



REPUBLIC OF MOZAMBIQUE
MINISTRY OF LAND AND ENVIRONMENT
NATIONAL ADMINISTRATION FOR CONSERVATION AREAS

NIASSA SPECIAL RESERVE

MANAGEMENT PLAN

2024 - 2034



FEBRUARY 2024



REPÚBLICA DE MOÇAMBIQUE
MINISTÉRIO DA TERRA E AMBIENTE

DESPACHO

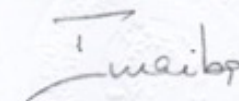
Tornando-se necessário aprovar um instrumento que garanta a gestão eficaz da Reserva Especial do Niassa, assegurando a protecção dos ecossistemas e a utilização sustentável dos recursos naturais existentes nesta área de conservação, ao abrigo do disposto no n.º 1 do Artigo 68 do Regulamento da Lei de Protecção, Conservação e Uso Sustentável da Diversidade Biológica, aprovado pelo Decreto n.º 89/2017 de 29 de Dezembro, determino:

Artigo 1. É aprovado o Plano de Maneio da Reserva Especial do Niassa, para o período de 2024 a 2033.

Artigo 2. O presente Despacho produz efeitos imediatamente à sua publicação.

Maputo, 06 de Fevereiro de 2024

A Ministra da Terra e Ambiente



Ivete Joaquim Maibaze

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Acronyms and abbreviations

ANAC	National Administration for Conservation Areas
CA	Conservation Area
CBNRM	Community-based Natural Resource Management
CFC	Community Fishing Councils
CGRN	Natural Resources Management Committee
LE	Law Enforcement
MITADER	Ministry of Land, Environment and Rural Development
MOMS	Management-Oriented Monitoring System
MP	Management Plan
MTA	Ministry of Land and Environment
NGOs	Non-governmental organizations
NNR	Niassa National Reserve
NSR	Niassa Special Reserve
PIU	Project Implementation Unit
PMU	Project Management Unit
SADC	Southern African Development Community
SGDRN	Niassa Reserve Management and Development Company
WCS	Wildlife Conservation Society

Technical sheet

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EXECUTIVE SUMMARY

The Niassa Special Reserve was established during the colonial era as the Niassa Game Reserve, through Ministerial Order No. 10578 of 9 October 1954 and it then became the Niassa Partial Game Reserve through Legislative Diploma n° 1997 of July 1960 and later its boundaries were altered through Legislative Diploma n° 2884 of 24 May 1969 and through Decree n° 81/99 of 16 November it was re-categorized the Niassa National Reserve, establishing new boundaries, always in accordance with the applicable laws and management objectives and finally, through Decree n° 42/2020 of 16 June, it was re-categorized as the Niassa Special Reserve (NSR), covering territorial spaces in the Provinces of Niassa and Cabo Delgado.

Located in the north of the country, it is bounded to the north by the international border line with the United Republic of Tanzania, to the south by an imaginary line, part of which runs along the dividing line of the tributaries of the Lugenda River basin, to the east by an imaginary line running from the south bank of the Rovuma River through the villages of the Negomano Administrative Post and to the west by another imaginary line running in a north-south direction from the Rovuma River to Mount Mosele (1 228 m), thus separating it from the Chipanje Chetu community management area.

It is the largest conservation area in the country, covering 42,000 square kilometers, of which about one third is in Niassa Province and part in Cabo Delgado Province. It extends over eight districts, six of which are in Niassa province, which includes the whole of Mecula district and a large part of Mavago district.

In December 2020, the Government of Mozambique signed a 20-year Co-Management Agreement with WCS for the Niassa Special Reserve. In order to effectively implement the agreement in force, this 10-year management plan has been prepared to improve the management of the six main management components centered on (i) the management of habitats and associated species, (ii) the protection of key conservation values, (iii) the adequacy of management and tourism infrastructures, (iv) the development of sustainable nature-based tourism, (v) the development of local communities and (vi) the improvement of technical management capacity.

INTRODUCTION

This Management Plan (MP) is the result of the revision of the Niassa National Reserve Management Plan, which has expired.

With the participation of multidisciplinary teams, the drafting process included document analysis, interpersonal communications with the various affected parties and stakeholders, including a consultation process with the communities living in and around the Reserve, as well as public and private institutions with activities within the Reserve.

This Management Plan consists of nine chapters:

- **Chapter 1** describes the planning process for preparing the Management Plan
- **Chapter 2** describes the Reserve, contextualizing the different stages of its development as a protected area, including its background and current situation.
- **Chapter 3** describes the biophysical characteristics of the NSR
- **Chapter 4** describes the socio-economic and cultural characteristics of NSR
- **Chapter 5** identifies conservation values
- **Chapter 6** presents the SWOT analysis
- **Chapter 7** describes the Management Plan
- **Chapter 8** establishes Conservation and Management Goals
- **Chapter 9** describes Monitoring and Evaluation indicators
- **Chapter 10** Management Plan Review Process
- **Chapter 11** presents the Management Plan implementation cost
- **Chapter 12** Bibliographical reference

Chapter I:

Description of the Management Plan preparation process

In the process of preparing the Management Plan for the Niassa Special Reserve (NSR) for the period 2024 - 2034, an analysis was made of the state of conservation of the ecological attributes, their threats, strengths, opportunities that exist for the development of the Reserve, the weaknesses in the structure and resources for management and finally, it establishes the ideal structure for better management of this Conservation Area. The Special Reserve category falls within the definition established by Article 19 of the Law on the Protection, Conservation and Sustainable Use of Biological Diversity, Law No. 16/2014 of 20 June, amended and republished by Law No. 5/2017 of 11 May, where it is defined as a “conservation area for sustainable use, in the public domain of the State, delimited, intended for the protection of a particular species of rare, endemic or endangered fauna or flora, or one that denounces decline, or with recognized cultural and economic value”. In the International Union for Conservation of Nature (IUCN) classification of protected areas, the Niassa Special Reserve falls into category VI, which groups together Protected Areas for the Sustainable Use of Natural Resources, whose characteristic is “protection for the management of natural resources with the aim of conserving ecosystems and habitats, together with associated cultural values and traditional natural resource management systems”.

1.1 Stakeholder engagement process for preparing the Management Plan

WCS and ANAC, as management partners, followed the Open Standards for Conservation Practice (“Open Standards”) (in English: CMP 2013; in Portuguese: CMP 2007) to guide their multi-stakeholder planning and consultation process. WCS and ANAC collaborated between 2016 and 2021 to implement several meetings, workshops and consultations with various interest groups, with more than 500 participants consulted. The following activities have been carried out since 2016:

Table 1: Stakeholders in the process of preparing the management plan

June 2016	Induction meeting (81 participants)
July to August 2016	Analysis and preparation for working groups
September 2016	Initial meeting for each of the nine working groups; start of technical consultations to define strategies (41 participants)
November 2016 - January 2017	Preparation and translation of strategies; consultations in all eight districts (308 participants)
January 2017	WCS-ANAC management committee meeting; report of district consultation meetings
March 2017	National Technical Panels on Mining and Zoning (13 participants)

May 2017	Management committee meeting
January 2018	Revised strategies and identified gaps will be resolved through computer and field work
February - March 2018	Public consultations in the provinces, districts, towns, concessionaires and NGOs in the provinces of Niassa and Cabo Delgado (81 participants)
August - September 2018	Adjusted the concept of zoning and the Implementation Plan to conform to the new Conservation Law
October 2018	Validation of the participatory land and resource use maps by the respective NSR communities (15 participants)
November 2018	Dissemination of the sustainable use of resources and NSR's governance, as well as the respective legal instruments, to districts, concessionaires, NSR workers and at provincial level (155 participants)
November 2018	Meeting with senior officials, donors, NSR management and selected concessionaires in Lugenda Camp to discuss subsequent steps for NSR's governance, which resulted in a draft "Lugenda Protocol".
January 2019	Dissemination among junior and senior employees of NSR and WCS-Mozambique, including the inclusion of contributions from NSR's vision, values and management objectives.
February - March 2019	Incorporation into the Management Plan of comments received from concessionaires in a revised version
November 2020-Feb 2021	Stabilization of success supported by WCS and ANAC to strengthen NSR's Situational Model
March 2021	Submission of the draft Management Plan to ANAC
April 2022	Submission of the draft to the NSR Management Board
June 2023	Submission of the draft Management Plan to the Ministry of Land and Environment (MTA)
June - August 2023	Analysis and comments by the MTA
September to November 2023	<ul style="list-style-type: none"> • Review of the draft by NSR, WCS and • Re-appraisal by the Niassa Provincial Government
December 2023	<ul style="list-style-type: none"> • Submission of the improved draft to the MTA by the Niassa Reserve Administration

The structure of the Management Plan is based on the provisions of article 69 of Decree n° 89/2017 of 21 December, Regulation of the Law on the Protection, Conservation, Sustainable Use of Biological Diversity (Law n° 16/2014 of 20 June amended and republished by Law 5/2017 of 11 May).

It also follows the steps recommended by ANAC in the “Principles for Preparing Conservation Area Management Plans”. The details contained in these management documents include general information on the Management Plan, the NSR’s background, the current situation and proposed actions for sustainable and participatory management.

It also presents a platform for the management of the Niassa Special Reserve within a 10-year timeframe. The Management Plan emphasizes the major consensuses reached between the main interested and affected parties during the preparation process and is geared towards being flexible enough to adapt to dynamic circumstances in the biophysical, institutional, political, socio-economic and legal environment.

In the 2024-2034 horizon, the plan defines the path towards a conservation approach that is economically and financially viable, socio-politically acceptable and ecologically sustainable and aligned with the Biodiversity Conservation Strategy & Implementation Plan (2015-2035).

Chapter II:

Niassa Special Reserve

2.1 Contextualization

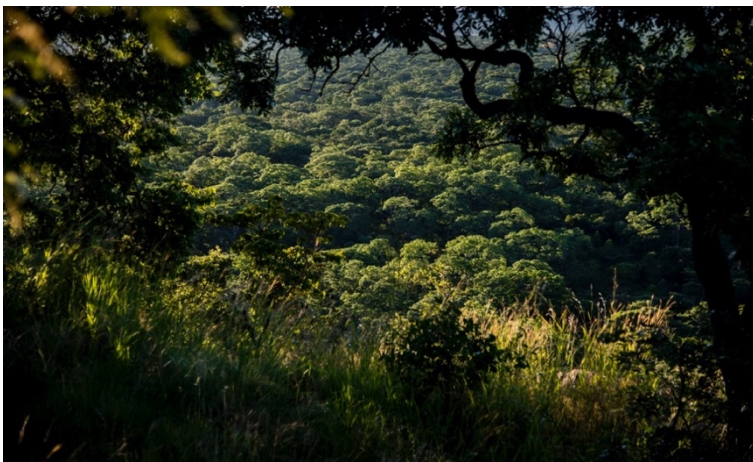
The provinces of Niassa (122,176 km²) and Cabo Delgado (82,625 km²) are critical areas of biodiversity (at local, national, regional and global level) and a vast area with abundant natural resources, with the potential to promote sustainable socio-economic development. However, these resources face threats resulting from unsustainable exploitation that make them undoubtedly incapable of supporting sustainable economies, social opportunities and the maintenance of fundamental ecological systems and natural processes related to them, as well as the designs for the prosperity of their resident population in particular and for the country in general.

The Niassa Special Reserve (NSR) was established by Order No. 10578 of 9 October 1954 as a hunting area and then changed to the Niassa Partial Hunting Reserve by Legislative Order No. 1997 of July 1960 and its boundaries were subsequently altered by Legislative Order No. 2884 of 24 May 1969.

Decree 81/99 of 16 November established new boundaries and it was re-categorized as the Niassa National Reserve, always in accordance with the applicable laws and management objectives.

Finally, Decree 42/2020 of 16 June once again re-categorized it as the Niassa Special Reserve (NSR), maintaining its previous boundaries, which cover 1/3 of the province of Niassa and part of two districts in the province of Cabo Delgado. The importance and complexity of the NSR comes partly from its size: the largest conservation area in the country (42,486 km²), with a core area (37,948 km²) it is part of a small group of the “seven largest protected areas” in sub-Saharan Africa, thus assuming a particularly important role in landscape conservation of national and global importance. It has no physical barriers along the perimeter of its boundary and minimal anthropogenic barriers, which allows for the natural movement of animals, making it the only remote natural area in modern times with these characteristics.

The Reserve is bordered to the north by the Rovuma River, which is Mozambique’s border with the United Republic of Tanzania. Its size and habitat composition, with sufficient protection and natural recovery, is home to numerous globally important fauna populations such as elephants and large carnivores. The NSR is also an important breeding site for rare birds such as the Taita Falcon (*Falco fasciinucha*), considered to be Africa’s rarest falcon, with just under 50 nests across the continent and a global population of just under 500 pairs. This occurrence makes the NSR an ecological site of global significance. Protecting the NSR not only safeguards critical fauna, but also ensures the global conservation of the rich biodiversity and ecosystem services that are crucial to our planet and humanity. Biodiversity surveys reveal that there are extensive and diverse areas of Miombo woodlands, wetlands, plains and rivers as well as endemism in its iconic mountains.



Picture 1: Miombo forest

The main floristic feature is the deciduous Miombo with a predominance of (*Brachystegia Spp*), which plays an important role in carbon sequestration contributing to climate change mitigation. Unfortunately, in the last ten years the threats have increased dramatically, including deforestation of areas, poaching, illegal mining, etc., putting pressure on the NSR’s ecosystems. Approaches to conservation have evolved, including

the broad approach of effective inclusion of interested and affected parties, with an emphasis on local communities living inside and in the buffer zone of conservation areas. Successful conservation requires the adoption of strategies for greater collaboration between stakeholders in the management of natural resources and the sharing of benefits resulting from the sustainable use of these natural resources.

In October 2012, ANAC signed a Memorandum of Understanding with WCS for technical and financial assistance to improve the management of the NNR and promote greater collaboration with local and central governments, private tourism operators, local communities and academic institutions. This collaboration is aimed at promoting equitable benefit sharing between the parties involved through participatory management and sustainable use of the Reserve's biological diversity with a focus on tourism.

By 2023, various partnerships have been established, forming a network of stakeholders within the Reserve and outside. This network will be extended and strengthened as a central strategy for achieving its objectives.

Table 2: List of NSR's management partners

Leão Niassa Coalition	<ul style="list-style-type: none"> • Luwire Wildlife Conservancy; • Chuilexi Conservancy; • Mozambique Conservation Force; • Mariri Investimentos / Niassa Carnivore Project (NCP); • Niassa Sanctuary; Naulala, Macalange, Lissongole and Ncuti villages; • Management of the Niassa Special Reserve; • ANAC; • Mozambican Wildlife Alliance (MWA)
Sport hunting operators	Kambako, Safrique, Mashambanzou Safaris, Mazeze Safaris
Donors	Save The Elephants, Lion Recovery Fund, BIOFUND, USAID, INL, Segre Foundation, TUSK, US Forestry Service, ART, EU, UNDP, AFD, EDP, Irish Embassy in Mozambique, Smart Parks, Dallas Safari Club, Spirit of America
Government	Government of Mozambique (central, provincial and district), Police of the Republic of Mozambique
Conservation NGOs	NCP, Flora and Fauna International (Chuilexi Conservancy shareholder), Mozambique Wildlife Alliance, Mozambique Conservation Force, Space for Giants
Development NGOs	Still ongoing (Education for the Joy of Life Program), Catholic University
Research partners	Sego Honey Gatherer Research Program, Endangered Wildlife Trust, Lúrio University, Development NGO's, Eduardo Mondlane University
Technology	EarthRanger, ESRI, WPS, SMART
Training, technical support	Endangered Wildlife Trust, US Forestry Service, Game Rangers Association of Africa

2.2 Legal background to the establishment of the Conservation Area

The geographical boundaries and legal use of the NSR have changed over time:

1. **Before 1954:** Free communal area with regulated persons, under the jurisdiction of the Majestic Company of Niassa, later categorized into administrative divisions before and after independence.
2. **1954:** Niassa Game Reserve
3. **1960:** Niassa Partial Game Reserve
4. **1969:** Niassa Partial Game Reserve - revised boundaries and reduced area
5. **1999:** Niassa National Reserve
6. **2020** Niassa Special Reserve (current status)

The **Niassa Game Reserve** was established in October 1954 to protect around 100,000 km². In 1960, it was reclassified as the Niassa Partial Game Reserve and its formal boundaries revised (Legislative Diploma No. 1997).

In 1969, the boundaries of the area were reduced to an area of 12,380 km², which remained until 1999, when, by virtue of Decree no. 81/99 of 16 November, new boundaries were established, and its designation was also changed to Niassa National Reserve (NNR), thus including multiple use areas to the north-east of the Reserve, making it possible to expand its main area to include a further 23,400 km². This portion was intended solely and exclusively for hunting activities (blocks), increasing the total area under conservation to 42,300 km² (Gibson, 2000, Hatton et al. 2001).

2.3 Re-categorization of the Niassa National Reserve (NNR)

During 2020, the NNR was re-categorized as NSR and subdivided into 21 management blocks. The change in category was due to the need to bring it into line with the categories laid down in the Law on the Protection, Conservation and Sustainable Use of Biological Diversity (Law 16/2014 of 20 June, amended and republished by Law 5/2017 of 11 May) and its Regulations (Decree 89/2017 of 29 December).

The term “natural resources”, according to the Glossary of Law 5/2017 of 11 May, “are natural environmental components that are useful to humans and generate goods and services, including air, water, soil, forest, fauna, fisheries and minerals”. Sustainable use of natural resources is defined as the integrated management of conservation with restricted use of resources in accordance with the provisions set out in the Management Plan.

2.4 History of Reserve Management

In 1996, the Mozambican government awarded the Madal Group a two-year contract to manage the then Niassa National Reserve. During the term of this contract, a management plan was prepared and the constitution of a company for the development of the Niassa Reserve was proposed (MADAL 1996, Suich et al. 2009).

In 2002 the *Sociedade para Gestão e Desenvolvimento da Reserva do Niassa* (SGDRN) was formally approved by the Council of Ministers through Decree 81/99 of 16 November as a public-private partnership between the state (which held 51% of the share capital) and Investimentos Niassa Ltd (with 49% of the share capital).

Investimentos Niassa was a private sector organization made up of Mozambican individuals. The partnership was formalized through a ten-year lease contract signed by the Mozambican Ministry of Tourism and running until 2012 (Baghai et al. 2018).

Under this management agreement, the Reserve was divided by the SGDRN into 17 management units, including nine hunting blocks, six ecotourism blocks and two zones of high biodiversity value, separated from the original delineation of the former core and buffer zones of the NSR (SGDRN, 2006: Management Plan 2007-2012).

Several concession contracts were signed in 2012, shortly before the demise of SGDRN. However, a public tender process for the concession of blocks L3, L4E, L5N and L5S was carried out in 2007.

2.5 WCS-ANAC co-management agreement

In October 2012, WCS and the Government of Mozambique signed a two-year Memorandum of Understanding (MoU) for technical and financial assistance to the Niassa National Reserve. The MoU was successively renewed for annual periods until 2020. In December 2020, the Government of Mozambique signed a 20-year Co-Management Agreement with WCS for the Niassa Special Reserve (attached). The Government of Mozambique felt that WCS's technical expertise in managing conservation areas, sustainable development, fundraising and the conservation of natural resources and biodiversity complemented ANAC's mission and that a joint management approach would be beneficial.

The foundations for NSR's governance and management are as follows:

- i. Preparing and implementing a Management Plan as a primary mechanism to guide management activities at NSR;
- ii. Establish a NSR Supervisory Committee equivalent to the Conservation Areas Management Board, in accordance with article n° 7 of Law n° 5/2017 of 11 May;
- iii. Establish a Niassa Special Reserve Management Committee whose main responsibility will be to oversee the coordination and efficient implementation of the co-management agreement between ANAC and WCS;
- iv. Establish a management structure that includes the main management areas, namely: biodiversity conservation, inspection, community development, tourism *marketing* & communication, administration, finance and human resources, communication;
- v. Establish and implement operational standards, policies and procedures for the management of NSR;
- vi. Improving the conservation and development of the NSR;
- vii. Develop and implement the strategy for the sustainable management of NSR's natural resources;
- viii. Establish conservation and management capacity at NSR, with the aim of gradually transferring additional NSR management responsibilities from WCS to ANAC staff at NSR.

Between 2012 and 2020, prior to the signing of the co-management agreement for the Niassa Special Reserve, it was managed exclusively by the government, despite the technical assistance provided by WCS. The co-management agreement establishes a new administration and management structure, based on a unified approach between the government and WCS. Under the agreement, NSR will be managed through a Project Management Unit (PMU) chaired by the Reserve Administrator and including a Field Operations Manager and eight leadership positions, including Law Enforcement, Conservation, Community Conservation, Tourism and Business and Human Resources Managers. The positions will be either full WCS employees or full ANAC employees.

The PMU will have primary responsibility for executing the Management Plan and the Business Plan as well as preparing and managing annual budgets and work plans. The PMU will also be responsible for managing concession agreements and compliance. The PMU will hold annual management board meetings to deal with operational matters and align these with the key Programs of Supervision, community liaison, monitoring, tourism, etc. These meetings will also facilitate the drafting of standard operating procedures for the entire Reserve to guide aspects related to enforcement, community liaison, human rights and gender issues. The Management Council is a mechanism envisaged for involving partners in public institutions. This council establishes systems for checking and balancing activities and promotes change processes

NSR's Management Board is an advisory body to NSR's Board of Directors, under the terms of the legislation in force. It is made up of the Reserve Administrator (Chairman), eight (8) District Administrators, three representatives of the Community Committees for the Management of Natural Resources (COGERNA), one (1) representative of the fisheries committee, three (3) representatives of the private sector including NSR operators, three (3) representatives of NGOs and two (2) Conservation Specialists. The Supervisory Committee (formerly known as the Management Committee or Steering Committee) is the body that oversees co-management at NSR. This committee is made up of two members from ANAC and two from WCS. At the Supervisory Committee meetings, the NSR Director reports on the progress of planned activities, expenditure and results and requests approval of plans or recommendations/support on certain issues. These meetings are open to the main donors and partners.

- “Ecotourism, hunting and recreational tourism and other specific activities may be carried out in conservation areas in accordance with the areas’ management plans, specific regulations and other legal provisions.”
- “Tourism in conservation areas should participate in the conservation of ecosystems, habitats and species in the areas in question.”

NSR’s ecotourism operators are affiliated with the vast community of conservation organizations, such as the SATIB Conservation Foundation, *International Conservation Action Trust*, *Fauna and Flora International*, *TRT Conservation Foundation* (TRT; formerly *Ratel Trust*), and *Conservation Capital*.

Table 1 shows the zoning of the NSR integrating concessions (2021). Only 1% of the Reserve’s area falls within the total protection zone and the remaining area is earmarked for the sustainable use of resources including tourism and conservation (15%), tourism, conservation (10%), and hunting (32%). These proportions are subject to change as a result of awarding new concessions or negotiating others, depending on the market that is to be achieved. Table 1 below shows the zoning of the Reserve as at June 2021.

Table 3: NSR zoning

Area	Operator	Contract start	Contract end	Original area before zoning	New Area Sq Km	Old Area (%)	New Area (%)
CDAs					1,900		4.4%
Buffer Zone*					4,524		10.5%
R1	None (WCS)			3,458	3,392	8.2%	7.9%
R2	TBD			2,255	2,255	5.3%	5.2%
R3	Mazeze Investimentos	2012	2027	2,666	2,614	6.3%	6.1%
R4	Sabie (TBD)			3,717	3,651	8.8%	8.5%
R5	Chulexi (tbd)	2012	2027	1,469	1,469	3.5%	3.4%
R6	Chulexi			2,320	2,291	5.5%	5.3%
J	None (WCS)			209	209	0.5%	0.5%
L1	Safrique	2008	2023	3,296	1,110	7.8%	2.6%
L2	Johan Calitz Safaris	2009	2023	4,217	3,504	10.0%	8.1%
L3	Metapiri Safaris	2008	2023	2,668	2,668	6.3%	6.2%
L4E***	Community Tourism Area			2,250	442	5.3%	4.1%
L4W***	Niassa Wilderness Safaris (TBD)				1,314		
L5 N	Mariri	2008	2023	1,244	1,244	2.9%	2.9%
L5 S	Chulexi	2012	2027	578	535	1.4%	1.2%
L6	Chulexi			2,301	2,178	5.4%	5.1%
L7	Luwire	2001	2026	4,360	3,821	10.3%	8.9%
L8	Kambako	2006	2021	2,098	1,905	5.0%	4.4%
L9	East African Safaris	2014	2019	2,901	1,833	6.9%	4.3%
M	None (WCS)			232	232	0.5%	0.5%
TOTAL AREA				42,238	43,091		

Concession type	Total area of NSR (%)
No Operator	8%
Block Allocated but Contract not Ratified	5%
Hunting Block	40%
Tourism, Conservation and Hunting Block	9%
Tourism and Conservation	18%
Community Tourism Area	4%
CDAs (Community Development Areas)	4%
Total Protection Zone	1%
Buffer Zone	10%

*All Buffer Zone Including outside NSR.
Buffer Zone inside NSR Area is 4,048 SqKm.
***L4E and L4O used to be a single block in old NNR Zoning

2.7 Buffer Zones

According to the Conservation Law, buffer zones are mandatory for Special Reserves, Integral Nature Reserves and National Parks. The establishment of a buffer zone for other categories of conservation areas is optional.

The purpose of a buffer zone around a conservation area is to serve as a transition zone between the management of a conservation area and zones of multiple use of resources in order to control and reduce impacts from inside or outside a conservation area that are incompatible with the conservation of biological diversity. The NSR buffer zone was established as an integral part of the Reserve and some exploration blocks were established within it. Under the terms of the Decree creating the Reserve, the blocks are managed in the same way as official game parks.

The Selous-Niassa Wildlife Corridor links the Nyerere National Park (formerly the Selous Reserve) in Tanzania to the NSR in Mozambique. These two areas combined have the potential to become the largest cross-border area (TFCA) on the African continent. The basis for coordinated management efforts was established when the governments of Mozambique and Tanzania signed a co-operation agreement in 2015 under the name of the Rovuma cross-border Landscape Area.

Adding to its political and management complexity, the boundaries of the NSR incorporate part or all of eight (8) districts. The NSR almost entirely incorporates the District of Mecula with an estimated population of 21,342 inhabitants and partially the District of Mavago with a human population of 30,757 inhabitants (INE, 2017), *Figure 3*. The remaining six (6) districts, whose areas fall mostly outside the NSR, are not restricted by this Management Plan. However, all six districts are important partners in NSR's operations because, with most of their population residing inside the Reserve, they are intrinsically involved in the administration of the Reserve through their membership of NSR's Management Board.

The areas with high population densities along the Mecula-Mussoma and Mecula-Marrupa roads and the areas along the Negomano-Mueda road in the District of Mueda will be set up as Community Management Units within NSR's Community Development Areas and Controlled Use Zones, by updating the Zoning Plan.

Table 1: Other protected areas near the NSR

Province	District	Extension	Representation
Niassa 88.1%	Sanga	2 441 km ²	19 %
	Mavago	9 025 km ²	98 %
	Mecula	18 090 km ²	100 %
	Muembe	503 km ²	9 %
	Majune	2 853 km ²	25 %
	Marrupa	4 295 km ²	25 %
Cabo Delgado 11.9%	Montepuez	2 518 km ²	14 %
	Mueda	2 490 km ²	22 %

NSR also shares boundaries with other areas of public and private domain with conservation area status: Coutada de Nicage in the south-east, Coutada de Lureco, Coutada de Marrupa, and various wilderness farms in the south and the Chipanje Chetu community conservation area in the west.

2.8 NSR's Access and Communication Routes

The Reserve can be accessed from Marrupa, Mavago or even the Republic of Tanzania. When travelling from Marrupa, the journey is 150 km to Mbatamila (the Reserve's headquarters). The road network is extensive and most of the routes are inaccessible during the rainy season. Furthermore, even when passable, the state of the roads is precarious, which increases the cost of vehicle maintenance.



Picture 2: Arrival of a visitor at the Mbatamila track

From a planning and development point of view, it should be noted that most of the roads within the Reserve are part of the country's national road network. This means that national priorities can override the Reserve's priorities without taking into account ecological aspects that should be prioritized, given that the NSR is a conservation area.

Twenty-six aerodromes are strategically located in and around the Reserve, 17 of which are operational and the rest under maintenance. Seven of these aerodromes can be considered available at any time of year for small aircraft. Mecula's runway (altitude 400 meters) is of a high standard of quality and length (1,000 meters long), capable of accommodating twin-engine aircraft. Recent improvements to the aerodrome at NSR's headquarters in Mbatamila have made it accessible all year round. Other aerodromes submitted for approval and registration by the Civil Aviation Institute of Mozambique are:

- Miuro runway;

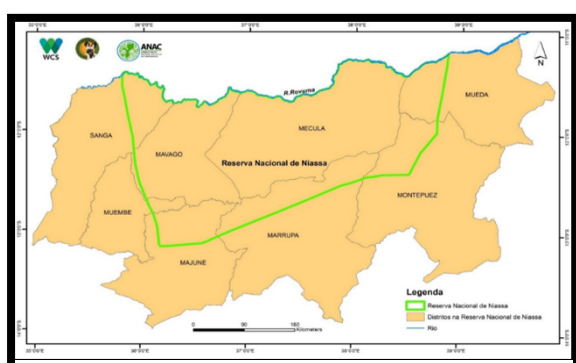


Figure 2: Districts covered by NSR

- Arianne's runway;
- Lugenda runway and;
- Mariri runway.

In general, communication services are so poor that they are only reliable via VHF radio, email, VOIP and sometimes satellite phone from Mbatamila camp. Mobile network coverage is currently available in the village of Mecula.

Chapter III:

Characterization of the biophysical environment

The Niassa Special Reserve is home to one of the largest remaining Miombo Forest covers in Africa, which is of global importance for carbon storage and sequestration (Allan *et al.* 2017). These forests also provide critical habitats for iconic and threatened natural species, including the largest population of the savannah elephant (*Loxodonta africana*) in Mozambique, lions (*Panthera leo*) and the endangered wild dog, known as the mabeco (*Lycaon pictus*). The NSR also includes species of fauna specific to Miombo in the region such as the Crawshay Zebra (*Equus burchellii crawshayi*), the Niassa cocone (*Connochaetes taurinus johnstoni*), the Johnston's Impala (*Aepyceros melampus johnstoni*), and the Roosevelt Palapala (*Hippotragus niger roosevelti*).

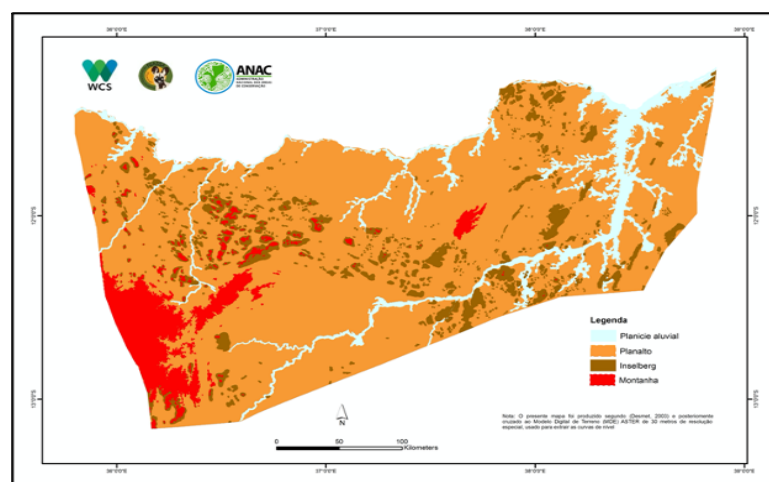
The NSR has been recognized as a critical area for African lion recovery efforts, currently holding 800 to 1,000 individuals (Chardonnet *et al.* 2009; Fusari *et al.* 2010, Packer *et al.* 2013, Begg *et al.* 2017) with the potential to hold even more (Lindsey *et al.* 2017). The NSR is also considered globally important for the conservation of the African wild dog, with an estimated population of around 350 out of a global total of 6,000 (Begg & Begg 2007).

3.1 Abiotic Environment

3.1.1 Geology, Topography and Soils

The topography of the Reserve is characterized by undulating terrain and plains, with an east to west orientation. The south-west area is dominated by hills and a mountain range.

Figure 3: NSR topography

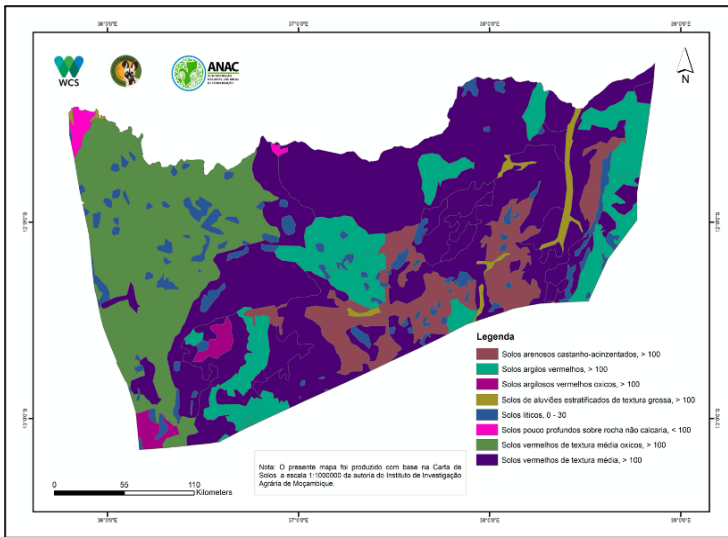


The confluence of the Lugenda-Rovuma rivers is the lowest elevation in the NSR (< 200m above sea level). The few large mountains emerge from the surrounding flat terrain and reach altitudes of over 1,000m. The highest peaks are Mount Mecula (1,440m) in the center of the Reserve rising over 600m above its surrounding area and Mount Yao (1,340m) located in the west.

The geological formations found at NSR are part of the Precambrian base of northern Mozambique, consisting mainly of high-quality gneiss, granulite, migmatite and orogenic-plutonic rocks laid down around 1,100 to 850 million years ago and deformed during the Pan-African Mozambican orogeny dating from 800 to 550 million years ago. Erosion wore away newly exposed granitoid formations such as hills. Remnants of the Karoo sedimentary rock occur in small portions in the far north and downstream portion of the Lugenda River valley (Pinna *et al.* 1993). The granitoid granulites and gneisses now exposed in important source areas have become important refuges for isolated endemic and rare species.

- Soils

Figure 4: Soil types and their depth (in cm) in the NSR



Fertile alluvial soils dominate the NSR with bands of ferralitic soils in the south-west and extreme south-east. On the Rovuma River, there is a narrow strip of sandy soils whose fertility and clay content increases along the alluvial zones of the wider rivers. In the highlands of the Miombo forest, the soils are sandier and less fertile. In these areas, these infertile soils vary from well-drained deep sandy-clay soils to sandy surface soils, often susceptible to erosion.

- Hydrographic network



Picture 2-Lugenda River

The area of the Reserve is part of the Rovuma Basin with the Rovuma River as its northern boundary. The Rovuma Basin within the Reserve has many sub-basins with seasonal flows and only the Lugenda sub-basin with a perennial flow (Figure 7). The source of the Rovuma River begins in the highlands east of Lake Niassa outside the NSR. The source of the Lugenda River is Lake Chiuta in the East African lake system, south of Lake Niassa. Both rivers flow from west to east and are wide and intertwined with perennial streams.

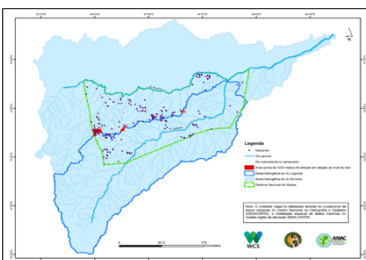
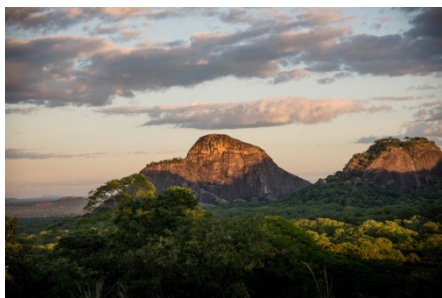


Figure 5: Hydrology at NSR

The dividing line in this vast hydrological system runs laterally through the center of the Reserve, forming southern and northern river basins, in which the catchment boundary of the Lugenda River almost coincides with the southern limit of the NSR. Within the NSR, the Rovuma River receives flows from the Lucheringo, Messinge, Chiulezi and Lugenda basins. The main tributaries of the Lugenda River are the Luatise, Luambala, Luchimua and Lureco. With an estimated average flow of 356 m³/s, the Rovuma-Lugenda catchment area is the second largest in Mozambique.



Picture 4: Yao Mountains

The hills are local water source areas and support numerous springs and associated lowland habitats. The Mecula and Yao mountains generate orographic rainfall in their neighborhood and are perennial sources of water for streams that run down their slopes, especially the Ncuti and Licombe. Springs and rivers determine the ecology of the area and the behavior of its fauna, particularly with regard to the range of species and seasonal movements. In addition, they are crucial to the lives of the people living in the Reserve,

determining their living patterns and strategies for routine activities (Wishart *et al.* 2004; PM 2007-2012). Waters upstream of the Rovuma and Lugenda river systems flow outside the Reserve. The planned construction of a reservoir, large-scale deforestation, planting of exotic species, development of irrigation plants and mining are imminent threats to water availability and quality. The flow of the Lugenda River has reduced considerably in the recent past and could become intermittent if not carefully monitored.

- **Climate**

The Niassa province is characterized by a humid tropical climate, with rainfall during a single warm period of monsoon winds from December to April, influenced by the variation of the Intertropical Convergence Zone. The dry season lasts from May to November. The mountains have a significant influence on the local climate due to their ability to generate orographic precipitation and the formation of convective systems through the accumulation of heat during the solar day, resulting in a chimney effect when air temperatures drop at night. Annual rainfall varies from 600 to 1400 mm with rainfall of 250-350 mm per month during the rainy season. Rainfall rates increase from east to west. High rainfall records of up to 1400 mm have been recorded on Mount Mecula and the lowest rainfall occurs in the valleys of the Lugenda and Rovuma Rivers. The average temperature during the wet season is 30°C, and during the dry season 23°C.

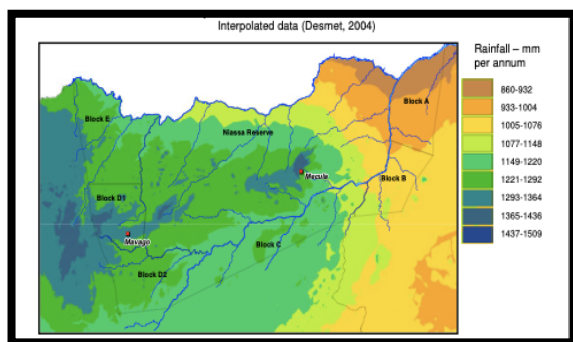


Figure 6: NSR rainfall

3.2 Biotic Environment

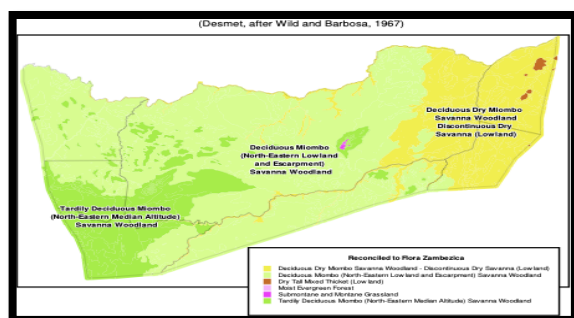


Figure 7: NSR vegetation types

• Flora

The NSR is part of the Miombo Eco-region and is mainly made up of dry Miombo scrubland. These cover more than 70 per cent of the total surface area of the Reserve and are made up of more than 800 plant species, half of which are endemic. *Julbernardia globiflora* Benth. (Troupin), *Brachystegia* spp., *Dyplorhynchus condilocarpon*, and *Pseudolachnostylis maprouneifolia*, among other tree species that dominate the tree cover in this

area with dense and continuous layers of grasses dominating the forest substrate (Ribeiro et al. 2017). Forest density varies and is classified as scrubland, open forest and wooded savannah. This vegetation is relatively undisturbed compared to scrubland in other regions of Mozambique.

There are six types of landscape and vegetation in the Reserve, the distribution and extent of which is determined mainly by the moisture available in the soil (Timberlake et al. 2004):

1. Deciduous forest, which covers most of the reserve;
2. Evergreen forest and riverside vegetation on alluvial fans with increased humidity from perennial rivers;
3. Shallow marshes, sometimes seasonal, wetlands that form drainage lines;
4. Evergreen forests and savannahs in the mountains;
5. Aquatic environment with perennial and seasonal rivers, beds and ponds;
6. Bare rock with small pockets of thin soil, almost similar to desert conditions (i.e. extreme temperatures) on steep hillsides with water flow sheets (onion-like weathering), seepage, and salt encrustation.

The combination of hills and undulating terrain with variations in the humidity gradient, exposure and aspect-related factors results in various microclimates which give rise to weathering mechanisms that shape the topography in different ways, creating space for numerous habitats and ecological niches. Desmet (2004) established 15 different plant communities and 33 soil classes by analyzing satellite images.



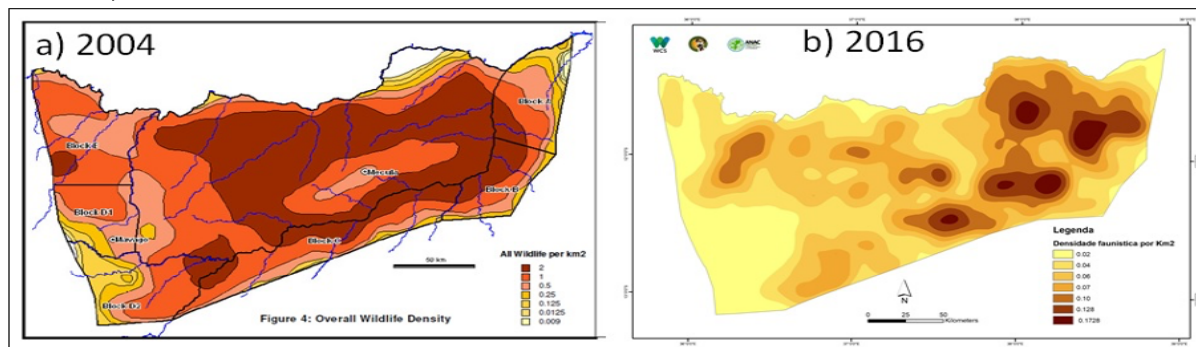
Picture 4_Wild-dog NSR symbol

• Wildlife

The NSR is still relatively unexplored in terms of its faunal components. The area represents an intergradation between a series of mammal subspecies about which there is still very little knowledge. Lists of mammals, birds and other vertebrates prepared by various authors have been compiled and are referenced in the Bibliography. There is little information on invertebrates. The general density of large mammals ranges from <0.5 to

>2 species/km. However, the impression is that the density of large mammals is relatively low compared to other protected areas in Miombo. The most notable case is that of the buffalo. It is unclear whether these low densities are natural or the result of poaching

Figure 8: Comparison of fauna densities in 2004 and 2016 in NSR (dark to light colors indicate high to low densities) - Aerial census 2016



However, the Reserve is one of the largest and most significant in terms of species richness in Mozambique. The NSR comprises a variety of fauna that includes rare, endemic and vulnerable species according to the IUCN Red List of Threatened Species (Bloesch and Mbago 2006). In terms of fauna distribution, censuses show that the greatest concentration of fauna is found along the Lugenda River (Figure 10). The comparison between the distribution of fauna in 2016 and in 2004 shows that areas of higher fauna density are dynamic and have adjusted to internal positive or negative dynamic factors. The shifts in spatial distribution towards pockets with low density trends in the 2004-2016 period is an indication of enormous pressure on the remaining wildlife populations.

○ Species of high ecological value

➤ Amphibians and Reptiles

NSR comprises around 30 species of amphibian, among which there are several important discoveries, including four primary records in Mozambique:

- The [gymnophionid amphibian](#) of the [Caeciliidae](#) family (*Scolecomorphus cf. kirkii*),
- The spotted reed frog (*Hyperolius picturatus*),
- The short-legged reed frog (*Afraxalus brachynemis*), and the
- The Upemba crested frog (*Ptychadena upembae*) (Branch 2005)

In 2005, around 57 reptile species were identified in NSR, one of which is a new species - Mecula's striped lizard. In addition, new to the Mozambique register are Loveridge's legless lizard (*Melanoseps loveridgei*), dwarf diurnal angulate lizard (*Lygodactylus cf. angularis*), Chobe's dwarf diurnal lizard (*Lygodactylus cf. chobiensis*) and Matagal's ornamental lizard (*Nucras ornate*). New amphibian species are identified whenever a census is carried out in the mountain formations (Morgadinho and Conradie 2015). The density of the Nile Crocodile (*Crocodilus niloticus*) in the Lugenda and Rovuma rivers is low. The main causes are related to intense fishing activity and observation errors, knowing that crocodiles in these rivers are wary and some restricted areas are breeding habitats. This species was observed in the 2016 aerial census (Grossman et al. 2017).

➤ Fish

The total number of species confirmed in the Reserve is 45 (Bills, 2004, Buruwate 2013) but extrapolations extend these figures to 55 (Eccles 1992). Studies have been carried out on the Rovuma River, a site on the Lugenda River and a site on the Incalau River, tributaries of the Lugenda River. In the Rovuma River, several endemic fish species have been identified, including relatively large species such as *Tilapia* sp., *Synodontis* sp., *Clarias* sp, *Hydrocynus vitattus* and *Labeo* sp. (Begg and Begg 2005).

➤ Birds

The Reserve's avifauna includes more than 400 species. More than 280 species were recorded during the census called "Bird Habitats and their typical species in Niassa National Reserve" and, according to Parker 2004, six "globally threatened" species have significant populations in the Reserve:

- The Taita Falcon (*Falco fasciinucha*)
- The Dickinson's Kestrel Falcon (*Falco tinnunculus*)
- African barred eagle (*Circaetus fasciolatus*),
- The African Shearwater (*Rynchops flavirostris*) and the African Scissorbill (*Rynchops flavirostris*).
- The Stierling's woodpecker (*Dendropicos stierlingi*).
- The Pita-de-angola Macaw (*Pitta angolensis*) was also identified.

The occurrence of important birds in the Reserve gives it the potential to be included in the inventory of Important Bird Areas in Mozambique (Parker 2004), which recommended the Reserve to begin the process of re-evaluation for designation as a Key Biodiversity Area. A total of 180 Southern Ground Hornbills (*Bucorvus leadbeateri*) were counted in NSR's 2016 aerial census, which corresponds to a total estimated population of 1,891 individuals (Grossman et al. 2017). Although birds were not the determining factor, the NSR was designated as an important area for biodiversity and included on the universal d-list as **site ID 49163**. (<https://sibmoz.gov.mz/key-biodiversity-areas/>)

➤ Mammals

○ Herbivores

Due to the size of the area and the composition and structure of the vegetation, the Reserve is capable of harboring large numbers of large, medium and small mammals. However, the Reserve has very low population sizes in relation to the ecological carrying capacity.

The African elephant (*Loxodonta africana*) is the reserve's key species and is responsible for the dynamics of the structure and composition of the flora and other species of fauna.

The Reserve has an ecological carrying capacity capable of supporting a population of around 50,000 elephants (Allan et al. 2017). However, with transnational crime networks, the NSR suffered a 65 per cent reduction in its elephant population between 2009-2014 to an estimated population of around 4,441 animals (Grossmann et al. 2015) followed by a further reduction of around 17 per cent between 2014-2016 to just 3,675 animals in 2016 (Grossman 2015, Grossmann et al. 2017). Although enforcement efforts alone have contributed to reducing poaching to almost

zero and stabilizing the elephant population at around 3,238 individuals (+/- 1,820-4,657, Grossman 2018).

Table 5: Most common large, medium and small mammals

Common Name	Scientific Name
African elephant	<i>Loxodonta Africana</i>
Niassa wildebeest	<i>Connochaetes taurinus johnstoni</i>
Zebra	<i>Equus burchellii crawshayi</i>
Impala	<i>Aepyceros melampus johnstoni</i>
Pala-Pala	<i>Hippotragus niger roosevelti</i>
Cape buffalo	<i>Syncerus caffer caffer</i>
Gondonga	<i>Alcelaphus buselaphus lichtensteinii</i>
Elande	<i>Taurotragus oryx</i>
Cudo	<i>Tragelaphus strepsiceros</i>
Imbabala	<i>Tragelaphus scriptus</i>
Waterbuck	<i>Kobus ellipsiprymnus</i>
Chango	<i>Redunca arundinum</i>
Hippopotamus	<i>Hippopotamus amphibius</i>
Grey goat	<i>Sylvicapra grimmia</i>
Warthog	<i>Phacochoerus aethopicus</i>
Bush pig	<i>Potamochoerus porcus</i>
Inhala	<i>Tragelaphus angasii</i>

Source: (Craig; 2011)

In the period 2008-2011, all species suffered a considerable reduction with some species reaching a drop of 2/3 to 3/4 of their previous populations. However, the species in question showed stability between 2014 and 2016. The buffalo had its lowest record in 2006 and since then has shown a stable growth estimated at 25,974 in 2018. Table 2 below shows the estimates of large populations according to the aerial census carried out in northern Mozambique, including NSR (National Fauna Census 2018).

Table 6: Estimates of the population of large and medium-sized herbivores (National Fauna Census 2018)

Species	Scientific name	Population estimate
Buffalo	<i>Syncerus caffer caffer</i>	25,974
Palapala	<i>Hippotragus niger roosevelti</i>	12,908
Grey goat	<i>Sylvicapra grimmia</i>	11,533
Warthog	<i>Phacochoerus aethopicus</i>	8,149
Zebra	<i>Equus quagga crawshayi</i>	5,198
Gondonga	<i>Alcelaphus buselaphus lichtensteinii</i>	4,423
Elande	<i>Taurotragus oryx</i>	4,409
Elephants	<i>Loxodonta africana Africana</i>	3,238
Waterbuck	<i>Kobus ellipsiprymnus</i>	3,153
Impala	<i>Aepyceros melampus johnstoni</i>	1,947
Cudo	<i>Tragelaphus strepsiceros</i>	1,731
Grey Chipene	<i>Raphicerus sharpie</i>	1,636
Cocone	<i>Connochaetes taurinus johnstoni</i>	1,191
Chango	<i>Redunca arundinum</i>	1,012
Hippopotamus	<i>Hippopotamus amphibius</i>	923
Imbabala	<i>Tragelaphus scriptus</i>	604
Bush pig	<i>Potamochoerus porcus</i>	346

➤ *Large carnivores*

Many of the species that occur in the NSR are of international conservation concern according to the IUCN Red List of Threatened Species, particularly the Mabeco (*Lycaon pictus* - Threatened C2a) and the African Lion (*Panthera leo* - Vulnerable A2abcd). Research carried out in 2004 (Bergg & Bergg 2004) indicated that at the time there was a viable lion population of around 600-800 individuals and more than 450 Mabecos. Leopards and spotted hyena are also relatively common but currently little is known about the specific threats, prey and movement patterns of these two species in the NSR. The NSR offers a unique opportunity to ensure the safety of these populations, which represents a major contribution to global efforts.

Chapter IV:

Characterization of the socio-economic & cultural situation

4.1 *History of Human Settlements*

Human presence in the NSR dates back thousands of years, with indications of its history evident in cave paintings and mounds. The recent history of Niassa was compiled by Liesegang (2003) starting with the presence of the Maravi Empire (1600/1700) with its trading center near Matondovela.

It was discovered that this area was later affected by migration caused by the arrival of the Nguni and Makuwa from southern Africa in a sequence of displacements in the 19th and early 20th centuries; battles between European countries during the First World War; and during the struggle for independence between 1964 and 1975, followed by a civil war from 1977 to 1992.

Records show that ancestors of many of the people who live here settled in the area around 1910 to 1925, although some groups of people have an even earlier history with the area, dating back to the 1850s.

There are now frequent visits and migrations across the northern border (Tanzania), partly to access the Reserve's resources and partly to contribute to the dynamic landscape of NSR's stakeholders.

Table 7: NSR Socio-anthropological Records

Dates	Events
Before 1600	Regional linguistic differentiation of the ethnic groups present in the area: Yao, Ngindo, Matambwe (Makonde), Makhuwa Meto, Lomwe, etc.
1600/1700	Existence of the Maravi Empire whose center was located in modern western Malawi. Long-distance trade to Kilwa (along a route that must have crossed the current Reserve area) and also to Mozambique Island and Tete.
1700-1820	Yao trade with the island of Mozambique; later in the 18th century Yao contacts with the Kilwa grew. Trade ended almost abruptly in ca. 1891
1820-1890	Long-distance trade accompanied by forced migrants under the leadership of the Makuwas, with pressure from the Ngoni and Yao, displacing Masananga and Macinga Yao, the Yao of Maúá, Malambo, the Yao of the Lugenda valley partly to areas north of the Rovuma
1855-1890	Intervention of the Ngoni (Maseko, 1855/65 and Magwangwara c.1870-1890)
1899-1912	Wars of conquest by the settlers. In the decades following the reflux of the Makhuwa and Yao populations, mainly from the south of Lugenda, who had fled to Montepuez after 1860.
1906	Maji-Maji uprising and the flight of Chief Ngoni to his former area under German control, a group settling in the region.
1912	Last campaign against Mataka V, flight of the incumbent chief to Tanganyika and appointment of Shehe Salanje (ruled until 1948) the Mataka in Mozambique in the northern part of Muembe (Mavago)
1917-1919	Northern Mozambique is affected by the war between Portuguese and British troops on the one hand and, on the other, the invasion of British troops crossing the Rovuma through the Negomano region; potatoes in Mecula and Negomano
ca. 1900-1965	Mataka people involved in tobacco trade with Quelimane (along with Majune traders), labor migrates to German East Africa/Tanganyika/Tanzania and Nyasaland/Rhodesia
ca. 1920-1936	Several cases of human trypanosomiasis in the Rovuma and Lugenda valleys. This makes the Lugenda valley less attractive to hunters
1941-1947 & 1949-1951	Forced cotton cultivation in Mecula, refugees from cotton-growing areas in the west of Mecula. Mataka refuses to grow cotton
1947-1964	The Mecula Administrative Post is abandoned and little direct administrative control is exercised by the Portuguese in the Rovuma area
ca. 1965-1974	Most of the population of Mecula and Marrupa have been forced to live in refugee camps (locally known as waiyela) fenced off from the neighborhood by barbed wire. Mecula, Marrupa, Mavago, Metarica and Maúá form the eastern sector (last region) of Frelimo's tripartite subdivision for Niassa province
1975	Independence seeks to bring development and some investment to the Reserve. The Niassa Reserve project is established
1984-1992	Renamo's war against government structures reaches the northern part of Niassa province; Assumane Ntaula, one of the leaders in Mavago District, is killed.

The last period of colonial history (especially related to the German occupation of East Africa during the early 20th century) denotes some importance for the Reserve as German fortresses and cemeteries are located on Mount Mecula and the soldier hunters Pretorius, famous for locating a German *Königsberg* cruiser in the Rufigi Delta in favor of the British navy in 1914, hunted elephants extensively in the Rovuma and Lugenda river valleys. By the turn of the 20th century the area was relatively well populated with people living in most of what is now NSR. These and other sites of paleontological, archaeological, historical and/or traditional importance need to be identified and their cultural value assessed. These sites are potentially important for the NSR's overall conservation objectives. Several old steel preparation sites for the manufacture of

instruments of war and labor, for example, have been identified in the vicinity of the River Lugenda (Begg *et. al*, 2004).

4.2 Current residents

The Yao, Macua/Makhuwa, Ngoni, Matambwe and Makonde ethnic groups that currently reside within the NSR have historical links to the area. The dominant languages are eMakhuwa (43.6%) and Ajaua (or Ciyao, 37.2%) in the south and east and Swahili, particularly in the north. Portuguese is more prevalent in the administrative areas and towns where state officials are present (INE 2007). From a religious point of view, the majority of the population is Muslim, with a few Christians - both integrated into the traditional worship of ancestral spirits. The Chiefs or Rulers take traditional leadership in the villages in parallel with the state administration

4.3 Land use and occupation on the outskirts of NSR

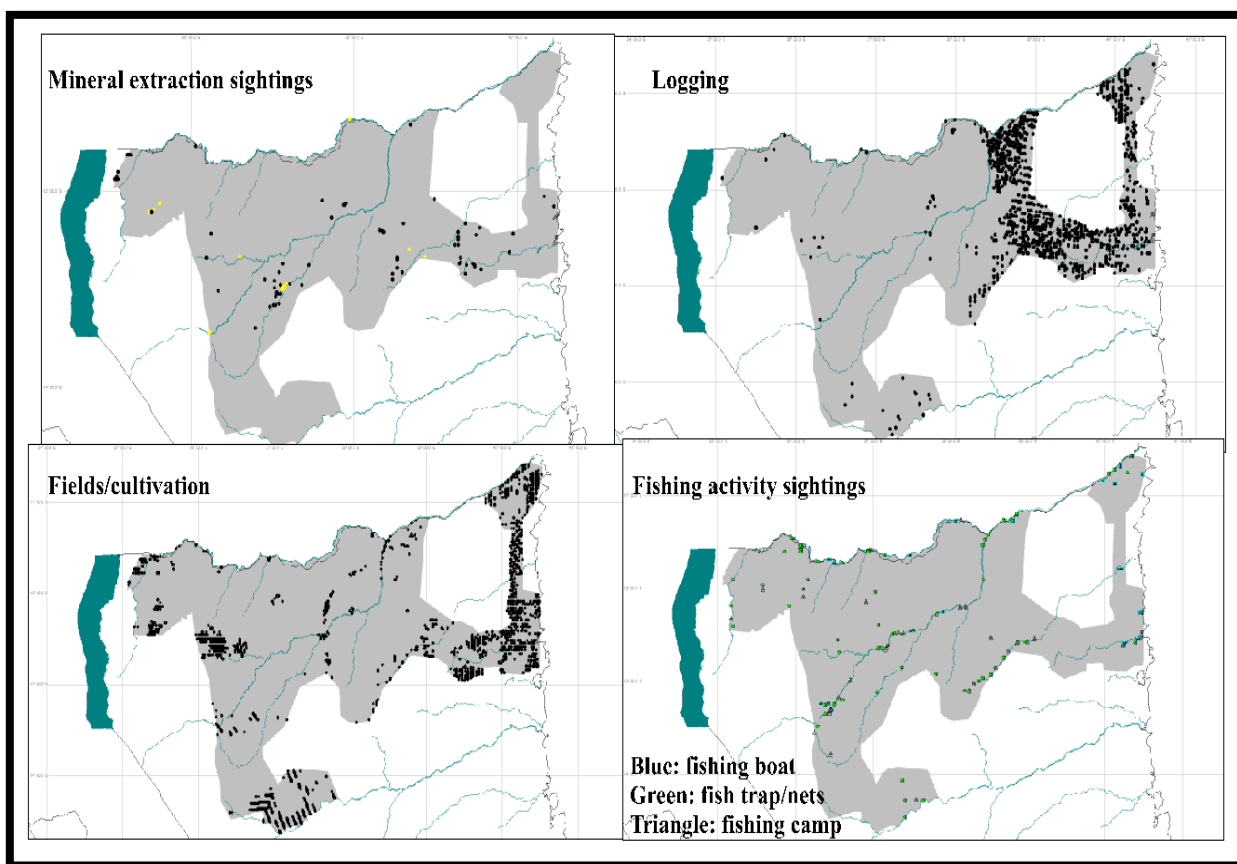
The NSR is in a broad but interconnected socio-economic landscape. Deforestation has been high in some adjacent districts, with around 10 per cent of their forest extent affected (Allan *et al*. 2017). In the Mavago District, for example, tobacco is grown, leading to deforestation for cultivation and the opening of access roads, which involves altering habitats and consequently reducing fauna and leading to the establishment of more permanent settlements. In the north-eastern corner of the Reserve near Negomano, the opening of a new road has linked the district headquarters of Mueda to the Negomano Administrative Post and the bridge to Tanzania. Traditionally, local families have always lived in relatively isolated groups practicing slash-and-burn or shifting agriculture. Although settlements have become more agglomerated both in the colonial period and by post-



Picture 6: Members of the local community

independence policies (creation of towns and communal villages respectively), subsistence farming remains the main form of land use and the main economic activity. Although literally such a practice could be described as commercial, there is some trade in agricultural surpluses, as tobacco is produced in humid alluvial soils. Elsewhere in Niassa Province, cotton was produced commercially in the 1970s to the west and south of Mecula, but virtually disappeared ten years later. The main crops grown today are rice, maize, manioc and beans. These staple food crops are the main source of income associated with raising and selling chickens in the traditional way and commercializing locally-raised chickens (landraces). Goat farming was introduced after the end of the civil war, but the rate of growth is low due to the occurrence of the tsetse fly. The national aerial census carried out in 2018 included the identification of land uses. The maps show cultivated areas, visualizations of signs of mineral extraction, logging activities and fisheries.

Figure 9: Key areas of economic activity within the NSR and adjacent lands (2018 aerial census)



4.4 Socio-economic situation of the NSR and its buffer zone

➤ Human population

Approximately 60,000 people live within the boundaries of the Niassa Special Reserve, of which around 29,000 in the main zone and around 31,000 in the buffer zone. This growing population mostly resides in two districts Mecula (21,342) and Mavago (30,757). The highest population density is located in the western buffer zone, while Mecula is in the center of the Reserve. Other communities can be found in more than 40 human settlements spread across six other districts with partial overlap with the NSR, as shown in Figure 9.

In accordance with the provisions of the body of articles 24 of the *Land Law*, article 13 of the *Regulation of the Land Law* defines “local community” as a group of families or individuals who reside in a territorial circumscription at the locality level or below, with the aim of safeguarding their common interests through the protection of residential areas and areas for agricultural practice, whether cultivated or not; forests; sacred sites; pastures; water sources; hunting; and expansion areas. Article 82 of the Regulation of Law No. 16/2014 of 20 June, amended and

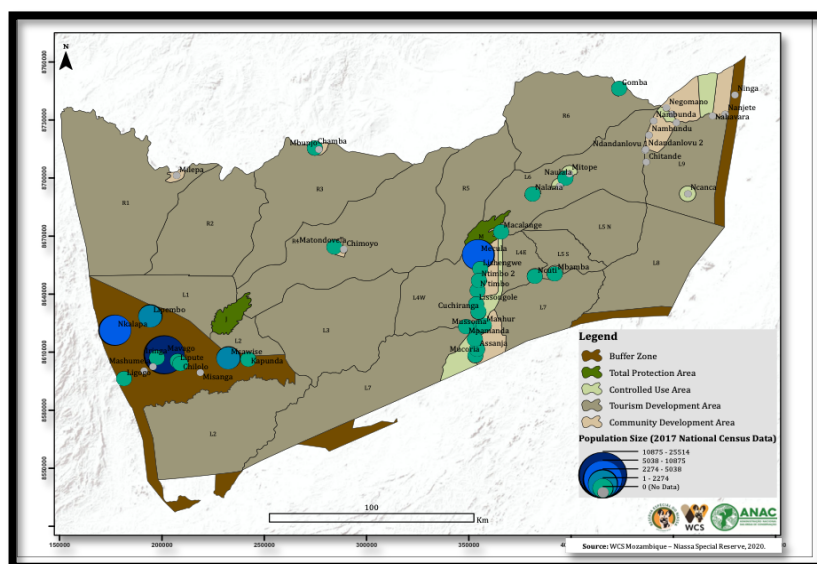


Figure 10: Population distribution in the NSR

republished by Law No. 5/2017 of 11 May, Law for the Protection, Conservation and Sustainable Use of Biological Diversity, states that: “In conservation areas in the public domain of the State and their buffer zones where human presence is permitted, the exercise of economic activities by local communities is subject, in general, to the conditions set out in the following articles and, in particular, to what is established in the Management Plan, which may establish other conditions or limitations and even prohibitions

on the exercise of said activities.” Collaboration and co-operation with these communities is crucial to achieving long-term conservation objectives in the NSR. The populations living inside the Reserve need specific attention. In 2014, NSR drew up a community policy based on the rights of the population to reside in the NSR, with the aim of providing the resident population with the best possible quality of life, which is also in line with the conservation objectives defined for the Reserve.

Table 8: Districts and human population within the Reserve

Province	District (number of Administrative Posts within the NSR and Buffer Zone)	Population in Administrative Posts within the NSR and Buffer Zone	District area in the Reserve	% of the district's area in the Reserve
Niassa	Sanga (2)		2,433 km ²	19%
	Mavago (2)	30,928	8,997 km ²	98%
	Mecula (2)	20,088	18,006 km ²	100%
	Muembe (1)		501 km ²	9%

	Majune (2)		2,845 km²	25%
	Marrupa (2)		4,279 km²	25%
Cabo Delgado	Montepuez (1)		2,542 km²	14%
	Mueda (1)	5,930	2,485 km²	22%

(Population census 2017 (INE, 2017, projection 2018))

There has been little change over the decades in the type of homes, food sources and food preparation methods of the local population. Subsistence farming remains the main form of land use and economic activity. The people of Mecula District lead a semi-nomadic lifestyle, tending agricultural fields in isolated places in the clearings or clearing forests in the months of January to April and returning to the villages located along the main access roads in the remaining months. Polygamy is common and men spend time between several villages to look after their agricultural fields and family ties. NSR is located in a remote, socio-economically and politically fragile region of Mozambique. The resident populations are very poor, with a lack of resources and public services such as health, drinking water, sanitation and education, including economic opportunities due to a lack of employment, with the state being the main employer.

4.5 Infrastructures within communities

In Niassa province, the limited infrastructure that existed was largely devastated by the civil war during the 80s. After the signing of the General Peace Agreement in 1992 and the first elections in 1994, roads, bridges, hospitals and schools began to be rehabilitated throughout the province. In the Niassa Special Reserve, Mecula is the capital district with the largest settlements. The



Picture 6: New infrastructures being built within the REN

district has several primary schools, a health center, a mosque, a church and government buildings serving administration, education, health and agriculture, among others. There are no formal (registered) shops in the village but there is a market that sells a variety of goods (clothes, soap, ballpoint pens, etc.) mostly from Tanzania, they also sell local dried fish and honey and there is also informal trade in stalls and shops. With the availability of electricity to most villages in recent years, mills can also be found outside Mecula and Mavago. Access and communication remain the biggest constraint and only seasonally

is the road linking the village of Mecula to the Reserve and the rest of the province via Marrupa rehabilitated.

➤ Health

Most villages have health posts with a nurse or health technician (INE 2017, Kock et al. 2017). Health services in the Reserve are limited by the poor infrastructure (e.g. roads, electricity and

water) and the variation in the quality, skills and training of health personnel (including qualified nurses, health technicians and doctors). Preventive and emergency services are currently absent. Health post staff are forced to perform above their training levels, facing daily difficulties that include inadequate supplies, lack of medicines, lack of transport, bad roads and a challenging physical and patient environment. Some concessionaires have hosted mobile clinics to meet the needs of the communities living in their concessions.

➤ **Education**

The level of education and civic skills in the Niassa Special Reserve remains very low, although there is a primary school in almost every village and at least one secondary school in each Administrative Post and in each District Capital (INE 2017). There are secondary technical institutes



Picture 7: Students from one of the elementary school in Vila Sede de Mecula, visiting NSR's headquarters in Mbatamila.

in Marrupa-Sede (since 2014) and Majune-Sede (since 2018) teaching courses relevant to the local labor market in forestry, wildlife and tourism management. However, opportunities for local residents to secure jobs related to the management of the Reserve or tourism remain limited due to a lack of professional experience for permanent jobs, a situation that condemns the community to casual labor. Some concession operators have set up a scholarship fund supporting students from primary to tertiary level, but the numbers of students who

can access these scholarships are limited. An Environmental Centre was set up in 2015 to offer training on conservation issues in schools.

➤ **Domestic water supply**

The center of Mecula District has a colonial-era water collection and distribution system that draws water from springs on Mount Mecula. The water is transported by gravity to the town in pipes from the highest points of Mount Mecula. The system is in a precarious state, although there is plenty of water in the mountains. The Mavago District has received a donation to help improve the water supply and treatment. All the villages along the Mecula-Mussoma road have at least one borehole; however, many are inoperable due to lack of maintenance and the monadic life of the people.

The World Health Organization sets a minimum of 20 liters of water per day for a person to live a healthy life. Thus, 60,000 people living in NSR (approx. 30,000 in Mavago, 21,000 in Mecula and 9,000 in Mueda) need at least 1.5 million liters of water a day. Many people collect water from individual boreholes and use river water for laundry. There is a small catchment system that collects spring water for irrigation of small vegetable fields.

➤ Electricity, telecommunications, banking services and other basic infrastructure

In 2014, three off-grid photovoltaic stations were built, supplying energy to the districts of Mavago (550 kW), Muembe (350 kW) and Mecula (400 kW) in Niassa Province. In addition, the Mecula district headquarters is connected to the two-phase Cahora Bassa national power grid and also has a back-up generator connected to the photovoltaic station. Both electricity systems are being used below capacity. Telecommunications services from Tmcel, Movitel and Vodacom are available in Mecula-Sede and Mavago District. Movitel's network covers most of the town's residential area, but does not reach more distant settlements or NSR's headquarters. There are formal banking or credit services in both districts through the services of the Commercial and Investment Bank - BCI. The districts have community radio stations. It should be noted that due to insecurity, Mecula's banking services have become inactive.

4.6 Use of natural resources and other sources of income

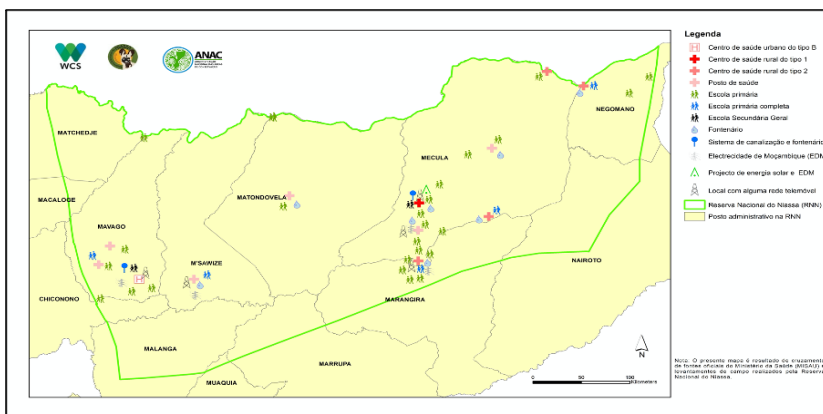


Figure 11: Public services within NSR

The majority of NSR residents are heavily dependent on the use of natural resources for their livelihoods, resulting in significant impacts on the conservation area. The Reserve provides important ecosystem services that support the daily needs of the population, namely fresh water supply, clean air, soil fertility, timber and non-timber forest resources and diverse

wildlife. Table 5 shows the key products and services generated by NSR.

Table 9: Use of natural resources in NSR

Goods:	<ul style="list-style-type: none"> • Food (game meat, fish, berries and leafy plants, tubers and honey) • Construction material (walls/doors/roofs, fences, canoes, tree bark containers, drums, barns, reeds for covering houses and bambo) • Firewood/coal • Water • Traditional medicines • Forest products (carpets, fiber ropes for bedding and property security, furniture, chicken and pigeon coops, raised pens, corrals, pestles and mortars and hunting tools) • Non-forestry products (sludge for making bricks and pots) • Minerals and stones for the kitchen • Portions of land for housing and cultivation
Services	<ul style="list-style-type: none"> • Water storage and filtration • Carbon Sequestration • Soil fertility • Environmental stability

Cultural and social aspects:	<ul style="list-style-type: none"> • Sacred sites (trees, rocks, rivers, etc.) • Areas of tourist value, areas for traditional hunting and fishing
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(Source: Working Group for the Management Plan)

Agriculture. Agricultural practice increases the more houses are established (Allan *et al.* 2017), and also results in greater deforestation of the NSR. Most of the forest has been lost in the vicinity of



Picture 9: Local people after receiving agricultural inputs

the villages of Mecula and Mavago. Forest cover has also been lost along the Marrupa-Mecula corridor towards the center of the NSR, particularly in places where communities practice shifting agriculture, water access sites and in areas of lower human-wildlife conflict with people abandoning the areas with the highest occurrence of elephants and buffalo. In the search for easy economic alternatives, local populations tend to get involved in illegal activities and unsustainable use of resources.

Illegal mining: occurs within the NSR. Rubies are being exploited from open-pit mines near Msawize in the south-west and gold is extracted from many secondary rivers and small tributaries of the headwaters of the Lugenda and Rovuma rivers. Gold mining poses a serious threat to the entire NSR ecosystem due to heavy metal pollution of the water which results in soil degradation, loss of biodiversity, desertification, fires and associated low plant growth rates. This pollution causes health risks for humans and wildlife. Gold mining activities are often accompanied by other illegal activities such as hunting. The uncontrolled use of mercury by inexperienced miners to recover gold in alluvial sediments can lead to the collapse of the river's ecology, a long-term disaster for all communities, dependent on fishing and drinking water. Mining conflicts with conservation goals and the resulting pollution along the rivers is affecting ecotourism and consequently the revenue potential of non-consumptive activities in the Niassa Reserve as a whole.

In fact, local communities benefit from mining activity as studies have shown that miners usually come from Tanzania and buyers from even further afield (Management plan update report 2_Working Groups_20160108), while the socio-economic and environmental effects are numerous.



Picture 10: Lugenda River fish, for family consumption

Fishing: Subsistence fishing for self-consumption is permitted within the Niassa Special Reserve. Fishing licenses are issued by the local administration and fees collected. The exact number of fishing camps and fishermen is not known, but they are more concentrated on the Lugenda and Rovuma rivers. The fishery can currently be considered an open-access activity and, at current levels of exploitation, shows a tendency to change from subsistence fishing to commercial fishing involving the sale of manufactured items in

addition to basic goods. Eight fishing gears were identified, namely 1. standard valves and insevila traps, 2. gillnets, 3. bottom nets, 4. *chingombo* nets, 5. *chingundenje* nets, 6. pole and line, 7. pole with static line and 8. poisoning.

Most catches are of four species of fish (two of *Labeo sp* and two of goldfish). Rocky habitat is the target of most fishing activities, except for insevila traps. There is still no reliable data showing a reduction in catches, and it is possible that the current system is self-regulating due to limited transport, rainfall and market forces. The collection of data from other areas and seasons is necessary for better evaluation and the establishment of an effective monitoring system. Fisheries management should be based on current data to establish reasonable limits for sanctuary zones, number of licenses to be issued and establishment, distribution of fishing camps and regulation of fishing gear. During the 2018 aerial census various economic activities were recorded within the NSR and the number of people involved in each activity estimated. Table 10 shows the size of the activity groups, with agriculture being the most dominant, followed by forestry.

Table 10: Estimated population by activity identified within the NSR (2018)

Activity	Estimated Population
Fishing camp	158
Logging	4,455
Mining	278
Gold digging	22
Machamba/Cultivation	7,403

➤ **Existing forms of community organization for access to and use of natural resources**

The local communities in the NSR have formed associations to coordinate their uses for specific natural resources and to benefit from funding and other benefits provided for in the Law. In light of the legal framework, *Natural Resource Management Committees* (CGRN) have been established in the districts of Mavago Mecula and Mueda, in the buffer zone of the Reserve. The CGRNs are legally established entities based on national legislation.

CGRNs are responsible for the following:

- Facilitate community involvement in decision-making about the use and monitoring of the sustainable use of natural resources in Conservation Areas (CAs);
- Become a forum for community-based decision-making on the use of natural resources;
- Participate in the macro- and micro-zoning of CAs in resource use areas;
- Mobilize and monitor community access and sustainable use of natural resources in CA;
- Representing concerns and suggestions in the decision-making process regarding the management of the CA; and
- Resolve conflicts arising from the violation of CA rules and regulations in the use of resources.

These community committees are the vehicles for sharing the “20%” resulting from the exploitation of forest and wildlife resources, in accordance with the provisions of paragraphs 4

and 5 of article 29 of Law No. 5/2017 of 11 May, the Law on the Protection, Conservation and Sustainable Use of Biological Diversity.

With the re-categorization of the Reserve and community management zones, the structure of the CGRNs has been redesigned to encourage equitable benefit sharing and ensure that residents take on an increasingly important role in the management of the Reserve's natural resources.

In addition, there are other beekeeping, fishing, agriculture, horticulture, sculpture and craft associations, as well as water committees within the NSR.

A key challenge in managing the Reserve is the presence of two districts with their administrative structures that legitimize and help people live within the NSR. These challenges are compounded by the relatively healthy state of the natural resources inside the Reserve compared to the increasingly degraded resources outside the Reserve. If managed as islands of conservation and if residents and local administrations do not contribute to sustainable management, the Reserve will not be able to withstand pressure from surrounding areas. The communities living in the NSR receive and theoretically reinvest their 20 per cent share of the revenues generated by the NSR. At the same time, the two administrations within the NSR must generate their income from the same natural resources as the Reserve's administration.

Chapter V:

Identifying conservation values

5.1 NSR's Unique Values

The Niassa Special Reserve is a globally unique area that needs integrated conservation efforts. The NSR stands out from other conservation areas in Mozambique and across Africa for the following reasons:

1. **Its Surface Area** - The largest conservation area in Mozambique, covering eight administrative districts, six in Niassa Province and two in Cabo Delgado Province, it is one of the largest wildlife conservation areas in Africa;
2. **Lack of fences and physical barriers** - There are no fences around the perimeter, although some have been put up to protect people and property from possible attacks by wild animals;
3. **A vast and intact Miombo woodland** - It is one of the few remaining areas of Miombo woodland in Mozambique, providing various ecological services for both the fauna and the local communities;
4. **NSR's connectivity with surrounding landscapes and conservation areas in the United Republic of Tanzania and Cabo Delgado** - NSR's connectivity with Tanzania and Cabo Delgado supports the viability of fauna populations and biodiversity specific to the genetic sub-region of East Africa;
5. **Morphology and connectivity of NSR's aquatic systems** - The Rovuma River and its tributary, the Lugenda, are important perennial sources of water draining from the East African Rift System into the Indian Ocean. Their morphological diversity offers space to accommodate the high level of biodiversity of the four major riparian ecosystems with plains, wetlands between rocks key to wildlife;
6. **Valuable and special fauna species** - NSR contains emblematic species such as lion, leopard, buffalo, sable, eland, hyena, wild dog, elephant and pangolin, with rare subspecies such as Boehm's zebra and Niassa wildebeest. Rare bird species also include the Taita falcon and the African skimmer;
7. **Ecological Carrying Capacity for populations of large mammals and, consequently, carnivores** - NSR is one of the remaining areas in Africa capable of harboring large populations of elephants and buffalo and offers different types of vegetation that allow it to support a great diversity of mammal species;
8. **Valley separating two large mountains, Mecula and Yao** - The mountain slopes have isolated botanical and zoological populations that are largely unknown and unrecorded and function as centers of endemism;
9. **Cultural heritage** - Located close to East Africa's Great Lakes system, NSR possesses ample artefacts of a rich human cultural history, including ancient art sites and yet-to-be-studied cellars and active sacred sites where traditional ceremonies still take place.

The NSR's key conservation values were compiled using participatory approaches between 2016 and 2019, emphasizing the fact that it is an **area for the conservation of emblematic species** and sites of historical and cultural importance such as:

- Mabeco (the symbol of NSR);
- Elephant;
- Lion;
- Taita hawk;
- Cave paintings;
- Waterfalls, island hills, mountains, caves, forests, savannahs, etc.

Figure 12: NSR connectivity in the Greater Rovuma ecosystem

Source: WWF 2008

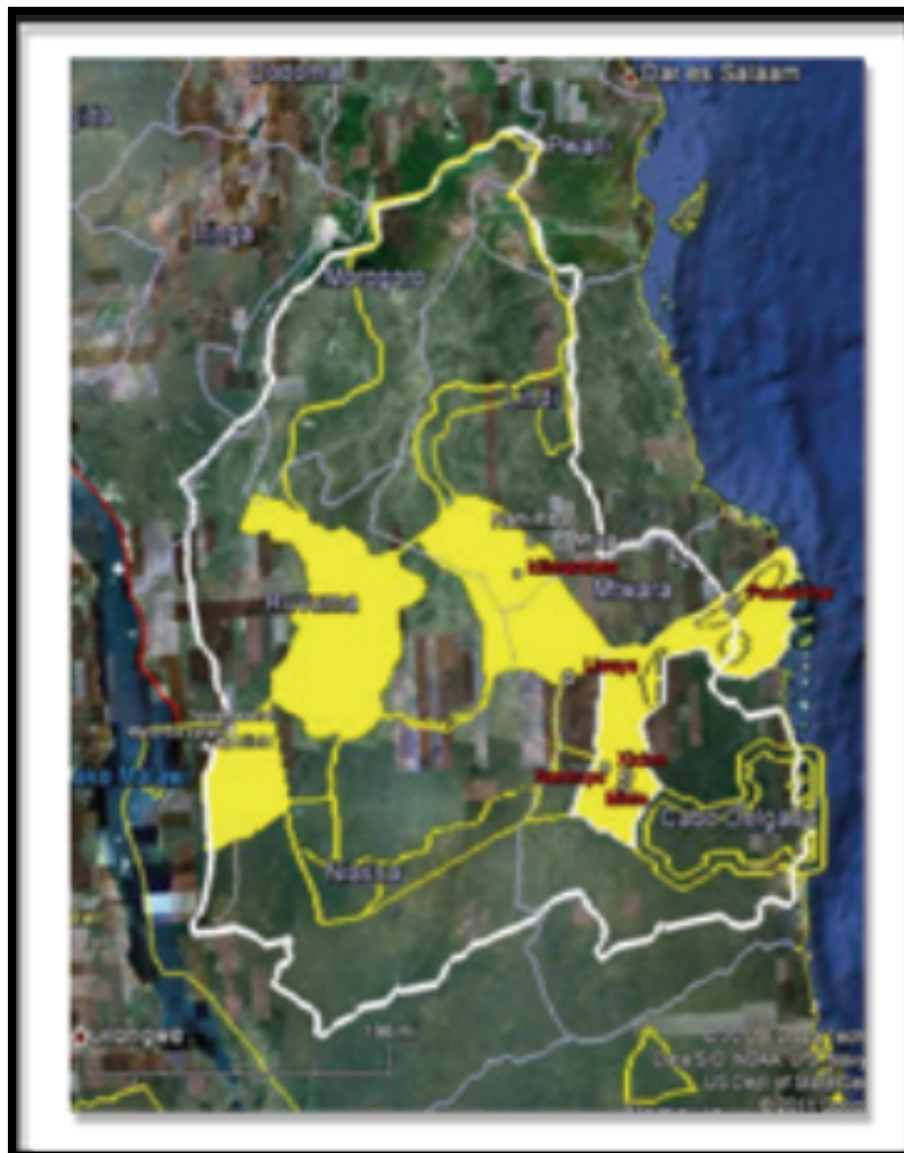
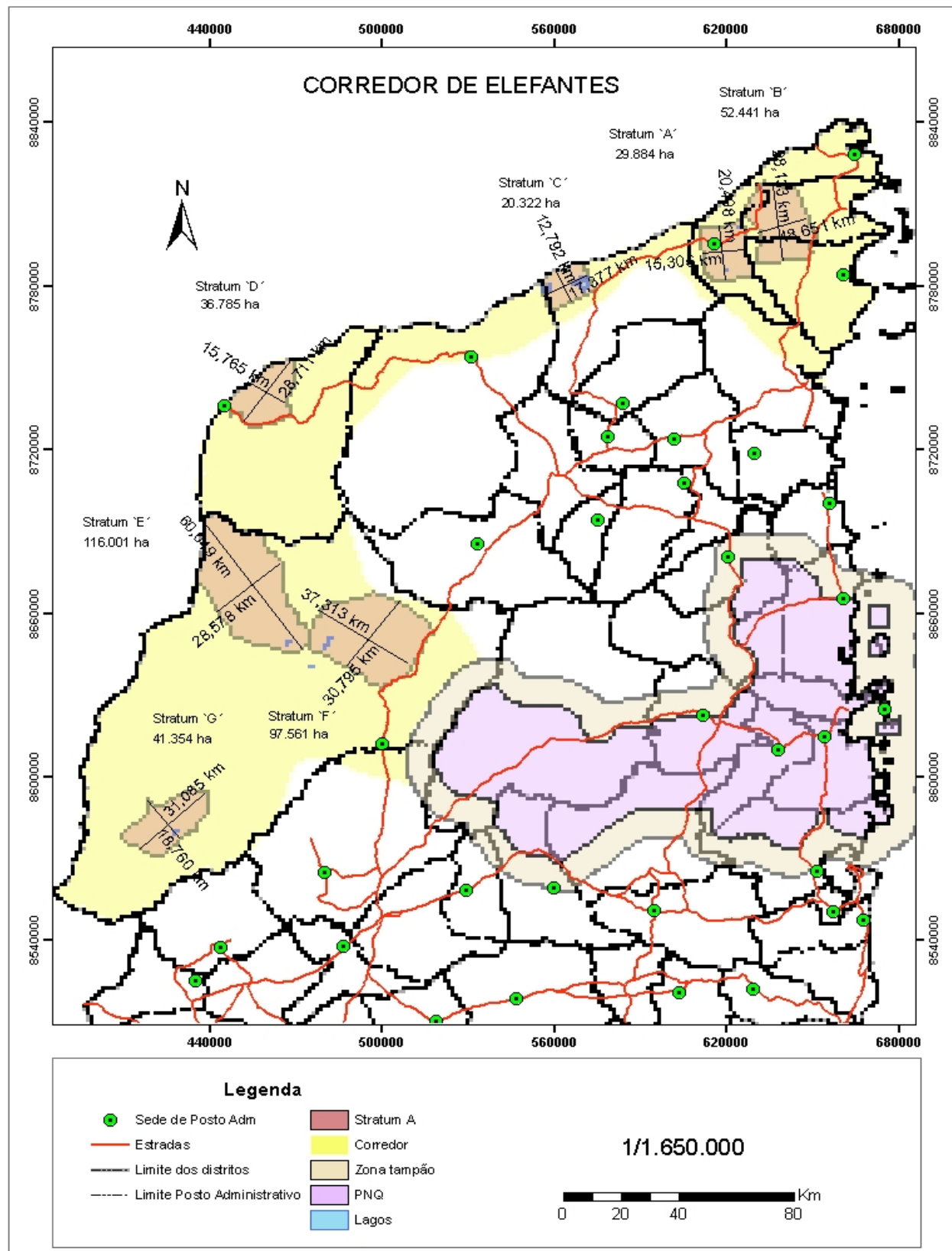


Figure 13: Elephant corridor adjacent to NSR in Cabo Delgado

Source: Araman, A. Ntumi, C (2008)



Chapter VI:

SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) of NSR's conservation and management goals

As NSR is the largest conservation area in Mozambique, its size, among other attributes, contributes to both its strengths and weaknesses. The Reserve is able to support the largest population of lion, leopard, mabeco, palapala, giant cudo, cocone, zebra and elephant species, despite having suffered the largest wave of elephant poaching between 2012 and 2016. In the last five years NSR management has significantly expanded its enforcement and protection operations and since May 2018 there has been no evidence of elephant poaching within the Reserve. Even so, the overall stability of the Reserve remains fragile and pressure from natural and anthropogenic threats is increasing. Based on the assessment of the Reserve's conservation status, points were identified which, if capitalized on, improved/removed from the management system or management, would boost the reserve's development.

6.1 Strengths

- It has an active inspection unit
- Concession as a management and financing mechanism

➤ **Strength 1: It has an Active Supervision unit**

The activity inspection comprises a body of trained inspectors, who are relatively well equipped and have an outlined work Program based on:

Equipment. NSR patrols are equipped to a high standard, including patrol equipment, camping equipment, communications equipment and other specialized equipment such as handcuffs, GPS devices and binoculars. Food rations are considered adequate, although there is still room for improvement. Weapons and ammunition for NSR inspectors have been adequate, although supplies have been a little tight in recent times, although this has been met by joint patrols with the Rapid Intervention Unit (UIR) or the Natural Resources and Environment Protection Police (PPRNMA). NSR's Administration has supported the establishment of a communication system covering the entire Reserve, a conservation air unit, strategic development of protection infrastructures, acquisition of vehicles and other equipment for land operations and a fortified partnership with operators and other enforcement forces in the Reserve, including a recently deployed police unit.

Inspectors & Officers: NSR inspectors have received basic training and refresher courses in recent years from specialized training consultants (*Conservation Outcomes*) in coordination with UIR instructors, using a training curriculum approved by ANAC. *Conservation Outcomes* instructors are

also used by two of NSR's operators to train their staff. In order to improve the response capacity of the inspectorate, members of the UIR were seconded to NSR in 2018. In addition, NSR coordinates with the PPRNMA, protection police and border guard police at local level.

➤ ***Strength 2: Concession as a management and financing mechanism***

The division of NSR into a number of concessions contributes to the sharing of conservation efforts, allowing for greater physical coverage on the ground, including supervision across this large area, and also allows for the establishment of a revenue-generating model that allows for the management of the Reserve and benefit local communities. On the other hand, the concessions offer employment opportunities for the communities.

Since 2021, NSR has been divided into 21 areas, currently including nine (9) concessionaires operating 11 of these concessions and with potential operators in the pipeline. The award of tourism concessions by Renewable agreements with less than 15 years' validity will be strengthened through refined contracts with mandatory fulfilment clauses and the addition of performance clauses. This will protect NSR from non-compliance with performance and improve the commitment of concessionaires to the management of NSR (see Chapter 8). Several concessions have not yet been awarded, so there is still room for revenue to rise from current levels.

6.2 Opportunities for NSR through the 2024-2034 GMP Management Plan

This Management Plan aims to capitalize on some of the key opportunities for NSR that would enable this vast conservation area to achieve its conservation objectives. The opportunities identified and to be capitalized on are as follows:

- Geographical location
- Legislation that favors biodiversity conservation initiatives
- Political will at the highest level of government
- There is a wildlife management school nearby
- A sustainable wildlife economy
- Potential environment for NSR to develop a portfolio of revenue models based on the sustainable use of natural resources
- Existence of land demarcation Programs in buffer zones that can establish an innovative model for community management

➤ ***Opportunity 1: Geographical insertion***

The NSR is located in a region where several conservation areas of different categories are established within and in the neighboring country. This gives the Reserve the opportunity to develop conservation initiatives that are harmonized with those of the surrounding areas.

➤ ***Opportunity 2: the country has legislation that favors biodiversity conservation initiatives***

National legislation creates opportunities for the establishment of businesses through the wildlife-based economy, provides for the participation and engagement of external actors in the management of natural resources, provides punitive measures that discourage crimes against wildlife and ensures the sharing of benefits between actors.

➤ ***Opportunity 3: There is political will at the highest level of government***

The government, at the highest level, pays great attention to the development of the NSR, especially in protecting the elephant population. This provides an opportunity for proper consideration of management proposals for the development of the Reserve.

➤ ***Opportunity 4: Existence of a wildlife management school nearby***

The Fauna College in Mweka offers courses that NSR depends on for its good management. As it is located in the same biome area, the content taught makes it easy to integrate the trained technicians.

➤ ***Opportunity 5: Conditions exist to establish a sustainable wildlife economy***

In the region, game hunting is the solution to turning an area with decimated wildlife populations into a wildlife economy. The strength of game hunting provides a revenue stream while allowing wildlife numbers to rise rapidly. The next step is to add tourism. This is more difficult than assumed but where successful can generate \$100-500/hectare compared to a steady \$20/ha from game hunting. However, tourism is very dependent on the number of tourists, brands, communications, logistics including regular and affordable flights and a favorable environment. Corruption is currently one of the challenges faced in most countries and slows economic growth partly due to its impact on the tourism industry through the difficulty of obtaining entry permits, bribes, among others, and the now associated armed insurgency in Cabo Delgado. In the short term, NSR needs a clear policy that can convert the high potential value of well-managed fauna into incentives to conserve fauna populations, including the increase of key species.

This sustainability also requires a robust contracting and management system, as explained later in this Management Plan. Updated contracts will include provision for performance-based sanctions and bonuses, require engagement of local communities and set tourism standards - all of which contribute to supporting a circular system of economic growth based on conservation success.

➤ ***Opportunity 6: There is a potential environment for NSR to develop a portfolio of revenue models based on the sustainable use of natural resources***

In Africa there are a number of emerging and trialed revenue models linked to the sustainable use of natural resources that NSR could potentially develop. Some opportunities are particularly viable for NSR as a conservation area given its large size compared to other areas and its associated attributes.

For example, one of the relevant models identified for NSR is the formulation of a sustainable hunting economy. Child (2020) identified a key strength of NSR as its potential as a competitive regional lion and leopard hunting destination that could leverage the performance of some concessions, and indirectly NSR's revenues. He emphasizes that NSR has established one of the most comprehensive trophy monitoring and quota-setting processes in Africa, although it has yet to address long-term sustainability, private sector viability, wildlife protection costs and community benefits.

Theoretically, Child (2020) estimated that NSR could, for example, sustain the extraction of 100 leopards per year (5% of the extraction), the equivalent of \$3.2 million (\$32,000 per leopard harvest) and \$240,000 in exemption fees. Income models for non-consumptive activities are also a possibility through public-private exchanges linked to biodiversity and carbon stocks as beneficial to the planet, as well as effective socio-economic development for the people of Mozambique who participate in conservation. A business plan identifying such opportunities for sustainable financing will be prepared by NSR's management team at the beginning of the implementation of the 2024-2034 Management Plan, and will continue to evolve from there.

➤ ***Opportunity 7: Existence of land demarcation Programs in buffer zones that can establish an innovative model for community management***

Mozambique's advantage over all other community-based natural resource management Programs in the region (Child 2020) is the delimitation Program that can be used to acquire rights and formalize each village in the buffer zone with a governance structure and a land use plan. A community-based land use plan will provide a formidable foundation for the advancement of CCGRN if combined with community rights over fauna, and with the model of community management of fauna in large areas of Africa. The ingredients for Mozambique to surpass Namibia today are in place, in line with the original intentions of the 1986 CAMPFIRE document, which was based on delimited entities of independent villages.

In the short term, this strategy is being constrained by political realities, such as the delimitation of land in a Special Reserve and the absence of CCGRNA policies for governance, revenue generation and retention. However, the World Bank is known for financing land delimitation, which could offer an opportunity to carry out this work in the NSR buffer zone.

6.3 Weaknesses

The Management Plan was also designed to understand NSR's key weaknesses in order to ensure revised conservation strategies and to deal with current issues in its own way and turn them into future strengths. The following weaknesses were identified:

- Lack of a sustainable business model
- Limited management capacity to respond to threats
- Weaknesses in the Inspection system
- Unreliable data collection and analysis
- Lack of efforts to implement the community initiative
- Inability to implement the zoning plan

➤ ***Weakness 1: Lack of a sustainable business model***

Currently, NSR's management and community income depend on either traditional donor funds or limited fees from hunting concessions, and NSR has yet to proactively optimize sustainable funding lines.

Challenges for revenue growth from non-consumptive sources: NSR's core area is allocated to non-consumptive tourism; however, there is less and less demand for such concessions and their services. Despite substantial capital investments in tourism, there are no operational investments at the level required to cover costs, which points to a significant challenge for the development of tourism in the NSR. Tourism is also an agglomeration industry that requires substantial economies of scale and investments in airports, air routes and so on. Without substantial investments including the ability to attract anchor product investments, only a relatively small portion of the national parks in the SADC region have viable tourism operations. Additionally, and given the recent political instability in the region, the NSR and its surrounding area, the Reserve would need a better press or strong tourism product that can attract resilient top markets.

The consumptive tourism sector in NSR is underperforming: NSR is a relatively expensive hunting destination in Africa. The return before Covid was approximately \$2m annually, even though the hunting economy has halved due to rampant elephant poaching and import restrictions in the US. The hunting income assessment (Child 12020) concluded that NSR was under-performing by a factor of 5-10 for the following reasons:

- a) Quotas are low compared to animal populations and yet they are underutilized
- b) The concessions are so large that they are only partially utilized
- c) The relationship between fauna numbers and trophy quotas or concession income suggests that this relationship is weak.

The limiting factor for financial/economic performance at NSR is not animal populations, implying that performance can increase quickly and substantially if the right administrative actions are taken.

Weak concession contracts: Concession contracts are outdated and require a better quality reporting system and a minimum of consent to inspection. In the current model, there is no requirement for year-round patrolling or field coverage by the inspectorate. NSR currently bears all the risk of underperformance and concessionaires underutilize or under-protect large concessions without mechanisms to exclude operators who demonstrate underperformance. Over time the size of concessions will need to be better subdivided into productive and manageable sizes using a performance criterion. There are also weaknesses in quantifying concessions in terms of their employability and economic activity because there are no records of this or the information is submitted irregularly and partially in the annual reports.

NSR is not optimizing the value of fauna and its sustainable use:

While NSR may have access to relatively comprehensive trophy monitoring and quota-setting processes, the same cannot be said for the full use of the system to optimize the sustainable use of wildlife resources. NSR should devise or use a more balanced quota system (i.e. a correct mix of large animals on the basis of which it could increase the utilization of lowland animals and underutilized areas) and its commercial viability. In addition, ensuring top economic values

through extraction that is equitable between partners could help reduce the tendency to extract low-value species by improving the general perception of animals for low-income partners.

Structural barriers to effective income management and the sustainable management of a sustainable wildlife economy:

Structural inadequacies are the growth of the wildlife economy, job creation, sustainable financing of NSR and consequently of ANAC's revenue base. The current fee structure discourages investment in the resource base, innovation in the wildlife economy and community participation. Fees for licensing hunters are paid to ANAC in Maputo and are not returned to NSR, except for the 20 per cent for communities. As such, NSR has no direct incentive to increase trophy extraction, hunting rates, animal numbers or concession performance. In addition, the revenues shared with the communities are not directly related to the performance of the fauna.

Management capacity is limited: The number and capacity of personnel to manage and supervise activities is insufficient to meet NSR's current needs, including operational aspects throughout the year, especially when key personnel are absent from the Reserve. Support systems are insufficient-including clarification of assignments, performance management systems, supervision and guidance, official delegation of powers and training-which inhibits the performance of operational staff, reduces the ability to resolve issues and also reduces response time. Senior management staff are overburdened, which reduces their ability to plan and act strategically in investing in and developing management systems or developing staff capabilities.

NSR's management should also extend its capacity to efficiently strengthen its cross-border collaboration with Tanzania for the improvement of the Niassa-Selous Ecosystem and its fauna corridors that extend over an area of approximately 10,000 km², as a key elephant migration route, just to give an example.

➤ **Weakness 2: Limited management capacity to respond to threats**

The reserve has limitations in terms of qualified human resources to carry out management interventions that minimize the impact of threats to conservation values. The lack of specialists in ecology, statistics and economics is a major weakness in terms of obtaining more accurate biodiversity data on a regular basis, establishing and implementing an adequate wildlife monitoring system and establishing an appropriate revenue-generating mechanism.

➤ **Weakness 3: Weakness in the inspection system**

Current patrol coverage is less than a third of what is needed:

The total inspection force is around 370 (almost 1 inspector per 100 km² and with an uneven distribution) and has sufficient potential to protect the reserve if fully allocated, supported and managed. However, current patrol coverage is estimated at around a third of needs, with NSR inspectors having an average field presence of 7-8 active field days per month, or 10-12 days if observation posts are included, as opposed to a target of 15 patrol days per month. The current scenario is jeopardizing NSR's inspections, as the number of inspectors is decreasing due to old-age pensions and deaths mainly due to illness, and there is no proper replacement of inspectors.

Need to improve patrols: There is considerable variation in the ability of different concession operators to carry out inspections, with some operators showing the capacity to maintain high levels of effective patrols and other management operations, while others have very limited

inspection capacity. In addition, the absence of the operator in vacant concessions (although the award process is underway) represents a major gap in NSR's enforcement capacity.

Poor management of crime scenarios: Substantial investments in patrols and other enforcement activities are easily lost if crime scenarios are not well processed, penalization processes are weak and judicial processes are also inefficient. While some progress has been made in the relationship with the judiciary to improve the situation and excellent recent results have been achieved, there is a need to improve collaboration with the judicial services for the processing of wildlife offences in the Reserve. Although district and provincial prosecutors have received training for this purpose, only around a third of the judiciary has received such training. As a result, many prosecutors and judges still don't consider wildlife crimes to be serious offences and the offenders are either sentenced to low penalties or some cases are considered to be unfounded and therefore annulled.

➤ ***Weakness 3: Unreliable data collection and analysis***

NSR's management is using the SMART Program, as are some operators. SMART models need to be introduced in all concessions to allow for an accurate assessment of field coverage, records of threat observations and fauna observations, improving the planning of subsequent operations. For the SMART Program to be effective, improved methods for downloading information need to be developed, with the data being integrated into "on the fly" monitoring software (EarthRanger) to give commanders a better overview on the basis of which to make targeted responses to NSR threats. While some progress has been made, some systems are in their infancy in much of NSR and enforcement staff from both NSR and the concessions need training to make these systems fully effective. The inspection data collected indicates that the pattern of activities has been established, although it still requires better analysis of the information to create predictions of illegal activities. For example, a fire set in a certain area to allow pasture renewal to attract animals to facilitate poaching will require patrols to be focused on that area 7 to 10 days later. An analysis of weather data, burn monitoring and animal movement data, etc. should also be considered. This should be linked to historical data in order to guide the enforcement response.

➤ ***Weakness 4: Lack of efforts to establish Community Conservation***

The absence of a community conservation Program in the NSR is a serious shortcoming in an area with at least 29,000 resident populations within it and a total of around 60,000 around it. This situation is reflected in the mentality of free access to resources, hunting large quantities of animals for meat, uncontrolled fishing, mining (to some extent) and many other practices that empowered communities might not carry out. So far, NSR has not been able to successfully attract support for conservation and the prevention of wildlife crime in the Reserve (see evaluation of the 2019 inspection). NSR is legally obliged to disburse 20 per cent of its revenue (through the formally established CGRN) - raised from concession and access fees - to local communities. However, the systems for calculating and returning these revenues are low or opaque, and there is no link between conservation performance and benefits. Furthermore, disbursements tend to be usurped by the committee elite and are rarely shared equitably or at the very least shared with members. In general, there is little evidence that this revenue sharing improves attitudes towards conservation or reduces anthropogenic threats.

➤ Weakness 5: Lack of formalized CGRNs

The absence of a high-quality CGRN Program is undermining the political legitimacy, economy and sustainability of the NSR. This could contribute to the management of benefit sharing, natural resource management, community taxation and the establishment of free quotas for non-sport hunting. According to the 2019 Inspection report, it is not entirely clear what the rights and duties of communities are in relation to the sustainable use and conservation of their assets. For this reason, workshop participants identified two particular vulnerabilities in the legislation regarding the presence of human populations within the Reserve: the lack of clear zoning and regulations guiding human activities in the different areas of the NSR and the unclear demarcation of the Reserve and zone boundaries. On the other hand, the community blocks are too small to function as viable fauna units. Nor does the current law provide for the establishment of independent businesses in the villages.

6.4 Threats

The threats are grouped into two main groups: threats to the management components (abiotic and biotic) and threats to the management components (material, human and financial resources). Anthropogenic threats to the ecosystem are based on a wide range of issues, many of which are interconnected and complex and involve local and regional communities and international actors, as well as NSR's management and concessionaires. The analysis of the current situation (see Appendix 1) suggests that in order to mitigate NSR's main threats and for NSR to be successful, it is imperative that conservation strategies include economic, social, cultural, political and institutional aspects in addition to the environmental focus. The threats identified (May 2022) and classified by NSR's operators in relation to individual concession areas, plus a perspective of the entire Reserve classified by NSR's Management, are shown in Table 10.

Table 10: Classification of threats to the biophysical environment and management

	NSR	OESTE		CENTRAL				LESTE
	EM GERAL	L2	L1	L3	L5N/L6/ R5&6	L7	L8S	L8 & L9
AMEAÇAS								
Incêndios descontrolados / queimadas								
Colocação de armadilhas								
Caça furtiva comercial de carne de arbusto								
Caça furtiva de carne de arbusto de subsistência								
Limpeza de terras para a agricultura								
Utilização de veneno para matar animais selvagens								
Comércio ilegal de animais selvagens								
Insurgência - risco de insegurança								
Mineração								
Pesca insustentável								
Perda de habitat								
Produção de carvão vegetal								
Exploração madeireira ilegal e comércio de madeira								
Utilização insustentável do NTFP*								
Limpeza de terrenos para aldeias / povoações								
Recolha de lenha combustível								
Retaliação de mortes de animais selvagens								
Espécies invasoras								
Caça com cães domésticos								
Transferência de doenças de animais domésticos								
Comércio ilegal de marfim								

* Produtos florestais não lenhosos

CHAVE: NÍVEL DE AMEAÇA

MUITO BAIXO BAIXO MÉDIO ALTO MUITO ALTO

6.4.1 *Threats to the biophysical environment*

Illegal mining with impacts on soils and watercourses, illegal logging, burning and shifting agriculture with impacts on vegetation cover, poaching and pollution of surface waters with impacts on the size, distribution and diversity of wildlife, are part of a large set of threats to the integrity of the NSR's habitats. While ivory poaching has fallen considerably in recent years, the conflict caused by insurgents in the east of the Niassa Special Reserve in Cabo Delgado is displacing large numbers of populations, making the area bordering the NSR's south and east increasingly vulnerable. The Reserve also faces ongoing internal pressure due to land use conversion by local communities to open new fields, artisanal mining, degrading fire regimes as well as regional pressure (especially on the border with Tanzania) and international trafficking in wildlife products, logging and poaching. The threats can therefore be grouped into:

1. Extreme weather events
2. Natural fires
3. Change in the behavior of surface water volumes
4. Succession in floristic composition
5. Uncontrolled burning resulting from human activities
6. Loss of vegetation cover as a result of traditional agriculture and illegal logging
7. Loss of soil structure as a result of illegal mining
8. Poaching
9. Nomadism and demographic growth
10. Control of problem animals in the context of human-wildlife conflict

6.4.2 *Threats to management components*

These threats are summarized in the availability of resources to manage the Reserve, from human resources in quantity and quality, material resources for equipping human resources and the availability of financial resources for operating costs, to the engagement of local communities and the environment for the development of economic activities. NSR's private operators have also faced unprecedented challenges due to the COVID-19 pandemic, which has restricted tourism activity and led to major losses in revenue, although thanks to the collaboration between the parties, it has not yet considerably affected enforcement action. So while climate change and global instability imposed by pandemics inevitably have an impact, the threats within the NSR are predominantly related to human behavior. NSR's 2020 situational analysis identified the following threats to management:

1. Weak local eligibility initiatives for natural resource management
2. Poor fisheries management and governance
3. Human-Wildlife Conflict
4. Land use and management plans unclear
5. High poverty rates in local communities and weak resilience for livelihoods
6. Insecurity of protein acquisition
7. Demographic pressures
8. Growing regional instability

9. Commercial factors
10. Legal proceedings
11. Inspection challenges
12. Weaknesses in human resources

Chapter VII:

The Management Plan

7.1 Vision

To become the state's public domain conservation area managed through public-private partnerships of international reference, for the sustainable use of natural resources and nature-based tourism, with the active participation of local communities and philanthropic organizations as a vector.

7.2 Mission

The mission of the Niassa Special Reserve is to restore ecosystems to ensure the maintenance of ecological services, guaranteeing connectivity between the priority ecosystems of the Greater Rovuma region, through the reintroduction of floristic and faunal species, incorporating science and institutional development, dissemination of knowledge, transfer of technology in favor of the parties involved, thus increasing the capture of tourism revenue and restoring livelihoods with high rates of recovery of habitats and associated species.

7.3 Institutional Values

With this vision and mission, the main values that guide the joint management agreement signed between the Government of Mozambique and the Wildlife Conservation Society (WCS) will be maintained.

7.4 Institutional Arrangement

7.4.1 Administrative Structure of the Niassa Special Reserve

Under the terms of Article 42(1) of Decree 89/2017 of 29 December, Regulation of the Law on the Protection, Conservation and Sustainable Use of Biological Diversity, Law 16/2014 of 20 June, approved and republished by Law 5/2017 of 11 May, *“legally created conservation areas placed under its administration are administered by ANAC”*.

Under the terms of Article 43(1) of the same Regulation, *conservation areas have the following administrative bodies a) the conservation area administrator, b) the management board.*

Pursuant to Article 43(1) of the aforementioned Regulation, *“the competences of the administrator of the conservation area in the public domain of the State, under the administration of ANAC, are those set out in the Standard Statute for the Administration of Conservation Areas”*.

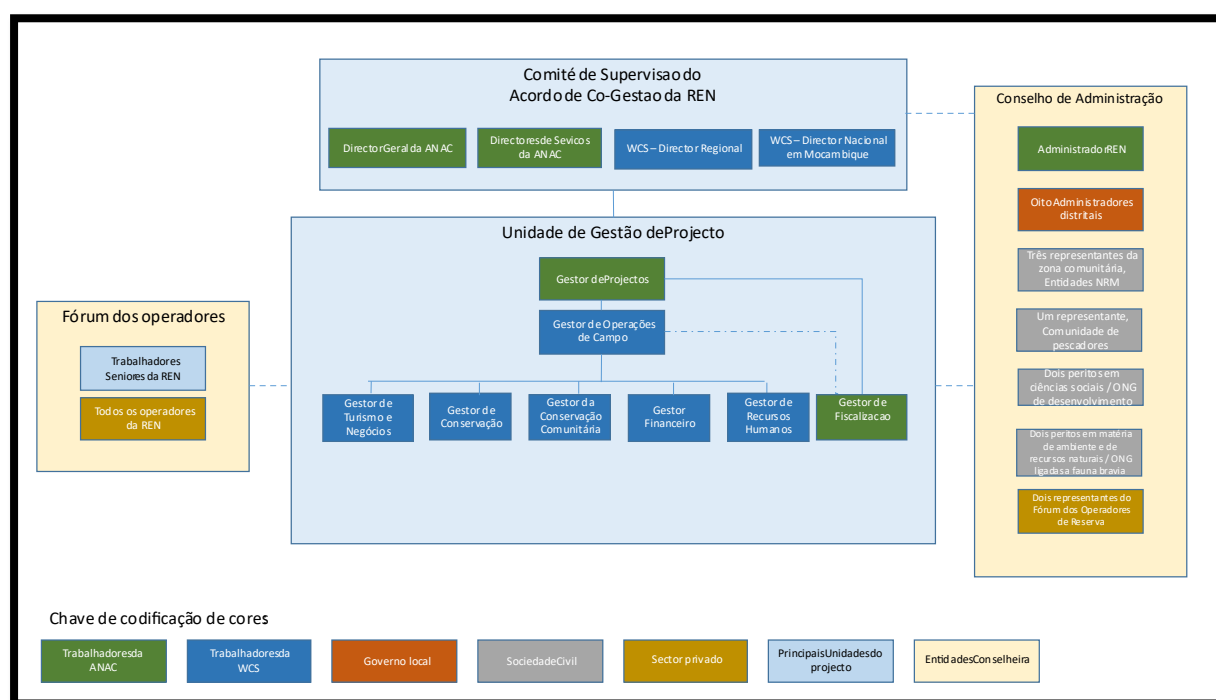
Under the terms of Article 31(2) of the Conservation Areas Statute, *“conservation area administrations are headed by an administrator appointed by the Minister who oversees the conservation areas”*.

7.4.2 Management Structure of the Niassa Special Reserve

Within the framework of the co-management agreement signed between the Ministry of Land and Environment and WCS, an “**Institutional Framework**” was established **which determines:**

- **Project** – Carrying out adequate and effective sustainable development management and financing of NSR’s administration
- **Administrator** - The project manager must be a Mozambican selected by the parties and approved by the Supervisory Committee and hired by WCS. He is appointed by the Minister who oversees the conservation areas.
- **Project Supervisory Committee (PSC)** - non-executive steering committee of the project, which includes ANAC, WCS and WCS-Mozambique to assess the progress of the project.
- **Project Management Unit** - Contracted by WCS-Mozambique, responsible for the management of NSR, controlled and managed by the NSR administrator, consisting of an administrative and financial manager, a field operations manager, a tourism or business manager, a community manager and the head of supervision.

Figure 14: Project management structure



7.4.2.1 Duties and obligations

WCS’s primary responsibility is to participate in the management, staffing and financing of the NSR; to participate in the management of day-to-day operations according to the agreement; to prepare business and management plans; to raise funds for the Reserve; to control financial expenditure within budgets and to assist in the creation of standard operating procedures, among other responsibilities.

ANAC’s primary responsibility is to serve as the government entity responsible for implementing the Co-management Agreement between WCS and the Ministry of Land and Environment by

resolving disputes between public sector entities in relation to the Co-management Agreement; ensuring the payment of basic salaries and benefits of some inspection staff - including the Project Manager (Administrator) and the Head of Inspection assigned to the project; providing some basic inspection equipment; assisting in the drafting of the Management Plan and ensuring its approval and that of the Business Plan; securing any licenses and authorizations within its area of jurisdiction for the pursuit of project activities; and legislating any realignments of the Reserve's boundaries if it is ecologically and financially beneficial to do so, among other responsibilities.

WCS operates as an exclusively non-profit partner of ANAC to co-manage the Niassa Special Reserve. WCS and the Ministry of Land and Environment signed a Co-management Agreement, in which ANAC is the Mozambican government entity responsible for implementing the agreement that describes the role and responsibilities of the two partners as well as the institutional structures that will oversee the Niassa Special Reserve. The two main management bodies are the Project Management Unit (UIP) and the Supervisory Committee, and there is also the Supervisory Committee which takes on an advisory role. The PIU will manage the day-to-day operations of the Reserve while the Supervisory Committee is responsible for general supervision and guides the preparation of the Management Plan and submission to the Ministry for approval, overseeing activity plans and budgets and other key decisions detailed below.

According to the Co-management Agreement, WCS and ANAC will share responsibilities as follows:

WCS will carry out the following activities, among others:

- Raise operating and capital funds
- Manage, finance and develop NSR sustainably, using good practices
- Hire staff for the PIU
- Support the PIU with technical assistance
- Create standard procedures for operations
- Assist in preparing, reviewing and adjusting the project's budget and Business Plan

ANAC will carry out the following activities, among others:

- Appoint the Project Manager /Administrator
- Appoint the Head of Supervision, seconded to the project, and allocate all supervision staff seconded to NSR
- Provide arms and ammunition for monitoring and managing human-wildlife conflict in the NSR
- If applicable, reintroduce species according to the Business Plan
- Ensure approval of the Management Plan
- Assist in issuing work visas and residence documents for foreign WCS workers
- Assist in obtaining permits, licenses and similar documents within its jurisdiction to carry out project activities, including those related to the operation of aircraft in the NSR
- Endorse WCS requests for funding from donors, through letters of support or other instruments suggested by the funders
- Respond to requests made by the Supervisory Committee to realign the boundaries of the NSR if this benefits the ecological, social and financial goals of the Reserve and beyond.

The Project Management Unit (PMU): In addition to the day-to-day operations - led by a Project Manager (with the functions of NSR Administrator) and a Field Operations Manager, supervising various department managers with field assignments - community, tourism, finance, and inspection - will carry out the following activities, among others:

- Submit technical and financial reports to the Project Supervisory Committee
- Develop, implement and monitor the annual work plan and budget
- Manage concession agreements
- Control the project's finances, including manage the following accounts:
 - Current account: donor funds for operating expenses
 - Own revenue account: NSR's consigned revenue from fees and tariffs (after removing the 20 per cent for the Treasury; 80 per cent is transferred to the own revenue account; 20 per cent to the community).
 - Community Account: for subsequent channeling to local community accounts

All revenues allocated to NSR will be administered by the PMU, thus managing the legal percentages to be submitted to the income and expenditure department for the benefit of NSR. Eighty per cent of net revenues will be allocated to the administration of NSR including the financing of the PMU such as personnel expenses, capital and operating expenses, which includes various conservation initiatives, tourism development, community capacity building and infrastructure of the Reserve, disbursement of the 20% of the community, etc. Additional revenue may be generated through fines for legislative offences, after deduction of incentives, which will be allocated to finance the project. An up-to-date Financial Management Manual will be prepared and used by the PMU in line with the Standard Operating Procedures. Formal and virtual external audits (by an international auditing company appointed by WCS) will be carried out.

The PMU, chaired by NSR's Administrator, will hold annual Management Board meetings as necessary to address operational challenges and reach alignment on key Programs in law enforcement, community engagement, biodiversity monitoring, tourism, etc. These meetings will also facilitate the regular review of standard operating procedures (SOPs) to guide aspects of personnel, human rights and gender considerations, partnerships, law enforcement, community involvement, sustainable development.

The Supervisory Committee: made up of two representatives from ANAC and two from WCS, with observers from Niassa and Cabo Delgado provinces, operators, donors and senior staff from NSR's administration, will carry out the following tasks, among others:

- Approve the annual management and business plans submitted to the PMU
- Approve the Management Plan (MP)
- Reconcile annually updated Business Plans in line with the Management Plan
- Review and approve key strategic recommendations issued by the PMU Project Manager
- New tenders and review, finalize or renew existing contracts with concessionaires.
- Determine NSR tariffs (sufficient to optimize the financial sustainability of the Project without unduly burdening tourism operations.

According to the Co-management Agreement, partners representing the Ministry of Land and Environment, concessionaires, donors and NGOs will be invited to meetings of the Supervisory Committee as observers.

7.5 Management Objectives

The purpose of the Management Plan is to:

General

Incorporate into management the capacity needed to develop the Reserve through actions to engage the main players, mobilize human, material and financial resources, promote equity and share benefits with a focus on restoring habitats, associated species and restoring the livelihoods of the local community.

Specific

- Restore priority ecosystems and associated species
- Increase the quantity and quality of trophies
- Incorporate alternative commercial activities into management to diversify sources of income
- Involve and improve the living conditions of local communities and establish guidelines on relations with these communities, administrative authorities at district, provincial and central level
- Establish integrated management Programs that include scientific research
- Promote the use of local and traditional knowledge to benefit the conservation and preserve of moral and historical values
- Establish guidelines for the establishment of management infrastructures of socio-economic interest
- Establish guidelines for the development of tourism activities
- Establish guidelines for communication mechanisms

7.6 Expected results

- *Five to ten years*
 - Well-governed reserve with a collaborative network of partners contributing to a shared vision
 - Critical habitats restored
 - Flora and fauna monitoring Program established and functional
 - Community development Program established and functional
 - Structured hunting Program
 - Sources of revenue generation contributing fully
 - All concession hunting blocks
 - Fully structured human resources with qualified technicians for each specialty
 - Human-wildlife conflict reduced to below 10% of current levels
- *Three to five years*
 - Updated exploitation transfer contracts
 - L4E hunting block in operation
 - Specific regulations approved

- Revitalized communication systems in operation
- *One to three years*
 - Main areas of intervention identified
 - All areas of high ecological value mapped
 - Mapped the main human settlements and areas of subsistence activities
 - Alternative socio-economic activities for generating income identified
 - All settlements with water supply problems identified
 - Functional analysis of the Reserve carried out (mapping the quality of human resources)
 - Negotiations started for operating contracts harmonized with management objectives

7.7 Zoning

NSR is among the largest and most complex protected areas in Africa. At the same time, it is NSR's aim to conserve its biodiversity, preserve and enhance its ecosystems, support the livelihoods of its local, rights-holding population through sustainable means, and provide recreational experiences for local, national and global citizens. Balancing all these needs in such a vast area requires the Reserve to be managed as a network of manageable and contextualized units.

Optimizing the multiple use of land and resources throughout the Reserve is a challenge that NSR's management must face. NSR's management will focus on the key ecological components and attributes in order to achieve its objectives.

To this end, the current zoning of the Reserve will be revised, mainly with regard to land use and occupation, to meet the needs of the communities living within and in the buffer zone of the Reserve. The zoning will integrate a diversity of types of use within it with the aim of assigning different uses to different spaces within the Reserve's boundaries.

The following zones will be established for management purposes:

- **Tourism development zone (game parks)**
This zone will comprise 17 blocks for tourist activities that will be given for concession to operators for exploitation either through hunting tourism or contemplative tourism.
- **Zone for community development** (settlements and associated activities)
This zone will comprise the set of dispersed areas where the various human settlements and associated subsistence activity areas are located
- **Total protection zone**
This zone will comprise two blocks designed to protect attributes of high ecological value to ensure the maintenance of species. It will serve as a sanctuary for revitalizing the population sizes of different species

7.8 Management Components

7.8.1 Vegetation Management Program

The following actions will be incorporated into vegetation management:

- Establishment of sampling plots and annual inventories of vegetation composition and structure
- Mapping areas with invasive species
- Establishment of an invasive species control Program
- Mapping areas with high levels of grass biomass production
- Introduction of a management burn Program (cold burns) to control biomass (areas producing over 3,000 kg per hectare)
- Mapping degraded areas
- Establishment of a restoration Program for degraded areas
- Mapping areas with species of high commercial value

7.8.2 Wildlife Management Program

The following actions will be carried out to manage the fauna:

- Fauna surveys every three years for all species
- Localized censuses for species of interest whenever monitoring so recommends
- Definition of annual extraction rates for illegible species
- Capture and translocation of illegible species to other conservation areas
- Control of problem animals in the context of human-wildlife conflict
- Mapping wildlife corridors for land use planning purposes

7.8.3 Community Development Program

This Program will focus on restoring the livelihoods of the communities living within and in the buffer zone of the Reserve and will be implemented through the following actions:

- Mapping human settlements
- Regular monitoring of land occupation and use
- Organizing and strengthening groups for the sustainable management of natural resources
- Community assistance and capacity to manage water supply sources
- Introduction and expansion of agricultural production technologies based on conservation agriculture
- Creating alternative activities to generate family income
 - Honey production
 - Handicrafts
 - Cultural tourism
- Promotion of scholarships based on meritocratic criteria
- Support for the health sector in the dissemination and implementation of community health care Programs
- Training community members to manage human-wildlife conflict

- Designing a specific action plan for livelihood restoration Programs

7.8.4 Tourism Development Program

This Program focuses on strengthening tourism in order to adapt it to the dynamics of the sector at a global level, always tending to maximize the existing potential of the Reserve. To this end, a series of actions will be implemented, including:

- Improving ecotourism in the five blocks already designated, including the block designated for community tourism
- Improving hunting activity in the 11 designated blocks
- Diversifying hunting, which is currently based on two main species: buffalo, leopard and lion.
- Establishing extraction rates within ecologically sustainable limits at the level of the population of each species.
- Developing community tourism Programs
 - Establish itineraries to visit sacred sites such as Chemambo
- Supporting private sector in creating incentives and promotion to increase the number of visitors.
- Diversifying tourism products by establishing camping facilities in non-concession areas that are under the direct management of the NSR administration.
- Monitoring tourism operations through visits to concessions, inspection of trophies at the end of each season.
- Establishing the obligation for concessionaires to submit annual reports in the format indicated by NSR's management and other documents established in the concession contract.
- Carrying out a periodic performance evaluation of dealers.
- Creating a dynamic portfolio of entrepreneurs and investors to finance NSR through sustainable activities.
- Updating and proposing a quota system, a product sharing system (e.g. quotas or non-consumptive products) and a standardized system of direct benefits between operators and communities.
- Developing and implementing a detailed Tourism Plan that includes promotion components, infrastructure development (campsites, access, trails and signposting) and alternatives for domestic tourism.

7.8.5 Protection and Monitoring Program

The protection and monitoring Program focuses on implementing actions aimed at ensuring the integrity of the Reserve's natural resources through the application of current legislation. The following actions will be implemented for this Program:

- Equipping the inspection body
- Training the inspection body

- Identifying and mapping of areas susceptible to illegal activities
- Establishing outposts or satellites in areas with the highest density of fauna and flora species of high commercial value
- Engaging the judiciary through sessions to disseminate legislation with the Criminal Investigation Services, the Attorney General's Office and the Courts.
- Establishing communication, intelligence and information exchange systems with the different players.
- Establishing a less burdensome patrol Program with reduced physical effort
- Increasing patrol coverage to 75 per cent of the most important conservation areas

7.8.6 Management Infrastructure and Equipment Program

Management infrastructures are the pillars for implementing the set of actions for the different management components. To ensure the provision of important infrastructures, the following actions will be implemented:

- Survey of existing infrastructures and needs in all sectors
 - Infrastructure for the implementation of all NSR management Programs;
 - Infrastructure to support increased tourism and the green economy
 Equipment needs survey carried out and acquisition and distribution ensured
- Equipment needs survey
 - Communication systems
 - Means of transport
- Rehabilitation of obsolete infrastructure
 - Camping
 - Health centers
 - Water and energy supply systems
 - Landing strips, roads and landings

7.8.7 Human Resources Revitalization Program

This Program aims to ensure that the technical capacity to implement the current management plan is maintained and that the Reserve is sustainable in the long term. It focuses on equipping the various departments with competent staff. To this end, the following actions will be carried out:

- Survey of existing human resources
 - Academic training
 - Technical skills
- Assessment of staffing needs
 - Equipping the sectors with competent technicians
- Training human resources
 - Organization of short courses
 - Sending technicians for training at academic institutions inside and outside the country
- Establishment of an incentive Program
- Filling all the positions in the Project Management Unit

Chapter VIII: Conservation and Management Goals

8.1 Biodiversity Conservation Goals

The conservation goals are aimed at maintaining the ecological integrity of the Reserve and pursuing the creation objectives. They were established on the basis of the level of threats, existing resources and those to be mobilized, conservation and management objectives. Table 11 below lists the conservation targets for this Management Plan. These targets were identified through a series of consultation processes resulting in the NSR's situational model (see appendix 1) and include flora, fauna and social welfare. In this context, the management and administration of the Niassa Special Reserve requires the development of strong local partnerships so that, as a minimum, conservation objectives are incorporated into community development objectives and sustainable nature-based tourism Programs.

Table 12: NSR's Vital Conservation Targets

CONSERVATION VALUES	GOALS
Nature	<i>Keep disturbance and alteration of the ecological role of the Reserve to a minimum</i>
Fauna	<i>Ensure the maintenance of fauna diversity by eradicating related threats</i>
Elephant	<ul style="list-style-type: none"> . Reduce population loss below 5% per year . Establish population growth of 7.1% per year . Establish a repopulation Program from other national CAs . Maintain the population number below 60% of the ecological carrying capacity (ECC). . Set the extraction (hunting) rate at 4.2 per cent per year. . Map and monitor spatial distribution . Control dispersion . Reduce interaction rates with the human population and areas of their activities to 1%.
Large carnivores	<ul style="list-style-type: none"> . Carry out two carnivore counts during the term of the Management Plan. . Establish an annual extraction rate for lion, leopard and hyena . Establish a carnivore monitoring Program
Ungulates	<ul style="list-style-type: none"> . Carry out censuses every three years . Maintain ungulate populations below 40 per cent of ecological carrying capacity . Capture and translocate animals whenever the number reaches 40 per cent of the CCE . Establish extraction rate (hunting) within limits to be estimated on the basis of herds (census).
Birds/Vultures	<ul style="list-style-type: none"> . Establish a monitoring Program (absence vs presence) . Map raptor nesting areas

CONSERVATION VALUES	GOALS
Plant communities	<i>Ensure the integrity of the various plant communities by removing the main threats</i>
Afro-mountainous vegetation	<ul style="list-style-type: none"> . Map and catalogue plant diversity in the <i>inselbergs</i> by year 5 of PM implementation . Reduce fires by 25 per cent per year of the current rate . Eradicate uncontrolled burning
Riverside forest	<ul style="list-style-type: none"> . Eradicate agricultural activities on the banks of watercourses . Map deforested areas . Introduce a habitat restoration Program . Reduce the annual rate of uncontrolled fires by 95 per cent
Miombo Forest	<ul style="list-style-type: none"> . Map deforested areas . Reduce the annual rate of uncontrolled fires by 95 per cent . Introduce management fires (cold fires) <ul style="list-style-type: none"> ➤ For protection purposes, map forest strata with species of high commercial value (timber) ➤ Establish a Program to restore deforested areas ➤ Establish a Program to eradicate shifting cultivation ➤ Promote a conservation agriculture Program
River systems	<i>Ensure the availability and quality of water in the main natural courses</i>
	<ul style="list-style-type: none"> • Establish a Program to monitor the quantity and quality of surface water • Eradicate artisanal fishing activities using toxic products • Eradicate agricultural activities on the banks of watercourses
Landscape connectivity	
	<ul style="list-style-type: none"> • Map the main ecological corridors • Establish an integrated landscape management Program <ul style="list-style-type: none"> ➤ Promote harmonized management of habitats and wildlife ➤ Promote landscape censuses ➤ Promote the harmonization of management policies
Community Development	<i>Improve the living conditions of local communities</i>
Stabilized local economy	
Lifestyles and economic resilience	<ul style="list-style-type: none"> • Establish conservation agriculture Programs for farmers in areas inside the NSR • Promote the construction of housing that is resilient to climate change and permanent • Establish production and commercialization chains • Promote honey production chains and other income-generating alternatives • Operationalize the community management Program for Block L4E
Safety/protection	<ul style="list-style-type: none"> • Promote block farms in at least 10 per cent of human settlements • Empower communities in CHFB mitigation matters

	<ul style="list-style-type: none"> • Promote fences for fields with alternative means to electric fences • Strengthen community participation in the management council
Community wellbeing	
Availability of water quantity and quality	<ul style="list-style-type: none"> • Survey the communities' water supply needs • Survey the state of conservation of water sources in the communities • Rehabilitating broken water fountains • Train at least 30 villages in the maintenance of water sources • Engage SDPIs in supporting communities to manage water sources responsibly
Improved/oriented Development of human services	<ul style="list-style-type: none"> • Create and strengthen environmental clubs in 10 schools by year 10 of the MP • Establish and strengthen scholarships for 15 students based on student merit in the first 6 years of MP • Establish partnerships with health services for vaccination campaigns and other health care, including maternal and child care.
Nutrition/food insecurity	<ul style="list-style-type: none"> • Promote fast-growing food crops, resistant to the effects of climate change and disease, covering 35% of families • Engage health services in food and nutrition awareness campaigns
Cultural identity	<ul style="list-style-type: none"> • Promote annual craft fairs in district centers to exhibit and sell art objects • Promote traditional dance sessions associated with photographic tourism and on festive dates

8.2 NSR's Management Targets

The management components are the ones that must ensure the implementation of the conservation goals. They are intricately linked to the institution's technical capacity, resources, equipment and management infrastructure.

For the implementation of conservation actions, a functional analysis will be taken into account to ensure that conditions exist or that additional conditions should be incorporated into the management structure. This includes the availability of financial resources.

Table 13: NSR's management goal

Human resources	<i>Improve the technical management capacity of the Reserve</i>
Biodiversity Management	
Fauna management	<ul style="list-style-type: none"> • Training of 3 technicians to draw up, implement and monitor management instruments (Management Plans and Legislation) in the first five years of the MP

	<ul style="list-style-type: none"> • Training of 2 technicians in biodiversity censuses and surveys in the first year of the MP • Training for 5 technicians on recording the conservation status of the main biophysical attributes in the first 5 years of the MP • Training of 10 technicians in CHFB management in the first 5 years of the Program
Protection and Supervision	<ul style="list-style-type: none"> • Refresher courses for all inspectors every two years • Produce manuals on environmental crime and carrying out a dissemination Program
Means and Equipment	<i>Ensure the quality of service provision</i>
Field material	<ul style="list-style-type: none"> • Equip technical staff and inspectors with field equipment (GPS, tents, binoculars, communication radios and manuals)
Economic Financial	<i>Increase the revenue generation base</i>
Tourism	<ul style="list-style-type: none"> • Establish a Program to evaluate the allocation and use of slaughter quotas • Evaluate the annual economic performance of all concessions • Establish a community tourism Program
Carbohydrate Sequestration	<ul style="list-style-type: none"> • Develop carbon stock studies • Mobilize at least 1 partnership to implement carbon sequestration projects
Animal products	<ul style="list-style-type: none"> • Introduce the sale of 75 per cent of the spoils of Community quotas

Chapter IX: Monitoring and Evaluation of the Management Plan

To ensure that the implementation of the Management Plan is monitored, a Program for monitoring and evaluating activities will be implemented throughout the term of this management plan.

The monitoring Program will focus on the targets set out in chapter 8 and the results will be used to support management decisions. As a means of verification, reports and maps will be produced in addition to field visits by external evaluation teams.

Chapter X: Management Plan Review Process

The Management Plan is not a static document and will be revised whenever deemed necessary in order to adapt it to current circumstances and trends in resources. The review periods for the Management Plan will follow the following timetable:

Table 14: PM review process

END OF YEAR		REVIEW PROCESS - If necessary
Year 1	2024	Review by the PMU (inform the Management Board of any significant changes to the Management Plan)
Year 2	2025	Review by the PMU (inform the Management Board of any significant changes to the Management Plan)
Year 3	2026	Review by the PMU (inform the Management Board of any significant changes to the Management Plan)
Year 4	2027	Mid-term review - Review by the Management Board
Year 5	2028	Review by the PMU (inform the Management Board and the Supervisory Committee of any significant changes to the Management Plan)
Year 6	2029	Review by the PMU (inform the Management Board of any significant changes to the Management Plan)
Year 9	2031	Preparation by the PMU of the Terms of Reference for an in-depth review of the Management Plan
Year 10	2032	In-depth end-of-term review of the PM - Reviewed by the Management Board and Approved by the Supervisory Committee and ANAC.

PMU: Project Management Unit

MC: Management Council

Chapter XI:

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