phones by ordinary citizens. Web GIS can be defined as any GIS that uses web technology to communicate between a server and a client (users). A

fully operational ODIS will have web-accessible base maps and dynamic layers. Base maps are usually pre-generated maps that are commonly referred to as cached or tiled layers. Examples are topographic, census and imagery layers. Operational layers focus primarily on dynamic data. In other words, data that can change more frequently than that of a cached base map. Many times, these layers encapsulate related content, such as sensor type (earthquake, weather, and fire data) monitoring data. The maps will be appropriately designed and categorized using international standards and conventions.

An upgraded web-based ODIS platform will be used for data management and storage and would have the following selected list of capabilities as an example:

- Provide access to digital base maps, earth observation images and operational (dynamic) map layers.
- Provide an interface to search for data within ODIS as well as on external sources of geospatial information. Users can also use the map interface to search for documents that are geographically referenced to the area.
- Provide the platform on which tools for impact analysis of proposed projects can be based.
- Provide the platform upon which monitoring tools can be built.
- Provide visualization of ecological hot spots and climate change vulnerability.
- Provide a collaboration platform for the stakeholders of ODMP.
- Provide a platform through which citizen science observations and feedback to government entities involved in the ODMP can be uploaded.

Database Hosting, Personnel, Documentation, and Data Sharing

It is recognized that there have been previous efforts to consolidate environmental data within the Botswana Government Environmental Information System (EIS). There has also been donor led projects such as the Southern Africa Regional Environmental Program (SAREP) which have produced some data products that are relevant to the management of the Delta.

The key variables that would ensure a well-functioning and effective ODIS are:

- Secure Database Hosting Infrastructure
  All data that is relevant to the delta must be perpetually hosted and accessible within secure facilities that can expand as the data size increases, preferably at the Okavango MIDA coordinating office. ODIS should be built on robust ICT infrastructure that can host all data and information resources pertaining to the Okavango Delta. Efforts should be made to identify any Delta-relevant data that was produced from ongoing or complete projects e.g., SAREP, TFO, SASSCAL etc. and depending on its availability, process it and store it within the ODIS database.

- Database documentation, sharing and reuse.
  Much of the data in ODIS and in government departments needs to be documented and properly curated to allow easy sharing and reuse. Documentation and adherence to international standards will enable ODIS to ‘speak’ to other portals that are hosted

externally such as the EIS and allow users to discover and use relevant data to fulfil their information need.

Geographic metadata is used to document the attributes of geographic data. Documentation of data allows users to identify it, assess its completeness, use constraints, quality assurance and if there are any needed changes as well as how to access it. It is simply information that you need to locate manage and utilise internal and external data resources. A standardized metadata template will be developed to support the implementation of a customized metadata profile conforming to these ISO 19115 themes.

- Data Sharing Protocols and Governance
  To meet the strict requirements for data owners, some of whom are scientists, all data that is included in the ODIS database should be properly attributed and a fine-grained permissions system put in place. Whereas old data that is already in the public domain may be made available for sharing, any newly contributed data should only be shared with the approval of the source contributor. If a stakeholder does not wish their hosted data to be shared, only map services (images or representations) of their data should be shared.

  Web GIS systems are inherently built to allow data sharing and reuse by ODMP stakeholders and for information products to be easily accessible to policy makers and resource managers for prudent decision making. An inbuilt search engine will be a major component for users to discover hosted data and information resources such as snapshot visualizations of phenomena happening within the delta e.g., fires, floods, land use changes that are hosted elsewhere via ODIS.

These actions will help maximize the return of investment by government in ICT projects such as ODIS and allow the value of data and information to be realized for decision making purposes. The ORI and its GIS Lab are positioned to manage spatial and biodiversity data exchanges with stakeholders. This is necessary as the ORI will lead the Scientific Advisory Committee.

<table>
<tr><th colspan="4">Strategic Objective 1.6</th></tr>
<tr><td colspan="2">Action/Recommendation: Strengthen the coordination and dissemination of biodiversity data (including metadata)</td><td>Priority</td><td>Lead Agency</td></tr>
<tr><td>F1</td><td>Strengthen and support ORI GIS lab with requisite resources to manage all data (socio-economic, spatial and biodiversity) for the Okavango Delta MIDA landscape</td><td>High</td><td>MLEAA/MENT
OKACOM
Development Partners</td></tr>
<tr><td colspan="4">The ORI GIS will:
1. Facilitate the selection of appropriate technology licenses as well as the design and development and maintenance of an upgraded ODIS database and web GIS platform.
2. Implement a coordinated adoption of tools (online catalogues, web mapping applications), standards (metadata, web publication) and policies (content, access, use) for an effective ODIS.
3. Facilitate the development of protocols and agreements for incorporation of data into ODIS, exchange of data, sharing of information products and interim findings amongst stakeholders.</td></tr>
</table>

Strategic Objective 1.6			
Action/Recommendation: Strengthen the coordination and dissemination of biodiversity data (including metadata)		**Priority**	**Lead Agency**
4. Coordinate and plan activities regarding community of practice and knowledge exchange meetings (seminars, conferences) with counterparts from all components implementing sectors to discuss results, scenarios and decision support within the delta and basin. 5. Ensure project outputs in terms of database and decision support tools are relevant to stakeholders. 6. Coordinate the training and professional development of personnel involved in the ODMP. 7. Seek and secure funds to sustain the availability of data and information for ODIS through the support of MLEAA, OKACOM and development partners. 8. Put in place a set of technical specifications (standards) that would guide an evaluation of fitness-for-purpose (quality) of the existing geospatial data and future automation. 9. Engage additional personnel to cover all important areas of running a well-functioning enterprise GIS portal to serve the needs of all users.			
F2	ODIS training or refresher sessions need to be a carried out continually to motivate users to use the application effectively.	High	ORI MLEAA DEA DNMM Implementing Sectors
F3	Develop a standardized metadata template to support the implementation of a customized metadata profile conforming to ISO 19115 themes.	Medium	ORI MLEAA DEA DNMM
F4	Develop data management and sharing protocols	High	ORI MLEAA DEA DNMM Implementing Sectors

Finally, the ODMP report is a very large document that may not be readily consumable by the public and other stakeholders. A visualised sample showcasing the ODMP in a web-based ODIS platform has been developed. It showcases innovative ways through which the ODMP can be made more accessible and engaging to stakeholders by transforming textual report into visually stimulating interactive web application that demonstrates the possibilities of a future web-based ODIS platform. The sample ODMP web application was developed as a visually stimulating story map and is available at https://arcg.is/DOOv10

Strategic Objective 1.7. To improve the adaptive capacity to climate change of institutions involved in the management of the Okavango Delta MIDA landscape.

Institutions are essential to providing guiding principles aimed at safeguarding the environment and societies against the impacts of climate change. Institutions are systems of rules, decision-making procedures, and programs (IDGEC, 1999) while adaptive capacity of institutions refers

to how these formal and informal rules, norms and beliefs enable individuals, organizations and networks to cope with climate change (Gupta *et. al*., n.a). The scoping assessment has found the adaptive capacity of the Okavango Delta MIDA institutions wanting.

The fight against climate change depends upon secure land turner and land use including natural resource access. Climate driven environmental changes on the availability of natural resources may be addressed by revising inhibitive laws and policies that hinder community access to natural resources such as, land, water, fish, veld products and wildlife resources. During the scoping stage, land tenure, land use and resource access issues were identified including the land bank directive which has since been repealed; hunting moratorium of 2014 which has been lifted; veld products harvesting regulations; raffle for fishing permits; and molapo farming regulations. There is thus a need to review existing laws and policies with the view of improving them to: facilitate community benefits from biodiversity; define property rights that facilitate rights to own, use or manage biodiversity; and create best management practices that address multiple functions.

Environmental legislation is invaluable in addressing the escalating climate change and hence its implementation demands a high degree of accountability. The scoping stage identified challenges such as; the disregard of the CBNRM policy mandate by giving investors the upper hand over communities, and none-compliance to environmental management plans (EMPs) of projects that were subjected to EIAs. There is therefore a need to enforce environmental legislation and intensify implementation of policies that in the end also facilitate the fight against the vagaries of climate change by reducing vulnerabilities. Prioritisation and enforcement of environmental conservation and associated legislation by government officials go a long way in addressing global change (see Folk, 2019). Strengthening of law enforcement should be coupled with enhancement of management and governance structures through strengthening existing local structures e.g., CBOs.

A strong human capital base and skills are needed to facilitate communities and biodiversity to adapt to climate change. Related to this, the scoping stage revealed that there was a lack of skills and capacity to facilitate certain operations that reduce community vulnerability to climate change and understaffing of some government departments involved in the management of Okavango Delta MIDA landscape. This therefore calls for enhancement human resource capacity to facilitate community climate change adaptation.

Strategic Objective 1.7			
Action/Recommendation: Institutional adaptive capacity to climate change		**Priority**	**Lead Agency**
G1	Create enabling legal and policy frameworks.	High	DWNP TLB MOA (DCP) DFRR DWS DoL DoT

Strategic Objective 1.7			
Action/Recommendation: Institutional adaptive capacity to climate change		**Priority**	**Lead Agency**
G2	Mainstream climate change adaptation into land ownership and access rights laws and policies.	High	DoL TLB DWNP MOA DoT DMS
G3	Intensify enforcement of laws, policies and regulations to reduce exposure/vulnerability to climate change (CBNRM Policy & EMPs)	High	DEA DWNP
G4	Enhance management structures (e.g., CBOs) considering climate change adaptation	Medium	DWNP
G5	Enhance human resource capacity in climate information and knowledge sharing among departments.	High	HRDC, DPSM MIDA Landscape stakeholders

Strategic Objective 1.8. To promote gender mainstreaming and equality across all the ODMP institutions and implementing bodies.

The Sustainable Development Goals agenda (SDG5: Achieve gender equality and empower all women and girls) calls for the eliminating gender inequality and closing the gender gap in the labour market is central to promoting gender equality, an important cornerstone to advance women's empowerment and a principal determinant in attaining SDG5. Gender bias originates in patterns of socialization based on socio-cultural norms. A Human Rights approach undergird the Gender Affairs Department (GeAD) development programming and advocates for gender mainstreaming as a core strategy. This makes gender a cross-cutting issue, and an imperative factor for the achievement of sustainable development goals. The national development areas for gender mainstreaming as stipulated by GeAD include: economic development and poverty elimination; social protection and social services (health, education, sanitation, information, housing, energy and climate change); political power, democratic governance and decision-making; access to justice, protection of human rights and freedom from violence and targeting vulnerable groups.

Capacity building and specific gender awareness competencies are required among sector civil servants include, *inter alia*, *i*ncreased awareness of the centrality of economic development and impacts gender discrimination in employment; infusion of gender budgeting implication and human rights discourse gender mainstreaming policy arena; gender awareness capacity building among politicians and civil servants to mitigate gender mainstreaming resistance; women's empowerment, that is, expansion of people's ability to make strategic life choices where this ability was previously denied. This includes economic, socio-cultural, familial/interpersonal legal, political, and psychological.

Different government authorities and regional coordinating bodies such as OKACOM oversee national and transboundary issues in the Ramsar and World Heritage site in Botswana. Given

the complexity of institutional and legislative arrangement, harmonizing these brings about challenges in the management of MIDAs from various institutions for the same site. These include but are not limited to inter-agency information flows and policy/program prioritization via national authorities. Each government entity has its own primary objectives and approaches, and sometimes these are not necessarily compatible with the geographical extents for the sites. Also, international designation could evoke resistance among local communities and multiplicity of recognition risks confusing them, particularly regarding land-use restrictions and access to natural resources.

Given these complexities, at its 35th Session (UNESCO Paris, 2011), the World Heritage Committee (Decision 35com12D.7) requested the World Heritage Centre to explore ways of recognizing and rewarding best practice through on-off initiative. The UNESCO template could be adapted not only to demonstrate the successful management and sustainable development of the World Heritage Site property, but also to address critical gender mainstreaming challenges within the Okavango Delta MIDA landscape as indicated in the action and recommendation table below.

Strategic Objective 1.8			
Action/Recommendation: Gender mainstreaming and equality across all development sectors		**Priority**	**Lead Agency**
H1	Training and capacity building on gender systems and intersection, and human rights-based approach to climate change adaptation.	High	MLEAA/MENT (DNMM, DEA) MNIGA (GAD) DSP S&CD
H2	Consistent monitoring of the SADC Gender Protocol on Gender and Development Action Plan with a baseline and specific targets within a 2030-time frame and measuring progress for policy makers and service delivery institutions, human rights activists (CBOS) and for beneficiaries to demand gender equality and align targets with Sustainable Development Goals.	Medium	MNIGA (GAD) CBO GAN
H3	Adopt, customize, align and promote implementation of UNESCO's best practice template to demonstrate the successful management and sustainable development of the World Heritage site property.	Medium	DNMM
H4	Affirm and monitor the Beijing + 25 specific measures to improve rural women's status and access to productive resources, active participation in conservation and management of natural resources.	Medium	CBOs GAN DGA

10.2.2 Biophysical Resources

10.2.2.1 Conservation and Provision of Nature Benefits to People

Strategic Goal 2. To ensure the long-term conservation of the Okavango Delta MIDA landscape and the continued provision of nature's benefits to people.

The economic base of Ngamiland district and Botswana is underwritten by sustainable management of natural resources. The tourism sector, which is one of the intended drivers of economic growth, is heavily dependent on a healthy population of the various species of wildlife and large natural landscapes. This form of economic activity was recognized in the original ODMP and in the previous review as facilitating the goals of conservation and sustainable use, and it appears to have served this function well thus far. Pressures are, however, increasing from all directions: the human population is rising, expectations of access to resources and prosperity are growing; climate change is increasing uncertainty about the drivers of the ecosystems; access to land is a mounting issue, and the competition for resources and land between people and wildlife is an increasing concern.

Long-term conservation of the Okavango Delta MIDA landscape requires a solid knowledge base and understanding of the ecological processes and functions that underlie the outstanding wildlife and landscapes on which its WHS status is based. While our understanding and knowledge of the systems has greatly increased since the last review, there are still many knowledge gaps that hamper clear decision making. Key to this stage of implementation is the design and implementation of programmes of monitoring and research, which, although recognized, have been poorly resourced and coordinated in the past.

The scoping stage of this review and the mid-term review highlighted that better coordination between institutions is needed to make the ODMP a useful tool. More effort is needed to make this a reality, particularly when formulating approaches to coexistence between a largely poor rural human population and a "natural" ecosystem, the services of which support both the local human population and the foreign exchange earning tourism industry. A truly concerted effort is needed to communicate the management goals and objectives to both these groups to gain their support in our attempts to conserve and sustain this globally valued socio-ecological system.

Four strategic objectives to realize the long-term conservation of the Okavango Delta MIDA landscape and the continued provision of nature's benefits to people are described below:

Strategic Objective 2.1. To maintain the ecological integrity (biotic and abiotic functions) of the Okavango Delta MIDA landscape, and their interactions.

Ecological integrity is premised on secure habitats, and habitats are maintained by ecological processes. The major ecological drivers in the Okavango Delta MIDA landscape are the hydro-climate (rainfall, river flows, and access to surface water), herbivore-plant interactions, and fire. Major ecological attributes of the Okavango Delta MIDA landscape include, critically, the existence of contiguous multi-functional wildlife habitats, particularly the availability of dry

season bridging forage in the form of floodplains which receive water during the winter months but are progressively exposed during the hot dry period before the rains begin.

The 2008 ODMP mid-term review (MTR) identified habitat fragmentation and ultimately the potential isolation of the Okavango Delta MIDA landscape as a major threat to sustainability. The threat is still relevant and needs to be addressed.

Strategic Objective 2.1			
Action/Recommendation: Prevent the isolation and fragmentation of the Okavango Delta MIDA Ecosystem		**Priority**	**Lead Agency**
A1	Integrate all the work on mapping movements of all species of wildlife; provide a repository and forum for this work to be synthesized and summarized for managers and policy makers.	High	MENT (DWNP) ORI
A2	Ensure all smaller scale land use plans and infrastructural developments conform to specifications of the Okavango Delta MIDA core and buffer areas and enshrine identified corridors.	High	DLUPU Land Boards DWNP
A3	Identify and remove all non-essential fences and barriers to movement of wildlife	Medium	DVS DWNP
A4	Monitor water quantity and quality, and water use, abstraction and extraction activities in the Okavango Delta MIDA landscape	Medium	DWS, ORI
A5	Monitor resource availability (forage, water, shelter resources, refuge) and distribution within the MIDA landscape and how it is affected by disturbance factors such as wildfires, floods, disease outbreaks, invasive species, poaching, overharvesting, excessive herbivory, and tourism development.	Medium	DWNP, DFRR, DWS, DVS, MOA, BTO, ORI,
A6	Regional integration and management of the Cubango-Okavango River Basin (CORB) and its adjacent ecosystems	High	MENT (DWNP, DEA, DNMM) OKACOM, ORI, KAZA

Strategic Objective 2.2. To conserve the different habitats, ecosystems, species and the OUV of the WHS and the Ramsar site.

The complex mosaic of habitats in the Okavango Delta MIDA landscape is maintained by great variation in the primary abiotic drivers, hydrology and climate. The complexity and heterogeneity ensure that critical resources are available to consumers at each stage of the annual cycle of wet and dry. This objective is wholly dependent on Strategic Objective 2.1 to ensure that access to these resources is possible at the crucial period.

The Okavango Delta MIDA landscape is characterised by high levels of heterogeneity in terms of vegetation, surface water and shade. The highly dynamic nature of the ecosystem, particularly in relation to hydrology, means that the system is extraordinarily resilient, but also highly vulnerable to extreme climatic events, unless the open nature of the system is maintained. The heterogeneity of the ecosystem allows animals to make compensatory adjustments in response to stochastic events such as unusually high floods that can restrict

access to resources, and drought periods when resources become scarce. It is therefore essential that the current levels of heterogeneity in the system on multiple spatial and temporal scales be maintained.

Much of the value of the Okavango Delta MIDA landscape stems from its wildlife and landscapes, in terms of tourism potential, ecosystem services, and intrinsic natural worth. There is potential for over-exploitation of resources, through high volume tourism and over-harvesting of vegetation and animal resources. Some species such as elephants and invasive plants can have large impacts on the ecosystem, and on other species. The effects of these species should be monitored and, if necessary, steps must be taken to reduce potential detrimental impacts. Globally, high levels of biodiversity are increasingly being acknowledged as indicators of ecosystem health and maintaining them is key for conservation. This necessarily requires in-depth surveying of current biodiversity and assessment of any threats so that biodiversity levels can be monitored.

To conserve habitats and ecosystems, ecological drivers must be secured and allowed to operate according to their natural variation. Careful planning and management of development in the catchment of the Cubango-Okavango River Basin (CORB) is needed to ensure that demand for water and energy do not result in the installation of infrastructure that alters the hydrological behaviour and water quality of the tributary rivers. Since this involves Namibia and Angola and their aspirations, great effort, advocacy and the identification of trade-offs is required on the part of Botswana.

Further threats to the ecosystems arise from human activities within the Okavango Delta MIDA landscape in Botswana. Wildfire is one example of this; illegal offtake of wild animals is another. Poaching has historically been a difficult infringement to deal with: responsibilities are unclear (or conveniently "grey"), arrest procedures have not been clear, and the will to enforce the laws does not appear to be strong. Arrests are very seldom followed by convictions. Similarly, efforts to reduce the frequency of wildfires have had very little success to date. This plan suggests that efforts be re-focussed on social engagement: people living in areas where the primary form of land use is based on using the natural resources (wildlife, veld products and the landscape) must be engaged in anti-poaching efforts, and the management of fire. Stewardship must be rewarded.

Strategic Objective 2.2			
Action/Recommendation: Secure primary ecological drivers		**Priority**	**Lead Agency**
B1	Engage OKACOM and advocate for minimum intervention in hydrological processes; secure the natural flow regime. Seek high-level support for these actions and associated trade-offs from Government	High	MLEAA MENT (DWS, DNMM, DEA)
B2	Support research and monitoring activities on habitats, habitat use and wildlife. Ensure a common framework for habitat classification to be used by all actors in monitoring. Provide for annual meetings for all stakeholders to present and discuss monitoring data. Ensure that reporting from these meetings is done.	Medium	MLEAA MENT (DWNP, DFRR, DWS) ORI

Strategic Objective 2.2			
Action/Recommendation: Secure primary ecological drivers		**Priority**	**Lead Agency**
B3	Support and facilitate the initiative to develop and implement community fire management strategies. This initiative is currently focused on the dryland areas to the west of the Delta. A concerted effort should be made to adapt and implement it in the inner Delta (including the Panhandle, where fire frequency has increased strongly over the last decades).	Medium	MLEAA MOA MENT (DFRR, DWNP)
B4	Develop a clear legal strategy for dealing with poaching. Clarify roles and responsibilities, ensure legal backing, and institute training in procedures for the appropriate enforcement agencies	High	MDJS DWNP BPS AoJ BDF
B5	Ensure that any artificial waterholes put into the Okavango Delta MIDA landscape have associated EIAs and the flow patterns mimic natural variation	Medium	DEA DWNP DWS
B6	Work with science and research partners to identify and define biodiversity indicators of system health; conduct regular assessments of biodiversity indicators and plan interventions to prevent biodiversity loss	Medium	DWNP, DEA, DFRR, DWS ORI
B7	Monitor functional heterogeneity in the Okavango Delta MIDA landscape, ensuring that habitats and ecosystem dynamics are maintained	Medium	DEA DWNP
B8	Prevent over-exploitation of resources by assessing stocks and allocating appropriate quotas; and minimize detrimental impacts of tourism	Medium	DEA DWNP DFRR, BTO MENT
B9	Monitor the impacts of high elephant populations on other species and habitats, including large trees and biodiversity; Implement the national elephant management plan	Medium	DWNP

Strategic Objective 2.3. To maintain continued flow of ecosystem services to local and national stakeholders

Implementation of this strategic objective must be preceded by the implementation of recommendations and interventions under Strategic Objectives 1 and 2 above. Local communities living in and around the ODRS rely on ecosystem services in the form of food, materials, employment and medicinal plants. These communities have existed in equilibrium with their natural environment for decades, but policy changes have removed their responsibility for governance and management of these natural resources. High-end tourism lodges visited by a majority of foreign tourists can be resented when income from such endeavours does not trickle down to the communities. Without benefits from the ODRS and its natural resources, local communities have no incentives to conserve the ecosystem. In large part, this issue related to governance and institutional capacitation, so is unlikely to be resolved quickly, but steps can be taken to revert responsibility for natural resource management back to local communities, thereby instilling a sense of ownership and promoting sustainable utilisation.

Strategic Objective 2.3			
Action/Recommendation: Revise CBNRM plan to ensure full integration of communities in CHA management decision making		**Priority**	**Lead Agency**
C1	Enlist participation of CBOs in revision of CBNRM plan. Ensure very broad consultation and retain stakeholder expectations within attainable possibilities.	High	MLEAA DWNP BTO
C2	Identify and Secure benefits for communities from: a) Wildlife user rights b) Abiotic resources (sand, clay, gravel, etc.) user rights c) Natural wilderness (e.g., by implementing the CBNRM component of Ngamiland District Tourism Plan)	High	MLEAA DWNP MMGE (DoM) NWDC DLUPU
C3	Resuscitate, re-implement or re-develop the community fish management plans developed during the BiOkavango/Panhandle Development Plan, including CPUE Monitoring	Medium	MLEAA DWNP ORI
C4	Assist communities to identify parameters and indicators for monitoring natural resources. Co-design and co-implement monitoring programmes. Train communities in Objective-based Management.	Medium	MLEAA DWNP DFRR DWS NGOs/CBOs ORI
C5	Initiate capacity-building and education programmes to empower communities to assimilate, collate, analyse, and interpret data from monitoring to assist management-oriented decision making	Medium	MLEAA DWNP NGOs/CBOs ORI

Strategic Objective 2.4. To build, maintain, and safeguard the resilience to climate change and other external drivers of biotic and abiotic functions of the Okavango Delta MIDA landscape and its biodiversity.

Climate change is predicted to bring about an increase in extreme, unpredictable weather conditions, including high intensity rainfall events and drought, both of which have substantial implications for the Okavango Delta MIDA landscape. The Okavango Delta is a system driven by changing water levels, which include the annual rainfall and the subsequent flood waters from Angola. Water requirements outside of Botswana's borders could affect the amount of water that enters the system, but also the dynamic flow patterns that are so important for the Delta ecosystem. Higher temperatures and potentially lower rainfall across southern Africa could increase demand for limited water resources associated with the Okavango Delta MIDA landscape. Climate change could reduce the amount of rainfall within Botswana, leading to greater conflict between wildlife and livestock farmers who may then be competing for limited forage and water.

Resilience of social-ecological systems is predicated on diversity and complexity. Complex systems with built-in redundancy are intrinsically more resilient to external shocks than simple ones. Systems with a high diversity of components and interactions are also intrinsically more resilient.

Habitat diversity must be protected by securing the natural ecological drivers. This involves work to ensure the natural flood regime is maintained, and work to restore the fire regime to frequencies which will permit natural recruitment processes to occur.

Biodiversity provides a critical natural capital base for the regulation of climate and natural hazards. For example, vegetation and wetlands are carbon sinks hence they play a role in carbon sequestering as well as reducing GHG emissions. Hence a disturbance to such ecosystem functions reduces the resilience of natural systems and human societies against the impacts of climate change (Uy & Shaw, 2012). Such disturbances include invasive species, wildfires, as well as degradation of wetlands and vegetation. The results of the scoping stage have shown threats associated with an increase in plant invasive species; as well as wetlands degradation (blocked and dry tributaries). This calls for nature-based solutions to climate change which include Ecosystem Based Approaches or Ecosystem Based Adaptation (EbA) as it is commonly known. Hence research and innovation are critical is identifying these adaptation solutions. The research aimed at protection of environment and biodiversity against climate change will fill gaps in areas such as: prediction of climate change; climate change impacts; carbon storage and methane issues; climate change management strategies; species that are expected to migrate under various climate scenarios and determine which ones are most likely to support wetland functions and values given climate change; range shifts and species invasions due to climate change; etc.

Strategic Objective 2.4			
Action/Recommendation: Maintain dynamic functionality of Okavango Delta MIDA landscape to enable resistance and resilience to climate change		**Priority**	**Lead agency**
D1	Coordinate with CORB states to ensure that water flow amount and variation into the Okavango Delta MIDA landscape is not interrupted	High	OKACOM DEA, DWS, ORI
D2	Maintain the Okavango Delta MIDA landscape as an open ecosystem enabling wildlife to perform adaptive movements in response to extreme environmental conditions caused by climate change	High	DWNP DLUPU MoA (DVS)
D3	Promote sustainable fire management strategies that suppress uncontrolled fires within the Okavango Delta MIDA landscape to reduce emissions of GHG	Medium	DFRR DWNP BTO
D4	Coordinate harvesting of natural resources to prevent deforestation, overutilization, pollution, and introduction of alien invasive species.	Medium	MENT (DFRR, DEA, DWNP) CBOs
D5	Initiate ‘Forests for adaptation’ and ‘Adaptation for forests’ through Ecosystem Based Adaptation	Low	DFRR
D6	Conduct research that points to adaptation measures that enhance protection of environment and biodiversity against climate change.	High	UB-ORI Other Tertiary Institutions, Private Researchers

Strategic Objective 2.4			
Action/Recommendation: Maintain dynamic functionality of Okavango Delta MIDA landscape to enable resistance and resilience to climate change		**Priority**	**Lead agency**
D7	Control invasive plant management through Ecosystem Based Adaptation (EBA)	High	DFRR, DWS (AVCU)
D8	Review fire management policies with a view to promoting wetland restoration and enhancement through controlled burning	High	DWS, DFRR, DEA

10.2.3 Socio-economic Environment

10.2.3.1 Sustainable Management to Support Livelihoods

Strategic Goal 3: **To sustainably use the natural and cultural heritage of the Okavango Delta MIDA landscape equitably to support livelihood of all stakeholders.**

One of the main thrusts of the government in NDPs 10 and 11 was to enhance people's livelihoods and transit from poverty reduction to poverty 'eradication'. Improving livelihoods implies that that there is a need to address all poverty-related issues including those bordering on the policy environment, institutional framework, and implementation of sustainable economic empowerment projects (MFDP, 2016). To re-iterate the strong link between people's ability to access natural resources (NRs) in the Okavango Delta MIDA landscape and their economic survival is a mere platitude. It is expected that the abundance of NRs in the Okavango Delta should automatically translate to enhancing the wellbeing of local communities in the area. Economic diversification, human capital development and creation of economic opportunities for the poor are, therefore, some of the government strategies to objectively address poverty issues.

However, the ODMP mid-term review (MTR) indicates that some daunting issues remain in the ODRS. These include human-wildlife conflicts and lack of integration of the recommended Land Use and Land Management Plan in the ODMP (particularly as it relates generally to soil suitability for arable agriculture and official recognition of flood recession farming). Although the ODMP stipulates that flood recession agriculture (*Molapo* farming) should be sustained, the mid-term review indicates that the recommendation was '…downplayed by the final ODMP document' (USAID, 2014, p. 46). Another major socioeconomic issue as highlighted in the mid-term review is the partial accomplishment in the expansion and improvement of the Okavango Delta people's socioeconomic base, which otherwise could be rightfully achieved through health, poverty, and gender mainstreaming in the ODMP implementation. To realize the strategic objective of the ODMP addressing improved livelihoods in the delta, there is an urgent need for the synchronization of cognate Okavango Delta MIDA efforts in ensuring the development of primary stakeholder's equitable and sustainable socioeconomic opportunities.

To achieve Strategic Goal 3, the following four strategic objectives have been developed:

Strategic Objective 3.1. To promote equitable use and access to natural and cultural heritage resources and flow of benefits to support livelihoods of local stakeholders.

Throughout, inequitable access to NRs has always been a major concern for rural communities in the Okavango Delta MIDA landscape. To enhance social and environmental justice, people who are *de facto* custodians of NRs need to be allowed and encouraged to manage the resources in their vicinity without any regimentation as it is in the current management structure of the Okavango Delta. To alienate people from their immediate environment is to court environmental trouble. This can only lead to two things: 'everyday forms of resistance' as witnessed in community revolt and poaching (Scott, 1989), and environmental degradation.

Consultations with communities during the scoping process in late 2019 and early 2020 indicate that local people perceive that they have been disenfranchised from decision making on access and use of NRs in the delta, making them to be embittered with the government. Somewhat linked to that is the remoteness of communities, which is further aggravated by poor road accessibility that hampers human movements and produce transportation. It is, therefore, necessary that a holistic review of the existing government policies on land access and use as well as those addressing agricultural development and food security be revisited to ensure that the needs of local communities are addressed, accordingly.

Gender mainstreaming is the heart of policy/program development practice. As social groups, women and men do not belong to static categories that remained stable and unchanged over time. There are subtle and complex dynamics inflecting gender discourses and access to and control over natural resources. Women's secure access to aquatic resources is vital for food security, craft making, small and medium enterprises and tourism for sustainable use of wetland resources. Gender makes a difference in water resources management. Men and women's roles need to be considered regarding the use, supply, conservation, and administration of water resources. Equally, gender matters in poverty reduction policy and program initiatives. Therefore, ignoring gender mainstreaming in poverty reduction initiative distorts comprehensive understanding of, for example, human impacts on environmental degradation and poverty.

Strategic Objective 3.1			
Action/Recommendation: Promotion of equitable use and access to natural and cultural heritage resources		**Priority**	**Lead Agency**
A1	Review policies on community control and access to natural resources and consider gendered differentials in the Okavango Delta MIDA landscape to end gender discrimination, increase women representation in leadership and decision-making structures, and revise relevant labour laws and funding requirement for programs.	High	DWNP DEA CEDA LEA DGA S&CD CBOs YDF
A2	Revisit and review the strategies already devised for alleviating human-wildlife conflicts including differential gendered impacts in the Okavango Delta MIDA landscape	High	DWNP
A3	Review policies on land use and reform paying attention to gender access in the Okavango Delta MIDA landscape.	High	DoL TLB
A4	Review agricultural policies in relation to the usufruct of *Molapo* farmers in the Okavango Delta MIDA landscape.	High	MOA (DCP)

Strategic Objective 3.1			
Action/Recommendation: Promotion of equitable use and access to natural and cultural heritage resources		**Priority**	**Lead Agency**
A5	Improve physical infrastructures (such as access roads and public transport) to enhance access to services (health and education) and social development in the Okavango Delta MIDA landscape.	Medium	MLGRD (DoR) DRTS
A6	Initiate gender budgeting strategic guidelines for key development sectors and entrepreneurship targeting rural communities, indigenous knowledge/natural resources-based venture/incubation programs/projects.	High	DB, EFP, NDB, NBFIRA, BIDPA, SB CEDA, DCD, MMGE (D EP & EDU)
A7	Assess community capacity needs for natural resources management and Nature-based rural entrepreneurship development	High	DWNP MLGRD (DCD, RD)
A8	Review agricultural policies in relation to gendered access to extension services, agri-business financing and entrepreneurship, household food and nutrition security in the Okavango Delta. Develop and implement community awareness and capacity building programmed based on the assessment of agricultural policies.	High	MAFS DAgri Business Promotion, DGA NFTRC
A9	Empower women through targeted programs such as Agri-business, conservation agriculture, and access to market information.	High	MOA DAgri Business Promotion MLGRD (DCD, RD) DGA
A10	Build capacity through training and awareness raising about different models of gender equality and equity.	High	DGA

Strategic Objective 3.2. To identify existing and emerging socio-cultural and economic opportunities for generating sustainable economic returns.

Ecosystems of the ODRS are fragile and subject to climatic and other global shocks. Agricultural practices and animal husbandry are continually pummelled by the harsh weather conditions and the ever-increasing climatic change. More importantly, judging from the global pandemic (COVID-19) witnessed in the last year, which has adversely affected ecotourism in the Okavango Delta and many other regions in the world, overdependence on the tourism sector as a major income earner for communities is, therefore, unsustainable in the long run. As economic diversification is one of the major strategies devised for the enhancement of people's socioeconomic wellbeing in the ODMP, there is a need to aggressively pursue other practicable avenues through which communities can generate incomes. Among many alternative options for improving local people's livelihoods, game keeping, for instance, might serve as an avenue

to significantly enhance 'sustainable utilization of wildlife, economic growth…' and employment creation in local communities (DWNP, 2021, p. 7).

Opportunities derived from meaningful skills transfer, land-use zoning and demarcation, ownership and control of natural resources including the desire for stewardship, and governance the Okavango Delta MIDA landscape are to be gendered. The link between people and opportunities derived from natural resources management is clear when applied as a balancing tool between competing gender demands. Gender makes a difference in agriculture policy and program initiatives regarding access to extension services to increase women's access to market information, knowledge of food crops, agri-business, conservation agriculture, fisheries, and other economic empowerment initiatives.

To achieve the above objective, it is necessary to engage in a fact-finding or ground-truthing process, which could help policymakers to make an informed decision on the implementation of appropriate and context-specific NR-based rural entrepreneurship development initiatives in the Okavango Delta MIDA landscape. Conducting a NR survey to profile communities in relation to the available resources within them and their immediate environ will foster the ability to implement locally grown cottage industrial base for achieving sustainable socioeconomic development in the Okavango Delta MIDA landscape.

<table>
<tr><th colspan="4">Strategic Objective 3.2</th></tr>
<tr><td colspan="2">Action/Recommendation: Identification of existing and emerging socio-cultural and economic opportunities</td><td>Priority</td><td>Lead Agency</td></tr>
<tr><td>B1</td><td>Conduct a study to produce a gendered profile of Okavango Delta MIDA villages and settlements in relation to the available natural resources (NRs) around them</td><td>High</td><td>MENT (DFRR, DWNP)
DAgri Business Promotion</td></tr>
<tr><td colspan="4">The profiling is expected to:
- Identify available NRs in specific locations in the Okavango Delta.
- Match communities with the available local resources
- Cluster communities in designated business villages based on their NRs.
- Collect gender disaggregated data and analysis.</td></tr>
<tr><td>B2</td><td>Assess the gendered capacity needs of communities for the purpose of enhancing their effective performance in NRs management and NRs-related rural entrepreneurship development.</td><td>High</td><td>DWNP
MLGRD (DCD, RD)</td></tr>
<tr><td colspan="4">The assessment is meant to:
- Determine gendered differentials of the knowledge and skills gaps existing in rural communities.
- Design appropriate gendered trainings and skills development (in conjunction with indigenous knowledge of communities), which can further enhance people's skills in NRs management</td></tr>
</table>

Strategic Objective 3.3. To identify and promote programmes and enterprises that support value addition in natural and cultural resources.

Clearly, the Okavango Delta is rich in biodiversity. This is evident in the abundant flora and fauna found within the delta's terrestrial and aquatic environments. These natural resources are in the form of wildlife, fisheries resources, veldt products, medicinal plants, wild roots and tubers, and a host of other resources. Although most of these resources are already playing a crucial role in the development of the tourism sector in the 2008 ODMP, the need to radically alleviate rural poverty through the enhancement of sustainable rural entrepreneurship and employment promotion in riparian communities situated within and around the Okavango Delta would engender the need to re-strategize and seek other alternatives for product development. There can be no other way to enhance people's access to the natural resources , which are available in their environment, other than devise environmentally friendly, value addition strategies through which these resources could provide better livelihood opportunities within the context of a World Heritage Site, which is the Okavango Delta's relatively new status.

Innovative strategies are, therefore, needed to enhance the derivation of sustainable economic returns from these resources without necessarily compromising the integrity of the ecosystem. Several multi-level approaches are herein suggested. First, there is need for a guided deregulation of NRs management; communities situated within and around the delta must be construed as true custodians of the NRs available within their environment. This implies that they need to be given the platform to adequately partner with the government in the adaptive co-management of NRs. Second, harvesting of NRs such as veldt products, fish, water lily, medicinal plants, etc. needs to be locally regulated in conjunction with relevant government agencies and departments as in the case of MOMS under the CBNRM initiative. Third, value additions to harvested natural products under a guided deregulated regime could be achieved through the establishment of rural business incubation centers (RBIC) or business villages at designated locations within the delta where these products could be turned into finished products by grassroots processors (see Kolawole, 2019).

To achieve this objective, three or more business incubation centers could be established within the delta by spreading them across the upper panhandle, mid-delta and distal area (see Kolawole, 2017). For instance, basketry, fish processing, artefacts, thatch and herbal medicine development and production could be standardized through the business incubators. As the government aims at maintaining the pristine nature of the Okavango Delta environment in order to further its tourism agenda, the formation of clustered business villages will achieve four things. First, it will enhance the development of local entrepreneurship and drive local desire for economic empowerment at the household level. Second, it will prevent sporadic environmental degradation that may arise from the clandestine activities of desperate but unregulated, private small business developers. Third, it will encourage checks and balances in the offtake of resources because of its in-built, inventory-taking nature. Fourth, it will promote adaptable and localized infrastructural development that does not compromise the integrity of the Okavango Delta ecosystem (Kolawole, 2017).

Gender intersects with other complex forms of inequality. Gender mainstreaming is always situated in the context of diverse and intersecting inequalities. During the 2008 ODMP Mid-Term Review, it was generally agreed by stakeholders "that mainstreaming gender into the

ODMP implementation process should be a deliberate policy decision and, where possible, 'should be applied to all sectors of the national economy to address issues of gender equality with regard to health, poverty, unemployment, education, etc., and that mainstreaming tools should be developed" (SAREP, 2014, p. 47). Gender and poverty were highlighted as constituting a threat to sustainable use of the Delta's ecosystems services.

Strategic Objective 3.3			
Action/Recommendation: Identification and promotion of programmes and enterprises that support value addition in natural and cultural resources		**Priority**	**Lead Agency**
C1	Identify appropriate cottage industries for value addition of products, disaggregated by gender.	High	MLGRD (DCD, RD)
C2	Undertake a gendered capacity need assessment and conduct training of communities to enhance their performance in cultural and natural resources related rural enterprises	High	MENT (DWNP, DRFF), MLGRD (DCD, RD)
The assessment is meant to: 1) Determine knowledge and skills gaps existing among individuals in rural communities. 2) Design appropriate trainings and skills development for potential, rural entrepreneurs			
C3	Initiate value addition, NR-based entrepreneurship development programs with rural communities based on their indigenous knowledge systems	High	LEA MFED (DB) CEDA
C4	Initiate fund-raising activities for community-based conservation, enterprise development, and education campaign for the Okavango Delta MIDA landscape.	High	MENT UNESCO ORI International Community

Strategic Objective 3.4. To climate proof livelihood strategies dependent on the Okavango Delta MIDA landscape and enhancing socioeconomic opportunities.

Climate change has a negative impact on food security. Consequently, climate change adaptation should be aimed at devising means of food production systems that are resistant to the vagaries of climate change. The scoping exercise had shown that agricultural production in the Okavango Delta MIDA landscape had declined due to unfavourable climatic conditions. The impact on food security in the landscape also includes decline in fisheries and wild foods. To curb these challenges, adaptation strategies recommended include Payment for Ecosystem Services (PES), an adaptation option which falls under the broad umbrella of Ecosystem Based Adaptation approaches.

The Okavango Delta system provides an income buffer and a source of income diversification for communities thus increasing their resilience to climate shocks (Midgley, 2012). Considering fisheries and aquaculture is another adaptation option to address impacts of climate change on aquatic ecosystems (see Brugere, & De Young, 2020). The Okavango Delta MIDA landscape is located in one of the poorest regions in the country and research has shown

that the poor are most affected by climate risks including extreme events such as floods and heat waves due to, among other factors, low asset bases (FAO & Red Cross Red Crescent Climate Centre, (2019). Hence adaptation options should also be aimed at strengthening the asset base such as land which was purported as a huge constraint during the scoping stage.

To build and maintain resilience, we need to ensure that the complexity and diversity of our social-ecological system (the Okavango Delta MIDA) is strengthened and protected. Socio-economic diversity of livelihoods must be protected; more effort must be made to empower people to take advantage of the opportunities in eco-tourism. Training and education programmes for local communities should be developed and delivered. Household security must be underwritten by Government: health and education delivery must be improved. Secure families have a much stronger vested interest in sustainable management of their resource base.

Strategic Objective 3.4			
Action/Recommendation: Climate proofing livelihoods to enhance livelihoods		**Priority**	**Lead Agency**
D1	Adopt climate smart farm practices (e.g., integrating livestock and crop production; improving soil quality); and drought contingency planning.	High	MOA (DoCP, DAP, DARSPD) DMS
D2	Create climate-resilient farming strategies to prevent increases in HWC during extreme weather conditions; work with NGOs to implement mitigation techniques.	Medium	MoA (DoCP, DAP, DARSPD) NARDI DWNP NGOs
D3	Mainstream fisheries and aquaculture in climate change adaptation.	Low	DWNP
D4	Adopt payment for ecosystem services for income diversification.	Medium	DFRR
D5	Develop and implement land management approaches and policies that build the livelihood asset base thus reducing vulnerability to multiple stressors, including climate change.	High	TLB
D6	Initiate outreach and education campaigns with local communities and other stakeholders to solicit management engagement on range, fire, HWC, and ecotourism.	Medium	DFRR, DWNP DoT
D7	Establish endowment funds to buffer rural communities against extreme events; these should be drawn from revenue streams originating from tourism levies, land, resource rentals and/or NEF.	High	DWNP, BTO, TLB
D8	Bolster rural health care and prioritise funding for primary education in communities living in WMAs.	High	MHW (HSM&E) MBE

10.2.4 Tourism

10.2.4.1 Tourism Management and Development

Strategic Goal 4. To develop, manage and enhance diverse environmentally sustainable tourism-based ventures and related developments in the Okavango Delta MIDA landscape for maximized contribution to local and national economy.

The tourism sector plays a key role in generating government revenue, creating jobs, and providing incomes for a significant proportion of Batswana directly and indirectly. It has been identified as an avenue to diversify the economy away from the capital-intensive diamond mining sector. Through Botswana's long-term Vision 2036, the country positions the tourism sector as an important engine for the economy. The country aims to develop a diverse tourism industry leveraging on its vast wildlife and natural resources to offer meetings, incentives, conferences, and events (MICE) tourism, as well as sports, adventure, and lifestyle tourism by the year 2036. Similarly, through the National Development Plan 11 (NDP 11), the government acknowledges the potential for economic growth through tourism.

In the 2008 ODMP mid-term review, it was emphasised that tourism has the greatest potential to coexist with the natural ecosystem of the ODRS than any other land use. The high cost – low volume approach to tourism development has served the ODRS well, resulting in minimal environmental impacts. In developing, managing, and enhancing diverse environmentally sustainable tourism-based ventures and related developments in the Okavango Delta MIDA landscape, it is important to acknowledge the collective responsibility of all stakeholders in the region to ensure that tourism development is centred on the twin concepts of conservation and sustainable use as enshrined in the country's National Ecotourism Strategy (NES). The overall aim of the NES is to ensure tourism planning and management that:

i. Minimises negative social, cultural, and environmental impacts,
ii. Maximises the involvement in, and economic benefits to, host communities,
iii. Maximises revenues for re-investment in conservation,
iv. Educates both the visitor and the local people as to the importance of conserving natural and cultural resources; and
v. Delivers a quality experience to tourists.

The importance of promoting environmentally sustainable tourism-based ventures cannot be overemphasised. This is because nature-based tourism profits from biodiversity and a healthy natural environment. To ensure sustainability of the tourism sector in ODRS and the country at large, the symbiotic relationship between tourism and the natural environment should be acknowledged and appreciated. Equally, the negative impacts of tourism on the natural environment should be minimized. However, there was less emphasis in the 2008 ODMP (and in its mid-term review report of 2014) on ensuring that the tourism industry is not used as an active spreader of Invasive Alien Species (IASs) in Botswana. This is concerning due to the indisputable reality that tourism activities and international arrivals are common vectors for the spread of non-native seeds and pathogens. It is imperative that in the revised ODMP the Ministry of Agriculture and Food Security and the Department of Forestry and Range

Resources should be assigned a role to play in the tourism industry as standard-setters and compliance supervisors in combating the spread of IASs.

The fourth strategic goal also calls for the diversity of tourism-based ventures and products. This requires tapping into alternative tourism services, products and destinations that offer variety to both domestic and international tourists. One of the ways of diversifying the tourism product in the Okavango Delta MIDA landscape is promoting the use of tangible and intangible resources that constitute cultural tourism. It is highlighted that the listing of the Okavango Delta as a world heritage site will improve the socio-economic lives of local communities living in the Delta. To ensure the trickling down of benefits to local communities, the NDP 11 enlisted sustained development, preservation and opening of cultural heritage sites for cultural tourism.

Seven specific objectives have been proposed to support the attainment of Strategic Goal 4.

Strategic Objective 4.1. To promote development of responsible, sustainable, optimal and diversified tourism products within designated zones of the Okavango Delta MIDA landscape.

Tourism in the Okavango Delta region is largely nature-based and narrowly wilderness and wildlife-based. It is reliant on the region's wealth of a variety of natural resources, which serves as an attraction to tourists, primarily international tourists. To safeguard the integrity of the natural environment and promote sustainable tourism in the country and the region, the government of Botswana promotes a high value-low volume tourism policy which aims to attract a limited number of tourists with high expenditure patterns. Consequently, the strategy not only places less emphasis on domestic tourists, but also naturally outprices most citizens and residents.

Due to the *corona* virus (COVID-19), the shocks and inbuilt risk associated with the over-dependence on international arrivals were exposed, calling for a need to promote the development of responsible, sustainable, optimal and diversified tourism products for both domestic and international tourists. There is a need to have deliberate plans to promote and accommodate domestic tourists through both pricing and product offerings without compromising the sustainability of natural resources and threatening the integrity of the natural environment. This calls for a delicate balance between inclusive tourism and sustainable tourism. This balance is important as it appreciates both the need for protecting the vulnerable biodiversity that supports tourism and promoting sustainable economic development in the region to support the local and national economies.

The Okavango Delta MIDA landscape is endowed with a vast wealth of tangible and intangible heritage and cultural products. Although both the ODMP of 2008 and the mid-year review of the Plan called for the diversification of the tourism product through tapping into the region's cultural tourism products, stakeholders and communities highlighted that the cultural tourism remains largely underutilised. There is, therefore, the need to tap into cultural tourism as an alternative tourism product by packaging and promoting tangible and intangible heritage and cultural products in the region. Similarly, another way of diversifying the tourism product in the Okavango Delta MIDA landscape is through the advertising and declaration of Lake Ngami

as a bird sanctuary. The development of Lake Ngami as a tourism product will benefit the local economy of the surrounding villages and create alternative forms of employment.

The tourism industry is diverse and dynamic and creates opportunity for women and men to develop key initiatives for their advancement. Participation in the tourism industry allows women independence and decreases household poverty. It therefore challenges gender roles and stereotypes in the workforce and facilitates women's empowerment.

Strategic Objective 4.1			
Action/Recommendation: Promotion of diversified tourism products		**Priority**	**Lead agency**
A1.	Develop comprehensive marketing strategies to raise awareness on tourism products that are poorly marketed in the region.	High	BTO
A2.	Identify alternative products to be offered by private operators and encourage them to diversify their product mix in that direction.	High	BTO
A3.	Formulating strategies to promote cultural tourism by exploring the potential of optimally using the heritage, cultural and archaeological resources of Ngamiland District to promote cultural tourism.	High	BTO
A4.	Designation and declaration of Lake Ngami as a bird sanctuary	High	DEA DWNP
A5.	Ensure that the tourism industry is not used as an active spreader of Invasive Alien Species (IASs)	Medium	MOA (DFRR) DWS
A6.	Embark on public education to develop the interest of citizens to explore their country in order to promote domestic tourism.	Medium	BTO
A7	Put specific measures to improve rural women's status and access to productive resources, active participation in the tourism industry	High	MNIGA LEA CEDA BTO

Strategic Objective 4.2. To increase and optimise meaningful citizen and local participation in tourism through proactive citizen empowerment, reservation and effective SMMEs policies and support.

Over the years, there have been concerns by citizens generally, and local communities in particular about their limited participation in the lucrative tourism industry. The limited participation of Batswana in the industry is often attributed to such factors as limited skills, financial barriers and insufficient policy framework or regulation which led to the exclusion of citizens in favour of non-citizens. It is also attributable to a lack of deliberate strategies to ensure citizen empowerment and capacity building.

Through the scoping exercise, the licensing processes of tourism enterprises were described as long, complex, expensive, and protracted, leading to inhibition of citizen participation in the tourism industry. Various interventions aimed are addressing this concern were recommended including:

i. The CBNRM Action Plan,

ii. Establishment of Industry Specific Financing Mechanisms, and the
iii. Establishment of a parastatal to manage the Tourism Development Fund.

The current report, however, argues against the establishment of a parastatal to manage the Tourism Development Fund. The establishment of sector specific CEDA-like statutory body, although desirable, is unnecessary and expensive especially at a time when government has considered to dissolve some parastatals with repetitive mandates. The administration of a Tourism Development Fund can be done by an existing statutory financing institution such as CEDA or National Development Bank which already have structures and human capital in place. Notwithstanding the relevance and importance of some of these recommendations, the ODMP mid-term review established that none of the main recommendations directed towards increasing or improving citizen and community participation in the tourism industry were implemented. Consequently, the industry remains dominated by foreign-owned establishments, especially the high-end and lucrative tourism concessions in the Okavango Delta.

Optimisation of meaningful local and citizen participation in the tourism industry within the Okavango Delta MIDA landscape is dependent on formal and informal institutions that promote, protect, and empower local communities and citizens with skills, knowledge, and survival techniques within the industry. These institutions should also promote equity participation, job creation, and skills development for the growth of locals and citizens. The implementation of skills development programmes to assist locals and citizens is crucial in dual benefit of assisting them in creating sustainable tourism business ventures and in helping them to find employment in the tourism sector. Promoting skills development is also important in promoting economic activity by improving citizens' access to better jobs and higher value markets in the case of entrepreneurs. The experience from work done in other similar regions in Southern Africa suggests that skills development and training should focus, although not limited, to the following areas:

a. Tourism skills development programme, which includes training in hospitality and guiding.
b. Craft development programme focusing on product development with crafters and facilitation of links to high value markets.
c. Higher Education Access Programme that provides scholarships and academic support to students from local communities studying tourism and conservation-related fields in tertiary education institutions.
d. Rural enterprise programme

The promotion of meaningful local and citizen participation in the tourism industry within the ODRS should also be promoted through creating plans for citizen empowerment. For example, this could be done through encouraging the procurement of goods and services for tourism enterprises from local communities and SMMEs. This is crucial in strengthening the linkages between the tourism industry and the local economies as well as in minimizing the leakages through importations of skills, services, and products.

Strategic Objective 4.2			
Action/Recommendation: Promotion of citizen and local participation in tourism		**Priority**	**Lead Agency**
B1	Improve ease of business and licensing processes for CBOs, locals, and citizens.	High	MENT (DoT) MITI CIPA
B2	Licences issued to private entities to operate tourism activities or accommodation in the Okavango Delta MIDA landscape should have specific requirements in respect of equity participation, job creation, and skills development.	High	MENT (DoT) MITI
B3	Develop special skills development programmes in areas such as tourism, craft production, and entrepreneurship	Medium	UB (ORI, FoB) BWTI Private Training Institutes
B4	Establishment of industry specific financing mechanisms	High	CEDA LEA NDB

Strategic Objective 4.3. To support development of meaningful community-private sector joint ventures in community managed areas.

The main objective of Community Based Natural Resources Management (CBNRM) Policy was to mainstream the participation of communities largely in tourism business and to ensure that communities have direct economic benefits from the tourist industry. As a result, communities living adjacent to protected areas were allocated land use rights (concessions) for their economic use and benefit. It was noted that Community Based Organisations (CBOs) were formed or incorporated to be commercial vehicles to carry out entrepreneurial objectives of the beneficiary villages in the Okavango Delta. The formation of these CBOs who are engaged in CBNRM and COMPACT found further policy support in the Tourism Policy of 1990.

Notwithstanding their proliferation in the Okavango Delta, the success rate of CBOs in the region reflects their failure as a business model preferred by communities. The Okavango Delta region also has CBOs which collapsed due to mismanagement. Due to the failure of CBOs as a business model, communities end up leasing their land use rights to private entities to run and operate lucrative tourism businesses. This is a short-term strategy for communities to address their inadequacies in business management with a long-term loss on direct economic benefits due to lower rates payable for the sub-leasing of concession rights. The private sector tends to have better business ethic and management skills which positively impact on the profitability of their ventures as opposed to CBOs which lack the requisite entrepreneurship skills and experience in the management of commercial enterprises. Given this reality, there is a pressing need for communities to reconsider and review their business model in search of a more viable and economically sustainable vehicle to implement CBNRM and COMPACT.

Instead of leasing off their concession rights, communities through their existing CBOs should consider entering joint venture partnerships (JVPs) with the private sector to run profitable

businesses together in community managed areas. Joint Ventures Partnerships must provide for clearly spelt succession arrangements between JVPs and CBOs with an oversight function provided by MENT to ensure that communities receive the required trainings necessary for them to fully take over the management of their concession areas. That should be distinct from mere sub-lease agreements through which communities simply sell the use of their areas and hunting quotas to safari operators and play no "joint" role in the management of activities that take place. It is important to note that these loose arrangements were largely encouraged by prevailing policy frameworks which prohibited the merging of partner's assets with those of community organisations (Mbaiwa and Tshamekang, 2012).

The proposed joint venture model in the strict sense would not only bring in money for communities but will also ensure the following:

i. direct skills transfer, business mentoring and apprenticeship for community members to ensure long term sustainability.
ii. effective raising of the necessary capital by the private sector to complement the immovable assets contributed by communities.
iii. sustainable employment creation for community members.

Strategic Objective 4.3			
Action/Recommendation: Development of community-private sector joint ventures		**Priority**	**Lead Agency**
C1	Review the existing policy and regulatory framework to allow for the merging or mixing of property by CBOs and the private sector to form JVPs and other special purpose vehicles for efficient and profitable CBNRM and COMPACT.	High	MENT (DWNP, BTO), MITI
C2	Initiate pilot project(s) that will implement the revised/proposed JVP model in some select communities in the Okavango Delta.	Medium	MENT (DWNP, BTO)
C3	Facilitate establishment of concrete, time-bound training plans as well as a binding agreement between Joint Venture Partners (JVPs) and communities on CBOs' capacity development strategies clearly outlining a roadmap on succession plan and timelines.	Medium	MENT BTO DWNP CBOs NGOs HATAB
C4	Initiate and implement skills transfer and apprenticeship programme to train the next generation of community resources and business managers.	High	CBOs LEA MYSC DWNP
C5	Training of CBO leadership in good corporate governance, trusteeship, and financial management.	High	MLGRD S&CD MENT DWNP CBO
C6	Facilitate implementation of COMPACT strategy for the Panhandle area of the Okavango Delta WHS	High	MENT DNMM Development Partners TAC

Strategic Objective 4.4. To promote the development of cultural heritage tourism for the benefit of the custodians of the cultural heritage assets

The 2008 ODMP and its subsequent mid-term review both made a call for the diversification of tourism products through the development of and tapping into the existing cultural tourism opportunities. It has been noted by stakeholders and highlighted by communities that, notwithstanding the earlier recommendations, cultural and heritage tourism remains largely underutilised in the Okavango. Several cultural heritage sites and sites of cultural significance have been identified and mapped around the Okavango Delta. These could be developed and used as tourism products and/or community educational sites for cultural preservation. Depending on the level of significance, they could be targeted to local, national, and international clientele. These will serve as an alternative from wildlife or nature-based tourism which the Okavango Delta MIDA landscape is largely known for.

The outbreak of COVID-19, which was declared a pandemic, halted international travel and exposed the vulnerability of Botswana tourism industry which is mostly made up of high value-low volume nature-based tourism products. It is therefore imperative to diversify the product offering to cater for different income brackets in furtherance of the overall sustainable tourism development in the Okavango Delta. The development, promotion and offering of cultural tourism products in the region will benefit the local communities who are the custodians of these cultural assets and the repositories of indigenous knowledge.

Further, it has been observed that the failure to mainstream cultural and heritage into tourism and educational products in the Okavango Delta may be partly due to the omission the Department of National Museum and Monuments (DNMM) in the implementation of the 2008 ODMP. DNMM's mandate is to preserve and promote Botswana's cultural and natural heritage for sustainable utilisation but was not among the initial twelve (12) ODMP implementation sectors for the 2008 ODMP. The lack of active participation of this important stakeholder which exists to provide implementation and policy guidance of the use of cultural heritage created an institutional and knowledge gap in cultural tourism development in the Okavango Delta.

Strategic Objective 4.4			
Action/Recommendation: Development of cultural heritage tourism		**Priority**	**Lead Agency**
D1	Identify and list additional cultural sites of significance that have not been mapped in the Okavango Delta MIDA landscape	Moderate	DNMM
D2	Categorise cultural heritage sites based on national existing criteria for their significance at local, national, and international level	Moderate	DNMM CBOs ToCaDI
D3	Align land use policies and plans to facilitate protection, reservation and gazetting of sites of cultural importance to optimise their utilisation	High.	DMNM MLMWS MoESD

D4	Improve physical infrastructures to enhance access to cultural heritage sites to enhance their potential and long-term viability as cultural tourism enterprise sites	Moderate	MLGRD DNMM
D5	Identify appropriate cultural heritage sites for tourism product development and management	High	BTO DNMM
D6	Formulate cultural heritage tourism product offerings for the Okavango MIDA landscape	High	BTO DNMM
D7	Market the different cultural tourism products and services for local and international clientele.	High	BTO HATAB BOGA CBOs
D8	Initiate fund-raising activities for community-based conservation, enterprise development, and educational campaigns for the promotion of cultural heritage.	High	Development Partners UNESCO ORI DMNM
D9	Review existing government environmental funding schemes (e.g., NEF) to include management of cultural heritage sites.	High	MENT DNMM
D10	Assess job training and capacity building community needs to enhance management of cultural heritage sites and their contribution towards rural economic empowerment through entrepreneurship.	High	DWNP DMNM ORI DEA/CBOs

Strategic Objective 4.5. To streamline tourism enterprises processes and procedures to facilitate investments in the tourism industry.

Generally, there are concerns about Botswana's consistently low ratings of the Ease of Doing Business index. The slow and often unclear processes are blamed for frustrating foreign investment thus directing away important foreign direct investment (FDI). The same impediments are faced by local entrepreneurs having to engage different government agencies from company registration up to starting to trade. By its very nature, tourism is a cross-cutting sector with implications for many different areas of government policy and which requires services from various agents of the government. As such, the tourism industry is a highly fragmented industry where issues overlap different ministerial responsibilities and levels of government. This, unfortunately, frustrates the efforts of some stakeholders including tourism enterprises is operating in a productive and competitive environment.

It is thus noted that in order to attract the necessary capital inflow and encourage domestic entrepreneurship, not only in the tourism business but in all business sectors, there is a need to streamline procedures by ensuring that there is a close interlink between various government departments and state-owned agencies involved in business or company formations and work and residence permit applications among others. Various agents of the government need to take the lead in the industry's strategic planning. This planning process involves many layers of government at national ministerial levels. It also requires strengthened linkages and partnerships with industry and the private sector. In all, streamlining processes and procedures to facilitate investments in the tourism industry reflects the need for an integrated approach to tourism development across government ministries.

Strategic Objective 4.5			
Action/Recommendation: Streamlining tourism enterprises processes and procedures		**Priority**	**Lead Agency**
E1	Create a one-stop-shop to streamline all processes for incorporating business from initiation until start-of-trading.	High	MITI, CIPA, BITC, Business Botswana.
E2	Expedite the processing of necessary immigration documents i.e., visas and work permits.	High	DIC
E3.	Expeditious processing of EIAs and issuance of related compliance certificates/licenses.	High	DEA, MITI, BTO
E4	Establish a monitoring framework for systematic monitoring and reporting of progress from pre-registration to post-operation.	Medium	BTO, DoT, HATAB

Strategic Objective 4.6. To promote the ecological integrity of the Okavango Delta MIDA landscape and its social carrying capacity for sustainable tourism development.

As stipulated in the 2008 ODMP Mid-term Review Report, various measures addressing waste management in accommodation establishments were recommended. Further, the North-West District Council developed waste management guidelines for ensuring compliance with sustainable tourism development by operators. Although these measures are laudable, there is an apparent lack of capacity in ensuring implementation and compliance by individual tourism operators to the standards and guidelines. It is important to ensure that there are regular and extensive compliance inspections by DEA especially in ecologically sensitive concession areas to ensure that the EIA Plans are implemented as approved. Further, there is no role clarity in each of the concerned stakeholders in monitoring and supervising continuous compliance with various legislative and regulatory instruments.

Improper disposal and management of solid and liquid waste were identified as one of the concerning practices by the ODMP. Several interventions to address this problem were recommended. These include:

i. Engaging the private sector to collect and dispose solid and liquid waste in settlements.
ii. Ensuring that tour operators comply with provisions of waste management as contained in their lease agreement, and
iii. To construct a landfill in Gumare.

The construction of a landfill in Gumare was the only activity achieved at the time of conducting the 2008 ODMP mid-term review in 2014. The lease agreements of tour operators did not make compliance with the Waste Management Act and NWDC waste management guidelines mandatory. However, this failure to adopt the recommendation should not be a cause for concern because the provisions of the Waste Management Act are legally binding. The Department of Sanitation and Waste Management is legally empowered to act against any operator, individual or entity violating the law. Further, NWDC acting under the Trade Act has the authority to inspect, ensuring compliance with environmental and public health laws. The revocation of the trade license, issuing of a fine, or both are some of the measures available.

This review of the ODMP has revealed that overcrowding is becoming a serious problem in the Moremi Game Reserve. Higher number of self-driving tourists visit MGR during peak season and this has the potential of eroding social carrying capacity or limit of acceptance of the reserve if not urgently attended to. Social carrying capacity is psychological and socio-cultural and refers to the limit beyond which the number of people in an available space would cause a decline in the quality of the recreational experience and the users' satisfaction (Saveriades, 2000). It was noted that self-drives tend to deviate from main roads in the reserve following animals or to avoid other tourists and this has created multiply tracks in the reserve. These tourists' behaviour is bound to substantially threaten the reserve's biodiversity and alter wild animal behaviour and ultimately diminishing MGR capacity to sustain and meet tourists' satisfaction.

Strategic Objective 4.6			
Action/ Recommendation: Promotion of ecological integrity through sustainable tourism development		**Priority**	**Leading Agency**
F1	Tracking ecological and social indicators through field studies or surveys	High	DWNP DEA DWS DoT
F2	Development of impact monitoring framework/programme to track changes.	High	DEA
F3	Restricting the number of people who can enter in MGR per day especially during peak season.	High	DWNP DoT
F4.	Limiting the permissible length of stay in the reserve.	High	DWNP
F5	Charging different entrance fees on certain days of the week and/or season	Medium	DWNP
F6	Formulation of industry-specific guidelines or standards conforming to international best practice ensuring that the services and products offered are environmentally sustainable.	Medium	DoT BTO HATAB
F7	Establishment of a regulatory authority responsible for enforcing environmental laws and regulations for the protection of the Okavango Delta MIDA landscape.	Medium	DoT DWNP

Strategic Objective 4.7. To encourage and promote the adherence to limit of acceptable change by all tourism sector stakeholders.

This revision of the 2008 ODMP revealed that the limits of acceptable changes (LACs) stated in the 2008 ODMP are not adhered to and this was also mentioned in the 2008 ODMP mid-term review of 2014. This has potential to erode the ecological and social carrying capacity of the Okavango Delta. It has been discovered that some tourism business establishments in the MIDA landscape use lights and power generators that are not of the prescribed quality. Some lights are switched on beyond recommended times and generators cause noise pollution. Consequently, these actions are arguably attributable to changes in animal movements, instigating human wildlife conflicts in the nearby communities. Lights at lodges alter animal behaviour and to some animals is a huge distraction. The quietness of nature helps most preys to detect their predators or sense any danger from a distance hence noise pollution keeps the

preys confused and easily attacked, thus compromising the ecological food chain which might lead to decline in one species population.

Uncontrolled aircrafts also have been mentioned as another source of noise pollution. Some aircrafts do not fly at a recommended height and some follow animals to their sensitive habitant, which sometimes leads to the mother abandoning their young temporarily or for good. This ultimately will have a serious impact to sensitive animals if not attended to diligently.

Despite the dearth of factual information on the impact of increased number of motorized boats in the Okavango Delta MIDA ecosystem, the review has acknowledged a great concern regarding high boat influx in the area. There are questions around their impact on future population of fish, water birds and aquatic plants sustainability as well as lager water animal behaviours. Boat cruising industry is growing rapidly in the Okavango Delta MIDA landscape, especially in Maun and Shakawe areas. There are boats of different kinds and currently big boats have been introduced in the area (e.g., house boats).

<table>
<tr><th colspan="4">Strategic Objective 4.7</th></tr>
<tr><td colspan="2">Action/ Recommendation: Implementation of LAC Framework for the Okavango MIDA landscape</td><td>Priority</td><td>Leading Agency</td></tr>
<tr><td>G1</td><td>Conduct a study to determine the impact of increased number of motorized boats and aircraft noise pollution in the Delta ecosystem.</td><td>High</td><td>DEA
DoT
DNMM
CAAB
ORI</td></tr>
<tr><td colspan="4">The study is expected to:
Determine the appropriate number of boats to be allowed in the river at a given time
Determine allowable aircraft per day and flying height that have minimal disturbance to wildlife, and
Identify fragile ecosystem to be avoided by tourists or cruisers.</td></tr>
<tr><td>G2.</td><td>Ensure adherence to LAC in the delta as stated in the 2008 ODMP by all parties, tourists, and tourism enterprises.</td><td>High</td><td>DEA
DoT</td></tr>
<tr><td>G3</td><td>Zoning areas for a particular activity and not permitting the activity in the threatened area</td><td>High</td><td>DEA
DWNP
DoT</td></tr>
</table>

CHAPTER 11: MONITORING FRAMEWORK

11.0 Overview

Monitoring frameworks are necessary for management effectiveness of landscapes such as the Okavango Delta MIDA. The mid-term review of ODMP has lamented lack of monitoring data in the Okavango Delta MIDA due to resource constraints. The monitoring efforts were also not very effective due to fragmented implementation by the implementing institutions. As already proposed, it is needful to establish an IDA coordinating office with requisite empowerment to ensure implementation of the Okavango Delta MIDA plan and monitoring. The implementing institutions must also be adequately capacitated to facilitate management effectiveness. Monitoring is very important as it assesses how the values of the World Heritage Site and the guiding pillars of the Ramsar site are being maintained over time. Monitoring also measures whether the objectives of the management plan are being achieved.

Drawing from the World Heritage Convention guidelines, measuring progress is essential to be able to adapt and improve the management of the site. Identifying key threats early on is necessary to be able to put in place remedial measures before the damage gets intense. Regular monitoring is necessary to re-assess priorities in view of new issues and progress made. The plan should be kept under review and adjusted to consider the monitoring process, changing priorities, and emerging issues.

The monitoring matrices were developed following the plan thematic areas, being the biophysical, socio-economic, tourism, and the cross-cutting climate change. The Tables (Tables 11.1 – 11.6) highlight the resource bases, threats, issues, and the needs for monitoring to guide management.

Table 11.1: Matrix for Monitoring Biological Parameters – at the scale of both the Ramsar Site and World Heritage Site.

Parameters	Threats	Indicators	Main Targets	Current Status & Management Issues	Recommended Actions & Interventions
Wildlife	• Human induced habitat conversion • Unsustainable harvesting • Competing land use claims • Fires • Extraction of water • Climate change • Land use changes • Invasive species • Human induced habitat fragmentation • Fences • Excessive herbivory • Poisoning	• Habitat availability • Habitat suitability • Habitat connectivity • Large herbivore movements • Wildlife population (carnivores, herbivores, birds, fish, amphibians) • Natural and human-induced mortality • Demographic structure • Poaching incidences • Fire frequency • Incidences of livestock and crop depredation • Legal hunting off-take • Conversion of woodlands to shrublands and open areas	• Reduced unsustainable and illegal harvesting. • Minimal anthropogenic habitat conversion • Facilitate/secure large herbivore movements between seasonal ranges. • Reduce human wildlife conflicts. • No introduction of alien invasive species • Maintain viable populations of rare and endangered species.	• Previous assessments reported stable wildlife populations except for recently reported declines in some large herbivore populations (Chase, 2011). • Several rapid assessments which were conducted across the Delta (2000, 2003 and 2007) did not identify any major ecological problems associated with aquatic diversity.	• Implement SAREP Protocol on monitoring natural resources (wildlife, vegetation & fires) • Aerial surveys for large mammals (quadrennial) • Camera trapping for large carnivores (quinquennial) • Spotlight counts for crocodiles (quadrennial) • Spoor transects for small species (quadrennial) • Monitoring of bat species (biennial) • Pitfall trapping for reptiles (quadrennial) • Point sampling for birds (quadrennial) • Light trapping for nocturnal invertebrates (annual) • Net sampling of diurnal invertebrates (annual) • Develop scientific rapid assessment and monitoring tools for habitats and animal abundance and distribution. • Improve technical capacity for environmental monitoring (biotic and abiotic) across all institutions. • Identify, zone and monitor traffic in wildlife movement corridors. • Greater involvement in monitoring wildlife for local communities • Promote CBNRM and other co-management strategies to encourage sustainable conservation programs [e.g., consumptive, and non-consumptive programs]. • Cessation of translocation of problem animals • Removal of non-essential fences

Parameters	Threats	Indicators	Main Targets	Current Status & Management Issues	Recommended Actions & Interventions
					• Support applied research on vegetation dynamics, fires, habitat quality and wildlife population dynamics, movements, and distribution and on human-wildlife interactions/ conflict.
Vegetation	• Human induced habitat conversion • Unsustainable harvesting • Competing land use claims • Fires • Extraction of water • Climate change • Land use changes • Invasive species • Human induced habitat fragmentation	• Plant species diversity (species richness, species composition, species abundance, and distribution) • Productivity • Prescience of endangered species • Presence of invasive species • Fire frequency • Flooding frequencies • Off-take (e.g., amount reeds harvested)	• Community/Species distribution • Cover • Density • Species composition • Fire frequency • Fire scars • Invasive species	Aquatic and terrestrial vegetation b/diversity in most parts of the Okavango Delta is in good condition due to its protected status except in localized cases of fires and excessive harvesting. Good progress toward mapping, quantifying, and classifying, but major efforts needed to consolidate into useable management tool. Widespread and intense anthropogenic fires observed with increasing frequency across the ODRS and WHS. Tentative progress with community participation in fire management. Threats from hydrological change still present, rising in urgency as CORB member states address endemic poverty	• Promote research and monitoring of vegetation structure, composition and diversity in wetlands and adjacent dry lands. • Promote mapping of vegetation types, soil types and wildlife habitats. • Promote applied research and monitoring of fire frequencies, distribution, and severity. Incorporate the findings of ongoing development of community fire management plans (Russel-Smith et al 2021) • Conduct baseline studies and monitoring assessment of invasive plant species. • Promote community participation and management of wildfires through locally relevant co-management/ cooperative/ partnership model. • Develop and operationalize Online Databases for Wildlife Monitoring, Aquatic Species, Alien Invasive Species, Vegetation/ Habitat Quality data

Parameters	Threats	Indicators	Main Targets	Current Status & Management Issues	Recommended Actions & Interventions
				and lack of economic development in the basin.	
Fish and Macro-invertebrates	• Water pollution • Climate Change (desiccation)	• Presence/absence of toxicity • Sensitive macro invertebrates	• Maintain good water quality suitable for all macro-invertebrates	Currently water pollution levels within the ODRS are minimal except in the vicinity of high-density settlements. Some work to monitor macroinvertebrates has started at ORI, and by OKACOM (basin-wide). DWS and ORI are monitoring of water quality. Strong evidence for oxygen stress in fish populations has emerged from recent research. Wild Fishery: Long-term CPUE monitoring activities (joint DWNP-ORI) have been curtailed due to structural changes in MENT. The ORI monitoring continues. Multiple fish die-offs have been anecdotally reported in the past decade. Recent research	• WQ monitoring by all parties. Data submitted to a central repository for curation, analysis and dissemination. • Expand monitoring of Macroinvertebrates to additional localities. Train MENT staff (DWNP Fisheries & DWS perhaps) to do this. Resource and facilitate collection and curation for taxonomic purposes. • Install, DO loggers where possible. Coordination with the NGOWP needed. MENT to budget for loggers in the long-term. • Re-instate long-term CPUE monitoring of wild fishery on the Panhandle and expand to the Upper Delta by DWNP. • Financial support for ORI's CPUE monitoring is needed, as is budgetary provision for monitoring of wild fishery by DWNP.

Parameters	Threats	Indicators	Main Targets	Current Status & Management Issues	Recommended Actions & Interventions
				indicates that dissolved oxygen is a major constraint. There is no evidence to indicate that fish offtake is affecting stocks. A major issue is the loss of fisheries officers withthe split into Aquaculture (MoA) and Wild Fishery (MENT).	

Table 11.2 Matrix for Monitoring Biophysical Parameters – Hydrological and Water

Parameters	Scale	Threats	Indicators	Management Targets	Current Status & Management Issues	Recommended Actions & Interventions
Hydrology	Basin-wide Strategic sites within the ODRS	• Human-induced changes in natural flow • Abstraction of water for irrigation (*agri. development*) • Hydroelectric power dams upstream • Unsustainable tourism development • Abstraction of water for industrial (e.g., mining) and municipal use (e.g., Menongue • Groundwater pollution • Land use changes • Mining • Climate change	• Water abstraction (for domestic, industrial, and irrigation purposes) • Acreage of flood recession farms • Number of proposed dams upstream • Sediment load • Acreage of irrigation schemes • Discharge/flow • Environmental flows	• Maintain current levels of sediment load. • No upper river dams. • Maximum off take of 600Mm3/year. • No significant human-induced change in natural flood pulse peak	Natural Flow Regime still not well-defined. Targets remain relevant. Currently no major human-induced changes in water flow although changes made in the last decade have not been assessed for impact (e.g., Duba cut channel) Various development scenarios being assessed as part of the CORB NAPs and the SAP include potential impoundments of main-stem Cubango and Cuito channels for "multi-use" development. Some of these pose a threat to the natural flow regime and sediment transport. Monitoring of discharge and levels are carried out on a (fairly) regular basis by DWS, ORI and some private sector concessionaires. Diminishing levels of funding for monitoring activities has greatly	• GoB to empower ODWHS Management Authority to strengthen engagement with OKACOM. • Advocacy for minimum upstream infrastructure must be strengthened. • Develop and implement protocols for monitoring floods and other hydrology-disturbance factors. • Institutional arrangements for hydrological and water quality monitoring strengthened: Activity and Data Sharing Agreements to be made (DWS-ORI-NGOWP; OKACOM) • Centralised Databases established. • Open Access data wherever possible • Support for OKACOM's CORB water and sediment monitoring programmes made through budgetary

Parameters	Scale	Threats	Indicators	Management Targets	Current Status & Management Issues	Recommended Actions & Interventions
					eroded the ability of both DWS and ORI to monitor at required levels of intensity. OKACOM has initiated work towards a basin-wide sediment monitoring programme.	allocations and capacity building.
Water quality	ODWHS, ODRS Basin-Wide	• Pollution from fishing camps • Pollution from tourism camps (solid and liquid waste) • Pollution from house boats and motorboats • Pollution from villages near waterways (e.g., Shakawe, Tubu) • Pollution from agricultural activities(fertilizers) • Mining (ground and surface water, solid waste, and liquid waste from mines)	**Physical Parameters** • Water color • pH • TDS (total dissolved solids) • Temperature • Surface water flow **Chemical Parameters** • Nutrient level (Na, Fe, K, P, Ca, Mg, N, Sulfate, carbonates) • Oxygen level and use (DO (dissolved oxygen), BOD (Biochemical Oxygen Demand), COD	• To maintain the current levels of water quality in undisturbed parts of the ODRS • To reduce ground and surface water pollution • To identify all sources of pollution in the ORDS • To ensure that both solid and liquid waste are handled and disposed of in ways friendly to the environment.	Currently the quality of water in the ODRS site has been reported to be in good standing except for few localized situations in high density settlement areas. Detailed laboratory chemical analysis is not routinely done. Knowledge about heavy metals and POPs is limited to a few campaign-based surveys. Groundwater biogeochemical sampling is the focus of a proposal under development between ORI and CNRS.	• Development and expansion of water quality monitoring programmes of CORB Institutions (ORI, DWS, NGOWP, OKACOM) supported by MLEAA. • Budgetary provisions made for main institutions (ORI, DWS) to continue and expand monitoring programs. • The Laboratories at ORI need to be refurbished, and additional staff hired. • Support development of centralized data storage, curation and analysis in all Institutions is needed. • Research into the use of eDNA to monitor aquatic community

Parameters	Scale	Threats	Indicators	Management Targets	Current Status & Management Issues	Recommended Actions & Interventions
			(Chemical Oxygen Demand) **Other Chemicals** • Arsenic • Fluorides **Biological** • Water sensitive species (bryophytes, ferns, • Presence of fish and benthic macro invertebrates) • Faecal coliforms			health should be supported. • Monitoring of macroinvertebrates should be expanded, with participation from DWNP and DWS.

Table 11.3 Matrix for Monitoring Large Scale Developments at the Ramsar and World Heritage Sites Scale- Mining

Resource Use Parameters	Threats	Indicators	Main Targets	Current Status & Management Issues	Recommended Actions & Interventions
Mining	• Land degradation (soil erosion) • Air pollution • Noise pollution • Increased ground and surface water abstraction • Exploitation drainage patterns and flow • Leakages and spillages leading to soil and water pollution. • Loss of biodiversity, habitat fragmentation, and disturbance of ecological processes • Displacement of people • Urbanization of rural areas • Environmental degradation (in case of poor waste management and disposal)	• No. of prospecting licenses • No. of mining licenses • Types of minerals • No. of mines in the ODRS • Distribution of minable mineral deposits in the ODRS • Waste disposal mechanisms • Growth rate of population of mining towns/villages • No. of new roads • No. of people displaced.	• To ensure that all mining companies fully implement environmental management strategies. • No prospecting and/or mining licenses issued within the Delta and the Panhandle. • No new prospecting and/or mining licenses issued within a buffer of 15Kms of the Delta and Panhandle. • Water supplies for mining to be sourced from groundwater. • Better administration of the sand and gravel quarrying sector: improved allocations of sites, streamlined licensing of approved quarry companies	Information regarding mineral exploration and potential future mines has not been easy to identify. Better communication is needed between ODRS management, BGI and the MMGE. Currently mining activities are developing within the ODRS. A new copper mine at Toteng has been established, and iron ore deposits identified west of Shakawe. A 3-year license for airborne geophysical survey (001/2020) has been issued for an area in the far north-west of Tsodilo Hills (outside of the ODWHS and Tsodilo WHS) for hydrocarbons. Little oversight has been possible of the rapidly growing sand and gravel mining sector in Ngamiland.	• Monitor implementation of EIAs and EMPs. • Monitor water use by mining operations very carefully. • Budgetary provision and additional manpower allocations to be made for monitoring mining activities in the ODWHS. • MLEAA to be constantly informed of applications for prospecting licenses. • Database of sand and gravel mining operations and licensed operators to be established. • Develop guidelines for the siting and management of sand and gravel borrow pits.

Table 11.4 Matrix for Monitoring Socio Economics Parameters at the Ramsar and World Heritage Sites Scale.

Socioeconomic Parameters	Threats	Indicators	Current Status and Management Issues	Recommended Actions and Interventions
Land use	• Unwholesome allocation of ancestral lands to private individuals for the development of campsites and cultural tourism • Human-wildlife conflicts • Conflicts between domestic livestock and photographic safaris • Underutilization of large community areas in NG22 • Unfettered grazing of livestock in NG22	• Lack of land ownership by individual community members • People's lack of or limited access to NRs in protected areas • Destruction of veldts products by elephants (e.g., reeds, crafts, edible natural resources, and wild fruits), which local people use as livelihoods supplementation.	• Livestock farming is recognized as a major livelihood activity for rural communities. This sector faces serious challenges mainly due to diseases, depredation by carnivores and competition for land between people and wildlife. • Fences that separate wildlife from livestock have fragmented wildlife habitats and closed major corridors. • Increasing irrigation schemes might compromise the integrity of the Okavango Delta MIDA landscape.	• Relocate cattle posts to the sand veldt; • Provide access roads to agricultural areas. • Designate and gazette cultural sites in the Okavango Delta. • Optimize the use of current community. • Land reforms needed. • Issue land rights certificates for Molapo farmers and lift ban on farming activities in Molapo farms • Promote traditional and access rights in concession areas. • Recognize cultural heritage of communities. • Align land use zoning with traditional pastoral management systems and practices. • Equitable allocation of land use zoning and allocations in favour of citizens

Socioeconomic Parameters	Threats	Indicators	Current Status and Management Issues	Recommended Actions and Interventions
Community Livelihoods	• Land degradation (soil erosion) • Soils low in cation-exchange capacity (CEC); poor soils • Human wildlife conflicts • Climate change • Air pollution • Noise pollution arising from tourism activities. • Increased ground and surface water abstraction • Exploitation drainage patterns and flow • Leakages and spillages leading to soil and water pollution. • Loss of biodiversity, habitat fragmentation, and disturbance of ecological processes • Displacement of people • Urbanization of rural areas • Environmental degradation (in case of poor waste management and disposal)	• Low agricultural productivity • Livestock depredation by carnivores • Crop destruction by elephants and baboons • Number of prospecting licenses • Number of mining licenses • Number of mines in the ODWHS/ODRS • Distribution of minable mineral deposits in the ODWHS/ODRS • Waste disposal mechanisms • Increasing number of mining towns/villages • Number of physical projects • Number of people displaced.	Information regarding mineral exploration and potential future mines has not been easy to identify. Better communication is needed between ODWHS/ODRS management, BGI and the MMGE. Currently mining activities are developing within the ODWHS/ODRS. A new copper mine at Toteng has been established, and iron ore deposits identified west of Shakawe. A 3-year license for airborne geophysical survey (001/2020) has been issued for an area in the far north-west of Tsodilo Hills (outside of the ODWHS and Tsodilo WHS) for hydrocarbons	• Develop local industry to produce organic fertilizers to alleviate the low CEC of the soils in the Okavango Delta MIDA landscape. • Develop agro-tourism and game farming. • Profile villages and settlements for the natural resources (NRs) available in them for rural entrepreneurship development purposes • Establish small cottage industry, which are designed to enhance value additions to locally available NRs (e.g., soap and oil from milk and perfumes, which are products of the Baherero indigenous technologies) • Promote indigenous skills such as packaging of wild fruits, go dupa metsi, etc. • Ensure that all mining companies fully implement effective environmental management strategies. • Discourage prospecting and/or mining licenses issued within the delta and the Panhandle. • Discourage new prospecting and/or mining licenses issued within a buffer of 15Kms of the Delta and Panhandle.

Resource Use Parameters	Threats	Indicators	Main Targets	Current Status and Management Issues	Recommended Actions and Interventions
Community Livelihoods	• Climate change • Loss of biodiversity and other ecosystem services • Increased demand for food leading to reduced food supplies. • Reduced employment opportunities • Habitat fragmentation and disturbance of ecological processes • Land degradation (soil erosion) • Air pollution • Noise pollution • Reduced tourism potential • Increased ground and surface water abstraction • Exploitation drainage patterns and flow • Leakages and spillages leading to soil and water pollution. • Displacement of people • Urbanization of rural areas • Environmental degradation (in case of poor waste management and disposal) • Socio-political changes in governance of natural resources [control/power, access, utilization and benefits-sharing]	• Growth rate of population and spatial expansion of towns/villages • # of new roads (tarmac & gravel) • # of people displaced. • Ecosystem Resource availability (catch/harvest effort) • Size of area under cultivation/agriculture/ • Size and distribution of livestock grazing areas. • # of human-wildlife conflict incidents. • # of co-management/CBNRM) initiatives implemented. • Benefits-sharing models in place • Poverty levels • Human well-being status	• Improved access to services (health, education, water, power) • Increased employment (esp in tourism support sectors) • Increased uptake of diverse economic opportunities • High level involvement of communities in decision-making and management of resources bases	• Poverty, poor educational performance, and poor health are characteristics of the ODWHS. • High unemployment has been exacerbated by the COVID-driven collapse of the tourism industry. • These factors combined with a generally open-access resource management regime contribute to a high rate of increase in the pressure on natural resources. • Current structures for community involvement in management and decision making over natural resource use have led to disenfranchisement and cynicism.	• Monitor indicators for health, education and access to water and power. • Monitor indicators of household economy, including diversity measures and natural resource dependence. • Initiate programs of outreach and education to stimulate community participation in resource management issues. • Monitor peoples' attitudes towards wildlife and natural resources

Table 11.5 Matrix for Monitoring Tourism Parameters at the Ramsar and World Heritage Sites Scale

Issue	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions
Low local and citizen participation	• Limited skills • Financial barriers • Insufficient policy framework or regulation to support citizen owned SMMEs. • Lack of deliberate strategies to ensure citizen empowerment and capacity building. • Long, complex, expensive, and protracted licensing processes.	• The industry remains dominated by foreign-owned establishments, especially the high-end and lucrative tourism concessions in the Okavango Delta. • The use of expatriate labour in high paid and skilled positions.	• Unequal distribution of gains from tourism, with negative consequences for rural livelihoods. • Due to the domination of foreign ownership of tourism establishments, the earnings made in the country are eventually repatriated, with little reinvested in the local economy.	• Formulation of formal and informal institutions that promote, protect, and empower local communities and citizens with skills, knowledge, and survival techniques within the industry. • The implementation skills development programmes to assist locals and citizens. • Strengthening the linkages between the tourism industry and the local economies as well as in minimizing the leakages through importations of skills, services, and products. • Promotion of citizen participation through mandatory 50/50% partnerships in safari camps.

Issue	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions
Weak linkages between tourism and the local economy	• Enclave nature of tourism in the region. • Mismatch between local farmers' produce and the produce demanded by tourism businesses. • Farming in the region is often done in small-scale basis for subsistence purposes.	• Low contribution of tourism to local economy. • High revenue leakages • Sporadic economic linkages generated by informal employment opportunities.	• Procurement of tourism inputs from foreign suppliers and the remittance of profits outside the region. • Rural livelihoods negatively affected. • Negative impacts on the casual earnings of both craft makers and other suppliers of products and services.	• Promote local cuisine in tourism establishments to support local farmers. • Reinforce competitiveness of tourism value chain. • Promote marketing of crafts and curio shops within tourist camps and in cultural villages. • Facilitate use and allocation of fields/farms for agro-tourism.
High dependence on international tourism	• High cost-low volume tourism strategy. • Less emphasis on domestic tourism. • Undiversified tourism products.	• High value-low volume policy promotes exclusivity and high-end products which local subsistence farmers in the Delta cannot produce. • The core of the Delta seems to be exclusive to high-end international tourists. • Prohibitively high prices supported by high value-low volume tourism policy slays domestic tourism in the core of the Delta.	• The industry suffers greatly when there are shocks such as pandemics and imported recession. • High leakages through citizens who prefer international tourism.	• Pricing using market segmentation. • Diversify the tourism product in line with tastes and preferences of domestic market. • Public education for developing the interest of citizens to explore their country.

Issue	Underlying Causes	Main Impacts	Key Implications	Recommended Approaches (Alternatives, Options) Interventions
Untapped cultural tourism	• Cultural and heritage tourism remains largely underutilised in the ODRS. • Lack of marketing of cultural heritage as a tourism product.	• Largely undiversified tourism product	• Value not derived from tangible and intangible cultural heritage.	• Explore the potential of optimally using the heritage, cultural and archaeological resources of region to promote cultural tourism. • DNMM should provide implementation and policy guidance of the use of cultural heritage.
Tourism threats to the environment	• Waste management not closely monitored. • Lack of capacity in ensuring implementation and compliance by individual tourism operators to the standards and guidelines.	• Noise pollution from increased motorized boats, aircraft and power generators in the campsite and lodges.	• Deteriorating recreational experience and tourists' satisfaction of MGR due to tourists overcrowding and camp sites.	• Regular and extensive compliance inspections by DEA especially in ecologically sensitive concession areas. • Ensure EIA Plans are implemented as approved. • Formulate industry-specific guidelines or standards conforming to international best practice for environmentally sustainable services and products. • Establishment of a regulatory authority to enforce environmental laws and regulations for the protection of the Okavango Delta

Table 11.6 Matrix for Monitoring Climate Change Impacts

Adaptation Parameter	Issue (Threats)	Underlying Causes	Impacts	Key implications	Recommended Action
Institutions involved in the management of the Okavango Delta MIDA landscape.	Unfavourable laws and policies	Land bank directive; hunting ban of 2014; veld products harvesting regulations; raffle for fishing permits; molapo farming regulations	Communities are impoverished due to inhibitive acts and regulations.	Impacts of inhibitive acts, policies and regulations are exacerbated by climate change which also decreases the availability of natural resources managed under them.	Create enabling legal and policy frameworks.
	Poor implementation of laws and policies	Disregard of CBNRM policy by giving investors the upper hand over communities; non-compliance to EMPs of projects that were subjected to EIAs; unmonitored research activities	Disempowerment of communities; decline of wild cat populations.	Climate change impacts exacerbates the impacts of poor policy implementation.	Intensify enforcement of laws, policies, and regulations; Enhancement of management structures taking into account climate change adaptation.
	Inadequate human resource capacity.	Lack of skills and capacity to facilitate certain operations that reduce community vulnerability to climate change e.g., capacity for soil testing in the region is lacking; some government departments involved in the	Poor crop yields; and inadequate assistance to farmers to bring adaptation solutions,	Increased vulnerability to climate change of farmers.	Enhance human resource capacity to facilitate community climate change and adaptation; Information and knowledge sharing among departments.

Adaptation Parameter	Issue (Threats)	Underlying Causes	Impacts	Key implications	Recommended Action
		management of MIDA landscape are understaffed.			
	Restrictive property and access rights (Access to land and other resources)	Restricted access to state land (protected areas) by communities.	Communities living in state land cannot own land (e.g., ploughing fields and residential plots); Competing land use activities (Agriculture and tourism).	Adaptive capacity of communities is reduced since they cannot own assets such as land.	Mainstream climate change adaptation into land ownership and access rights laws and policies.
Biotic and abiotic functions of the Delta and its biodiversity	Increase in invasive plant species.	Climate change alters and compounds the distribution and spread of invasive plant species.	The outpacing of native species by invasive plant species affects food security and biodiversity.	Invasive species compromise the resilience to climate change of the biodiversity and food security in the MIDA landscape	Increased efforts for invasive plant management through Ecosystem Based Adaptation (EBA)
	Drying up and reduced inflow of some tributaries of the Okavango Delta (Sankoyo, Mogogelo, mogobe wa Mokaba, Khwai)	Blockage by *Salvinia molesta*; erratic rainfall and high temperatures	Affects drainage of wetlands to prevent oxidation of wetland soils and the resulting release of carbon into the atmosphere fish and wildlife habitat	The role of wetlands as carbon sinks and carbon sequestering, as well as reduce methane emissions is compromised.	Wetland restoration or enhancement

Adaptation Parameter	Issue (Threats)	Underlying Causes	Impacts	Key implications	Recommended Action
	Loss of natural vegetation (including veld products such as wild fruits and grasses e.g., *Mokapana, Moretlwa, Motsentsela, Marenge*)	Competition between various land uses; increasing elephant populations.	Loss of carbon sinks through deforestation and desertification; reduced livelihood strategies dependent on forest products.	Increased GHG prevalence in the atmosphere hence exacerbating climate change.	'forests for adaptation' and 'Adaptation for forests' through Ecosystem Based Adaptation.
	Limited information on climate change-biodiversity nexus	Limited local expertise in climate change science and policy and resources.	Slow response to climate change through appropriate adaptation measures.	Increased exposure and vulnerability to climate change of environment and biodiversity as well as associated livelihoods.	Conduct research to identify adaptation measures to enhance protection of environment and biodiversity against climate change.
	Wildfire outbreaks	Anthropogenic and natural causes	Release of gases that contribute to climate change	Increased GHG prevalence leading to climate change	Manage bush fires and fires in the Delta and along the Okavango River
Livelihood strategies dependent on the MIDA landscape.	Decline in agricultural production.	Unfavourable climatic conditions; human wildlife conflicts due to invasion by elephants and predators; extreme droughts episodes	Decline in agricultural production; high livestock mortality; tick infestation.	Reduced socio-economic opportunities thus increasing vulnerability to climate change.	Adoption of climate smart farm practices (e.g., integrating livestock and crop production; improving soil quality); drought contingency planning

Adaptation Parameter	Issue (Threats)	Underlying Causes	Impacts	Key implications	Recommended Action
	Decline in fisheries.	Dry tributaries of the Okavango	Decline in fisheries.	Climate change impacts may affect fishery stability, and, therefore, the economy, food security and local livelihoods.	Mainstream fisheries and aquaculture in climate change adaptation.
	Decline in veld products.	Competition between various land uses; increasing elephant populations.	Decline in availability of veld products (wild fruits and grasses e.g., *Mokapana, Moretlwa, Motsentsela, Marenge)*	Economy, food security and local livelihoods at stake	Adopt payment for ecosystem services for income diversification.
	Restrictions in land ownership	Unfavourable land allocation laws	Restricted livelihood strategies exacerbated by climate change.	Increased vulnerability to climate change due to limited asset base.	Land management approaches and policies that build the livelihood asset base thus reducing vulnerability to multiple stressors, including climate change; Addressing Environmental and Social Justice issues
	Water scarcity	Unfavourable climatic conditions	Competition of available water with wildlife		Enhance water demand management at household level e.g., water harvesting

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APPENDIX I: Policies, Legislative Frameworks and Plans with Relevance to the OD MIDA landscape

Instrument	Summary Description	Relevance to and Implications for ODMP
Policies		
Vision 2036	The Vision calls for the inclusion of climate change vulnerability assessments, adaptation, and mitigation into development plans in order to ensure a low carbon footprint, climate resilience and disaster risk reduction. The document further envisions a society that is aware of and is resilient to the consequences of climate change. Pillar 3 of the Vision on sustainable environment aspires for a sustainable and optimal use of natural resources for the upliftment of the socio-economic livelihoods.	The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation. Moreover, the ODMP revision is exploring the ODRS ecosystem's carrying capacities, the limits of acceptable changes, optimal use of renewable resources for a sustainable maximum yield, communities' active participation and involvement in management, allocation, utilization, and benefit distribution of natural resources within the ODRS and the ODWHS to alleviate poverty and improve livelihoods, and continued implementation and extension of the CBNRM into protected areas. Other noteworthy issues of relevance to the ODMP includes the establishment/determination and observance of the country's ecosystem's carrying capacities in every development initiative; development within the limits of acceptable changes; optimal use of renewable resources for a sustainable maximum yield; creation of inclusive / non-discriminatory structures and frameworks that promote environmental protection and minimization of environmental pollution; active involvement of communities in management, allocation, utilization and benefit distribution of natural resources to alleviate poverty and improve livelihoods; implementation of Community Based Natural Resources Management program in the host communities to optimize benefits and enhance resilience to climate change; and the development of sustainable

Instrument	Summary Description	Relevance to and Implications for ODMP
		policies that promotes local community empowerment and enterprising of community based projects.
NDP 11	The National Development Plan 11 recognizes that Botswana's key economic sectors such as agriculture and tourism are vulnerable to the impacts of climate change. Furthermore, NDP 11 notes that the ability to adequately commit resources and capacity to respond to the impacts of climate change is at present inadequate. According to the plan, there is no doubt that global climate change has implications for human survival. Other key components of NDP 11 with relevance include the economy, employment creation, social upliftment, and the quest for a sustainable environment.	The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation. The revised ODMP will guide towards ensuring a sustainable environment for a healthy population and sustainable management of natural resources. The plan will further outline how tourism and agriculture will be harnessed to boost the economy and create employment, thereby contributing to poverty eradication, food security and social protection.
Wetlands Conservation and Management Policy, 2008	The WCMP, as a natural resource management and conservation policy, provide guidance to the conservation, sustainable management, and the restoration of degraded Botswana's wetlands for the benefit of citizens. The Policy goal is to conserve, manage and, where necessary, rehabilitate Botswana's wetlands to sustain their ecological and socio-economic functions as well as providing benefits for the present and future wellbeing of the people. The Policy highlights the quest to safeguard the traditional rights of wetlands users, promote the wise use of wetland natural resources and support investment in natural resources-based enterprises. The Policy further advocates to incentivize communities to engage in participatory wetland conservation and management to contribute their socio-	The Okavango Delta is a wetland of global importance. Locally, it is a perennial source of surface water, and a biodiversity hotspot supporting abundant and large diversity of animals and plants, as well as people of different ethnic groups. Sustainable management and conservation of natural resources therein is therefore critical. Regionally, OD is part of the Cubango-Okavango River Basin (CORB) and the end point of all surface waters from the basin. Proper conservation ethics by people downstream and existence of strong institutions is paramount to motivating people upstream to use water sustainably. Internationally the Okavango Delta is the 1000th World Heritage Site, recognizing the importance of local peoples' participation and culture in driving conservation of protected areas. The relevance

Instrument	Summary Description	Relevance to and Implications for ODMP
	economic welfare. The management of wetlands, as outlined by the Policy, will be guided by an ecosystem approach, will be science based, transparent and will follow participatory processes, even espousing international and regional transboundary cooperation in wetland management.	of the WCMP will be in guiding and informing practices done at local, regional and international level for sustainable conservation of natural resources. With the Policy emphasis on community participation and benefit, the management of wetland resources by communities and other relevant stakeholders will be greatly enhanced within the scope of existing regulations for the CBNRM.
Wildlife Conservation Policy, 1986	The Policy provided for administration of wildlife resources through the WCP framework and entrenched the Wildlife Management Areas (WMAs), which formed the basis for wildlife conservation and sustainable utilization in the country. It also provided a policy framework for greater involvement and participation of citizens and rural communities in conservation and commercial utilisation of a wildlife resource. The policy facilitated establishment of community CHAs for use by communities living within or in the vicinity of the areas designated for community use.	The policy will continue to inform wildlife conservation and management and facilitate co-management of natural resources management with local communities. While CBNRM will continue to include other resources beyond wildlife, wildlife-based tourism will still play some role in community-based initiatives, more so in areas with wildlife. There are prospects for wildlife-based enterprises such as game ranching, game farming and tourism in general.
Wildlife Conservation Policy, 2013 (draft)	The overall policy goal is to create an enabling environment for the conservation, sustainable use and management of wildlife and biodiversity resources in order to generate development benefits for current and future generations of Batswana. It intends to promote partnerships in wildlife management through participation of stakeholders such as communities, the private sector and civil society organizations in wildlife conservation, management, and utilization. It is also	One of the conditions of the WHS is to promote co-management of Protected Areas with the private sector and communities and further ensure that local communities are the key beneficiaries of the listed sites. This draft policy will ensure that the aspirations of the WHS are met. Commercial utilisation of natural resources and commercialization of wildlife products is further emphasized as a strategy towards poverty eradication, and game farming and ranching is already

Instrument	Summary Description	Relevance to and Implications for ODMP
	intended to promote co-management of Protected Areas with the private sector and communities and ensure that local communities derive benefits from PAs.	being encouraged in areas near but outside the WHS by different land use plans and MTR of ODMP.
National Conservation Strategy, 1990	The NCS identified the main environmental issues being wildlife, urban/industrial pollution, vegetation/wood resources depletion, depletion of veld products, rangeland degradation and water resource depletion and degradation. In the light of these challenges, the strategic document was aimed at ensuring sustainable development by ensuring resource utilisation does not compromise their long-term resilience. The NCS underscores the need to ensure that future generations will have access to natural resources commensurate to the available stocks.	The NCS, though outdated, advanced key environmental concerns that the country is still facing to-date. High populations of some wildlife species such as elephants, overharvesting of resources (bushmeat, fish, timber/wood, veld products), poor waste management strategies, etc. can impose a huge impact on sustainability of the resources and ecosystem functioning, and compromise resilience of the site. Some aspirations of NCS can be used to guide management actions and achievement of increased productivity, diversity and resilience of ecosystem structures and processes.
The Tourism Policy, 1990	The Tourism Policy of 1990 provides the basis for tourism industry guidance in Botswana, with the general objective of obtaining, on a sustainable basis, the greatest possible benefits for citizens of the country from its tourism resources. This is a key policy that provides an enabling environment for tourism development in Botswana. The policy provided for the CBNRM, which empowered local communities in poverty alleviation, employment creation and participation in tourism. Specifically, the policy called for employment creation, raising incomes in rural areas to reduce urban drift to promote rural development and stimulate the provision of the services in remote areas of the country. The Policy	The Policy remains pivotal in promoting and guiding tourism and ensuing citizen participation through such programs as the CBNRM. Already there are several CBOs engaged in CBNRM in and around the Okavango Delta whose formation and viability are supported by the Tourism Policy.

Instrument	Summary Description	Relevance to and Implications for ODMP
	promotes local communities to undertake wildlife-based industries.	
The Tourism Policy, 2021	The Tourism Policy aspires to position Botswana as a tourist destination of choice by the year 2036 by offering nature, heritage, and local lifestyle-based experiences. The Policy document acknowledges the skewed nature of ownership of large tourism enterprises away from citizens, and hence intend to improve and increase citizen participation. Among several Policy objectives, the Policy will ensure significant share of citizens in ownership and community participation. Further, the tourism product will be diversified and broadened into other forms and areas such as culture, heritage, arts, craft development and forests. The Policy advocates for identification of underdeveloped cultural natural attractions and sites with tourism potential. Capacity building and mentorship opportunities for emerging tourism businesses will be pursued. The Policy recognizes CBNRM as a tool towards community empowerment towards natural resources management and active participation in natural based enterprises.	The Policy intents will be instrumental in facilitating and promoting tourism product diversification and broadening within the Okavango Delta as WHS. Nature-based tourism, cultural heritage sites, and craft developments are key towards marketing the ODRS and WHS as unique place and product of choice. Recognition of the continued need and relevance of CBNRM in community empowerment and a means to meaningfully benefit from natural based enterprises and the quest to promote citizen participation in tourism are critical elements for sustainable management of natural resources.
CBNRM Policy, 2007	The 2007 CBNRM Policy provided firm guidance and formalized CBNRM implementation in Botswana and provided policy environment for community participation in sustainable development, and active participation in conservation and management of natural resources. The policy broadened CBNRM landscape beyond the traditional wildlife to include veld products,	Supporting and expanding CBNRM to local communities residing in WMAs in and around the Okavango Delta will continue to be guided by this policy. Existing and emerging CBOs in the OD and environs will be guided and monitored by reference to the CBNRM Policy.

Instrument	Summary Description	Relevance to and Implications for ODMP
	cultural and historical sites, scenic landscapes, and other natural resources. It incentivized the communities to engage in conservation activities leading to sustainable development and poverty reduction.	
	The policy provides for the improvement of land administration and management from the system, environmental and economic perspective. The intent is to promote sustainable land utilisation, conservation, and protection. The policy acknowledges local communities' subsistence on natural resources and intend to secure this subsistence livelihood activity through CBNRM and enhancement of resource utilisation through community-private sector partnerships. The policy envisages that by giving communities the right of resource utilisation and benefits, both livelihoods and resources will be sustained. The policy emphasizes the need to protect and conserve natural resources through which tourism relies on and further provides for identification of sustainable tourism, cultural and heritage sites for use by communities in tourism. The policy further provided for zoning of special-purpose use areas for a variety of non-permanent developments and uses such as for recreation and national events.	Tourism activities are mainly land-based, and for CBOs to participate in CBNRM, they need access and user rights over land and resources. The new Land Policy provides for identification of areas suitable for tourism, cultural and heritage sites, the latter two being key to diversifying the tourism product within the Okavango Delta.
National Forest Policy, 2011	The Policy serves to facilitate the management of forests and range resources of the country through conservation, development, and sustainable use. The Policy seeks to optimize the contribution of the forest and range resources to the long-term socio-economic development of Botswana by ensuring equitable and sustainable flow	Designation or development of some areas as forest reserves is an on-going task facilitated by DFRR. What is of paramount importance is the harvesting of timber and NTFPs to sustain the livelihoods of the local people.

Instrument	Summary Description	Relevance to and Implications for ODMP
	of benefits through sustainable utilisation to meet social, cultural, economic, environmental, and ecological needs of present and future generations. The Policy notes the multiplicity of stakeholder interests in forest conservation and management, and hence highlight strategies of participation and involvement in decision making. It also advocates for forests to be used for Forest ecotourism through CBNRM program.	
Tawana Land Board Land Allocation Policy, 2012	The land allocation Policy was formulated to provide a framework towards achieving transparency, promoting efficiency and effectiveness in land allocation and management. They are also intended to promote cooperation and coordination of development between and among Land Board and stakeholders. The Policy outlines that tourism related activities shall be advertised. It further points out the procedures for regularizing inheritance plots and that all *matlotla* (ruins) not claimed and used from a minimum of 5 years shall not be regularized.	Policy provisions will guide allocation of land to individuals and community trusts in the Okavango Delta under the ODMP. It is envisaged that through this policy, the socio-economic livelihoods of communities will be improved, and access to land will be fundamental in achieving this goal.
Botswana National Water Policy, 2012	The Policy provides a national framework that will facilitate access to water of suitable quality and standards for the citizenry and provide the foundations for sustainable development of water resources in support of economic growth, diversification, and poverty eradication. The Policy is aimed at promoting protection, conservation and restoration of water resources and the environment within the nation; promoting effective and efficient sustainable management and use of the water	The project area has surface water body in the form of the Okavango River and conservation of the water resources is a priority. The sustainable use of water following the policy and guidelines will ensure long term facilitation and maintenance of ecological processes and support continuous provision of ecosystem services.

Instrument	Summary Description	Relevance to and Implications for ODMP
	resources. The Policy advocates for the protection of water resources and to be used sparingly to support different uses and ecosystem processes. The policy promotes Water Demand Management strategies that support climate change adaptation e.g., water-loss reductions, water recycling, rainwater harvesting, water pricing, water efficient fixtures and fittings, as well as water restrictions.	Even though the policy was not designed to address issues of climate change per se, the outlined water demand management strategies indirectly do. The delta and water sector in general is vulnerable to climate change.
National Biodiversity Strategy and Action Plan, 2016	The strategy recognizes climate change as one of the causes for loss of biodiversity and that this has implications for the reduction in ecosystem services and natural resource availability, with negative consequences for rural livelihoods. The strategy's aim is that by 2025, the anthropogenic pressures on wetlands, woodlands and savannas will be minimised, so that the impacts of climate change and other external perturbations on their ecological integrity and functioning can be managed (Strategic Actions for Target 10).	The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation.
Land Policy, 2019	Land improvement, administration and management within the, environmental and economic contexts is addressed by the policy. The policy thrust is meant to enhance sustainable land utilisation, conservation and protection. Having recognised local communities subsistence on natural resources, the policy aims at securing people's subsistence livelihood activities	Tourism activities are mainly land based, and for CBOs to participate in CBNRM, they need access and user rights over land and resources. The new Land Policy provides for identification of areas suitable for tourism, cultural and heritage sites, the latter two being key to diversifying the tourism product within the ODRS/WHS area.

Instrument	Summary Description	Relevance to and Implications for ODMP
	through CBNRM and enhancing resource utilisation through community-private sector partnerships. From the policy perspective, both livelihoods and resources will be sustained if communities have the right to utilise resources and benefit therefrom. The policy underscores the need to protect and conserve natural resources. Land improvement, administration and management within the environmental and economic contexts is addressed by the policy. The policy thrust is meant to enhance sustainable land utilisation, conservation and protection. Having recognised local communities' subsistence on natural resources, the policy aims at securing people's subsistence livelihood activities through CBNRM and enhancing resource utilisation through community-private sector partnerships. From the policy perspective, both livelihoods and resources will be sustained if communities have the right to utilise resources and benefit therefrom. The policy underscores the need to protect and conserve natural resources upon which tourism relies and further provides for identification of suitable tourism, cultural and heritage sites for use by communities in tourism. The policy further provided for zoning of special purpose use areas for a variety of non-permanent developments and uses such as for recreation and national events.	Livelihood activities mainly takes place on the land. The user rights of communities over land and resources are, therefore, fundamental to their livelihoods, particularly in agriculture and other related endeavours.
Climate Change Response Policy, 2021	The Policy strives to make Botswana a society that is sustainable, climate resilient, and whose development follows a low carbon development pathway, in pursuit of prosperity for all. This will be achieved by	Okavango Delta is a fragile ecosystem because of being in a semi-arid Kalahari region characterised by deep Kalahari sands, erratic seasonal rainfall and high dependency on water inflow from other countries.

Instrument	Summary Description	Relevance to and Implications for ODMP
	mainstreaming sustainability and climate change into development planning. The Policy envisages that in so doing, the country's resilience and capacity to respond to existing and anticipated climate change impacts will be enhanced. The Policy will be guided by key principles of sustainable development, precautionarity and public participation. The Policy sets the scene for development of sector based strategies towards adaptation and mitigating the impacts in key national priorities areas such as agriculture and food security, water, human health, biodiversity and ecosystems, forest management, land use and land allocation, disaster risk reduction. The Policy intends are to mainstream gender across all developmental nodes to ensure that vulnerable groups such as women, youth, and the disabled are secure and prioritized through provision of means of implementation such as technologies, finance, and capacity building. Stakeholder active participation and involvement is considered key by the Policy as well as establishment of requisite structures in the form of committees at national and local level to facilitate policy implementation.	Wetlands in arid and semi-arid climates are at high risk of experiencing long droughts and desiccation as a result of climate change. Because of being located in semi-arid climate the Okavango Delta's resilience and capacity to support high biodiversity will be compromised under climate change, hence the need for a policy that prepares the nation to devise adaptive strategies to mitigate and prepare itself for socio-cultural, economic and environmental challenges emerging as a result of climate change. The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation. This Policy therefore will guide in adaptation and mitigation measures to lessen the severity of the negative impacts, more so on vulnerable groups identified by the Policy.
Legislation		
Water Act, 1968	The Act defines the ownership of any rights to the use of water and made provisions for the grant of water rights and servitudes. Generally, it makes provisions concerning rights in respect of water and related matters. It prohibits right of property in public water, defined as	The Okavango river is a permanent source of water for plants, animals, humans, and various ecosystem processes. Water is a key element of life and key ingredient of various ecosystem processes and functions. Water is a commodity in high demand in this

Instrument	Summary Description	Relevance to and Implications for ODMP
	all water flowing over the surface of the ground or contained in or flowing from any river, spring or stream or natural lake or pan or swamp or in or beneath a watercourse and all underground water. The Act prohibits pollution of public waters through spillage of sewage	semi-arid landscape, and its uses must be regulated to ensure sustainability of the resource and that it reaches a wide spectrum of its users, including the vulnerable groups and communities at the far downstream of the Delta in a clean and useable state. Regulation of water use, definition of water rights, appropriate developments, waste management and pollution control strategies to protect public waters by the Act will continue to be necessary.
Herbage Preservation (Prevention of Fires) Act, 1977	The Act seeks to prevent and control bush and other fires. The Act prohibits burning vegetation without requisite permission and wilful or negligent lighting of a fire that may be a threat to property. It further legislates for the construction and maintenance through mutual agreement and cost sharing among landowners.	Uncontrolled bush fires continue to be a problem in the Okavango Delta and the Act is vital towards regulation, monitoring and management of wildfires both below (peat fires) and above-ground (surface) fires. Because of climate change, this policy has become so important for the Okavango Delta since the continued high frequency of uncontrolled fires will exacerbate the fragility of the Okavango Delta as an important hotspot of biodiversity and water resources in northern Botswana. The Act permits burning as long as permits have been obtained, therefore prescribed burning, controlled/early burning can be used for maintenance and enhancement of key ecosystem functions, improvement of grazing resources and elimination of pests and parasites. The previous ODMP advocates for prescribed and controlled burning to achieve various management goals, and community fire management teams have been

Instrument	Summary Description	Relevance to and Implications for ODMP
		established to facilitate implementation of appropriate fire management strategies such as controlled burning.
Aquatic Weeds (Control) Act, 1971	The Act provides for the control of aquatic weeds, regulations and monitoring of boats and their movements over surface waters to promote eradication of aquatic weeds. The Act empowers the Minister to declare any surface water infested. The Act identified nine (9) aquatic weeds, among which is *Salvinia molesta* D. S. Mitchell (Kariba weed, Motshimbamo).	Among the aquatic weeds identified by the Act, *Salvinia molesta* continues to be a threat to Delta ecology. Regulations, monitoring, spraying with herbicide for boats moving between zones within and into the Okavango Delta will continue to be a priority in the management of the Delta and as guided by the Policy.
Agricultural Resources Conservation Act, 1975	The Act underscores the need to conserve and improve Botswana's agricultural resources. It defines an agricultural resource to include the soils waters, plant life and vegetation, vegetable products of the soil, animal life and fauna. While the Act provides for the appointment of the Agricultural Resources Board, it also suggests the establishment of Conservation Committees that are area specific. Among others, the Conservation Committees are required to monitor and review the status of conservation of agricultural resources, assist in preservation measures, ensures wise use and improvement of agricultural resources, and undertake public awareness in matters of conservation of agricultural resources within their areas. These conservation structures are empowered to ensure the mitigation or prevention of soil erosion, the prevention or control, whether by firebreaks or control-burning, of	The Act is holistic in perspective and provide for management and sustainable use of agricultural resources as well as mitigation of bushfires and pollution of public water. These are pertinent issues in the ODRS and WHS. The Act is relevant in that it provides complimentary efforts to other sector specific legislations such as Water Act, Herbage Preservation Act and others. The potential establishment of Conservation Committees can facilitate the establishment of resource user committees within all OD communities. These will determine cost-effective ways to enhance conservation and utilisation of the natural resources in the Delta. Agricultural resources play pertinent roles in the livelihoods of the people in the delta.

Instrument	Summary Description	Relevance to and Implications for ODMP
	bushfires, the eradication or prevention of noxious weeds and the prevention of pollution of public water.	
Fish Protection Act, 1975; Fish protection Regulations, 2016	The Act, together with its subsidiary regulations, the Fish Protection Regulations, 2016, provide for the effective regulation, control, protection and improvement of fish and fishing in Botswana. The regulations prohibit commercial fishing or recreational fishing without a licence and place restrictions on various types of fishing and on the importation of and dealing in specified fishing gear. They also restrict subsistence fishing to citizens of Botswana, and that the subsistence fishing may be carried out using certain specified gear such as traditional fishing gear in drying out pools on flood plains. The Regulations provided for open and closed fishing season.	The Act provide for effective regulation and control of commercial fishing, and protection and monitoring of commercial fishing activities. The Act has a strong relevance to the commercial and sport fishing activities in the Okavango Delta.
Public Health Act, 1981	The Act makes provision for the protection of public health in Botswana and regulates for the prevention or introduction of diseases, sanitation, the storage of food, the control on the supply of water and food and the prevention and destruction of mosquitoes.	This Act, while it has been there, its relevance has never been more felt like during the current COVID 19 pandemic. The pandemic affected both the national economies and the travel and tourism sector was the most affected. During shutdowns and even post shutdowns, the international travel and tourism market – which serves as a significant market for the ODRS tourism – was halted amid global travel restrictions including many borders fully closed, to contain the virus. The Act will continue to be relevant in ensuring control and prevention of future pandemics and epidemics, more so that the ODRS is a hub of international tourist visitors. The development of

Instrument	Summary Description	Relevance to and Implications for ODMP
		COVID-19 protocols for the travel and tourism industry in collaboration with the Ministry of Health and Wellness has demonstrated pragmatic steps to safeguarding the health, safety and well-being of tourists, employees, and communities amidst the pandemic. Several Standard Operating Procedures have been developed to this effect targeting the different tourism facilities and activities.
Wildlife Conservation & National Parks Act, 1992	The Act provides for the conservation and management of the wildlife in Botswana to support a sustainable utilization of wildlife, control of export and import and the implementation of international treaties. The Act facilitates community-based wildlife utilisation and management within specified areas by enabling communities to play a greater role and allowing them to benefit from the utilisation of wildlife quotas. The Act provide for consultation and collaboration between DWNP, local authorities and land authorities in the development of WMAs, their management plans and administration.	The Act will continue to support issuance of wildlife quotas to deserving community CHAs and regulate for the management and conservation of wildlife resources, national parks and game reserves.
The Tourism Act (1992)	The Act provides for regulating the tourism industry with a view to promoting its development and well-being. It makes provision for the licensing of tourism enterprises and sets out the procedures in respect of applications for licenses, power of inspection, appeals, etc.; definition of categories of tourism enterprises; provision for the	Continued promotion, extending and diversifying tourism in the Okavango Delta will need regulation and licensing of the enterprises.

Instrument	Summary Description	Relevance to and Implications for ODMP
	introduction of a grading system for tourism enterprises amongst others.	
The Tourism Regulations (1996)	The Regulations specifies the requirements for a tourism license and hotel grading and prescribed license fees and training levies	New tourism facilities will continue to be subjected to available standards and requirements and monitored for compliance.
Waste Management Act, 1998	The Act provides for the planning, facilitation, and implementation of advanced systems for regulating the management of controlled waste in order to prevent harm to human, animal and plant life; to minimise pollution of the environment, to conserve natural resources. It also provides for the implementation of provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Act also provides for waste recycling plans and defines duties of local authorities in relation with the collection and disposal of waste. The Act further mandates for the drawing up of the local and national waste management plan by authorities within their areas of jurisdiction as well as waste recycling and litter plans.	Waste management and plans are issues of concern everywhere. This Act is therefore necessary in that it provides legislative guidance and powers for proper management of waste by different sectors within the ODRS and WHS such as tourism establishments.
Monuments and Relics Act, 2001	This Act makes provision with respect to the protection and conservation of national monuments and protected heritage areas. It also outlines steps and processes to be undertaken for listing and recognition and acquisition of any national monument, recent artefact, recent historic monument, or protected heritage area, for its protection or preservation that is under private individuals.	Cultural and heritage sites within the ODRS and the ODWHS will be identified and listed for preservation and/or protection for community benefit. These sites will have the potential for cultural tourism.

Instrument	Summary Description	Relevance to and Implications for ODMP
Agricultural Resources Conservation (Utilization of Veld Products) Regulations, 2006	The regulations, a subsidiary of the Agricultural Resources Conservation Act, comprise rules relative to the control of harvesting and exploitation of veld products. They restrict harvesting of specific veld products and specific quantities without permit for subsistence, domestic use. Examples include edible veld products, plant with medicinal value, thatching grass, firewood, reeds and poles for building purposes. The regulations also make provision for seasonal harvesting of thatching grasses.	The veld products identified by the regulations are the backbone of livelihoods of communities in the Okavango Delta. Free access to these resources for subsistence is important. Providing a window of opportunities for communities to access these resources during harvesting season is necessary for grass regeneration; this aligns with indigenous knowledge and practice. The entire ODRS/WHS ecological environment is rich in diverse veld resources.
Botswana Tourism Organisation Act, 2009	The Act provided for the establishment of a Botswana Tourism Organisation, and the regulation of the tourist industry with a view to promoting its sustainable development and well-being in collaboration with the stakeholders. The Act also empowers BTO to plan, develop and implement tourism marketing and promotion strategies for Botswana, ensure grading and classification of tourist accommodation facilities, promoting industry standards, and developing and improving existing tourism opportunities and diversify the sector into other forms of tourism, such as such as cultural heritage tourism, eco-tourism, entertainment, recreational and leisure tourism.	Tourism in the ODRS and ODWHS are key to the ODMP. The Act will therefore continue to guide tourism development in the site. Cultural heritage tourism is being realised as one of the viable options to diversify the tourism product in the ODRS and the ODWHS. In 2008 when the ODMP was completed, BTO was not established, but since its establishment, the Organisation has played a significant role in the implementation of the tourism component of the ODMP. The organisation will continue to play this role both in the ODRS and the ODWHS in the revised ODMP.
Environmental Impact Assessment Act, 2011	The EIA Act provide for environmental impact assessment to be used to assess the potential effects of planned developmental activities; to determine and to provide mitigation measures for effects of such activities	The EIA Act, and its subsidiary legislations will be vital in regulations development activities within the Okavango Delta which is the World Heritage Site and Ramsar site. The Okavango Delta is considered

Instrument	Summary Description	Relevance to and Implications for ODMP
	as may have a significant adverse impact on the environment; to put in place a monitoring process, mechanisms, and evaluation of the environmental impacts of implemented activities.	ecologically sensitive with the need to preserve its ecological integrity. To do this, the Act that mandate EIA and how it must be done becomes very relevant as it will help preserve the ecological integrity of the delta. The WHC is very particular on the necessity of undertaking EIAs, for which reason it has called upon Botswana to ensure that the EIAs of veterinary cordon fences and revisions to the EIA of the Mohembo bridge development project be undertaken to demonstrate that necessary mitigations will be undertaken to ensure specific protection of OUV attributes.
Environmental Assessment Regulations, 2012	The EIA regulations facilitated the implementation of the provisions of EIA Act, 2011 on such matters as procedures for environmental impact assessment and public participation, and registration and certification of practitioners. They also mandate practitioners to comply with Code of Conduct of Practitioners. The regulations prescribe forms and procedures to be followed from the onset of project brief through public hearing process and ultimate submission. They also define the activities and projects to which the EIA will be required.	
Plans and Strategies		
Community Based Rural Strategy for Rural Development, 1997	The thrust is to help people living in rural communities to improve their livelihoods and alleviate their poverty situations. The strategy underscores a more effective and sustainable approach towards rural development. This is by strengthening the role of community participation and community leadership structures, allowing them to identify their own economic needs and aspirations as well as formulate and implement their own action plans on livelihoods improvement and poverty reduction.	Facilitating the OD communities to take their destiny in their own hands will contribute to achieving the thrust of this strategy. Empowering communities through agricultural and other rural entrepreneurship projects (including those addressing value additions), CBNRM in the ODRS and WHS will enhance the realization of sustainable communities.

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Botswana Waste Management Strategy, 1998	The Waste Management Strategy was formulated to facilitate and coordinate waste management issues countrywide. The strategy adopted the waste management hierarchy as a solution towards sustainable waste management, with disposal being the least preferred option, and reuse and recycling being the most preferred. The strategy highlights sustainable utilization of natural resources, the application of the 'polluter pays' principle, and reduction, reuse and recycling of waste.	The strategy is necessary to facilitate proper and effective management of waste within the ODRS and the ODWHS and the promotion of environmentally acceptable waste collection and disposal by licensed waste carriers. The areas within the ODWHS are most sensitive as they comprise mainly of wetlands and swamps, thereby necessitating proper handling of all forms of waste. The strategy will guide sustainable waste management in the ODRS.
Botswana Tourism Master Plan, 2000	The Master Plan provides a policy framework for tourism growth into the future through four main strategic policy guidelines, being Product diversification; Community/citizen participation; Private/Public Sector Partnership; Ecological/economic sustainability	Product diversification towards cultural tourism in the Okavango Delta will remain very vital to cater for different people interests and to make tourism more resilient especially during the season of climate change and lockdowns due pandemics such as COVID-19.
The Botswana National Ecotourism Strategy, 2002	The National Ecotourism Strategy aimed at conserving Botswana's natural resources and wildlife through creation of an environment where tourism development planning and management are done within the confines of the principles of ecotourism by all stakeholders engaged in tourism. Two of these key principles include the objective of minimizing negative social, cultural, and environmental impacts and maximizing the involvement in, and the equitable distribution of economic benefits to, host communities.	Development and promotion of tourism need to be done responsibly, respecting socio-cultural factors, and ensuring environmental integrity. These are pillars that will guide tourism development in the ODRS and WHS with the confines of principles of ecotourism.

Instrument	Summary Description	Relevance to and Implications for ODMP
The Ngamiland District Settlement Strategy, 2003-2027	The overall goal of the strategy is to facilitate integrated spatial planning for guiding and shaping human settlement developments with the District. Among the 10 goals of the Strategy, the two most relevant include the establishment of broad land use zones/agro-ecological zones in the District for various uses and determine how they could be rationally and sustainably utilised; protection and preservation of the environment and sustainable utilisation of the natural resources.	The Plan has identified the parts of the ODRS and WHS as an environmentally fragile area deserving protection and conservation.
Ngamiland District Tourism Development Plan, 2007	The Ngamiland Tourism Development Plan vision is 'to strive for the development of a world class nature-based tourism destination that is economically sustainable and optimizes benefits to local communities and the nation within agreed limits of acceptable change' The vision will be realized through conservation of the tourism resource base and optimizing economic returns of the Okavango, increased citizen participation in the tourism industry and ensuring high quality visitor experience in the Okavango Delta. The plan identified five Tourism Development Areas (TDA) in the Delta. It calls for branding the area as a tourist destination area focused on river-based activities.	The Plan, though already integrated into the Ngamiland Integrated land Use Plan, have made specific guidance on strategies to promote, brand and market tourism in the ODRS and WHS.
ODMP, 2008	The ODMP, prepared for the Okavango Delta Ramsar Site (ODRS), overall goal is "to integrate resource management for the Okavango Delta that will ensure its long-term conservation and that will provide benefits for the present and future well-being of the people, through sustainable use of its natural resources" The Plan is	The Plan is important in guiding developments and biodiversity conservation efforts in the Delta. It is regularly updated to align it with contemporary issues affecting socio-economic and cultural needs of the local people and ecological needs of the entire biota. It presents the status of the environment and advises on

Instrument	Summary Description	Relevance to and Implications for ODMP
	currently being reviewed. The Plan, during its development, integrated the proposals and zonation of the Okavango River Panhandle Management Plan into the land use plan of 2001.	approaches and strategies that can ensure sustainable utilisation and conservation of the ecosystem components of the Okavango Delta. Although the old ODMP was reviewed midway, and is now under full review, the document is still relevant to date because of the socio-economic and ecological baselines determined and several solid long-term recommendations which were made and are still applicable.
Ngamiland Integrated Land Use Plan, 2009	The plan is meant to propel environmental conservation and biodiversity management in the District. Having synchronized different District plans into one, the plan is devised to produce better results. It has zoned land use activities based on optimal use in terms of soil suitability, environmental and ecological sensitivity, resource availability and community livelihoods options	The Plan has synthesised and validated key recommendations pertinent to the development of tourism in the Delta and livelihoods options of local communities. It addresses the Ngamiland District livelihoods plan. It speaks to all the land-use and management plans in areas in and around the Delta.
CBNRM Practitioners' Manual, 2009	The manual provides a good understanding of the social, economic, and ecological factors that affect the management of natural resources by communities. It introduces community-based natural resource management and outlines the processes, policy and legal framework within which Botswana CBNRM operates. The objectives of the Manual are to create awareness on principles involved in CBNRM, tools available for resource management in CBNRM, procedures and processes involved in the development and functioning of a CBO and linkages between local level decisions and the internal and external CBNRM environment.	With more CBOs being formed, new officers tasked with CBNRM implementation in the District, the Manual will continue to provide much needed guidance for effective guidance to the emerging CBNRM CBOs.
Strategic Environmental Management Plan, 2013	The strategic environmental assessment outlines targets that will ensure that the long-term ecological integrity of	The SEMP gives strategic direction and guidance at various spatial scales on targets and mitigations to be

Instrument	Summary Description	Relevance to and Implications for ODMP
	the ODRS system is maintained and/or improved. The assessment has found that the Ramsar Site is facing significant threat of losing its semi pristine and ecologically fully functional wetland state. The SEMP cautions on the need for significant changes in the broader basin, ecosystem linkages and within the Ramsar Site to offset the critical thresholds that may be destructive to the ODRS. The SEA warns against the current prevailing 'business as usual approach' towards ODRS management as it would be detrimental to the long-term viability of the system. The SEA recommends for an approach with 'a vision that ensures that the objectives and requirements of the Ramsar site are considered prior to sector developments. It also calls for flexibility in sector strategy implementation, adaptive management approach and improved feedback mechanisms to facilitate and support the development of the ODRS effectively and efficiently. On a positive note, the SEA found that there is general awareness at the district level concerning the ODRS and responsibilities. Notwithstanding this, the SEA indicates that the sustainability of ODRS will also depend on the critical changes required from external stakeholders outside the ODRS, mainly the upstream and mid-stream basin nations. Key drivers and underlying causes undermining the long term integrity and survival of the ODRS are discussed at three level; i) global, such as climate change, international treaties and global economic system; ii) basin level factors (population increase, land use changes and increasing water requirements and poverty) and iii) within the ODRS such as population	done to safeguard the integrity of the Okavango River and the Okavango Delta as a whole. The SEMP highlights areas of the Okavango Delta with varying sensitivities and provides thresholds on indicators of the status of the ecosystem and on human elephant conflict. The SEMP provides the much-needed the strategic planning guidelines which will safeguard the biodiversity of the Delta.

Instrument	Summary Description	Relevance to and Implications for ODMP
	increase, mushrooming settlements and land use, tourism, national policies and strategies, erratic changes to policies and programs and governance. In terms of the latter, the SEA recommends 'for a single and effective planning authority to manage settlement within the ODRS'.	
National Biodiversity Strategy and Action Plan, 2016	The NBSAP has gone through and evolutionary process since its development in 2004, with the current Strategy envisioning that "By 2025, ecosystem, species and genetic diversity is valued, protected, and used sustainably and equitably, through the involvement of all sectors of society and the provision of sufficient resources for its sound management". The Strategy adapted overtime to align with the CBD's Strategic Plan and comply with the Aichi Targets. The five (5) overarching National Goals of the NBSAP, which are closely linked to the CBDs goals aspires to ensure, i) biodiversity mainstreaming and valuing by the society, ii) reduction of pressure on biodiversity and natural resources utilization, iii) protection of ecosystems, species and genetic resources through sound management, iv) securing a fair and equitable access to the benefits of biodiversity and v) participatory planning and capacity development. From these National Goals, 20 national targets were established to guide and direct appropriate strategies up to 2025, in line with the CBD timelines. The strategy recognizes climate change as one of the causes for loss of biodiversity and that this has	The strategy is useful to facilitate and guide monitoring and evaluating biodiversity resources within the Okavango Delta and in fulfilment of the requirement of the World Heritage Site Guidelines which requires regular assessments on the status of the resources within the ODRS and the WHS. The NBSAP will help in setting targets to guide both management, monitoring and evaluation. The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation.

Instrument	Summary Description	Relevance to and Implications for ODMP
	implications for the reduction in ecosystem services and natural resource availability, with negative consequences for rural livelihoods. The strategy's aim is that by 2025, the anthropogenic pressures on wetlands, woodlands and savannas will be minimised, so that the impacts of climate change and other external perturbations on their ecological integrity and functioning can be managed (Strategic Actions for Target 10)	
National Development Plan 11, 2017	The NDP 11 notes the listing of the Okavango Delta as the 1000th UNESCO WHS and highlighted that it will enhance the socio-economic and livelihoods of local communities living in the Delta. The Plan further indicates the continued development, preservation and opening monuments and cultural heritage sites for cultural tourism to benefit and empower of local communities.	The Plan mandates opening of monuments and cultural heritage sites for cultural tourism. This will further broaden and diversify the tourism product within the ODRS and WHS through the promotion and support of cultural activities. This will increase benefits to the local communities and the international community, as well as preserving local culture.
CBNRM Strategy & Action Plan, 2019-2023 (draft)	The draft CBNRM Strategy serves to give direction to CBNRM implementation in Botswana to ensure contribution to achieving SDGs aspirations of natural resource conservation, poverty alleviation and rural development. The Strategic long-term vision is "leaving no Community Behind: Empowering local communities in the sustainable use of natural resources to improve their livelihoods and achieve conservation'. The strategic plan, informed by the SGDs goals ending poverty in all its forms, promoting sustainable economic growth, life on land and cross-cutting partnerships, is aimed at	The CBNRM strategy is necessary in giving CBNRM implementation direction. Through its explicit priority areas, the CBNRM strategy will encourage diversification of the wildlife-based tourism product by promoting other attractions such as cultural and nature-based tourism (mekoro, wilderness, food festivals, etc.) to benefit local communities residing in and around the Delta. It will further facilitate capacity building and skill development to promote sustainable utilization, conservation, and generation of benefits for the communities and other stakeholders. This will

Instrument	Summary Description	Relevance to and Implications for ODMP
	achieving CBNRM principles of rural development and biodiversity conservation. To do this, the Strategy has six priority areas, being 1. Expanding & Diversifying CBNRM Tourism Product; 2. Increasing CBNRM Economic Benefits and distribution to communities; 3, Strengthening CBNRM Institutions & Governance structure; 4. Enhancing Capacity & Skills Development in CBNRM; 5. Increasing community participation in Natural Resource Conservation; and 6, Adoption of Policy and Regulatory framework in CBNRM development. It is envisaged that attaining the strategic goals will improve CBNRM program effectiveness and efficiency.	contribute to improved sustainable utilisation of the ODRS and WHS.
Botswana Elephant Management Plan and Action Plan of March 2021	The Plan provides guidance to conservation and management of elephants within the Botswana territory and within the principles of the Wildlife Conservation Policy of 1986 and Wildlife Conservation Draft Policy of 2013. Its vision is to conserve optimal elephant populations while ensuring the maintenance of habitats and biodiversity, promoting the contribution of elephants to local communities and to the national development while minimising their negative impacts on rural livelihoods. The plan comprises of six key components which are (i) protection and law enforcement, (iii) human-elephant conflict management, (iii) management of habitats and connectivity, (iv) social and economic framework, (v) conservation capacity and (vi) coordination and collaboration. It is through these 6 key components that the three target areas of maintaining viable populations of elephant, ensuring no adverse	The Okavango Delta is an area of economic importance and of socio-economic paradox in that it is a hub of eco-tourism which is the third contributor of foreign exchange to the national economy. However, a majority of local communities living in and around the Okavango Delta are living below poverty datum line and the region ranks second in the country in terms of poverty. Poverty in the Okavango is aggravated by the high incidence levels of human-elephant conflict, high dependency on natural resources, and limited access to the resources due to conservation and land use policies. The plans outline how the elephant populations will be sustainably managed to protect the habitats and improve the livelihoods of people living in the delta through the creation of elephant-based consumptive and non-consumptive tourism and by-product utilisation schemes driven by communities and other key

Instrument	Summary Description	Relevance to and Implications for ODMP
	impact on biodiversity and community livelihoods, and multi-stakeholder involvement on the realisation of economic benefits on sustainable basis will be achieved.	stakeholders. The plan is key to biodiversity conservation and protection of values that ODMP seeks to achieve.
Regional & International Agreements & Conventions		
Convention for the Protection of Cultural Property in the Event of Armed Conflict, 1954	The Convention provides a framework of protection of cultural property, both movable and immovable, in situations of armed conflict. The goal of the Convention is to protect cultural property against destruction or damage, as well as theft, looting, or other forms of unlawful seizure during periods of armed conflict.	The ODRS, within which the ODWHS is situated needs this framework to ensure protection of any known or unknown cultural property within the site. While armed conflicts are rare in Botswana, the framework offers protection in an unlikely event of armed conflict.
Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property,1970	The Convention provides a general international cooperation framework between States parties for preventing the import and trade of stolen cultural artefacts. 'Cultural property' in the context of Convention is any property designated by State parties as being of importance in either archaeology, prehistory, history, literature, art or science on religious or secular grounds. The Convention provides rules for restitutions, inventories, and imposition of penalties and/or administrative sanctions. The Convention generally articulates the principles of shared responsibility and cultural equity.	As cultural tourism is promoted in the ODRS and ODWHS, there's potential for illicit export of cultural materials out of the area. The Convention framework will thereby be useful in preventing theft and/or restitution of the cultural materials.
The Convention on Wetlands of International Importance (Ramsar Convention), 1971	The Convention serves as an international treaty providing the framework for national action and international cooperation for the promotion of conservation and wise use of wetlands and their resources. The Convention work to prevent, stop and reverse wetland loss and degradation.	The management of ODRS and ODWHS must adhere to the principles of the Convention which promotes for the wise use of wetlands and their sustainable utilization for the benefit of humanity without compromising their ecological integrity.

Instrument	Summary Description	Relevance to and Implications for ODMP
UNESCO Convention on the Protection of the World Cultural and Natural Heritage (World Heritage Convention), 1972	The WHC is a global instrument aimed at identifying and protecting the world's natural and cultural heritage considered to be of Outstanding Universal Value. It was established to facilitate an effective system of collective protection of the cultural and natural heritage of outstanding universal value, organized on a permanent basis and in accordance with modern scientific methods. The Convention recognizes the important role of indigenous peoples and local communities in conservation of WHS, hence the adoption of the fifth strategic objective on 'community' to facilitate community development. The Convention guides the inscription process of properties and consequent management of WHS through The Operational Guidelines for the Implementation of the World Heritage Convention.	The Okavango Delta was inscribed WHS and hence its management must be guided by the Convention's operational guidelines. The review of the ODMP to cater for the WHS and its management is a compliance measure to the requirements of this convention.
Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973	The Convention serves as a global agreement among governments to regulate or ban international trade in species for the protection of endangered species of wild fauna and flora against over-exploitation through international trade. The Convention ensures that international trade in protected plant and animal species is not unsustainable done to threaten their survival. This is done by granting varying degrees of protection species of animals and plants.	Botswana is a signatory to the Convention since 1977 and has since incorporated this into the Wildlife Conservation & National Parks Act of 1992. Issuance of hunting quotas for different wildlife species continue to be done within the auspices of the CITES to ensure their sustenance. The ODRS, mainly the OD WHS, being a key biodiversity area, the trade in flora and fauna found in abundance and diversity in the Okavango Delta need to be closely monitored protected to reduce over-exploitation.

Instrument	Summary Description	Relevance to and Implications for ODMP
Convention on Biological Diversity, 1992	The Convention, being one of the most widely ratified international treaties on environmental issues has three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. The Convention is dedicated to promoting sustainable development, the ecosystem approach, with the emphasis on building partnerships are all helping to shape global action on biodiversity. It served as a pragmatic tool for translating the principles of Agenda 21 into reality. The Convention recognizes and placed people as belonging and part of biological diversity.	The key goals of the Convention speak directly to the aspirations of the Okavango Delta as a WHS, hotspot of biodiversity and a source of life for local communities upstream and downstream. The convention talks about equitable sharing of the benefits from the use of genetic resources and local communities stand to benefit.
Permanent Okavango River Basin Water Commission Agreement (OKACOM), 1994	The OKACOM Agreement was established to guide Member States on matters relating to the conservation, development, and utilization of water resources of common interest to the Member States. Specifically, the Commission determines the long-term safe yield of the water available from all potential water resources in the Basin; the reasonable demand for water from consumers in the Basin; and develop criteria for the conservation, equitable allocation and sustainable utilization of water resources in the Okavango River Basin.	The Okavango River and the Okavango Delta, are part of the larger Cubango-Okavango River Basin and hence promotion of regional dialogue, understanding of member states of the need to conserve water, and coordinated interventions for sustainability of the Delta are very important.
UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects (1995	The UNIDROIT Convention provides an international framework for the preservation of the world's cultural heritage by promoting the return of stolen or illegally exported cultural objects. The Convention defines a cultural object as one "which, on religious or secular grounds, [is] of importance for archaeology, prehistory,	As cultural tourism is promoted in the ODRS and ODWHS, there's potential for illicit export of cultural materials out of the area. The Convention framework will thereby be useful in preventing theft and/or restitution of the cultural materials.

Instrument	Summary Description	Relevance to and Implications for ODMP
	history, literature, art or science" and belonging to anyone of the categories identified in the Convention.	
SADC Protocol on Shared Water Courses System, 2000	The regional protocol fosters closer cooperation for judicious, sustainable, and coordinated management, protection and utilization of shared watercourses and advance regional integration and poverty alleviation within the region. The protocol calls for equitable utilisation of shared water resources, monitoring of the implementation of water resour*ces* developments by member states.	Botswana, being a signatory to this protocol, and the quest to ensuring equitable utilization of the Cubango-Okavango River Basin, of which the Okavango Delta is part of, makes this protocol relevant.
The Convention for the Safeguarding of the Intangible Cultural Heritage, 2003	The Convention provides an international framework for the protection of intangible cultural heritage. The goal of the Convention is to safeguard the intangible cultural heritage, which entails the practices, representations, expressions, knowledge, and skills that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. These further includes the instruments, objects, artefacts, and cultural spaces associated with intangible cultural heritage. The Convention recognise communities and bearers as key actors in safeguarding and transmitting the intangible cultural heritage across generations, being constantly recreated in response to the prevailing environmental conditions and history.	The implementation of the ODMP takes place in a multi-ethnic cultural space rich in intangible cultural heritage. The Convention will be useful in protecting indigenous and local communities' intangible cultural heritage.
KAZA TFCA Treaty, 2011	The KAZA TFCA Treaty, ratified by the member states of Angola, Botswana, Namibia, Zambia, and Zimbabwe in August 2011, is aimed at ensuring sharing, conservation and prudent management of natural	The Okavango Delta MIDA landscape is almost all entirely part of the KAZA TFCA. The Botswana portion of the TFCA comprises 30% of the entire KAZA TFCA, which is the largest among the member countries,

Instrument	Summary Description	Relevance to and Implications for ODMP
	resources within the KAZA TFCA for present and future generations within the context of sustainable development. The regional integration approach goal is to derive equitable socio-economic benefits through the sustainable use and development of natural and cultural heritage resources. The Treaty envisage tourism development in the TFCA as one of vehicles to propel the socio-economic growth in the region to improve the livelihoods of the primary beneficiaries of the TFCA. The Treaty also serves as an instrument that will facilitate a regional integrated approach towards harmonizing policies, strategies, and practices for managing the shared natural resources straddling the international borders of KAZA's five member states. The objects of the KAZA TFCA include; conservation of shared natural resources and cultural heritage, promoting the development of connectivity among the protected areas and restoring wildlife migratory routes, development of the TFCA as a world class tourism destination area, promotion of free and easy flow of tourists across the borders, sustainable utilisation of natural resources for socio-economic upliftment and harmonisation of legal and policy framework for effective management of natural resources within the TFCA.	constituting 15 366 272 ha. The Botswana portion covers the Okavango Delta (including Moremi Game Reserve), the Chobe-Linyanti river system, which are part of the Okavango Delta MIDA landscape. The KAZA TFCA has identified six Wildlife Dispersal Areas (WDAs), two (Kwando River and Khaudum-Ngamiland WDAs) being part of the Okavango Delta MIDA landscape. The WDAs creates essential links between adjacent land use types and across international boundaries. Other significant conservation areas of the TFCA are the Chobe National Park and Makgadikgadi-Nxai National Park.
Nagoya Protocol on Access and Benefit-sharing, 2014	The protocol's objective is to ensure fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity. It also facilitates a transparent legal framework for the effective	The traditional knowledge (e.g., ethnobotany) and provisions on access, benefit-sharing and compliance have been issues of concern among indigenous communities. Local communities have shared their indigenous knowledge of medicinal plants with

Instrument	Summary Description	Relevance to and Implications for ODMP
	implementation of one of the objectives of the CBD; the protocol addresses issues on traditional knowledge that are associated with genetic resources, and which are covered by the CBD and the benefits arising from their utilization. Proper application of the protocol is bound to create greater legal certainty and transparency for both providers and users of genetic resources. It also addresses genetic resources where indigenous and local communities have the established rights to grant access to them. Contracting Parties are to ensure communities' prior informed consent, and fair and equitable benefit-sharing, keeping in mind community laws and procedures as well as customary use and exchange	pharmaceutical companies, which in turn used that local knowledge without due recognition for and/or intellectual property rights of the rightful owners. The protocol will provide guidance in terms of access to and equitable benefit sharing of genetic resources among local and indigenous communities within the ODRS/WHS area.
Sustainable Development Goals, 2015	SDGs are concerned with addressing the three pillars of sustainable development, being economy, society and environment in a holistic manner by focusing on the overall ecosystem and human well-being. The role of tourism in poverty eradication is central to SDG8 which calls for decent work and economic growth. SDG12 advocates for responsible tourism through responsible consumption and production.	Noting that poverty eradication is a highlight of the SDGs, and that Government of Botswana recognises tourism as an engine of economic growth, it is necessary if its potential in the ODRS and the WHS is maximised. There are resident communities in ODRS and WHS and their lives are dependent on natural and cultural resources and assets of the area. As local communities expand the need for more inclusivity in developments, equitable sharing and conservation becomes more paramount.
	Further, SDG 11 calls for making cities and communities, with a specific target made towards strengthening efforts to protect and safeguard the world's cultural and natural heritage.	The revision of the ODMP aims at devising strategies for protecting the delta and its inhabitants taking into consideration climate change adaptation.
	SDG13 calls for urgent action to combat climate change and its impacts. Target 13b for example calls for the	

Instrument	Summary Description	Relevance to and Implications for ODMP
	integration of climate change measures into national policies, strategies, and plans.	
The 4th Ramsar Strategic Plan 2016 – 2024	The 4th Strategic Plan 2016 – 2024 outlines priority focus areas of the Contracting Parties for the implementation of the Ramsar Convention in 2016 – 2024. The strategic long-term vision is that "wetlands are conserved, wisely used, restored and their benefits are recognized and valued by all". The strategic plan, informed by National Reports to COP11, formulated four strategic goals derived from the four priority areas for the Ramsar Convention for the 2016 – 2024 period. The goals are, i) addressing the drivers of wetland loss and degradation, ii) effectively conserving and managing the Ramsar site network, iii) wisely using all wetlands, and iv) enhancing implementation. The framework matrix outlines targets aligned to each objective and tools, actions and resources, key actors and baselines for monitoring and evaluation.	The strategy is useful in guiding, implementing, and monitoring wetlands, in this case the ODRS. It provides tools and resources to aid implementation. The strategy supplements the National Biodiversity Strategy Action Plan. In ODRS, the strategy can guide in establishing country "priorities within the Strategic Plan, develop its own work plan for implementing them, and consider its own use of its own resources".

APPENDIX II: Main Take-home Messages of the 2014 Mid Term Review of the 2008 ODMP

Category of lessons learnt	Specific Take-home Message from the MTR
Information and data availability	The characterization of complex relationships between climate change, land-use, and biodiversity in ODRS are missing and limited by a lack of process understanding, data availability, and inherent scenarios uncertainties. There has been a lack of focused work on the impacts of climate change There is need to improve understanding of how ecosystems and individual wildlife species respond to environmental changes such as climate change
Vulnerability to climate change	The overall progress in all other areas of the ODMP including the identified threats from climate change was seriously delayed or found lacking. Climate change was identified as one of the major potential threats to the long-term conservation of the Delta, in terms of water resources. Provide the highest priority to conservation of species that are most vulnerable to change (including climate change), such as specialized and threatened species and those of regional significance
Impact of climate change on specific economic sectors, livelihoods, habitats	Climate change and its impacts on tourism and the ODRS as an ecosystem were completely ignored or omitted by the ODPM There is little understanding of how climate change (desiccation of river channels or flooding) is going to affect water dependent livelihoods, such as fishing There is little understanding on how climate change affects habitats and how the changes affect wildlife
Monitoring of climate change trends	There is need for monitoring of the effects of climate change on the flow regimes in the Delta There is need to devise a systematic, coordinated monitoring program
Coping and adaptation strategies	There is no action plan for climate change issues The need for an ODRS-specific regional development strategy that factors in key driving forces such as climate change.

	There is limited understanding of how households have been coping or are likely to cope with the impacts of climate change There is need to establish adaptive management mechanisms for responding to changes. There is need to support research that assists in identifying specific management requirements for vegetation species and communities, including responses to expected climate change The ODMP has recommended that ─ sectors such as tourism, agriculture, subsistence and commercial use of vegetation resources, water, and fisheries which are likely to be affected by the impact of climate change initiate the development of coping strategies The move from conventional agriculture to Conservation Agriculture is seen as a worldwide movement toward the restoration of natural resources, integrating biological considerations into the soil/plant/atmosphere continuum while responding to the challenges of climate change. It was also noted that the Conservation Agriculture concept offers an appropriate technology not only to adapt to climate change but also fosters sustainable use of natural resources and, through agricultural intensification, also offers better economic prospects to small farmers

APPENDIX III: Inter-sectoral analysis of gender: Making a difference.

Development Sector	Why Gender matters
Climate change	**Why gender makes a difference in climate change adaptation, mitigation and monitoring.** • To help planners develop appropriate communication approaches to disaster preparedness and food distribution, access to technologies and credit, safety and mitigation and monitoring gendered impacts. • Women are often dependent on climate sensitive natural resources and are often disproportionately vulnerable to climatic risk of exposure. • The SADC gender protocol pays attention to women's representation in climate change decision making especially important in addressing extreme events.
Biodiversity	**Why gender makes a difference in biodiversity policy/program initiatives.** • In recognition of the important Technical Ecological Knowledge (TEK) in women possess in ethnobotany, management and ecology of plants and their utilization preferences related to food and nutrition, health and wellbeing plant diversity and fair distribution of benefits. • A gender perspective to intellectual property regimes would consider women's roles and equitable distribution of benefits derived from its utilization.
Agriculture	**Why gender makes a difference in agriculture initiatives.** • In many instances' crops are "gendered." Household food and nutritional security issues are within the purview of women. Food crops and vegetable gardens would subsequently improve nutritional status of women and children's education. • Access to extension services to increase women's access market information/opportunity, and knowledge of food crops that grows rapidly, cooks easily, have higher protein and nutrient content. • In Botswana, 58% women own arable land than 42% men. • Platforms for addressing gender equality and equity programs include Agri-business, Conservation Agriculture, fisheries projects and other income generating project. There is significant gender difference in ownership of cattle (skewed towards men), goats, chickens (skewed towards women and sheep

Energy	**Why gender makes a difference in energy initiatives.** • Women are primary decision-maker for household energy use. Direct and indirect household energy intervention/programs are more effective if they target women. • Alternative sources of energy reduce labour and time in household chores and contributes to safety. • Lack of affordable energy supply affects women's enterprises profitability, • Cleaner fuel impacts on their health, foods can be stored longer periods and reduce wastage.
Water	Why gender makes a difference in water management. • When men and women's roles are considered in the use, supply, conservation and administration of water resources, the link between people and natural resources management becomes clear. • Taking gender issues into account allows for a better understanding of the entire hydrological cycle and interactions of water with other natural resources and socio-economic systems. • Water Rights and rights to Water increase the urgency of legal frameworks to set allocation priorities in public interest. • IWRM a balancing tool between competing demands
Fisheries and Aquaculture	**Gender makes a difference in fisheries initiatives.** • When fisheries organizations involve women in decision making and leadership roles, organizations are likely to make provisions which benefits all members of the organization. Women's secure access aquatic resources is vital for craft making, small and medium enterprises and tourism for sustainable use of wetland resources.
Forestry	**Why gender makes a difference in sustainable forest management.** • Forest provides significant benefits in terms of timber and non-timber products and an array of other ecosystems services. • Failure to take women and men's activities in forestry management decisions may lead to criminalization activities (such as illegal collection of firewood and non-timber products). Gender-responsive forestry policies/programs that seek sustainable forestry practices would consider practical and strategic needs of both men and women
Tourism	Why gender makes a difference in tourism and ecotourism.

	• The tourism industry is diverse and dynamic and creates opportunity for women to develop key initiatives for their advancement. Participation in the tourism industry allows women independence and decreases household poverty. It challenges gender roles and stereotypes in the workforce and facilitates women's empowerment
Medicinal plants	Why gender makes a difference in medicinal plants access. • Many communities rely on herbal medicines for health care. Traditionally, women are involved in collecting, simple processing, and trading of medicinal plants contribute significantly to the cash income. Inequality between women and men has generated differing levels of access to medicinal plants and their genetic resources. This diminishes the possibilities of negotiating fair benefit sharing arrangement. Gender makes a difference in medicinal plants initiative
Protected Areas	**Why gender makes a difference in protected area** • Management of protected areas can only be effective if local women and men are involved. • Gender equity is key to sustainable conservation and livelihoods. Protected areas present a unique opportunity to promote gender equity if the intervention initiatives allow for just access to and benefits from proper management of natural resources
Poverty and environment	**Why gender matters in poverty reduction policy/program initiatives** • Men allocate a greater percentage of their income to personal use. Women tend to allocate to family welfare. • Moderate and severe malnutrition differ among female and male headed household. • Education facilitates women's access to health services and delays women's age at marriage/first birth. • Ignoring gender, education, poverty distorts the understanding of human impacts on the environmental degradation and poverty. • Investment in social protection and safety and promote women's economic empowerment through programs such as ISPAAD, LIMID

APPENDIX IV International Best practice Framework

	Topics for demonstrating Best Practice	Why your World Heritage property site is a best practice in relation to the topic Philippines: The Historic Town of Vigan World Heritage Site
1	**Conservation:** What innovative management practices or strategies are being applied in order to ensure the conservation of the Outstanding Universal Value (OUV) of the property (e.g. better resource management, restoration and rehabilitation, addressing various manmade or natural threats and challenges, etc?)	1. legislative measures to safeguard and preserve the historic city: 2. Cultural mapping project which has identified and documented cultural heritage resources, local arts and crafts, crafts persons and practitioners of intangible cultural heritage. 3. Establishment of a City Public Safety and Disaster Risk Reduction Management Office
2	**Local People:** What exemplary practices are you using in order to effectively address the needs of local stakeholders within the management system for the property, and enable their full and active participation	Public fora and multi-stakeholder workshops were organized
3.	**Legal Framework:** What special measures have you taken to ensure that the legal framework for the World Heritage site is effective in maintaining the OUV of the property?	Passing of legislative ordinances
4.	**Boundaries:** What innovative ways of dealing with the boundaries of the property, including for management of the buffer zone do you have in place, to effectively manage the site and protect its OUV?	Delineating boundaries Heritage office established
5	**Sustainable Finance:** What effective strategies have you developed and implemented to assure adequate and sustainable financial resources for implementing the management measures required to maintain the site's OUV?	Heritage Conservation Program
6	**Staffing training and Development:**	Heritage Conservation Division manned by trained personnel

	What approaches and strategies have you developed and implemented to assure that the human resources are adequate to manage the World Heritage property?	
7	**Sustainable Development:** What are the effective mechanisms in place to ensure that resource use permitted in and around the World Heritage site is sustainable and does not impact negatively on OUV?	City Government to promote sustainable development and use of local resources,
8	**Education and Interpretation Programmes:** How do the education, interpretation, and awareness programmes you have developed and implemented significantly enhance the understanding of OUV of the site among stakeholders?	To safeguard and revitalize the intangible cultural heritage of Vigan, festivals and cultural events are organized yearly

APPENDIX V Legislative and Policy Framework relevant for gender mainstreaming

Instrument	Summary Description	Relevant pointers for gender mainstreaming in MIDA, and opportunities for best international practices
Policies		
Vision 2016 envisaged full employment.	Employment legislation has been reformed to eliminate discriminatory practices, especially in the mines, industry and agriculture	This legislation continues to be important in view of emerging employment opportunities in the mining (Toteng) and tourism sectors in the district
National Development Plan 11, 2016	Mainstreaming a gender perspective into all development initiatives, including policies, programs as well as processes, is increasingly recognized as a vital development approach	This is key or master document will continue to be key in that it sets the tone for mainstream gender in all government development policies/program interventions and legislative framework in MIDA
National Policy on Gender and development 2015	The National Policy on Gender and Development aims to achieve effective integration and empowerment of women in order to improve their status, enhance participation in decision making and augment their role in development activities. The Policy identifies a range of issues, systems, and institutions in which the same opportunities should be available to women and men to maximize their potential as human beings and valuable citizens of Botswana. The long-term goal of the policy was to reduce inequalities in the opportunities and outcomes of social, economic, political, cultural and legal development for both women and men.	This policy will continue to inform development policies/programs and legislative framework and is pivotal in gauging gender

Instrument	Summary Description	Relevant pointers for gender mainstreaming in MIDA, and opportunities for best international practices
The National Population Policy	The Policy recognizes that female headed households are more vulnerable to poverty and targets programs to enhance their participation in economic activities	This Policy will continue to provide guidelines for mainstreaming gender about access to provision and access to services for women in various types of settlement
The 2003 Revised national policy on Rural development	Recognizes that women constitute the majority in rural population and are the backbone of the rural economy unequal access to and control over economic and productive resources, such as land, cattle, employment opportunities. Program strategies aimed at improving women's livelihoods, legal rights to property and other productive resources	Women are the backbone of the rural economy. The Division of Agricultural Policy and Statistics in the Ministry must revive the Agricultural Gender Policy (2005-2010) to formulate and implement gender responsive programming and deliver on its core mandate of women's economic empowerment by supporting income generating agro-businesses, training women farmers and women extension service professionals. The Ministry departmental budgets do not speak to gender except for ISPAAD, Livestock Management and infrastructure development (LIMID). The projects tend to address gender parity than equality and fails to address gender disparities in different sub-sectors of agriculture and food/nutrition security, access to finance, markets, technology, social protection, labor, land, crops, livestock, fisheries, forestry, water and agricultural value chain including impacts of climate change

Instrument	Summary Description	Relevant pointers for gender mainstreaming in MIDA, and opportunities for best international practices
National Gender Program Framework,	Is the main document guiding all gender mainstreaming in the country? The Framework aims at translating gender priorities into programs in all sectors of the economy	Although the Framework need updating to address challenges across government ministries whose policies and programs are weak on gender issues, the framework will continue to guide gender mainstreaming efforts
National Energy Draft Policy	The Policy recognizes different energy needs of women and men and calls for inclusion and consideration of these gender differences into energy strategies, program formulation and implementation	Botswana Power Corporation gender mainstreaming and institutionalization is exemplary. With the support of ENERGIA, the International Network on Gender and Sustainable Energy, BPC embarked on gender mainstreaming with the overall goal of ensuring that energy needs of both men and women are include in the planning and implementation of rural electrification.
African Gender and Development Index	Measures the extent of inequality about women's advancement and empowerment in the African continent. It provides effective mechanism for monitoring policy instruments aimed at reducing the gender gap and promote gender equality.	
2030 Agenda for Sustainable Development	Addresses issues facing women in agriculture and calls for states to fulfil women's equal rights to economic resources, basic services, technology and financial services	The Agenda will continue to be relevant in providing guidelines for women and girls access to land, fisheries and forests independent of their marital status, and provide policy, legal and organizational frameworks that are non-discriminatory.
Convention on the Eliminations of all forms	The Convention came into force in 1981 and is commonly known as the "International Bill of Rights for Women."	The Bill will continue to be relevant in addressing issues of discrimination and exclusion of women,

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of discrimination against women (CEDAW)	In 2013 the government instituted a process of domesticating it, between 1995 and 2009, Botswana amended some of its laws to make them gender sensitive through the Miscellaneous Amendment Act (2008) to align the relevant laws with CEDAW. In 2003, the Citizenship Act was amended, restrictions placed on women working underground were removed from the 1996 Mines and quarries Act, the 2004 Abolition of Marital Power Act removed the minority status of women married in community of property, the 2008 domestic Violence Act protects family member from gender based violence and the 1997 amendment of the Criminal Procedures and Evidence Act mandates hearing of sexual offence in camera.	protect rural women by ensuring their participation in development programs, to have access to services. The Bill speaks to social power capabilities in addition to economic power 'opportunities' (wages, employment, and access to resources
Beijing Platform of Action (1995)	Affirms women's human rights and economic, social and political empowerment, addresses women's vulnerability to poverty, access to credit and health, education and productive resources	The platform continues to be relevant since 2015, the Beijing +25 recognizes specific measures to improve rural women's status and access to productive resources, active participation in conservation and management of natural resources.
The 2008 SADC Gender Protocol on Gender and Development.	Provide for gender equality and human rights-based approach to development. It is designed to address widespread gender inequality, freedoms and dignity of women. The framework provides both policy, implementation framework and legal tools for mainstreaming gender equality and equity.	The Protocol will continue to be relevant in that it has a plan of action with a baseline and specific targets within a 2030-time frame, including mechanism for measuring progress for policy makers, service delivery institutions, human rights activists and for beneficiaries to demand

Instrument	Summary Description	Relevant pointers for gender mainstreaming in MIDA, and opportunities for best international practices
		gender equality. The targets are aligned with millennium development goals.
Climate Change Response Policy, 2021	The Policy strives to make Botswana a society that is sustainable, climate resilient, and whose development follows a low carbon development pathway, in pursuit of prosperity for all. This will be achieved by mainstreaming sustainability and climate change into development planning. The Policy envisages that in so doing, the country's resilience and capacity to respond to existing and anticipated climate change impacts will be enhanced. The Policy will be guided by key principles of sustainable development, precautionarity and public participation. The Policy sets the scene for development of sector based strategies towards adaptation and mitigating the impacts in key national priorities areas such as agriculture and food security, water, human health, biodiversity and ecosystems, forest management, land use and land allocation, disaster risk reduction. The Policy intends are to mainstream gender across all developmental nodes to ensure that vulnerable groups such as women, youth, and the disabled are secure and prioritized through provision of means of implementation such as technologies, finance and capacity building. Stakeholder active participation and involvement is considered key by the Policy as well as establishment of requisite structures in the form of committee at national and local level to facilitate policy implementation.	The MIDAS area is among the areas predicted to be adversely affected by climate change. The effect of climate change has been experience and voiced by the communities. This Policy therefore will guide in gender mainstreaming of climate change adaptation and mitigation measures to lessen the severity of the negative impacts, more so on vulnerable groups identified by the Policy. Gender responsive and human rights based approach to climate change, climate change effects on capacity to adapt, food security, health, Gender related disaster risk reduction, climate resilience. The SADC Gender and development Protocol pays attention to percentage of women in decision making bodies that addresses climate change

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