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6th National Report on the Implementation of Convention on Biological Diversity in Mozambique

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Sixth National Report on the Implementation of Convention on Biological Diversity in Mozambique

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PREFACE

The Conference of the Parties to the Convention on Biological Diversity (CBD), at its tenth meeting in October 2010, adopted the 2011-2020 Strategic Biodiversity Plan and the associated Aichi objectives. CBD Parties subsequently reviewed and updated their National Biodiversity Strategy and Action Plans to align them with the Strategic Plan and develop national targets using the Aichi targets as a flexible framework. Mozambique has reviewed and completed updating its NBSAP in 2015, in accordance with the guidelines of the Conference of the Parties. The revised NBSAP (2015-2035) has national biodiversity targets that have been developed with the involvement of a wide range of stakeholders from government institutions, universities, research institutions, CSOs, NGOs and private sector and local community representatives. National targets were set using global targets as a flexible framework.

In this regard, 4 strategic objectives and 20 national targets were defined and aligned to the Global Strategic Biodiversity Plan. Using these two instruments as well as various official government documents, reports from non-governmental and civil society organizations as well as cooperation partners, websites and official biodiversity links, Mozambique completed the preparation of the sixth national report, following the guidelines of the Conference of the Parties.
The Sixth National Report on the Implementation of the Convention on Biological Diversity constitutes an update of the Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique. This report sets out the changes to biodiversity and the actions taken since the 2015-2035 Strategy and Action Plan for the Conservation of Biological Diversity (NBSAP) was adopted, with particular emphasis on changes since the last national report was submitted. It briefly outlines the progress made and the effectiveness of policies and legislation related to biodiversity conservation and the 20 Aichi National and Biodiversity and Sustainable Development Goals. Provides also an update on the state and current trends in biodiversity in Mozambique, and an analysis of the threats and implications of biodiversity loss for human well-being.

Different stakeholders will use the report to plan biodiversity conservation and management in Mozambique as well as to mobilize additional and international resources for biodiversity conservation.

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The process of preparing the Sixth National Report on the Implementation of the Convention on Biological Diversity in Mozambique had the participation of several key national actors involved in the conservation and management of biodiversity. Therefore, on behalf of MITADER, we would like to thank all those who, individually or on behalf of government institutions, academia, civil society organizations, the private sector and cooperation partners, participated in different ways in the preparation and review of the different versions of the report.

Particular thanks are due to the team of biodiversity experts from the Eduardo Mondlane University, coordinated by Prof. Dr. Cornélio Ntumi, who has worked tirelessly and has shown great professionalism, disposition and dedication in the preparation of this Report.

We would also like to thank the members of the Biodiversity Unit, represented by key governmental and non-governmental sectors, who, through critical observations, have contributed significantly to the improvement of this national biodiversity report.

Executive Summary

Biodiversity plays a key role in the development of a healthy economy. The Convention on Biological Diversity (CBD) was the first global agreement on the conservation and sustainable use of all components of biodiversity, including genetic resources, species and ecosystems. Mozambique ratified the CBD in August 1994 through Resolution 2/94 of 24 August and committed itself to achieving a significant reduction in the rate of loss of biological diversity at national level. In this context, Mozambique has so far submitted five reports, the last of which in 2014.

The Sixth National Report on the Implementation of the Convention on Biological Diversity is an update of the Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique. This report presents changes to biodiversity and the measures taken since the 2015-2035 Strategy and Action Plan for the Conservation of Biological Diversity (NBSAP) was adopted, with special emphasis on the changes that have occurred since the last national report was submitted. It briefly describes the progress made and the effectiveness of biodiversity policies and legislation related to the 20 national and Aichi Targets on Biodiversity and the Sustainable Development Goals. It also presents an update on the status and current trends of biodiversity in Mozambique, and provides an analysis of the threats and implications of biodiversity loss for human well-being. The report is divided into 6 sections:

Section I discusses the Rationale for National Targets (NTs); contains information on the targets the country has adopted in line with the 2011-2020 Global Biodiversity Strategic Plan. From the NBSAP can be extracted 4 national strategic objectives aligned with those defined by the Global Biodiversity Strategic Plan. For each objective, National Targets were developed, totaling 20 Targets: **NT1** deals with the awareness of biodiversity in the Mozambican population; **NT2** on improving knowledge and integration of biodiversity in decision-making processes; **NT3** on the adoption and implementation of legislation to prevent the degradation of biodiversity; **NT4** on the sustainable production and consumption of biodiversity; **NT5** on the fragmentation and degradation of critical ecosystems; **NT6** on the establishment of management strategies; **NT7** on the sustainable management of resources; **NT8** on the pollution of ecosystems; **NT9** on the occurrence of invasive species and their management strategies; **NT10** on ecosystems vulnerable to climate change; **NT11A** on the assessment and redefinition of marine and terrestrial conservation areas; **NT11B** on the management of conservation areas; **NT12** on the rehabilitation and sustainability of degraded ecosystems; **NT13** on the genetic diversity of species; **NT14** on ecosystem services; **NT15** on the

contribution of biodiversity to the enhancement of carbon stock; **NT16** on access to and sharing of benefits resulting from biodiversity; **NT17** on the involvement of sectors in biodiversity issues; **NT18** on valuing traditional knowledge and uses of biodiversity; **NT19** on improving gender mainstreaming for the effective implementation of targets; **NT20** on mobilization of funding and support for biodiversity programs.

Section II provides information on the main measures taken by the country to implement the NBSAP and the achievement of its targets.

Target 1: Some activities were implemented in the production of awareness-raising material and holding of awareness-raising events, in some of which members from different urban and rural communities participated, for example, environmental education in schools; awareness-raising activities of BIOFUND, the PNG Community Education Centre and PNAB; periodic awareness-raising campaigns on burning in RNN; clean-up campaigns the initiative "Let's do it Mozambique", etc.

Target 2: Activities were implemented on production and capacity building on taxonomic inventories; biodiversity enhancement projects and research on the value chain of biological resources; scientific publications; establishment of a portal on biodiversity; provision of information in the database and creation of an institutional environment for conducting research. For example, creation of BioNoMo with the objective of sharing and making available to the general public primary data on biodiversity; the digital platform with studies, reports, spatial data in digital format (shapefiles), etc. on biodiversity; taxonomic expeditions carried out by different institutions; research lines designed by higher education institutions; regular availability of funds by FNI for scientific research and biodiversity, etc.

Target 3: Activities were implemented on compensation for loss and/or reduction of biodiversity; inspection and enforcement of fines by the environmental authority; capacity building on EIA; review of the Environmental Quality Standards Regulations and some aspects of waste management; updating of the EIA Decree, and the Environmental Quality Standards Decree; and selection of EIA consultants. For example, implementation of biodiversity offsets; establishment of compensation initiatives; conduct of waste collection activities; environmental education and clean-up on beaches at a national scale; review of the EIA Process Regulations, etc.

Target 4: Activities related to the definition of ecological limits of goods and services; ecosystem assessment; commercialization of varieties; use of alternative energies; and promotion of energy alternatives favourable to the conservation of biodiversity were implemented. For example: implementation of the Sustenta and Mozbio II project; release of various crop varieties and

promotion of the commercialisation of inputs; increase in the use of new and renewable energies, especially solar panels and photovoltaic energy; dissemination of the use of improved ovens, etc.

Target 5: Activities related to biodiversity monitoring; implementation of management plans; community involvement in conservation activities; assessment and identification of critical habitats; and incentives for local community participation in conservation activities were undertaken. For example: monitoring of mangroves; identification of ecosystems as part of the Important Biodiversity Areas (KBAs) project; creation of nine marine community protection areas; conservation actions in afromontane endemic centres; channelling of around 118 million meticais to 805 beneficiary communities living in areas where forest exploitation occurs; and identification of critical ecosystems, etc.

Target 6: Activities related to indicators on Important Plant Areas (IPAs); species management plans; updating of the national red data book; access to the red data book; implementation of *in-situ* conservation plans; establishment of conservation and restoration programmes; assessment of forest reserves; and systematic assessment of the conservation status of endemic and/or threatened species were carried out. For example: conservation in Afromontane endemic centres located outside the CAs network; restoration of degraded areas through reforestation in Serra da Gorongosa and in the areas of forest exploitation and mangrove swamps in the district of Mecúfi; updating of red lists of plants and identification of important areas for biodiversity (KBAs), including IPAS; approval of the CITES Regulation and the Regulation of the Conservation Law; identification of around 234 endemic or almost endemic species, etc.

Target 7: Activities were implemented related to dissemination of conservation agriculture; practices and farmers making use of this; soil and water conservation techniques; drought and flood mitigation measures; charcoal exploitation licenses and review of land use planning. For example: Conservation agriculture has been disseminated in various parts of the country; capacity building of 30,576 members belonging to 500 producer organizations; issuance of simple licenses to 883 forestry operators; some spatial planning plans are under preparation throughout the country as well as the National territorial development plan, etc.

Target 8: Activities related to critical ecosystems or that provide essential goods and services have been implemented, specifically on the implementation of management plans and remediation plans and on monitoring programs. For example: design of two critical ecosystem pollution management plans, and some policies (ENAMMC, the REDD+ Strategy, National Strategy and Action Plan for Integrated Coastal Zone Management and the National Strategy and Action Plan for Mangal

Management); implementation of beach pollution monitoring and reduction actions in the country's coastal zones, etc.

Target 9: Activities related to the establishment of the national plan for the eradication and control of invasive species were carried out, on which only the regulation for the control of invasive alien species was developed. For example: establishment of the national plan for the eradication and control of invasive species; identification of invasive species including in some CAs such as REM, RNC, PNG, PNL and ZPT-CSS, etc.

Target 10: Activities related to indicators on publications and knowledge of the level of impact of Climate Change on critical ecosystems; implementation of mitigation and adaptation projects on vulnerable ecosystems; and research projects on the impact of climate change on critical ecosystems were carried out. For example: research on the impact of climate change on biodiversity was conducted at UEM, UP and Uni-Lúrio as well as by ENAMMC. Two projects related to the impact of climate change on critical ecosystems were implemented (in the PNQ, on the mangrove and in the RNG, on the miombo).

Target 11A: CA assessment including review of boundaries, mountain, marine and hotspot ecosystems covered by CAs; percentage of rehabilitated areas and areas under CA; rehabilitation programmes and review of CA categories were carried out. Preparation and review of management plans for CAs; assessment of the ecological status of 7 forest reserves; expeditions to 6 mountains carried out; the process of re-categorization of CAs according to the new categories of the Biodiversity Conservation Law; the detailed mapping of CAs; and review of the boundaries of REM, GNP, PNAB, RNZ, PNG and RNC is under way.

Target 11B: activities were carried out on management plans in the CAs; and the creation of CGRN and community inspectors. For example: allocation of funding to CAs; creation of BIOFUND with the main objective of providing financial support; conclusion of new co-management contracts with international organizations; increased involvement of the private sector; construction of various infrastructures in CAs and various tour operators started with their operations in various CAs.

Target 12: Indicator-related activities were carried out on the rehabilitation of critical ecosystems; monitoring of turtles outside CAs; implementation of conservation activities for endangered species and approval of strategies for their conservation; expeditions carried out and species catalogued in the database and re-introduction of individuals of endangered species of wildlife. For example: reforestation of 1,438.67 ha of mangroves; replanting of mangroves with the involvement of communities; channelling about 118 million meticais to 805 beneficiary communities; reforestation

of about 4,140 hectares with native and exotic species; translocation of 1,223 animals to the CAs; seven monitoring programs for sea turtles; elaboration of conservation strategies for threatened species; carrying out of eight expeditions of flora.

Target 13: Activities were implemented in relation to the management plan for genetically endangered species; conservation and enhancement of genetically endangered species; institutions for conservation of genetic resources, and type of crop varieties and animal breeds resistant to drought and disease. For example: characterisation and harvesting of crops and release of drought- and disease-resistant crop varieties.

Target 14: Some activities related to the assessment of ecosystem services were carried out. For example, the payment scheme for ecosystem services is being integrated and it is intended to design a system adjusted to national conditions.

Target 15: Some activities related to the approval of legislation for compensation for the use of biodiversity were carried out; development and implementation of national methodologies for carbon assessment, and allometric methodologies and equations for some forest ecosystems were developed. For example: assessment of Four ecosystems in relation to carbon stock; approval of a legal framework for REDD+; various REDD+ projects take place in the country; offset metrics for the design of compensation legislation are being developed, etc.

Target 16: A number of activities have been undertaken to achieve the target. For example: preliminary review and data collection with the ultimate objective of integrating the Nagoya Protocol of the CBD into national biodiversity policies in Mozambique (by SECOSUD II); a database of marine organisms for taxonomic and biotechnology activities was created.

Target 17: Creation of institutions at provincial and district levels working, with sectoral plans of action on biodiversity. For example: the Government has produced and for mandatory implementation, the simplified matrix for integrating Cross-cutting Issues into Plans and Budgets.

Target 18: Capacity building was undertaken to strengthen and operationalize the CGRNs and establish CGRNs. For example: the project "Community Management and Conservation of Natural Resources in the Gilé and Pebane Districts" implemented by COSV; small-scale community conservation projects implemented by MozBio I and II; "transparency monitoring programme in natural resource management" carried out by Livaningo, establishment and operationalization of 289 CGRN.

Target 19: MozBio trained 87 technicians from ANAC, CAs and DNDR on the implementation of community projects. 166 women were trained in environmental matters for poverty reduction, adaptation and mitigation to climate change under the Environmental Education, Communication and Dissemination Programme.

Target 20: Activities were carried out on involvement in mobilizing funds for biodiversity conservation. For example, COMBO and BIOFUND have partnered with UNDP through the BIOFIN project; large scale financial contributions include World Bank funding through the Mozbio II project; the Millenium BIM and FNDS have recently signed a protocol creating a financing line for investments in Ecotourism projects; several multi and/or bilateral agreements have been signed with various partners, etc.

Section III contains information on the progress made towards achieving the national targets, as well as an assessment of national progress towards the Aichi Biodiversity Targets. During the first 3 years (2015-2017) of preparation for the implementation of the NBSAP, the development of monitoring and evaluation mechanisms at national, provincial, district and local levels was planned.No baseline was developed considering the time frame established for 2017. This section assesses the progress of each national target from 2015 onwards - year of strategy approval, as follows: thirteen targets are "*No significant changes*" (Targets 4, 6, 7, 8, 11A, 11B, 13, 14, 16, 17, 18, 19, 20); and eight targets are in "*Progress towards the target but at an insufficient rate*" (Targets 1, 2, 3, 5, 9, 10, 12, 15). This progress is justified by the fact that the implementation of the NBSAP is at an incipient stage, characterized by scarcity of qualified financial and human resources.
Although the legislation has made great progress in supporting conservation, with the approval and updating of various regulations, there are still many challenges in its implementation. It should be noted that all the fully achieved priority actions refer to the area of conservation of the components of biological diversity, the scope of the actions related to the sustainable use of the components of biological diversity being unsatisfactory.

Section IV aims to provide information on **progress towards the Aichi Global Biodiversity Targets**. The national targets were set based on the Aichi Global Targets and are based on the current state of knowledge of biodiversity and national capacity. The implementation of the NBSAP has provided support for achieving the Aichi targets, so the analysis presented in this report indicates that the country has satisfactorily achieved twelve of the 20 agreed Aichi targets (Targets 1, 2, 3, 4, 6, 7, 11,

14, 15, 16, 17 and 20) and the remaining eight targets (Targets 5, 8, 9, 10, 12, 13, 18 and 19) are on track towards the target but below expectations. Of the actions carried out in the country that contributed to the progress already registered under the Aichi targets, we highlight, for example:

- Increase the level of knowledge of the various sectors of society on biodiversity issues;
- Significant advances observed in biodiversity surveys;
- Very significant advances have been made in integrating biodiversity into national and local development and poverty reduction strategies;
- Recording of evidence linked to the legal environment favourable to the prevention, mitigation and compensation of environmental impacts and has also been observed in solid waste management;
- Implementation of initiatives to restrict the impacts of natural resource use;
- Reforestation, identification and mapping of critical ecosystems and consequent prevention of their degradation through the strengthening of protection measures;
- Approval of the fisheries master plan (2012-2019) and the fisheries law in 2013, Law 22/2013, which recognizes fisheries research as an area of support for fisheries management;
- Implementation of various initiatives aimed at reducing fires;
- Ratification of the "Protocol for the Protection of the Marine and Coastal Environment from Land-based Sources and Activities (LBSA Protocol);
- Approval of the National Strategy and Action Plan for Integrated Coastal Zone Management (2015-2020);
- Adaptive ecosystem management of ecosystems critically affected by climate change;
- Increased coverage of protected areas (land and marine);
- Reintroduction of various species of animals in REM, RNG, PNZ and PNG;
- Preparation of the NBSA 2015-2035;
- Creation of the BioFund and the FNDS to mobilize funds for biodiversity conservation;

Section V addresses similar plant conservation strategies or commitments in response to the **Global Strategy for Plant Conservation (EGPC)** and/or active plant conservation work through botanical garden networks or botanical collection institutions. To achieve the objectives, the Strategy has created 16 targets for plant conservation to be achieved by 2020. Although Mozambique does not have a specific Strategy for plant conservation, several initiatives have been established to promote the implementation of the EGCP. These plant conservation initiatives are incorporated into the

National Biodiversity Strategy and Action Plan 2015-2035. Among the established initiatives, the following stand out:

- Publication of plant data by Mozambican institutions on various online platforms;
- Evaluation and re-categorization of plant species;
- Implementation of botanical expeditions;
- Training in plant taxonomy;
- Mapping of ecosystems/habitats for the country and their assessment;
- Identification, evaluation and characterization of IPAs;
- Promotion of conservation agriculture, agroforestry systems, reforestation in order to reduce deforestation;
- Evaluation of the conservation status of plant species;
- Carrying out seed harvesting missions throughout the country to preserve the genetic diversity of plants;
- Dissemination of information and awareness on forest conservation measures and plant extraction, both at curricular and community levels;
- Development of ethnobotanical studies;

Section VI is intended to update the country's Biodiversity Profile. It provides a brief overview of the status and trends of biodiversity.

Mozambique has several ecological attributes that contribute to the country's food security and economy.

About 51% of the territory is covered by forests and 19% by woody formations. Forest exploitation has faced great challenges to maintain its sustainability due to the great demand driven by the international market. Between 2001 and 2016, the country lost 6.2% of its forest area and the volume of officially licensed timber grew from 212,711m^3 in 2013 to 255,492m^3 in 2017.

The fishing sector has increased its contribution to GDP from 3% in 2016 to 10.3% in 2018.

Regarding fauna, poaching has led to the decline of many species, for example the elephant population has been reduced by about 50% in the last six years and the rhino population is almost non-existent in the country. However, wildlife restoration programmes have been implemented in different CAs.

The variety of existing ecosystems encompasses a diversity of flora and fauna species, many of which are endemic to the region, but the conservation status of many ecosystems is critical. Still, the network of protected areas covers 26% of the entire national territory.

The level of knowledge of species diversity in the country remains low. However, it is estimated that there are 6,145 plant species (more than 300 species on the IUCN red list) and about 4,271 species of fauna (101 terrestrial species on the IUCN red list and threatened, and 41 marine species).

Population growth, urbanization, economic activities, governance, technology and innovation, and climate change have driven changes in biodiversity. The population has grown from around 22 million people in 2010 to around 28 million today. Urban expansion, among others, may have resulted in the duplication of requests for Land Use Titles (3,001 in 2011 to 7,008 in 2016); in the duplication of the automobile fleet (380,343 in 2010 to 698,814 in 2016), culminating in a strong pressure on biodiversity. In turn, the different productive sectors have led to considerable changes in natural ecosystems and biodiversity, which are still little known and reported. This coupled with illegal resource exploitation poses a major threat to biodiversity conservation in Mozambique.

Nevertheless, legal and political reforms made in the last three years in the forestry sector and in biodiversity conservation have gradually resulted in the strengthening of biodiversity conservation. Their integration into various policies and plans and programmes; the creation of CGRNs and community councils; the ratification of various conventions; the approval of different regulations; and the introduction of improvements to monitoring regulations may have positively affected conservation actions, reversing negative trends in biodiversity. Thanks to the implementation of these actions, the level of knowledge about biodiversity has been increasing; the main direct threats to biodiversity have been monitored; inspections and monitoring have improved and the main performance indicators of government action in this sector indicate remarkable progress.

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Acronyms

ABS	Access and benefit sharing
ABT	Aich Biodiversity Target
AFD	Agence Française de Developpement (French Development Agency)
ANAC	National Administration of Conservation Areas
AP	African Parks
APAIPS	Primeiras e Segundas Islands Environmental Protection Area
AQUA	National Agency for Environmental Quality Control
BCI	Commercial investment bank
BDPES	Balance of the Economic and Social Plan
BIM	International Bank of Mozambique
BIOFIN	Biodiversity Financing Initiative
BIOFUND	Foundation for Biodiversity Conservation
BPNR	Buffelskloof Private Nature
CA	Conservation Areas
CBD	Convention on Biological Diversity
CEAGRE	Center for Agricultural Studies and Natural Resource Management
CEC	Community Education Center
CGRN	Natural Resources Management Committee
CIDE	Centre for Research and Development in Ethnobotany
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNRF	National Center for Plant Genetic Resources
CONDES	National Council for Sustainable Development
COP	Conference of the parties
COSV	Cooperazione per lo Sviluppo (Development Cooperation)
DINAB	National Directorate of Environment
DINOTER	National Directorate of Territorial Planning
DNDR	National Directorate of Rural Development
EIA	Environmental Impact Assessment
ENAMMC	National Strategy for Adaptation and Mitigation of Climate Change
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FFEM	Fonds Français pour l'Environnement Mondial (French Global Environment Facility)
FNDS	National Sustainable Development Fund
FNI	National Research Fund
FSD	Financial Sector Deepening
GBIF	Global Biodiversity Information Facility
GDP	Gross Domestic Product
GGI	Greenhouse Gas Initiative
GSPC	Global Strategy for Plant Conservation
ha	Hectar
ICRAF	International Centre for Research in Agroforestry
IFC	International Finance Corporation

IGF	Fondation Internationale pour la Gestion de la Faune (International Foundation for Wildlife Management)
IIAM	Institute of Agricultural Research of Mozambique
IIP	National Institute of Fishery Research
INP	National Petroleum Institute
IPA	Important Plant Areas
iTC	Community Land Initiatives
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Areas
KFW	Kreditanstalt fuer Wiederaufbau
Km	Kilometers
m	Meters
MAGTAP	Mining and Gas Technical Assistance Project
MASA	Ministry of Agriculture and Food Security
MCTESTP	Ministry of Science and Technology, Higher Education and Professional Technical
MEF	Ministry of Economy and Finance
METT	Management Effectiveness Tracking Tool
MHN	Natural History Museum
MICOA	Ministry for Coordination of Environmental Affairs
MICTUR	Ministry of Culture and Tourism
MIMAIP	Ministry of Sea, Inland Waters and Fisheries
MIREME	Ministry of Mineral Resources and Energy
MISAU	Ministry of Health
MITADER	Ministry of Land, Environment and Rural Development
MOMS	Management Orientated Monitoring System
MOPHRH	Ministry of Public Works, Housing and Water Resources
MOZBIO	Mozambican Biodiversity
MRV	Measuring, Reporting and Verification
NBSAP	National Biodiversity Strategy and Action Plan
CBO	Community Based Organization
NGO	Non-governmental organization
PARPA	Poverty Reduction Plan
OSOL	Our Sea, Our Life
PDD	District Development Plan
PDUT	Land Use Development Plan
PECODA	Environmental Education, Communication and Disclosure Program
PEDSA	Strategic Plan for the Development of the Agricultural
PES	Economic and Social Plan
PESOD	Economic, Social and District Budget Plan
PME	Small and Medium Company
PNDT	National Plan for Territorial Development
PNG	Gorongosa National Park
PNL	Limpopo National Park
PNQ	Quirimbas National Park
PNZ	Zinave National Park
POA	Annual Operating Plan

PPF	Peace Parks Foundation
PQG	Government Plan
RADEZA	Network for Environment and Community Development in Zambezia
RDB	Red data book
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REIA	Environmental Impact Study Report
REM	Maputo Special Reserve
RNB	Banhine National Reserve
RNC	Chimanimani National Reserve
RNG	Gilé National Reserve
RNM	Marromeu National Reserve
RNN	Niassa National Reserve
RNP	Pomene National Reserve
RPMPO	Ponta do Ouro Marine Partial Reserve
SANBI	South African National Biodiversity Institute
SDAE	District Economic Activity Service
SDG	Sustainable Development Goal
SPEED+	Supporting the Policy Environment for Economic Development
TFCA	Tranfrontier Conservation Areas
UCAMA	Manica Peasant Union
UEM	Eduardo Mondlane University
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

INTRODUCTION

Biodiversity currently plays a key role in a healthy economic development; it contributes to poverty reduction and human well-being, thereby ensuring sustainable development (MITADER, 2015).

Many countries have made efforts to ensure the conservation of their biological heritage. In this context, during the World Summit on Environment and Sustainable Development - Rio Summit in 1992, 156 countries adopted the Convention on Biological Diversity (CBD). At present, the CBD has 196 Parties (https://www.cbd.int/).

CBD was the first worldwide agreement on the conservation and sustainable use of all components of biodiversity, including genetic resources, species and ecosystems (www.wwf.org.mz). Mozambique ratified the CBD in August 1994 by the Resolution 2/94 of 24 August and committed to achieving a significant reduction in the rate of biological diversity loss at national level (MICOA, 2003).

In the light of CBD Article 6, signatory countries are required to develop a National Biodiversity Conservation Strategy and Action Plan (NBSAP). This document serves as a global and national framework for the implementation of the Convention's Objectives. Mozambique formulated its first NBSAP in 2000 for the period 2003-2010 (MITADER, 2015; MICOA, 2014). In 2015, the review and updating process took place, culminating in the elaboration of the NBSAP for the period 2015-2035. In addition to the strategy, signatory countries shall provide national reports to the Conference of the Parties on measures taken to implement them and their effectiveness in meeting the objectives of the Convention (https://www.cbd.int/). In this context, Mozambique has so far submitted five reports, the last of which in 2014.

This report is an update of the Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique. This report will focus on changes to biodiversity and actions taken since the Strategic Biodiversity Plan 2015-2035 was adopted, with particular emphasis on changes since the last national report was submitted. The report also briefly outlines the progress made and the effectiveness of biodiversity policies and legislation related to the 20 Aichi Biodiversity Targets and the Sustainable Development Goals.

It is noteworthy that NBSAP was finalized in 2015 with a term of 20 years, and a 3-year period (2015-2017) was set for the creation of the fundamental bases for its full implementation (legislation, knowledge and capacity), in recognition of gaps in knowledge, human and financial capacity, and integration in sectoral plans. Thus, 2017 was considered the reference year for the establishment of

national targets. Therefore, NBSAP has been in place for about 3 years, with 17 left to complete. As such, most of the evaluated targets are not yet achieved as NBSAP implementation is at an early stage and is characterized by a shortage of qualified financial, technical and human resources.

This delay in starting the review of the strategy means that its time horizon is not aligned with the 2011-2020 Global Strategy and the Aichi Biodiversity Targets. Thus, this report will take into account this time disparity when assessing the respective measures implemented by the country.

This report is the result of information from various official government documents, reports from non-governmental organizations, websites and official biodiversity links due to the lack of a biodiversity monitoring system that provides relevant information in a systematic manner, as detailed in section III. The structure adopted for the report was that presented by CBD at the Cancun meeting in 2016 - "Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity". Accordingly, the report is divided into six (6) sections:

I. Information on the targets to be achieved at the national level;

II. Implementation measures taken, assessment of their effectiveness, associated obstacles and scientific and technical needs to achieve national targets;

III. Assessment of progress toward each national target;

IV. Description of the national contribution to the achievement of each global Aichi biodiversity target;

V. Description of the national contribution to the achievement of the targets of the Global Strategy for Plant Conservation;

VI. Updated biodiversity country profile.

Section I contains information on national targets that the country has adopted in line with the Global Strategic Biodiversity Plan 2011-2020. The section includes aspects such as the rationale for the target, that is, the challenges that the country faces in relation to a particular aspect, the achievements, and the aspirations regarding that same aspect, which resulted in the elaboration of the target; and how the target relates to the Aichi Biodiversity Targets and the Sustainable Development Goals.The targets reported in this section were used in other sections of the report.

Section II presents information on the main steps taken by the country to implement the Strategy and Action Plan for the Conservation of Biological Diversity in Mozambique (NBSAP) and the achievement of its targets.

Section III contains information on progress towards national targets, as well as an assessment of national progress towards the Aichi Biodiversity Targets.

Section IV aims to present information on progress towards the Aichi Global Biodiversity Targets. This section relates the progress made at national level to the Aichi Biodiversity Targets. The information collected through this section makes it possible to prepare an analysis/synthesis of the contributions of national, regional and other actions to overall targets. Here, we describe how and to what extent Mozambique contributed to the achievement of a certain Aichi Biodiversity Target and summarizes the evidence used to support this description.

Section V addresses plant conservation strategies or commitments in response to the Global Strategy for Plant Conservation (GSPC) and/or active plant conservation work through botanical garden networks or botanical collections institutions.

Section VI is intended to update the country's Biodiversity Profile. It provides a brief overview of the situation and trends in biodiversity. The status and trends of biodiversity, including biodiversity benefits and ecosystem services and functions, are presented here.

SECTION I: INFORMATION ON TARGETS BEING PURSUED AT THE NATIONAL LEVEL

For the elaboration of the NBSAP, the various key sectors that integrate biodiversity conservation issues into their activities (including the private sector) were identified for their mandates and areas of intervention. Some of these actors were consulted and participated in the process of defining the interventions postulated in the strategy.

The current NBSAP (2015-2035) results from a revision of the 1st NBSAP (2003-2012) to align with the postulates of the 2011-2020 Global Strategic Plan and Aichi Biodiversity Targets. The plan addresses biodiversity issues considering synergies with other important instruments such as the National Climate Change Adaptation and Mitigation Strategy and the Drought and Desertification Action Plan.

The Ministry of Land, Environment and Rural Development (MITADER) coordinates all planned activities, but with all key sectors integrating biodiversity issues into their activities.

From NBSAP, 4 national strategic objectives can be extracted in line with those defined by the Global Strategic Biodiversity Plan. For each objective national targets were developed, totaling 21 targets. The relevant indicators defined for each target are systematically integrated in the 2015 - 2019 Government Plan (PQG); Annual Economic and social plans (PES) and cross-sectoral plans as well as District Development Plans (PDD) and Economic, Social and District Budget Plan (PESOD).

Strategic Objective	Designation	Matching Target
A	Reduce the direct and indirect causes of biodiversity degradation and loss.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
B	Improve the conservation status of biodiversity by safeguarding the diversity of ecosystems, habitats, species and genes.	11A, 11B, 12, 13
C	Improve sharing of biodiversity benefits and ecosystem services for all sectors of government and society.	14, 15, 16
D	Improve implementation through participatory planning, knowledge management and capacity building.	17, 18, 19, 20

For information on this chapter, see the following documents: MITADER. (2015). National Strategy and Action Plan of Biological Diversity of Mozambique (2015-2035); Convention on Biological Diversity (CBD) (2010). Strategic Plan for biodiversity - 10th Conference of the Parties to the CBD, Nagoya; United

Nations (2015). Transforming our World: The 2030 Agenda for Sustainable Development; and the Biodiversity Unit can also be consulted through MITADER's National Environment Directorate (DINAB).

The rationale, level of application, relevance of the target, relation to Aichi Biodiversity Targets, as well as other relevant information will be described below for each national target:

Target 1: By 2020, increase by 30% the level of awareness of the Mozambican population about the values of biodiversity and the impacts that human activity can cause.

Rationale for the National Target

Most of the Mozambican population is aware, at various levels, albeit intrinsically, of the values of biodiversity. However, knowledge and awareness of the effects that human activity can have on biodiversity is still incipiente. Therefore, it is important to recognize the intrinsic relationship between local communities and biodiversity, continually threatened by poverty levels and the lack of alternatives for livelihood and income. It is also important to recognize existing environmental awareness initiatives by various governmental (eg: MITADER through PECODA) and non-governmental institutions. In this regard, campaigns to promote a change in attitude should continue to reach a wider range of actors, including primary, secondary and higher education institutions, the media, local, district, provincial and central government authorities, decision makers, Non-Governmental Organizations (NGO) and local communities. Particular attention should be paid to private operators, who, driven by short and medium term objectives, may not be aware of the value and influence of long term biodiversity. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with Sustainable Development Goal (SDGs) 4 and 12.

Level of Application

National

Relevance of the National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 18

Other ABT related: targets n^{o} 1, 2, 3 and 4

Target 2: By 2020, there should be a better understanding of the economic, social and ecological value of biodiversity to enable better integration into decision-making and management.

Rationale for the National Target

At present, the integration of biodiversity issues into national and local development strategies as well as national accounts is hampered by the lack of quantification of the real economic, social and ecological value of biodiversity. Particular focus should be on applied research driven by the need of knowledge on the real value of key ecosystem goods and services (energy, timber, honey, berries, microorganisms, and protection services), the contribution of biodiversity to the country's development, and valorization of less used species.

This should obviously ensure an efficient data and information management and archiving system, including an operational biodiversity database. The establishment and maintenance of communication mechanisms between researchers and decision makers is important and a communication platform through the National Biodiversity Unit should be promoted.

It should serve to strengthen dialogue and communication, and thus facilitate the integration of biodiversity aspects into decision making. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 9, 11, 13, 14, 15 and 17.

Level of Application

National/Regional

Relevance of the National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 2

Other ABT related: targets n^{o} 1, 4, 5 and 6

Target 3: By 2025, effectively adopt and implement policies and legal instruments to prevent, mitigate and offset the impacts of human activities that may cause biodiversity degradation.

Rationale for the National Target

In the current context in which the Government of Mozambique is focusing on agriculture and forestry, mining, infrastructure development, oil and gas, fisheries, energy and tourism which may have serious effects on biodiversity, it is particularly important to ensure that Environmental Impact Studies (EIAs) for

development projects effectively address biodiversity issues, including aspects of compensation; conduct strategic environmental assessments of policies and programs; ensure compliance with existing instruments and policies by monitoring environmental management, control and inspection plans; manage waste (including pollution) at all levels. In addition, biodiversity loss due to economic development must be adequately compensated, so setting the value for biodiversity offset should be a national bet. Thus, actions aimed at determining compensation levels and defining management and decision-making measures in these areas are relevant. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 2, 8, 9, 11, 12, 14 and 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 3, 7 and 8

Other ABT related: targets n° 12 and 17

Target 4*:* By 2025, define environmentally sustainable production and consumption systems established on the basis of sustainable practices and with appropriate investments.

Rationale for the National Target

The main response to the current unsustainable situation in consumption and production should be the promotion of sustainable use practices in order to reduce the pressure on biodiversity and allow development activities within ecological limits. However, the lack of knowledge about the productive capacity of the main ecosystems limits the definition of sustainable management practices. Thus, it is suggested that a permanent improvement of knowledge about ecological limits of use, and some management practices be identified, promoted and implemented. Particular focus should be on the use of floristic and wildlife resources in key ecosystems in order to (i) increase production and yield; (ii) promote the use of alternative species to reduce pressure on some species; (iii) support / leverage small and medium enterprises that place less pressure on biodiversity; (iv) promote the sustainable use of alternative energies, among others. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 2, 8, 9, 11, 12, 14 and 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 4

Other ABT related: targets n° 2, 3, 4, 5, 7, 8 and 14

Target 5: By 2035, reduce by at least 20% the area of critical ecosystems or those providing essential goods and services under degradation / fragmentation.

Rationale for the National Target

Critical ecosystems in terms of their conservation status deserve special attention in terms of reducing or removing disturbances. At the same time, it is important that the degradation of the country's main biodiversity hotspots be reduced. Reducing the rate of degradation requires the development and implementation of management plans and, where not possible, evaluations to establish baselines for monitoring biodiversity status and possible trends. Special attention should be given to unprotected areas where formally no management and monitoring activities exist. In these, particular attention should be given to promoting the involvement of populations and / or groups directly dependent on ecosystems through capacity building and incentives for ecosystem conservation and restoration activities. This target is in line with target 12. This target is also recognized by the CBD and is in alignment with SDGs 5, 7, 9, 10, 11, 13, 14 and 15.

Level of Application

National/ Regional

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 5

Other ABT related: targets n° 6, 8, 10 and 12

Target 6: By 2025, have at least 30% of habitats of endemic and / or endangered floristic and faunal species with established management strategies.

Rationale for the National Target

The species diversity of an ecosystem determines to some extent the resilience to change and disturbance. At present, it is estimated that in Mozambique about 1% of these species are known, described and efficiently conserved. An improvement in the conservation status of existing species first requires an assessment and /or updating of their current status and the development of species-specific management plans and conservation strategies. Improvement of knowledge about these species should entail the collection of material relevant to their identification and detailed description, the assessment of the current stocks of the species in their natural habitat, as well as the possibility of enhancing and maintaining stocks through conservation measures in situ and ex situ. The target is also recognized by the CBD and is in alignment with SDGs 1, 2, 3, 6, 7, 8, 9, 11, 12, 14 and 15.

Level of Application

National/ Regional

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 6

Other ABT related: targets n^{o} 4, 5, 8, 10 and 12

Target 7: By 2020, catalog / systematize, disseminate and encourage sustainable management practices in agriculture, livestock, fisheries, forests and wildlife.

Rationale for the National Target

Mozambique's socio-economic development is clearly dependent on the agrarian sector (agriculture, forests, wildlife, livestock and fisheries), so the promotion of sustainable management practices in this sector is extremely important. These practices have been carried out by private or local initiatives without proper assessment of implementation levels and their efficiency in biodiversity conservation. It is also limited to how these practices can be disseminated, and mainly encouraged to promote greater involvement of different stakeholders in the adoption of good management practices. The definition of areas of value for the conservation of biodiversity in areas of farm, forest, fish, etc. should be one of the focuses in the development of the agrarian sector in the country. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 1, 2, 3, 6, 7, 8, 9, 11, 12, 14 and 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 7

Other ABT related: targets n° 4, 5, 6 and 7

Target 8: By 2025, reduce pollution by at least 20% of critically polluted ecosystems.

Rationale for the National Target

This target is in line with target 3. The expansion of major economic activities in various sectors, such as commercial agriculture, mining, oil and gas, industry, infrastructure development, urban expansion, among others, is recognized. Although these investments are subject to the Environmental Impact Assessment (EIA) process, it is recognized that the capacity to monitor and examine the impacts of these activities is deficient, as well as the limited incorporation of sustainable environmental management practices into the companies' activities. Improving awareness of current levels of soil, air and water pollution (inland and marine) is crucial for the definition of concrete pollution abatement measures. Large urban centers should deserve special attention given their rapid expansion, which is not always accompanied by appropriate solid waste management and wastewater treatment practices. In this context, the promotion of green behavior by urban populations is of utmost importance. In areas identified as polluted, pollution reduction and remediation plans should be designed, punishment measures (fees and fines) and, where appropriate, sustainable environmental management practices should be promoted. International agreements with neighboring countries should be strengthened and implemented in order to reduce pollution in international waters. This goal is also recognized by the CBD and is in alignment with SDGs 1, 2, 3, 6, 7, 8, 9, 11, 12, 14 and 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 8

Other ABT related: targets n° 3 and 4

Target 9: By 2025, reduce the area of invasive species by 10% and establish / implement strategies for managing their impacts.

Rationale for the National Target

Many species, including aquatic and terrestrial plants, insects and birds, have been introduced to Mozambique over the years, most of them deliberately. Some of these species cause imbalances in the ecosystems where they occur, which may lead to the extinction of other species and probably a reduction in genetic diversity. However, existing studies such as the knowledge of the ecology of these species and the routes through which they enter ecosystems are still incipient for a better estimate of species invasion rate, which limits the development of eradication plans or control of exotic invasive species. The difficulty is further associated with the weak implementation of the legal framework that supports activity on alien invasive species. This goal is also recognized by the CBD and is in alignment with SDG 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 9

Other ABT related: target n^{o} 4

Target 10: By 2035, place at least 20% of the area of ecosystems critically affected by climate change under adaptive ecosystem management.

Rationale for the National Target

Mozambique is vulnerable to climate change due to various natural and anthropogenic factors. The consequences, although still poorly understood, include, but are not limited to, alteration and / or loss of ecosystems and, consequently, the well-being of populations dependent on the goods and services provided by ecosystems. Thus, actions are needed to reduce the negative impact of climate change and enable local communities to adapt. These include, among others, the use of sustainable resource use practices (advocated in target 7). In this context, this strategy and action plan should be implemented in conjunction with the National Climate Change Strategy (ENMC), which identifies strategic actions on biodiversity and ecosystems in the context of climate change. The goal is also recognized by the CBD and

is in alignment with SDGs 6, 11, 14 and 15.

Level of Application

National

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 10

Other ABT related: targets n° 12, 14 and 19

Target 11A: By 2025, assess and redefine 75% of current conservation areas, and formally include 100% of afromontane endemism centers (altitude> 1500m) and at least 5% of marine ecosystems in conservation areas.

Rationale for the National Target

The coverage of the national system of conservation areas is estimated at about 26% of the national territory. However, the true state of some of these conservation areas is not known to justify their maintenance as a protected area. On the other hand, several other areas were being created to include other ecosystems (mainly marine and coastal). Effective management requires a complete overhaul of the current national system through knowledge of key protected habitats and their national representation, redefining the boundaries of some areas, and defining the need to maintain certain conservation areas. Particular attention should also be paid to biodiversity conservation issues in areas not formally recognized as conservation areas but whose status justifies such as mountain ecosystems, Cheringoma-Marromeu complex miombo forests, as well as other formally exploited areas (forest concessions, farm, pasture, etc.). In these, community management actions should be undertaken to promote the sustainable use of biodiversity. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 14 6, 11, 14 and 15.

Level of Application

National/ Regional

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n° 11

Other ABT related: targets n° 2, 5, 6 and 12

Target 11B: By 2030 effectively and equitably manage at least 50% of conservation areas.

Rationale for the National Target

The management system of conservation areas in the country is currently poor. Effective management presupposes the strengthening of human capacity and infrastructure, mobilization of financial resources, among others. On the other hand, it is important to adapt management systems, considering that the conservation areas in the country have human populations within their limits and surroundings, except for the Gilé National Reserve. Management focus should be on improving the conservation of endemic and endangered species through *in-situ* strategies on critical and climate-sensitive ecosystems, and on developing sustainable and participatory management programs, restoring conservation areas and valuing biodiversity in conservation areas. Consideration should be given to the design and implementation of access and benefit-sharing schemes for communities living in and around conservation areas, effectively contributing to the conservation and improvement of communities' living conditions. This target is also recognized by the CBD and is in alignment with SDGs 6, 11, 14 and 15.

Level of Application

National/ Regional

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 11

Other ABT related: targets n^{o} 2, 4, 6, 7 and 10

Target 12: By 2030, rehabilitate at least 15% of degraded ecosystems / habitats, restore their biodiversity, and ensure their sustainability, with a view to mitigating the effects of climate change and combating desertification.

Rationale for the National Target

This target is directly related to target 5. Over the years, a number of ecosystems, including those located within the boundaries of conservation areas, have experienced different levels of degradation and this situation is likely to remain in the coming years if concrete measures to rehabilitate these ecosystems are not implemented. Ecosystem rehabilitation ensures better adaptation to climate change, as well as contributing to the combat to desertification. To reverse this situation it is important that degraded

ecosystems are known (mapped and evaluated for their status) so that priorities are set for the development of concrete ecosystem rehabilitation programs. In this process, particular focus should be given to critical ecosystems (mangroves, coral reefs, miombo, etc.), as well as areas of high human intervention (agriculture, forests, pastures, mining, urbanization and those subject to desertification). The implementation of rehabilitation programs must take into account ecological and socio-economic objectives, so active participation of local communities and decentralization of decision making are important. The target has been adopted to meet this need, which is also recognized by the CBD and is in alignment with SDGs 6, 11, 14 and 15.

Level of Application

National/ Regional

Relevance of National Targets to Aichi Biodiversity Targets (ABT)

Main ABT related: target n^{o} 2

Other ABT related: targets n^{o} 5, 6, 7 and 10

Target 13: By 2030, complete the characterization and cataloging the genetic diversity of cultivated plants and domestic animals and their threatened ancestors in natural habitats, including species of socio-economic and/or cultural value and defining strategies for their conservation.

Rationale for the National Target

This target aims to ensure greater attention to genetic resources, their values and their protection. Since the current knowledge on the subject is still limited, priority actions should focus on the inventory of species, genetic characterization and cataloging / mapping of threat levels, the critical points of agro-biodiversity, among others. For priority species, should develop and implement sustainable management programs, to prevent genetic erosion. Species with marketable potential should also be recognized, described and valued, and its cultivation promoted.

This Target is also recognized by the CBD and is aligned with SDGs 2 and 3.

Level of Application

National

Relevance of national targets to Aichi biodiversity targets (ABT)

Main ABT related: target n° 13

Other ABT related: targets n° 2, 4, 6 and 16

Target 14*:* By 2030, create and integrate into the national accounts a payment mechanism for environmental goods and services to promote fair, equitable and sustainable use of biological diversity.

Rationale for the National Target

This target should be tackled together with the target 2. The economic value of biodiversity is important in accounting for ecosystem services, as a contribution to the country's development. This should focus not only on the resources that are currently most used, but also in those having marketing potential. Being an emerging approach it requires capacity building at the level of planning, as well as an improvement of the legal framework, not only in establishing appropriate mechanisms, but also in their enforcement (more details in target 16).

This target also requires the development and implementation of a comprehensive program of valuation, able to generate information on the economic potential of biodiversity. In this context, the development of tools for accounting of biodiversity and promoting its marketing are of high importance.

This Target is recognized by the CBD and is aligned with SDGs 5, 6, 7, 8, 9, 11, 13, 14 e 15.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n° 14

Other ABT related: targets n° 2 and 7.

Target 15*:* By 2025, knowing and strengthen the contribution of biodiversity to increase the stock of carbon in order to mitigate and adapt to climate change.

Rationale for the National Target

This target should be tackled together with the target 12 on the rehabilitation of ecosystems, since it seeks to ensure greater benefits derived from conservation efforts. The implementation of the REDD+

mechanism in Mozambique should be accelerated and strengthened in order to reduce losses due to climate change, and increase benefits of conservation and restoration of ecosystems.

With REDD+ mechanism will be established a carbon market. Although this international market is emerging, it is necessary the development of national methods or testing and adoption of international methods of assessment and carbon accounting for the different ecosystems. To this end, it is assumed that REDD+ pilot projects are developed and implemented, focusing on the ecosystems with potential to generate this environmental service (eg, mountain forests and biodiversity *hotspot*). It also envisaged the promotion of voluntary compensation mechanisms for the use of biodiversity by the private sector.

This Target is recognized by the CBD and is aligned with SDGs 6, 7, 9, 10, 11, 13, 14 e 15.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n^{o} 15

Other ABT related: targets n^{o} 3 and 10.

Target 16: By 2020, implement national legislation on access and benefit sharing arising from the use of biodiversity and genetic resources.

Rationale for the National Target

With the effective implementation of legislation on access and resources sharing, is intended to be guaranteed the compensation for the use of biodiversity, and valued the traditional knowledge and its contribution to improving the livelihoods of local communities. Although Mozambique has ratified the *Nagoya Protocol* and approved the *Regulation on Access and Benefit Sharing resulting from Genetic Resources and Associated Traditional Knowledge* (Decree 19/2007 of 9 August), there is still the need to adapt the instrument to respond fully to the Nagoya Protocol, and improve the implementation of this instrument in coordination with others who are relevant. The development of a mechanism for access and benefit sharing should be established, taking into account the targets 14 and 15 on the payment for environmental services. For this is important, among other things, empowering local communities and the private sector to promote their participation in compensation mechanisms from biodiversity.

This Target is recognized by the CBD and is aligned with SDGs 3, 8 and 15.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n° 16

Other ABT related: none.

Target 17*:* By 2020, the sectors involved in biodiversity issues must develop, based on national targets, sectoral goals, integrate them into sectoral plans, and start implement it.

Rationale for the National Target

This target aims to ensure that the priorities for biodiversity conservation, established in this strategy, are integrated into development strategies and sectoral plans of key sectors for the development of the country: (i) energy; (ii) mining; (iii) agriculture, forestry, wildlife; (iv) fisheries; (v) tourism; (vi) public works and housing; and (vii) water, and that the planning is carried out in a decentralized manner. This requires consistency with national targets and the revision of the strategies/sectoral plans in order to ensure effective mainstreaming of biodiversity in budgetary planning, and to ensure the implementation of projects and activities related to biodiversity conservation.

This Target is recognized by the CBD and is aligned with SDGs 2, 8, 9, 11, 12, 14 and 15.

Level of application

National/ Regional

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n° 17

Other ABT related: all

Target 18: By 2035, value and respect the knowledge and traditional uses of biodiversity, in accordance with national legislation.

Rationale for the National Target

In conjunction with the target 16, this seeks to respect regarding to ownership of traditional knowledge

and ensure its contribution to the improvement of local communities' livelihoods.

This Target is recognized by the CBD and is aligned with SDGs 2, 3, 5 and 10.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n° 18

Other ABT related: 1 and 2

Target 19: By 2035, strengthen the capacity of key stakeholders and improve the integration of gender issues, to enable the effective implementation of national targets.

Rationale for the National Target

This target aims to address the cross-cutting issues of training, capacity building and gender. Recognizes the need for strengthening national capacity to boost the role of sectors in achieving national targets by 2035. The target groups for training should include key government institutions, productive/key private sector, NGOs, local and traditional leaders, and organizations and community institutions.

To ensure the planning, implementation and full monitoring, it is important the generation of knowledge and the development of tools for integrating gender issues. This implies the collection and production of knowledge on how decision-making about biodiversity affects differently the needs of different groups and their livelihoods, the development of tools for integrating gender issues in national and sector projects and activities, the effective integration of gender issues in main legal instruments related to biodiversity and the possible use of opportunities of national reforms, such as REDD+, ABS, ENMC, etc. to integrate gender issues.

This Target is recognized by the CBD and is aligned with SDGs 9, 10, 13, 14, 15 and 17.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n° 4

Other ABT related: none

Target 20: By 2020, strengthen national and international partnerships and establish innovative mechanisms for financing and support biodiversity programs.

Rationale for the National Target

The partnership between the different stakeholders is central to the implementation of the activities identified in this strategy. This requires the creation of national and sectoral innovative strategies for resource mobilization and investment. For this it is important to develop plans to mobilize resources for biodiversity, mobilizing partners for the implementation, planning and budgeting that includes biodiversity, establishing benchmarks for budgeting and mobilizing investment in programs to conserve biodiversity, which are multilateral, bilateral and national, as required by decision X / 3 of the CBD COP- on resource mobilization.

This Target is recognized by the CBD and is aligned with SDGs 9, 10, 13, 14, 15 and 17.

Level of application

National

Relevance of national targets to Aichi Biodiversity targets (ABT)

Main ABT related: target n^{o} 20

Other ABT related: none

SECTION II: IMPLEMENTED MEASURES, ASSESSMENT OF THEIR EFFECTIVENESS, ASSOCIATED OBSTACLES AND SCIENTIFIC AND TECHNICAL NEEDS TO ACHIEVE NATIONAL TARGETS

This section describes the measures implemented to achieve the national targets presented in the NBSAP, their effectiveness in bringing about change, and key obstacles in their lifetime (2015-2035). For each target specific actions and indicators for their achievement were defined. In this section, measures refer to the activities undertaken to respond to such indicators.

The effectiveness of the measures taken was assessed through an analysis of the activities carried out during the period in question, thus assessing the degree of compliance with the indicators proposed in the NBSAP. This took into account the national representativeness, the visible results of its implementation as well as the timeframe for producing results. This analysis represents the opinion and point of view of the authors, followed by validation through stakeholder consultation, and was made taking into account the adequacy of the proposed indicators to reach the goal; the response level of activities for each indicator; the time frame for carrying out these activities; the appropriateness of the methodology used for the implementation of the activities; the ability of activities undertaken to induce change; as well as the scope of the activities carried out.

Thus, they were classified according to the scale proposed by COP in:

Effective - This measure is considered to have completely met or surpassed its anticipated results in the specified timeframe.

Partially effective - Progress towards the stated objective has begun however the complete desired outcome has not yet been achieved. This could be due to time lags between when the measure was taken and when its effects become visible. It could also be due to national circumstances creating delays or challenges to the implementation of the measure. Other possible reasons for a measure being given this assessment are that the measure has not been implemented at the scale necessary or at the appropriate institutional level.

Ineffective - This measure has not resulted in any change to the issue being addressed. A measure with this assessment has not brought about the anticipated results as the measure has been rendered ineffective as a result of other national factors. This could be because additional national actions have been taken, perhaps in other sectors, which have prevented the action from reaching its anticipated results. It could also be the result of a change in national circumstances or conditions.

Unknown - the effectiveness of the measure is unknown. Reasons for this could include that no information is available to be able to assess progress, or because the measure has only recently been taken and its effectiveness is not yet clear.

The linkages of the NBSAP targets with Aichi's biodiversity targets and the Sustainable Development Goals have already been described in section I.

Target 1: By 2020, increase by 30% the level of awareness of the Mozambican population about the values of biodiversity and the impacts that human activity can cause.

Measure taken to contribute to NBSAP implementation

To achieve target 1 of NBSAP Strategic Objective A, the Mozambican Government has developed five priority actions and ten indicators on awareness raising; school programs; training and awareness; private sector involvement in the production of awareness raising material; conducting awareness events; involvement of community members; and private sector investment for capacity building on biodiversity. Overall, of the ten indicators no activities were implemented in relation to one indicator.

Partly, some activities have been implemented in the production of awareness-raising material and awareness-raising events, in which some members of different urban and rural communities have participated. For example, some environmental awareness and education activities have been implemented by BIOFUND (Biodiversity Conservation Foundation) which annually hosts biodiversity fairs that reach thousands of people, with an emphasis on students, teachers, government institutions, NGOs, the private sector and academic institutions. The fairs include photographic exhibition, leaflets, documentaries and lectures on the value of biodiversity and the need for its conservation. Since 2015, 5 fairs have been held in the provinces of Maputo, Gaza, Zambezia, Inhambane, and Manica, reaching about 15,000 people. The Community Education Center (CEC) of the Gorongosa National Park (PNG) has undertaken a number of activities, including visits by students, teachers and community members to the CEC and the park itself. It is estimated that in 2016 alone, CEC's environmental education and awareness campaigns reached over 21,000 people, addressing the importance of sustainable management of natural resources and prevention and control of uncontrolled burning, one of the main threats to biodiversity in Mozambique. Likewise, in 2016 a Community Education Center was created in the Bazaruto Archipelago National Park (PNAB) to promote environmental education for the preservation of marine and coastal biodiversity. The Niassa National Reserve (RNN) has been conducting awareness campaigns on burning and the conservation of natural resources. The Mariri Education Center in the RNN was established in 2015 and each year more than 100 children and teachers from Mecula district are invited to participate in training and environment sessions. The MOZBIO project boosted environmental education in schools and communities. WWF undertakes

community environmental education campaigns through the creation and capacity building of community natural resource committees and community fisheries councils. The Natural History Museum's environmental education activities annually reach thousands of children and teenagers visiting this institution, with 73,517 visitors registered from 2016 to 2018. The “Let´s do it Mozambique” initiative periodically organizes environmental clean-up campaigns in different parts of the country, as well as promoting environmental awareness and education through social networks. The exact number of reached people is not known, but it is estimated that over 20,000 people have been reached to date. In Zambezia Province, COSV has been conducting environmental education campaigns in schools in the Gilé and Pebane districts, and has also produced an environmental education manual; it has implemented various environmental awareness initiatives in the communities and promoted the exchange of poaching instruments for agricultural tools. Similarly, in the same province, ETC TERRA and RADEZA are conducting awareness campaigns on cold fires to reduce the number of fires, and raising awareness among local communities by mobilizing 240 members grouped within 12 Natural Resource Management Committees.

In the context of wildlife protection, benefiting the community and development, the KHETHA program (implemented by WWF and funded by USAID) aims primarily at education and environmental awareness of the importance of combating illegal trade in species as a crime and the potential of this combat to improve the living conditions of local communities. Significant progress has been made in meeting awareness-raising indicators and school programs. In this context, more than 60 awareness-raising programs were carried out (Radio Mozambique, Community Radios, TV stations, films and documentaries in local and Portuguese language on good environmental practices. In 2016 1,125 clubs and environmental centers were created to address issues related to environmental issues and biodiversity conservation in schools across the country. Issues of biodiversity conservation are included in school curricula at various levels, from primary to higher education. Higher education institutions have increased the number of undergraduate and postgraduate courses relevant to biodiversity conservation.

Evaluation of the effectiveness of implemented measures

The effectiveness of the measures taken is unknown.

While appropriate steps have been taken to make changes in the recognition of biodiversity values, the indicators used to measure these changes remain far from expected. For example, although awareness raising has increased in recent years, uncontrolled burning levels remain high, poaching has increased,

deforestation has not significantly decreased, and poor waste management continues. This is because changing the mindset of the population requires a long time for the results of this change to become visible in nature.

Relevant websites, web links and files

http://www.biofund.org.mz/biblioteca_virtual/;

http://www.biofund.org.mz/veja-aqui-os-videos-da-exposicao-itinerante-de-biodiversidade-2015-2018/

http://www.biofund.org.mz;

https://www.facebook.com/mhnm1913/;

http://www.fnds.gov.mz/index.php/pt/;

http://www.ine.gov.mz/;

http://www.mef.gov.mz/;

http://www.mined.gov.mz/;

http://www.mitader.gov.mz/?page_id=9;

http://www.mitess.gov.mz/;

http://www.oceanrevolution.org;

http://www. rateltrust.org/education/mariri-environmental-centre/;

MEF. (2015-2018). Balanço do Plano Económico e Social. Moçambique;

MEF. (2015-2018). Plano Económico e Social. Moçambique;

Museu de História Natural. Relatórios Anuais. 2016/2017/2018.

Programa Quinquenal do Governo (2015-2019);

Obstacles and scientific and technical needs related to the implemented measures

Despite the progress made, there is a continuing need to raise awareness among the Mozambican population about the value of biodiversity and the impacts that human activities can have, as well as to improve private sector participation in order to increase its contribution to reducing direct and indirect causes of biodiversity loss and degradation.

Mozambique has at least 20 national languages and about 80% of the population lives in rural areas and the illiteracy rate is around 39%. This challenges the development of appropriate strategies and materials to increase the reach of program beneficiaries. Also, sharing best practices on the value of biodiversity developed in a particular region and in a specific language may result in exclusion. The level of knowledge of biodiversity in Mozambique is still deficient and especially of some taxonomic groups

such as herpetology and invasive species. However, in the last five years expeditions have been made to Chimanimani National Reserve and Gorongosa National Park which included the survey of herpetofauna and entomofauna, resulting in the identification of new species for Mozambique.

Financial, technical and scientific resources are needed to design and implement broader communication strategies and programs focused on the goal and its indicators.

Target 2: By 2020, there should be a better understanding of the economic, social and ecological value of biodiversity to enable better integration into decision-making and management.

Measure taken to contribute to NBSAP implementation

In relation to this target, five priority actions and 14 indicators were defined related to the promotion of scientific research, taxonomy, improved access and sharing of information and the development of databases and computer systems on biodiversity.

Of the 14 indicators listed above, no activities were conducted for five indicators.

Partly, activities have been implemented on production and training on taxonomic inventories, biodiversity enhancement projects and biological resource value chain research, scientific publications, establishment of a biodiversity portal, and availability of information in the database. Thus, Mozambique Agricultural Research Institute (IIAM), Fisheries Research Institute (IIP), Natural History Museum (MHN), Eduardo Mondlane University (UEM), Gorongosa National Park (PNG) and international partners undertook several expeditions on biodiversity taxonomy, an activity that allowed the transfer of taxonomy knowledge and skills to Mozambican technicians and students. In this context, herbariums and museums recorded an increase in cataloged and archived specimens. Regarding valorisation projects, in 2018 two Biodiversity Symposiums were held and training and research institutions published several articles relevant for decision-making on biodiversity conservation. Since 2017 there is the Biodiversity Network of Mozambique (BioNoMo), which is a network of government institutions, universities, research centers and conservation areas, whose purpose is to share and make primary biodiversity data available to the general public. This network allows Mozambique's biodiversity data to be shared globally through the Global Biodiversity Information Facility (GBIF) portal. However, the use of this platform is at an early stage.

In order to facilitate access to information, BIOFUND has created a digital platform with studies, reports, spatial data (shape files), etc. on biodiversity in Mozambique. This virtual library has about

2,200 data. At the same time, as part of the Connect Project, the creation of a Mozambique Biodiversity Center was proposed to unify the various sources of biodiversity data in Mozambique and serve as a communication platform with decision makers and various information users.

Significant progress has been made in meeting indicators related to scientific research, and in particular in creating an institutional environment for conducting research. Higher education institutions have designed lines of research, covering research on conservation of species and ecosystems; biotechnology and the transfer or expansion of environmentally sound technologies, sustainable and integrated agricultural production for conservation of agricultural biodiversity, demographics and rural communities, tourism, land use planning and disaster and climate change management. For example, UEM's vision has been revised to make research the foundation of teaching-learning activities and service delivery to society. The implementation of the IIAM Strategic Plan 2011-2015 and the Master Plan for Fisheries 2012 - 2019 also created institutional support for biodiversity research. The Strategic Plan for Agrarian Sector Development (PEDSA 2010-2019) includes a research component to produce knowledge relevant to the development of sustainable agriculture. The National Climate Change Adaptation and Mitigation Strategy (2013-2025) also emphasize the need for scientific research to support decision-making on climate change adaptation. The Government, through the National Research Fund (FNI), regularly makes available, on a competitive basis, funds for scientific research, including biodiversity. The expansion of postgraduate education has also leveraged relevant scientific research for biodiversity conservation. However, there is a need to improve the alignment between research and conservation priorities in the country.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

While appropriate measures have been taken to allow the integration of biodiversity issues into national and local development strategies, the indicators of possible change remain far from the desired. Biodiversity information is not yet used in decision making. Positive changes in knowledge about the economic, social and ecological value of biodiversity should be noticeable primarily in policy changes and in the ability to make decisions that impact the environment. These decisions should use biodiversity data from appropriate and reliable sources to ensure that decisions are based on the best available evidence and are as effective as possible and cost-effective. To this end, measures taken to successfully achieve the national target should focus in particular on applied knowledge-driven research on the real value of ecosystem goods and services.

Relevant websites, web links and files

http://www.biofund.org.mz/

https://www.fni.gov.mz/category/projectos/

https://www.gorongosa.org/pt;

http://www.secosud2project.com/bionomoportal.php;

https://www.uem.mz/

Instituto de Investigação Agrária de Moçambique (IIAM). 2010. PLANO ESTRATÉGICO DO IIAM (2011-2015);

MICOA. (2012). Estratégia Nacional de Adaptação e Mitigação às Mudanças Climáticas;

Ministério da Agricultura. (2011). Plano Estratégico para o desenvolvimento do Sector agrário (PEDSA 2010-2019)

Ministério das Pescas. (2010). Plano Director das Pescas 2010-19.

Videira, Bonate, Sidat e Costa (2017). Revisão e Análise de Lacunas para Melhorar a Disponibilidade e Uso de Dados para Actividades de Planeamento de Mitigação e Projectos de Desenvolvimento. Impacto & Wildlife Conservation Society.

Other relevant information

Case Study 1: Zambezi Delta Mangrove

The Zambezi River Delta contains one of the largest mangrove forests in eastern Africa. These forests are recognized for supporting terrestrial and marine biodiversity, contain large carbon stocks and provide essential ecosystem services to local communities.

Estimates of mangrove extension in the Zambezi Delta vary widely, and many have noted their reduction. However, these estimates are summarized over different spatial extensions of the delta area and are most often based on a comparison of data from different methods and sources rather than a consistent analysis of a single dataset. On the other hand, these estimates often lack field verification, but access to them has been difficult and time consuming.

A recent study (Shapiro *et al*., 2015) evaluated the mangrove area and measured the rate of change in the Zambezi River Delta, using Landsat data over a period of nearly two decades, and determined the effects of change in stocks of carbon dioxide in the mangroves.

The results showed that out of a total of 37,034 ha of mangrove measured in 2013, there was a net increase of 3,723 ha compared to 1994; large and small gains and losses over time were also observed

(Figure 1).

The largest areas of loss were observed in coastal areas, while mangrove expansion was observed mainly along the inland margin and on newly formed islands and plains along the river.

Mangrove loss has also been observed in some distinct areas within the Marromeu National Reserve. Loss areas along the coast were verified during the field mission, where large mangrove trunks were observed, with sand-covered roots.

In some inland areas, mangrove mortality was also observed, with lichens covering the treetops of dead mangroves. Gains in mangrove areas are evident throughout the Delta, particularly in new land formations, as well as in the upstream edges, where mangrove fragments become denser over time and increase along the edges of the channel.

The total economic value resulting from direct and indirect use of the Zambezi Delta mangrove has been estimated at USD 1,026,582,480 per year (IUCN & WWF, 2016). Direct use of mangrove in the form of poles, timber, firewood and charcoal production was estimated at USD 1,120 per ha per year on average, while its use for regulatory, habitat and nursery functions and climate regulation were estimated at USD 20,000 per ha per year, USD 600 per ha per year, and USD 6,000 per ha per year, respectively.

The economic value of mangrove for sustainable logging has been estimated at USD 1,200 per ha per year if exploited for coal over the 10-year cyclical period.

Considering the delta population estimated at 188,206, coal production from the mangrove would yield about USD 236 per ha per year, equivalent to average per capita Gross Domestic Product (GDP) in Mozambique. If harvested sustainably as timber, the cycle period would be 5 years and yield USD 1,040 per ha per year, equivalent to USD 204.64 per capita per year, slightly less than if it were harvested as charcoal. It is believed that if the mangrove is exploited as timber, it would yield more; however the harvest cycle would be from 20 to 30 years (IUCN & WWF, 2016).

The study recommends the implementation of a sustainable mangrove management plan, including a cutting and harvesting plan for mangrove timber resources that should consist of cutting commercially viable trees (7.5 m high, 2.5 m perimeter) for charcoal production at a tree felling rate of 13 trees per hectare per month, producing 20 sacks of charcoal per hectare per month. On the other hand, the study recommends promoting the use of alternative building materials, which include burnt brick, as the Zambezi Delta is rich in clay. Also recommends regulating river flow to mimic the natural seasonal cycle through the dam and promoting alternative livelihoods to mangroves such as agriculture,

rehabilitation of the Sombo irrigation system; fish processing and trade; cage aquaculture; fattening and trading of crab and beekeeping.

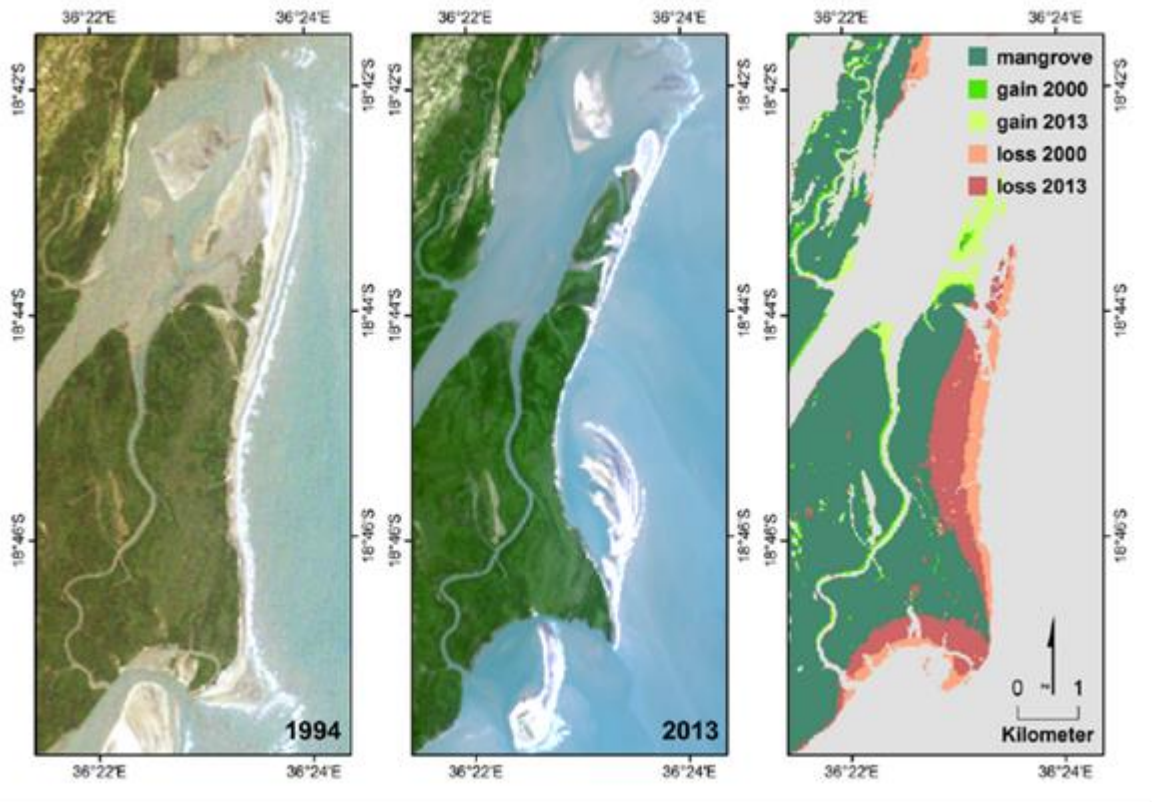


Figure 1: Areas of mangrove loss and gain in the Zambezi Delta between 1994 and 2013 (Shapiro *et al*., 2015).

Relevant websites, web links and files

https://www.gefblueforests.org/project/national-blue-carbon-policy-assessment-mozambique-summary

https://www.researchgate.net/publication/285770793_The_Mangroves_of_the_Zambezi_Delta_Increase_in_Extent_Observed_via_Satellite_from_1994_to_2013

Aditional information: https://www.wwf.org.mz/?2860/Mangal-do-Delta-do-Zambeze-avaliado-em-mais-de-1-bilio-de-dlares-americanos

Obstacles and scientific and technical needs related to the implemented measures

There are few studies done to evaluate ecosystem services in Mozambique. A challenge remains in the implementation of the research agenda. To this end, capacity building and training packages need to be created to improve existing human resources. In addition, the scarcity of funding prevents most of the research priorities identified in the different strategies from being implemented.

Target 3: By 2025, effectively adopt and implement policies and legal instruments to prevent, mitigate and offset the impacts of human activities that may cause degradation of biodiversity.

Measure taken to contribute to NBSAP implementation

To achive this target the Government has defined nine priority actions and 19 indicators on biodiversity aspects; private companies implementing voluntary measures; compensation initiatives; EIA, impartiality in conducting EIAs; environmental quality standards; waste management; and penalties for biodiversity loss.

Given that the preparation of the Diploma for EIA Independent Reviewers' and the revision of the Environmental Quality Standards Regulation are still ongoing, there has been no progress on ten of the indicators mentioned above.

Partly, activities related to five indicators on compensation for loss and / or reduction of biodiversity, inspection and enforcement by the environmental authority, EIA capacity building and revision of the Environmental Quality Standards Regulation and some aspects of waste management were implemented. In this sense and to strengthen the national technical capacity for the implementation of biodiversity offsetting, BIOFUND and the COMBO project have been carrying out various activities to disseminate the relevant legislation in this area and have trained more than 200 people including technicians and consultants on environmental impact assessment, environmental management plans and monitoring. Some partners and institutions have publicly stated their commitment to the biodiversity offset system, eg. BIOFUND, Wildlife Conservation Society (WCS), Forest Tends, Biotope Foundation, WWF, Anadarko, Sasol, Syrah Resources, National Plan for Territorial Development (PNDT) / National Directorate of Territorial Planning (DINOTER), National Sustainable Development Fund (FNDS), Supporting the Policy Environment for Economic Development project (SPEED+), LAUREL, World Bank, Mining and Gas Technical Assistance Project (MAGTAP), Our Sea, Our Life project (OSOL), INP, CONNECT, Biodiversity financing Initiative (BIOFIN) and Natural Capital. Examples of established compensation initiatives include the COMBO project and the Sustainable Financing of Mozambique Protected Areas System Project (Pro-Fin). The National Agency for Environmental Quality Control (AQUA) and Environmental Inspector have started their activities and are making good progress. About 180 technicians, including technicians from government institutions, academia, NGOs and environmental consultants, have benefited from EIA training and compensation for biodiversity loss. Regarding solid waste management, waste collection, environmental education and beach cleaning

activities were carried out at national scale. Increasing the number of towns and cities and the development of solid waste plans has improved their collection and treatment systems. However, population growth in cities results in solid waste production above the capacity of collection and treatment by Municipal Councils.

Significant progress is visible in meeting three indicators related to the updating of the EIA decree, the environmental quality standards decree, and the selection of EIA consultants. For this purpose, the Regulation on the Environmental Impact Assessment Process was revised through Decree N^{o}. 54/2015 of 31st December, which introduced category A +, in addition to the previous ones (categories A, B and C). Category A + covers actions that, by their nature, require a high level of social and environmental vigilance and the involvement of experts in the EIA processes. This Regulation also establishes the need for an offset Management Plan where necessary, and also adds compensation measures.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

However, actions taken to ensure effective implementation of policies and legal instruments to prevent, mitigate and offset the impacts of human activities that could cause biodiversity degradation are not entirely satisfactory. Some changes in the state of biodiversity are visible but in isolation, as efforts to reach the target are still insufficient. Although the National Legal Framework is characterized by a variety of instruments governing biodiversity-related activities, enforcement is not visible, which undermines the effectiveness of some measures and leads to biodiversity degradation.

Measures to ensure that EIAs for development projects effectively address biodiversity issues, including aspects of offsetting their loss and conducting strategic environmental assessments of policies and programs, are crucial and should be strengthened to ensure the effectiveness of measures outlined for this goal.

Relevant websites, web links and files

Decreto n^{o} 54/20105: Aprova o Regulamento sobre o Processo de Avaliação do Impacto Ambiental e revoga os Decretos n^{o} 45/2004, de 29 de Setembro e 42/2008, de 4 Novembro;

Lei n.º 5/2017, de 11 de Maio – Lei da Protecção, Conservação e Uso Sustentável da Diversidade Biológica;

http://www.biofund.org.mz;

https://www.mozambique.wcs.org.

Obstacles and scientific and technical needs related to the implemented measures

One of the major obstacles to the implementation of the measures taken is the poor implementation of national policies and the lack of budget to finance projects aimed at reducing biodiversity loss. Some shortcomings are also visible in national biodiversity offsets legislation, hence there is need to effectively implement EIA Laws and Regulations that include No Net Loss requirements and offsets. Reduced law enforcement and monitoring capacity, in part due to scarcity of human resources, as well as technical and financial constraints constitute another barrier to achieving the target. There is also a shortage of qualified human resources to carry out EIA of A + category projects.

Target 4: By 2025, define environmentally sustainable production and consumption systems established on the basis of sustainable practices and with appropriate investments.

Measure taken to contribute to NBSAP implementation

To achieve this target, six priority actions and 12 indicators on environmental and economic sustainability in the assessed ecosystem aspects were established; goods and services with ecological limits; new species promoted; diversity of traded varieties; product selection; certification of marketed products; ecosystem services (wood and energy); sustainable production methods; Small and Medium Enterprises (SME) promotion mechanisms and emission-reducing energy systems.

Of the 12 indicators, no activities were implemented for seven of the indicators mentioned above.

Partly, activities were implemented on four indicators related to the definition of ecological boundaries of goods and services, ecosystem assessment, marketing of varieties, and use of alternative energies.

Several initiatives have been implemented to reduce the negative impacts of agricultural, livestock, forestry, fish and energy production systems on biodiversity. The main interventions include the implementation of the Sustenta project, which aims to contribute to the improvement of rural households' livelihoods and the sustainability of natural resources in the areas covered by the project (Zambezia and Nampula provinces). The project focuses on the development of value chains in agriculture and natural resource management. Beneficiaries include local communities, SMEs and public institutions. Through actions that increase production and productivity in agriculture the project contributes to reducing deforestation and biodiversity loss. The Mozbio II project integrates an environmental sustainability promotion component into production processes along the Chimanimani, Marromeu and Maputo National Reserves to ensure that the various forms of land use occurring at

landscape level do not result in significant biodiversity loss and environmental degradation. These projects are implemented by FNDS, National Administration of Conservation Areas (ANAC) and BIOFUND.

Several crop varieties have been released in agricultural production and the trade of agricultural inputs promoted to increase yield and productivity (for more details see section V, target 9). Notable progress has also been made in fish production systems in order to obtain protein for local communities and for export.

In the logging industry, logging limits are defined in the forest concessions management plan but enforcement is not yet effective. To promote the use of forest species, a wood technology laboratory was equipped at UEM and IIAM and research was carried out on the physical and mechanical properties of neglected forest species.

Significant progress has been made in meeting an indicator related to the promotion of energy-friendly alternatives for biodiversity conservation, with an increase in the use of new and renewable energies, especially solar panels and photovoltaic energy.

By 2016 there were at least 70 000 improved and energy efficient biomass stoves in Mozambique, whereas by 2015, 14.2% of the national population used firewood and only 1.5% used solar panels. In the production of charcoal the use of improved ovens was also disseminated to reduce deforestation. However, the sustainability of charcoal production and consumption remains a major challenge. The high reliance on charcoal can make producers and traders vulnerable to environmental problems such as deforestation. It is recognized that Mozambique is one of the largest charcoal producers in Africa, with an estimated extraction volume of about 17 million cubic meters of wood per year for its production. Due to lack of regulated policies, the charcoal supply chain becomes inefficient due to the poor trading capacity of communities that make it difficult to integrate into the value chain (see Case Study 2)

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

Although appropriate measures have been taken to define environmentally sustainable production and consumption systems established on the basis of sustainable practices, and with appropriate investments, they have not been robust enough to ensure their effectiveness. Positive changes in the establishment of sustainable practices for biodiversity conservation are visible.

Efforts have been made in recent years to promote sustainable use practices in order to reduce the pressure on biodiversity and allow development activities within ecological limits. Despite the effort, agricultural, fishery, mining and energy production practices persist in the country, which cause species losses and ecosystem degradation. This suggests that the measures taken to reach this target should be reinforced by the promotion of new sustainable practices throughout the country so that the indicators set are quite effective in achieving the target objectives.

Websites, links da Web e arquivos relevantes

http://www.biofund.org.mz

http://www.fnds.gov.mz/index.php/pt/;

http://www.fnds.gov.mz/index.php/pt/nossos-projectos/listagem-de-projectos/sustenta;

http://www.fnds.gov.mz/index.php/pt/nossos-projectos/listagem-de-projectos/mozbio;

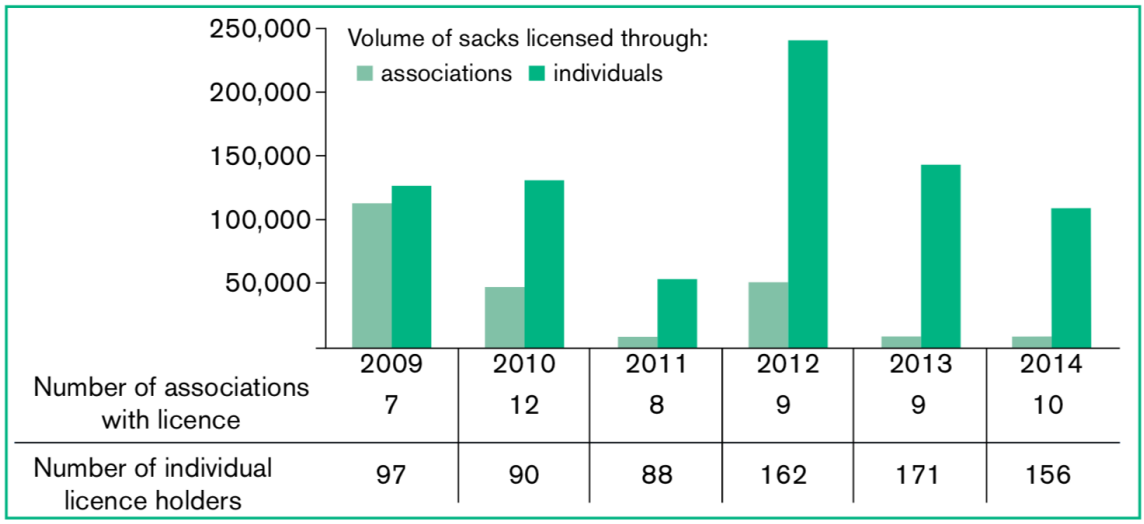
http://www.mireme.gov.mz/;

Other relevant information

Case Study 2: Charcoal Value Chain in Mabalane District, Gaza Province

Charcoal is a major source of energy in most African countries and Mozambique is no exception. Mabalane District in Gaza Province is the main supplier of charcoal to the Capital City-Maputo, with mopane forests being the main source of wood for charcoal. Mopane forests also supply rural populations with building materials, firewood and food, increasing pressure on this forest ecosystem. A study conducted between 2009 and 2014 (Baumert *et al.*, 2016; Woollen *et al.*, 2016) revealed that there are two major groups of charcoal producers: 1) individual and 2) associations. Although the number of associations increased from 7 to 10 in the period from 2009 to 2014, the volume licensed by them decreased (Figure 2). Individual operators are divided into two main groups (Figure 3): 1) local, unlicensed small-scale traders selling charcoal to wholesalers from Maputo city; and 2) Large-scale licensed producers, of which 80% are non-residents. The latter control charcoal production in Mabalane. Most of the profits generated through charcoal production do not accrue to communities (according to Ministerial Diploma n° 93/2005 of 4th of May, 20% of forest operators' net revenues should accrue to communities). On the other hand, the fragile or absent organization and the low commercialization capacity of the local communities makes it difficult to integrate them into the value chain. Charcoal production in the current way compromises the conservation of the biodiversity of Mopane forests in the Mabalane district. In fact, outside operators have no obligation to conserve licensed areas and as a result, the availability of charcoal from mopane forests has decreased. As a

result, operators are exploiting the resource in less preferred ecosystems such as Combretum forests (Figure 4). The study also verified that mopane regeneration in abandoned areas happens and therefore, the management of these areas is a priority to allow the replacement of the forest resource. In general, to prevent further degradation of mopane forests due to intensified charcoal production as well as increase the benefits received by small producers, it is important to strengthen community management institutions (associations), promote sustainable management practices, and review the current licensing regime for external operators, among others.



	2009	2010	2011	2012	2013	2014
Number of associations with licence	7	12	8	9	9	10
Number of individual licence holders	97	90	88	162	171	156

Figure 2: Annual licensed charcoal production in Mabalane

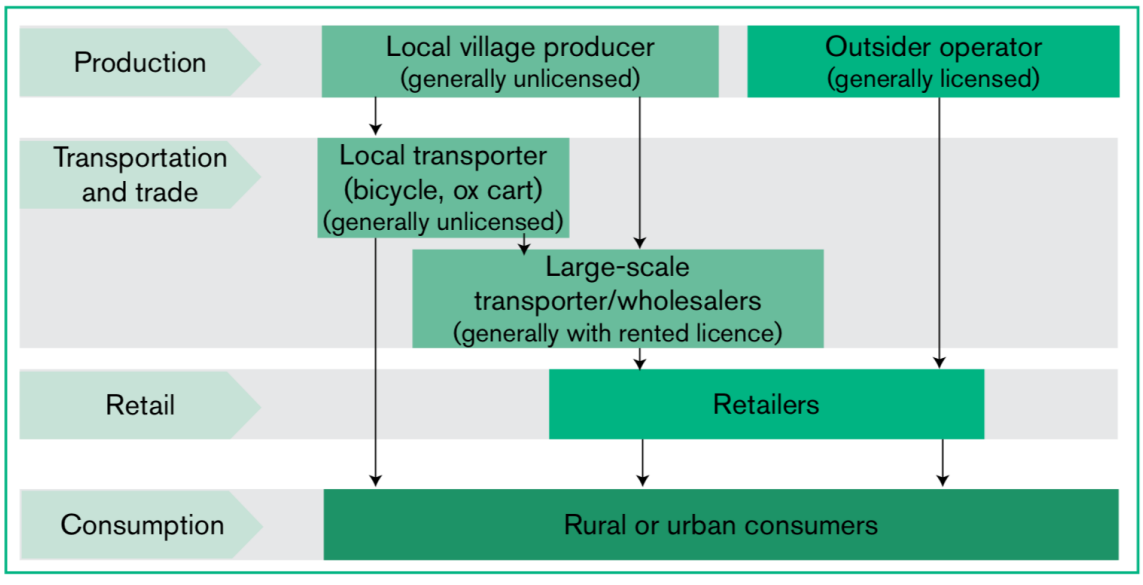


Figure 3: Charcoal value chain in Mabalane

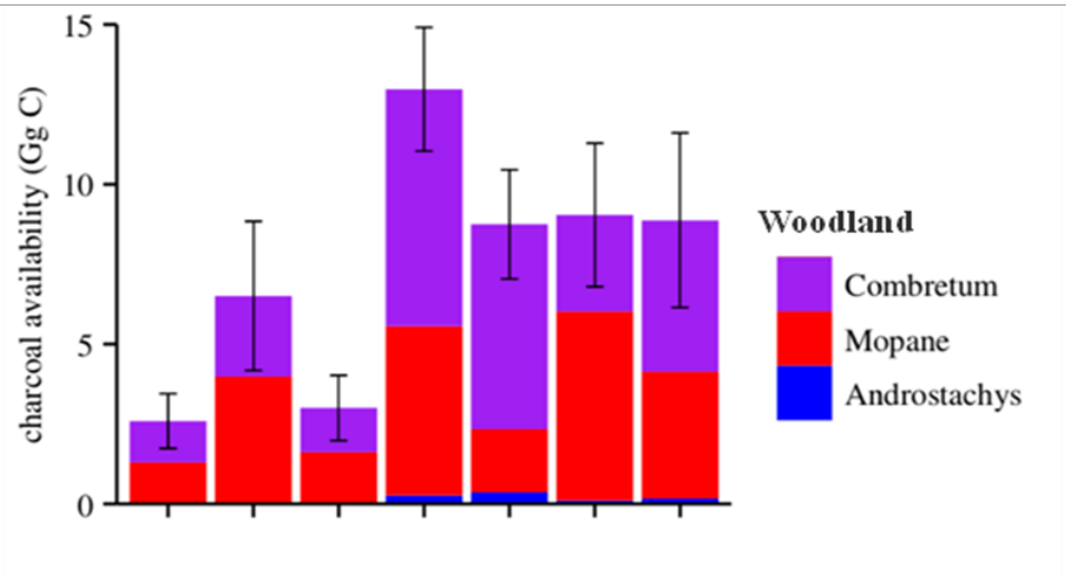


Figure 4: Availability of charcoal in Mabalane district's forests

Relevant websites, web links and files

http://www.biofund.org.mz/wp-content/uploads/2019/01/1548676718-WP10P_Rosalina_Cadeia_de_valor_Carvao%20regiao%20sul%20Agosto2014bc.pdf

Obstacles and scientific and technical needs related to the implemented measures

Lack of knowledge about the productive capacity of key ecosystems limits the definition of sustainable management practices. There is a need to improve knowledge about ecological limits of use, and some management practices and to promote the use of alternative species to reduce pressure on some species.

Financial, technical and scientific resources are needed to design and implement broader sustainable management practices focused on the target and its indicators.

Target 5: By 2035, reduce by at least 20% the area of critical ecosystems or those providing essential goods and services under degradation / fragmentation.

Measure taken to contribute to NBSAP implementation

In order to achieve this target, the Government has defined four priority actions and eight performance indicators on critical ecosystem and habitat aspects; baselines; biodiversity monitoring; participation of local communities in conservation activities; community conservation areas and community

involvement.

Overall, of the eight indicators, no activity has been implemented to reach three of the indicators mentioned above.

Partly, activities related to biodiversity monitoring, implementation of management plans, and community involvement in conservation activities was undertaken. Mangrove monitoring was carried out and the identification of ecosystems under the Key Biodiversity Areas (KBAs) project is ongoing; management plans were prepared for the 2016-2025 period for the Marromeu and Pomene National Reserves and for the Bazaruto Archipelago National Park; nine marine community protection areas in Inhambane Bay and 2 in Cabo Delgado were created; conservation actions have been carried out in centers of endemic species located outside the conservation areas (CA) network such as Mts. Namuli, Mabu, Chiperone, Ribáuè and Inago.

Significant progress has been made in carrying out activities linked to two indicators related to the assessment and identification of critical habitats and in encouraging the participation of local communities in conservation activities. For example, about 118 million meticais were channeled to 805 beneficiary communities residing in areas where logging occurs. Critical ecosystems have been identified and given priority during the review period in order to prevent their degradation by reinforcing protection measures. These efforts include the mapping of the mangrove, wetlands, coastal forests and “critical habitats” defined by IFC.

Evaluation of the effectiveness of implemented measures

The effectiveness of the measures taken is unknown.

Most indicators for this target have actions in progress. However, due to the extensive area of critical ecosystems outside CA, threats to their integrity persist. Although some actions taken have led to the reduction of the degradation of the country's main biodiversity hotspots, action needs to be taken to ensure that benefits are maintained. For example, critical ecosystems have been identified but to prevent their degradation protection measures will need to be strengthened. In addition, it was supposed that with increasing incentives for community participation there would be greater community participation in biodiversity conservation, but this is not yet happening. Positive changes in critical ecosystems are noticeable in the state and trends of biodiversity and changes in drivers of biodiversity loss. Changes in the involvement of populations and / or groups directly dependent on ecosystems through capacity building and incentives for ecosystem conservation and restoration activities should be encouraged.

Relevant websites, web links and files

http://www.biofund.org.mz/wp-content/uploads/2018/12/avaliacao-dos-ecossistemas-montanhosos-IIAM.pdf

https://mozambique.wcs.org/

https://www.fao.org/forestry/

Obstacles and scientific and technical needs related to the implemented measures

Despite efforts, critical ecosystems that are outside the network of conservation areas remain under intense human pressure. The mangrove continues to suffer from the pressure of extraction of building material and fuel wood, urban development, and the impact of extreme weather events. Challenges also persist in some critical ecosystems such as forests of the Namuli, Ribáuè and Inago Mountains, which are under pressure from agriculture due to the lack of sustainable livelihood and income alternatives for local communities. Reducing the rate of degradation requires the development and implementation of management plans and, where not possible, evaluations to establish baselines for monitoring biodiversity status and possible trends.

Target 6: By 2025, have at least 30% of habitats of endemic and / or endangered floristic and faunal species with established management strategies.

Measure taken to contribute to NBSAP implementation

To achieve this target eight priority actions and 16 indicators were defined on the establishment and implementation of systematic conservation assessment programs for endemic and or endangered species; species evaluation; identification of Important Plant Areas (IPAs); Red data book (RDB) update and KBAs identification; institutions accessing the RDB; in situ conservation plan; center and ex-situ conservation initiatives; endemic and threatened species; approval of the strategy to combat trade products from illegal activities; assessment and rehabilitation of forest reserves; approved management plans and percentage of species with management plans.

Of the 16 indicators, no activity was performed for 11 indicators mentioned above. Partly, activities related to IPAs indicators, species management plans, updating of the national RDB, access to the RDB, implementation of *in-situ* conservation plans, establishment of conservation and restoration programs, and assessment of forest reserves. As a matter of fact, there were several

conservation actions in Afromontane centers of endemism located outside the network of CA, especially Mts. Namuli, Mabu and Chiperone, focusing on environmental awareness, dissemination of conservation agriculture and identification of livelihood alternatives for local communities. In addition to these activities, restoration of degraded areas has been carried out through reforestation with the involvement of local communities in the creation of alternative livelihoods in Gorongosa Mountain (part of PNG) and reforestation activities in Cabo Delgado Province in the areas of forest exploitation and mangrove in the district of Mecúfi. The landscapes of the Maputo National Reserve and Chimanimani National Reserve, which are part of the Maputaland and Chimanimani endemism centers, respectively, are two of the three areas of implementation of the Mozbio II project, which has strengthened the management capacity of biodiversity *in situ*. Studies are underway to update plant red lists (by IIAM) and to identify KBAs, including IPAs and areas of occurrence of fauna species that appear on the International Union for Conservation of Nature (IUCN) global list of threatened species (WCS COMBO and KBAs projects). This information will be available by mid 2020. Some forest reserves such as Zomba, Moribane, Maronga, Ribáuè, M'palue, Matibane, Mecuburi were evaluated. Although the strategy to combat the trade of illegally sourced products was not implemented, the CITES Regulation was approved and the Conservation Law Regulation was approved, which establishes seizures of property and severe penalties to perpetrators.

Significant progress was observed in meeting two indicators on systematic assessment of conservation status of endemic and or endangered species. Major centers of endemism and other important areas for biodiversity in Mozambique have already been identified, with about 234 endemic or near-endemic species. Most of these areas are included in the network of conservation areas and have management plans, although these are only being partially implemented due to financial deficits.

Evaluation of the effectiveness of implemented measures

The effectiveness of the measures taken is unknown.

However, there is a need to evaluate the conservation status of species and to develop management plans and specific conservation strategies for each species.

The effectiveness of the measures taken can be achieved by the end of NBSAP implementation if knowledge of these species improves; hence there is a need to improve the collection of material relevant for the identification and detailed description of species and to make an assessment of current stocks of the species in their natural habitat.

Relevant websites, web links and files

http://www.anac.gov.mz/

http://www.biofund.org.mz/wp-content/uploads/2018/12/avaliacao-dos-ecossistemas-montanhosos-IIAM.pdf

http://www.mitader.gov.mz/projecto/mozbio/

Obstacles and scientific and technical needs related to the implemented measures

Enforcement capacity remains a major constraint for the protection of endangered species affected by commercialization due to the scarcity of financial, human and equipment resources. Endangered species conservation strategies or plans are limited to elephant and lion. Strategies for ray and shark conservation are still in preparation. In addition, there has been no expansion of *ex-situ* conservation centers or initiatives, including increased capacity to collect quality seed for use and conservation in the Genetic Bank of the most traded timber species.

Target 7: By 2020, catalog / systematize, disseminate and encourage sustainable management practices in agriculture, livestock, aquaculture, mining, forests and wildlife.

Measure taken to contribute to NBSAP implementation

NBSAP has established seven priority actions and 17 indicators on the territorial plan and regulation; monitoring and management plans; implementation of conservation agriculture dissemination projects; definition of the system of areas of high conservation value; conservation training packages; conservation techniques; implementation of energy alternatives; operating licenses; numbers of mining permits and operators.

Of the total proposed indicators, there were no activities related to 11 indicators. Partly, activities were implemented related to six indicators on the dissemination of conservation agriculture practices and farmers using it, soil and water conservation techniques, drought and flood mitigation measures, exploration licenses for coal production and on revision of land use plans. Conservation agriculture has been widespread in many parts of the country, as well as several other initiatives, many of which are unreported. 30,576 members belonging to 500 producer organizations were also trained, 19,057 in Zambezia and 11,519 in Nampula, of which 18,285 are women. A successful case of conservation agriculture was found in Zambezia province, a project implemented by COSV, where more than 11,000 producers were covered (for more details see Case Study 3).

Simple licenses were issued to 883 forest operators. 198 of the 883 forest concessions (22%) developed

management plans. 1,937 licenses for the exploitation of wood for coal production were issued, corresponding to 635,469 sacks of coal. However, illegal exploitation of forest resources and in some cases within CAs persists, as well as illegal exportation due to enforcement difficulties. Some land use plans are being prepared throughout the country, such as the National Plan for Territorial Development; Special land use plan of part of the district of Matutuine and Inhaca Island and several Partial Plans of Urbanization.

No significant progress was observed in any of the 15 indicators.

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

There are few actions taken to reach the target as NBSAP implementation is at an early stage and there is a shortage of financial and human resources. Most practices have been undertaken by private or local initiatives without proper assessment of implementation levels and their efficiency in biodiversity conservation.

Positive changes are visible in the promotion of conservation agriculture in some areas of the center and north of the country, and the sustainable management of some forest concessions. To reach the target there is still the need for improvement of the agrarian, forestry, fish and other sectors in the country.

Relevant websites, web links and files

http://www.anac.gov.mz/

https://www.cosv.org/projects/areas-of-intervention/africa-en/mozambique/?lang=en

Other relevant information

Case Study 3: Conservation Agriculture

In 2015 the National Conservation Agriculture Platform was created. This platform involves various public and private agencies to streamline research in the area, document conservation research and extension work, and develop policies for its massification. Some initiatives are already being implemented by various partners, especially in the Quirimbas National Park in Cabo Delgado Province as well as in the provinces of Nampula and Zambezia, and the central region of the country, just to mention a few examples.

For example, in Zambezia Province, in which the “Conservation of natural resources in the Gilé National

Reserve and its surrounding areas by strengthening the economic and productive activities of rural communities" Project in the Gilé and Pebane Districts was implemented, the alliance between COSV, Administration of the Gilé National Reserve, IGF Foundation, ETC TERRA, Carbon Sink, RADEZA and District Economic Activity Services (SDAEs) of the two districts implemented various activities including training and support for farmers in conservation farming techniques; creation, training and support of stakeholders for the transformation and conservation of agro-pastoral products and forest production; training of farmers in conservation agriculture and the installation of experimental demonstration plots of conservation agriculture.

At the end of project implementation, 420 farmers were trained and supported in conservation farming techniques and the opening of new plots reduced by 75%. The number of beneficiaries covered by the project has exceeded the target set at the start of the project considerably from 420 to 700 beneficiaries covered, thus increasing agricultural production due to conservation farming techniques implemented by beneficiaries in the agricultural fields (See Figure 5). However, although farmers have received knowledge of conservation farming techniques that reduce the opening of new agricultural plots and consequently reduce burning, a considerable number of uncontrolled burning cases are still visible in the area.

The project was very effective and achieved positive results in terms of community mobilization and capacity building and development by members of the Natural Resource Management Committees. It has managed to increase the focus groups' knowledge of the application of conservation agriculture techniques.

Figure 5: Field cultivated with conservation agriculture techniques

This field was cleared without burning, without application of chemical fertilizers and with dry grass permanently covering the soil to allow the soil structure to be built naturally while maintaining beneficial insect habitats. In-line sowing is one of the methods that facilitates weeding and harvesting, thus minimizing the need for labor. This method gives crops room to grow and decreases yield loss.

On the other hand, some dissemination of improved technologies for increasing soil productivity and fertility is underway in the central region of the country. National and international civil society organizations and research institutes including World Vision, ADRA, IIAM, KULIMA, OXFAM, CYMMIT, ICRAF, CLUSA, CARE International, CIAT, AGRIMERC, AGRIFUTURE, PROMAC, AGRA, UCAMA and FAO are working on identifying and adapting potential technologies for improving agricultural productivity and their dissemination among households. Some peasant organizations as well as individual peasants benefit from technical assistance, in particular sharing good agricultural practices, conservation farming techniques and agro-forestry systems.

Despite these actions, the problems of deforestation arising from unsustainable agricultural practices persist, even in areas that have received technical assistance. The level of adoption of productive and sustainable technologies is also weak. This is due to several factors, including poor contact between

extensionists and peasant groups (extensionist-peasant ratio is 1/250 directly assisted and 1/1000 indirectly assisted per year); the short duration of improved technology transfer initiatives, the lack of follow-up after technology transfer, the lack of technology adaptation exercise to site specificities, and the lack of technology consolidation at beneficiary level.

Relevant websites, web links and files

https://www.cosv.org/projects/areas-of-intervention/africa-en/mozambique/?lang=en

Obstacles and scientific and technical needs related to the implemented measures

The way in which sustainable management practices in agriculture, livestock, fisheries, forests and wildlife can be disseminated, and especially encouraged to promote greater involvement of different actors in the adoption of good management practices, is limited. These actions require financial resources for their implementation; the country is currently plunged into an economic crisis that lasts since 2015, when the NBSAP was approved. Measures like this have become secondary to the state's agenda, given the remaining problems that the country has been facing.

There is a need to promote public-private partnerships that help to carry out some of the measures allocated to the goal. There is also a need to emphasize the definition of areas of value for the conservation of biodiversity in areas of farm, forest, and fish, among others.

Target 8: By 2025, reduce pollution by at least 20% of critically polluted ecosystems.

Measure taken to contribute to NBSAP implementation

In relation to this target, the Mozambican Government has defined four priority actions and 10 indicators on pollution in aspects related to polluted ecosystems; impact on critical ecosystems; implementation and development of management plans; ecosystems with low pollution and implementation of monitoring programs.

No activities have been implemented to demonstrate progress on four indicators. Partly, activities related to critical ecosystems or providing essential goods and services have been implemented, specifically on the implementation of management plans and remediation plans and monitoring programs. Within this framework, two critical ecosystem pollution management plans have been devised, and some policies, such as the National Climate Change Adaptation Strategy, the REDD + Strategy, the National Strategy and the Integrated Coastal Zone Action Plan (2015 - 2020) and the National Strategy and Action Plan for Mangrove Management were developed. The Mozbio II Project is

implementing the Payment for Results project in Zambezia Province, which aims to reduce forest degradation and improve natural resource management practices. This project foresees, among others, the increase of carbon sequestration and thus contributes to the mitigation of the effects of climate change. Beach pollution monitoring and reduction actions have been implemented in the country's coastal areas, involving the general public, from individual students to companies.

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

Despite the fact that improved knowledge of current levels of soil, air and water (inland and marine)pollution is crucial for the definition of concrete measures to reduce pollution, the actions taken have not been sufficiently robust to ensure the achievement of the target. Most of the indicators defined for this target have not been implemented. This is due to the fact that polluted areas are not well defined or well known and therefore sustainable environmental management practices are poorly promoted.

Relevant websites, web links and files

MICOA. 2012. Estratégia Nacional de Adaptação às Mudanças Climáticas (2013-2025);

MITADER. 2016. Estratégia Nacional para a Redução de Emissões de Desmatamento e Degradação Florestal, Conservação de Florestas e Aumento de Reservas de Carbono Através de Florestas (REDD+) 2016-2030;

Estratégia Nacional e Plano de Acção para a Gestão Integrada de Zonas Costeiras (2015-2020);

MIMAIP. 2018. Estratégia Nacional e Plano de Acção para a Gestão do Mangal em Moçambique (2018-2023).

Obstacles and scientific and technical needs related to the implemented measures

It is recognised that there is a lack of capacity to monitor and inspect the impacts of economic activities in various sectors, such as commercial agriculture, mining, industry, infrastructure development, urban expansion, among others, as well as the limited incorporation of sustainable environmental management practices in public or private development activities.

There is a need to promote green behavior on the part of the Mozambican population and to apply disciplinary measures to offenders, as provided for in the Environment Law and associated regulations. In areas identified as polluted, pollution reduction and remediation plans should be designed,

punishment measures (fees and fines) and, where appropriate, sustainable environmental management practices should be promoted. This requires financial and technological resources.

Target 9: By 2025, reduce the area of invasive species by 10% and establish / implement strategies for managing their impacts.

Measure taken to contribute to NBSAP implementation

To this end, NBSAP has established four priority actions and nine indicators on invasive species, identified routes, invasive species policies, species control and eradication, research and scientific publications; eradication and control plan, area occupied by species and catalog on invasive species.

Overall, out of the nine indicators, activities related to six indicators were not implemented. Partly, activities were undertaken concerning the establishment of the National Invasive Species Eradication and Control Plan; on on this subject only the Regulation for the control of invasive alien species was developed.

Advances have been made in the identification of invasive species including in some conservation areas such as Maputo Special Reserve, Chimanimani National Reserve, Gorongosa National Park, Limpopo National Park and Cape San Sebastian Sanctuary. The global invasive species database has a record of 53 invasive species in Mozambique. On the legal framework for monitoring, control and eradication and control of invasive species, a Regulation for the Control of Invasive and Exotic Species (approved by Decree No. 25/2008 of 1 July) was developed.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

Most of the measures implemented to achieve this goal have not been implemented. Some exotic species have been identified, but studies on introduced species in Mozambique are scarce. The few studies that exist and the knowledge of the ecology of these species and the routes through which they enter ecosystems are still incipient. The lack of a better estimate of species invasion rate limits the development of plans for eradication or control of alien invasive species.

Relevant websites, web links and files

http://www.iucngisd.org/gisd/search.php

http://www.repositorio.uem.mz/bitstream/123456789/257/1/2016%20-

%20Pagule%2C%20Carlos%20Elias.pdf

Obstacles and scientific and technical needs related to the implemented measures

The main difficulty in meeting the target is the limited implementation of the Invasive Alien Species Control Regulation.

Global best practice sharing, scientific and technical cooperation, continuous cross-border cooperation and additional funding are needed to achieve this target. Within the country, it is also necessary to establish a nationally coordinated invasive species management system that brings together experts in each domain, such as botanists, foresters, biologists, engineers, ecologists, hydrologists and communication specialists, so that species-specific strategies and their areas can adopt a far-reaching perspective on the management of invasive alien species.

Target 10: By 2035, place at least 20% of the area of ecosystems critically affected by climate change under adaptive ecosystem management.

Measure taken to contribute to NBSAP implementation.

Related to this target, three priority actions and six indicators on research projects and programs were defined; reach of indicators related to the National Climate Change Strategy; impact of climate change; efficient implementation of mitigation and adaptation projects.

Of the six indicators mentioned above, no activities related to three indicators were implemented. Partly, activities related to indicators on publications and knowledge of the level of impact of Climate Change on critical ecosystems and implementation of mitigation and adaptation projects on vulnerable ecosystems were carried out.

In this context, actions have been undertaken over the past five years on research and monitoring of interactions that guide conservation decision making. For example, research on the impact of climate change on biodiversity is covered by the research lines of UEM, Pedagogical University (UP) and Uni-Lúrio as well as the National Climate Change Adaptation and Mitigation Strategy. However, research projects and scientific publications on this subject are scarce, so the impact on biodiversity is not known and projects to mitigate and adapt impacts on vulnerable species and ecosystems are not being implemented. The few studies are summarized in studies on the impact of climate change on miombo woodlands, mangrove, seagrass and coral of the Quirimbas National Park conducted by WWF with support from the French Development Agency (AFD)/ French Global Environment Facility (FFEM); and

Quelimane mangroves study conducted by IUCN.

Significant progress has been made only in implementing activities about the number of research projects related to the impact of climate change on critical ecosystems. Progress has been made in the preparation of conservation area management plans that emphasize the need for continuous monitoring and research on biodiversity and the effects of management measures implemented on biodiversity and community livelihoods. Two projects were implemented related to the impact of climate change on critical ecosystems (on the mangrove of Quirimbas National Park-PNQ and miombo woodlands of Gile National Reserve-RNG). However, ecological management and monitoring is still limited due to the scarcity of financial resources. The most notable monitoring activities are wildlife census; monitoring of elephants and fires and their interaction with vegetation in the Niassa National Reserve (RNN), and monitoring of sea turtles in the Ponta do Ouro Partial Marine Reserve (RMPPO). Several climate change adaptation projects are being implemented in the PNQ, in the Environmental Protection Area of Ilhas Primeiras e Segundas (APAIPS), as well as in the cities of Pemba and Quelimane.

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

Actions that reduce the negative impact of climate change and enable local communities to adapt have been taken, but not enough to ensure progress towards the target. Additional measures are recommended to guide conservation decision makers to mitigate the impacts of climate change on biodiversity in critically endangered areas.

Obstacles and scientific and technical needs related to the implemented measures

The scarcity of research projects and scientific publications on ecosystems critically affected by climate change under adaptive ecosystem management is a major obstacle to adaptation and mitigation measures. In a scenario where the impact on biodiversity is not known and few mitigation and adaptation projects on impacts on vulnerable species and ecosystems are being implemented, there is a need to improve climate variable monitoring systems and their effects on biodiversity and use the results of monitoring to guide the implementation of adaptive management actions. There is also a need to develop specific climate change adaptation and mitigation strategies in each location vulnerable to climate change in order to make communities more resilient to climate change; However, financial, technical and human resources are the main obstacles to the implementation of this type of action.

Target 11A: By 2025, assess and redefine 75% of current conservation areas, and formally include 100% of afromontane endemism centers (altitude> 1500m) and at least 5% of marine ecosystems in conservation areas.

Measure taken to contribute to NBSAP implementation

Eight priority actions and 10 indicators were defined for assessing progress against this target on conservation area assessment; percentage of areas rehabilitated and under Transfrontier Conservation Area (TFCA); ecological corridors; rehabilitation programs; mountainous ecosystems, marine ecosystems and hotpsots covered by conservation areas.

Overall, of the 10 indicators, no activity on two indicators was implemented. Partly, activities related to indicators on conservation areas assessment were conducted including boundary revision; mountainous, marine and hotspot ecosystems covered by conservation areas; percentage of areas rehabilitated and under TFCAs, rehabilitation and revision of category (e.g. proclamation of the PNQ as a Biosphere Reserve and initiation of the recategorization of conservation areas under the new Conservation Law categories). In fact, between 2015 and 2018 management plans were prepared or reviewed for conservation areas such as Pomene National Reserve (RNP), Marromeu National Reserve (RNM), Magoe National Park (PNM), PNG, APAIPS, RNN, Limpopo National Park (PNL) (in these two the process is still ongoing). In the same period the ecological status of 7 forest reserves, Zomba, Moribane, Maronga, Ribáuè, M'palue, Matibane and Mecuburi were conducted; expeditions were made to the Ribáuè, Inago, Tsetsera, Serra choa, Garuzo, and Lico hills, and surveys and monitoring were carried out in other areas such as Mecuburi, Moribane, Zomba, Maronga and Licuati. In the vicinity of PNL and RNN a considerable number of game farms have been established, the management of which will contribute to the maintenance of landscape integrity. In 2015 Mozambique and Tanzania signed an agreement on the coordinated conservation and management of the Niassa-Selous transboundary ecosystem with a view to strengthening collaboration and cooperation for the conservation and effective management of this transboundary ecosystem. During the period under review there was no expansion of coverage of the conservation area network. Afromontane and coastal ecosystems that were outside the conservation areas in 2014 remain outside. However, considerable progress has been made in implementing conservation activities in these ecosystems, particularly in the form of environmental awareness campaigns, the promotion of conservation agriculture, the rehabilitation of degraded areas and the identification of alternative sources of income

for local communities (eg beekeeping, breeding), chickens rearing, and credit and savings systems). In this context, the process of recategorization of conservation areas is underway according to the new categories of the Biodiversity Conservation Law and the detailed mapping of conservation areas including coutadas and game farms.

Two rehabilitation programs for degraded conservation areas were implemented, namely restoration of Bazaruto National Park (PNAB) as well as the program to combat deforestation and forest degradation in the RNG.

Community natural resource management committees have been set up at Mt. Mabu, Mt. Namuli, APAIPS, PNG, RNN, PNQ and other sites. Significant progress was made in two indicators related to the revision of the limits of conservation areas and the establishment of ecological corridors.

The limits of Maputo Special Reserve (REM), Banhine National Park (PNB), PNAB, Zinave National Park (PNZ), PNG and Chimanimani National Reserve (RNC) have been revised to exclude areas modified by human activities. The redefinition of the RNN boundaries and zoning is underway. Corridors have been identified to facilitate the link between PNL and PNB. The RNP Management Plan approved by the Government proposes a revision of the limits to incorporate the coastal and marine area adjacent to the reserve.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

Actions are underway on almost all indicators. The measures taken had a positive performance in terms of improving knowledge of the main protected habitats and their national representation, redefining the boundaries of some areas, and defining the need to maintain certain conservation areas in the national network. However, efforts are still needed to address biodiversity conservation issues in areas not formally recognized as conservation areas but where the state of biodiversity justifies it. Additional measures are recommended to guide conservation decision makers to mitigate the impacts of climate change on biodiversity in critically endangered areas.

Relevant websites, web links and files

http://www.anac.gov.mz

http://www.cabodelgado.gov.mz/por/content/.../BALANCO%20PES%202017.pdf

http://www.mitader.gov.mz

Obstacles and scientific and technical needs related to the implemented measures

Conservation areas in Mozambique exceeded the national target of 17% of the territory. These include terrestrial, inland and coastal ecosystems. Much more work is needed, however, to extend the range of coverage, encompassing biodiversity-rich marine and afromontane ecosystems. The marine environment remains underrepresented in the national network of conservation areas. The high density of the human population in the coastal zone and the reliance on fishing resources limit the space options for establishing coastal conservation areas with minimal conflict with local communities.

Additional financial, technical and human resources are required to solve this problem. Systematic identification and mapping of these areas is necessary to create a correct understanding of their numbers, total areas and the biodiversity they host, to move towards strategies for conserving them sustainably and to explore their potential for contributing to connectivity between conservation areas.

Target 11B: By 2030 effectively and equitably manage at least 50% of conservation areas.

Measure taken to contribute to NBSAP implementation.

Ten priority actions and 20 performance indicators have been defined for this target. The 20 indicators are related to conservation area management plans; conservation area natural resource management committees; creation of community conservation area; inspection; research projects and programs; scientific publications on conservation area; tourism services and annual revenues; training of technicians; conservation area material capabilities; tourist resorts in conservation area; benefits from conservation activities, agricultural inputs; sustainable agriculture, management and conservation of biodiversity.

Of the 20 indicators listed above, no activities related to 18 indicators were carried out. Partly, indicator activities were carried out on management plans in conservation area, and creation of community-based natural resource management committees and community rangers.

Considerable progress has been made over the past five years in terms of allocating funding to conservation areas for improving human resources, infrastructure, enforcement, monitoring, livelihoods, and so on. BIOFUND was established and consolidated with the main objective of providing financial support to conservation areas in Mozambique. From 2017 to date BIOFUND has an investment capital of around USD 32.5 million of which its annual income will be channeled to conservation areas. On the other hand, through its direct implementation projects, BIOFUND has already channeled around USD 3 million to conservation areas in Mozambique. In 2016 Management Effectiveness Tracking Tool

(METT) data indicate that 54% of the conservation areas evaluated were more than 50% effective. Conservation areas with low effectiveness such as RNM and RNC have been prioritized in the Mozbio II project (funded by the World Bank); European Union (EU) and AFD funding was addressed to RNG; the PROFIN project benefited RNM and RNP to improve their management. BIOFUND, with support from SPEED+, carried out the study on Biodiversity Conservation Area Co-Management Models, which was a key tool to guide the Government in exploring the co-management approach to conservation areas. The Government renewed and entered into new co-management agreements with international organizations such as Peace Parks Foundation (PPF), African Parks (AP), WCS, etc., benefiting PNL, REM, PNZ, PNAB and RNN, with a view to improving the supply of inputs for effective management. Tourism revenues in conservation areas have been increasing due to improved attractiveness, tourism infrastructure and advertising of tourism services. Private sector involvement has increased over the past three years, including partnerships with communities. Still in this approach, several infrastructures were built in the conservation areas, for example, staff housing and vehicles in PNZ, PNB, PNL, RNC, RNG, RNM, RMPPO and REM. Additionally, several tour operators started their operations in various conservation areas. For example, PNG makes management partnership (montebelo + community); the PNQ has 12 tour operators (privately managed) and in RNN more than 7 tour operators generate tourism revenues, which are shared with local communities.

The conservation law establishes the need to improve governance for equitable management through the establishment of conservation area management councils. This legal basis creates a favorable environment for the integration of local communities, the private sector and NGOs in management. Management plans designed after the approval of this law include the composition of this management board. Likewise, 8 management plans have an adaptive approach, namely: PNB, PNAB, RNG, RNM, PNL, PNZ, PNM, and RNC. In addition, most conservation areas have community-based natural resource management committees in the buffer zones; communities participate in fire prevention and benefit from tourism revenues, and capacity building for diversification of income sources and social services (e.g. health in the buffer zone of the PNG). However, the costs of conserving biodiversity for local communities remain higher than the benefits. The involvement of community rangers has not always had positive results due to the lack of incentives and working conditions. Regarding the number of scientific publications on conservation areas, 758 documents published by 2015 and 79 documents published from 2016 to 2019 were registered.

There were no significant advances in any of the proposed indicators.

Evaluation of the effectiveness of implemented measures

The effectiveness of the measures taken is unknown.

Despite the lack of financial resources to manage conservation areas, the indicators used to measure this target performed positively. The Government has made a number of efforts to ensure good management of protected areas. Positive changes are noticeable in the management structure of conservation areas, but not enough to ensure fully effective management that impacts on biodiversity status and trends, and that results in changes in the drivers of biodiversity loss, changes in behavior or changes in policies.

Relevant websites, web links and files

http://www.anac.gov.mz

http://www.biofund.org.mz

http://www.mitader.gov.mz/projecto/mozbio/

Obstacles and scientific and technical needs related to the implemented measures

The management system for conservation areas in the country is currently deficient, and although there has been an improvement in the management structure in recent years, there is a need for greater financial and technical investment for effective management. The challenge is to improve the efficiency and equity of management because although all CA have management plans, less than 50% of the actions indicated in the management plans are implemented due to the scarcity of financial and human resources and equipment.

Target 12: By 2030, rehabilitate at least 15% of degraded ecosystems / habitats, restore their biodiversity, and ensure their sustainability, with a view to mitigating the effects of climate change and combating desertification

Measure taken to contribute to NBSAP implementation.

NBSAP has established nine priority actions and 14 indicators on this target related to assessment and rehabilitation of critical ecosystems; involvement of local communities; restoration of endangered species; carrying out expeditions; registration and cataloging of threatened species; turtle monitoring projects outside conservation areas; wildlife reintroduction; monitoring of marine species; conservation activities for endangered species; new conservation strategies for endangered species and actions to mitigate human-wildlife conflicts.

Of the 14 indicators listed above, no activity was implemented related to eight indicators.

Partly, activities related to indicators on rehabilitation of critical ecosystems, monitoring of turtles outside conservation areas, implementation of conservation activities for endangered species and approval of strategies for their conservation were carried out.

In fact, 1,438.67 hectares of mangroves were reforested, of which 51% only in Cabo Delgado Province-Mecúfi district. Likewise, mangrove replanting was carried out with the involvement of the communities in Quelimane district (Zambézia province), Nhangau Administrative Post (Beira-Sofala province), Limpopo district (Gaza province), APAIPS and Matola Rio Administrative Post (Maputo province). Some 118 million meticais were also channeled to 805 beneficiary communities living in areas where forest exploitation occurs as a way of encouraging them in nature conservation and natural resource management initiatives.

The most important activities for assessment and rehabilitation of natural ecosystems covered the Gorongosa mountain mangrove and forest (see Case Study 4). Priority has been given to degraded areas in the establishment of forest plantations (particularly in Manica, Zambezia, Nampula and Niassa provinces) for commercial timber production while at the same time restoring the ecosystem's ability to sequester carbon and provide other ecosystem services (eg. honey production in planted forests, etc). Estimates indicate that in 2015 and 2016 some 4,140 hectares of native and exotic species were reforested for conservation and community purposes.

In relation to threatened wildlife species, 1,223 animals (both threatened and non threatened) were translocated to the conservation areas; 994 animals of various species, including zebras, impalas, leopards, buffalos, elephants, giraffes, wildebeests, nyalas, wild dogs and lions were reintroduced. These reintroductions aimed to restore populations of certain wildlife species in PNZ, RNMarromeu, PNG and REM with the aim of restoring the function of fauna in the ecosystem and also stimulating tourism development. In PNG within a few years the density and diversity of animals increased rapidly, and populations of some of these species more than doubled their number (see Case study 5).

During the 2015/2016 season, there were seven sea turtle monitoring programs (in the RMPPO, total Protection Zone of Cabo de São Sebastião - ZPTCSS, PNAB and on the Vamizi island), the latter being the only program carried out outside the Conservation Areas- The Vamizi Island Sea Turtle Monitoring Program. There are currently eight monitoring programmes in place, including monitoring in the PNQ; The monitored marine species including outside conservation areas include sea turtles, dugong, dolphins and whales.

Strategies for the conservation of endangered species have also been developed: Strategy and Action

Plan for Lion Protection in Mozambique (2013); Strategy and Action Plan for Elephant Conservation - 2010 to 2015 (2010); Regional Strategy for Cheetah and Mabeco Conservation in Southern Africa, revised and updated in August 2015; and Review of Strategy and Action Plan for Elephant Conservation in Mozambique (2016) - not approved. The National Strategy for the management of human-wildlife conflict was also updated. In this sense, the data on man-wildlife conflicts indicate that between 2006 and 2014, 1,041 animals were killed and 457 victims of the man-wildlife conflict were registered. Significant advances have been observed in indicators related to the number of expeditions made and species cataloged in the database and the reintroduction of individuals of endangered wildlife species. In this context and in relation to expeditions, eight flora expeditions were carried out in the period between 2015 and 2019, one of which is in progress. About 10,000 species were recorded and catalogued in the biodiversity database in 2015 and 217,983 species in 2018. Between 2001 and 2018 over 8,000 animals were translocated for restocking in various conservation areas.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

While appropriate measures have been taken to bring about changes in biodiversity, and to ensure its sustainability, with a view to mitigating the effects of climate change and combating desertification, the indicators used to measure these changes remain far from expected.

Measures taken over the years to reduce habitat and ecosystem degradation levels have not been fully effective as ecosystem rehabilitation actions are implemented in a few areas due to financial and technical constraints. The active participation of communities in decision making should also be taken into account to ensure the effectiveness of the indicators.

Relevant websites, web links and files

http://www.ctv.org.mz/.../Moz%20Turtle%20Report%202016-17%20Pt.pdf

http://www.ctv.org.mz/publicacao/RGA%20-%202016.pdf

http://www.gaza.gov.mz/por/Informacao/Noticias-da-Provincia/Em-curso-plantio-de-mangal-na-foz-do-rio-limpopo-no-ambito-da-proteccao-ambiental

htttp://www.anac.gov.mz

htttp://www.ctv.org.mz/qstartaruga.php

Other relevant information

Case study 4: Restoration of the Gorongosa National Park

In the 1960s, Gorongosa National Park was considered one of the most spectacular national parks in Africa. The densities of large herbivores in this park were at the same level as in areas of high wildlife abundance in Tanzania and Kenya. The war (1977-1992) that devastated the country claimed human lives and wildlife populations, which declined by 90-99% from the mid-1970s to the late 1990s.

A recently published study (Stalmans *et al*., 2019) documents for the first time the trajectory of wild populations in Mozambique's Gorongosa National Park over half a century. For example, following the first restoration efforts, wildlife recovery has accelerated since 2004, coinciding with the public-private co-management of the Gorongosa Project's with the Government of Mozambique. The Gorongosa Project follows a dual conservation and human development strategy for Gorongosa and the surrounding area and its inhabitants. The park's infrastructure has been rebuilt and expanded, the vigilant corps has been re-trained, expanded and equipped, while human development programs have focused concurrently on health, agriculture and education projects.

There was a marked recovery of total wildlife biomass and most individual populations. This largely reflects the natural population growth of the remaining populations. Wildlife translocations from other protected areas were limited to less than 500 animals, mostly buffalo and wildebeest to supplement the small number of war survivors.

Within the central Rift Valley area of the Park, wildlife biomass has now recovered to over 80% of pre-war biomass. The previously dominant large herbivores - including the elephant (*Loxodonta africana*), hippo (*Hippopotamus amphibius*), buffalo (*Syncerus caffer*), zebra (*Equus quagga*) and wildebeest (*Connochaetes taurinus*) - are now outnumbered by the waterbuck (*Kobus ellipsiprymnus*) and other small medium-sized antelopes. The waterbuck has emerged as the predominantly dominant postwar species, while larger animals such as buffalo are recovering more slowly, probably because of their intrinsically lower growth rates. For example, waterbuck abundance increased to more than 55,000 individuals accounting for over 74% of large herbivore biomass in 2018. In contrast, elephants, hippos and buffalo, which accounted for 89% of pre-war biomass, are now only 23%.

The last aerial wildlife count conducted in October 2018 counted over 100,000 large herbivores, making PNG once again a truly spectacular destination, witnessing the resilience of nature, under good protection and support.

These results demonstrate the potential for rapid postwar recovery of large herbivorous biomass given the park's soundness of management, but also suggest that restoring community structure takes longer and may require active intervention.

Case study 5: Restoration of wildlife populations

Mozambique was affected by a destabilizing civil war between 1976 and 1992. During this period conservation areas were abandoned by management entities due to lack of security and wildlife was indiscriminately slaughtered for meat and trophies. As a result, in many conservation areas the herds of many animal species have declined by over 95% and other species have become locally extinct. In late 1990's the process of rehabilitation of parks and national reserves was initiated. Reintroduction of wildlife populations is one way to achieve growth and viability of wildlife populations. National legislation establishes that the State promotes the repopulation of wildlife in accordance with the management plan of each conservation area. Similarly, the 2015-2024 ANAC Strategic Plan states that one of the actions towards the achievement of the strategic objective of biodiversity conservation is the promotion of restocking to ensure the maintenance of ecosystems in conservation areas. Reintroduction of wildlife is also a way of diversifying the tourism product with a view to increasing revenues for the state, local communities and the conservation area. The restocking program allowed more than 8,000 animals to be moved for restocking in various conservation areas between 2001 and 2018. PNL, PNG, REM and PNZ are the conservation areas that received the highest numbers of animals, with over 2,000 animals of different species received by each of the areas. In the early years of the reintroduction program implementation, these were supported by animals imported from neighboring countries. However, in the past five years, in addition to importing animals, Mozambique's conservation areas have provided animals to other areas, evidence that conservation area recovery programs are showing positive results. Most of the reintroduced species show good performance and high adaptability to new habitats, with population growth recorded.

Relevant websites, web links and files

Case study 4: https://www.gorongosa.org/pt/

Case study 5: https://www.anac.gov.mz/

Obstacles and scientific and technical needs related to the implemented measures

One of the major obstacles is the widespread rehabilitation of ecosystems in the country, which would ensure better adaptation to climate change and combat desertification. It is important that degraded ecosystems are known (mapped and assessed for their status) so that priorities are set for the

development of concrete ecosystem rehabilitation programs. Financial and technical resources are needed to work around this situation.

Target 13: By 2030, complete the characterization and cataloging the genetic diversity of cultivated plants and domestic animals and their threatened ancestors in natural habitats, including species of socio-economic and/or cultural value and defining strategies for their conservation.

Measure taken to contribute to NBSAP implementation

In order to achieve this Target, four priority actions and 9 indicators on genetic diversity of threatened species have been designed: to carry out the genetic inventory; implementation of the management plan; conservation and valoration of species; publications; conservation initiatives and institutions; crop varieties and animal breeds resistant to drought and disease; and construction of fish ponds.

In general, in five indicators out of the total of the indicators listed above, no activity was implemented.

Partly, activities were implemented in relation to the genetically threatened species management plan; conservation and valoration of genetically threatened species; institutions for the conservation of genetic resources, and type of crop varieties and animal breeds resistant to drought and disease.

In this context, crop characterization and harvesting and release of crop and drought resistant varieties was made. Regarding the development of drought-resistant varieties, 240 tonnes of certified rice seed for Gaza province were produced as a result of testing two drought-resistant varieties (more details can be seen in section 5, target 9); and as part of the development of fish species varieties, 856 tanks were built and populated in 2015 and 1,476 tanks in 2018, although there is no record of developed fish varieties nor the total (cumulative) number of tanks currently in existence.

Similarly, *in-situ* and *ex-situ* genetic resource conservation institutions have been reported and equipped with human and material resources, namely: IIAM, Food Crop Conservation Germplasm Bank, gene bank of the Center for Genetic Resources at IIAM; Medicinal Plant Garden at the Ethnobotanical Research Center in Namaacha. In 2015, the Rules of Procedure of the Sub-Committee for the Registration and Release of Varieties were approved.

Evaluation of the effectiveness of implemented measures

The implemented measures were parcially effective.

While appropriate steps have been taken to make changes in knowledge about genetic resources, their

values, and their protection, the indicators used to measure these changes remain far from expected. Positive changes from target are noticeable in the development of resistant varieties in the agriculture sector. The effectiveness of the target is underpinned by limited knowledge about genetic resources, which largely compromises the definition of strategies for their conservation.

Relevant websites, web links and files

Diploma Ministerial n.º 82/2015: Aprova o Regimento Interno do Sub-Comité de Registo e Libertação de Variedades;

http://www.masa.gov.mz

Obstacles and scientific and technical needs related to the implemented measures

The issue of genetic diversity in the country is very little addressed. There is little in the literature and information produced by experts is scarce or difficult to access. Identification and conservation of genetic varieties could be expanded through botanical surveys and the engagement of zootechnology actors. A major effort is needed to create incentives for research aimed at the conservation of genetic diversity, as well as the implementation of management plans in order to increase their socio-economic and / or cultural value, contributing to the conservation as well as reducing agricultural losses and reducing hunger. This requires specialized financial, human and technical resources.

Target 14: By 2030, create and integrate into national accounts a payment mechanism for environmental goods and services to promote fair, equitable and sustainable use of biological diversity.

Measure taken to contribute to NBSAP implementation.

To achieve target 14 the government has designed two priority actions and eight indicators on payment for environmental goods and services with regard to the valuation of ecosystem services and their contribution to national accounting systems; contribution of biodiversity to GDP and welfare; and on the creation, capacity-building and training in the use of biodiversity value accounting and integration tools.

Of the eight indicators listed above, no action was taken on five indicators.

Partly, some activities related to the evaluation of ecosystem services were carried out. Capacity building and training on the achievement of “No Net Loss of Biodiversity” has been implemented by WCS/COMBO and BIOFUND. For example, in Inhambane the sessions addressed a total of 200 participants from different sectors and institutions, government, academia and private sector

representatives from 2017 to date. It focuses on the training of civil society and the private sector, especially Government technicians working in the area of Environmental Impact Assessment, Management Plans and Monitoring.

Also, within the scope of payment for ecosystem services, some progress has been made in the creation of guidelines for the application of the hierarchy of mitigation and biodiversity offsets in Mozambique following the Mozambican environmental impact assessment legislation. Technical guidelines for the definition of ecological quality assessment indicators for miombo and mangrove forests are under development.

As part of the forest policy review and national forest program, the payment scheme for environmental services is being integrated and the design of a system tailored to national conditions is intended.

The BIOFIN project coordinated by the United Nations Development Program (UNDP) and the European Commission with the participation of the governments of Switzerland, Germany, Norway and Belgium, started in Mozambique in July 2018 under the leadership of MITADER and the Ministry of Economy and Finance (MEF). This initiative foresees four main products. The political and institutional review and the review of biodiversity expenditure have already resulted in important knowledge of biodiversity policies and financing in Mozambique. The other two components: Identification of financing needs and the biodiversity financing plan are underway.

None of the proposed indicators made significant progress.

Evaluation of the effectiveness of implemented measures

The implemented measures were partially effective.

While appropriate steps have been taken to bring about changes in the equitable and sustainable use of biological diversity, the indicators used to measure these changes remain far from expected. Positive changes are noticeable in planning, as well as an improvement in the legal framework and the development of tools for biodiversity accounting, but the applicability and oversight of actions approved by the Government is a weakness in achieving the target.

Relevant websites, web links and files

http://www.biodiversityfinance.net/index.php/mozambique

http://www.biofund.org.mz

http://www.combo-africa.org/wp-content/.../20180817_Treino_NPL_Moçambique.pdf

http://www.combo-africa.org/wp-content/uploads/2018/03/20180213_update_combo_2018_PT.pdf

Obstacles and scientific and technical needs related to the implemented measures

Efforts should be made to strengthen institutional capacity to give real value to environmental goods and services and ensure their sustainable use.

Financial, technical and scientific resources are needed to design and implement broader communication strategies and programs focused on the target and its indicators.

Target 15: By 2025, knowing and strengthen the contribution of biodiversity to increase the stock of carbon in order to mitigate and adapt to climate change.

Measure taken to contribute to NBSAP implementation

In order to reach this target, seven priority actions and 15 indicators were defined on: approval of the REDD + strategy; carbon assessments; forest certification for carbon sequestration; REDD + projects and community involvement; energy systems that reduce emissions; payment for ecosystem services; and approval of legislation to compensate for the use of biodiversity.

Of the 15 indicators formulated, there were no activities related to three of the indicators listed above.

Partly, some activities related to the approval of legislation to compensate for the use of biodiversity were carried out; development and implementation of national methodologies for carbon assessment, methodologies and allometric equations for some forest ecosystems (miombo, mopane, and mecrusse) have been developed. Landscape scale biomass estimation methodologies using remote sensing techniques were also tested. Four ecosystems were evaluated for carbon stock. The amount of carbon in dense evergreen mountain forests (more than 575 tCO2 / ha), mildly disturbed miombo forests (108 tCO2 / ha), mangrove (58 tCO2 / ha), and mopane (47 tCO2) were estimated. On the mangrove of the Zambezi Delta, a feasibility analysis for the implementation of carbon projects was also carried out.

In order to create a favorable legal environment for the implementation of carbon sequestration initiatives, Mozambique has approved a legal framework for REDD +. Several REDD + projects are taking place in Zambezia province, including the RNG, in Cabo Delgado, including PNQ and in Tete, Manica and Sofala. Also in this context, in 2018 Mozambique submitted the REDD + Baseline Report, reporting emissions from deforestation and forest degradation.

For emissions-reducing energy systems, there are currently natural gas-fired thermal power plants (Ressano Garcia; Kuvaninga in Chókwè; combined-cycle power plants in Maputo city), as well as large-scale solar power plants in Mocuba and Metoro, still under construction; Wind power is used in the center and north of the country in traditional grinding systems, and there are projects in view for the installation of wind farms in Maputo province (Matutuine) and Inhambane Province. Actions such as empowering local communities in the production of improved stoves and new models of efficient coal production have been carried out, with a total of 70,000 improved stoves distributed across the country by 2016.

In the carbon market, Mozambique signed in February 2019 an agreement with the Forest Carbon Partnership Facility (FCPF) for the implementation of a Payment for Results program in 10 districts of Zambezia province. In the context of institutional capacity building, a Monitoring, Reporting and Verification (MRV) framework was created in the FNDS dedicated to the REDD+ mechanism. Zambezia's Integrated Landscape Management Programme is the first one where the "payment for results" will be implemented, which foresees a reduction of 10 million tons of carbon dioxide emissions by 2024.

Under the biodiversity loss compensation, the biodiversity compensation payment fee was published in the Conservation Act Regulation. Biodiversity offsetting metrics are being developed for the design of compensation legislation.

Only one indicator was 100% met with the approval of the 2017 National REDD + Strategy and its Regulations.

Evaluation of the effectiveness of implemented measures

The implemented measures were partially effective.

Although appropriate measures have been taken to understand and reinforce the contribution of biodiversity to increasing carbon stocks, the indicators used to measure these changes remain far from expected. Significant changes are visible in the implementation of the REDD + mechanism in Mozambique to reduce losses due to climate change and to increase benefits from conservation and restoration of ecosystems.

There is a need to further promote voluntary mechanisms for compensation for the use of biodiversity by the private sector. In addition, carbon market feasibility studies should be undertaken to lay the foundations for exploitation of this carbon market to generate revenue to support biodiversity

conservation and create incentives for sustainable use of these areas by local communities.

Relevant websites, web links and files

https://www.redd.org.mz

Obstacles and scientific and technical needs related to the implemented measures

Notwithstanding the progress made, there is a need for further carbon stock assessments, and to improve the ability to summarize and report on projects and communities involved in emission reduction projects, as well as to make more effort to improve legislation on payment for ecosystem services, with a view to contributing to climate change mitigation and adaptation.

Target 16: By 2020, implement national legislation on access and benefit sharing arising from the use of biodiversity and genetic resources.

Measure taken to contribute to NBSAP implementation

In order to achieve Target 16, the government has designed five strategic actions and nine indicators on access and benefit sharing from the use of biodiversity (ABS) for the transferred material database; agreements and value of shared benefits; approval of the legislation dissemination program; operationalization of the traditional knowledge database; database accesses; training; technical assistance; and strengthening the legal framework.

Overall, no actions were taken on any of the proposed indicators.

Despite this, some activities leading to the achievement of the target were partially developed. Also in this context, the SECOSUD II project is underway, which is conducting a preliminary review and data collection with the ultimate objective of integrating the Nagoya Protocol of the CBD into national biodiversity policies in Mozambique. In addition, there is a database of marine organisms for taxonomic and biotechnology activities to develop basic science and business initiatives.

Regarding the National Legal Framework on Access and Benefit Sharing, the country has a single specific rule, Decree No. 19 of August 9, 2007, which approves the Regulation on Access and Distribution of Benefits from Genetic Resources and Associated Traditional Knowledge. This needs to be revised to align with the intentions of the Nagoya Protocol ratified in 2014. A new Law for the Practice of Traditional and Alternative Medicine is being finalized and awaiting approval. Although Mozambique is a signatory to the Swakopmund Protocol on the Protection of Traditional Knowledge

and Folklore Expressions, traditional knowledge cannot be legally patented as the appropriate legislation has not yet been passed.

Evaluation of the effectiveness of implemented measures

Implemented measures were ineffective.

While appropriate steps have been taken to bring about changes in access and sharing of benefits resulting from the use of biodiversity and genetic resources, the indicators used to measure these changes remain far from expected. Parallel measures to reach the target have been taken but it appears that the country does not have the resources to effectively implement its ABS policy. Strengthening institutional capacity to coordinate related activities and administrative capacity to activate the Interministerial Working Group on the Management of Genetic Resources as required by the country's ABS regulation is crucial.

Relevant websites, web links and files

https://s3.amazonaws.com/absch.documents.abs/records/absch-nr-mz-240491-1-en.pdf

Obstacles and scientific and technical needs related to the implemented measures

The lack of financial resources to effectively implement its ABS policy is one of the main problems encountered in implementing the target. There is no fair benefit sharing oversight mechanism. Another problem is the development of a mechanism for access and benefit sharing and systematization of the concept of local knowledge.

Target 17: By 2020, the sectors involved in biodiversity issues must develop, based on national targets, sectoral goals, integrate them into sectoral plans, and start implement it.

Measure taken to contribute to NBSAP implementation.

In order to achieve this Target, three strategic actions and five indicators on sectoral biodiversity protection targets and action plans have been devised for the preparation of the roadmap for biodiversity integration; inclusion of biodiversity targets in different institutions; design of biodiversity action plans in different institutions; design of plans and budgets that include biodiversity in different sectors; and sector-integrated biodiversity actions.

Of the five indicators listed above, no activities were conducted on four indicators.

Partly, activities related to an indicator on institutions were implemented at provincial and district

levels, with sectoral biodiversity action plans. In this regard, the Government has produced, and for mandatory implementation, the simplified matrix for integrating cross-cutting issues into plans and budgets. In this matrix, the environment in general and biodiversity in particular is a cross-cutting theme. The key ministries for implementing environmental actions (MITADER, MEF, Ministry of Public Works, Housing and Water Resources-MOPHRH, Ministry of Agriculture and Food Security -MASA, Ministry of Health-MISAU, Ministry of Sea, Inland Waters and Fisheries-MIMAIP, Ministry of Science and Technology, Higher Education and Professional Technical -MCTESTP) have entered activities on the five pillars of the 2015 - 2019 PQG on the environment, aligned with the NBSAP.

In this same sphere, the National Plan for Territorial Development (PNDT) is the top instrument of the territorial planning system of Mozambique. The PNDT performs several primary functions: (i) it spells out the strategy and model of national territory organization, (ii) provides the basis for spatial coordination of sectoral policies and for the programming of large public investments with territorial impact; and (iii) establishes guidelines and guidelines for the definition of the spatial planning policy and for the elaboration of the other territorial plans.

No significant progress was made on any of the indicators.

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

Actions have been taken to achieve the target but the way in which they are implemented does not allow control over their effectiveness. In addition, the weak capacity to report and share information on biodiversity prevails.

Relevant websites, web links and files

http://www.mined.gov.mz/POEMA/.../PO-S6-Orientacoes_PESOE_2012.pdf

http://pndt.gov.mz/

Obstacles and scientific and technical needs related to the implemented measures

Corresponding actions are still very scarce due to weak institutional coordination, lack of financial and human resources, and poor ability to implement biodiversity issues in planning and budgeting documents, resulting in independent and sporadic and ineffective actions.

Target 18: By 2035, value and respect the knowledge and traditional uses of on biodiversity, in accordance with national legislation.

Measure taken to contribute to NBSAP implementation.

To achieve target 18 the Mozambican government has developed four strategic actions and ten indicators on Biodiversity Management Committees (establishment and operationalization; capacity building; profile; members) and on traditional knowledge (publications; initiatives; seminars; traditional practices; production of information dissemination material; and dissemination actions).

Of the ten indicators formulated above, no activities related to two indicators were implemented.

Partly, training was provided to strengthen and operationalize natural resource management committees (CGRN). For example, several projects namely the project "Community Management and Conservation of Natural Resources in the Gilé and Pebane Districts" implemented by COSV; small-scale community conservation projects implemented by MozBio I and II; "Natural resource management transparency monitoring program" undertaken by Livaningo; and others in various regions of the country were implemented. On the other hand, the fishermen's union of Angoche, Larde, Moma and Pebane has been contributing to decision-making on fishery resource management at APAIPS and the development of legislation; Natural resource management associations on Mount Mabu are more empowered, among others.

Advances were observed in the establishment of CGRN; in 2018 289 CGRN were established, with an awareness and environmental awareness role in the communities, with 699 members trained.

Evaluation of the effectiveness of implemented measures

The effectiveness of the measures taken is unknown.

While appropriate measures have been taken to bring about changes in the integration of national targets into sectoral plans and actually start their implementation, the indicators used to measure these changes remain far from expected. Positive changes are visible in establishing CGRN and including communities in decision making in various regions of the country. Although traditional knowledge is widely used in Mozambique, there is still no legal regime in the country that effectively protects traditional knowledge. Efforts should be made to ensure safe access and rational use of native plants and other natural resources; encourage scientific research in this area of interest; and provide subsidies for community empowerment, promoting sustainable use of biodiversity.

Relevant websites, web links and files

https://www.cosv.org/projects/areas-of-intervention/africa-en/mozambique/?lang=en

http://www.itc.co.mz/2018/11/12/desmistificando-a-gestao-comunitaria-de-recursos-naturais-em-

mocambique-notas-do-workshop-de-partilha-de-experiencias-com-a-nacso/;
http://www.livaningo.co.mz/monitoria-e-transparencia-na-gestao-de-recursos-naturais/;

Obstacles and scientific and technical needs related to the implemented measures

Financial and technical support is needed to build local language tools for community empowerment to better protect their knowledge and negotiate with users seeking access to traditional knowledge.

Target 19: By 2035, strengthen the capacity of key stakeholders and improve the integration of gend issues, to enable the effective implementation of national targets.

Measure taken to contribute to NBSAP implementation.

To achieve this target six strategic actions and 11 indicators on biodiversity with gender content were designed. Specifically, elaboration of modules; training; capacity building; publications; review of the gender, environment and climate change strategy; indication of focal points; and gender mainstreaming in the CGRN, and respective training; and about NBSAP dissemination.

Of the 11 indicators that were designed to achieve this goal, no action has been fully taken to meet them.

Partly, 87 technicians from ANAC, Conservation Areas, and National Directorate of Rural Development (DNDR) were trained by MozBio on the implementation of community projects. As mentioned earlier, the COMBO project and BIOFUND have conducted a number of training sessions on biodiversity conservation, which included gender diversity representatives. The Ministry of Gender, Child and Social Welfare (MGCAS) prepared the gender profile in Mozambique in 2016. The gender profile indicates, among others, that women have even less access to productive resources, including natural ones, than men.

In Mozambique, the use and management of land and other natural resources are intrinsically linked to gender issues. In turn, there is a gender inequality resulting from socio-cultural, economic, religious and ethnic factors. Women in Mozambique have natural resources as their main source of livelihood, yet have less access to and control of productive resources than men.

166 women were trained in environmental issues to reduce poverty, adapt and mitigate climate change under the Environmental Education, Communication and Disclosure Program - PECODA in the first phase (2009 to 2014). In 2016, 20 dissemination and training campaigns on good environmental practices were carried out throughout the country, benefiting 21,169 people, including 11,787

women. There is currently a greater percentage of women who are aware of environmental issues and are adopting the use of new technologies in adapting and mitigating climate change and sustainable use of natural resources. Additionally, there is also an increase in the number of natural resource management committees that are led by women. The Care-WWF Alliance at APAIPS carried out various conservation, replanting, savings and conservation agriculture actions involving women. Care International developed an analysis of women's role in climate change; WWF conducted a study on the impact of extractive industry development and women.

Evaluation of the effectiveness of implemented measures

The measures taken were ineffective.

While some appropriate steps have been taken to bring about changes in gender mainstreaming in sectoral plans, the indicators used to measure these changes remain far from expected. This indicates that the country underperformed in achieving this goal. Emphasis should be placed on empowering key stakeholders to better deliver on biodiversity and gender mainstreaming to ensure that the solutions proposed by the projects match the needs of everyone, including and highlighting women.

Relevant websites, web links and files

https://www.wwf.org.mz/?4502/WWF-apresenta-trabalho-na-APAIPS

http://www.mgcas.gov.mz/st/FileControl/Site/Doc/4021perfil_de_genero_de_mocambique.pdf

https://uem.mz/images/cientifica/Politica%20de%20Investigacao-PORT-Revisto1.pdf

http://www.biofund.org.mz/wp-content/uploads/2018/01/PS-Programa-CARE-WWF-Allianca.pdf

http://www.biofund.org.mz/wp-content/uploads/2018/11/F1222.Itc-Report-Ps.pdf

Obstacles and scientific and technical needs related to the implemented measures

Among other difficulties that undermine the implementation of gender actions in Mozambique are: cultural barriers, insufficient awareness of laws and rights that defend women and unequal access to education. Achieving equity is still a major challenge in Mozambique, so an effective effort to promote and consolidate positive actions that ensure gender equality is essential.

Target 20: By 2020, strengthen national and international partnerships and establish innovative mechanisms for financing and support biodiversity programs.

Measure taken to contribute to NBSAP implementation.

To achieve Target 20 the Mozambican government has developed three strategic actions and five

indicators on biodiversity conservation partnerships with regard to involvement in fundraising; financial and technical support; and holding conferences and financing strategy development for NBSAP implementation.

Of the five indicators listed above, no activities were developed on four indicators. There is only information on involvement in mobilizing funds for biodiversity conservation. For example, the COMBO project and BIOFUND have partnered with the UNDP through the BIOFIN Project - a global initiative that seeks to improve, develop and implement financial mechanisms to improve financing for the conservation of biodiversity. Through the BIOFIN project, the political, institutional and economic context for biodiversity financing was assessed. Large financial contributions include World Bank financing through the Mozbio II project (REM, RNM, RNC); EU project (APAIPS, RNG and Mt. Mabu), KfW (PNL), PPF (PNL, PNZ and REM), AP (PNAB), Carr Foundation (PNG), AFD (RNG), among others. The World Bank, KfW, EU, AFD, are BIOFUND's main sources of capital and operating funds, which since 2017 has disbursed USD 3 million to conservation areas.

The Millennium BIM bank (International Bank of Mozambique) and MITADER, through the FNDS, recently signed a protocol establishing a financing line for investments in ecotourism projects. The Commercial investment bank (BCI) has introduced the BIO debit card which allows users to contribute to biodiversity conservation. The EU and the Mozambican Government have signed four financing agreements, one of which is covered by the area of sustainable natural resource management, as part of the PROMOVE Program which aims to help implement trade facilitation measures and improve the business environment.

In addition, several multi and / or bilateral agreements were signed with various partners such as Financial Sector Deepening Mozambique (FSD Moc), IUCN, Government of Vietnam, WCS, WWF, Greenhouse Gas Initiative (GGI) and FCPF on different aspects such as microfinance, conservation of natural resources, endangered species for trade, green growth and carbon funds.

Evaluation of the effectiveness of implemented measures

The measures taken were partially effective.

While appropriate steps have been taken to make changes in funding and support for biodiversity programs, the indicators used to measure these changes remain far from expected. Positive changes are noticeable in increasing fund-raising partnerships. Despite the number of partnerships created for biodiversity, Mozambique would benefit much more if the business plan was developed, giving the donors forum more credibility in the financial viability of its conservation initiatives.

Relevant websites, web links and files

https://eeas.europa.eu/delegations/mozambique/59201/uni%C3%A3o-europeia-e-mo%C3%A7ambique-assinam-quatro-conven%C3%A7%C3%B5es-de-financiamento-para-com%C3%A9rcio_pt

Other relevant informations

Case Study 6: BIOFUND- Biodiversity Conservation Foundation

Mozambique is rich in biodiversity. It has 14 ecological regions which together house 5,500 plant species, of which 250 are endemic; 740 bird species; at least 80 reptiles and amphibian species, of which 28 are endemic; 3,000 insect species and 214 mammal species. Its richness in flora and fauna finds protection in 7 National Parks, 12 National Reserves, 20 Coutadas, 51 Game farms; 13 Forest Reserves, among others. The area consigned to biodiversity conservation in Mozambique occupies about 26% of its territory. However, as in many emerging countries, the country is experiencing the apparent contradiction between conservation and development. From this perspective, the country's attractiveness to international finance capital for a number of areas, including the exploitation of coal deposits, natural gas and other minerals as well as agriculture, can affect many natural habitats. This poses enormous challenges to the consolidation of the country's network of conservation areas, whose incomes are still modest and the state budget allocated to them is manifestly insufficient. The operating cost of the national conservation area system is estimated at USD 18 million, of which about 80% is covered by contributions from the international community.

Despite being an injection of useful funds, external support has not been distributed equally among conservation areas. For example, between 2012 and 2014 only five conservation areas received approximately 95% of the value of external support. Even for the most favored, although this support is significant, it is also a problem, as values can vary dramatically year after year, making program planning and implementation difficult. Given that different donors often support different aspects and are not always well aligned with each other, reliance on external support poses a high risk for the effectiveness of conservation areas, and a high bureaucratic and administrative burden.

In this context environmental funds are an alternative that can provide a stable and long term level of financing to conservation areas.

It is in this context that BIOFUND was created in 2011 after two years of preparation by the Founders Committee. BIOFUND is an environmental fund, a non-profit and private law institution that mobilizes,

invests and manages financial resources for the sole benefit of biodiversity conservation in Mozambique. It is by definition the strategic partner of the ANAC. Once legally established and consolidated, BIOFUND received USD 10.6 million for the constitution of its investment fund in 2014. By the end of 2018, the cumulative value of the equity fund had reached USD 32.56 million. With this merit, BIOFUND will be able to disburse about USD 1 million annually for the conservation of biodiversity in Mozambique.

Relevant websites, web links and files

http://www.biofund.org.mz/sobre-nos/oque-e-a-biofund/

Obstacles and scientific and technical needs related to the implemented measures

Despite the number of partnerships created for biodiversity, Mozambique has not prepared a business plan for NBSAP implementation, which would give the country more credibility in the funding forum regarding the financial viability of its conservation initiatives. It is urgent to acquire human and technical resources for the implementation of the National Biodiversity Strategy and Action Plan and the establishment of a monitoring system of the actions planned in the Strategy.

SECTION III: ASSESSMENT OF PROGRESS TOWARDS EACH NATIONAL TARGET

During the first 3 years (2015-2017) of preparation for NBSAP implementation, the development of monitoring and evaluation mechanisms at national, provincial, district and local levels was antecipated.

To this end, institutions in different sectors should integrate these mechanisms into their plans and programs through the annual planning process to include biodiversity-related activities in the Annual Operating Plan (POA) and the PESOD. For this monitoring system to be effective, the baseline on changes in ecosystems was essential. However, such a monitoring and evaluation system does not yet exist in the country.

Nevertheless, the progress of some of the indicators defined in the NBSAP has been monitored using annual PES balances, PESOD's performance reports as well as expert reports from government partners, CBO's and NGOs. Monitoring based on these instruments focuses on pressure indicators; impact; state and response as well as behavioral changes in sectors of the country. Thus, taking into account that no baseline was developed considering the time frame established for 2017, this section assesses the progress of each national target from 2015 onwards - the year the strategy was approved.

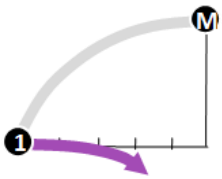
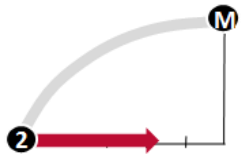
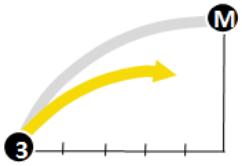
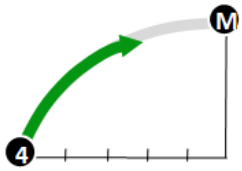
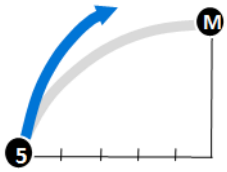
The assessment follows two approaches, quantitative and qualitative. The quantitative assessment represents only the percentage of indicators of each target for which actions are being implemented. The qualitative assessment reflects the opinion and point of view of the authors of this report, combined with stakeholder consultations during the socialization phases of this report.

Thus, the combination of these two approaches considers:

- All indicators have the same weight;
- Indicators that have been partially answered are equal to half of the indicators fully met;
- Scope of the target;
- Timeframe to reach the target.

Thus, a scale was defined according to the categories presented by COP, as illustrated in the table below:

Table 1: Category of progress

Category of progress	Definition	Range
	*Moving away from target* The issues the target is seeking to address are deteriorating. Reasons for this could be because the pressures on biodiversity are increasing, or other changes to national circumstances, the measures taken have not yet had an impact, the actions taken have been ineffective and/or because no significant measures have been taken.	0%
	*No significant change* No significant changes have been observed. Reasons for this could include that the measures taken have not yet had an impact, the measures taken have been ineffective, or that no significant measures have been taken.	1-25%
	*Progress towards target but at an insufficient rate* *Significant progress towards the attainment of the target has been made, however insufficient for the target to be met by the deadline unless further measures are taken.*	26-50%
	*On track to achieve target* The measures which have been taken and the current status of the issues addressed by the target will be met by the target deadline.	51-75%
	*On track to exceed target* The national measures taken will allow for the criteria/thresholds established by the target to be exceeded by the target deadline. In the case of those targets with quantitative elements, this would mean that the identified threshold would be surpassed. In the case of qualitative targets, this would mean that the actions or conditions required to be met have been surpassed.	76-100%
	Unknown The progress towards the attainment of this target is unknown. This could be because the available information is inconclusive or because no assessment has been undertaken.	

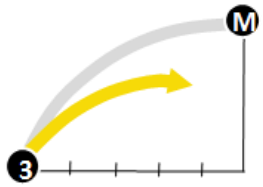
Source: Modified by: Secretariat of the Convention on Biological Diversity, 2014. Global Biodiversity Outlook 4. Montréal, 155 pages. www.cbd. int/GBO4

The information used for the assessment was taken from official websites of the relevant ministries, Government Social and Economic Plan Balances (BDPES); specialized reports from international agencies represented in Mozambique; Non-Governmental and Civil Society Organizations; BIOFUND; FNDS.

Target 1: By 2020, increase by 30% the level of awareness of the Mozambican population about biodiversity values and the impacts that human activity can cause.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "Progress towards the target, but at an insufficient rate (30%)".



Date the assessment was done

August 2019

Indicators used in this assessment

Awareness programs; School programs on biodiversity; teachers trained in the specialty of biodiversity; and private sector led training and awareness programs; NGOs, communities, public-private partnerships involved in capacity building and awareness programs; investment for biodiversity capacity building supported by the private sector; materials produced for the implementation of public biodiversity awareness campaigns; public biodiversity awareness events; communities reached; involved community members participating in the campaigns.

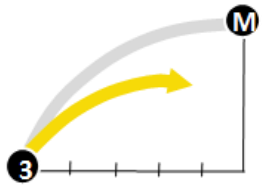
Level of confidence of the above assessment

Based on partial evidence.

Information on more than half of action indicators planned for this target exists. However, the quality and comprehensiveness of this information is limited.

Target 2: By 2020, there should be a better understanding of the economic, social and ecological value of biodiversity in order to better integrate into decision-making and management

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "Progress towards the target, but at an insufficient rate (30%)".	

Date the assessment was done

August 2019

Indicators used in this assessment

Priority research lines to assess biodiversity; scientific publications and technical reports on biodiversity; research projects on the value of biodiversity; taxonomic inventories and staff trained; scientific platform and tools for dialogue and sharing and access to information; institutions/individuals using the tools for decision making and management; tools for economic valorization of key ecosystem services; biodiversity valorization projects; biodiversity portal established and operational; information available in the database.

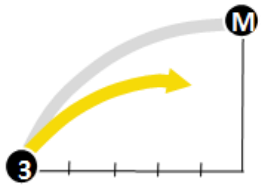
Level of confidence of the above assessment

Based on partial evidence.

Information on half of the action indicators planned for this target exist, however, the quality and scope of this information is limited.

Target 3: By 2025, effectively adopt and implement policies and legal instruments to prevent, mitigate and offset the impacts of human activities that may cause biodiversity degradation.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "Progress towards the target, but at an insufficient rate (30%)".	

Date the assessment was done

August 2019

Indicators used in this assessment

Fines issued under the Inspection and Monitoring Program of public and private waste treatment plants; inspected, rehabilitated and treatment plants functioning; inspection and monitoring program of public and private waste treatment stations to ensure their effective operation and approved rehabilitation; inspections, controls and fines issued under waste management plans; waste management plans for the development projects implemented; amount of waste collected, treated and/or recycled; waste management plans implemented at various levels; environmental quality standards adjusted to the national reality; compensations and penalties for biodiversity loss; capacity building in the assessment and quantification of impacts on biodiversity; capacity building for EIA consultants on the assessment and quantification of biodiversity impacts developed; EIAs reviewed by independent entities; EIA consultants selected by the environmental agency; mechanisms defined to ensure the impartiality of conducting EIAs, including independent review of EIAs (peer review mechanisms); EIAs that incorporate aspects of hierarchical compensation and mitigation for biodiversity loss; EIA Decree 45/2004 updated; compensation projects/initiatives established; private companies, organizations and other related institutions that implement voluntary compensation measures for the loss and / or reduction of biodiversity.

Level of confidence of the above assessment

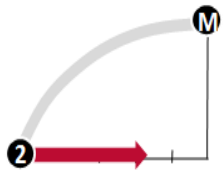
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 4: By 2025, define environmentally sustainable production and consumption systems established on the basis of sustainable practices and appropriate investments.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (20%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Goods and services with defined ecological limits; evaluated ecosystems; harvesting rates for two ecosystem services (wood and energy) defined; new species promoted, supported and consumed; diversity of traded varieties; mechanisms to promote SME in the use of less practices less aggressive to biodiversity; SMEs applying sustainable production methods; favorable energy alternatives for biodiversity conservation; families using alternative energies; explored charcoal; number of certified products sold; certification systems defined for selected products in accordance with national and international standards.

Level of confidence of the above assessment

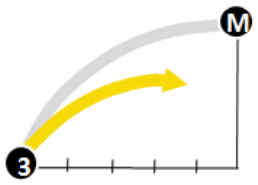
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 5: By 2035, reduce by at least 20% the area of critical ecosystems or those providing essential goods and services under degradation / fragmentation.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in “progress towards the target, but at an insufficient rate (35%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Critical ecosystems/habitats identified and evaluated; functional management plans implemented in at least seven critical ecosystems or providing essential goods and services; baselines developed for biodiversity monitoring; areas with defined biodiversity monitoring baselines; monitoring plans implemented in at least four unprotected areas; incentives for local communities to participate in defined

biodiversity conservation and management activities; communities actually engaged in biodiversity conservation activities; families and community members involved in conservation activities.

Level of confidence of the above assessment

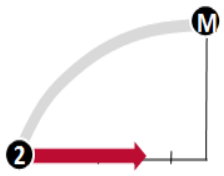
Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 6: By 2025, have at least 30% of habitats of endemic and / or endangered floristic and faunal species with established management strategies.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (20%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Program established and implemented; species evaluation; identification of IPAs; update of Red Data Book-RDB; institutions accessing the RDB; *in-situ* conservation plan; center and *ex-situ* conservation initiatives; endemic and threatened species; approved strategy; assessment and rehabilitation of forest reserves; illegal trade; approved management plans and percentage of species with management plans.

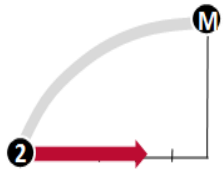
Level of confidence of the above assessment

Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 7: By 2020, catalog / systematize, disseminate and encourage sustainable management practices in agriculture, livestock, aquaculture, mining, forests and wildlife.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (15%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Territorial plan and regulation; National Plan for the prevention and control of uncontrolled burning updated and implemented; monitoring and management plans; projects implemented; conservation agriculture; definition of a system of areas of high conservation value; training performed; conservation techniques; implementation of energy alternatives; operating licenses; energy alternatives defined and implemented; numbers of licenses and mining operators.

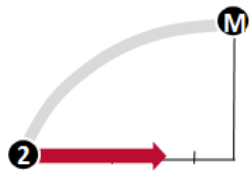
Level of confidence of the above assessment

Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 8: By 2025, reduce pollution by at least 20% of critically polluted ecosystems.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (5%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Polluted ecosystems; critical or threatened ecosystems, or providing essential services with known levels

and types of pollution; impact on critical ecosystems; management plans developed and implemented; ecosystems with reduced pollution levels and impact on critical ecosystems or providing approved and implemented essential goods and services; monitored sites/ecosystems; impact on critical ecosystems known; remediation plans for critical polluted ecosystems, or those providing essential goods and services, reduction of pollution in critical ecosystems.

Level of confidence of the above assessment

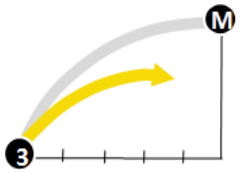
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 9: By 2025, reduce the occurrence of invasive species by at least 10% and establish / implement strategies for managing their impacts.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "progress towards the target, but at an insufficient rate (30%)".



Date the assessment was done

August 2019

Indicators used in this assessment

Invasive species; identified routes; legal framework; control and eradication of species; research and scientific publications; eradication and control plan; area occupied by species and catalog on invasive species; research on invasive species (routes, abundances and impacts) in progress; area occupied by known and monitored invasive species; catalog on invasive species, their distribution and impact.

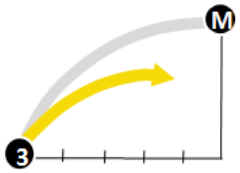
Level of confidence of the above assessment

Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 10: By 2035, place at least 20% of the area of ecosystems critically affected by climate change under adaptive ecosystem management.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "progress towards the target, but at an insufficient rate (35%)".	

Date the assessment was done

August 2019.

Indicators used in this assessment

Research projects and programs on the impact of climate change on critical ecosystems; impact level of climate change on known critical ecosystems; indicators postulated in the National Climate Change Strategy; impact of climate change; mitigation and adaptation projects implemented effectively to assess progress towards this goal.

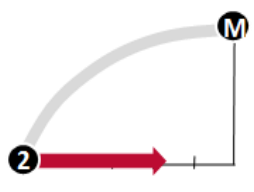
Level of confidence of the above assessment

Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 11A: By 2025, assess and redefine 75% of current conservation areas, and formally include 100% of Afro-mountainous endemism centers (altitude> 1500m) and at least 5% of marine ecosystems in conservation areas.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is "without significant changes (22%)".	

Date the assessment was done

August 2019

Indicators used in this assessment

Assessment of conservation areas; conservation areas with revised limits; percentage of areas rehabilitated and under ACTF; Forest Reserves evaluated and redefined; ecological corridors established to improve connectivity and ecological integrity between the NLP, PNB and PNZ and between the PNG and the Marromeu NR; mountainous, marine ecosystems and biodiversity hotpsots covered by ACs; area under TFCA; rehabilitation programs for degraded conservation areas.

Level of confidence of the above assessment

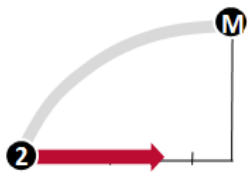
Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 11B: By 2030 effectively and equitably manage at least 50% of conservation areas.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (10%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Conservation areas (CA) with management plans; CAs with natural resource management committees; community CAs created; community rangers trained, equipped and participating in patrolling; research projects and programs to support the planning and management of CAs; scientific publications on CAs; households living in buffer zones with reduced dependence on natural resources of the CA; tourism services and annual revenues; trained technicians in relevant scientific areas for biodiversity conservation; capability of the CA in terms of materials; CAs with tourist resorts managed through partnerships between the private sector and local communities; benefits from conservation activities, agricultural inputs; sustainable agriculture and biodiversity management and conservation activities.

Level of confidence of the above assessment

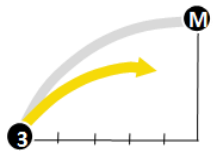
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 12: By 2030, rehabilitate at least 15% of degraded ecosystems / habitats, restore their biodiversity, and ensure their sustainability, with a view to mitigating the effects of climate change and combating desertification.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "progress towards the target, but at an insufficient rate (35%)".



Date the assessment was done

August 2019

Indicators used in this assessment

Assessment and rehabilitation of critical ecosystems; involvement of local communities; restoration of endangered species; expeditions made; number of registered and cataloged species; cataloged threatened species; turtle monitoring projects outside CAs; individuals of threatened reintroduced wildlife species; monitoring of marine species; conservation activities for endangered species; new conservation strategies for endangered species and actions to mitigate human-wildlife conflicts.

Level of confidence of the above assessment

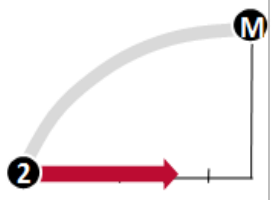
Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 13*:* By 2030, complete the characterization and cataloging the genetic diversity of cultivated plan

and domestic animals and their threatened ancestors in natural habitats, including species of socio-econom and/or cultural value and defining strategies for their conservation.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (15%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Genetic inventory of threatened species; activities of the respective management plan; articles and publications; genetic conservation initiatives; conservation institutions; Scientific publications; fish tanks.

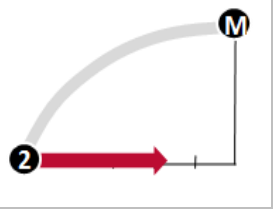
Level of confidence of the above assessment

Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 14*:* By 2030, create and integrate the national accounts a payment mechanism for environmental goods and services to promote fair, equitable and sustainable use of biological diversity.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (10%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Socio-economic value for key ecosystem goods and services; its contribution to national accounting; Economic tools for quantifying and integrating the value of biodiversity in national accounts; contribution of biodiversity, ecosystem goods and services to GDP; contribution of biodiversity to the well-being of the population; technicians trained in the use of biodiversity value accounting and integration tools; training on the use of biodiversity value accounting and integration tools; technicians trained in the use of quantification tools.

Level of confidence of the above assessment

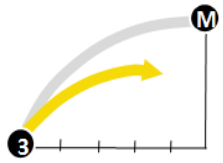
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 15*:* By 2025, knowing and strengthen the contribution of biodiversity to increase the stock of carbon in order to mitigate and adapt to climate change.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their fulfillment is in "progress towards the target, but at an insufficient rate (30%)".



Date the assessment was done

August 2019

Indicators used in this assessment

National REDD + Strategy approved; National methodology for carbon assessment developed; Carbon assessments made; Ecosystems assessed for carbon stock; Amount of carbon by ecosystem type; Forest area certified for carbon sequestration; REDD + projects in progress; local communities involved and benefited by REDD +; good practices introduced and implemented by communities under REDD +; Energy systems that reduce emissions; Community members using the improved energy systems; Biodiversity payment mechanism; companies involved in biodiversity payment initiatives; Legislation for the introduction of an environmental charge to compensate for the use of biodiversity or ecosystem services; Percentage of environmental charges applied for compensation for the use of biodiversity or

ecosystem services.

Level of confidence of the above assessment

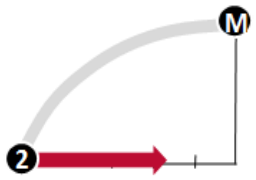
Based on partial evidence.

Information on indicators of actions planned for this target exists, however, the quality and scope of this information is limited.

Target 16*:* By 2020, implement national legislation on access and benefit sharing arising from the use biodiversity and genetic resources.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (3%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Database on the list of material transferred in accordance with the National ABS Regulation; ABS / Shared benefit value agreements; ABS legislation dissemination and dissemination program; Database on traditional knowledge available on the Government website; access to the database on traditional knowledge; ABS training modules; technical assistance programs for strengthening national ABS programs; ABS trained technicians; National Legal Framework on ABS and protecting traditional knowledge.

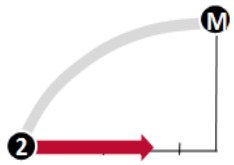
Level of confidence of the above assessment

Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 17*:* By 2020, the sectors involved in biodiversity issues must develop, based on national targets, sectoral goals, integrate them into sectoral plans, and start implement it.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (10%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Guide for the integration of biodiversity at sectoral level; Institutions with defined biodiversity targets; Provincial and district level institutions with sectoral biodiversity action plans; Sectors with plans and budgets that include biodiversity; Actions on biodiversity and integrated by sector.

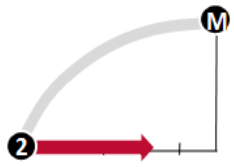
Level of confidence of the above assessment

Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 18: By 2035, value and respect the knowledge and traditional uses of biodiversity, in accordance with national legislation.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (15%)”.	

Date the assessment was done

August 2019

Indicators used in this assessment

Established and operational biodiversity management committees; capacity-building to strengthen and operationalize biodiversity management committees; Profile of the members of the defined biodiversity

management committees; members and technicians selected and integrated into the organic structure; publications on traditional knowledge; initiatives promoting local knowledge; seminars held to disseminate the impact and importance of traditional knowledge on biodiversity management and conservation; traditional practices integrated into biodiversity management and conservation activities; material produced and distributed for the dissemination of information about traditional knowledge; dissemination of information on traditional knowledge.

Level of confidence of the above assessment

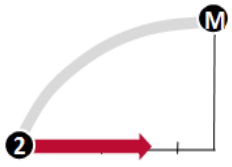
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 19: By 2035, strengthen the capacity of key stakeholders and improve the integration of gender issues, to enable the effective implementation of national targets.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (12%)”.



Date the assessment was done

Agosto de 2019

Indicators used in this assessment

Enhanced / elaborated biodiversity modules with gender content; biodiversity training sessions for key stakeholders held; trained biodiversity technicians; NBSAP specific activities and dissemination material; NBSAP dissemination seminars held; scientific reports and publications on gender and biodiversity relations; Gender, Environment and Climate Change Strategy revised taking into account biodiversity issues; training seminars on gender and biodiversity; focal points of the locally indicated gender units; gender categories in natural resource management committees; gender training and biodiversity management seminars held for Natural Resource Management committees.

Level of confidence of the above assessment

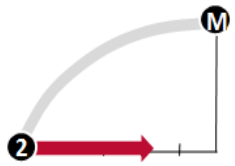
Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

Target 20*:* By 2020, strengthen national and international partnerships and establish innovative mechanisms for financing and support biodiversity programs.

Category of progress towards the implementation of the selected target

The evaluation of the indicators designed for this target indicates that their compliance is “without significant changes (10%)”.



Date the assessment was done

August 2019

Indicators used in this assessment

Partners involved in mobilizing funds for biodiversity conservation; level of financial and technical support of the partners involved; creation of innovative financing mechanisms, ACS co-management mechanisms, biannual partnership conferences on NBSAP implementation; partner institutions and participants in the biannual partnership conferences in implementing NBSAP; Financing strategy designed for NBSAP financing.

Level of confidence of the above assessment

Based on limited evidence.

Information on most action indicators planned for this target is not available and the quality and comprehensiveness of existing information is limited, the evaluation is strongly based on expert opinion.

SECTION IV: DESCRIPTION OF NATIONAL CONTRIBUTION TO THE ACHIEVEMENT OF EACH GLOBAL AICHI BIODIVERSITY TARGET

During the COP-10, held in Nagoya City, Aichi Province, Japan, the CBD proposed the establishment of a set of targets, medium-term objectives, which were materialized in 20 proposals called the Aichi Targets for Biodiversity, aimed at reducing biodiversity loss worldwide. CBD Parties to the CBD (including Mozambique) have committed to work together to implement the 20 targets by 2020. These targets are organized into five major strategic objectives:

(A) Address the root causes of biodiversity loss by raising government and society awareness of biodiversity concerns - *Targets 1, 2, 3* and *4;*

(B) Reduce direct pressures on biodiversity and promote sustainable use - *Targets 5, 6, 7, 8, 9* and *10;*

(C) Improve the biodiversity situation by safeguarding ecosystems, species and genetic diversity - *Targets 11, 12* and *13;*

(D) Increase biodiversity benefits and ecosystem services for all **-** *Targets 14, 15* and *16;*

(E) Increase the implementation, through participatory planning, of knowledge management and capacity building - Targets 17, 18, 19 and 20.

The strategic objectives are in line with national priorities. National targets were set on the basis of the Aichi Global Targets and refer to the current state of biodiversity knowledge and national capacity.

This section aims to analyze the progress made in the country according to the different activities developed to achieve the 20 Aichi targets.

Target 1: *By 2020 at the latest, people will be aware of the values of biodiversity and the steps they can take to conserve it and use it sustainably.*
People's awareness of biodiversity values depends largely on communication, education, extension programs, and the development and implementation of demonstration programs. All of this helps people understand and learn to sustainably use and conserve biodiversity for future generations. It is important to raise awareness of the active participation of all stakeholders. For a meaningful contribution, people need to understand the concept, meaning and threats to biodiversity, as well as the role they can and should play in their restoration, conservation and sustainable use. About half of the Mozambican population, at various levels, is aware of the values of biodiversity. Unfortunately, knowledge and awareness of the effects that human activity can have on biodiversity

is still incipient. There are, however, several environmental awareness initiatives implemented by various governmental and non-governmental institutions. In this regard, campaigns promoting a change in attitude should continue to encompass greater diversity of actors including: primary, middle and higher education institutions, the media, local, district, provincial and central government authorities, decision makers, NGOs and local communities. Particular attention should be paid to private operators who, driven by short and medium term objectives, may not be aware of the value of biodiversity.

How and to what extent has the country contributed to the achievement of this ABT

Although the level of knowledge of different sectors of society on biodiversity issues is not known, there is objective evidence of improvements, for example increased:

- Media coverage on biodiversity;
- The number of visitors to national parks and reserves (demonstrating the rising awareness of the value of biodiversity);
- Incorporation of aspects about environment and biodiversity in the curricula;
- Higher courses dealing with biodiversity issues;
- Rural communities that have been participating in Environmental Education, Communication and Dissemination programs;
- Adherence to tree planting programs in schools;
- Participation in environmental awareness programs;

Further details on evidence of progress made by the country towards ABT 1 aligned with National Target 1 (NT1) are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

The entire country and its population, with a special focus on students, youth and local communities, including women, were the main mentors and implementers of activities related to communication, education and public awareness. These segments represent the main human capital that must understand the value of biodiversity to better commit to its conservation. This target aims to increase people's ability to take decisions at their level in a conscious and informed manner, so that such decisions have the desired social, economic and environmental impacts, as stated in the 2030 Agenda and its SDG. There are good signs that people, communities and various social groups are beginning to demonstrate decision-making capacity, as described in NT1 in section II. Based on the comprehensive

evidence presented in NT1, progress towards ABT 1 is on track.

There are good signs that people, communities and various social groups are beginning to demonstrate decision-making capacity as described for NT1 in section II. Based on the comprehensive evidence presented in NT1, progress towards ABT 1 is on track.

Target 2: *By 2020 at the latest, biodiversity values will be integrated into national and local development and poverty reduction strategies and planning procedures and incorporated into national accounts and reports.*

Biodiversity conservation is crucial to preserving the environment, society and the health of the country's economy; It is therefore imperative to seek the integration of biodiversity into policy formulation and planning. In Mozambique, the integration of biodiversity issues into national and local development strategies as well as national accounts is hampered by the lack of quantification of the real economic, social and ecological value of biodiversity. Therefore, there is a need for applied knowledge-driven research on the real value of key ecosystem services (energy, wood, honey, berries, and protection services); its contribution to the development of the country and valorization of underused species.

Integrating biodiversity into Mozambique's institutional matrix is aligned at central, provincial, district and community levels. Ministries such as MITADER, MIMAIP, Ministry of Culture and Tourism (MICTUR), MASA, Ministry of Mineral Resources and Energy (MIREME) oversee the implementation of biodiversity related activities. In addition to these institutions, the National Council for Sustainable Development (CONDES) exists at central level, with a harmonising, binding and facilitating role in the implementation of activities linked to the environment in general, but to biodiversity in particular. All provinces have provincial directorates of the aforementioned ministries, as exists at the district level. At local level, implementation of biodiversity actions is under the responsibility of the Natural Resource Management Committees (CGRN); Management boards and Advisory Boards. Despite this stratified network of biodiversity governance, challenges remain in setting up and maintaining communication mechanisms between researchers and decision makers; a communication platform through the Biodiversity Unit should be promoted. This should have the role of strengthening dialogue and communication and facilitating the integration of biodiversity aspects into decision making.

How and to what extent has the country contributed to the achievement of this ABT

While the value of biodiversity for community development is recognized, national accounts do not yet reflect the state of biodiversity and ecosystem services. However, some significant advances have been noted in biodiversity surveys; few of these studies focused on ecosystem services and if they did, included some.

In addition, very significant progress has been made in integrating biodiversity into national and local development and poverty reduction strategies. For example:

- PQG (2010 - 2014) and PQG (2015 - 2019)
- annual PES;
- IIAM Strategic Plan 2011-2015;
- Environmental Strategy for Sustainable Development in Mozambique;
- PARPA
- National Strategy for the Promotion of Integrated Community Management of Natural Resources;
- Fisheries Master Plan 2012 - 2019;
- Environmental Regulation for Petroleum Operations;
- Action Plan for the Green Economy (2013/2014);
- PEDSA (2010–2019);
- Mozambique Climate and Climate Change Policy (2013);
- ENAMMC (2013-2025);
- AQUA;
- Conservation Areas Law 2013, Law No. 5/2017 and its regulation.

Details on evidence of progress made by the country in relation to the ABT 2 aligned with the NT2 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Knowledge and sustainable use of biodiversity and the design of strategies and policies for its conservation are the fundamental foundations for the economy's health, well-being and, in this sense, the activities implemented to achieve this target are aligned with the 2030 agenda and their sustainable development objectives. This target is intended to ensure that in the end there will be knowledge of biodiversity; that ecosystem services, to which the majority of the rural population is

dependent, produce recognition through their inclusion in national accounts, and that designed strategies, policies and laws serve to ensure that biodiversity is on the agenda and to serve today and forever. The evidence described shows that the country is committed to knowledge; that the government is committed to governance and that biodiversity is increasingly perceived as a driver of development. However, there are many challenges in accounting. Based on the comprehensive evidence presented in NT2, progress towards ABT2 is on track.

Target 3: *By 2020 at the latest, incentives, including subsidies that become biodiversity-damaging, will have been eliminated or reformed, or are in the process of being eliminated to minimize or prevent negative impacts, and have been set up and implemented positive incentives for the conservation and sustainable use of biodiversity that are consistent and in accordance with the Convention, as well as others with other relevant international obligations, taking into account national socio-economic conditions.*

Mozambique's development matrix is centered on agriculture, mining, fishing, logging, industry, among others. Unfortunately, its performance poses severe threats to biodiversity. The basic objective of establishing economic incentives for biodiversity conservation is to influence people's behavior, making them more motivated to conserve rather than degrade or deplete biodiversity in the course of their economic activities. Subsidies and incentives that have positive externalities to alleviate poverty by promoting the use of renewable and clean fuels and reducing pressure on forests have become increasingly supportive of biodiversity conservation and have encouraged biodiversity-friendly activities through a better orientation.

There are several ways to implement actions to prevent and mitigate impacts generated by the above mentioned activities. Mandatory EIAs for all development projects; compensation for their loss; monitoring of environmental management plans, control and inspection; implementation of waste management programs that prevent contamination of surface and groundwater, soils and associated ecosystems; Implementing zero net loss mechanisms is some of the ways.

Biodiversity loss due to economic development must be adequately compensated, so setting the value for biodiversity offset should be a national bet. Thus, actions aimed at determining compensation levels and defining management and decision-making measures under these areas are relevant.

How and to what extent has the country contributed to the achievement of this ABT

There is evidence of evidence related to the legal environment favourable to the prevention, mitigation and compensation for environmental impacts and has also been observed in solid waste management.

Details of evidence of progress made by the country towards the ABT 3 aligned with NT3 are given in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

There are many factors that undermine biodiversity conservation efforts. To this end, Mozambique has committed to reform or eliminate incentives, including subsidies that become detrimental to biodiversity to minimize or avoid negative impacts, and to apply positive incentives for the conservation and sustainable use of biodiversity that are consistent and sustainable in accordance with the Convention and other relevant international obligations. The evidence described above indicates that the Government is committed to achieving this goal by approving many legal instruments, some of which prevent practices that are harmful to biodiversity and others that guide the implementation of healthy practices for biodiversity conservation. As a country with more than 70% of the population living in rural areas and dependent on ecosystem services, the implementation of biodiversity-friendly practices and the prohibition of those that damage it favours economic development and sustainability, both included in Agenda 2030. However, there are many challenges in implementing practical actions that bring tangible results. Based on the comprehensive evidence presented in the NT3, progress towards ABT 3 is on the right track, but at very slow pace.

Target 4: *By 2020 at the latest Governments, the private sector and interest groups at all levels will have taken action or implemented plans for sustainable production and consumption and have been able to narrow the impacts of natural resource use clearly within safe ecological limits.*

As mentioned in the previous sections, as in the whole of the planet there is unsustainable consumption and production in Mozambique. Sustainable use practices need to be promoted in order to reduce the pressure on biodiversity and allow development activities within ecological limits. For example, wetlands, pastures and forests are recognized as important production sectors, however their production capacity and carrying capacity are being evaluated in very limited respects. Some of these ecosystems are heavily exploited without respecting safe ecological limits. In part, this

is due to a lack of knowledge about the productive capacity of key ecosystems, which limits the definition of a goal to achieve sustainable management practices. In National Target 4 it is suggested that the improvement of knowledge about the ecological limits of use is known and some practices identified, promoted and implemented. Good and environmentally sustainable production practices are required to stimulate development, but with less pressure on biodiversity.

How and to what extent has the country contributed to the achievement of this ABT

Initiatives have been implemented to restrict the impacts of natural resource use such as:

- Implementation of the Sustenta project in Zambezia and Nampula;
- Released varieties of diverse crops and promoted the marketing of inputs;
- Progress in fish production systems;
- Increased use of new and renewable energy (solar panels and photovoltaics).

Further details on evidence of progress made by the country towards the ABT 4 aligned with NT 4 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Sustainable development interests all actors: Government, strategic partners, Civil Society and communities. Use outside ecological limits can end the cycle of resource existence and compromise natural capital and human existence itself. To this end, all stakeholders should implement plans, strategies and policies that ensure sustainable use of biodiversity, ie within ecological limits. The actions and their level of implementation described demonstrate that plans, strategies and regulations have been created and are being implemented on a broad scale across the country in a convergent manner. Although the practical gains from this implementation are not yet noticeable, still partial results demonstrate alignment with the goals set out in the 2030 Agenda. Based on the comprehensive evidence presented in NT 4, progress towards ABT 4 is on the right track.

Target 5: *By 2020, the loss rate of all natural habitats, including forests, will have been reduced by at least half and, as far as possible, brought to near zero, while degradation and fragmentation will have been significantly reduced.*

Fragmentation and loss of some habitats are occurring at a rapid pace. For example, between 1990 and 2017, the extent of forests in Mozambique went from 62.431 to 40.1 million hectares. Similar

degradation trends have occurred in critical ecosystems such as mangroves, coastal forest, miombo woodlands, mountain forests and grasslands, flooded Zambezi savannas, and marine ecosystems such as corals and seagrass. These trends have been associated with demographic growth that demands subsistence agriculture and overexploitation of resources and mining among others. Reducing the rate of degradation in such ecosystems requires the development and implementation of appropriate strategic and political-legal measures, such as the implementation of management plans; capacity building and incentives for ecosystem conservation and restoration activities and promotion of the involvement of populations and / or groups directly dependent on ecosystems. Special attention should be given to unprotected areas where formally no management and monitoring activities exist.

How and to what extent has the country contributed to the achievement of this ABT

Several studies have shown that forest cover has been declining in Mozambique. Indeed, the extent of areas of natural forests and other woody formations rose from 62,431,000 hectares in 1990 to 60,181,000 hectares in 2005 and 40.1 million of hectares today ie forest conversion rate in 1990 was 219,000 hectares per year and reduced to 211,400 hectares per year in 2010 (FAO 2010). The charcoal production rate went from 100,000 tonnes in 1990 to 849,000 tonnes in 2012. Currently, coal production has been falling significantly. The mangrove area went from 1,500,000 hectares in 1963 to 446,712 hectares in 2007 and only 295,600 hectares today.

Several other activities have been implemented, such as the identification and mapping of critical ecosystems and consequent prevention of their degradation through the reinforcement of protection measures.

Further details on evidence of progress achieved by the country in relation to the ABT 5 aligned with NT 5 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Loss and fragmentation are a major cause of biodiversity loss in Mozambique, mainly due to anthropogenic factors. This goal guides parties to dramatically reduce losses (up to 50% and where possible to zero) as well as fragmentation. Habitat loss and fragmentation can undermine SDGs, as much of Mozambique's rural households are dependent on what they extract from various ecosystems. Although shyly, restoration of some habitats and tree planting programs may be making small gains in cover and carbon stocks. However, as a general trend, habitat loss and fragmentation

continue worryingly, especially in forests. There are many challenges in accounting for the contribution of restoration and tree planting efforts to reversing habitat loss. Based on the comprehensive evidence presented in NT 5, progress towards ABT 5 is on track but far from the target.

Target 6: *By 2020, the management and capture of any stocks of fish, invertebrates and aquatic plants will be sustainable, legal and done by applying ecosystem approaches to avoid overexploitation; put in place plans and recovery measures for depleted species; ensure that fisheries do not have significant adverse impacts on threatened species and vulnerable ecosystems, and that fisheries impacts on fish stocks, species and ecosystems remain within safe ecological limits.*

From a universe of about 900 fish species, it is estimated that around 1% of these are currently described and efficiently conserved in Mozambique. Improving their conservation status requires an assessment and / or updating of their current status and the development of species-specific management plans and conservation strategies. Improved knowledge of these species should involve the collection of material relevant to the identification and detailed description, the evaluation of stocks in their natural habitat, as well as the possibility of improvement and maintenance of stocks through conservation measures *in -situ* and *ex-situ*. In recent years, the demand for fish and shellfish resources (gastropods, shrimps, crabs and mussels) has been increasing. This has forced the Government to design policies and strategies to increase production yield and develop aquaculture, which includes the promotion of public-private partnerships to achieve its goals. Government action has been accompanied by the implementation of a regulatory and supervisory framework that ensures the adoption of good biodiversity conservation practices.

How and to what extent has the country contributed to the achievement of this ABT

Several studies show reduced catches in Mozambique. Commercial catches of fish decreased from 30,210 tonnes in 2004 to 18,437 tonnes in 2008 (USAID, 2010); In the same period, catches of surface shrimp decreased from 11,889 tonnes to 7,482 tonnes.

In terms of legislation, the Government approved the Fisheries Master Plan (2012-2019) and the Fisheries Law 2013, Law 22/2013, which recognizes fisheries research as a support for fisheries management. The Government has banned the issuing of new licenses for surface shrimp fishing.

Details of evidence of progress made by the country towards the ABT 6 aligned with NT 6 are

provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Fishing resources are one of the engines of Mozambique's economy growth. A large part of the country's population lives in the coastal zone and is engaged in fishing, using a variety of fishing gear that, if not regulated and monitored, can be detrimental to the sustainability of fishing. In addition, semi-industrial and industrial fishing face other challenges in the regulated exploitation of resources. This goal is to ensure that fishing activity respects stoks, the rules of exploitation and sustainability as well as adopts an ecosystem approach to safeguard the conservation of endangered species. Evidence described above demonstrates that there are consistent significant advances in legislation, policies and regulatory strategies. The fisheries sector has strengthened the ecosystem approach to marine resource management as a whole; the fisheries ministry has increased its responsibilities for the whole sea and from this perspective the community approach through management committees and implementation of fisheries sustainability actions has gained greater impact. All this effort converges with the 2030 Agenda. Based on consistent evidence presented in NT 6, progress towards ABT 6 is on the right track.

Target 7: *By 2020, areas under agriculture, aquaculture and logging will be managed sustainably, ensuring the conservation of biodiversity.*

Mozambique's socio-economic development depends on agriculture, forests, wildlife, livestock and aquaculture. Due to the degradation of traditional agriculture, habitat destruction and overfishing, biological resources essential for human livelihoods have been threatened. Therefore, the promotion of sustainable management practices in the agrarian sector is extremely important. Some practices are under implementation, notably conservation agriculture in some areas of central and northern Mozambique and the sustainable management of some forest concessions. These practices have been carried out by private or local initiatives without proper assessment of implementation levels and their efficiency in biodiversity conservation. The designation of some areas of value for biodiversity conservation in cultivated and forested areas, fishing areas, etc. should be one of the focuses on the development of the agrarian sector in the country.

How and to what extent has the country contributed to the achievement of this ABT

Mozambique is increasing its agricultural production through an increase in agricultural areas, which puts pressure on forests. In view of this, in 2011 the Agricultural Sector Strategic Plan 2010 - 2019 (PEDSA) was approved, which, among others, aims to increase agricultural intensification and increase the productivity of agricultural areas and to control the use of agrochemicals. The Government has been implementing a number of initiatives to reduce burning. Indeed, in 2013 was launched the National Burn Control campaign to empower communities in improved forest resource exploitation techniques; launched the Conservation Agriculture Promotion Program in the PNQ in Cabo Delgado as a means of reducing the population's use of uncontrolled burning.

In Mozambique aquaculture represents a great potential for production. Actions to accelerate its development include increasing the area under cultivation and construction of fry and feed production infrastructures. Aquaculture production volume has been increasing from just over 2,000.00 tonnes in 2017 to 1,180.00 tonnes in the previous year. This sector has grown in the last two years by about 8%. In view of this growth, the Government has approved aquaculture legislation, which establishes norms, parameters and restrictions for the exercise of this activity.

Further details on evidence of progress made by the country in relation to the ABT 7 aligned with NT 7 can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Agriculture, aquaculture and logging are three of the sectors that contribute to the country's GDP, but both can have a negative impact on biodiversity. This goal is for the parties to implement actions that, while considering the three sectors as crucial for the economy, minimize their negative impact on biodiversity. The evidence presented earlier suggests that comprehensive and appropriate plans, policies and strategies are being implemented. Challenges persist in the production of scientific knowledge that assists the legal and policy component to achieve practical results. As the three most important sectors for the economy, their good performance on biodiversity aligns with the goals of Agenda 2030. Based on the comprehensive evidence presented in NT 7, progress towards ABT 7 is on track.

Target 8: *By 2020, pollution, including excess nutrient pollution, will have been reduced to levels not detrimental to ecosystem functioning and biodiversity.*

The expansion of commercial agriculture, mining, industry, infrastructure development, urban expansion, among others has allowed the country to reach levels of development of its economy. Although investments in these sectors are subject to the EIA process in accordance with Mozambican legislation, the poor capacity to monitor and inspect the impacts of these activities is acknowledged, as well as the limited incorporation of sustainable environmental management practices into business activities. The intensification of agriculture presupposes the use of agrochemicals, and when improperly done, can lead to pollution of ecosystems.

Improving awareness of current levels of soil, water (inland and marine) and air pollution is crucial for the definition of concrete pollution reduction measures. On the other hand, rapid urban growth, not always accompanied by appropriate solid waste management and wastewater treatment practices, can also increase pollution levels. Through NT 8, in line with ABT 8, Mozambique seeks to promote green behaviour among citizens; implement pollution reduction and remediation plans and, where appropriate, promote sustainable environmental management practices.

How and to what extent has the country contributed to the achievement of this ABT

With the exception of some urban centers and mining areas, pollution levels in the country are not yet detrimental to the functioning of ecosystems. Nevertheless, in 2014 Mozambique ratified the "Protocol for the Protection of the Marine and Coastal Environment of Land Based Sources and Activities (LBSA Protocol); approved in 2016 the National Strategy and Action Plan for Integrated Coastal Zone Management (2015-2020). It is preparing the National Strategy and Action Plan for Mangrove Management (2018-2023) and the National Strategy and Action Plan for Wetland Management.

Further details on evidence of progress made by the country in relation to the ABT 8 aligned with NT 8 can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Pollution has negative effects on the quality of ecosystems and the species associated with these ecosystems. With this goal, pollution is expected to be reduced to levels that do not impair the functionality of ecosystems. The evidence presented earlier recognizes that pollution levels in the country are not yet detrimental to the functioning of ecosystems. Major progress has been made in creating a legal environment, policies and strategies to harmonize the three sectors of activity and

conservation of biodiversity. Although pollution levels are still negligible, there are still no programs that show ways to deal with a few reported cases of pollution, such as Moatize and Manica. Challenges persist in the production of scientific knowledge that assists the legal and policy component to achieve practical results. However, the approach that has been taken by the Government is convergent and balanced with the sustainable development goals, summarized in Agenda 2030. Based on very partial evidence presented in NT 8, progress towards ABT 8 is on the right track, but still below expectations.

Target 9: *By 2020, invasive alien species and their vectors will have been identified and prioritized, priority species will have been controlled or eradicated, and vector control measures will be taken to prevent their introduction and establishment.*

Biological invasion is a major cause of environmental and socioeconomic damage, as well as a major determinant of biodiversity decline (CBD, 1992). Many invasive species taxa cause socioeconomic impacts, and may affect human well-being, including food security, material and non-material goods, health, social, spiritual and cultural relationships (Bacher *et al.* 2017). Anthropogenic pressure, land use change and climate change are causes that have accelerated their invasion of Mozambique.

Many species including aquatic plants, terrestrials, insects, birds have been introduced to Mozambique over the years, most of them deliberately. However, the existing studies are still incipient for a better estimate of the species invasion rate, knowledge of the ecology of these species and the routes through which these species enter ecosystems. This limits the development of eradication plans, control of invasive species. The difficulty is further associated with the lack of a legal framework to support invasive plant activities.

How and to what extent has the country contributed to the achievement of this ABT

Little has been done to update the list of invasive species in Mozambique, so little is known about their distribution. There are currently about 53 invasive species listed (http://www.iucngisd.org).

Further details on evidence of progress made by the country towards the ABT 9 aligned with NT 9 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Invasive species are another setback in biodiversity conservation. Once established, they can succeed

and gain competitiveness with the natives, thereby negatively influencing the provision of various ecosystem services on which communities depend, contrary to Agenda 2030 and the SDGs. With this target, it is expected that by 2020 invasive species have been identified; the priority ones have been controlled and eradicated; that the vectors have been identified and controlled. The evidence presented earlier recognizes that there has not been much progress in the key indicators of success. There is general knowledge about invasive species; its distribution and vectors. Since 2008 there has been a legal instrument, but practical actions in this direction have not been implemented. Based on very partial evidence presented in NT 9, progress on ABT 9 is in the early stages and on the way, but still far below expectations.

Target 10: *By 2015, multiple anthropogenic pressures on coral reefs, and other ecosystems impacted by climate change or ocean acidification, will have been minimized to maintain their integrity and functioning.*

Mozambique is vulnerable to climate change due to its geographical location in the intertropical convergence zone and downstream of shared river basins, its long coastline and the existence of large areas with altitude below sea level. On the other hand, they contribute to vulnerability and low adaptability, poverty, limited investments in advanced technology, and fragility of social infrastructure and services, especially health and sanitation. The consequences, although still poorly understood, include, but are not limited to, alteration and / or loss of ecosystems and consequently the well-being of people who depend on the goods and services provided by the ecosystems. Through NT 10, in line with ABT 10, Mozambique seeks to implement actions such as the use of sustainable resource use practices (advocated in target 7) that reduce the negative impact of climate change and enable local communities to adapt.

How and to what extent has the country contributed to the achievement of this ABT

To achieve this goal, the country has decided to place under adaptive ecosystem management ecosystems critically affected by climate change. In this regard, it continued to implement actions under the National Climate Change Adaptation and Mitigation Strategy (2013-2025). This strategy calls for the application of management practices that increase the adaptive capacity of ecosystems and the identification of areas at risk of biodiversity loss as some of the measures to protect biodiversity from climate change. In addition, with the ratification of the "Protocol on the Protection of the Western Indian Ocean Marine and Coastal Environment from Land Based Sources and

Activities" in 2014, the level of protection of some ecosystems has increased; To help protect coral reefs, it created the First and Second Islands Environmental Protection Area.

Further details on evidence of progress made by the country towards the ABT 10 aligned with NT 10 can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Climate change imposes significant impacts on ecosystems. But it is the multiple anthropogenic pressures that create the most impacts and especially when combined with the first. Strategically, a minimization of anthropogenic pressures could help in the maintenance and functioning of ecosystems. By this target, it was expected that by 2015 such pressures would have been minimized. The evidence presented above suggests progress in the implementation of some actions which have had positive results. Such positive progress resulted from the implementation of policies and strategies by the Government. However, the implementation of further actions in the adopted strategy is still in progress. Medium and long term activities will be required to consolidate some results. Challenges persist in conducting scientific research to help consolidate results. Based on consistent evidence presented in NT 10, progress on ABT 10 is on track, but still far below expectations.

Target 11: *By 2020, at least 17% of terrestrial and continental waters and 10% of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem services, will have been conserved through protected area systems managed by effectively and equitably, ecologically representative and satisfactorily interconnected and by other spatial conservation measures, integrated into wider terrestrial and marine landscapes.*

The Strategic Plan for Biodiversity Conservation (2011 - 2020) suggests that 17% of land areas and 10% of marine and coastal areas worldwide be conserved and designated protected areas. The Aichi Goal 11 seeks, in addition to the assigned area for protection, their management and effective conservation measures.

In Mozambique, about 26% of the national territory is officially protected. However, challenges remain for effective management through knowledge of key protected habitats and their national representation, redefining the boundaries of some areas and defining the need to maintain certain

protected areas within the national protected area system. Special attention should be given to biodiversity conservation issues in areas not formally recognized as protected areas but whose status justifies it. In these, (Community) management actions should be undertaken to promote the sustainable use of biodiversity.

Effective management presupposes the strengthening of human capacity and infrastructure, mobilization of financial resources, among others. On the other hand, the focus of management should be on improving the conservation of endemic and endangered species through *in-situ* strategies, on critical and climate -*sensitive* ecosystems, and on the development of sustainable and participatory management programs, on the restoration of protected areas and the enhancement of biodiversity in these.

Activities supporting ABT 11 progress are in line with NT 11A and 11B.

How and to what extent has the country contributed to the achievement of this ABT

Coverage of protected areas (terrestrial and marine) in the country has been increasing but continuing challenge to reach the 10% target for marine and coastal areas.

Further details on evidence of progress made by the country towards the ABT 11 aligned with NT 11A and 11B are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Effective implementation of the Strategic Plan for Biodiversity in general and NBSAP in Mozambique aims to provide greater protection for biodiversity. Most of the country's protected areas were established at a different time and context than today. On the other hand, the concept of protected areas has been changing, encompassing other categories. To this end, the parties undertake to consign 17% of their land surface area and 10% of their navy to conserve biodiversity. Mozambique should assess and redefine current conservation areas and include other areas of refuge. The evidence presented shows that the country has exceeded its 17% target for land surface area and is working to increase from just under 3% to 10% of its marine and coastal areas. Significant progress is being made in the assessment and inventory of stranded ecosystems and boundaries of some conservation areas have been reconsidered in alignment with the inclusion, integrity and convergence with the 2030 Agenda SDGs and principles.

Although Mozambique has devoted 26% of its geographical area to biodiversity conservation, their

effective management faces challenges. This target also recommends ensuring effective management of at least 50% of conservation areas. The evidence presented shows that the country has significantly improved management of protected areas either through the elaboration of Management Plans and their implementation, or through the re-launching of tourism activities. This improved management is benefiting communities living side by side with conservation areas, thereby converging with the SDGs and the 2030 Agenda.

Based on consistent evidence presented in NT 11, progress towards ABT 11 is on track towards expectations.

Target 12: *By 2020, the extinction of known endangered species will have been prevented and their conservation situation, especially those undergoing further decline, will have been improved and maintained.*

The number of vulnerable and threatened species is increasing in Mozambique. In-depth knowledge of the conservation status of species in Mozambique, especially endemic and endangered species, is poor. Much effort has been made in recent years to improve knowledge of the conservation status of the most important, endangered and / or endemic species. In some protected areas, wildlife recovery programs, particularly and especially the most vulnerable ones, have been implemented.

How and to what extent has the country contributed to the achievement of this ABT

Despite a lot of effort to improve biodiversity protection, factors that threaten its persistence remain a challenge. The increase in poaching has been a setback and main explanation for wildlife reduction in recent years. For example, poaching has been the main cause of the decline of half the number of elephants by 2014. The Government has made a lot of effort to reduce poaching and thanks to this effort, there has been a drastic reduction in the last two years. On the other hand, reintroduction activities of various animal species in the REM, RNG, PNZ and PNG, have recovered animal populations.

Further details on evidence of progress made by the country towards the ABT 12 aligned with NT 12 can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Species extinction is occurring at increasingly frightening rates. In Mozambique, some species are

already considered extinct. This goal recommends that parties undertake actions to prevent endangered species and improving protection for those in decline. The evidence presented demonstrates that the country is implementing measures to prevent losing more species and in some cases restoring some declining populations. These actions help to restore conservation-based tourism and direct and indirect gains to local communities, which converge with the SDG and Agenda 2030.

Based on the general evidence presented in NT 12, progress against ABT 12 is on track towards the expected, but still below target.

Target 13: By 2030, complete the characterization and cataloging the genetic diversity of cultivate plants and domestic animals and their threatened ancestors in natural habitats, including species socio-economic and/or cultural value and defining strategies for their conservation.

Genetic resources play a key role in human survival. In Mozambique, protecting these resources is still at the under many challenges. This goal aims to ensure greater attention to genetic resources, their values and their protection. As current knowledge on the subject is still limited, priority actions should focus on species inventory, genetic characterization and cataloging / mapping of threat levels, agro-biodiversity hotspots, and others. For priority species, sustainable management programs that prevent genetic erosion should be developed and implemented. Species with marketable potential should also be recognized, described and valued and their cultivation promoted.

How and to what extent has the country contributed to the achievement of this ABT

In order to protect local plant varieties, by 2014 the Government had already established through the Ministry of Agriculture, a variety emission control committee and a National Plant Genetic Resources Committee to protect the plant genetic resources. It had also approved a Biosafety Regulation on the Management of Genetically Modified Organisms. Further details on evidence of progress achieved by the country in relation to the ABT 13 aligned with NT 13 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Genetic diversity of cultivated plants, bred and domesticated animals, and wild varieties is a heritage of nations because it ensures the human condition. This target recommends the parties to maintain this diversity and to prevent genetic erosion and to protect their genetic diversity. The evidence

presented shows that the country has implemented policy and strategy reforms in this regard as well as awareness raising activities. The Government has implemented actions to promote the conservation of genetic biodiversity that are indigenous. Despite research into the identification of drought-resistant varieties, research challenges in this field are still required to ensure the agrobiodiversity that ensures community development to align with the SDG and the 2030 Agenda. Based on comprehensive evidence presented in NT 13, progress towards ABT 13 is on track, but still below target.

Target 14: By 2030, create and integrate the national accounts a payment mechanism for environmental goods and services to promote fair, equitable and sustainable use of biological diversity.

Benefits from ecosystem services are vital to the survival of communities as well as to the economy of the country. Unfortunately, ecosystems and hence their services are under pressure from various sources, mainly due to climate change. And Mozambique is highly dependent on ecosystem services. Accounting for biodiversity contributions to the country's development should focus on the resources that are currently most used and those with the potential for commercialization. In Mozambique, this is an emerging and new approach that requires capacity building at the planning level. This target as well as target 2 requires the development and implementation of a comprehensive recovery program that generates information on the economic potential of biodiversity, so the development of tools for biodiversity accounting and trade promotion are of high importance.

How and to what extent has the country contributed to the achievement of this ABT

Except for species reintroduction, mangrove replanting, restoration of the Gorongosa mountain range, and transformation of the former Malhazine military compound area into a biological park, very little has been done about rehabilitating critical degraded ecosystems. Apparently, research, capacity building and training in valuing ecosystem services is required. Further details on evidence of progress made by the country towards the ABT 14 aligned with NT 14 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Ecosystems provide various services and in the specific case of Mozambique, households are intrinsically dependent on these services. Unfortunately, for many reasons, many ecosystems crucial

for this purpose have been degrading. This target recommends the parties to implement restoration and preservation actions imbued with the principles of inclusion. The evidence presented demonstrates that pressures on critical ecosystems have been identified; rehabilitation and rehabilitation activities are being implemented; A large proportion of these activities are implemented with strong inclusion of women and other vulnerable groups. Progress is also observed in the design and implementation of appropriate policies. These actions confirm their convergence with the SDGs and the 2030 Agenda. Based on the comprehensive evidence presented in NT 14, progress towards ABT 14 is on track.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks will have been increased through conservation and restoration actions, including through the recovery of at least 15% of degraded ecosystems, thus contributing to mitigation and adaptation to climate change and combating desertification.

Climate change could have severe impacts on the degradation and loss of critical ecosystems and the environment. Some changes may be visible and others barely noticeable. Such visible changes can be changes in forest cover pattern, loss of biodiversity, rainfall patterns and among others. Mozambique is already registering such changes that are very noticeable. This target in conjunction with target 12 is intended to ensure the benefits derived from conservation efforts. Recent efforts on the REDD+ mechanism in Mozambique should be recognized and strengthened to ensure the benefits generated by ecosystem conservation and restoration. The international carbon market is still emerging, but the development of national methodologies for carbon assessment and accounting, reference for different ecosystems should be a bet of the country. This further presupposes the development and establishment of REDD+ pilot projects focusing on ecosystems with the potential to generate this environmental service. It also provides for the promotion of voluntary mechanisms for compensation for the use of biodiversity by the private sector.

How and to what extent has the country contributed to the achievement of this ABT

Actions to meet this target included the implementation of the British company Envirotrade's carbon livelihoods project in the PNQ, the Nhampakue and Inhamitanga forest reserves and the PNG buffer zone and the Nhambita community as well as plantation. In the degraded areas of Lúrio, and Sanga of 54, 000 hectares of exotic forests were planted. In 2017 the National REDD+ Strategy and its Regulations were approved. Further details on evidence of progress made by the country towards the

ABT 15 aligned with NT 15 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Ecosystems are permanently under pressure and above all by climate change and multiple anthropogenic causes. Restoring degraded ecosystems enables resilience cycle functionality. This target recommends that the parties implement degraded ecosystem restoration actions to ensure appropriate adaptation to climate change. The evidence presented demonstrates that the Government has designed and implemented appropriate policies and strategies; In some cases practical actions are underway. Restoration of such degraded ecosystems aims to ensure the provision of crucial household survival services in line with the SDG and Agenda 2030. Based on comprehensive evidence presented in NT 15, progress towards ABT 15 is at right way towards the expected.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits derived from its Use will have entered into force and will be operationalized in accordance with national law.

Mozambique ratified the Nagoya Protocol in 2014. As a signatory, and through this target, it ensures that biodiversity offset schemes are established to enhance traditional knowledge and ensure its contribution to improving the livelihoods of local communities. Although Mozambique has ratified the Nagoya Protocol and approved the Access and Benefit Sharing Regulation in 2007, there is still a need to improve the implementation of these instruments in coordination with relevant ones. The development of a fair and equitable access and benefit sharing mechanism should be established taking into account targets 14 and 15 on payment for environmental services. It requires, among other things, the empowerment of local communities and the private sector to promote their participation in biodiversity offset mechanisms.

How and to what extent has the country contributed to the achievement of this ABT

Despite having ratified the Nagoya Protocol in 2014 and having a Regulation on Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge since 2007, overall, very little has been done in this regard. Details of evidence of progress achieved by the country in relation to the ABT 16 aligned with NT 16 are provided in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on

sustainable development and the SDGs

Mozambique is rich in secular knowledge about biodiversity. This knowledge has been valued over generations and proved necessary for the survival of communities and industrial processes, food and health. To this end, the Parties undertake to ensure that appropriate legislation and policies are implemented, and in close compliance with this purpose, at national level biodiversity offset schemes are established in such a way as to enhance the value of traditional knowledge and to ensure its contribution to biodiversity improving the livelihoods of local communities in alignment with the SDG and Agenda 2030. The evidence presented demonstrates that the Government has devised and implemented appropriate policies and strategies such as the Regulation on Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge; and the Law for the Practice of Traditional and Alternative Medicine, which is awaiting approval. Mozambique is a signatory to the Swakopmund Protocol on the Protection of Traditional Knowledge and Folklore Expressions. However, actions under NT 16 in this respect are still below expectations. Based on comprehensive evidence presented in NT 16, progress towards ABT 16 is on track and in the right direction.

Target 17: By 2015, each Party will have developed, adopted as a policy instrument, and begun to implement an effective, participatory and up-to-date national biodiversity strategy and action plan.

In compliance with CBD Article 6, Mozambique approved and implemented its biodiversity strategy and related plan in 2003 (NBSAP, 2003 - 2010). NBSAP (2003 - 2010) has been revised in NBSAP (2015 - 2035). The biodiversity strategy paper has a 20-year timeframe; It is presented in seven chapters and eight strategic objectives. This goal is to ensure that the biodiversity conservation priorities set out in this strategy are integrated into the development of sectoral strategies and plans of key sectors for the country's development: (i) energy, (ii) mining and extractive industry, (iii) agriculture / forests / wildlife, (iv) tourism, (v) public works and housing; (vi) waters and that such planning be carried out in a decentralized manner. This requires consistency with national targets as well as the revision of sectoral strategies / plans to ensure the effective integration of biodiversity issues into budget planning by ensuring the implementation of projects and activities related to biodiversity conservation.

How and to what extent has the country contributed to the achievement of this ABT

The United Nations has declared the 2011-2020 decade the decade of biodiversity. As a result, the 20 Aichi Targets were designed, which were used by parties to adjust their national targets to the Aichi

targets. The Mozambique Biodiversity Strategy was drafted in a participatory process across sectors and its drafting coincided with the entry of a new Government called to implement its 2015 - 2019 PQG. In this perspective NBSAP 2015 - 2035 was aligned with both the PQG as with PES 2015, 2016, 2018 and 2019. The Government has also produced and for mandatory implementation, the simplified matrix of integration of cross-cutting issues in Plans and Budgets. In this matrix, the environment in general and biodiversity in particular is a cross-cutting theme. The key ministries for implementing environmental actions (MITADER, MEF, MOPHRH, MASA, MISAU, MIMAIP, MCTETP) have entered activities on the five pillars of the 2015 - 2019 PQG on the environment, aligned with the NBSAP. Thus, annual PES balance sheets are used as monitoring tools for NBSAP implementation.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Mozambique has adhered to the global objectives of the biodiversity decade. In this sense, it adopted Aichi's 20 target, from which it elaborated its national goals synchronized with the global ones. To this end, the parties undertake to develop and adopt as a policy instrument and to implement NBSAP in a participatory manner. The evidence presented demonstrates that the country has devised national targets and participatively updated the NBSAP which was submitted to the secretariat in late 2015; It has adopted the NBSAP as its strategic working tool and many of its actions have been implemented by the nominated Government agencies and partners. NBSAP 2015 - 2035 is a document fully aligned with the SDGs and 2030 Agenda. Based on consistent evidence presented in NT 17, progress towards ABT 17 is on track.

Target 18: By 2020, indigenous knowledge and innovations and practices of indigenous and local communities relevant to the conservation and sustainable use of biodiversity and the customary use of these areas of biological resources will have been respected, in accordance with national law and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities at all relevant levels.

Traditional beliefs about plant and animal uses are rooted in the culture of many ethnic groups in Mozambique; each ethnic group has developed a traditional system of the role of plants and animals as food, clothing, protection, medicinal value and spiritual values. There is a vast literature on research on medicinal plants in Mozambique and the Government has created appropriate institutions to deal

with this issue. Still, there is a long way to go in systematizing and aligning research and defining a unified approach to protecting traditional knowledge in the light of the Nagoya Protocol. Together with target 16, this target aims to ensure respect for the ownership of traditional knowledge and to ensure its contribution to improving the livelihoods of local communities.

How and to what extent has the country contributed to the achievement of this ABT

The Government approved three instruments in this regard: Intellectual Property Strategy, which was in force between 2008 and 2018; Regulation on Access and Benefit Sharing from Genetic Resources and Associated Traditional Knowledge and the Mozambique Science, Technology and Innovation Strategy which has as research priorities: i) the creation of an information base for ethnobotanical knowledge; ii) the creation of a coordination mechanism for ethnobotany research and its use in social and economic development programs; iii) research on the characterization of traditional practices, including social aspects; iv) research to value traditional knowledge; v) research into the use, production and marketing of products based on local knowledge; vi) research on ethnobotanical resources and their use in different contexts, via plants with nutritional value, plants with medicinal value, plants with aromatic properties for the production of insecticides, toiletries, cosmetics, aromatherapy and ornamental purposes. Nevertheless, little has been done in practical terms and especially in capacity building. Further details on evidence of progress made by the country towards the ABT 18 aligned with NT 18 can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

As stated in target 16, Mozambique is rich in traditional beliefs about plant and animal uses. These uses are rooted in the culture of many ethnic groups that span the vast territory. To this end, the parties undertake to respect the traditional knowledge, innovation and practices of traditional communities through compliance with national and international law in this regard with full participation of the communities themselves, in order to induce local development and participation, as advocated in the SDGs and Agenda 2030. The evidence presented shows that the country has been implementing the Intellectual Property Strategy and the Regulation on Access and Benefit Sharing from Genetic Resources and Traditional Knowledge. It created public institutions that act in the valorization of the traditional knowledge and implemented several capacitating activities and community associations. Based on consistent evidence presented in NT 18, progress towards ABT 18 is on track towards the expected, but with enormous challenges in inclusion.

Target 19: By 2020, knowledge, the scientific basis and technologies related to biodiversity, their values, functioning, status and trends and the consequences of their loss will have been improved, widely shared, transferred and applied.

Biodiversity knowledge generation plays an important role in improving the existing database, but also in improving knowledge-based decision making. In Mozambique, biodiversity information is generated by academia, research institutions, non-governmental organizations, government partners and individuals. This target focuses on indicators that by 2020, Mozambique's flora projects will be successfully implemented; existing ecosystem information to be updated by 2017; National Red List on flora and fauna as well as ecosystems are prepared as well as basic inventories on non-timber forest products and animal genetic resources by 2020 and among other expected advances such as the design of a web page where biodiversity information is provided.

How and to what extent has the country contributed to the achievement of this ABT

In the last ten years, eight expeditions have been carried out, mainly in the provinces of Zambezia and Cabo Delgado. These expeditions served to improve the country's knowledge of its biodiversity. Two nationally covered wildlife aerial censuses were also conducted (2013 and 2018). At least four protected areas (RNN; PNQ; PNG; PNL and REM) conduct regularly (at least every two years air censuses). Critical habitats of the country were mapped as well as wetlands. The number of biodiversity research projects has increased as well as publications in this regard. Much progress has also been made in training human resources for biodiversity. However, despite a lot of effort that has been made over the past three years, Mozambique does not yet have the “Clearing house mechanism”. There is a web platform being finalized to host the country's biodiversity database; Practical mechanisms for providing information in a communicative form to decision makers are under discussion. The creation of Red Lists of flora and fauna, as well as the mapping of KBAs in the country are also being consolidated.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Knowledge about biodiversity allows decisions to be made about their use and management to be consistent and informed. In Mozambique, biodiversity information is generated by academia, research institutions, non-governmental organizations, government partners and individuals. To this end the

parties undertake to improve existing knowledge on biodiversity and to share, transfer and apply it. The evidence presented shows that the country has been implementing actions that result in better knowledge of biodiversity, but this is an ongoing process; that despite some challenges is developing mechanisms for better sharing this knowledge. Challenges persist in their transfer and application. The consolidation of the knowledge that has been gained has allowed decision makers to be advised on sustainable use in the light of the Agenda 2030. Based on consistent evidence presented in NT 19, progress against ABT 19 is on track towards the expected, but with enormous challenges in fundamental and applied scientific research.

Target 20: By 2020 at the latest, the mobilization of financial resources for the effective implementation of the 2011-2020 Strategic Biodiversity Plan from all sources and in accordance with the consolidated process agreed in the Resource Mobilization Strategy should have increased substantially compared to at current levels. This target will be subject to change as a result of resource needs assessments to be prepared and reported by the Parties.

Multi-stakeholder partnerships are crucial for the implementation of national biodiversity conservation goals. NBSAP has considered various strategies to ensure the generation of funds for biodiversity and other associated topics. Such national and sectoral resource mobilization and investment strategies must be innovative as conservation is receiving less and less funding. In Mozambique, 73% of resources for biodiversity conservation come from international donors; 15% of the state treasury; 6% of state payroll revenue and another 6% from other sources. To this end, it is important to develop resource mobilization plans for biodiversity, mobilize partners for the implementation of this strategy, local planning and budgeting that includes biodiversity, mobilize investments in biodiversity conservation programs, establish benchmarks for biodiversity conservation, multilateral, bilateral and national budgeting that support the flow of investments in biodiversity conservation and monitoring programs.

How and to what extent has the country contributed to the achievement of this ABT

BioFund and FNDS were created from which some partnerships in mobilizing funds for biodiversity conservation were established.

Additionally, several multi and / or bilateral agreements were signed.

Further details on evidence of progress made by the country towards the ABT 20 in line with NT 20

can be found in Section II of this report.

How and to what extent the contribution support the implementation of the 2030 agenda on sustainable development and the SDGs

Effective implementation of the Strategic Plan for Biodiversity in general and NBSAP in Mozambique entails resource mobilization. Unfortunately, financial resources for biodiversity conservation have been scarce. This fact requires building many partnerships. In Mozambique, 73% of resources for biodiversity conservation come from international donors; 15% of the state treasury; 6% of state payroll revenue and another 6% from other sources. To this end, the parties undertake to mobilize financial resources for effective implementation of NBSAP and to create appropriate strategies for building synergies necessary for this purpose. The evidence presented shows that the Government has set up institutions (BIOFUND and FNDS) to assist in mobilizing financial resources; established several partnerships and signed several multi and bilateral agreements. These government initiatives have helped the country to implement crucial actions that stimulate the country's economic development focusing on sustainability, inclusion and integration in light of the principles of the 2030 Agenda. Based on consistent evidence presented in NT 20, progress towards ABT 20 is on the right track towards the expected.

SECCTION V: NATIONAL CONTRIBUTION TO THE ACHIEVEMENT OF THE GLOBAL STRATEGY FOR PLANT CONSERVATION (GSPC) TARGETS

The Global Strategy for Plant Conservation (GSPC) was adopted by the CBD at its COP-6 in 2002 and updated for the 2011-2020 period at the COP-10 in October 2010 in Nagoya, Japan. The Strategy seeks to assess the state of global plant conservation by 2020, and ensure that at least 75% of threatened taxa are conserved in situ (Munoz-Rodriguez *et al*. 2016). In order to halt the ongoing loss of plant diversity, the Global Strategy for Plant Conservation has developed 5 objectives, namely:

I: Plant diversity understood, documented and recognized.

II: Plant diversity is urgently and effectively conserved.

III: Plant diversity is used in a sustainable and equitable manner.

IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted.

V: The capacities and public engagement necessary to implement the Strategy have been developed.

To achieve the objectives, the Strategy has set 16 targets for plant conservation to be achieved by 2020. Several countries have developed national responses to contribute to GSPC. Although Mozambique does not have a specific Plant Conservation Strategy, several initiatives have been established to promote the implementation of the GSPC. These plant conservation initiatives are incorporated in the NBASP 2015-2035.

This section describes how far Mozambique is contributing to achieving the goals set by the GSPC.

Objective I: Plant diversity well understood, documented and recognized

Target 1: *An online flora of all known plants.*
National targets related to GSPC targets
Activities related to this target are incorporated in NT **2**
Major measures taken by the country for the implementation of the GSPC
To achieve this goal, efforts are being made to create an online National Biodiversity Center, which will be fed by the various institutions in Mozambique that publish plant information online:

In 2007 an online site called “Flora of Mozambique” was created with the aim of providing online information on the flora of Mozambique to various users. This site has about 6,145 native or naturalized species in its database. It also has 27,896 images of 3,501 species (3,432 native or naturalized and 69 cultivated).

Through experience gained from existing international initiatives (GBIF, BioCASE, Species2000 and Encyclopedia of Life) to create a sustainable infrastructure for standardization, aggregation and publication of biodiversity information, the country currently has an online tool called “Biodiversity Network of Mozambique - BioNoMo ”, still in a pilot phase, with primary biodiversity data of 8,844 occurrences corresponding to 2,506 digitized species (40.8% of total known species) of information from the IIAM (National Herbarium of Mozambique-LMA) and UEM (Eduardo Mondlane University Herbarium-LMU) herbariums.

In addition, plant data have been published by Mozambican institutions in GBIF. In this portal, 4,714 occurrences of endemic and near-endemic plants from Mozambique were published, as well as 1,059 occurrences of the LMU collections.

It should be noted that the activities described above are being implemented by projects and as such it is necessary that the national institutions with the responsibility of providing information to the platforms have the capacity to continue after the end of the ongoing projects.

Relevant websites, web links and files

Burrows J, Burrows S, Lötter M, Schmidt E (2018) Trees and Shrubs of Mozambique. Publishing Print Matters, Noordhoek, Cape Town, 1–1114.

https://www.gbif.org

https://www.kew.org

https://www.mozambiqueflora.com

https://www.plants.jstor.org

http://www.secosud2project.com/bionomoportal.php

Target 2*: An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **6**

Major measures taken by the country for the implementation of the GSPC

Since 2016, at least one meeting per year of the Southern African Plant Specialists Group has been held to assess the conservation status of species using IUCN criteria. Priority was given to the evaluation of 400 endemic and near-endemic species (of the estimated 800 for Mozambique), and species of economic and cultural value. Five meetings were held and 354 species were evaluated / re-evaluated, where 144 are in the endangered category, and of these 269 are already published in the IUCN red list, with the collaboration of different institutions with updated information complementing the Country flora data.

In 2017, researchers, academics and conservation technicians were trained in the application of the IUCN criteria to assess the conservation status of species.

Relevant websites, web links and files

IUCN SSC Southern African Plant Specialist Group (2017). IUCN SSC Southern African Plant Specialist Group:2016–17report.https://www.iucn.org/sites/dev/files/2016-2017_southern_african_plant_sg_report.pdf;

http://www.kew.org

http://www.iucnredlist.org

http://www.secosud2project.com/bionomoportal.php

Target 3: *Information, research and associated outputs, and methods necessary to implement the strategy developed and shared.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **2**

Major measures taken by the country for the implementation of the GSPC

Studies conducted in various regions of Mozambique to improve knowledge of the country's vascular plants have resulted in the recording of new occurrences, new records and new underscribed species. Botanical expeditions were conducted (8) to document and disseminate plant diversity in lesser-known areas, mainly in mountainous and coastal ecosystems. These resulted in the increase of recorded and archived specimens in the country's herbariums. 35 plants were described and published. Two botanists were trained in taxonomy, digitization of herbarium specimens and their georeference, and conducting botanical expeditions. However, there still are gaps in taxonomy

information for some groups, rare species and their exact location, as well as lack of skilled taxonomy botanists with field experience in collecting quality data to achieve appropriate levels for the implementation and sharing of the GSPC.

Relevant websites, web links and files

http://www.biofund.org.mz/

http://www.gorongosa.blogs.sapo.mz/simposio-sobre-conservacao-e-126999

https://www.kew.org/sites/default/files/Chimanimani%20CEPF%20report%202016_FINAL.pdf

https://www.kew.org/sites/default/files/Chimanimani%20Darwin%20report%2C%20FINAL.pdf

Timberlake, J. R., darbyshire, I., Wursten, B., Hadj-Hammou, J., Ballings, P., Mapaura, A., Matimele, H., Banze, A., Chipanga, H., Muassir, D., massunde, M., Chelene, I., Osborne, J., & Shah, T. (2016). Chimanimani Mountains: Botany and Conservation. Report produced under CEPF Grant 63512. Royal Botanic gardens, Kew, London. 95 pp.

Timberlake, J.R., Darbyshire, I., Cheek, M., Banze, A., Fijamo, V., Massunde, J., Chipanga H. and Muassinar, D. (2016). Plant Conservation in Comunities on the Chimanimani footslopes, Mozambique. Report produced under the Darwin Initiative Award 2380. Royal Botanic Gardens, Kew, London.69pp.

Objective II: Plant diversity is urgently and effectively conserved

Target 4: *at least 15% of each ecological region or vegetation type secured through effective management and/or restoration.*

National targets related to GSPC targets

Activities related to this target are incorporated in NTs **4, 5** and **6**

Major measures taken by the country for the implementation of the GSPC

Most of the main vegetation types are included in the conservation areas network. However, some ecosystems such as mountain and coastal forest ecosystems are still outside the conservation area network, just as some important vegetation types are in the buffer zones of conservation areas and are under intense human pressure. In order to ensure that all vegetation types are well represented by ecological zones, a comprehensive map of the different vegetation types / ecosystems is required, as well as to determine which species or biological components are to be conserved in each ecosystem, assess ecosystem threats and their level of protection.

Some measures are being taken in this regard, currently is underway an exeecise for mapping and

evaluate the country ecosystems / habitats.

Relevant websites, web links and files

http://www.biofund.org.mz/

Target 5: *At least 75% of the most important areas for plant diversity of each ecological region protected with effective management in place for conservation plants and their genetic diversity.*

National targets related to GSPC targets

Activities related to this target are incorporated in NTs **6** and **11A**

Major measures taken by the country for the implementation of the GSPC

In 2017 was initiated a process of identifying, evaluating and characterizing IPAs for Mozambique. This activity is being carried out by the Royal Botanic Garden-Kew, IIAM and UEM, in collaboration, with the aim of assessing and identifying priority areas for plant conservation in order to enable them to be effectively managed. So far IPAs have been identified and evaluated in the Chimanimani and Ribaué / M'palué areas, as well as the identification of threatened plant species in urgent need of protection.

In parallel, initiatives to identify and map KBAs are also being developed and will also help to prioritize biodiversity conservation actions.

Although the actions taken to achieve this target are promising, there is still a need for more flora surveys from lesser-known areas in each ecological region to identify and protect critical plant conservation sites in Mozambique, so that limited resources available can be targeted to the important plant diversity areas and ensure sustainable management of these areas.

Relevant websites, web links and files

http://www.biofund.org.mz

http://www.kew.org

http://www.keybiodiversityareas.org

http://www.link.springer.com

http://www.mozambique.wcs.org

http://www.Plantlife.org.uk

Target 6: *At least 75% of production lands in each sector managed sustainably, consistent with the*

conservation of plant diversity.

National targets related to GSPC targets

Activities related to this target are incorporated in NTs **7** and **9**

Major measures taken by the country for the implementation of the GSPC

Mozambique comprises 10 agro-ecological zones, and the country's productive land represents an important natural resource for socio-economic development. Spatial planning and sustainable land exploitation activities are undertaken by the government to minimize impacts on land use. Nevertheless, there are still gaps in the integration of plant biodiversity information into land use planning. Agrarian legislation must take account of plant conservation aspects to ensure that productive land in each sector is sustainably managed, consistent with the conservation of plant diversity.

Conservation agriculture is part of the sustainable management practices of the productive areas developed in the country. The MASA promotes conservation agriculture, agro-forestry systems, and reforestation in order to reduce deforestation. However in mining areas we still have areas that are not being able to minimize the negative impacts and even restore or rehabilitate these areas.

Relevant websites, web links and files

http://www.masa.gov.mz

http://www.mitader.gov.mz

Target 7: *At least 75% of known threatened plant species conserved in situ.*

National targets related to GSPC targets

Activities related to this target are incorporated in NTs **6** and **12**

Major measures taken by the country for the implementation of the GSPC

In Mozambique about 70 plant species are in the threatened category of the IUCN red list. As mentioned in the previous targets, an assessment of the conservation status of plant species is still ongoing in order to determine which plant species are threatened in Mozambique and to identify whether they are within the national conservation network. According to the assessments carried out many species in the endangered category fall outside conservation areas and / or in forest reserves that are not part of the conservation areas network, there is therefore a need to strengthen legislation

for the conservation of endangered species.

Relevant websites, web links and files

http://iucnredlist.org

Target 8: *At least 75% of threatened plant species in ex situ collections, preferably in the country of origin, and at least 20% available for recovery and restoration programmes.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **13**

Major measures taken by the country for the implementation of the GSPC

There are some institutions responsible for *ex situ* plant conservation in Mozambique.

The Botanical Garden of the Eduardo Mondlane University has a collection of about 200 species belonging to at least 70 families; More than 96% of the species are native to Mozambique, and of these four species are threatened. On the other hand, there are only three threatened species in the IIAM Botanical Garden.

It is expected that, with the activities of evaluation of the state of conservation, a list of endangered species will be drawn up and conservation plans developed for these species, allowing an increase in the number of endangered species incorporated in the botanical gardens.

Relevant websites, web links and files

https://www.gbif.org/
https://www.uem.mz/

Target 9: *70% of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge.*

National targets related to GSPC targets

Activities related to this target are incorporated in NTs **4, 13** and **16**

Major measures taken by the country for the implementation of the GSPC

Genetic diversity of crops is preserved through germplasm conservation at the Mozambican National Center for Plant Genetic Resources (CNRF). This Center is part of the IIAM, a public institution that carried out activities in the collection, conservation and morphological and molecular characterization of seeds. There are currently 3,439 accessions of various cultivated food crops and some wild crop relatives.

From 2015 to 2018, 6 seed collection missions were carried out across the country. 292 accessions of cultivated and wild rice (*Oryza sativa*; *Oryza longistaminata* and *Leersia hexandra*), 141 accessions of cowpea (*Vigna unguiculata*), 33 accessions of bambara/yoke (*Vigna subterranea*) and 27 accessions of peanut (*Arachys hypogea*) were collected; multiplication and morphological characterization of 295 rice accessions (*Oryza sativa*; *Oryza longistaminata* and *Leersia hexandra*) and 75 accessions of cowpea (*Vigna unguiculata*) were performed; and molecular characterization of 50 rice accesses was performed.

The program "Adapting agriculture to climate: Collecting, protecting and preparing wild relatives" produced the guide "Mozambique Crop Wild Relatives - Identifying Seed Collection Guide" where 28 important species were identified for Mozambique and 16 of which are of high priority for collection. A preliminary assessment of the conservation status of *Solanum torreanum* places this species in the category of critically endangered species.

However, Mozambique is not yet carrying out colection missions for crop wild relatives and endangered wild species.

During the period 2015 to 2018 seeds were collected for conservation in genetic bank in an opportunistic way in 2 botanical expeditions. Since the CNRF is not yet prepared to conserve these seeds, they were transferred to the Millenium Seed bank in Kew Gardens in UK.

At IIAM's forest centers and stations, a total of 130 kg of seeds of various native forest species (17 species) were collected and stored (Table below with information on species and quantities) for use in reforestation and agroforestry programs.

Table 2: List of species and seed stock at IIAM Forest Centers

Scientific Name	**Local Name**	**Seed stock (Kg)**
Afzelia quanzensis	Chanfuta	28
Brachystegia spiciformis	Mussassa	1.1
Combretum molle	Duputa	0.5
Combretum zeyher	Duputa	0.4

Funtumia Africana	Mutotassadza	1
Khaya anthotheca	Umbaua	33.5
Millettia stuhlmanni	Jambirre- panga panga	25
Pericopsis angolensis	Chuanga	0.7
Piliostigma thonningii	Mucequessa	0.3
Pterocarpus angolensis	Umbila	0.7
Dalbergia melanoxylon	Pau preto	0.7
Adansonia digitate	Malambe	9.5
Sclerocarya birrea	Canhu	7.6
Strychnos madagascariens	Mucuacua	3.2
Strychnos spinose	Massala	2.5
Uapaca kirkiana	Musange	6.4
Albizia adianthifolia	Goana	8.36
TOTAL		**129.460**

Relevant websites, web links and files

http://www.biofund.org.mz

http://www.issdseed.org

http://www.masa.gov.mz

Target 10: *Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **9**

Major measures taken by the country for the implementation of the GSPC

Several invasive species have been introduced in Mozambique over the years. So far about 166 invasive species have been registered in the country. Although a Regulation for the Control of Invasive Alien Species (approved by Decree No. 25/2008 of 1 July) has been developed, little is known about the distribution of these species.

Currently management activities of exotic/invasive species are developed in the Management Plans of some conservation areas, but their implementation is conditioned by financial aspects and lack of qualified personnel. Protected area managers have resorted to cutting and incineration of invasive alien plantations in these areas. By way of example, the REM is developing measures for the eradication of Eucalyptus plantations that were established for commercial purposes, but which were constraining the growth of native plants.

Some legal instruments developed by the country have helped in the management and prevention of biological invasions, for example: the Environmental Impact Assessment Regulation that obliges the extraction companies in Mozambique to develop mitigation measures to prevent, reduce or manage impacts on possible new biological invasions.

Relevant websites, web links and files

http://www.anac.gov.mz

http://www.mitader.gov.mz

http://www.repositorio.uem.mz

Objective III: Plant diversity is used in a sustainable and equitable manner

Target 11: *No species of wild flora endangered by international trade*

National targets related to GSPC targets

Activities related to this target are incorporated in **None** of the NTs

Major measures taken by the country for the implementation of the GSPC

Mozambique is a signatory of the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulates international trade in endangered species of wild fauna and flora. In addition, the country has approved the Conservation Areas Act, the CITES Regulation and the submission of the Conservation Areas Act amendment to criminalize those in illegal possession of wild products.

Commercialization decrees were prepared in 2014 for some timber species that the country considers threatened, but these species did not acquire the category of threatened by the IUCN assessment criteria, but because they are overexploited species and there is no longer availability of individuals with the species minimum cutting diameters.

According to the 2014 Environmental Investigation Agency (EIA) report, 76% of the timber exported came from illegal logging and almost 50% of the timber going to China was illegal, so the country is making efforts to improve and strengthen cooperation between Mozambique and other states such as the Republic of South Africa, the Socialist Republic of Vietnam and the People's Republic of China, in extradition of offenders of flora trafficking, as well as allowing the circulation of information through the courts at various levels of warns of the negative impacts of trafficking in flora products.

The government has also increased control over fiscalization, however, the country still needs to improve control over the movement of CITES products at harbors and airports, and even at land borders to increased fiscalization at these locations.

Relevant websites, web links and files

http://www.anac.gov.mz

http://www.biofund.org.mz

http://www.portaldogoverno.gov.mz

https://www.wwf.org.mz

Target 12: *All wild harvested plant-based products sourced sustainably.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **4**

Major measures taken by the country for the implementation of the GSPC

The country has been disseminating information and awareness about forest conservation and plant extraction measures, both at curriculum and at community level. But logging levels of woody species in the natural forest have exceeded the annual allowable logging volumes, which range from 515,700 to 640,500m³, due to a variety of unsustainable forest management practices (illegal logging, non-adherence to management plans by concessionaires and licence holders and poor enforcement of forest sector laws). The country has been adopting enforcement measures to try to minimize this situation, such as the "operação tronco (trunk operation)" carried out in 2017, which resulted in the seizure of 150,982 m3 of wood and corresponding fines of 157,423,710, 00Mt.

Awareness-raising activities are promoted in local communities with a view to promoting sustainable practices for collecting forest products. In 2016, 20 campaigns were carried out in different communities in the country. However, little has been done in relation to the harvesting of other plant products than wood. There is much over-exploitation of plant products for medicinal purposes.

Relevant websites, web links and files

www.mitader.gov.mz/

Target 13: *Indigenous and local knowledge innovations and practices associated with plant resources*

maintained or increased, as appropriate, to support customary use, sustainable liveliohoods, local food security and health care.

National targets related to GSPC targets

Activities related to this target are incorporated in NT **16** and **18**

Major measures taken by the country for the implementation of the GSPC

Mozambique is a signatory to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits from Their Use. As a result, some efforts are being made, but there is still little progress regarding the use of scientific and traditional knowledge for plant conservation. On the other hand, some progress has been made in integrating the process of producing traditional knowledge linked to ethnobotany, as an activity linked to practices related to the use of medicinal plants.

Ethnobotanical studies have been developed by the Ministry of Science and Technology, Higher Education and Professional Technical Studies (MCTESTP) on the establishment of an ethnobotany database. As a result, the Centre for Research and Development in Ethnobotany (CIDE) was created under the MCTESTP, which conducts studies on the use, recovery, conservation and valorization of traditional knowledge on plants with medicinal, nutritional, aromatic and ornamental potential. In addition activities are promoted on information sharing and dissemination; protecting the interests of the local communities from which knowledge is derived, and at the same time promoting the sharing of knowledge between communities so that they can benefit in a sustainable manner.

A review of legislation on access and benefit sharing of genetic resources is currently under way.

Relevant websites, web links and files

http://www.fao.org

http://www.mctestp.gov.mz

https://absmocambique.files.wordpress.com

Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted

Target 14: *The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **1**

Major measures taken by the country for the implementation of the GSPC

The importance of plants and their conservation has been promoted through radio and television programs. As mentioned in Section II (target 1), several awareness campaigns are conducted every year.

Awareness-raising campaigns are regularly carried out in schools, mainly in communities close to areas rich in biodiversity, such as the PNG Community Education Centre; community education activities in the schools of the Gilé communities have been developed by COSV in partnership with RNG, etc; several initiatives have been created by the government such as the "one leader, one forest" and "one student, one plant" initiative that culminated in the planting of several seedlings of plants; and several environmental clubs have been created.

Biodiversity conservation organizations have had a number of biodiversity promotion initiatives that include a focus on plants, such as the BIOFUND exhibitions. Two sessions of the General Assembly of this organization were held in which issues focused on plant conservation were discussed.

Relevant websites, web links and files

http://www.biofund.org.mz

http://www.portaldogoverno.gov.mz

Objective V: The capacities and public engagement necessary to implement the Strategy have been developed

Target 15: *The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this strategy.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **17, 19** and **20**

Major measures taken by the country for the implementation of the GSPC

Various activities have been undertaken to achieve this target as mentioned in Section II (Target 2) and Chapter V (Target 1 and 3). New taxonomists were trained in the activities carried out by IIAM and

UEM. Several technicians were trained in cataloging and digitalization of specimens of herbariums and museums. Data entry technicians were trained on the BioNoMo online platform.

Training sessions were held where over 500 people were trained in " No Net Loss, Mitigation Hierarchy and Biodiversity offsets"

Training in planning and finance was conducted for all Conservation Areas in the country, organized by BIOFUND in partnership with ANAC.

Target 16: *Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy.*

National targets related to GSPC targets

Activities related to this target are incorporated in NT **20**

Major measures taken by the country for the implementation of the GSPC

In recent years there has been an increase in partnerships between institutions for biodiversity conservation. IIAM in the development of its plant conservation activities has collaborated with the Buffelskloof Private Nature Reserve (BPNR), and the South African National Biodiversity Institute (SANBI). Since 2005 it has also been collaborating with RBG-Kew, with which it signed a Memorandum of Cooperation in 2017.

The various state institutions have been making partnerships with various private institutions to promote the conservation of plants, such as partnerships with Biofund, WCS, USAID, etc.

Mobilization of funds for the implementation of plant conservation programs and projects remains one of the biggest problems faced.

Mozambique needs to develop a Plant Conservation Strategy in order to obtain more funding for plant conservation activities. It is also necessary to promote and strengthen partnerships at national and international level to achieve the goals set by GSPC.

SECTION VI: MOZAMBIQUE BIODIVERSITY PROFILE

Biodiversity facts

Status and trends of biodiversity, including benefits from biodiversity and from ecosystem services and functions

Mozambique has valuable ecological attributes, geographical areas with unique and exceptional richness, which share a biological diversity that contributes to food security and the economy of the country.

1. Forest Resources

About 70% of the Mozambican territory (54.8 million hectares) is covered by vegetation of different categories, of which 40.1 million hectares (51%) are forests and about 14.7 million hectares covering 19% of the country correspond to woody formations (shrubs and shifting forests). Of the total forest cover 22.5 million hectares are dense forests, 16.4 million hectares open forests, 802 thousand hectares open forests in wetlands and 357 thousand hectares mangrove forests.

The rate of forest degradation is poorly known (MITADER, 2018). However, forest degradation has different origins in productive activities: expansion of agricultural areas covering 89,407 hectares / year, corresponding to 65%; the expansion of residential areas and infrastructures that reach 16,285 hectares / year, corresponding to 12%; logging covering 11,412 hectares / year, corresponding to 8%; firewood and coal production covering 9,027 hectares / year, corresponding to 7% (MITADER, 2016). The provinces with the largest forest cover area in the country are Niassa with 7,890,485 hectares corresponding to 62%, followed by Zambezia with 4,577,842 hectares corresponding to 42%, Tete with 3,827,883 hectares corresponding to 36% and Cabo Delgado province with 3,758,284 hectares covering 47% of the forest area (MITADER, 2018).

Forest resources in Mozambique have contributed to socioeconomic development and poverty alleviation. However, its exploitation has faced major challenges to maintain its long-term sustainability with high demand driven by the international market. Forests have also contributed to carbon sequestration and protection of water catchment areas, although their value is not known in Mozambique.

2. Fishing Resources

Currently, Mozambique has an estimated fishing potential of 332,000 tons, having as its main resources: marine fish, freshwater fish, kapenta, tuna and shrimp. This sector contributes 10.3% to national GDP in 2018, and the production of 2017 was about 340,210 tons and about 14,853 tons of registered export products.

3. Wildlife

The country is home to a diversity of fauna, especially small ones. Healthy populations and then declining populations. For example, the elephant population has declined by about 50% over the past six years and the rhino population almost no longer exists in the country due to poaching. However, wildlife restoration programs have been implemented. Indeed, the reintroduction of fauna species was made in PNG, RNZ, RNG and REM.

4. Ecosystem Diversity

Mozambique's ecosystems are grouped into 4 main categories: (I) terrestrial ecosystems, (II) marine ecosystems, (III) coastal ecosystems, and (IV) inland water ecosystems. These ecosystems structure habitats that encompass a variety of flora and fauna species, many of which are endemic to the region (MICOA, 2014). The state of conservation of ecosystems is critical; most of them need additional efforts to move to the well protected category. However, the Mozambican territory has a very comprehensive protected area network, which covers 26% of the entire territory, including Parks, Reserves, Coutadas, Wild Farms and Hunting Community Areas (ANAC, 2015; MITADER, 2015).

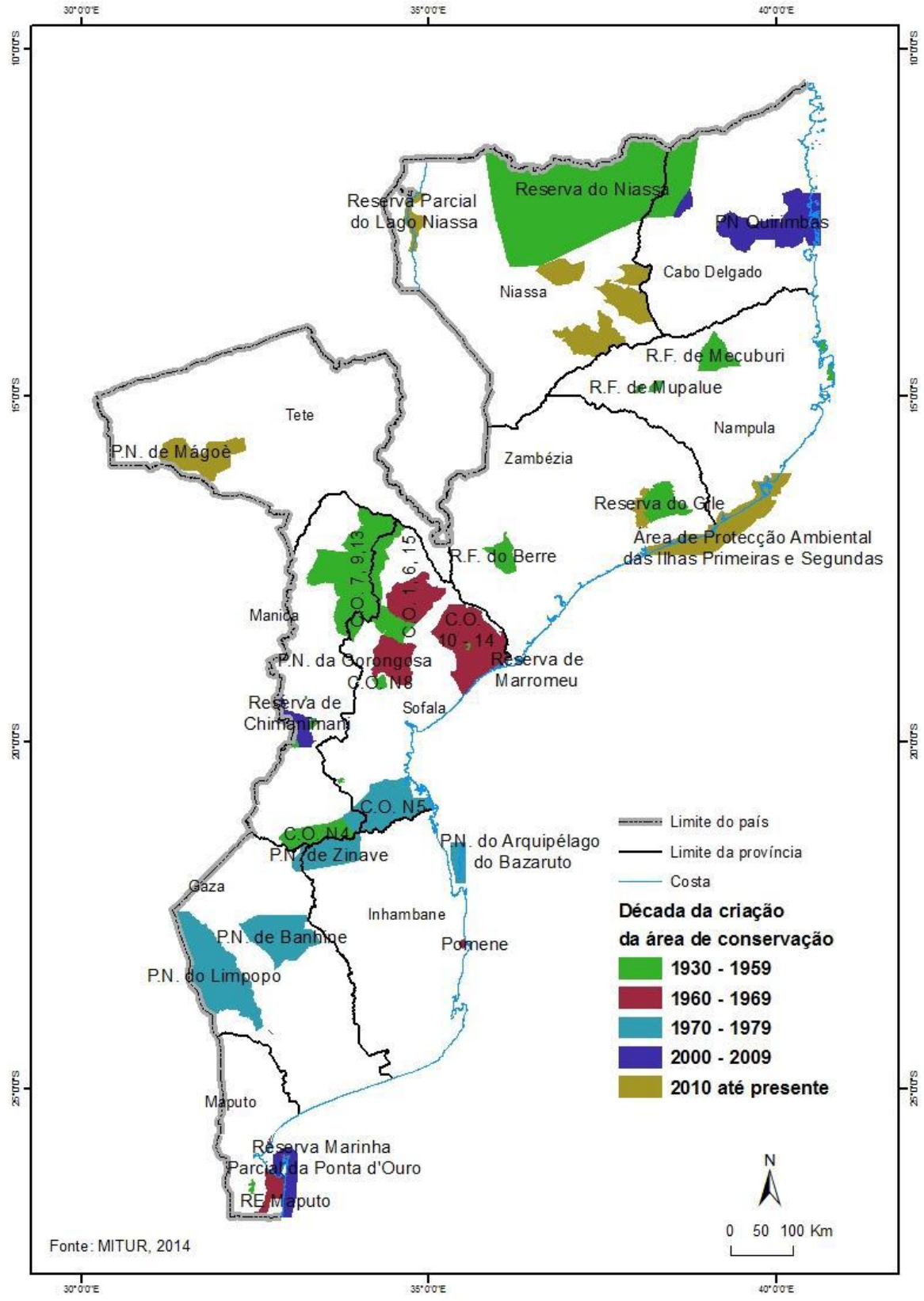


Figure 6: Distribution of protected areas in Mozambique and their reporting period.

5. Terrestrial Ecosystems

5.1. Main phytogeographic regions

Four phytogeographic regions are recognized in Mozambique: (I) Swahili Regional Endemism Center, (II) Maputaland-Tongoland Endemism Center, (III) Zambezi Regional Endemism Center, and (IV) Swahili-Maputaland Regional Transition Zone (MICOA, 2014). These regions host a diversity of fauna and flora species, including endemic and almost endemic.

5.2. Terrestrial ecoregions

Mozambique has four biogeographic provinces covering five biomes subdivided into 14 ecoregions which include: Eastern Zimbabwe Mountain and Prairie Mountain Mosaic , Flooded Savannahs of the Zambezi Coast, Southern Shrub Miombo, Southern and Eastern African Mangroves, Lake Niassa, Maputaland Coastal Forest Mosaic, Southern African Shrub, Southern African Mangrove, Miombo Eastern and Southern Forests , Southern Rift Mountain Forest and Grassland Mosaic, Southern Zanzibar-Inhambane Coastal Forest Mosaic, Zambezi Shrubland Mopane , Flooded grasslands of the Zambezi, and Halophytes of Maksadgad. Seven of these are of global importance (CEAGRE, 2015).

5.3. Aquatic ecosystems and wetlands

Over 50% of the Mozambican territory is occupied by aquatic ecosystems, including wetlands that are distributed throughout Mozambique specifically in watersheds. There are currently two regions in the country declared wetlands by the RAMSAR Convention: Marromeu National Reserve in Sofala Province (1,500 km^2), and the Niassa Lake Reserve in Niassa Province (478 km^2), both of which cover an area of 1,978 km^2 (MITADER, 2018). According to the RAMSAR classification system, there are three categories of wetlands in the country, which include i) Artificial inland wetlands which occupy an area of 316,033 ha, corresponding to 4%, which include designated areas for aquaculture, salt flats, dams, water treatment plants as well as irrigated areas for agriculture; (ii) Marine or coastal wetlands, which cover an area of 1,603,590 ha, corresponding to 28.3%, including areas of marine waters, estuarine waters, coastal freshwater or saline lakes as well as coral reefs; and finally iii) Inland wetlands with an area of 1,669,681 ha corresponding to 67.7%, which include marshes, waterways, flood areas, inland deltas, freshwater or saltwater lagoons (IMPACTO, 2019).

5.4. Marine and coastal ecosystems

Marine and coastal ecosystems cover an area of approximately 572,000 km² (42% of the Mozambican territory). Coral reefs cover about 1,890 km², seagrass about 439 km² and mangroves about 2,956 km², of which 261.3 km² are actually in protected areas (Bosire *et al*., 2016). These ecosystems support over 900 species of fish, 122 species of shark and rays, over 900 species of mollusks, 27 species of mammals, 5 species of turtles, over 250 species of soft and hard corals, 14 species of seagrass, 10 species of mangroves, 82 species of crustaceans and 63 seabirds (MITADER, 2018).

6. Species diversity

Despite additional efforts, the level of knowledge of species diversity in the country still remains weak. However, the diversity of species in Mozambique is estimated to be 6,145 plant species, 35 of which are new *taxa* and new 105 records; of these, more than 300 species of plants are in the IUCN red list, of which 22% are endemic. Some species need special attention such as: *Encephalartos munchii, E. pterogonus, E. senticosus, E. lebomboensis*, *E. umbeluziensis, E. chimanimaniensis, E. aplanatus and E. ngoyanus* as they are in the critically endangered and *vulnerable* categories (www.iucnredlistorg). Also, species such as *Alloeochaete namuliensis*, *Crotalaria torrei, Plectranthus gurueënsis, Aloe torrei*, *Senecio peltophorus* and *Exacum zombense* need special attention because they are critically endangered.

Finally, it is estimated that the country has about 4,271 species of fauna, of which insects are the most abundant group (72%), birds (17%), mammals 5% and the least abundant amphibians with 2% (MICOA, 2014; MITADER, 2018).

6.1. Threatened and endangered species

The conservation status of these species is neither ecologically healthy nor satisfactory. According to *NatureServe* in Mozambique, IUCN Red List and threatened species include 53 corals, 5 amphibian species, one endemic; 29 bird species, one endemic; and 14 mammalian species, two endemic and one endangered endemic. Also on the IUCN Red List are: 41 Marine Species of which include sharks, rays, whales and fish, 5 Species of sea turtles and dugongs that are seriously threatened, in a number not yet specified (MICOA, 2014; dashboard.natureserve .org / country / mz (Accessed date 30/05/2019).

6.2. Endemic species

In Mozambique two major centers of endemism are recognized internationally: Maputaland-Pondoland-Albany Endemism Center in the south and Chimanimani Endemism Center in the center of the country.

The Maputaland-Pondoland Endemism Center is internationally recognized as being the second richest floristically in the Southern African region, with approximately 2,000 endemic plant species; has several priority areas and twelve ecological biodiversity conservation corridors that are crucial for long-term conservation.

Main pressures on and drivers of change to biodiversity (direct and indirect)

Changes in biodiversity result from direct (proximate causes) and indirect (remote causes) factors. In general and in Mozambique, the main driving forces for changes in biodiversity are population growth, urbanization, economic activities, governance, technology and innovation, and climate change.

The country's population grows at a rapid rate of over 2.7%. For example, of the 22 million inhabitants that existed in 2010, the country is currently inhabited by about 28 million inhabitants. Rapid population growth represents a burden on the consumption of natural resources in general and biodiversity in particular. Because of this, the country has been witnessing a remarkable urban sprawl, and more land has been allocated for various purposes. For instances, there was a doubling of land use title applications (3,001 in 2011 to 7,008 in 2016) as well as the sharp increase in delimited community land (104 in 2010 to 2,002 in 2016). On the other hand, more land has been allocated for infrastructure, transportation, energy, water, etc. Deforested area grew to 438,000 hectares in 2016. Between 2001 and 2016, the country lost 6.2% of its forest area, and in agriculture, chemical use increased (3.8 tons in 2002 to 4.5 tons in 2016). The volume of officially licensed timber has increased (212,711 in 2013 to 255,492 m^3 in 2017). Population growth implied a doubling of the country's number of vehicles (380,343 in 2010 to 698,814 in 2016). Pollution associated with resource consumption continues to affect land, air and water, thereby increasing the rates of disease related to environmental pollution. This calls for swift action and revolutionary policies. Legal and policy reforms in the last three years in the forest sector and biodiversity conservation have gradually resulted in enhanced biodiversity conservation.

These facts are occurring at a time when Mozambique's economy is facing a major challenge due to economic crises and foreign debt growth in recent years. Low economic growth and high inflation since 2015 have been directly affecting the environment as more resources are needed to meet the needs of a

growing population. Indeed, GDP fell from 7.1 in 2010 to 3.8 in 2016 and inflation followed the rise from 17.2 in 2010 to 25.3 in 2016. Signs of slowdown in the Mozambican economy and maintenance of low inflation have meanwhile been characterizing the last two years.

In conclusion, the country's rapid economic development over the past five years has put a heavy strain on biodiversity. The focus is on infrastructure, mining (coal, heavy sands, and other minerals of high economic value), agriculture (mainly large-scale commercial), forests (exotic plantations and selective logging) and fisheries have resulted in considerable changes in natural ecosystems and biodiversity, which are still poorly known and reported. In addition, illegal exploitation of forest and wildlife resources and mining constitutes a major threat to the conservation of biodiversity in Mozambique.

Thus, the main threats to biodiversity in Mozambique are ii) Conversion, loss, degradation and fragmentation of natural habitats; ii) Overexploitation of certain species; iii) Invasion by non-native species that harm ecosystems and native species; iv) or contamination of natural habitats or species; and v) Climate change.

Measures to enhance implementation of the Convention

Implementation of the NBSAP

By the Resolution 2/94 of 24 August, Mozambique ratified the United Nations Convention on Biological Diversity (CBD). In addition to CBD, Mozambique is a signatory to the CITES Conventions, Migratory Species Convention, RAMSAR and Ocean Conventions. As part of CBD implementation, the country produced its first CBD report in 1997; the second in 2006; the fourth in 2008 and the fifth in 2014. The country designed its first Strategy and Areas of Action for the Conservation of Biological Diversity in 2003. The 2003 strategy was implemented between 2003 and 2010. The current strategy (NBSAP 2015 - 2035) is the second and was aligned in its design with the Aichi Goals, but is in the early stages of its implementation. However, measures to improve the implementation of the convention have been incorporated into the Government's Five Year Plans (PQG) and their PES; PEDDs, PDUTs and sectoral Strategic Plans. For example, the country has been making many efforts to conserve biodiversity through its transverse integration into various national sectoral and inter-sectoral development policies and plans and programs. Biodiversity conservation has been explicitly or implicitly integrated into a number of national development frameworks, including, for example, PEDSA 2011-2020; IIAM Strategic Plan (2011-2015); PARP 2011-2014; National Development Strategy , 2013; National Climate Change Strategy 2013-2025; Agenda, 2025; National REDD + Strategy; ANAC Strategic Plan; Tourism Strategy Action Plan for the

Green Economy; Sea Policy and Strategy and Sea Strategy.

Reforms in key biodiversity legislation and the Government's commitment to allocate about 26% of its surface area to biodiversity conservation reinforce the notion that there is a matrix to absorb conservation support measures. The adoption of a transversal and inclusive approach has allowed the consignment of conservation actions in other relevant institutions and the decentralization of governance. The creation of natural resource management committees and community councils has enabled the voice of command to the citizen to be replicated, as well as that of civil society, organized in various associations and forums. There are currently over 2,000 national CGRN, of which 1,176 were set up under the Community Land Initiative (iTC), 45 co-management committees and 307 community fisheries councils.

Biodiversity conservation has crossed the boundaries of protected areas and is increasingly including areas of recognized biological value in free areas such as ecological corridors, stranded ecosystems of Mabu, Inago, Chiperone, Namúli; IBAs and IPAS concepts and sacred forests add to the appreciation of biodiversity.

In the legal component, the approval of the Biodiversity Conservation Law and its regulation; the approval of the CITES Regulations; improvements to the surveillance regulation; the creation of an environmental oversight agency and the design of a policy for the forestry sector has reversed negative trends in biodiversity. On the other hand, the conception of the mangrove strategy and wetland inventory support among other measures the implementation of the Biodiversity Convention in Mozambique.

Overall actions taken to contribute to the implementation of the 2011-2020 Strategic Biodiversity Plan

The Constitution of the Republic of Mozambique grants conservation status to biodiversity and, in its alignment, Government Policies and Programs (PQG, PES) on environment and biodiversity pay special attention as cross-cutting sectors. Biodiversity conservation is integrated into sectoral agriculture policies, forestry, fisheries and mining policies as well as territorial planning, land and district strategic plans (eg PEDD; PDUTs, PNDT and PESODs). The implementation of the Biodiversity Strategic Plan is in line with the conservation area network approach in Mozambique. In fact there are 87 CAs between National Parks, National Reserves, Forest Reserves, Official Coutadas, Wilderness Farms, Land and National Parks, Marine and Aquatic Reserves which in total make up about 26% of the country's surface area (MITADER, 2018). In addition to these areas, the law attaches conservation value to stranded ecosystems (eg Mabu, Inago, Namuli, and others); mangroves, wetlands, IBAs and IPAs. On the other

hand, and in alignment with the constitutional command, the biodiversity theme is also addressed in the Municipalities Law. Given the recognized value of transnational ecosystems, Mozambique has adopted transboundary biodiversity conservation as a strategy. In this perspective, the country has 3 transfrontier conservation areas namely (TFCA Libombos; TFCA Chimanimani; and under discussion TFCA ZIMOZA (between Mozambique and Zimbabwe) and TFCA Selous (between Mozambique and Tanzania).

Thanks to the implementation of these global actions, the level of knowledge about biodiversity has been increasing; major direct threats to biodiversity have been under control (uncontrolled burning, poaching); inspections and surveillance have improved and key indicators of government action in this sector indicate remarkable progress.

Support mechanisms for National implementation

In Mozambique, the vast majority of funding for biodiversity conservation is directed to large-scale projects that result in improved biodiversity management; increase knowledge of biodiversity; restore degraded ecosystems as well as programs that support sustainable use of natural resources, including biodiversity. On the other hand, the vast majority of funding for biodiversity conservation comes from external funds (for example, it is estimated that in 2014, the contribution from the international community covered about 81% of the operating cost of the national conservation area system), some of which are designed to directly finance biodiversity and others, come from funding within agriculture, forestry, mining and fisheries projects. Strategically, traditional funders for biodiversity conservation have a mechanism in place whereby funds are managed by an established entity, BIOFUND (founding member of the Africa Environmental Funds Consortium). BIOFUND's objective is to finance the conservation of biodiversity in Mozambique.

Other national and international conservation agencies also have schemes inherent in their organizations for funding biodiversity conservation activities.

Mechanisms for monitoring and reviewing implementation

Several mechanisms for monitoring and reviewing the implementation of NBSAP targets have been implemented in various ecosystems. For example, in RNN, PNM and PNL, the MIKE programme (Monitoring the Illegal Killing of Elephants (MIKE) has been implemented. The results of its implementation have allowed to monitor the severity of poaching and to adopt measures for its reversal. In addition to MIKE, some conservation areas have implemented Management Orientated Monitoring System (MOMS) (in RNG; APAIPS; RNAB and PNQ) and MRV and Self-Monitoring, Analysis, and Reporting Technology (SMART) (in PNQ). In both cases, the implementation of such mechanisms has been

entrusted to sworn *fiscais* in each of the Parks, making it sustainable, although the number of them per protected area is far from ideal.

Other mechanisms consist of detailed inventories such as regular national forest inventories (1984; 2005 and 2017); regular national wildlife censuses (2008, 2014, 2018); regular air censuses in some conservation areas (eg PNG, at least three air censuses performed; REM, regularly at two to three year intervals; RNN, regularly at two-year intervals since 1996; as well as sporadically in the PNQ (two aerial and one terrestrial censuses). Most commonly used persistent monitoring and implementation mechanisms include environmental inspection, through the application of the Environmental Inspection Regulation, with civil society involvement. Through these, pollution is monitored as well as fisheries and burning. Very recently, in addition to the existence of inspector networks in each sector, a specialized implementation monitoring and verification agency, AQUA, has been established. The creation of AQUA is aligned with the creation of solid baselines through the design of specific strategies such as mangroves and their mapping; wetland mapping and forest policy.

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