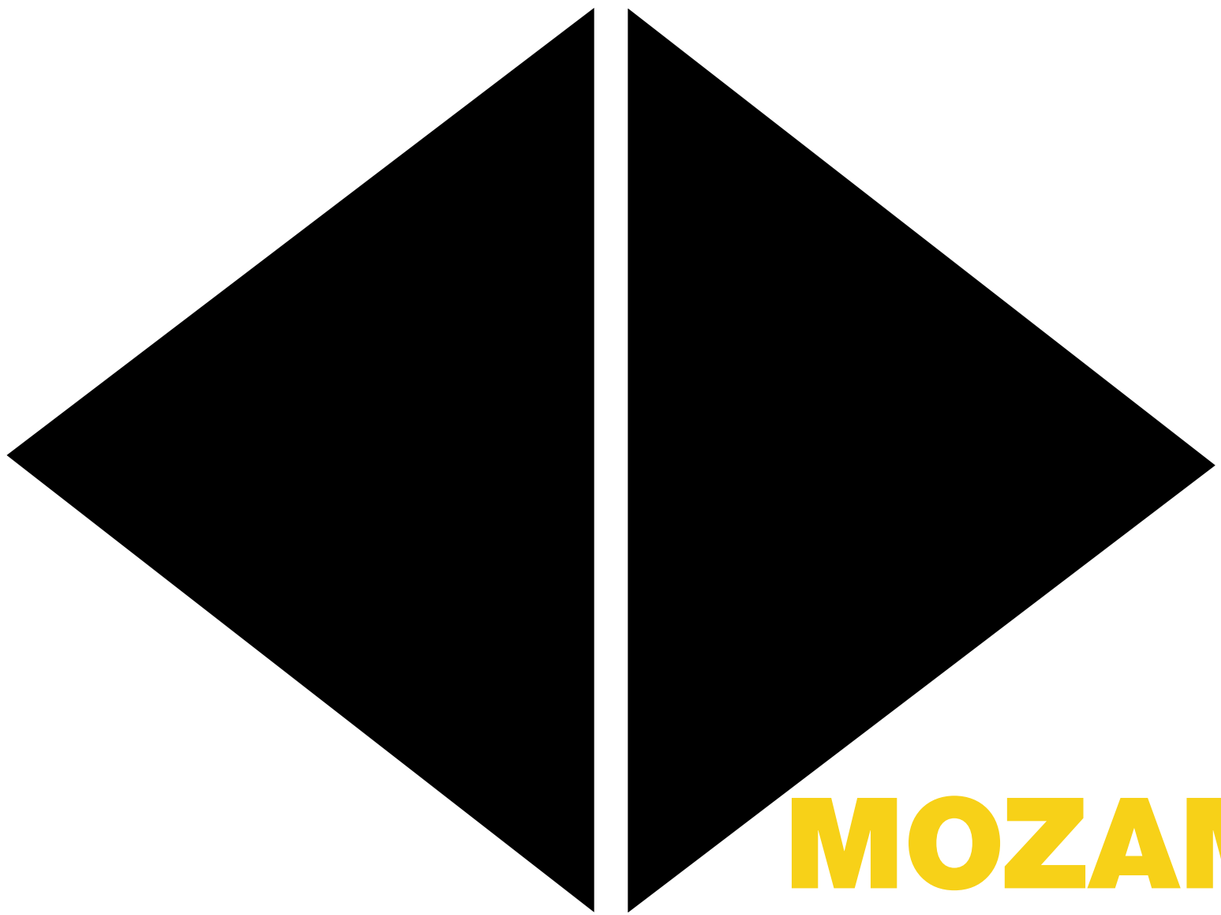
MOZAMBIQUE'S

National
Adaptation
Plan



MOZAMBIQUE'S National Adaptation Plan

Cane seller,
MAPUTO

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SUBMITTED
by **CEAGRE** in collaboration with

15th March, 2023

Farmer, District of Namaacha
MAPUTO

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Sunrise on Chidenguele Lagoon,
Administrative post of Chidenguele,
GAZA

MOZAMBIQUE is an extremely vulnerable country to the negative impacts of climate change, which erode and compromise environmental, social and economic development efforts. Therefore, it is imperative to increase resilience in the medium and long term, rather than being limited to immediate and isolated climate actions. Focus should also be on the integration of climate change issues in the continuous planning process.

In response to the above-mentioned challenge, Mozambique's National Adaptation Plan (NAP) has emerged, which is based on the principles of the United Nations Framework Convention on Climate Change (UNFCCC), including the decisions of the Paris Agreement and other Conferences of the Parties to this Convention, and it is linked to the Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction 2015-2030. In addition to this international framework, the National Adaptation Plan (NAP) has its foundations in Mozambique's National Development Strategy and the sectoral strategies approved by the Government of Mozambique.

PREAMBLE

THE NAP PRESENTS a framework of integrated climate change adaptation actions for its implementation, a result of extensive consultations with various strata of our society during face-to-face and online work sessions, questionnaires and interviews, integration of specific adaptation actions (sectoral, regional or thematic), including the main development sectors, in response to the country's main climate vulnerabilities.

THE NAP FOCUSES on achieving the objectives of the National Strategy for Adaptation and Mitigation of Climate Change (ENAMMC) to reduce the vulnerability of people and the economy, create institutional and human capacity and increase the ability to access financial and technological resources, without neglecting the objectives of promoting low carbon development.

Mozambique's NAP has three main objectives, namely:

To create a favorable environment for integration of adaptation in planning and budgeting at national, provincial and district levels;

To improve the capacity to manage and share data and information, access technology and finance adaptation; and

To implement adaptation actions for a greater resilience of the most vulnerable at the district level.

WE BELIEVE that we are increasingly closer to greater resilience, united around a better and reinforced planning that shall lead us to a more efficient and effective climate action, in favor of a stronger and healthier Mozambican environment and society.

Ivete Joaquim Maibaze
Minister of Earth and Environment

Group of children and women,
AZA

AKNOWLEDGEMENTS

ON BEHALF of the National Directorate of Climate Change, I would like to thank everyone who participated in the preparation of this National Adaptation Plan, whether by taking part in consultation seminars or by answering questionnaires sent to the sectors for collection of information. I would also like to thank the climate change focal points, the Governments and Provincial Secretariats of Nampula, Sofala and Maputo for hosting and supporting the organization of regional seminars. Special acknowledgement goes to the Adaptation Division, UNFCCC Secretariat, for their technical support and strategic guidance. Acknowledgements also go to the United Nations Development Program (UNDP) for funding the initiative. Much special appreciation goes to the technical and administrative team of CEAGRE for their coordination and logistical support and to Ana Paula Bouças for the translation into English.

Maputo, March 2023.

National Directorate of Climate Change

Maputo city downtown view,
MAPUTO

EXECUTIVE SUMMARY

INTRODUCTION

Mozambique is one of the most vulnerable countries to extreme weather events. Its exposure to the east coast of the Indian Ocean, downstream to several international rivers that flow into its extensive plains and its economic status as a least developed country, place the Country as one of the most vulnerable to climate change in the world.

The adaptive capacity of communities is conditioned by limited and often climate-dependent livelihoods, such as subsistence and rain fed agriculture, artisanal fishing and tourism, and a still poor capacity to absorb disasters and the bio-geophysical shocks that they face.

With the main economic sectors and large part of communities largely exposed to climate risks, the country's adaptive capacity can increase significantly if adaptation to climate change is integrated into national, provincial, district and sectoral public planning and budgeting processes within civil and private society.

Mozambique has already taken steps in this regard, integrating resilience to a certain degree into its Government's Five-Year Program and the updating of its First Nationally Determined Contribution (NDC) for the period 2020-2025. This is fully aligned with the National Strategy for Adaptation and Mitigation of Climate Change (ENAMMC), which is based on three pillars and has the creation of resilience and reduction of climate risk as a priority.

The country formally launched the NAP process on 13th December, 2016 as a way to materialize the ENAMMC and the integration of Climate Change Adaptation (CCA) into planning. The main objective of the process was to involve stakeholders in the design of the roadmap for preparation and implementation of the NAP. The country has also made an effort to increase resilience at the local level, having developed Local Adaptation Plans (LAPs). To date, 125 LAPs have been prepared (out of a total of 154 districts).

But an increase in adaptive capacity is still needed in the medium and long term. To this end, Mozambique is now presenting its National Adaptation Plan – NAP MOZ, in an effort to bring about transformative changes in the entire planning and budgeting processes, including current environmental, social and economic practices, as well as increase its capacity to absorb climatic shocks, which are expected to be even more intense and frequent.

NATIONAL CONTEXT

The Mozambican population is over 30 million inhabitants, with women representing around 52%. The population is typically young, with around 45% aged 0-14 and 52%

aged 15-64. More than 66% of the population is rural, but with a very rapid urbanization process. The number of people residing in urban areas is estimated to have increased by 5 million between the years 2000 and 2017, which has environmental implications in urban areas.

Agriculture in Mozambique is the basis of the national economy, with an average contribution of over 20% of the total GDP and employing 80% of the working population. Trade, transport and communication services contribute with an average of 10% each. The extractive industry sector has shown great performance in recent years, having gone from 2% in 2013 to just over 7-8% between 2018 and 2021.

The climate of Mozambique is, in general, humid and dry tropical, with pockets of hot semi-arid climate and two distinct seasons, one being hot and rainy, from October to April, and the other cold and dry, from May to September.

Territorial planning has been one of the main constraints to the harmonization of development and land use planning between sectors, resulting in an increase in vulnerability, where human settlements are established in inappropriate areas and the infrastructure is built in inappropriate places. As a measure, the Country has prepared the National Territorial Development Plan, with the purpose of harmonizing and maximizing land use in order to promote development.

HISTORICAL TRENDS OF EXTREME EVENTS

Studies carried out based on precipitation data between 1960 and 2006 indicated that there is a delay in the beginning of the rainy season, reaching between 20 and 45 days in some places, as well as a more pronounced persistence of dry days in the northeast part of the country in the months of March to May and September to November. Furthermore, it was observed that the average annual rainfall in Mozambique decreased at an average rate of 3.1% per decade in the aforementioned period.

In general, average temperatures in Mozambique range between 25˚C and 30˚C (average maximum temperatures) and 15˚C – 21˚C (average minimum temperatures). The highest average maximum temperatures are recorded in the coastal area of the country, in the south of Tete province and the western part of Gaza province. As for average minimum temperatures, these have a decreasing pattern from the coast to the interior. The highest average minimum temperatures are recorded along the northern coast and the lowest are recorded in Gaza province. In general, average maximum temperatures tend to increase in recent decades. In the case of Maputo City, despite a marked inter-annual variation, the long-term trend was an increase of about 1ºC between 1980 and 2020.

FUTURE CLIMATE

The Intergovernmental Panel on Climate Change (IPCC), in its Sixth Assessment Report (AR6), presents unequivocal evidence of climate change worldwide: the atmosphere and oceans are warming, the extent and volume of snow and ice are decreasing, sea levels are rising and weather patterns are changing. In Mozambique, historical data on extreme weather events show that tropical cyclones, floods and droughts are common in Mozambique and their frequency and intensity tend to increase in recent years. These events are often associated with socio-economic damage, resulting in loss of human life, human suffering, loss of property, destruction of critical infrastructure (eg. health facilities, schools, access roads, etc.) and other indirect losses. Through an analysis of the trend of events recorded in the last four decades (1980 – 2019), it is noted that the number of events that devastated the country has increased significantly since the 2000s. For example, in the rainy season of 2018/2019, Mozambique was severely hit by three cyclonic events: Idai, Kenneth and Desmond. During this period, and on average, Mozambique was hit by a cyclone or flood every two years and drought every three years.

CLIMATE RISKS

Estimates of loss of human life and economic losses indicate to growth during the period 1970 to 2019. Mozambique is among the countries that had the greatest loss of life during the prolonged drought of 1981, with about 100,000 deaths. Cyclone Idai in 2019 caused economic losses estimated at around USD 1.96 billion, and a cost of reconstruction estimated at USD 2.9 billion, making it the country with the highest losses on the African continent between 1970 and 2019. In terms of the African continent, Mozambique has the second highest number of climate disasters, with 79 events, after South Africa, with 90 events, between 1970 and 2019.

The sixth IPCC Report notes that the impacts and risks of climate change are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climate and non-climate risks will interact, resulting in the composition of overall risk and cascading risks across sectors and regions. Some responses to climate change result in new impacts and risks.

Mozambique is particularly vulnerable to climate change due to its location downstream to shared river basins.

This vulnerability is exacerbated by the extensive coastline and socio-economic fragility. More than 60% of the population lives in low-lying coastal areas, where intense storms from the Indian Ocean and rising sea levels put infrastructure, coastal agriculture, key ecosystems and fisheries at risk. Although migration to urban areas is increasing, two-thirds of the population still resides in rural areas, with limited access to electricity, clean water and sanitation. Forty-five percent of the population lives below the poverty line and 70 percent depend on climate-sensitive agricultural production for food and livelihoods.

CLIMATE FINANCE IN MOZAMBIQUE

Climate finance in Mozambique is still deficient. The limited capacity of the State Budget to finance development activities further limits the ability to finance climate-resilient development. Several bilateral and multilateral cooperation partners have contributed to the financing of climate action in Mozambique. It is estimated that between 2015 and 2022, 47 projects were financed with a budget of around USD246 billion for coordination, institutional capacity building, adaptation and mitigation actions.

The Climate Change Convention (UNFCCC), in recognition of the limited adaptive capacities of developing countries, particularly least developed countries like Mozambique, established climate support funds for these countries. Between 2019 and 2021, the Green Climate Fund (GCF) financed six projects, 3 for adaptation and 3 for mitigation. Out of all the projects financed, only one is at national level, while the others cover several countries and Mozambique is part of this set. The Global Environment Facility (GEF) has funded more than 30 national projects, of which 15 are explicitly on climate change. Still, the gap between needs and available funds is still huge. If the costs of humanitarian emergency operations, post-disaster reconstruction and resettlement of populations displaced by climate disasters are taken into account, the difference is even greater, which suggests specific actions to increase national capacities to mobilize resources for climate finance.

One of the country's main advances in the area of climate change is the preparation of local adaptation plans, which are an integral part of this NAP and aim to promote decentralized actions to the district level and guide concrete actions to reduce people's and economic vulnerability at the local level. Mozambique prepared 135 and approved 104 PLAs at the district and municipality levels, out of a total of 161 districts (including the 7 urban districts of Maputo City) budgeted at around USD 6 billion. However, given the limitation of the State Budget, little was implemented.

GAPS AND NEEDS

The Sixth IPCC Report highlights that adaptation, in response to current climate changes, is reducing climate risk and vulnerability, primarily through adjusting existing systems. Many adaptation options exist and are used to help manage the projected impacts of climate change, but their implementation depends on the capacity and effectiveness of governance and decision-making processes. These and other enabling conditions can also support climate resilient development. Based on the NDC and the inputs collected during the consultations, the barriers and gaps associated with the NAP process include financial, technological and knowledge, political and institutional limitations which must be removed to allow a good environment for the implementation of strategic adaptation actions to climate change.

THE NAP

Mandate, vision and objectives

The NAP's mandate is implicit in the National Strategy for Adaptation and Mitigation to Climate Change (ENAMMC) (MICOA, 2012):

The general objective of ENAMMC is "to establish action guidelines to create resilience, including the reduction of climate risks in communities and in the national economy and to promote low carbon development and the green economy through its integration in the sectoral and local planning process". The ENAMMC recognizes adaptation as a top priority, and therefore has the following specific objectives: (i) to make Mozambique resilient to the impacts of climate change, reducing climate risks to people and goods as much as possible, restoring and ensuring the rational use and protection of natural and built capital; (ii) to identify and implement opportunities to reduce GHG emissions that contribute to the sustainable use of natural resources and access to affordable financial and technological resources and the reduction of pollution and environmental degradation, promoting low carbon development; and (iii) to build institutional and human capacity, as well as explore opportunities for accessing technological and financial resources to implement the ENAMMC.

The NAP focuses on achieving ENAMMC's objectives to reduce the vulnerability of people and the economy, create institutional and human capacity, and increase the ability to access financial and technological resources, without neglecting the objectives of promoting low carbon development. Thus, Mozambique's NAP has three main objectives, namely:

1. To create an enabling environment to facilitate the integration of adaptation into planning and budgeting at national, provincial and district levels;
2. To improve the capacity to manage and share data and information, to access technology and finance adaptation; and
3. To implement adaptation actions for greater resilience of the most vulnerable at the district level.

COHERENCE WITH SDGS, SENDAI, PARIS AGREEMENT AND ALIGNMENT OF SECTORAL DEVELOPMENT STRATEGIES

The NAP is based on the principles of the UNFCCC, including the decisions of the Paris Agreement and other Conferences of the Parties to this Convention and is linked to the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction 2015-2030. The other 1992 Rio de Janeiro Conventions, the UNCCD and the CBD should be considered to create synergies and reduce soil degradation and maintain agricultural productivity, while maintaining healthy ecosystems capable of supporting adaptation and providing nature-based solutions. In addition to this international framework, the NAP has its foundations in the Mozambique National Development Strategy and in the sectoral strategies approved by the Government of Mozambique.

LOSSES AND DAMAGES

Although the UNFCCC does not have a precise definition of loss and damage, it is generally understood that both result from extreme events. In the scope of the Glasgow Conference (COP26) discussions, the UNFCCC recognizes that "covering" losses and damages is the third essential pillar of climate action: helping people after they have already experienced climate-related losses. The IPCC's 6th Assessment Report (AR6), published in February 2022, recognizes that as the magnitude of climate change increases, so does the likelihood of exceeding adaptation limits. Recognizing the impacts caused by extreme weather events in the country, Mozambique is called upon to include efforts to be able to cover the damage losses from climate change, and for this purpose, it must document these losses and include in its MRV systems the appropriate mechanisms to account for economic and non-economic loss and damage.

STRATEGIC ACTIONS

The NAP's Framework for Climate Change Adaptation Actions (Table 1) results from consultations in face-to-face and online work sessions, questionnaires and interviews, integration of specific adaptation actions (sectoral, regional or thematic), including the main development sectors, in response to the country's main climate vulnerabilities.

Table 1

FRAMEWORK OF INTEGRATED CLIMATE CHANGE ADAPTATION ACTIONS FOR THE NAP IMPLEMENTATION

Objective	Pillar	Strategic Adaptation Actions (2022-2032)
To create an enabling environment to facilitate the integration of adaptation into planning and budgeting	Institutional framework	**1.** Reinforcement of coordination, institutional framework and the updating of policy documents related to the NAP Implementation
To improve knowledge and capacity to manage and share data and information, access technology and finance adaptation	Knowledge, technology and finance	**2.** Reinforcement of the early warning system; **3.** Education, public awareness (communication) and research; **4.** Climate finance
To implement adaptation actions for greater resilience of the most vulnerable	Resilience of the most vulnerable	**5.** Increasing the adaptive capacity of vulnerable people – integrating gender and children into policies and actions; **6.** Preparation of integrated local governance plans; **7.** Development of resilience mechanisms for urban areas and other settlements; **8.** Promotion of more resilient agriculture; **9.** Reinforcement of food and nutrition safety; **10.** Resilient Public Infrastructures; **11.** Improved management of water resources, water supply and sanitation; **12.** Improved access to renewable energy; **13.** Reduced vulnerability of people to disease transmission vectors associated with climate change; **14.** Protection of Oceans and Coastal Areas; **15.** Reinforcing the capacity to prepare and respond to climate risks and disasters; **16.** Increasing the resilience of forests

IMPLEMENTATION PLAN

Documented strategic adaptation actions are budgeted at around USD 7.2 billion. The actions are aligned with the NDC and the implementation of the indicated strategic actions will imply significant advances in the implementation of the NDC.

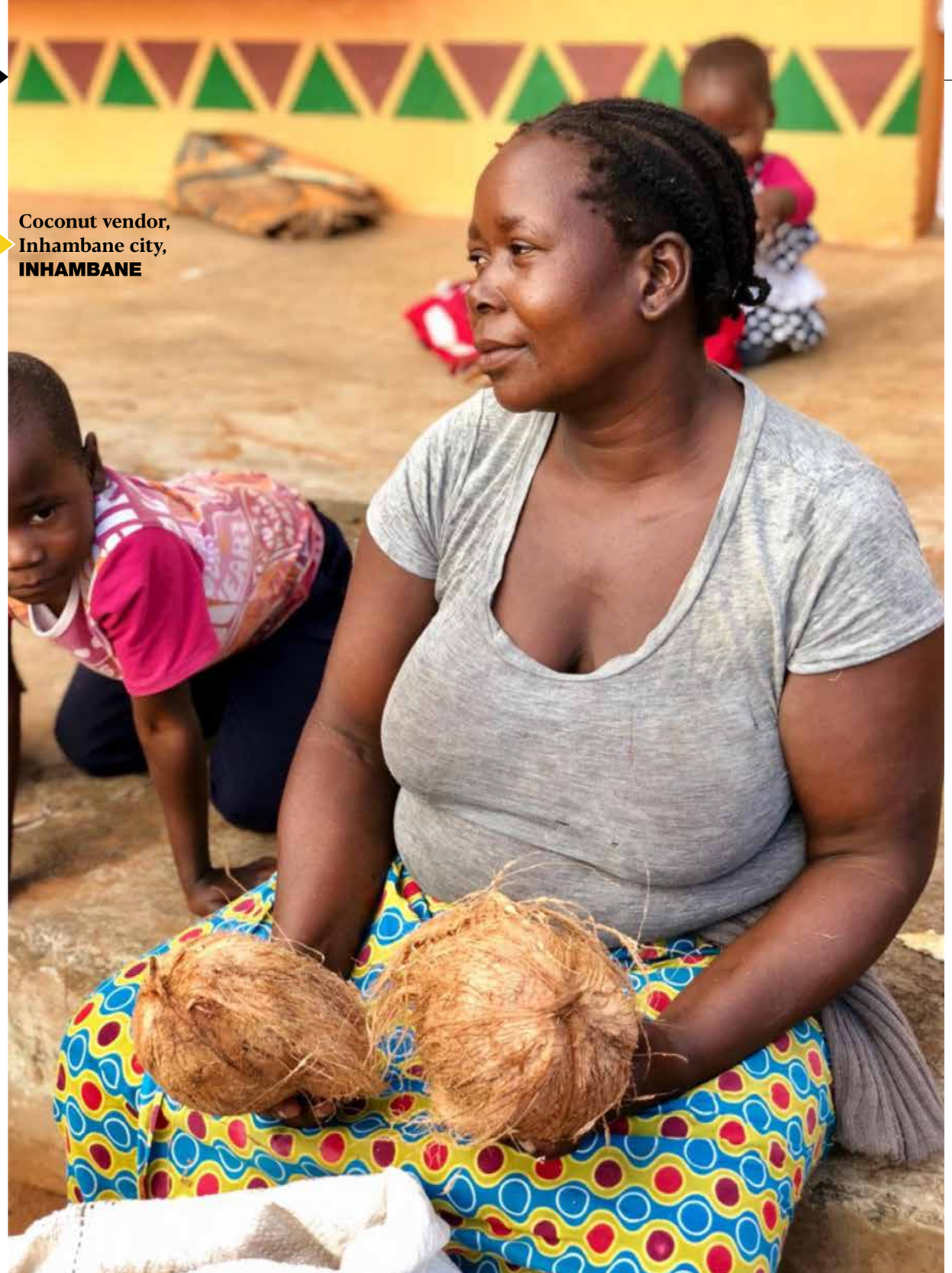
TIME HORIZON AND CALENDAR

The present NAP has a time horizon of 10 years and is aligned with the ENAMMC and the NDC. Therefore, the NAP Implementation Plan is in line with the ENAMMC and NDC Implementation Plan. Three phases of implementation of the present NAP are established: Phase 1: 2022-2024 – establishment of the NAP implementation environment, mechanisms for coordinating and financing the NAP and piloting the implementation of adaptation actions; Phase 2: 2025-2030 – consolidation of the implementation of vulnerability reduction measures; Phase 3: Post-2030 – Consolidation of climate resilient development. The Post-2030 phase lacks a NAP review and update process.

MONITORING AND EVALUATION

Institutional arrangements were established by the ENAMMC and operated by the National System for Monitoring and Evaluation of Climate Change (SNMAMC). The monitoring and reporting of data and information needed to track adaptation actions and mitigation efforts is provided on a sectoral basis according to the main IPCC reporting categories. The Ministry of Land and Environment (MTA) has the overall responsibility to oversee national climate policy and prepare and maintain the adaptation report and submit Mozambique's National Communications, BURs, BTRs and NDCs to the UNFCCC.

Mozambique's National Transparency Framework for the implementation of climate actions was established in line with international standards as a way of facilitating the preparation of reports for the UNFCCC. Thus, the national system was developed to systematically produce the following reports: Biennial Transparency Report (BTR), National Communication (CN) and the Implementation Report of the National Strategy for Mitigation and Adaptation to Climate Change (RI-ENAMMC), including the following interim reports: the National Inventory Report (RIN), National Determined Contribution Implementation Report (RI-AAMMC) and Adaptation Communication (CA).



Coconut vendor,
Inhambane city,
INHAMBANE

ABBREVIATIONS

AFOLU Agriculture, Forestry and Other Land Uses

PA Paris Agreement

ARA Regional Water Administrations

BM Bank of Mozambique

BTR Biennial Transparency Report

BUR Biennial Update Report

AC Adaptation Communication

CBD Convention on Biological Diversity

CCGC Disaster Management Coordination Council

CLGRC Local Climate Risk Management Committees

CH_4 Methane

CN National Communication

CO_2 Carbon Dioxide

CO2eq Equivalent Carbon Dioxide

NCSD National Council for Sustainable Development

COP Conference of the Parties

CQNUMC United Nations Framework Convention on Climate Change

CSE Superior Council of Statistics

CTCM Technical Council for Methodological Coordination

CTGC Technical Council for Disaster Management

DA Activity Data

DINAB National Directorate of Environment
DNMC National Directorate for Climate Change
EBAC Low Carbon Development Strategy
EDM Mozambique Electricity
ENAMMC Mozambique's National Climate Change Adaptation and Mitigation Strategy
ENH National Hydrocarbon Company
ETF ou E**TA** Enhanced Transparency Framework
FAO United Nations Food and Agriculture Organization
FNDS National Sustainable Development Fund
FOLU Forests and Other Land Uses
FREL Forest Reference Level
FUNAB National Environment Fund
FUNAE National Energy Fund
GEE Greenhouse Gases
Gg Gigagram
HCB Cahora Bassa Hydropower
ICAT Initiative for Climate Action Transparency
GGI Greenhouse Gas Inventory
IIAM Mozambican Agricultural Research Institute
INAHINA National Institute of Hydrography and Navigation
INAM National Institute of Meteorology
INATTER National Institute of Land Transport
NDCi Nationally Determined Contribution Intent

INE National Institute of Statistics
INGC National Institute for Disaster Management
INGD National Institute for Disaster Management
INP National Petroleum Institute
IPCC Intergovernmental Panel on Climate Change
IPP's Independent Power Producers
IPPU Industrial Processes and Product Use
KTOE Thousand tones of oil equivalente
LA Level Assessment
LDC Least Developed Countries
LoCAL Local Climate adaptive living facility
LEAP Long-range Energy Alternatives Planning System
M&A National Monitoring and Evaluation System
MADER Ministry of Agriculture and Rural Development
MEF Ministry of Economy and Finance
MGC Matola Gas Company
MICOA Ministry for Coordination of Environmental Action
MIREME Ministry of Mineral Resources and Energy
MISAU Ministry of Health
MIT Mitigation Scenario
MOPHRH Ministry of Public Works, Housing and Water Resources
MRV Measurement, Reporting and Verification
MTA Ministry of Earth and Environment
MTC Ministry of Transport and Communications

$MtCO_2$ Millions of tons of carbon dioxide
MW Mega Watts
N_2O Nitrous Oxide
NAMA Nationally Appropriate Mitigation Action
NDC Nationally Determined Contribution
SDG Sustainable Development Goal
PES Economic and Social Plan
PDUT District Land Use Plan
PNDT National Territory Development Plan
ONG´s Non-governmental Organizations
PBURM Mozambique's First Biennial Update Report
PBTRM Mozambique's First Biennial Transparency Report
PETROMOC Mozambique's National Oil Company
PARP Poverty Reduction Plan
POCA Agricultural Marketing Plan
PODA Agricultural Development Plan
PQG Government's Five Year Plan
PRH Humanitarian Response Plan
QNFTM Mozambique's National Strengthened Transparency Framework
QRD Disaster Recovery Framework
REDD+ Reducing Emissions from Deforestation and forest Degradation
REF Reference Scenario
RI-AAMMC Report on the Implementation of the Nationally Determined Contribution
RI-ENAMMC Implementation Report for the National Climate Change Mitigation and Adaptation Strategy
RIN National Inventory Report
SEN National Statistical System
TA Trend Assessment
UNCCD United Nations Convention to Combat Drought and Desertification
UEM Eduardo Mondlane University
UNEPUnited Nations Environment Program
UNFCCC United Nations Framework Convention on Climate Change

Fruit vendors,
Maputo City, **MAPUTO**

1. INTRODUCTION

MOZAMBIQUE is extremely vulnerable to the negative impacts and unpredictability of the climate. As a least developed country with a long coastline in the Indian Ocean, Mozambique has been experiencing, with increasing intensity and magnitude, the negative impacts of climate change, which have made climatic phenomena such as droughts or cyclones and tropical storms to become more frequent and intense.

The adaptive capacity of communities is conditioned by limited and often climate-dependent livelihoods, such as subsistence and rain fed agriculture, artisanal fishing and tourism, and a still poor capacity to absorb disasters and the bio-geophysical shocks they face.

With the main economic sectors and a large part of the communities largely exposed to climate risks, the country's adaptive capacity can increase significantly if adaptation to climate change is integrated into national, provincial and district public planning and budgeting processes of both civil society and private.

Mozambique has already taken steps in this regard, integrating resilience, to a certain extent, into its Government's Five-Year Program and recently approving, in the Ministers' Cabinet, the country's update of its first Nationally Determined Contribution (NDC) for the period 2020-2025. This is fully aligned with the National Strategy for Adaptation and Mitigation of Climate Change (ENAMMC), which is based on three pillars, having the creation of resilience and the reduction of climate risk as a priority.

Under the UNFCCC and under the Cacún Agreement (2010), the National Adaptation Plan (NAP) was established as a medium and long-term planning tool, complementary to the existing National Adaptation Action Program (NAPA) focused on reducing vulnerability in the short term. The country had already prepared and submitted its National Action Program for Adaptation to Climate Change (NAPA), which gave rise to the implementation of several projects, and has been preparing its National Communications, following on what is provided in the INDC.

Mozambique formally launched the NAP process in a work session that took place in Maputo on December 13, 2016. The main objective was to present the process to several stakeholders and start the design of the roadmap for the NAP preparation and implementation (Photo). The aim of the NAP is to reduce vulnerability by integrating climate change adaptation into national planning processes, within relevant sectors at all levels (UNFCCC, 5/CP.17). The NAP process is based on learning from the implementation of adaptation actions and programs (including the NAPA and PLAs), as well as the capacity building of national staff at all levels and in all sectors to identify adaptation actions within the development actions and their integration into planning and budgeting instruments.

Presentation of the NAP process in the launch session.

This process is then based on Mozambique's efforts to reduce its vulnerability, namely through the implementation of the ENAMMC and the integration of Climate Change Adaptation (CCA) in planning. Considering the country's high vulnerability to climate change and the urgency to reduce it, the implementation of the NAP process is an excellent opportunity to integrate adaptation into medium and long-term development planning and, therefore, one of the main assets to reduce national and local vulnerabilities, promoting resilient and low-carbon development, associated with the implementation of concrete actions on the ground. This NAP is concurrently the adaptation action plan to implement Mozambique's First Nationally Determined Contribution (NDC) Update.

The country has also made an effort to increase resilience at the local level, having developed Local Adaptation Plans (PLAs). To date, 79 LAPs have been prepared (out of a total of 161 districts)[1].

But an increase in adaptive capacity is still needed in the medium and long term. To this end, Mozambique is now presenting its National Adaptation Plan – NAP MOZ, in an effort to bring about transformative change in the entire planning and budgeting process and also in current environmental, social and economic practices, and to increase its capacity to absorb climatic shocks, which are expected to be even more intense and frequent.

Based on an extensive consultation process, this document constitutes the NAP of Mozambique and consists of description chapters and the Plan itself:

1. Environmental and Socio-economic Context;

2. The Future Climate;

3. Climate Risks;

4. Gaps and Needs for Greater Climate Resilience;

5 Climate Finance Portfolio in Mozambique;

6. Historical Trends of Extreme Weather Events;

7. Mozambique NAP;

- **a)** Vision;
- **b)** Mission;
- **c)** Principles;
- **d)** Objectives;
- **e)** Pillars;
- **f)** Consistency between the NAP and other international instruments;
- **g)** Alignment with Sectoral Development and Strategies;
- **h)** Strategic Adaptation Actions.

8. Implementation, Monitoring and Evaluation Plan;

9. Time Horizon and Calendar;

10. Bibliographic References

Photo of bivalves,
Administrative post of Chidenguele,
GAZA

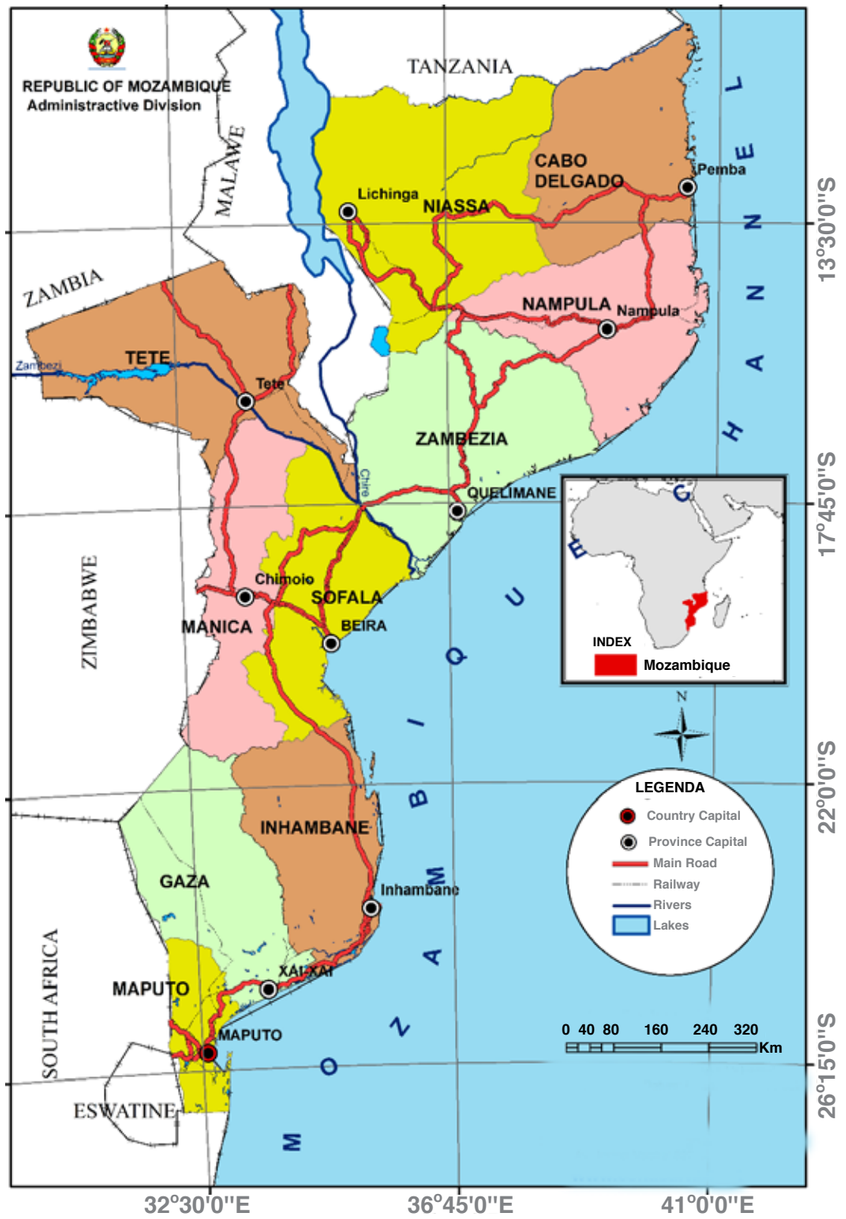
2. SOCIO-ECONOMIC AND CLIMATE CONTEXT

2.1 GEOGRAPHIC PROFILE

The Republic of Mozambique is located in the southern hemisphere, on the southeast coast of the African continent, between latitudes 10°27'S and 26°52'S and the meridians of 30°12'E and 40°51'E. The country has an area of 801,590 km2 of land and about 13,000 km² of inland waters. Along the eastern part, it is bathed by the Indian Ocean, with a coastline of approximately 2,700 km. In its northern part, Mozambique is bordered by Tanzania, to the northwest by Zambia, Malawi and Lake Niassa; Zimbabwe to the west, South Africa to the southeast, and E-Swatini to the south, in a line of international land borders with an extension of about 4,330 km. To the east, the country is bordered by the Indian Ocean and separated from Madagascar by the Mozambique Channel (Figure 1).

Figure 1

MAP OF GEOGRAPHICAL LOCATION OF MOZAMBIQUE AND ITS ADMINISTRATIVE DIVISION INTO PROVINCES



Administratively, the country is divided into 11 provinces, as the municipality of Maputo city (capital of the country) also has this status. The provinces are currently divided into 154 districts (26 more districts from the previous 128) which, in turn, are divided into 419 local administrative districts, called Administrative Posts. The latter are made up of 1052 localities, the lowest level of the Mozambican state's administrative configuration. The subdivisions reported above are joined by 53 municipal authorities, of which 33 were created in 1998, 10 more in 2008 and another 10 in 2013.

Along the approximately 2,700 km of coastline there are numerous islands, including the Quirimbas archipelago in Cabo Delgado province, Mozambique island and the islands of Goa and Sena in Nampula province, the Bazaruto archipelago in Inhambane and the Inhaca, Portuguese and Xefina islands in Maputo province.

The relief of the country is arranged in the form of an amphitheatre, with a mountainous area to the west, which descends in flat steps to the coastal plain, to the east. In terms of altitude, Mozambique is characterized by plains, plateaus, mountains and depressions. The coastal plain, with altitudes of up to 200 meters, extends along

the entire coastal strip, narrowing from the mouth of the Rovuma River to the Zambezi delta and extending in the south to the so-called great Mozambican plain, up to Ponta de Ouro. It occupies 1/3 of the national territory. There are also the so-called low pressure plains that extend along the valleys of the main rivers, eventually receiving the name of the respective hydrographic basins, such as: Incomáti Plain, Limpopo Plain, Save Plain, Búzi Plain, Lúrio Plain, Lugela Plain, Messalo Plain and Zambezi Plain.

2.2 POPULATION

Mozambican population is 30,832,244 inhabitants (INE 2021), with around 52% women and 48% men. The distribution by age group is about 45% among 0-14 years, 52% for 15-64 years and 3% for over 64 years. More than 66% of the population is rural and 56% are women. It is estimated that the number of people residing in urban areas has increased from 5 million in 2000 to over 10 million in 2017, which has environmental implications in urban areas. The most widely spoken national languages in the country include KiSwahili, EMakhuwa, CiSena, XiNdau, XiTsonga, XiTchope, Guitonga, CiNyungwe, EChwabo, EKoti, ELomwe, CiNyanja, CiYao, XiMakonde and KiMwane, out of the more than 40 existing languages in the country. The official language adopted is Portuguese, inherited from the colonizing country, Portugal, from which Mozambique became independent on June 25, 1975.

Mozambique has experienced significant population growth with an average annual rate of 2.4% over the last ten years. Between 2007 and 2017 there was a growth of 8.4 million inhabitants, against 4.4 million between 1997 and 2007. According to projections, Mozambican population could exceed 50 million inhabitants by 2050. These data show how the demographic issue will have a very important role in planning the socio-economic development of the country and the potential challenges for the management of natural resources which is the main source for the majority of the population, as well as the environment.

2.3 ECONOMY

Agriculture in Mozambique is the basis of the national economy. The sector employs 90% of the female workforce and 70% of the male workforce, that is, 80% of the Mozambican workforce works in the agricultural sector (PEDSA, 2011). Agriculture has an average share of GDP above 20% of the total. The sectors of transport, trade and communications

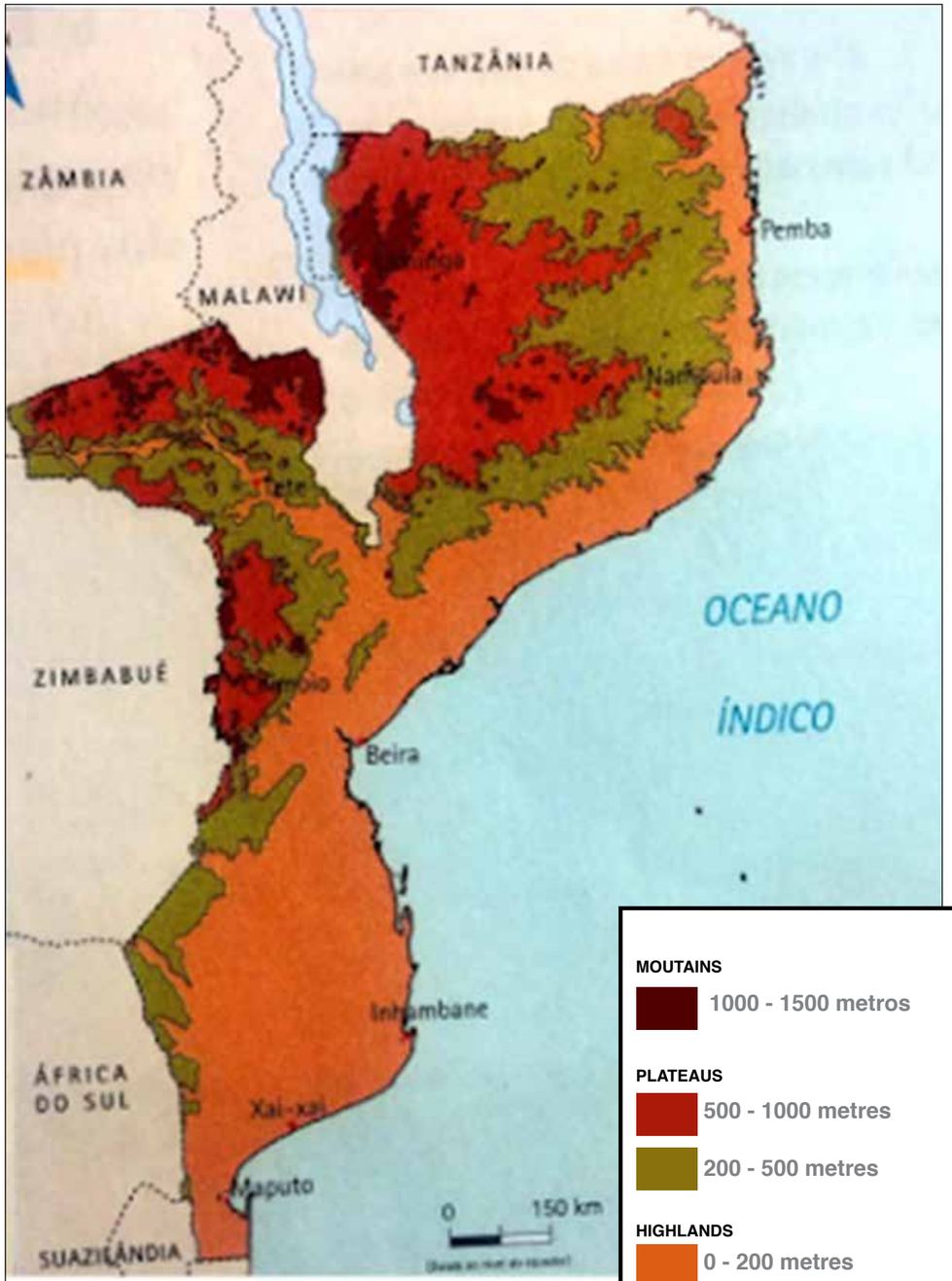
contributed with an average of 10% each. The extractive industry has shown great performance in recent years, having gone from 2% in 2013 to just over 7-8% between 2018 and 2021 (INE: Mozambique National Accounts). The national economy has considerable potential in the primary sector, driven by the existence of natural resources, however, the main challenge is the development of industries that allow sustainable exploitation and transformation of these resources. The diversification of the national economy is still a challenge for a more stable, comprehensive and sustainable growth. Mozambican economy, after several years of growth of around 7% per year, has slowed down since 2016 due to various factors caused by international and national situations. Estimations point that in 2020 the country had a negative growth (-1.23%) and the COVID-19 pandemic worsened the situation after the damage caused by cyclones Idai and Kenneth in the previous year.

2.4 RELIEF

The relief of the country is arranged in the form of an amphitheatre, with a mountainous area to the west, which descends in flat steps to the coastal plain, towards the east. In terms of altitude, Mozambique is characterized by plains, plateaus, mountains and depressions. The coastal plain, with altitudes of up to 200 meters, extends along the entire coastal strip, narrowing from the mouth of the Rovuma River to the Zambezi delta and extending in the south to the so-called great Mozambican plain, up to Ponta de Ouro. It occupies 1/3 of the national territory. There are also the so-called low pressure plains that extend along the valleys of the main rivers, eventually receiving the name of the respective hydrographic basins, such as: Incomáti Plain, Limpopo Plain, Save Plain, Búzi Plain, Lúrio Plain, Lugela Plain, Messalo Plain and Zambezi Plain.

Figure 2

RELIEF OF MOZAMBIQUE (BILA AND FONDO 2010:32)



The plateaus occur mainly in the Central and Northern regions of the country, where they are more expressive, especially in the provinces of Manica, Tete, Zambézia, Nampula, Niassa and Cabo Delgado, configuring themselves in mountainous islands or "inselbergs". In the southern region of the country, the plateaus occupy only a small strip in the western part of the provinces of Maputo and Gaza in a mountainous alignment of approximately 900 km in length and 30 km in maximum width, along the border with Swaziland, Republic of South Africa and Zimbabwe. In some plateau areas there are accumulation plains that result from excavations carried out in river valleys, as is the case of the valleys of the Zambezi, Messalo and Lugela rivers

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In some plateau areas there are accumulation plains that result from excavations carried out in river valleys, as is the case of the valleys of the Zambezi, Messalo and Lugela rivers.

1. In the plateau area, the following are distinguished:

2. Medium plateaus (200m – 600m altitude);

Highlands (600m – 1,000m altitude)

The main plateaus are:

1. Mozambican Plateau: located in the provinces of Zambézia and Nampula.

In this region, the plateaus have altitudes ranging from 600 to 1,000 meters in altitude. The main feature of the

Mozambican plateau is the occurrence of "inselbergs" called islands or residual hills.

2. Niassa Plateau - located in the province of Niassa, along Lake Niassa;

3. Mueda Plateau – located in Cabo Delgado province;

4. Chimoio Plateau – located in Manica province, close to the border with Zimbabwe;

5. Maravia Plateau – located in the province of Tete, close to the border with Zambia;

6. Angónia Plateau – located in the province of Tete, close to the border with Malawi.

Mountain formations with altitudes equal to or greater than 1,000 meters are located at:

1. West of Niassa: where mountain elevations have the shape of an Ipsilon (Y), constituting a chain or Maniamba-Amaramba system in which hills such as: Jéci (1,836m), Mitucuè (1,803m), Sanga (1.79 m), Chitagalo (1,803 m), Chissindo (1,579 m) and Txingeia (1,787 m) are to be highlighted;

2. Northwest of Zambézia and Tete: in Zambézia there are the Chire-Namúli formations with hills such as: Namúli (2,419m), Chiperone (2,054m), Inago (1,807m), Mabu (1,646m), Tumbine (1,542m)), Derre (1,417m) and Mongue (1,043m); and, in Tete, the mountains (Planaltos da Maravia-Angónia) are in their northern part, near the border with neighboring Malawi, and the highlight goes to the mountains: Domuè (2,096m) and Chiobuè (2,021m);

3. West of Manica: escarpment of the same name or Chimanimani massif near the border with Zimbabwe; it is in this massif where the highest mountain in the country is located, Binga (2,436 m altitude, in the district of Sussundenga), 35 km length and a width that varies from (8 to 10 km) and it is located about 80 km from the city of Chimoio, and the Serra Choa (1,844 m). Also in this province, there is the Espungabera massif with an altitude of approximately 1,000m, separating Chimanimani from Serra da Gorongosa (Sofala) with a maximum altitude of 1,863m.

In the southern region of the country there are no mountain formations as such, however, in terms of altitude we fall into an illusion when we look at the Libombos plateau chain, as it is located in a predominantly flat region; in fact, it is nothing more than a plateau with only 802m of altitude (M'ponduíne mount) in Namaacha, next to the border with Swaziland and South Africa.

Fire associated with itinerant agriculture, **SOFALA**

2.5 CLIMATE

According to the Köppen-Geiger classification, the climate in Mozambique is generally of the Aw type (tropical humid and dry) with pockets of BSh (semi-arid hot climate), with two distinct seasons, one being hot and rainy, from October to April, and the other cold and dry, from May to September (Gelcer et al., 2018).

The atmospheric circulation in the country is characterized by zones of influence of low equatorial pressures with NE monsoon winds during summer. Winds in the south and central zones are predominantly SE trades, and in the north they are influenced by a monsoon regime with NE winds during summer and SW winds during winter. The rainfall regime in Mozambique is influenced by the tropical cyclones formed in the southwestern Indian Ocean basin during summer, the Intertropical Convergence Zone (ITCZ), the Indian monsoon, low pressure systems over the continent, Atlantic and Indian Anticyclones, El Niño/Southern Oscillation (ENSO) and Cold Fronts (Macie, 2016).

2.5.1 PRECIPITATION

The spatial distribution of precipitation is very variable across the country. Precipitation is more abundant in the north, where the annual average varies between 800 and 1,200 mm, becoming exceptionally high, 1,500 mm, in the highlands of Zambézia, Niassa and the mountainous areas of Gorongosa. Central Mozambique and the entire coastline receive amounts of rainfall ranging between 800 and 1,000 mm. However, in some regions of the province of Tete, the values of precipitation are reduced by up to 600 mm. The south of the country is generally drier, with an average rainfall of less than 800 mm, reaching values of 300 mm in the administrative post of Pafuri, in the province of Gaza (Figure 3).

Precipitation trends in Mozambique are not significantly observable, due to the great inter-annual variability of rainfall in different seasons. However, the analysis of historical data carried out in several studies point to a late onset of the rainy season in Mozambique, as well as an increase in the persistence of dry days.

Analyzing precipitation data between 1960 and 2006, the INGC Report (2009) points to a delay, in the beginning of the rainy season, that reaches between 20 and 45 days in some places, as well as a more pronounced persistence of dry days in the northeast of the country in the months of March to May and September to November.

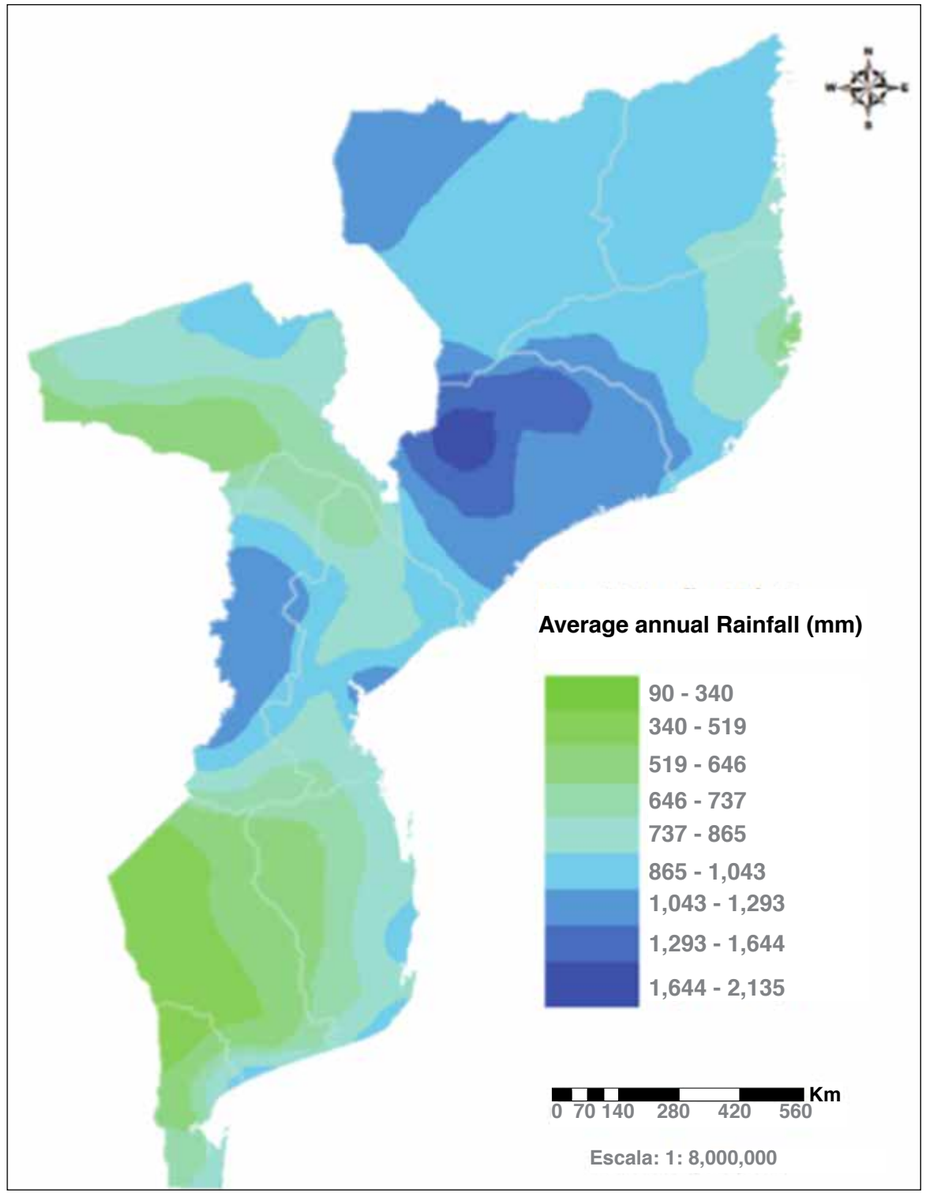
The study of Mcsweeney et al. (2010) identified that in the period between 1960 and 2006, the average annual rainfall in Mozambique decreased at an average rate of 3.1% per decade in the period under analysis. On the other hand, despite the observed decreases in precipitation, the amount of precipitation during heavy rainfall events increased at an average rate of 2.6% per decade, with these increases being more pronounced in the period from December to February (DJF).

The period of greatest precipitation in the country corresponds to the summer of the Southern Hemisphere, between October and April. During the rainy season, the highest rainfall occurs in the months of January, February and March, contributing about 45% of the total annual rainfall and is often associated with migration and activity from the Inter-Tropical Convergence Zone (ITCZ).

In the northern region of the country, typical values of monthly rainfall are 20 – 200 mm/month during the rainy season and 5 – 30 mm/month in the dry season. The central region records between 30 – 200 mm/month in the rainy season and 20 – 40 mm/month in the dry season. The south of Mozambique, with the lowest precipitation values, registers between 40 -130 mm/month in the rainy season and 20 - 40 mm/month in the dry season.

Figure 3

SPATIAL DISTRIBUTION OF ACCUMULATED ANNUAL RAINFALL IN MOZAMBIQUE



Source: Mozambique Precipitation Atlas, INAM, 2012)

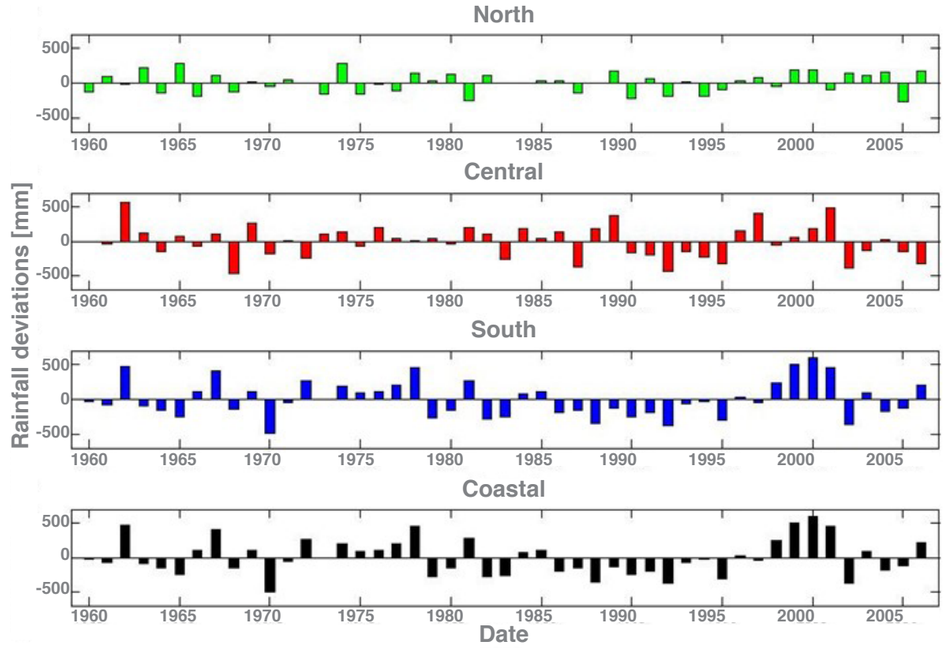
It is mainly the southern region that is prone to drought and some areas in the south of the province of Tete, in the center of the country.

2.5.2 INTER-ANNUAL VARIATION OF PRECIPITATION

In Mozambique, there is a very high inter-annual variability of rainfall in the rainy season, particularly in the central and southern regions. This variability causes significant fluctuations in the annual amounts of precipitation, and there are also years with an abundance of precipitation (with a greater probability of floods), or a deficit of precipitation (with a greater probability of droughts). Figure 4 shows the deviations of precipitation from the climatological mean in four geographic regions of the country, including the coastal region in the period from 1960 to 2006. The best documented cause of this variability is the southern oscillation and the El Niño phenomenon (ENSO), which on average causes warmer and drier conditions and relatively cooler and wetter conditions (La Niña) in the rainy season of eastern southern Africa. Evidence on the ENSO relationship and precipitation in Southern Africa can be found in several studies (Reason *et al.*, 2000; Reason and Jagadheesha, 2005).

Figure 4

PRECIPITATION DEVIATIONS SHOWING INTER-ANNUAL VARIABILITY AND THE PROBABILITY OF OCCURRENCE OF FLOODS AND DROUGHTS IN FOUR REGIONS OF THE COUNTRY: NORTH, CENTER, SOUTH AND COASTAL



Source: INGC, 2009

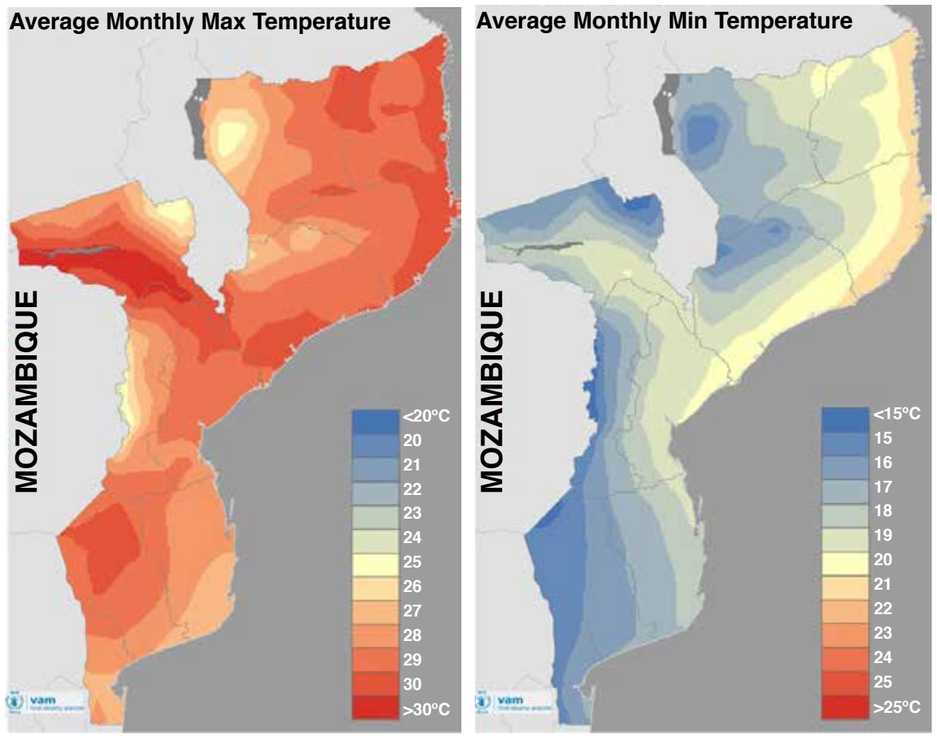
2.5.3 TEMPERATURE

In general, average temperatures in Mozambique range between 25˚C – 30˚C (average maximum temperatures) and 15˚C – 21˚C (average minimum temperatures) (Figura 5). The highest average maximum temperatures are recorded in the coastal area of the country, in the south of Tete province and in the western part of Gaza province

(Figura 5) on the left). As for the average minimum temperatures, these have a decreasing pattern from the coast to the interior. The highest average minimum temperatures are recorded along the northern coast and the lowest are recorded in Gaza province (WFP, 2018). The Gaza region also has the highest temperature range in the country.

Figure 5

SPATIAL DISTRIBUTION OF AVERAGE MAXIMUM TEMPERATURE (ON THE LEFT) AND AVERAGE MINIMUM TEMPERATURE IN MOZAMBIQUE, CALCULATED FOR THE PERIOD 1982 - 2017

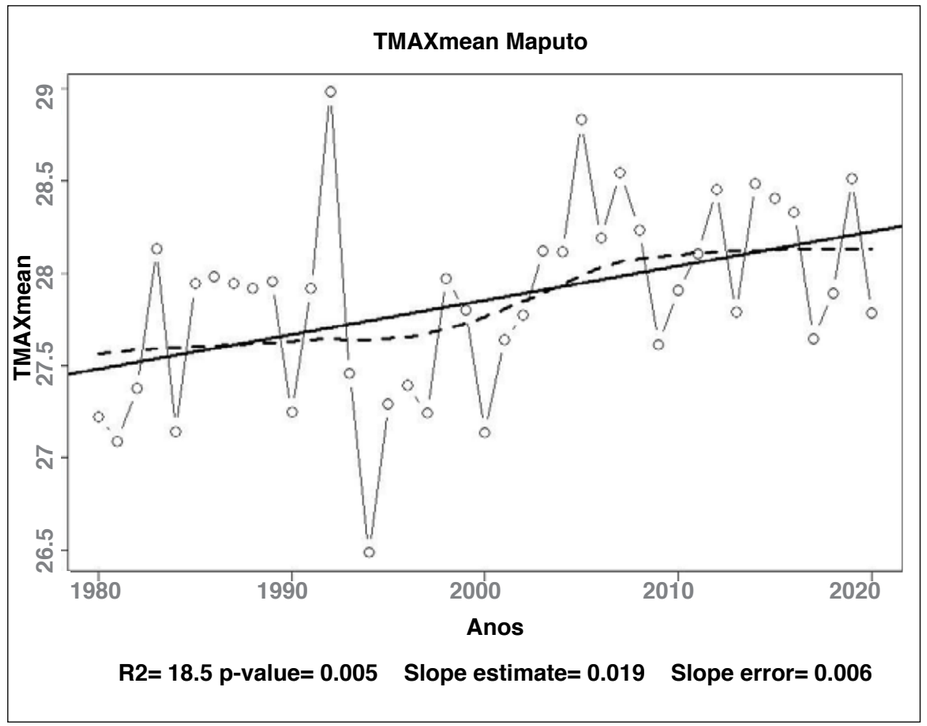


Source: WFP, 2018. Mozambique Climate Analysis

In general, average maximum temperatures tend to increase in recent decades. In the case of Maputo City, despite a marked inter-annual variation, the long-term trend was for an increase of around 1°C between 1980 and 2020 (Figura 6).

Figure 6

INTER-ANNUAL VARIATION OF AVERAGE MAXIMUM TEMPERATURE IN MAPUTO CITY BETWEEN 1980 AND 2020



3. HISTORICAL TRENDS OF EXTREME EVENTS

HISTORICAL DATA on extreme events show that three climate-related hazards are most likely to occur in Mozambique, namely tropical cyclones, floods and droughts. These events are often associated with socio-economic damage, resulting in loss of human life, human suffering, loss of property, destruction of critical infrastructure (eg health facilities, schools, access roads, etc.) and other indirect losses. Through an analysis of the trend of events recorded in the last four decades (1980 – 2019), it is noted that the number of events that devastated the country has increased significantly since the 2000s (Figura 7). Since the decade (2000-2010) to the present, the number of cyclones competes with the number of flood events, despite the slowdown in drought events.

Bearing in mind that tropical cyclones are often associated with heavy rainfall events that can contribute with a significant proportion of precipitation in a very short period, which in turn cause flooding in several regions of the country, with serious implications for the health of communities, the aggravation of these phenomena in recent decades should deserve special attention.

Figure 7

TREND IN THE NUMBER OF EXTREME EVENTS THAT OCCURRED BETWEEN 1980 E 2019

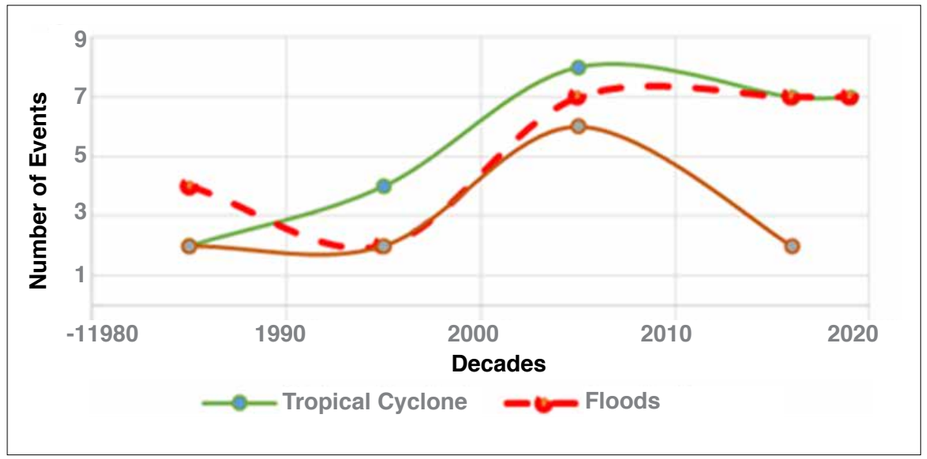
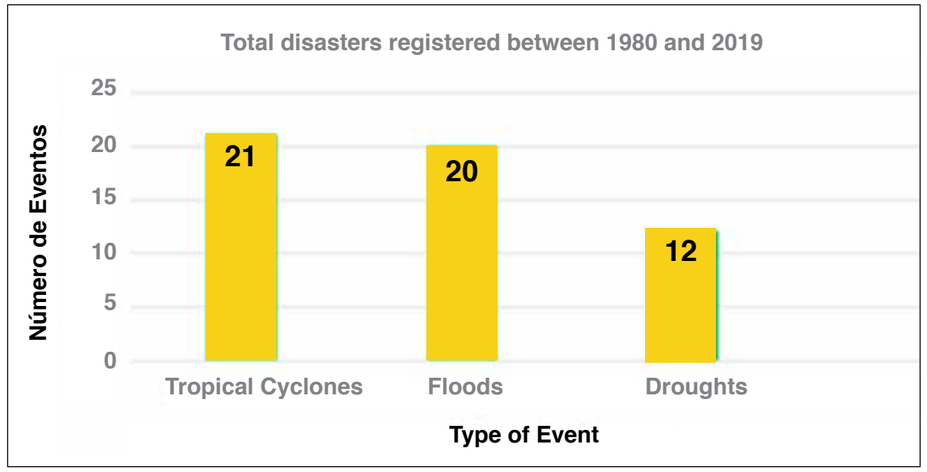


Figure 8

TOTAL NUMBER OF EXTREME EVENTS THAT OCCURRED IN MOZAMBIQUE BETWEEN 1980 – 2019



Source: produced based on DeSinventar data and INGC reports on the rainy season

In the period 1980 to 2019, Mozambique was affected by 21 tropical cyclones, 20 flood events and 12 droughts (Figura 8). This means that on average, the country is affected by a tropical cyclone or a flood event every two years and a drought event every three years. Tropical cyclones and flooding events represent about 77% of the total events that occurred in the period under analysis. In fact, in recent years there has been more than one cyclone or tropical storm a year, exacerbating the impacts these phenomena have on the economy and the lives of populations.

The direct impact of these events is often expressed by the number of loss of human life, people affected through loss of personal property and livelihoods, destruction of critical infrastructure in the country such as roads, bridges, water supply system, schools, hospitals, as well as the outbreak of water-borne diseases (eg malaria, cholera, diarrhea, etc.). However, the lack of systematic and homogeneous records of events and their impacts and, on the one hand, the persistence in considering only large-scale and high-impact disasters in a

short period of time have hidden thousands of small and medium-scale disasters that take place every year in the country. Consequently, Mozambique does not know the real value of the direct and/or indirect economic losses associated with these events.

According to the Desinventar[2] database, between 1979 and 2022, in Mozambique, the highest disaster related death toll (76%) originated from droughts, followed by floods (16%) and epidemic (5%). On the other hand, cyclones were responsible for 51% of the damage houses, while floods and flash floods destroyed 29% and 4% respectively. Even though the economic losses were not systematically accounted, the DesInventar data base presents an estimation of losses at about USD35 billion from disasters during the period 1979-2022. The disaster events occur in combination causing multiple and overlapping damages

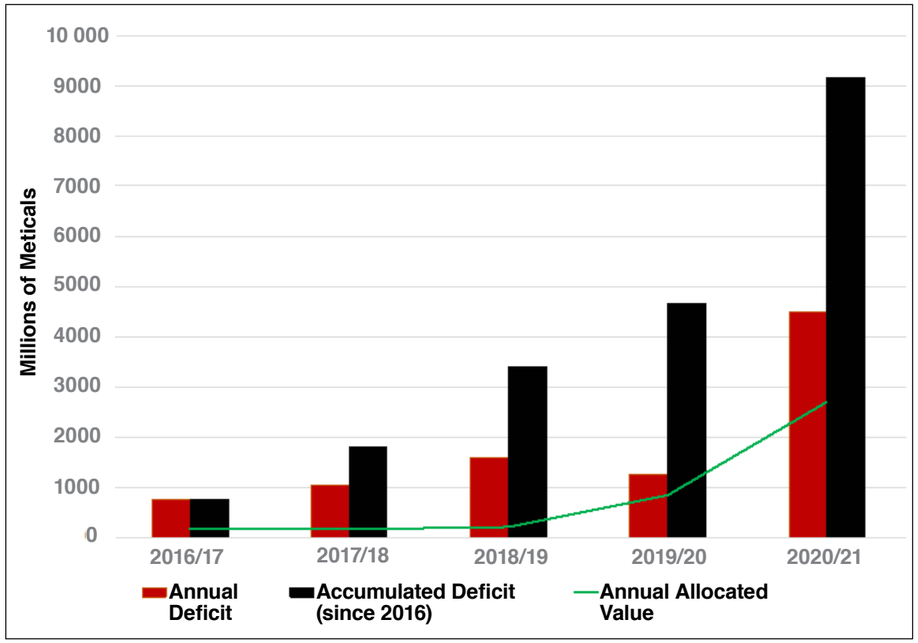
According to the National Institute for Disaster Management (INGD) updates on extreme events, in recent years cyclones have been the most common and damaging events, followed by floods and droughts. For example, in the 2018/2019 rainy season, Mozambique was severely hit by three cyclonic events: Idai, Kenneth and Desmond. During this period and on average, Mozambique was hit by a cyclone or flood every two years and a drought every three years.

The direct impact of these events is often expressed in the number of loss of human life, loss of personal property and livelihoods, destruction of critical country infrastructure such as roads, bridges, water supply systems, schools, hospitals or disease outbreak transmitted by water (eg malaria, cholera, and diarrhea, among others). Furthermore, given the impact of these events on the economy, including the cost of destruction, emergency operations, resettlement and reconstruction, the impacts of extreme weather events are also expressed in monetary terms.

Figure 9 shows that despite the amount allocated to reconstruction after extreme weather events, this amount is not sufficient and the financial deficit related to the impacts associated with extreme weather events and emergencies has increased to such an extent that, since 2016, they have already exceeded 9 billion Meticais. For comparison purposes, Mozambique's GDP in 2019 was 15 billion Meticais[3].

Figure 9

ANNUAL ACCUMULATED DEFICIT FOR POST-DISASTER RECONSTRUCTION BETWEEN 2016 AND 2021



Source: MTA, 2021

3.1 NATIONAL DEVELOPMENT PRIORITIES

Mozambique has established its long-term National Development Strategy (ENDE) for the period 2015-2035. The main objective of the ENDe is *"to improve the living conditions of the population through structural transformation of the economy, expansion and diversification of the productive base".*

The following constitute priority areas for national development:

1. Energy;

2. Agriculture;

3. Fisheries;

4. Manufacturing industry;

5. Mineral extractive industry;

6. Tourism industry.

The development pattern adopted by the National Development Strategy (ENDe) assumes that the industrialization process plays a crucial role in boosting the economy by stimulating the development of the main sectors of activity (agriculture and fisheries). However, industrialization will only be effective if it takes into account the principles of sustainable development and a climate resilient economy.

The NAP's function is to bring together different strategic elements of development and promote sustainable development. The most prominent are the local adaptation plans, which at this stage are still at the district level, but which are also expected to be at the provincial level; the National Territorial Development Plan (PNDT) and the District Land Use Plans, which have the function of establishing and explaining the territorial consequences of the

national development model, giving territorial rationality to the Government's major strategic options and contributing to greater efficiency in the implementation of the main sectoral policies with the most significant territorial impact. The PNDT recognizes exposure to climate risks and therefore considers it imperative and urgent that it assumes the implementation of defined policies and strategies, in the sense of drastically reducing vulnerability and increasing the resilience of the Mozambican territory to these and other extreme events.

Table 2 intends to summarize the intensity of impacts of climate change felt and projected for Mozambique in the various sectors of activity.

The impacts and vulnerabilities identified on the NAPA, PCN and SCN by the IPCC at a regional scale and by the INGD in the national and local context and already mentioned above were validated in the consultations with the various partners, including representatives of the private sector and civil society at the sectoral, central, provincial and regional levels and are mainly related to responses such as the management of water resources, which should be improved to face the change in water availability, both in terms of quantity and quality, as well as its seasonality, for alteration of the seasonal patterns of the rainy and dry seasons, both in terms of onset and duration[4] and the integration of parameters related to the protection of lives and infrastructure.

This component also includes, in view of Mozambique's exposure to extreme events, such as those associated with tropical cyclones, the risk management and prevention mechanisms associated with the climatic phenomena. The vulnerability factors generated by these changes in the precipitation regime and by the increase in temperature are:

1. Decreased quantity of quality water available for various uses (human, wildlife, forest, agriculture, energy production, industry) due to lower rainfall, lower aquifer recharge, increased evapotranspiration, saline intrusion and greater risk of spread of fires (lower relative air humidity);

2. Greater risk of loss of life, crops, forests and other natural heritage, soil erosion and damage to infrastructure associated with floods and inundations due to sea level rise and storm surge and extreme precipitation events – floods and strong winds;

3. Lower availability of biomass for energy purposes;

4. Changing the distribution and abundance of fisheries resources and marine biodiversity by heating the water

column and acidification and, ultimately, bleaching and dying of corals;

5. Increase in human mortality and morbidity due to the spread of vector-borne diseases associated with climatic variables and malnutrition, with exacerbated effects on the most vulnerable groups; and

6. Decreased soil fertility due to erosion, deforestation, excessive fires and saline intrusion.

Table 2

CLIMATE RISKS BY SECTOR/AREA IN MOZAMBIQUE

Climate Risks							
Sector/area	Change in atmospheric temperature patterns	Change in precipitation patterns	Droughts	Floods	Tropical cyclones	Rising of sea level water	Increase in average sea temperature
Water resources	•••	•••	•••	•••	•••	••	•
Infrastructure		•		•••	•••	••	
Agriculture	••	•••	•••	•••	•••	•	
Food safety	••	•••	•••	•••	•••	•	
Forests	••	•••	•••	••	•••	•	
Industry		•	•••	•••	•••	•	
Energy		•	••	•	••		
Health	••	•	••	••	••	•	•
Tourism	••	•	••	••	•••	•	•
Transport	••	•		•••	•••	••	
Biodiversity and conservation areas	••	•••	•••	•••	•••	•	••
Coastal areas	•	•	•	•••	•••	•••	••
Human settlements	••	••	•••	•••	•••	•••	•
Fishing		•	•	•	••	••	•••

Key: ••• High •• Moderate • Low (or not known)

Source: MICOA, 2012

3.2 CLIMATE VULNERABILITY AND THE PANDEMIC

The Coronavirus (COVID-19) pandemic has exacerbated climate vulnerability in Mozambique. This is because the latter is deeply related to the social weaknesses and the pandemic was another way of aggravating and exposing them. According to the work developed by the NAP *Global Network*[5], the pandemic has reinforced the need for adaptation in the most vulnerable countries. Thus, there is a shared priority in the fight against the pandemic and against climate change with a view to recovery and regeneration, both environmental and economic and social. In the case of the health sector, for example, whether as a response to COVID-19 or building its resilience to the impacts of climate change, countries recognize the importance of more well-equipped medical facilities, better risk communication strategies, more health professionals trained in crisis response, more and better disease surveillance and need for functional early warning systems.

Real Gross Domestic Product (GDP) contracted by an estimated 0.5% in 2020, due to the pandemic covid-19, the first decline in 28 years, after growing 2.2% in 2019. The economic contraction dragged 850,000 people below the international poverty line in 2020, an increase of 1.2 percentage points, while GDP per capita was expected to contract by -3.4% in 2020. Mozambique's economy recovered moderately in 2021. Growth reached 2.2 percent, driven by agriculture and a gradual rebound in demand.

Dry bed of one of the affluents of Zambeze River,
TETE

4. FUTURE CLIMATE

4.1 CLIMATE PROJECTIONS

4.1.1 FUTURE TEMPERATURE PROJECTIONS

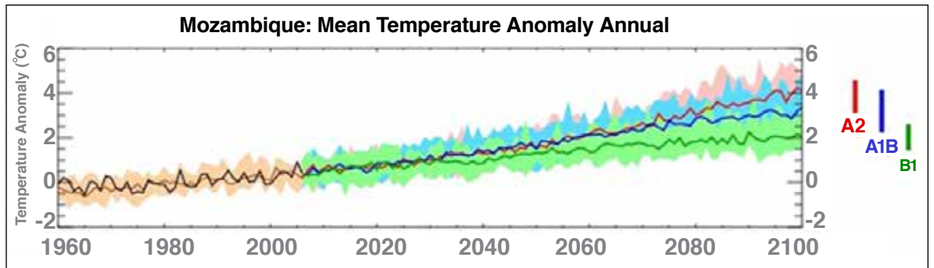
The Intergovernmental Panel on Climate Change (IPCC), in its Sixth Assessment Report (AR6) presents unequivocal evidence of climate change worldwide: the atmosphere and oceans are warming, the extent and volume of snow and ice are decreasing, sea levels are rising and weather patterns are changing. The most optimistic scenario predicts an increase in the earth's temperature between 0.3˚C and 1.7˚C and, in the worst case, the Earth's surface could warm between 2.6˚C and 4.8˚C over this century until 2100 (IPCC, 2021). In December 2015, the Paris Agreement, approved under the United Nations Framework Convention on Climate Change (UNFCCC), established a global framework to reduce carbon dioxide (CO2) emissions and noted that global warming should be limited to 1.5˚C.

In Mozambique, some studies point to a significant increase in temperature, with the average annual temperature expected to increase between 1.0 and 2.8 ˚C by 2060 and between 1.4 and 4.6 ˚C by 2090 (INGC, 2009; Mcsweeney

et al., 2010) (Figure 11). The projected rate of warming will be faster in the interior regions of Mozambique than in areas closer to the coast. All projections indicate substantial increases in the frequency of days and nights considered "hot" in the current climate. So, this increase will be between 17 and 35% of days per year, around 2060 and between 20 and 53% of days per year in 2090. The same projections also indicate a reduction in the frequency of days and nights considered "cold" in the current weather.

Figure 10

TRENDS IN THE AVERAGE ANNUAL TEMPERATURE IN MOZAMBIQUE FOR THE RECENT PAST BETWEEN 1960 AND 2006 (black line)



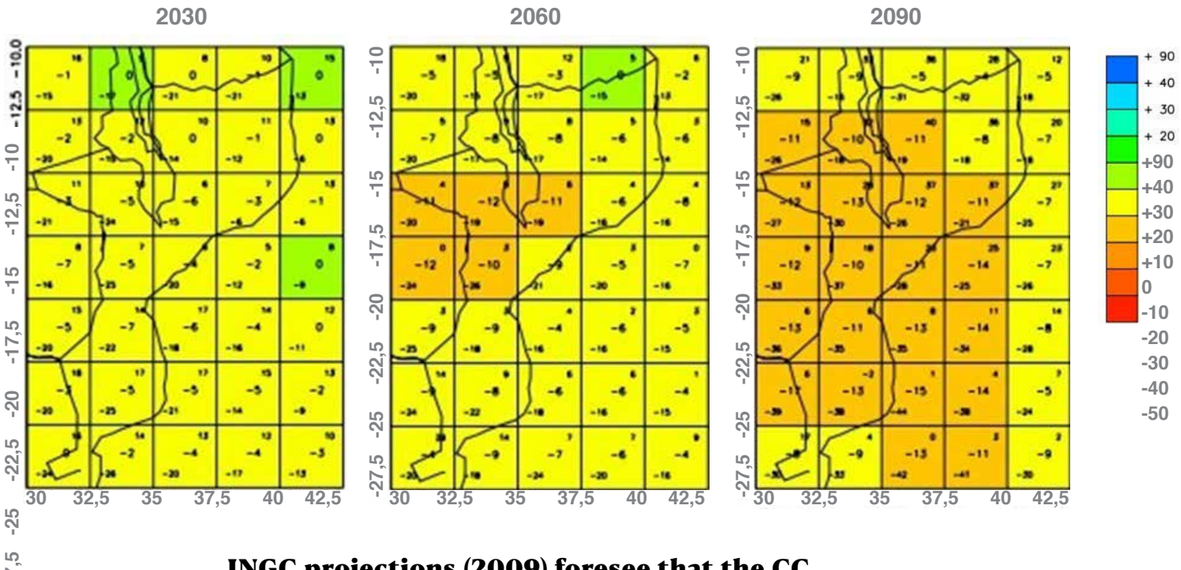
Trends in the average annual temperature in Mozambique for the recent past between 1960 and 2006 (**black line**) and The projected future for three emission scenarios (**colored lines**). The colored bars on the right side indicate the different scenarios used in the simulations (**A2**, **A1B** and **B1**) as well as the uncertainty ranges in the average climate projections around 2090 – 2100
(Adapted from Mcsweeney et al., 2010)

4.1.2 FUTURE PRECIPITATION PROJECTIONS

Precipitation variations are not as clear as temperature variations. The range of precipitation projections resulting from different models is large and encompasses both negative and positive changes. There are indications of variations between -15 to +20 mm per month, or -15% to +34% (Mcsweeney et al., 2010). However, the models show more consistency in seasonal projections, indicating a reduction in rainfall in the dry season, that is, in the period from June to August (JJA) and from September to November (SON). This reduction is partially offset by the increase in rainfall in the rainy season, from December to February (DJF), with greater expression in northern Mozambique (Mcsweeney et al., 2010). In general, rainfall projections do not indicate substantial changes in annual rainfall, but rather change in rainfall patterns (Figure 11).

Figure 11

SPATIAL PATTERNS OF MONTHLY AVERAGE RAINFALL FROM SEPTEMBER TO NOVEMBER PROJECTED FOR THE YEARS 2030, 2060 AND 2090 (Adapted from Mcsweeney et al., 2010)



INGC projections (2009) foresee that the CC in Mozambique will be manifested mainly in the:

1. Temperature patterns:

a) atmosphere – with an average increase between 1.5 ˚C and 3.0 ˚C in the period between 2046 and 2065 and record of more hot days and fewer cold days, with an increase in maximum and minimum temperature;

b) oceans – with rising average sea levels and changes in the distribution and availability of fish stocks and effects on marine ecosystems (such as, for example, corals);

2. Precipitation patterns:

a) With irregular behavior of rainfall in terms of starting and ending time, rainfall load (phenomena of intense precipitation in a short period of time) and duration of the rainy season (drought), disfiguring the notions of "official" and "real start" of the agricultural season, which in some regions may result in a decrease in current potential yields of around 25%;

b) With a growing reduction in potential agricultural income levels by up to 20% in the main crops that constitute the basis of food security and an essential condition for improving the per capita income of Mozambican households;

3. Increase in the frequency and intensity of extreme events (droughts, floods and tropical cyclones):

a) Persistence of extraordinary floods in identifiable places in the country, which can be referred to as "risk zones";

b) Cyclones and other strong winds;

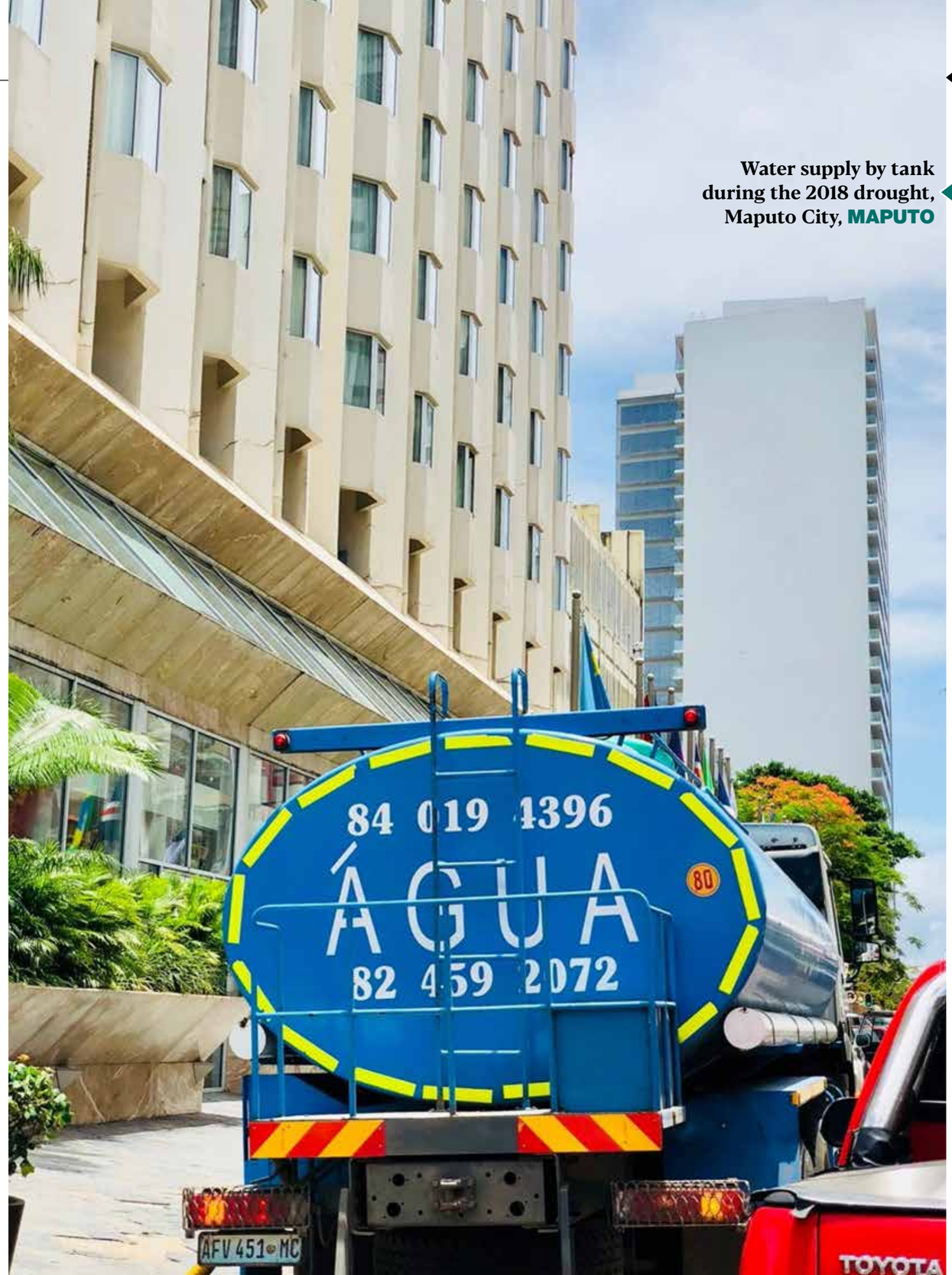
c) Prolonged droughts;

4. Sea level rise: 15 cm, 30 cm and 45 cm as a result of thermal expansion and 15 cm, 110 cm and 415 cm as a consequence of the reduction of continental ice caps in the years 2030, 2060 and 2100, respectively.

a) Identified areas with potential increased risk due to the emergence of other adverse natural phenomena such as loss by submersion and erosion of coastal areas, intrusion of saline water, desertification;

b) Reduction of available areas for the practice of agriculture in green or lowlands;

c) Many of the main coastal urban centers in the country, including Maputo, Beira and Quelimane, are already in a critical situation in terms of vulnerability (human lives, properties, social infrastructures, etc.) to the effects of CC.



Water supply by tank during the 2018 drought, Maputo City, MAPUTO

5. CLIMATE RISKS

THERE ARE SEVERAL PUBLICATIONS that place Mozambique at the top of risk classifications, including climate, such as the *Global Climate Risk Index 2021*[5], published by the Germanwatch World Bank Group, or the ND-Gain Index , published by the University of Notre Dame.

The first places Mozambique as the country most affected by climate change in 2019, with 700 deaths and losses of around USD 4930.08, equivalent to more than 12% of the Gross Domestic Product (GDP). Between 2000 and 2019 Mozambique was ranked as the fifth most affected country worldwide.

The frequency and intensity of extreme weather events has been increasing worldwide. Estimates of loss of human life and economic losses indicated growth during the period 1970 to 2019. Mozambique is among the countries that had the greatest loss of life during the prolonged drought of 1981, with about 100,000 deaths and economic losses caused by Cyclone Idai in 2019, estimated at around USD 1.96 billion, and a reconstruction cost estimated at USD 2.9 billion, making it the country with the highest losses on the African continent between 1970 and 2019). In terms of the African continent,

Mozambique is the second with the highest number of climatic disasters, with 79 events, after South Africa, with 90 events, between 1970 e 2019 (7,8) .

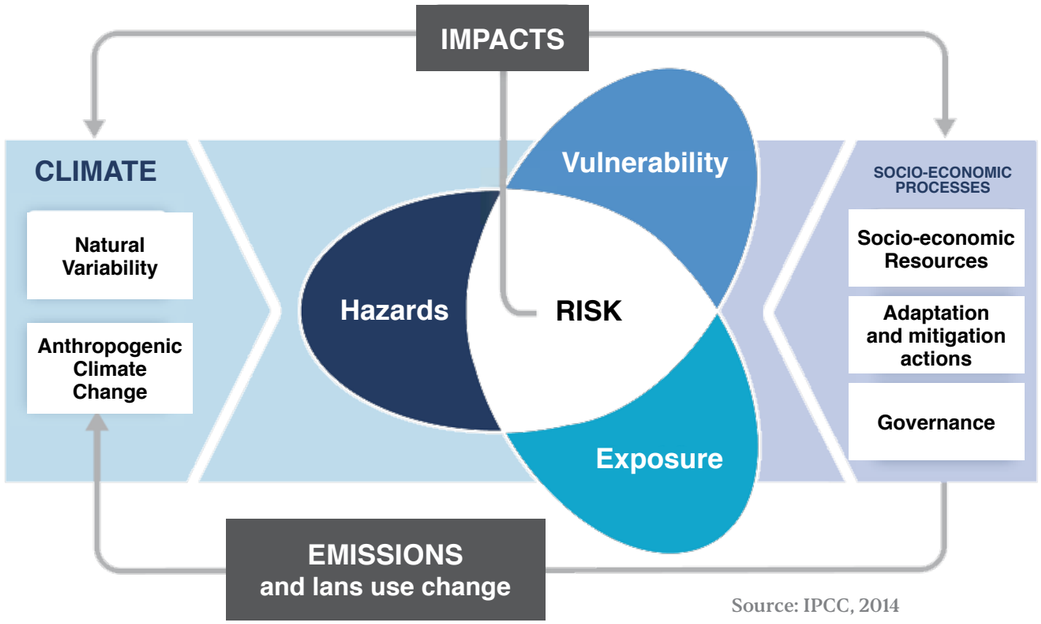
According to the Sixth Report of the Intergovernmental Panel on Climate Change (IPCC, 2021), risks associated with climate change arise from climate-related hazards (climate trends and extremes) and the vulnerability of society, communities or systems exposed (in terms of livelihoods, infrastructure, ecosystem services and governance) as illustrated in (Figure 12).

Based on the above, on the experience of Mozambique and on the perspective of the evolution of climate vectors in the country, the most significant climate risks are:

1. loss of livelihoods, built-up areas and coastal infrastructure, ecosystem services and economic stability associated with a trend towards drought, storm surge, ocean acidification, sea level rise and extreme precipitation; and

2. Threats to coastlines in low-lying areas due to severe storms and rising sea levels.

Figure 12 **CONCEPTUAL FRAMEWORK OF CLIMATE RISK**



Source: IPCC, 2014

5.1 CLIMATE RISKS AND VULNERABILITY BY SOCIOECONOMIC SECTOR

The sixth report of the IPCC indicates that the impacts and risks of climate change are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climate and non-climate risks will interact, resulting in the composition of overall risk and cascading risks across sectors

and regions. Some responses to climate change result in new impacts and risks.

Mozambique is particularly vulnerable to the climate change due to its location downstream of shared river basins (Floods e.g. Limpopo Basin 2000 and 2013; Licungo Basin 2007, 2013 and 2019, etc.). This vulnerability is exacerbated by the country's 2,470 km of coastline and socio-economic fragility. More than 60% of the population lives in low-lying coastal areas, where intense storms from the Indian Ocean and rising sea levels put infrastructure, coastal agriculture, key ecosystems and fisheries at risk. Although migration to urban areas is increasing, two-thirds of the population still resides in rural areas with limited access to electricity, clean water and sanitation. Forty-five percent of the population lives below the poverty line and 70 percent depend on climate-sensitive agricultural production for their food and livelihood. The country's vulnerability is also heightened by its low adaptive capacity, poverty, limited investment in modern technology and deficiencies in its infrastructure and social services, especially those related to health and sanitation (e.g. malaria and cholera in 2019 after Cyclone Idai and Kenneth in central and northern Mozambique). These events result in the loss of human life, crops, livestock and wildlife. In line with forecasts, there is an increase in the frequency and intensity of extreme weather events such as droughts, floods and tropical cyclones (recent cyclones with high impact: Idai and Kenneth 2019, Eline in 2000, etc.). The destruction of social and economic infrastructure, greater dependence on international support, increases in food prices, damage to human health and the environment, and the destruction of ecosystems are some of the serious forms of manifestation of vulnerability in Mozambique, which represents a major barrier to the efforts of the Government and its partners to fight poverty and achieve Sustainable Development Goals (SDGs).

Although vulnerability affects all population groups, women are particularly more vulnerable. Often, where they take refuge, they start life again in deplorable situations due to extreme poverty, in such a way that some parents end up allowing their daughters to get involved in premature unions. But this is just one facet of gender inequalities, with women exposed to various forms of violence. .

Gender inequalities remain a challenge in ensuring the observance of human rights and promoting inclusive and sustainable development. Despite the recognition of the

role that women play in the country's socio-economic development, they are often excluded from decision-making processes, have little access to resources and opportunities and their empowerment is relegated to the second plan. These challenges increase in emergency situations due to the government's limited capacity to prevent and adequately respond to situations created by natural disasters and the increased vulnerability of populations, especially women, children and the elderly, to gender-based violence[10].

5.1.1 AGRICULTURE, FORESTS AND FISHING

AGRICULTURE

Agriculture in Mozambique is the basis for development and it is the most important source of income and subsistence for more than 80% of the population. It has an average share on the GDP of above 20% of the total GDP (INE: Contas Nacionais, 2008 – 2018). The agriculture sector also plays an essential role for women's livelihood, as 90% of the economically active female population earns a living from agriculture. In addition, women constitute 61% of the agricultural workforce. The country's agricultural potential is estimated at 62% of the total area, but only 7% of the area is currently cultivated (CIAT; World Bank. 2017).

Out of the 3 million hectares of land with potential for irrigated agriculture, only 118,000 hectares were equipped for irrigation in 2015 and only 62,000 ha (52%) were being used for irrigated agriculture (CIAT; World Bank. 2017). The country's National Development Strategy (2015-2035), the Green Economy Action Plan (2013-2030), the National Climate Change Adaptation and Mitigation Strategy (2013-2025) describe the agriculture sector as essential for poverty reduction and for stimulating economic growth, as well as one of those that has the greatest potential for adaptation and emissions reduction, through the promotion of resilient production techniques and systems.

Basic food production is dominated by cereals such as maize, sorghum, millet and rice. Rice production has shown great expression in recent years with the expansion of national production on a commercial scale. In relation to cash crops, cotton, sugar cane and tobacco are the most expressive crops, both in terms of covered area and production volume. Rice production is carried out in irrigated areas and floodplains. Rice is the third most important crop in the cereals group, having increased the cultivated area from 200 thousand hectares in 2006 to 300 thousand hectares in 2012, despite the national potential being around 900 thousand hectares.

Agriculture in Mozambique is mainly dominated by the family sector whose production is oriented towards subsistence, in a rain fed regime, and highly vulnerable to climate variability. In terms of farm size, approximately 72% of the country's farmers work on plots of land that do not exceed 2ha, using limited amounts of inputs and extensively practicing slash and burn (CIAT; World Bank. 2017). Livestock production and savanna burning represent two main sources of Greenhouse Gas (GHG) emissions in the agriculture sector.

Some major drought-sensitive food crops, such as maize, could decline on average by up to 11% (2046-2065), and up to 45% in areas like Tete. More erratic rainfall and temperature changes could contribute to the spread of existing and new agricultural pests, such as fall armyworm, posing an unprecedented threat to maize and sorghum. The increased risk of floods and droughts is likely to affect key value chain crops such as soy, pigeon pea and sesame, disrupting local markets and farmers' incomes. These production impacts, combined with the effects of floods and heavy rains on rural roads, could result in a loss of agricultural GDP of 4.5 - 9.8 percent by 2050.

Livestock production is an important activity in the agricultural sector. Animal husbandry is a component of diversifying the livelihoods of peasants, it is a source of income and an economic reserve, it contributes to the balance of production systems, to the increase of agricultural production, with animal traction and manure, and to the food security of households, while still playing a social role in rural communities. Livestock production is mainly carried out by the family sector for subsistence (mainly small animals such as goats, rabbits, chickens, ducks), but large-scale production has been increasing in recent years, mainly livestock (beef, swine, goat and sheep) and broilers and egg production.

Although agriculture is the economic base of the majority of the population in the country, it is constrained by low soil productivity; biotic and abiotic factors, such as high pressure from pests, diseases and weeds, and irregularity and scarcity of rainfall, respectively; low use of inputs (fertilizers, pesticides and improved seed) and low level of use of adequate technologies. Other factors that also contribute to low productivity include poor agronomic practices and insufficient extension services due to low geographic coverage.

The impacts of climate change on agriculture result from direct impacts that can be cyclones, floods, droughts, heat waves in cultivated areas, reducing harvests and destroying agricultural infrastructure and equipment and access

routes for crop flow. The weak infrastructure for storing and managing water and irrigation is an aggravating factor. The main affected by these impacts are rural populations that depend almost exclusively on subsistence agriculture for their food security. For example, Cyclone Idai is reported to have affected more than 700,000 hectares of agricultural land and caused losses corresponding to US$258 million in destroyed crops. Tropical cyclones Idai and Kenneth, which occurred in the 2018/2019 rainy season, resulted in livestock losses due to the death of 5,428 cattle, 10,305 small ruminants, 3,191 pigs and 124,498 birds. As the frequency and intensity of cyclones increases, the affected areas and therefore the number of those affected will increase.

FORESTS

Mozambique has a considerable area of natural forests and other woody formations, mainly Miombo, Mecrusse and Mopane types. These tropical dry forests are subject to a high rate of deforestation and degradation, due to their fragility and high demand for goods and services to which they are subject and the fact that they are the main livelihood of the poorest population (MITADER, 2018).

The 2007 national forest inventory (Marzoli, 2007) estimated the country's forest cover at just over 50%, that is, just over 40 million hectares of forests and other woody formations. Of this area, about 67% (26.9 million hectares) correspond to productive forests. More recently, a new forest inventory (MITADER, 2018) found a decrease of 21% in the total forest area and 36% in the productive forest area, as compared to the 2007 inventory.

Although deforestation rates vary over the years, the pressure to convert forests to other uses reduced by 30% from 2013 to 2018 (MITADER, 2018), and it is expected that the reduction in deforestation and the increase in afforestation will lead to greater areas of forests and greater carbon storage, allowing for an increase in wood production, employment and income.

Deforestation and forest degradation in Mozambique is estimated at 12 $MtCO_2$/year of carbon dioxide emissions in the period between 2000 and 2012 (CEAGRE & Winrock International, 2016). The main cause of deforestation, with around 7.8 MtCO2/year (65% of total emissions) is the conversion of forests for shifting agriculture. The other important causes are urban sprawl and infrastructure (1.4 $MtCO_2$/year; 12%), logging (0.9 $MtCO_2$/year; 8%) and firewood and charcoal (0.8 $MtCO_2$/year; 7%). Reforestation in Mozambique is still in its infancy, even though its role in reducing pressure on natural forests is recognized. Although there

is a potential area of around 7 million hectares for planting fast-growing exotic species, only close to 60,000 ha are planted, mainly with species of the genera Eucalyptus and Pinus (DNTF, 2015).

Forest management is often referred to as a means of reducing greenhouse gas emissions, but at the same time as a means of adaptation, insofar as they have the potential to produce goods and services of local utility from the provision of renewable energy services of biomass, wood, and a variety of non-wood forest products, protection and recovery of soil productivity, regulation of the hydrological cycle, among others. In the case of Mozambique, where the main type of agriculture is itinerant, the restoration of forest ecosystems is a natural way of recovering soil productivity. At the same time, while acknowledging that 77% of domestic energy is from biomass and that this pattern will continue for decades to come, it is extremely important to recognize the role of sustainable forest management as an adaptation measure.

FISHERIES

The Mozambican coastline is about 2,700 km long, and several fishing resources can be identified. According to the Fisheries Master Plan (2010-2019), it is estimated that the potential of Mozambique's fisheries products is around 332 thousand tons, with the main resources being shallow-water shrimp (in Sofala Bank and in Maputo Bay), deep-sea crustaceans (on the continental slope of the central and southern areas), horse mackerel and mackerel (on the Sofala Bank) and demersal fish (in the southern and northern areas).

It is estimated that the fisheries sector contributes around 4% to the GDP (MIMAIP, 2016) through the export of shrimp, prawns and other fish products, with a global production of around 151 thousand tons per year, from marine fisheries and inland waters (Ministerial Diploma No. 161/2014 of 1 October). Fisheries contribute to food security and especially by providing around 50% of the animal protein consumed in the country (MIMAIP, 2016). Therefore, a breakdown in the ecosystems and resources based on fisheries will have severe socio-economic implications.

Climate change risks to marine and fisheries resources include rising temperature, precipitation and sea level, coastal storms and acidification of estuaries. This can decrease fish stocks, alter markets and influence tourism in the marine and coastal environment. Since the extensive Mozambican coast is home to several fishing communities, in addition to large tourist investments, the impacts of climate change have the potential to directly affect 1/3 of the population living on

the coast and the practice of fishing, as well as negatively affect the coastal tourism industry. Tropical Cyclones Idai and Kenneth, which occurred in the 2018/2019 rainy season, resulted in the loss of 2,189 vessels that were destroyed and 77 boat engines damaged, 2,387 fishing gear units lost and 5,210 tonnes of fish lost; in fish farming, 562 tanks and 228 cages were totally destroyed and 396 tons of fish lost.

5.1.2 WATER RESOURCES

With 104 river basins and considerable groundwater potential, Mozambique has abundant water resources. However, increased risk of floods and droughts, more variable rainfall and high population growth are putting pressure on these water resources. Mozambique shares 13 major rivers with neighboring countries and the anticipated rainfall reductions in Zimbabwe and Zambia could translate into significant reductions in river flows in Mozambique. The flows of the Zambezi River could be reduced by up to 15 percent (not taking into account the risk of drought and population growth). In the central area, this could translate into a reduction in per capita water availability of around 1.900 m^3/ capita/year in 2000 to around 500 m3 by 2050 (the international water scarcity threshold is 1,000 m^3/capita/year). Even in areas where river flows are expected to increase (such as in the south), expected population growth is projected to decrease water availability. For example, in the Limpopo basin, an estimated 15 percent increase in river flows is still likely to result in a 64 percent drop in water availability by 2050, due to the population growth. Increased river flows are likely to increase the risk of flooding, particularly from January to March, and high-intensity rain events will increase flooding along the coast[12]. The weak infrastructure for capturing, storing and channeling water is one of the main limitations in the sector, which in turn is reflected in sectors such as agriculture, health and environmental sanitation, and energy generation.

5.1.3 ENERGY

The energy sector has recorded, over the last two decades, significant growth, both in terms of production and demand. Despite the consumption of modern energy sources showing a noticeable evolution, particularly the consumption of electricity and gas, biomass of forest origin remains the most important source of energy used in the country (ME, 2012). Indeed, it is estimated that around 77% of Mozambican families depend on biomass, mainly charcoal and firewood, to satisfy their energy needs (Mahumane & Mulder, 2016).

This reality is due to the fact that the majority of the population in rural areas (estimated at around 70%) resorts to the use of firewood to satisfy their cooking and water heating needs, while in the urban area, whose number of population has been growing at a fast pace, most of the population use charcoal for cooking, despite the increasing price of this type of energy and the negative impacts associated to it. It should be noted that according to the preliminary results of the last census carried out by the National Statistics Institute, the urban population represents approximately 32% of the country's total (INE, 2018).

Mozambican government has ruled out the possibility of abandoning coal mining as part of the energy transition advocated by the United Nations to meet the goal of reducing carbon emissions by 2030. The government justifies this position on the grounds that coal remains one of the main Mozambican exports and thus makes a crucial contribution to the balance of payments and as a source of foreign exchange. The Government also believes that the energy transition must always take into account the real conditions of the country. At the moment coal is the main contributor to the balance of payments and in second place are heavy mineral sands.

Gas also has a place in the energy transition. In the context of the energy transition, actions are underway aimed at the development of non-polluting energy generation systems, including hydroelectric plants, but also less polluting fossil fuels, such as natural gas. The government has set an ambitious target of producing an extra 600 MW of energy by 2024, of which 400 MW will be generated by gas-fired power plants and 200 MW will come from solar, wind and hydropower[13].

5.1.4 OIL AND GAS

The consumption of liquid fuels grew at an average rate of 6% per year, and as of 2009 it reached an average growth rate of 15% per year. The transport sector is responsible for the largest portion of this increase, followed by the industrial sector. The consumption of petroleum products almost doubled in the period 2000 - 2011. Natural gas production in Mozambique has grown by an average of 5.3% per year since 2006. About 95% of the natural gas produced is exported to South Africa.

In the last decade, the energy sector continued to grow significantly. With the increase in the exploration and consumption of natural gas in the country, new actors emerged, especially from the private sector, in the area of electricity production, the independent energy producers (IPP's) that have been expanding the national production

capacity, which currently stands at 2,724 MW (EDM, 2018).

The approval of the Natural Gas Master Plan by the Government in 2014, aimed at the massification of natural gas produced in the country, has boosted the increasing use of this resource, not only in the production of electricity, but also in the industrial sectors, services and road transport, although at still low levels. Natural gas also represents an opportunity to diversify the mix of forms of energy used in Mozambique, making an important contribution to industrial and socio-economic development. In turn, the consumption of liquid fuels, diesel and gasoline doubled, mainly due to the increase in the national car fleet, which, with 287,951 vehicles in 2010, almost tripled in less than ten years, reaching 782,757 vehicles in 2018 (INE, 2011 & 2018). It should be noted that part of these fuels is used in the extractive industry, which is an emerging sector with significant growth, and in the generation of electricity.

5.1.5 INDUSTRY

The industry sector has played an important role in the Mozambican economy. Since national independence, this sector has contributed significantly to the GDP. Based on this contribution, integrated industrialization is identified

as one of the Mozambican government's bets to promote national development (GoM, 2014).

It is important, however, to point out that the Mozambican industrial sector is mainly made up of micro-enterprises and other small companies, which together account for more than 90% of the industrial park. Micro-industries make up around 63% of the sector, small 31%, medium 3% and large 3% (MIC, 2016).

In terms of employment, large companies are the ones with the greatest weight with 71%, followed by small companies with 16%, medium-sized companies with 8% and, finally, micro-companies with 6%. Large companies are also the ones with the highest turnover with a total of 69%, followed by micro-companies with 21%. Medium and small companies only handle turnover of around 5% and 4%, respectively.

Regarding the sectors that contribute the most to Mozambican industrial production, the metallurgical industry (dominated by aluminum smelting) is the one with the greatest weight, with a contribution of 35%, followed by the food industry with 25%, the beverage industry with 13%, non-metallic minerals with 10%, the tobacco industry with 8%, and the other industries with 9%.

5.1.6 BIODIVERSITY

Mozambique is characterized by an abundance of natural resources and considerable biological diversity, which support a great diversity of species (flora and fauna). The country has four groups of important natural ecosystems: (i) terrestrial ecosystems, (ii) marine and coastal ecosystems, (iii) inland water ecosystems and (iv) coastal ecosystems. These comprise considerable biological diversity estimated at over 6,000 species of plants and 4,200 species of animals (3,075 insects, 726 birds, 214 mammals, 171 reptiles and 85 amphibians). There is still considerable agricultural production and diversity potential, which is distributed in 10 agro-ecological zones. In terms of coastal and marine biodiversity, 194 species of coral, 9 plant species of mangroves, 13 of marine meadows, 5 of turtles, 18 of marine mammals (seven species of dolphins, 8 of whales, 2 of seals and 1 species of dugong), 2,626 species of sea fish (800 species associated with coral reefs, 92 cartilaginous fish) and 1,363 species of mollusks. The biodiversity of inland waters is also recognized, with emphasis on Lake Niassa and the Zambezi Delta.

Recognizing the importance of biodiversity conservation, Mozambique ratified the Convention on Biological Diversity (CDB, Resolution No. 2/94) and signed the Cartagena Protocols on Biosafety for Genetically Modified Organisms (Resolution No. 11/2001) and the Nagoya on Access and Fair and Equitable Benefit Sharing (Resolution No. 2/2014). The socio-economic characteristics of the country also put it in a peculiar situation in terms of biodiversity conservation. In fact, more than half of the Mozambican population, estimated at 28 million inhabitants according to the results of the last census in 2017; 66.6% of the population of this country lives in rural areas (INE, 2019). Like other developing countries, the Mozambican population, especially the rural population, depends on natural resources for its survival.

At the national level, in 2003, Mozambique embarked on the development and implementation of the National Strategy and Action Plan for the Conservation of Biological Diversity (2003-2010) and this was updated for the period 2015 – 2035. Given the transversal nature for conservation of biodiversity, the national legal framework is characterized by a diversity of instruments that govern activities related to biodiversity, including, among others, the Land Law (law 19/97), the Environment Law (Law nº 20/1997), the Fisheries Law, the Forests and Wildlife Law (Law nº 10/99)

and the Conservation Law (Law nº 16/2014), in addition to a series of regulations associated with these laws (e.g. Environmental Impact Assessment Regulation, Forestry and Wildlife Regulation and General Regulation on Maritime Fishery Activities). Although some of these instruments need to be improved, consolidated and their implementation strengthened, the existence of this diverse legal basis that contributes to the conservation of biodiversity is to be praised and valued.

For the materialization of the instruments indicated above, the country has invested in conservation measures, mainly in-situ, which is demonstrated by the fact that 26% of the national territory is covered by Conservation Areas (ACs), with 13 terrestrial areas and 2 marine. In recent years, three National Reserves, a National Park and several coutadas and wild and community farms were created. Biodiversity is fundamental in Mozambique for economic development in general, as 90% of rural energy comes from firewood and charcoal and more than 80% of the population uses the goods and services offered by biodiversity for their survival.

Biodiversity values can be analyzed within the following categories:

1. Forest (timber and non-timber) and fauna resources;

2. Fisheries resources;

3. Agricultural and livestock resources;

4. Tourism resources;

5. Mineral resources.

The main threats to biodiversity in Mozambique are human activities, mainly consisting of land use change that results in loss or reduction of biodiversity and operate at various spatial scales. Human threats to biodiversity are exacerbated when combined with climate change, especially when we consider that in extreme weather events, in addition to direct damage to ecosystems, there are displacements of populations that are settled in safe places, where other ecosystems are affected. Furthermore, the loss of agricultural crops and the loss of livelihoods lead people to resort to the use of wild plants for food, but also to the intensification of charcoal production as a complementary way of finding means of survival for households.

6. CLIMATE FINANCE PORTOLIO IN MOZAMBIQUE

6.1 GREEN CLIMATE FUND (GCF)

THE GREEN CLIMATE FUND (GCF) is the world's largest climate fund, mandated to support developing countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions, climate resilient pathways and it is a critical element of the historic Paris Agreement (PA). A core GCF principle is to follow a country-oriented approach, which means that developing countries lead GCF programming and implementation. Country ownership of GCF financing decisions enables developing countries to turn NDC ambitions into climate action. GCF's country-oriented approach is underpinned by capacity-building support through its Readiness Programme that is available to all developing countries. The balanced allocation principle obliges the GCF to invest 50% of its resources for mitigation and 50% for adaptation in equivalent subsidy. At least half of its adaptation resources must be invested in the most vulnerable countries (SIDS, LDCs and African States). The GCF aims to leverage synergies and minimize potential trade-offs between adaptation and mitigation.

In 2017, the GCF funded the Readiness Program which aimed to strengthen the Designated National Authority of Mozambique by establishing a coordination mechanism with an Advisory Committee, preparing and executing an institutional capacity plan. The means of implementation consisted of a robust consultative process (including sensitization of the private sector and identification of potential applicants for direct access to accreditation) with the support of a team of consultants with several complementary skills. Deployment of support also enabled the development of the strategic framework for engagement with the GCF, through the preparation of the national climate finance strategy and the GCF national program, and the building of structured dialogue with Accredited Entities, including national applicants for GCF[15] accreditation.

Between 2019 and 2021, the GCF funded six projects, 3 of which were adaptation and other 3 mitigation. Among all the projects financed, only one is at national level, while the others cover several countries and Mozambique is part of this set. The project at the national level is implemented in Tete province with the following objectives: (i) to reduce vulnerability to climate risks through the promotion of climate-resilient agriculture, as well as the watersheds restoration and enhancement, for food insecure smallholder women and men; (ii) to enhance and sustain the adaptive capacity of smallholder women and men through a combination of context-specific, integrated risk management tools and market-based opportunities; and (iii) to inform adaptation planning and decision-making across smallholders, communities and national/local authorities through the generation and use of climate information. Together, these components will strengthen individual, community and government capacities to address climate risks and vulnerabilities according to national commitments.

The other two multi-country adaptation projects include one that aims to establish a coral reef investment window, targeting 17 countries in Africa, Asia-Pacific, Latin America and the Caribbean, to address critical barriers of private funding and investment focused on the blue economy. The GCF acts as an anchor investor, with US$125 million, encouraging further public and private sector investment in the following areas: sustainable ocean production, ecotourism and sustainable infrastructure and waste management. The other project aims to reduce or avoid the impacts of climate change through ecosystem-based adaptation for vulnerable coastal populations in Mozambique, Tanzania,

Madagascar and South Africa. This project brings together adaptation sub-projects by non-governmental organizations (ONGs) under the Blue Action Fund to improve climate-resilient coastal zone management in this diverse region. The program will leverage additional co-funding from ONGs, while grant recipients are required to provide 25% of their project budget.

6.2 GLOBAL ENVIRONMENT FACILITY (GEF)

The Global Environment Facility (GEF) was the first global source of funds for climate adaptation and continues to play a leading role in strengthening the resilience of developing countries as the operational entity of the financial mechanism of the United Nations Framework Convention on Climate Change. It channels climate adaptation support primarily through the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF). These two funds play an important role in serving the Paris Agreement, which sets a global adaptation target to increase adaptive capacity, strengthen resilience and reduce vulnerability to climate change.

The GEF's approach to adaptation is based on the recognition that climate change affects all aspects of human, social and economic development. The GEF supported the integration of adaptation measures into development plans, policies, programs and projects at regional, national, sub-national and local levels. Innovation, partnership and gender equality are also part of the GEF's approach to supporting adaptation and resilience.

In Mozambique, the GEF has funded more than 30 national projects, of which 15 are explicitly on climate change. Although the other projects are not referred to as climate change projects, they make an important contribution to improving the institutional and policy environment, the degradation of soils and biodiversity, which in turn is very directly related to adaptation to climate change.

In addition to this, Mozambique has also benefited from climate funds from bilateral cooperation and other private and civil society initiatives. Based on the information above, it can be seen that the level of investments from the GCF and GEF climate funds has been increasing, but it is still low in Mozambique compared to the country's current level of vulnerability.

6.3 BILATERAL COOPERATION FUNDS AND OTHERS

Mozambique has been receiving funding for climate change projects through bilateral cooperation partners and international financial institutions. During the period 2015 - 2022, at least 47 projects costing more than 245 million dollars were registered (Table 3). Most of the projects are implemented at the national level, covering all provinces. The projects include several actions, among which capacity building, coordination and MRV (Measurement, Reporting and Verification).Preparation of national reports, technical assistance, adaptation, mitigation, among others.

Table 3

NUMBER OF PROJECTS IMPLEMENTED AND BUDGET ALLOCATED IN THE CONTEXT OF CLIMATE CHANGE IN MOZAMBIQUE FROM 2015 TO 2022

Region of implementation	Number of projects implemented	Allocated budget			
		USD	€	MZN	Total in USD equivalent
North	3	8,940,00	625,000	_	9,627,500
Center	7	21,700,00	5,000,000	123,437,748	23,659,329
South	11	31,688, 000	700,00	15,000,000	31,926,095
Coastal	6	16,828,275	_	_	16,828,275
National	20	164,441,604	29,341,298	_	164,441,604
TOTAL	**47**	**243,597,879**	**35,666,298**	**138,437,748**	**245,795,304**

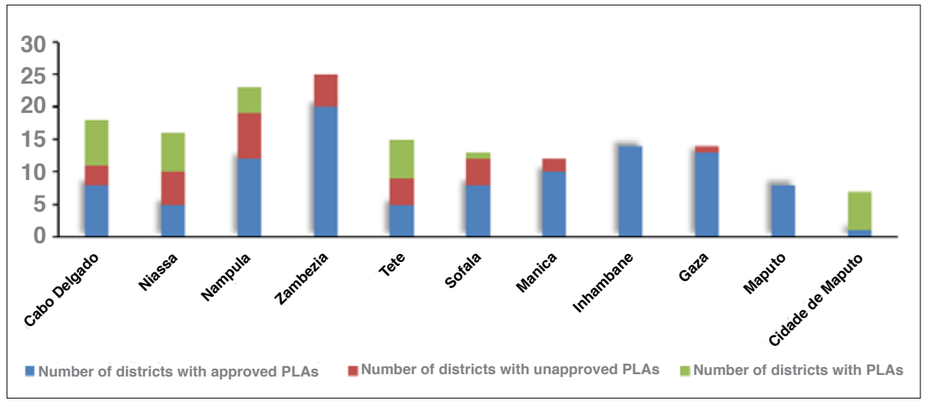
Note: The source of this information is the Ministry of Landand Environment (MTA) database on climate change projects implemented from 2015 to 2022.
It should also be noted that part of the projects known as Southern zone, in fact, are at national level, and coordinated centrally in Maputo.

6.4 LOCAL ADAPTATION PLANS (LAP)

One of the main requirements for the implementation of climate actions is their integration into the planning and budgeting mechanisms of development actions. This procedure allows climate actions to be recognized as development priorities, and on the other hand, facilitate access and allocation of funds for the implementation of these actions. Mozambique prepared 135 and approved 104 LAPs at district and municipality level, out of a total of 161[16] districts (Figura 13) budgeted at around 368 billion meticais (around 6 billion US dollars). The LAPs constitute an important basis for the implementation of concrete activities to reduce vulnerability at the level of the most vulnerable populations and sectors, however, given the limitation of the State Budget, little has been implemented. Thus, the present National Adaptation Plan includes specific actions that aim to leverage the districts' capacities to implement the LAP and, in this way, reduce the vulnerabilities of people and the economy. Difficulties at the district level are not only at the implementation level, but also at the planning level, such that more than half of the districts in the country still do not have an approved LAP, and its preparation depends on technicians at the national or provincial level.

Figure 13

NUMBER OF LOCAL ADAPTATION PLANS (LAP) PREPARED AND APPROVED FOR FUNDING BY PROVINCE



THE SIXTH IPCC[17] REPORT highlights that adaptation, in response to current climate change, is reducing climate risks and vulnerability mostly via adjustment of existing systems. Many adaptation options exist and are used to help manage projected climate change impacts, but their implementation depends upon the capacity and effectiveness of governance and decision-making processes. These and other enabling conditions can also support Climate Resilient Development.

Mozambique has development policies aimed at reducing poverty through a set of actions in different sectors that include access to basic health care, improvement of food and nutrition security, water supply and environmental sanitation, access to clean renewable energy, among others. The implementation of these policies, despite indicating progress at various levels, has faced the challenges posed by extreme weather events.

7. GAPS AND NEEDS FOR GREATER CLIMATE RESILIENCE

The preparation of the first version of the roadmap for designing and implementing the National Adaptation Plan (NAP) process in Mozambique was based on an analysis of

gaps and barriers that had already been the scope of the country's INDC and on its update based on the inputs collected during the most recent stakeholder consultations, notably in training sessions.

Based on what these contributions were and on what is established by the National Climate Change Mitigation and Adaptation Strategy (ENAMMC), the discussion of the institutional framework for the conduct of the process was also started, which was then concluded with the NAP process itself, at the end of the launch phase, with the definition of the mandate, vision and mission.

Based on the NDC (Government of Mozambique, 2021) and the inputs collected during the consultations, barriers and gaps associated with the NAP process include:

1. FINANCIAL

1. Insufficient availability of climate funding for the country, associated with the complexity of access criteria and procedures;
2. Poor public investment and private sector participation in adaptation actions;
3. Lack of funds for maintenance and updating of the network of systematic observation stations and collection of climatic data (meteorological, hydrological, hydrographic, air quality, etc.); and
4. Slow return on climate change adaptation investment.

2. TECHNOLOGICAL AND KNOWLEDGE

1. Weak capacity to cost the losses caused and response measures to climate change and little research and investigation on climate change;
2. Unpredictability of the intensity and magnitude of climate change impacts;
3. Weak capacity to design projects to compete for available climate finance;
4. Unavailability of adaptation technologies and poor technical capacity for Monitoring, Reporting and verification (MRV), including the effects of policies, strategies, plans, projects and the availability and use of climate financial and technological resources; and
5. Difficulty in research and poor dissemination of knowledge about the risks and actions of climate change, associated with poor capacity to manage and disseminate the results of studies and projects.

3. POLITICAL AND INSTITUTIONAL

1. Insufficient incentives to attract the participation of the private sector and civil society in the development of initiatives that contribute to climate change adaptation;

2. Poor sensitivity of decision-makers to issues related to climate change and the costs of inaction; and

3. Weak coordination and accountability of sectors in the implementation of approved strategies and policies, due to little capacity to verify the implementation (enforcement) of laws and regulations, also associated with little capacity for integrated planning in activities.

During the training, an analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) was also prepared and validated. See Table 4.

Table 4

SWOT ANALYSIS OF THE NAP PROCESS

Strengths	Weaknesses
Existence of: Planning instruments that already integrate the medium and long-term impacts of CM Institutional framework for CM Concrete adaptation actions MC seen as a priority in the PQG and integrated into the State Budget module	Lack of studies on climate and means of data collection Poor knowledge and technical skills about CCA Poor quality of adaptation actions Low integration of the most vulnerable groups in the decision regarding CCA
Opportunities	**Threats**
Creation of education and awareness programs Existence of the legal framework and political commitment Experience in dealing with extreme events Existence of various cooperation partners and CCA programs	Scarce financial resources Cultural diversity that threatens communication (e.g. variety of languages) Poverty Multiple vulnerabilities (HIV-AIDS, low level of education, crime, poverty, among others) Corruption

In terms of needs, to move forward with the NAP, it is necessary to:

1. Update vulnerability studies including climate scenarios in order to identify priority areas/sectors

2. Define clear coordination mechanisms;

3. Put in place mechanisms for implementing the ENAMMC such as the Knowledge Management Center, National Network on Climate Change and Financial Mechanism;

4. Assess the capacity building needs of the National Climate Change Network (of the institutions of the MRV institutional arrangement) and prepare and implement the Capacity Building Plan so that it can conduct investigation and research in the relevant areas;

5. Strengthen the Integrated Climate Change Database Management System

6. Strengthen institutions for collecting, processing and systematizing information and creating a database on studies carried out and national experts in the area of climate change;

7. Design and implement a strategy for education, awareness, dissemination and public participation in climate change;

8. Assess the technological needs, prepare and implement the respective plan;

9. Update sectoral policies to integrate climate change;

10. Establish climate insurance;

11. Train national technicians in the design and management of projects that compete for climate finance;

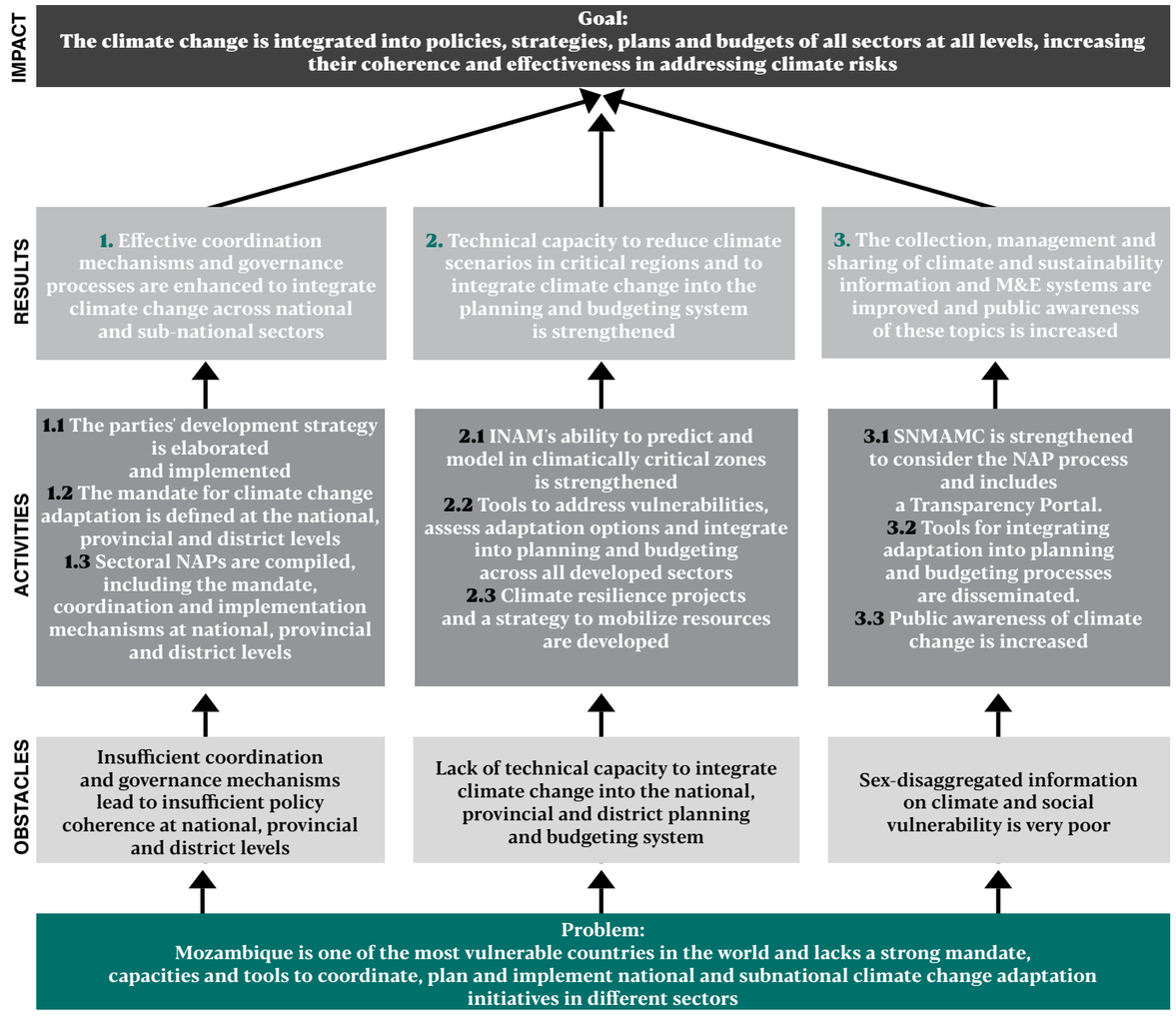
12. Develop and/or improve tools to monitor and evaluate CCA; and

13. Strengthen the capacity to integrate other cross-cutting issues in the CCA (gender, biodiversity and others).

Figure 14 shows the outcome of the theory of change made over the launch of the NAP process and the design of its roadmap.

Figure 14

THEORY OF CHANGE DIAGRAM FOR THE NAP ROADMAP



Collection of water from holes in the dry bed of the Zambeze River, **TETE**

8. MOZAMBIQUE'S NAP

8.1 MANDATE

THE NAP'S MANDATE is implicit in the National Strategy for Adaptation and Mitigation of Climate Change (ENAMMC) (MICOA, 2012):

The overall objective of ENAMMC is to *"establish guidelines for action to build resilience, including the reduction of climate risks for the communities and the national economy and promote the development of low carbon and green economy, through their integration in the sectoral and local planning processes".* The specific objectives are: **(i)** to become resilient to the impacts of climate change in Mozambique, while minimizing climate risks to people and property, restoring and ensuring the rational use and protection of the natural and built capital; **(ii)** to identify and implement opportunities to reduce Green House Gas (GHG) emissions that contribute: to sustainable use of natural resources, access to financial resources and technological affordable resources; and the reduction of 6 pollution and environmental degradation by promoting low-carbon development; and (iii) to build the institutional and human capacity as well as exploring opportunities

to access technology and financial resources to implement the national climate change strategy.

The Strategy defines adaptation and climate risk reduction as a national priority, while recognizing the need to take advantage of the opportunities that the country has, without prejudice to development actions, to reduce the impacts of climate change through a set of actions of mitigation and low carbon development".

The vision of ENAMMC is "a prosperous and climate change resilient Mozambique, with a green economy in all social and economic sectors". This vision is achieved by the following mission "Reduce vulnerability to climate change and improve the living conditions of Mozambicans, through the implementation of concrete measures of adaptation and reduction of climate risks and also of mitigation and low carbon development, aiming at sustainable development" with the active participation of all social, environmental and economic actors and sectors".

Accordingly, the NAP is also referred to in the Nationally Determined Contribution as Mozambique's climate adaptation and resilience priority aligned with national, sectoral and local development policies.

The National Directorate for Climate Change (DMC) is the government entity in charge of coordinating and facilitating the development of the NAP, with the support of the Climate Promise.

The process was conducted on the basis of extensive stakeholder consultations, involving public and private entities and representatives of civil society and the private sector, including the media, and started in 2017 with the launch of the NAP process and the elaboration of its roadmap.

8.2 VISION

A prosperous and climate change resilient Mozambique, with a green economy in all social and economic sectors.

8.3 MISSION

Vulnerability reduction to climate change and improving the living conditions of Mozambicans, through the implementation of concrete measures for adaptation and reduction of climate risks, taking into account low carbon development options, aiming at sustainable development, with the active participation of all social, environmental and economic actors and sectors.

8.4 PRINCIPLES

The NAP is based on the guiding principles of the UNFCCC, the Sendai Framework and the Updated NDC and the ENAMMC of Mozambique:

1. Proactive/Preventive nature – demonstrating leadership and pioneering spirit at the expense of a reactive attitude;

2. Social equity – recognition and respect for human rights and the fact that all citizens, irrespective of their social status, must carry out specific CC adaptation actions to CC, with due regard for the cultural diversity that characterizes Mozambican society;

3. Equality – of rights, opportunities and challenges between men and women in all areas of political, social, economic and cultural life, regardless of color, race, ethnic or geographical origin, place of birth, religion, level of education , socio-economic position, profession, party affiliation and political beliefs;

4. Parity – the strategy is based on the principle of equality between men and women, with a view to ensuring women's representation in decision-making and climate change management bodies;

5. Sustainability – the need for interventions on climate change to be sustainable from an economic-financial, environmental, social and cultural point of view;

6. Transparency and participation – need for information provision, accountability and adequate response to the different actors in the context of climate change, seeking to ensure that the strategy implementation process is inclusive, participatory and comprehensive;

7. Valuing local and traditional knowledge on mechanisms for adapting to climate change.

8.5 OBJECTIVES

Responding to identified gaps and needs, Mozambique's NAP has three main objectives:

1. To create an enabling environment to facilitate the integration of adaptation into planning and budgeting at national, provincial and district levels;;

2. To improve the capacity to manage and share data and information, access technology and finance adaptation; and

3. To implement adaptation actions for greater resilience of the most vulnerable at the district level.

A successful NAP is one that creates the conditions to be unnecessary. It is expected that within a few years, the various sectors, public and private organizations and civil society entities will fully and automatically integrate adaptation into their planning, operations and budget and that Mozambique will be a resilient nation.

8.6 PILLARS

The three pillars that support Mozambique's NAP objectives are:

3. Institutional framework;

4. Knowledge, technology and financing; and

5. Resilience of the most vulnerable.

8.7 CONSISTENCY BETWEEN THE NAP AND OTHER INERNATIONAL INSTRUMENTS

8.7.1 SUSTAINABLE DEVELOPMENT GOALS (SDG)

The Sustainable Development Goals (SDGs) are a global call for action to end poverty, protect the environment and climate and ensure that people everywhere can enjoy peace and prosperity. The UN and its partners in Mozambique[18] are working to achieve the Sustainable Development Goals. 17 ambitious and interconnected goals that address key development challenges facing people in Mozambique and around the world. For example, the UN's engagement in support and recovery after Cyclones Idai and Kenneth are unique achievements in meeting the 2030 Agenda, linking humanitarian response, recovery and resilience into a single effort. The humanitarian response is unique in its timeliness, coordination and scale, bringing life-saving assistance to nearly two million people. A great deal of effort has been made to link the formulation of the Disaster Recovery Framework (QRD) to the update of the Humanitarian Response Plan (HRP) in order to ensure the nexus between humanitarian and development efforts. Mozambique has commitments to meet the SDGs, on which it has developed a framework of national indicators. The performance indicators of the SDGs are in line with the goals of sustainable development in Mozambique and in this way with the adaptation indicators, particularly disaster risk reduction, food security, health, education, agriculture, biodiversity, cities, oceans and coastal areas, among others.

8.7.2 SENDAI FRAMEWORK

The Sendai Framework for Disaster Risk Reduction 2015-2030 applies to the risk of small and large-scale, frequent and infrequent, sudden and slow onset, caused by natural or man-made hazards, as well as environmental, technological and biological related hazards. The aim is to guide multi-disaster risk management in training at all levels, as well as within and across sectors. The expected result of the Sendai Framework is the substantial reduction of risks and losses from disasters in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of people, businesses, communities and countries. The purpose of the Sendai Framework is to prevent new and reduce the risks of existing disasters through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce exposure to hazards and vulnerability to disasters, increase readiness for response and recovery, and thereby strengthen resilience[19]. In Mozambique, the Sendai Framework is operationalized through the Master Plan for Disaster Risk Reduction 2017-2030, approved by the Government of Mozambique and coordinated by National Institute for Disaster Management (INGD). These instruments are closely linked to the NAP to ensure that the economy, ecosystems, and the community are resilient and are prepared to take concrete actions to reduce the risk of disasters, with a focus on those caused by climatic phenomena, which are the most common in the country.

8.7.3 THE PARIS AGREEMENT

The Paris Agreement aims to achieve the decarbonisation of world economies and sets out as one of its long-term goals to limit the rise in global average temperature to levels well below 2°C above pre-industrial levels and to pursue efforts to limit the rise in temperature to 1.5°C, recognizing that this will significantly reduce the risks and impacts of climate change. Furthermore, the Agreement aims to increase the capacity to adapt to the negative impacts of climate change and to promote resilience to climate change and a low greenhouse gas emission development, in a way that does not threaten food production and make financial flows consistent with a path towards low-emissions and climate-resilient development.

The operation of the Paris Agreement is mainly done through the Nationally Determined Contribution (NDC).

In this context, climate financing mechanisms are also established with a view to supporting developing countries, particularly the Least Developed Countries (LDC) to implement the Agreement. Mozambique's nationally determined contribution (NDC) under the Paris Agreement prioritizes adaptation and highlights an ambitious mitigation commitment to reduce about 76.5 MtCO2eq from 2020 to 2030, conditional on the provision of financial, technological, and capacity building from the international community. The strategic actions presented in this NAP are part of the adaptation component of the Mozambique NDC and are part of the ENAMMC climate risk reduction and adaptation pillar that covers the main sectors of economic development, as a basis for promoting a resilient economy.

8.7.4 OTHER UNITED NATIONS CONVENTIONS

United Nations Convention to Combat Desertification

A The United Nations Convention to Combat Desertification (UNCCD) is one of the main conventions associated with the UNFCCC, and its main objective is to combat desertification.

The UNCCD is the only legally binding framework created to address desertification and the effects of drought. It constitutes a multilateral commitment to address the impact of land degradation and protect the land so that it can provide food, water, shelter and economic opportunity for all people. The Sixth IPCC Report states that climate change will have a severe impact on soil degradation, and consequently on the reduction of agricultural productivity and the degradation of ecosystems, thus increasing vulnerability. Therefore, the interaction between the UNFCCC and the UNCCD is extremely important, particularly with regard to the combination of adaptation actions with soil protection measures.

United Nations Convention for the Conservation of Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) is the first global agreement to cover all aspects of biological diversity, its main objectives are: (i) the conservation of biological diversity; (ii) the sustainable use of the components of biological diversity; and (iii) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Biodiversity and the benefits it provides are

fundamental to human well-being and a healthy planet. Despite continued efforts, biodiversity is deteriorating around the world and this decline will continue or worsen under normal business scenarios. The interaction between biodiversity loss and climate change will increasingly exacerbate the impacts of extreme weather events and increase the vulnerability of communities. For its part, the UNFCCC recognizes the role of biodiversity for both mitigation and adaptation, and Ecosystem-based Adaptation is a concept already cemented and considered from a greater perspective in actions at the local level. The post-2020 global biodiversity framework builds on the Strategic Plan for Biodiversity 2011-2020 and sets out an ambitious plan to implement broad-based action to bring about a transformation in society's relationship with biodiversity, ensuring that by 2050 the shared vision of 'living in harmony with nature' is fulfilled.

8.7.5 OTHER INITIATIVES

In addition to these international initiatives, Mozambique is aligned with other regional initiatives through SADC, the African Union, the Least Developed Countries (LDC) Group, and other initiatives. One of the initiatives is the *Local Climate Adaptive Living Facility* (LoCAL)[20], a global mechanism that is producing results by channeling grants to locally-led climate change adaptation actions in least developed countries. At COP26, the LDC Group recognised LoCAL as a long-term initiative in support of LDCs' climate action objectives. LoCAL supports LDCs in reviewing and implementing Nationally Determined Contributions and National Adaptation Plans as well as securing direct access to international finance from the Adaptation Fund and Green Climate Fund for further deployment of the mechanism.

In the context of valuing local knowledge, Mozambique is also part of the Consortium of Universities in Least Developed Countries on Climate Change[21]. The Consortium will focus on climate change adaptation, especially community-based adaptation. The objective of this consortium is to seek to consolidate adaptation mechanisms based on local knowledge; foster a collaborative South-South network to increase research capacity and expertise on climate change; and to establish networks and increase the capacity of universities in the South to develop common research projects and implement teaching and training programs on different topics of climate change.

8.8 ALIGNMENT WITH SECTOR DEVELOPMENT AND STRATEGIES

Mozambique has some sectoral instruments aligned with the need to reduce vulnerability to the impacts of climate change and promotion of low-carbon development. Example of these instruments is the Plan for Poverty Reduction (PARP), the Strategic Plan for Agriculture Development (PEDSA), the Social Action Basic Strategy, the Strategy of Tourism, the National Water Resource Strategy, the Master Plan for Disaster Management, the Disaster Management Policy, Intervention Strategy in Slums in Mozambique and its Action Plan, the Gender, Environment and Climate Change strategy, the Energy Strategy and the proposals of the national Development Strategy, the Emission Reduction Strategy from Deforestation and Forest Degradation (REDD+), amongst others. These instruments recognize explicitly that extreme weather events are one of the largest and main threats to performance of the sectors and development (see Table 4). The inclusion of climate change aspects in sectoral planning and in social and economic plan (PES) is still limited. However, there is an increasingly growing concern with climate change issues since the country has been affected by extreme weather events, revealing some of the potential impacts of climate change. As a response to this, there are pilot projects being developed in order to strengthen the technical and institutional capacity to integrate resilience to climate change in key sectors of the economy and to improve the evidence base for the future development policies and plans. In addition, the Economic and Social Plan (PES) already includes programme for climate change. The implementation of sectoral strategies such as Reducing Emissions from Deforestation and forest Degradation (REDD+), although focused on mitigation, has a strong adaptation component, in recognition that mitigation will not be carried out without solving local development problems.

On the other hand, private sector agents are still not very aware of the risks of exposure to climatic phenomena and variations and do not immediately identify the need for adaptation and creation and resilience in their activities. However, it is the private sector that has its own resources and will typically have the greatest adaptive capacity. Even without being aware, this is what one resorts to remain competitive in the market, facing droughts, floods, among other impacts and vulnerability factors. Therefore, the private sector, like all others, is exposed to climate risks and by realizing this and reacting to them consciously, it will integrate a competitive advantage.

Climate change must be integrated into socio-economic development plans, not as a cross-cutting issue, but a development issue that is part of all sustainable development agendas defined by the Government, NGOs and the private sector. The floods of 2000, the drought of 2016, and the cyclones and tropical storms that occurred between 2018 and 2022 clearly demonstrated that there is a need to include the issue of adaptation to climate change in the development agenda of all sectors, as the impact of climate events extremes affects all of them.

Table 5

MAIN SECTORAL INSTRUMENTS AND INTEGRATION OF CLIMATE CHANGE

Instrument	Integration of Climate Change
National Development Strategy (ENDe) (on revision 2015-2035) [22]	The ENDe explicitly indicates that the Climate Changes constituted an important factor in reducing the rate of economic growth, and may constitute a risk for the implementation of the strategy. However, it does not explicitly state how development actions could be implemented to minimize this risk. But it is strategically oriented towards the development of agriculture, industry, infrastructure, energy, tourism, among other activities, which are vulnerable to Climate Changes, assuming that they are taken into account in the planning and operation of investments.
National Territorial Development Plan 2020-2040	The PNDT is an instrument for articulating and coordinating sectoral policies with a more significant territorial impact. The PNDT is limited to articulating sectoral policies from the perspective of the development of territories at the national and provincial levels, and in their articulation in an integrated territorial development perspective, with a strong component of taking advantage of endogenous resources and valuing the territorial potential
Agenda 2025 (2003-2025)	It indicates as one of the critical uncertainties the growing capacity to manage natural disasters and the effects of global CC. Furthermore, it recognizes that agriculture, as it is influenced by climate, can increase the probability of risk in production
NAPA	It established as priorities in relation to measures to adapt to CC the following: **(i)** to Strengthen the early warning system for agriculture; **(ii)** to Develop farmers' capacities to deal with CC; **(iii)** to Reduce the impacts of CC in coastal areas; (iv) to Manage water resources under CC conditions
Energy Strategy	The strategy is aimed at aligning Mozambique with internationally accepted best practices for efficient energy use, raising citizens' awareness of good environmental practices, diversifying the energy supply matrix, with particular emphasis on new and renewable sources of energy and the opportunities created by the Clean Development Mechanism (CDM), under the Kyoto Protocol (FP)
New and renewable energy development strategy 2011-2025	EDENR is structured in two main lines of action: the Off-Net Strategy (EDENR-FR) and the On-Net Strategy (EDENR-ER). These two aspects have different characteristics and requirements, although they apply to the same renewable sources, namely hydropower, solar energy, wind energy, geothermal energy, ocean energy, and co-generation with organic waste. The EDENR-FR applies to the supply of energy in Isolated Energy Systems (EIS), and is designed to accommodate a mix of energy sources that complement each other, with different quality and magnitude, to ensure minimum cost and maximum access. In this regime, renewable sources can be consumed directly, or for the generation of electricity for individual, public or private consumption
PEDSA (2011-2020)	In its diagnosis, it recognizes that Mozambique has important hydrographic basins, with the potential to support the growth of agricultural production and productivity and minimize the negative impacts of CC. He mentions that one of the challenges that Mozambique has is soil erosion and salinization, mainly associated with CC in the coastal zone. Strategic actions include several directly related to CC, with emphasis on (i) Improving the management of water resources (...) for agriculture and other uses and to reduce the risks arising from climate change; (ii) to develop and implement policies and strategies to reduce the impact of CC on natural resources and, ultimately, on food security and rural livelihoods; (iii) to develop and implement a strategy to reduce the risks associated with natural disasters and CC and adapt production systems.
Food and Nutrition Security Strategy (2008-2015)	The FNS Strategy recognizes CC as one of the main causes of food insecurity. The strategic objectives of the FNS strategy include: **(i)** Reducing the incidence of malnutrition (acute and chronic) through the improvement of health conditions, water and sanitation, and food and nutrition education; **(ii)** to Increase the capacity of households to respond to seasonal variations in production and physical and economic access to adequate food
National Water Resources Management Strategy	It includes several aspects that can serve as entry points for CC, recognizing that they will exacerbate the country's ability to capture water as a result of CC. Specific actions include water supply in urban and peri-urban, rural areas; water supply for socio-economic development including irrigation, supply to industry, energy, tourism, fisheries and aquaculture, navigation and water sport
National Strategy for Basic Social Security (2019-2024)	The Basic Social Security strategy that recognizes exposure to shocks and natural disasters linked to the CC is one of the causes of poverty and vulnerability. One of the strategic objectives is to increase the coverage and impact of basic social protection interventions for the poorest and most vulnerable people
Strategy for Intervention in Informal Settlements in Mozambique and its Action Plan	Defines as one of the specific objectives to achieve the reduction of vulnerability of populations residing in informal settlements, in relation to the effects of climate change
Gender Strategy and Climate Change	The general objective of Gender, Environment and Climate Change Strategy is to develop in an integrated way the gender perspective in its transversal aspect for the environment sector, with a view to improving the quality of life of the population, in particular women and communities, through mitigation and adaptation to climate change and sustainable use of natural resources. **The strategic objectives are:** **1.** To contribute to the empowerment of women and local communities, through access to technologies and other activities for the mitigation and adaptation to climate change and the sustainable use of natural resources **2.** To ensure gender equity in the decision-making process, training and environmental capacity building **3.** To ensure that plans, policies, programs, strategies and budgets promote gender equity, access to natural resources and measures to mitigate and adapt to climate change **4.** To ensure that staff and technicians from all sectors of environmental transversality have an understanding of gender equity and are able to contribute to the purposes of this strategy

Instrument	Integration of Climate Change
Gender Strategy and Climate Change	**5.** To contribute to MICOA being an institution that actively practices and promotes gender equity in environmental management **6.** To operate MICOA's Gender Department as a national mechanism for implementing and monitoring priority actions in the field of gender, environment and climate change
Disaste Management Policy	**The general objectives are:** **a)** to prevent the loss of human life and destruction of property caused by natural or man-made disasters; **b)** Incorporation of disaster prevention in the overall process of national development; **c)** Promotion of internal and external solidarity, in the event of calamities; **d)** Ensuring effective coordination and participation of the public and private sector in disaster management; **e)** Contribution to the conservation and preservation of the environment; **f)** Promotion of regional or international coordination in the management of disasters, especially those whose causes originate from neighboring countries
Disaster Management Law	The Disaster Management Act (Act No. 15/2014 of 20 June) was drafted in recognition of the country's vulnerability to natural disasters as well as other disasters resulting from human action. The Law aims to establish the legal regime for disaster management, and includes prevention, mitigation of the destructive effects of disasters, development of relief actions, humanitarian assistance, as well as reconstruction actions in the affected areas. The law recognizes that its objectives will only be achieved through multisectoral and multidisciplinary efforts, involving the structures of society and individual citizens, in order to guarantee promptness and effectiveness in responding to events that have occurred, but also in preventing their occurrence or its effects through a proactive stance. The law states that disaster management actions must be carried out in a decentralized manner, observing the powers of public administration bodies, without prejudice to the principle of mutual aid between the different geographical areas
Master plan for disaster risk reduction 2017-2030	Approved by the Council of Ministers on 17 October 2017, the Direct Plan for disaster risk reduction seeks to operate the Disaster Management Law and the National Strategy for Adaptation and Mitigation to Climate Change, through the identification of actions to reduce disasters, which can be incorporated into governance plans at all levels, namely the Five Year Plans and the Economic and Social Plans. It is up to the Disaster Risk Reduction Coordinating Council (body that defines Disaster Risk Reduction policies and strategies) to ensure that disaster risk reduction activities are part of the debate that leads to the formulation of the Five-Year Plans and should advise the Government on the definition of annual priorities on disaster risk reduction in order to make them part of the Economic and Social Plan in all sectors of governance. The general objective of this plan is to reduce the risk of disasters, the loss of vital infrastructure, as well as preventing the emergence of new disaster risks by increasing human and infrastructural resilience in the face of extreme climatic, natural and anthropic events. The Plan is aligned with the Sustainable Development Goals and the Sendai Framework for disaster risk reduction. Thus, the document focuses on prevention, as a disaster risk reduction measure

Instrument	Integration of Climate Change
Mangrove Management Strategy 2020-2024	The objective of this Strategy is to maintain or increase the biodiversity, values and function of the mangrove ecosystem, in order to respond to the needs of environmental protection in estuaries and coastal zones. It is also intended that this strategy will contribute to minimizing the effects of global warming through the process of carbon sequestration and storage, absorbing carbon dioxide from the atmosphere and contributing significantly to the achievement of SDG 14. The implementation of the strategy can also open new avenues for self-employment, such as ecotourism, restoration and replanting, aquaculture and beekeeping, helping to improve the socio-economic conditions of coastal communities
National Strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+)	The present strategy, recognizing that the causes of deforestation and forest degradation have their origins in productive and development activities such as the expansion of agricultural areas (89,407 ha/year; 65%), the expansion of residential areas and infrastructure development (16,285 ha/year, 12%), the unsustainable exploitation of wood (11,412 ha/year, 8%), firewood harvesting and charcoal production (9,027 ha/year, 7%), among others, focuses its actions on orientation of these activities so that they are carried out in order to minimize deforestation and forest degradation. The ultimate objective of this strategy is to promote sustainable development, greater resilience to climate change, integrated rural development, through a set of actions focused on the forestry, agriculture and energy sectors. This strategy provides an opportunity to align and harmonize policies, strategies and sectoral plans, promoting the ownership and integration of climate change and mobilizing funds to carry out activities that result in greater agricultural productivity, greater efficiency in the use of energy, restoration of degraded areas and the management, protection and sustainable use of forests. The boundaries of the causes of deforestation and forest degradation at the landscape level and resource users are tenuous, demanding an integrated approach in the implementation of viable, inclusive, efficient and sustainable actions and models
National Plan for Territorial Development (PNDT)	Mozambique established, as one of the principles of the National Plan for Territorial Development (PNDT), the protection of people and goods against natural and anthropogenic hazards. The PNDT further established, in its action plan, the need to guarantee the safety of communities, people and goods through actions such the program of protection and defense works against floods in the period from 2020 to 2040. The territorial development plan advocates preventing risks of natural and anthropogenic origin and safeguarding the sustainability of ecosystems and biodiversity and envisages ensuring: resilient and sustainable country that knows well the areas most exposed to the different types of risk (of natural or human origin) and threats to the quality of the environment

Instrument	Integration of Climate Change
Guide for Construction of Resilient Housing	The Resilient Housing Reconstruction Guide aims to guide construction actors and users, mainly district technicians, artisans and others interested in the implementation of the resilient building techniques, as well as reducing housing rebuilding costs. This guide on resilient housing emphasizes the prohibition of construction in disaster risk areas
Health Sector Strategic Plan	The Health Sector Development Strategy states that the quality of health depends largely on the environment and the availability of potable water, sanitation, hygiene and management of water resources. Indeed, a large part of the occurrence of diseases such as diarrhoea, malnutrition, malaria and neglected tropical diseases is attributable to the unavailability of drinking water, inadequate sanitation or insufficient hygiene. Extreme weather events have the potential to destroy health infrastructure, exacerbate the heath condition of people living with diseases, and increase shortages of potable water and sanitation services

8.9 LOSSES AND DAMAGES OF CLIMATE CHANGES

In the framework of the Glasgow Conference (COP26) discussions, the UNFCCC recognizes that "Covering" the loss and damage is the third essential pillar of climate action: helping people after they have already experienced climate-related losses. The IPCC's 6th Assessment Report (AR6), published in February 2022, recognizes that as the magnitude of climate change increases, also increases the probability of exceeding the limits of adaptation. The report differentiates these boundaries between "soft" – where adaptation options exist but not accessible – and "hard" – cases where "there are no reasonable prospects that intolerable risks will be avoided". These limits have even greater impacts on vulnerable communities that do not have the necessary resources to implement adaptation measures[23].

Although the UNFCCC does not have a precise definition of losses and damages, it is generally understood that they result both from extreme events such as cyclones, droughts and heat waves and from slowly evolving changes – such as sea level rise, desertification processes. , shrinking glaciers, land degradation, and ocean acidification and salinization. In some cases, damage can permanently alter the landscape; this is the case, for example, of the advance of the sea on small islands or droughts consuming freshwater

resources and turning previously productive agricultural lands into dust. Vulnerable communities are particularly likely to suffer loss and damage from lack of funding or from living in places that are already beyond what adaptation efforts could protect.

Damages can be divided into economic and non-economic losses, although the two categories may overlap: **(i)** Economic losses and damages are those that affect traded resources, goods and services. In other words, climate impacts that affect sectors such as agriculture, forestry, fisheries and tourism or that damage essential infrastructure and properties, in addition to disrupting supply chains; **(ii)** Non-economic losses can be the most devastating – such as the incalculable price of losing family members, the disappearance of cultures and ways of life, or being forced to leave ancestral lands and homes.

Based on this context, it is clear that Mozambique is highly prone to loss and damage from climate change. Losses resulting from frequent cyclones expose local communities and the economy in general to irreparable losses, with incalculable consequences. For example, rising sea levels result in coastal erosion and saline intrusion, with consequences for the loss of agricultural areas, public and private infrastructure. Prolonged droughts are causing arid and semi-arid regions to lose their aquifer reserves. Other losses and damages include climate-displaced people, who often never return to their homes or their return means starting over from scratch.

Thus, Mozambique is called upon to include efforts to be able to cover losses from damage from climate change, for this purpose, it must document these losses and include in its MRV systems, the appropriate mechanisms to account for economic and non-economic losses and damages.

Livestock watering,
Mahelane, **MAPUTO**

8.10 STRATEGIC ADAPTATION ACTIONS

The vulnerability and exposure of societies and ecological systems to climate-related hazards is constantly changing due to circumstances at the economic, social, demographic, cultural, institutional and governance levels (IPCC, 2014). Effective climate change adaptation and risk mitigation measures address the three risk aspects: hazard, vulnerability and exposure.

From the Nationally Determined Contributions (NDC), adaptation contributions and actions related to transparency and governance with respect to climate change data, services and climate empowerment were analyzed. To these were added mitigation actions that could increase resilience and adaptive capacity. That tally was cross-referenced with Ambition 2030 to see which domains needed to see their resilience increased.

The NAP's actions framework of adaptation to climate change (Table 6), results from consultations in face-to-face, online work sessions, questionnaires and interviews, integration of specific adaptation actions (sectoral, regional or thematic), in response to the main vulnerabilities climate change in the country, and the main development sectors. The NAP actions are focused on the process of integrating adaptation into development programs while the NDC includes the full listing of sectoral technical actions. Thus, the climate adaptation actions presented cover the main regions of the country (north, centre, south, coastal zone), the main climate risks (cyclones, droughts, floods) and were grouped into the main development themes with a view to promoting a climate resilient development as they reduce people's vulnerability, with a focus on the most vulnerable people, in particular women, and reducing the vulnerability of public and private infrastructure. Thus, **the themes identified, in a participatory way through public consultations with key actors in the different regions of the country are as follows:**

1. Coordination and governance of adaptation to climate change;

2. Reducing the risk of climate disasters;

3. Reducing the vulnerability of people, especially women and the poorest;

4. Early warning system about weather disasters;

5. Resilient cities and settlements;

6. Climate Resilient Agriculture, Forestry and Fisheries';

7. Food and nutrition security;

8. Water resources management;

9. Health and prevention of waterborne diseases;
10. Education, knowledge and public awareness;
11. Public and private infrastructure;
12. New and renewable energies;
13. Oceans and coastal areas.

These themes resulted in 16 integrated climate change adaptation actions divided by the three pillars of the NAP as indicated in Table 6. The details of the strategic adaptation actions can be found in Annex 1. The financing and implementation strategy of this NAP is the following: expansion of project ideas into Concept Notes that can be submitted to the main climate finance mechanisms, focusing on the mechanisms established by the UNFCCC (GCF, GEF, LCDF, etc.) but without excluding the possibility of financing through others bilateral development support partners and private sector and civil society initiatives. As a way of facilitating implementation, the design of a financing strategy is proposed among the strategic actions, which should include training on the design of project proposals oriented towards the main climate funds for adaptation.

Table 6

FRAMEWORK FOR INTEGRATED CLIMATE CHANGE ADAPTATION ACTIONS FOR THE IMPLEMENTATION OF THE NAP

Theme/Sector/Region	Focus
Objective 1: Create an enabling environment to facilitate the integration of adaptation into planning and budgeting	
Pillar 1: Institutional framework	
1. Reinforcement of Coordination, institutional framework and updating of policy documents related to the Implementation of the NAP	Strengthening of climate action coordination: National Directorate of Climate Change, Ministry of Economy and Finance, provincial and district governments, integrated plan and budget. Integration of the NAP in the next PQG and sectoral planning instruments
Objective 2: Improve knowledge and capacity for management and sharing of data and information, access to technology and financing for adaptation	
Pillar 2: Knowledge, technology and finance	
2. Reinforcement of the early warning system	Systematic information collection and real-time information for system power
3. Education, public awareness (communication) and research	Reactivation of the Center for knowledge management and research, public awareness, technology development and innovation
4. Climate finance	Capacity building in project design, climate fund management
Objective 3: Implement adaptation actions for greater resilience of the most vulnerable	
Pillar 3: Resilience of the most vulnerable	
5. Increasing the adaptive capacity of vulnerable people - integrating gender and children into policies and actions	Reinforcement of basic social protection measures with regard to climate change so that it contributes to the resilience of vulnerable populations Strengthening the orientation and targeting capacity of the Productive Social Action Program to increase the resilience of vulnerable groups
6. Integration of local governance plans	Implementation of Local Adaptation Plans Territory management, local adaptation committees
7. Desenvolvimento de mecanismos de resiliência das áreas urbanas e outros assentamentos	Plano de urbanização resiliente às MC, CityRAP (city resilience action planning tool). Drenagem de águas pluviais, tratamento de águas residuais, gestão de resíduos
8. Agricultura mais resiliente	Produtividade (alternativas à agricultura itinerante, agricultura de conservação, sistemas agroflorestais), redução de perdas pós-colheita (armazenamento e processamento, cadeias de valor), pragas e doenças
9. Reforço da segurança alimentar e nutricional	Disponibilidade, acesso, preferência de alimentos e valor nutricional
10. Aumento da resiliência das Infraestruturas Públicas	Estradas e Pontes, Postos de saúde, Escolas
11. Melhoria da gestão de recursos hídricos, abastecimento de água e saneamento	Reforçar a capacidade de captação, armazenamento e canalização da água para consumo humano, animais, rega, etc. Poupança e reutilizaçãso de água, sistemas de rega
12. Melhoria do acesso às energias renováveis	Redução e eficiência de energia de biomassa, acesso à electricidade e gás natural outras alternativas incluindo mini-centrais hídricas, eólicas, solares (térmicas e fotovoltaicas)
13. Redução da vulnerabilidade das pessoas aos vectores de transmissão de doenças associadas às mudanças climáticas	Água, saneamento do meio, e higiene, gestão de resíduos urbanos (domésticos, hospitalares e industriais)
14. Proteção dos oceanos e das zonas costeiras	Promoção do desenvolvimento turístico, erosão costeira, subida do nível do mar, intrusão salina, mangais, pesca (inclui aquacultura - armazenamento e processamento, cadeias de valor) Aumentada a resiliência da pesca Zonas turísticas e zonas costeiras com infraestruturas resilientes e desenvolvimento costeiro verde e sustentável
15. Reforço da capacidade de preparação e de resposta a riscos e desastres climáticos	Redução do risco, resposta aos desastres, operações de resgate/salvamento e resposta pós-desastres
16. Aumento da resiliência das florestas	MFS incluindo processamento de produtos florestais madeireiros e PFNM, áreas de conservação de biodiversidade, ecoturismo

Documented strategic adaptation actions are budgeted at around US$7.2 billion (Table 7). The actions are aligned with the NDC and the implementation of the indicated strategic actions will imply significant advances in the implementation of the NDC.

Table 7

INDICATIVE BUDGET OF STRATEGIC ACTIONS OF ADAPTATION TO CLIMATE CHANGES

Action	Budget (USD)
1. Strengthening coordination, institutional framework and updating policy documents related to the Implementation of the NAP	1,013,436,000
2. Reinforcement of the early warning system	63,603,567
3. Education, public awareness (communication) and research	976,000,000
4. Climate finance	1,000,000
5. Increased adaptive capacity of vulnerable people - gender mainstreaming in policies and actions	60,364,253
6. Integrated Local Governance Plans	8,800,000
7. Developed resilience mechanisms for urban areas and other settlements	9,000,000
8. More resilient agriculture	415,651,532
9. Enhanced food and nutrition security	47,133,013
10. Resilient Public Infrastructures	8,662,500
11. Improved water resources management	2,829,772,972
12. Improved access to renewable energies	1,513,558,478
13. Reduced vulnerability of people to disease transmission vectors associated with climate change	1,248,000
14. Oceans and Coastal Protected Areas	208,000,000
15. Strengthened capacity for preparedness and response to climate risks and disasters	4,406,500
16. More resilient forests	76,049,051
Total	**7,236,685,866**

Source: Updated NDC Implementation Plan (Government of Mozambique 2021)

Access bridge to the Island of Mozambique,
NAMPULA

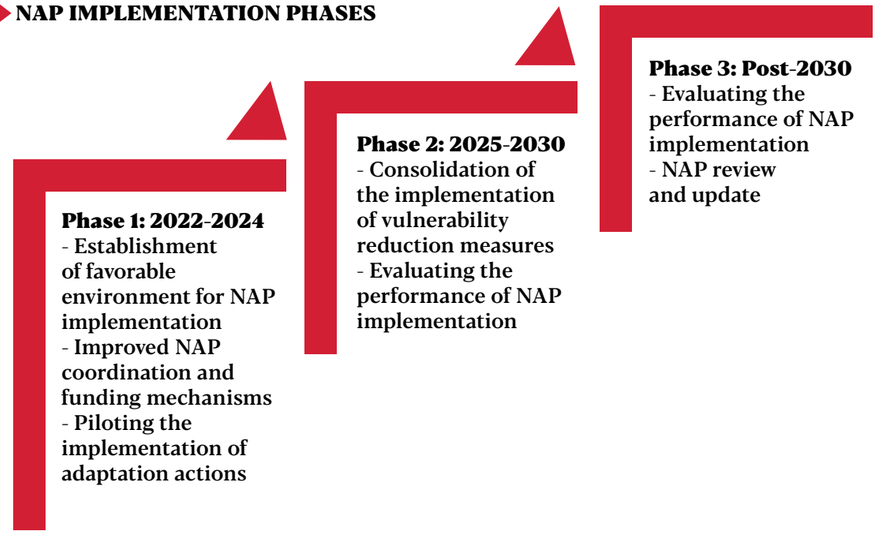
8.11 IMPLEMENTATION, MONITORING AND EVALUATION PLAN

8.11.1 IMPLEMENTATION PLAN

The present NAP is aligned with the ENAMMC and the NDC. In this way, the NAP Implementation Plan is in line with the ENAMMC and NDC Implementation Plan. Thus, three phases of implementation of the present NAP are established: **Phase 1:** 2022-2024 – establishment of the NAP implementation environment, mechanisms for coordinating and financing the NAP and piloting the implementation of adaptation actions; **Phase 2:** 2025-2030 – consolidation of the implementation of vulnerability reduction measures; **Phase 3:** Post-2030 – Consolidation of climate resilient development. The Post-2030 phase lacks a NAP review and update process (Figure 15).

Figure 15

NAP IMPLEMENTATION PHASES



8.11.2 MONITORING AND EVALUATION

A robust monitoring and evaluation (M&E) framework is needed to track progress on Mozambique's climate change adaptation goals. The NDC Partnership Plan includes climate action performance monitoring instruments. This plan includes the key indicators, the reference level and the targets to be achieved in 2030. This instrument should be used as a basis for the monitoring and evaluation of the NAP. Additionally, the country designed the matrix of monitoring elements of the Mozambique NDC 2020 – 2025 within the scope of ICAT. The matrix includes indicators and global targets from the NDC as well as measures for adaptation and climate risk reduction, mitigation and low carbon development. It is important to mention that the detailed matrices for adaptation and climate risk reduction, mitigation and low carbon development include indicators that are sensitive to the gender dimension that resulted from WRI support.

The institutional arrangements were established by ENAMMC and operated by the National System for Monitoring and Evaluation of Climate Change (SNMAMC). Monitoring and communication of necessary data and information to track adaptation operations and mitigation efforts are provided on a database in accordance with the

main IPCC reporting categories. The MTA has overall responsibility to oversee national climate policy and preparing and maintaining the adaptation report and submitting Mozambique's National Communications, BURs, BTRs and NDCs to the UNFCCC.

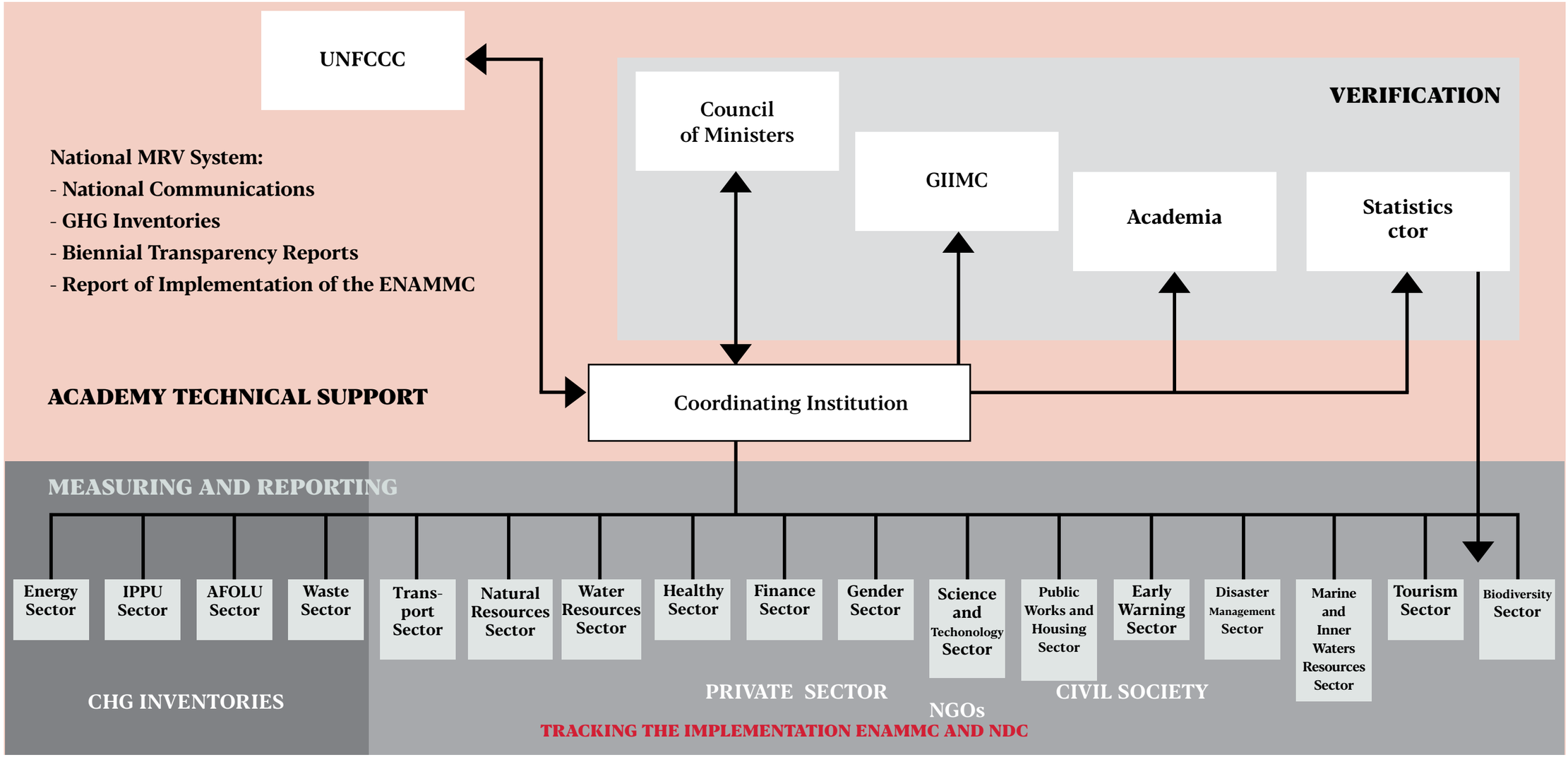
The Mozambique's National Transparency Framework for the implementation of climate actions was established in line with international standards as a way of facilitating the preparation of reports for the UNFCCC. Thus, the National System was developed to systematically produce the following reports: Biennial Transparency Report (BTR), National Communication (CN) and the Implementation Report of the National Strategy for Mitigation and Adaptation to Climate Change (RI-ENAMMC), including the following interim reports, the National Inventory Report (RIN), National Determined Contribution Implementation Report (RI-AAMMC) and Adaptation Communication (CA) (Figure 16).

The National Transparency Board has the following systems: Measurement and Reporting System, Verification System and Academy Technical Support. In turn, the Measurement and Reporting System is sub-divided into two, one for Measuring and Reporting GHG emissions and removals and the second for Monitoring and Reporting (tracking) the adaptation and risk reduction, mitigation and low carbon development and the support received and required contained in the ENAMMC, NAP, NDC and LTS.

Climate finance and expenditures are reported by the MEF and FNDS as part of the SNMAMC process. As shown in the figure, the global system is supported by government entities and local government institutions, as well as development partners, Non-Governmental Organizations and civil society. Development partners play a critical role, both in supporting projects and programs aimed at strengthening institutional MRV capacity, and in providing information and data on financed climate change interventions.

Figure 16

INSTITUTIONAL ARRANGEMENTS TO MONITOR THE IMPLEMENTATION OF CLIMATE POLICIES



Source: ICAT - Mozambican National Enhanced Transparency Framework

The reports will later be verified by the Statistics Sector, GIIMC and Academia that will technically advise the Ministers cabinet in approving the Reports. The academy will also provide technical support to the sectors involved in the MRV.

The updated NDC presents an institutional framework. Nevertheless, and taking into account the challenges still present to ensure the implementation of the NAP objectives, five functions are chosen as priorities, namely: **(i)** coordination, **(ii)** definition of policy in an inclusive way, **(iii)** operation **(iv)** monitoring and evaluation and learning and **(v)** support to be implemented by various actors (Table 8).

Table 8

INSTITUTIONAL ATTRIBUTIONS FOR THE IMPLEMENTATION OF ADAPTATION ACTIONS

Body/Sector	Type of actions to be implemented
Government (Ministries, Provincial, District, Municipal Governments)	Definition of policies, regulations, technical standards in line with climate change
	Facilitation and harmonization of public, private and civil society integration
	Design and implementation of projects, adaptation actions and climate risk reduction, mitigation and low carbon development, and cross-cutting issues
	Promotion of the coordinated implementation of impact reduction activities through the incorporation of adaptation aspects in the PQG and ENDe
Private Sector	Project implementation and fundraising
	Support to the Government in the implementation of activities on cross-cutting issues
	Technical support for the design and implementation of sectoral policies and measures
	It can be an example by integrating climate change risks into business plans with a view to creating greater resilience and security for investments
	Sector leadership role in introducing and disseminating best practices
Civil society	Implementation of adaptation and mitigation activities at the community level
	Community empowerment
	Mobilization of funds for project implementation
	Monitoring NAP implementation as an independent observer
Media	Divulgação de informação sobre boas práticas de redução de vulnerabilidade
	Dissemination of information on good practices to reduce vulnerability
	Translation of articles on adaptation into common language
Community-Based Organizations	Transmission of local and ancestral knowledge about observations of climatic phenomena, mechanisms of adaptation to extreme climatic events
	Integration of ancestral knowledge and cutting-edge technology with low cost and maintenance to increase resilience
	Facilitation of the interaction between scientific knowledge and local knowledge
	Support and cooperation in the implementation of programs and projects
	Proposal and support for the implementation of adaptation measures
Academy and Research Institutes	Development and inclusion of adaptation in education curricula
	Development of research programs and systematic observation, including standardization of methods and data quality
	Systematization and documentation of scientific, technical and local knowledge about climate change
Development partners and climate finance	Provide resources for government, NGOs and CSOs in Mozambique to carry out development activities
	Alignment of technical and financial interventions with the adaptation measures and actions defined in the NAP so that all stakeholders work towards a common objective

8.11.3 NATIONAL CLIMATE CHANGE MONITORING AND EVALUATION SYSTEM

The monitoring and evaluation of the NAP should build on existing national provisions to accompany the implementation of the national policy on climate change. This is provided by the National Climate Change Monitoring and Evaluation System (SNMAMC), established by ENAMMC as an instrument to measure the progress of the strategy. The SNMAMC mandates the country to report to the Council of Ministers, on an annual basis, the measures taken to adapt and mitigate climate change in Mozambique (UDP, 2019). The main objectives of the systems are:

- Improve accountability in the use of resources and verify the effective allocation of resources to sectors, at all levels and to the most vulnerable groups;
- Support intersectoral coordination and implementation of ENAMMC and Action Plans for Climate Change through monitoring and learning of the implementation process;
- Assess the extent to which ENAMMC has contributed to reducing vulnerability to climate change and achieving Mozambique's national development goals;
- Inform policy formulation and planning by developing new evidence on the effectiveness of adaptation, mitigation and disaster risk reduction approaches; and
- Comply with national (Government) and international reporting requirements.

The SNMAMC reports are based on the use of sectoral indicators reported by government ministries to the MEF. The MEF collects and ensures the quality of the data that is collected and reviewed by the MTA to produce the SNMAMC report. Information on climate change activities and outcomes that occur at the district level is shared at the provincial level through the Economic and Social Plan (PES) process. At the national level, the sectors are responsible for providing information on the progress of the PES to the MEF (UDP, 2019).

The framework of indicators provided by the SNMAMC provides a basis for long-term monitoring of the strategy, along with the implementation of the ENAMMC and NDC. A number of challenges and systemic issues will need to be addressed through increased support for capacity building, along with an expansion of the indicators needed to track mitigation across sectors and activities.

Coal vendor, Lichinga city,
NIASSA

8.12 TIME HORIZON AND SCHEDULE

The present NAP has a time horizon of 10 years and the first implementation phase runs until 2025. The proposed schedule is presented in Table 9. During the validation seminar, the participants were unanimous to indicate that all strategic actions are urgent and should start in 2022 or 2023. However, knowing the need to mobilize resources for the implementation of these actions, strategically, this Adaptation Plan will adopt an approach of prioritizing actions, starting with those considered structuring (e.g. Coordination, Policies) or particularly critical (e.g. Water resources, Health, Education and research). The Plan sets a target of 2-3 funded projects per year, in line with the proposed strategic actions.

Table 9

NAP IMPLEMENTATION SCHEDULE

Strategic Action	Focus	Year									
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Goal 1: Create an enabling environment to facilitate the integration of adaptation into planning and budgeting												
Pillar 1: Institutional Framework												
1. Reinforcement of Coordination, institutional framework and updating of policy documents related to the Implementation of the NAP	Strengthening of climate action coordination: National Directorate of Climate Change, Ministry of Economy and Finance, provincial and district governments, integrated plan and budget. Integration of the NAP in the next PQG and sectoral planning instruments. Systematic data collection for MRV including tracking progress and results achieved, Updating database on MRV/ Integrated Management System on Climate Change											
Objective 2: Improve knowledge and capacity for management and sharing of data and information, access to technology and financing for adaptation												
Pillar 2: Knowledge, technology and finance												
2. Reinforcement of the early warning system	Systematic information collection and real-time information for system power											
3. Education, public awareness (communication) and research	Center for knowledge management and research, public awareness, technology development and innovation, updating of vulnerability assessment studies including climate scenarios, bienial Climate Change Conferences											
4. Climate finance	Capacity building in project design, climate fund management											
Objective 3: Implement adaptation actions for greater resilience of the most vulnerable												
Pillar 3: Resilience of the most vulnerable												
5. Increase in the adaptive capacity of vulnerable people - integration of gender and children in policies and actions	Reinforcement of basic social protection measures with regard to climate change so that it contributes to the resilience of vulnerable populations											
	Strengthening the orientation and targeting capacity of the Productive Social Action Program to increase the resilience of vulnerable groups											
6. Integration of Local Governance plans	Implementation of Local Adaptation Plans											
	Territory management, local adaptation committees											
7. Development of resilience mechanisms for urban areas and other settlements	Climate Change resilient urbanization plan, CityRAP (city resilience action planning tool). Rainwater drainage, wastewater treatment, waste management											
8. Increasing the resilience of agriculture	Implementation of the Strategic Plan for the Development of the Agrarian Sector (PEDSA): Productivity (alternatives to shifting agriculture, conservation agriculture, agro-forestry systems), post-harvest loss reduction (storage and processing, value chains), pests and diseases											
9. Food and nutrition security	Implementation of the Food Security and Nutrition Strategy (ESAN): Availability, access, food preference and nutritional value: positive nutrition and eating practices											
10. Increase in the resilience of public infrastructures	Implementation of approved instruments aimed at building resilient infrastructure: Roads and Bridges, Health Centers, Schools, infrastructures for energy generation and transmission, water collection and distribution											
11. Management of water resources and water supply, sanitation and hygiene	Implementation of the National Water Resources Management Program: Strengthen the capacity to capture, store and channel water for human consumption, animals, irrigation, etc. Water saving and reuse, irrigation systems											
12. Improved access to renewable energy	Implementation of the Energy for All Program and EDM Strategy 2018 – 2028: Reduction and efficiency of biomass energy, access to electricity and natural gas other alternatives including mini hydro, wind, solar (thermal and photovoltaic) plants											
13. Reduced vulnerability of people to disease transmission vectors associated with climate change	Implement the National Health Program focusing on water-related diseases: water supply, environmental sanitation, hygiene, urban waste management (domestic, hospital and industrial)											
14. Protection of oceans and coastal areas	Sustainable and integrated development of the Coastal Zone: Promotion of tourism development, coastal erosion, sea level rise, saline intrusion, mangroves, fisheries (includes aquaculture - storage and processing, value chains)											
	Increased fishing resilience											
	Tourist areas and coastal areas with resilient infrastructure and green and sustainable coastal development											
15. Strengthening the capacity to prepare and respond to climate risks and disasters	Implementation of the Master Plan for Disaster Risk Reduction:: Risk reduction, disaster response, rescue operations and post-disaster reconstruction											
16. Increasing the resilience of forests	Implementation of the National Forestry Program: Sustainable Forest Management including processing of timber forest products and NTFP, Biodiversity conservation areas, ecotourism											

Taxi. Quelimane. **ZAMBÉZIA**

9. REFERÊNCIAS BIBLIOGRÁFICAS

CEAGRE & Winrock. (2016). *Identificação e análise dos agentes e causas directas e indirectas de desmatamento e degradação florestal em Moçambique.* Relatório final. Maputo. 36p.

CIAT; Banco Mundial. 2017. Climate-Smart Agricultura em Moçambique. CSA Country Profiles for Africa Series. Centro Internacional para a Agricultura Tropical (CIAT); Banco Mundial. Washington, D.C. 25 p.DNTF, 2015

EDM, 2018a. Plano Director Integrado de Desenvolvimento do Sistema Eléctrico de Moçambique 2015-2042. Electricidade de Moçambique, Maputo, Moçambique.

EDM, 2018b. Estratégia nacional da concessionária de energia elétrica para 2018-2028. Iluminação da Transformação de Moçambique. Electricidade de Moçambique, Maputo, Moçambique.

Gelcer E e Perondi D. 2018. Influence of El NiñoSouthern oscillation (ENSO) on agroclimatic zoning for tomato in Mozambique January 2018Agricultural and Forest Meteorology 248:316-328, DOI: 10.1016/j.agrformet.2017.10.002

GoM, 2014. Estratégia Nacional de Desenvolvimento 2015-2035. Maputo, Moçambique.
INE (Instituto Nacional de Estatística), 2011. Estatísticas dos Transportes e Comunicações, 2009-2011. Maputo, Moçambique.
INE, 2019. Resultados definitivos do IV Censo do Recenseamento Geral da População e Habitação (RGPH) 2017. Maputo, Abril de 2019, Moçambique.
INGC, 2009. Study on the impact of climate change on disaster risk in Mozambique Synthesis Report, 2009.
IPCC, 2014. Climate Change, 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani,

S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R.
Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3–32, doi:10.1017/9781009157896.001.
IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. In Press.
Mahumane, Gilberto & Mulder, P. 2016. Introducing MOZLEAP: An integrated long-run scenario model of the emerging energy sector of Mozambique. Energy Economics 59, 275 – 289.

Marzoli, A. (2007). Inventário Florestal Nacional. Avaliação Integrada das Florestas de Moçambique AIFM. Direcção Nacional de Terras e Florestas. Moçambique.

McSweeney, M. new, Lizcano G., and Lu X. (2010) Improving the accessibility of Observed and Projected Climate Information for Studies of Climate Change in Developing Countries. The UNDP Climate Change Country Profiles

ME/DEP. 2012. Estatística da Energia 2000-2011 (Ministério da Energia - República de Moçambique ed.). Moçambique: Direção de Estudos e Planificação, Ministério da Energia de Moçambique

MICOA, 2012. Estratégia Nacional de Adaptação e Mitigação das Mudanças Climáticas.

MIM AIP. 2016. Boletim estatístico de pesca e aquacultura 2006-2017. Disponível em: http://www.mimaip.gov.mz/wp-content/uploads/2019/06/AF_Boletim-Estatistico-Miolo-2006-2017-Final-em-usoFev2019.pdf

MTA, 2021: NDC Actualizada de Moçambique.

MITADER. 2019. Plano Nacional de Desenvolvimento Territorial. Relatório R.III/01. Proposta Técnica Preliminar de PNDT.

MITADER. 2018. Desflorestamento em Moçambique (2003 – 2016). Maputo. 42 pp.

PEDSA, 2011. Plano estratégico par o desenvolvimento do sector agrário. Ministério da agricultura

MIC. 2016, Política e Estratégia Industrial (2016-2025), Maputo.

Reason, C.J.C., Allan, R.J., Lindesay, J.A. and Ansell, T.J., 2000: ENSO and climatic signals across the Indian Ocean basin in the global context: Part 1,Interannual composite patterns. International Journal of Climatology, 20, 1285-1327.

Reason and D. Jagadheesha 2005 A model investigation of recent ENSO
impacts over southern Africa. Oceanography Department, University of Cape Town, Rondebosch, South Africa

Inauguration of an project,
Distrito de Namaacha, MAPUTO

10. ANNEX 1. STRATEGIC ADAPTATION ACTIONS

1.STRENGTHENING COORDINATION, INSTITUTIONAL FRAMEWORK AND UPDATING POLICY DOCUMENTS RELATING TO THE NAP IMPLEMENTATION

Strengthening coordination of climate actions: National Directorate of Climate Change, Ministry of Economy and Finance, Provincial and District Governments, Integrated Plan and Budget. NAP Integration in the next Government's Five-Year Plan (PQG) and sectoral planning instruments.

PROJECT TITLE:

Climate Change Observatory - Climate Change Forum

SUMMARY

Brief description of proposed actions

Although the country has been severely affected by climatic events, given its location of greater vulnerability, thus adding several challenges in the various development

sectors, with emphasis on the public works and housing sector, health, agriculture and disaster risk management, efforts carried out in the country to respond to these climatic events in order to adapt and reduce their impact when they occur still face coordination level barriers. In recent years, the Government of Mozambique created the National Directorate for Climate Change with the role of leading the coordination of climate actions. The Government also remodeled and created the National Institute for Disaster Management, with the role of coordinating response, preparedness, and post-disaster support, with a focus on climate disasters. Nonetheless, these institutions do not fully respond to all concerns, given the transversal nature of climate impacts, as well as the complexity of impacts at provincial, district and local levels. In this sense, reinforcing coordination between the various development sectors and actors (government institutions at national, provincial and local levels, the private sector, civil society, youth, local community organizations and international development partners) and improving the institutional framework and the policy to underline the implementation of the country's adaptation plans and improve the intervention of the various adaptation actors would clarify roles and responsibilities and promote synergies to create greater impact, reducing climate vulnerability in the economy and society. The main point of entry for the integration of adaptation actions in development is their incorporation into the Government's Five-Year Plan (PQG), which will then be absorbed in the different sectors.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Climate change has continually contributed to an increase in the frequency and intensity of disasters at the national level. The most common weather events in the country include tropical cyclones, floods, storms and droughts. When these climatic events happen, many humans are lost and agricultural fields are also lost, which contributes to food insecurity, and various socioeconomic infrastructures (mainly houses, bridges, roads, electricity transmission lines, schools and hospitals) get destroyed. These losses cause setbacks and constraints in various development sectors, negatively affecting the economy (e.g. reduction in GDP) while reducing access to basic social services as a result of the destruction of health, education, water and sanitation, communication and electricity infrastructure.

At the same time, the impacts may exacerbate the situation of food insecurity as a result of the loss of agricultural crops, destruction of transport, processing and storage infrastructure, and the proliferation of agricultural pests and diseases.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Despite the evidence of the impacts of extreme weather events in the country, there is still a lack of considering climate aspects in planning and budgeting in the different development sectors. This is, in part, a result of weak intersectoral coordination between the various sectors that are beset by climate change. It is crucial that the ministries that will play key roles in the development and adaptation to climate change, such as the ministries responsible for the sectors of Land and Environment, Economy and Finance, Transport and Communication, Agriculture, Health, Disaster Management, Public Works and Water Resources, Energy, Trade and Tourism understand the magnitude and timing of risks and their implications in their own sectors, so that they can take climate change into account during their planning and budgeting as an essential part, for them to be able to effectively implement adaptation measures. Furthermore, coordination shall be implemented so that the integration of climate change is considered not only at the sectoral level, but also at the provincial, district and local levels, where the respective development plans must include relevant climate impacts.

Efforts to reduce the vulnerability of the economy must also be aligned with other initiatives, particularly the Sustainable Development Goals (SDGs), therefore requiring a coordinated effort of actions so that by reducing climate vulnerability it is also possible to respond to the SDGs.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

For the realization of the country's commitment of reducing climate vulnerability, several actors must interconnect in favor of this cause, from Government actors (national, provincial and district), private sector, civil society and international cooperation partners in order to synchronize their efforts and establish consolidated policies and other instruments for the effective implementation of adaptation actions in the context of climate change. In terms of Government actors, the Ministry of Land and Environment (MTA) and the Ministry of Economy and Finance (MEF) play a very crucial role in coordinating and consolidating the

institutional framework to ensure the implementation of adaptation actions. Although the role of these two ministries in this action is highlighted, the role and contribution of other ministries with specific actions related to disaster management (the INGD), academia, provincial and district governments, the private sector and civil society including young climate activists is essential. Research institutions and systematic observations, management and storage and data sharing are also extremely important in order to document impacts and produce evidence that can be used for monitoring the implementation of adaptation measures.

With an effective implementation of the NAP, these actors involved will benefit because their efforts and sectoral plans will reduce the negative impacts associated with extreme weather events.

1.4 OBJECTIVES AND EXPECTED RESULTS

Strengthening coordination, institutional framework, updating and adapting policies brings with it several objectives that include:

(i) Operation of the governance structure for climate change with a focus on adaptation actions, especially including sectors not traditionally involved in climate actions, such as health, education, child protection;

(ii) Training of actors working on climate change planning, budgeting and monitoring tools for the NAPs implementation;

(iii) Development of a national framework of indicators that integrate the NAPs and SDGs to guide public planning;

(iv) Design updated and specific climate scenarios that cover the entire national territory and include all sectors;

(v) Integration of adaptation actions into the Government's Five-Year Plan 2025-2029.

(vi) Improved understanding and quantification of climate change impacts, losses and damages and adaptation limits, based on existing data.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS OF THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Improving coordination and strengthening the institutional framework increases actors performance during the implementation of their actions by reducing climate vulnerability and avoiding duplication of efforts and the overlapping of roles during the implementation of actions; producing evidence that can be used to monitor the

performance of the implementation of adaptation measures and increasing the level of transparency before the parties to the United Nations Framework Convention on Climate Change.

This measure, in addition to building robustness in the implementation of adaptation plans, which in turn helps in achieving the 17 SDG objectives, contributes to the achievement of priority 2 of the Sendai framework for Disaster Risk Reduction (DRR), which consists of strengthening the governance for disaster risk management.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

To put this action into practice, the following activities are needed:

(i) Review the operational framework of coordination of climate change, including planning, budgeting, implementation and monitoring and evaluation of adaptation to climate change at the central, provincial and district levels (GIIMC, the Climate Change Network and knowledge Centre) and in the various economic and social development sectors;

(ii) Capacity building for climate change units in various climate change planning and monitoring tools, which is the main entry point for all sectors, private sector, civil society and development cooperation partners;

(iii) Prepare the guide on the integration of CC in the environmental impact assessment and licensing;

(iv) Ensure participation in regional and global forums on climate change for the purpose of learning and disseminating assured experiences;

(v) Develop a national indicator framework that integrates the NAPs and SDGs to guide public planning instruments;

(vi) Draw up-to-date and specific climate scenarios that cover the entire national territory and all development sectors;

(vii) Integrating adaptation actions into the Government's Five-Year Plan (PQG 2025-2029).

(viii) Analyze the impacts of climate change on different sectors, using existing data and collection systems;

(ix) Ensure the incorporation of adaptation actions into integrated planning and budgeting

(x) Coordinate with disaster risk reduction and management (INGD) entities at national, provincial and district level;

(xi) Establish coordination standards with line ministries for monitoring the NAP implementation and the strategic decision-making and advocacy process.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

This coordination action is led by the Ministry of Land and Environment (MTA) and the Ministry of Economy and Finance (MEF) and should be taken as a priority in the preparation of the next five-year program (PQG). However, due to the fact that the implementation of national adaptation plans involves several development sectors, the collaboration of all sectoral ministries and other stakeholders (e.g. academia, private sector and civil society, Non-Governmental Organizations, cooperation partners, professional organizations such as the Order of Engineers), young climate activists, is essential.

3. ESTIMATED BUDGET

The projected budget is based on the baseline of Mozambique's updated NDC activities and is estimated at USD1,014,436,000.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action should cover the whole country, with deployment in the provinces, and its implementation shall be from 2023 to 2030.

2. STRENGTHENING THE EARLY WARNING SYSTEM

Collection of systematic and real time information to feed the Early Warning System (EWS).

PROJECT TITLE:

esponse to the Early Warning System (EWS)

SUMMARY

Brief description of proposed actions

The early warning system (EWS) is a whole set of instruments that aim to warn the population in advance about the occurrence of a phenomenon that can cause human and material damage. The primary objective of the early warning system is to enable people, institutions and communities to respond in a timely and adequate manner to hazards/threats in order to reduce the risk of death and property damage. To be effective, alerts must not only have a solid scientific and technical basis, but also focus primarily on communities, institutions, objects and infrastructures exposed to the risk.

In recognition of the various risks, with particular emphasis on climate risks, Mozambique established the

National Institute for Disaster Management (INGD) with the aim of, among other objectives, implementing an efficient early warning system capable of providing preventive warning regarding the proximity of disasters and prepare intervention plans for each type of disaster in order to reduce the impacts. The INGD has been implementing the EWS with the support of institutions such as INAM and DNGRH, which are essential actors in the development of credible information to warn about natural phenomena, hence a reduction in disaster associated deaths has been witnessed. Nonetheless, the goals to be achieved are still far from desirable, partly due to the scarcity of resources, but also due to the reduced human and technological capacity, the latter including the meteorological and hydrometric network, data processing systems, preparation and transmission of prior notice in an understandable manner and in accessible language, as well as the actions to be taken in response to the notice given. To this end, focusing on local organizations such as local disaster management committees has been a challenge, but a goal to be achieved in all communities.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Early warning on the occurrence of weather events is the proactive way to deal with environmental extremes and reduce adverse socioeconomic and environmental impacts when these events occur. Prevention has the ultimate purpose of reducing death, destruction of infrastructure, and disruption of access to basic social services, loss of agricultural crops, among others, thus reducing economic losses by promoting climate-resilient development.

In order to ensure an effective early warning system, a mechanism for collecting data, processing meteorological and hydrometric information, formulating warning messages and a timely dissemination to potential victims is needed.

The implementation of an EWS in Mozambique is part of the implementation of several national policies, particularly the Master Plan for Disaster Risk Reduction 2017-2030, approved by the Government of Mozambique, and at the international level, the implementation of the Sendai Framework for disaster risk reduction, and therefore also for the sustainable development goals.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Since the main impact of a climate disaster is reflected in the loss of lives of people and animals, loss of agricultural crops, infrastructure and consequent impact on the economy, a EWS has the potential to produce information in good time to avoid most of these impacts. It is recognized that warning itself is not enough, which is why for an EWS to be efficient and effective it must include an action plan (e.g. evacuation, protection) that can be implemented in good time. Thus, there is need to strengthen the capacity for systematic collection and processing of climate data, preparation of prior notice and its timely transmission and support to communities and institutions so that they can implement a response plan. This chain needs to be improved and on constant alert for it to be effective, hence the need for institutional, human, technological and financial capacities for it to be operational.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

In Mozambique, the INGD plays a key role in conceptualizing and implementing the Disaster Risk Reduction Master Plan 2017-2030, being responsible for coordinating actions to systematize information, assess risks, ensure response preparation, support local organizations in the implementation of response and risk reduction plans, as well as subsequent actions, including rescue operations, victim assistance and reconstruction. The National Meteorology Institute (INAM) and the National Directorate of Water Resources Management (DNGRH) play a crucial role in collecting, systematizing and processing meteorological and hydrometric data that are used to assess risk, hence the need for coordination between these institutions for the operationalization of the EWS. At the local level, Local Disaster Risk Management Committees have been established in critical regions with the task of identifying locally existing threats (including EWS information) for the design and implementation of prevention, preparedness and response activities.

1.4 OBJECTIVES AND EXPECTED RESULTS

The main objectives of this action include, among others:

– Strengthening INDG's capacity to coordinate EWS operation actions;

– Strengthening the capacity of INAM and DNGRH to

systematically collect climate data, including establishing a network of stations, updating and maintaining adequate measuring equipment;
– Increased capacity for local disaster risk management committees on risk identification, response, preparedness and implementation;
– Institutionalization of disaster reduction plans (emergency operations) at the level of public and private institutions, civil society and in neighborhoods.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

A EWS is a support system for other planning tools and has the main function of reducing the impacts of extreme weather events. Therefore, the EWS must be seen as part of a set of actions to prevent the risk of climate disasters and include land use planning and allocation of infrastructure in safe or less risky areas, the adoption of building codes for climate-resilient public infrastructure and information support for the climate insurance system.

An effective EWS has coordinated actions at all levels, including State institutions (national, provincial, district, local), civil society, private sector and grassroots local organizations. Thus, organizations/companies should adopt EWS as part of their emergency procedures and operations and train workers on disaster prevention standards.

Additionally, the implementation of this action is a significant step towards avoiding and reducing the negative impacts of climate adversities and achieving the SDGs in general.

Furthermore, the implementation of this action constitutes a relevant step towards achieving priority 4 of the Sendai Framework for Disaster Risk Reduction (DRR).

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The following activities will be put into practice to materialize this climate action:

(i) Training of technicians in EWS matters (throughout the chain, from data collection, processing, preparation of warning, and its transmission up to the preparation and implementation of the response plan;
(ii) Reinforcement of National Meteorology Institute

(INAM) and National Directorate of Water Resources Management (DNGRH) capacity to provide meteorological and hydrometric information which is dedicated and adequate to each user;

(iii) Strengthened scale of early warning system, covering the districts;

(iv) Reinforcement of storage systems, data processing and timely dissemination of meteorological and hydrological information;

(v) Reinforcement of INAM's role in coordinating the collection and monitoring of climate data;

(vi) Setting standards for the development and coordination of early warning systems for multiple events;

(vii) Reinforcement of climate and meteorological information systems, allowing to forecast the occurrence of droughts;

(viii) Strengthening the INGD's role in coordinating response and recovery operations to climate disasters;

(ix) Establishment and training of local disaster risk management committees;

(x) Strengthening storage systems, data processing and dissemination of hydrological information;

(xi) Consolidate (or streamline) ongoing maintenance of equipment used in hydrometric stations to ensure reliability and quality of collected data;

(xii) Reinforce systems for storing, sharing and processing data and disseminating hydrological information;

(xiii) Identify places of refuge and evacuation channels in those administrative posts prone to hydrometeorological events.

(xiv) Strengthening the participation of women and people with disabilities in local disaster risk management, early warning and adaptation strategies.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The Early Warning System is led by the INGD in coordination with INAM and the DNGRH. However, given the transversality of the impacts in different sectors, the EWS operation actions must include other sectors, mainly the Ministry of Agriculture and Rural Development (MADER), Ministry of Public Works, Housing and Water Resources (MOPHRH), Ministry of Health (MISAU) and the Agricultural Research Institute of Mozambique (IIAM). In addition to these government entities, it is necessary to involve other actors, particularly cooperation partners, given the need for Funds to equip and strengthen the early warning system, which include: UNEP, UNDP, World Bank, USAID, AfDB, FAO, CANADA, NORWAY, and FRANCE.

7. ESTIMATED BUDGET

The estimated budget is based on the reference of Mozambique's updated NDC activities and is estimated at USD63,603,567.

8. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

The implementation of this action must be subdivided into coastal zones where flood events, cyclones and floods occur, and semi-arid zones where drought events also occur. In terms of coastal zones this action shall cover the coastal areas of the provinces of Maputo, Gaza, Inhambane, Sofala, Zambézia and Cabo Delgado. In semi-arid areas, it shall cover the provinces of Tete and interior regions of the provinces of Gaza and Inhambane. This is an action to be implemented between 2022 and 2030.

3. EDUCATION, PUBLIC AWARENESS (COMMUNICATION) AND RESEARCH

Center for knowledge management and research, public awareness, technology development and innovation.

PROJECT TITLE

Establishment of Knowledge and Awareness Centers on Climate Events.

SUMMARY

Brief description of proposed actions

Climate change is a relatively new phenomenon and many of its causes and impacts are not known. At a global level, there has been the emergence of institutions dedicated to researching these natural phenomena from various points of view. Mozambique is not alien to this global movement and has made some effort to introduce climate change topics in some of the teaching curricula. Even so, this process has been done in a timid and uncoordinated way, resulting in a lack of continuity in the construction of knowledge, particularly local knowledge about climate change.

Additionally, information and public awareness about climate change are not done systematically and often climate change is only referred to as news after the occurrence of an extreme climate event. In order to guarantee that the country can provide a response tailored to the real impacts and the current social, economic, cultural and political situation, the country needs to have adequate knowledge, on the one hand, of the true climate risks, the vulnerability of people and infrastructure, and response capacity (mainly local response) to extreme weather events. This knowledge will be used to shape and influence policies at national, provincial and local levels so that appropriate and socially just responses are implemented for both planning, prevention and reconstruction. In this context, the training of national research institutions, in partnership with their regional and international counterparts, is necessary. Research aimed at understanding the risk of disasters and reducing uncertainties are crucial.

The promotion of studies that technically and scientifically support the use of adaptation measures based on ecosystems – AbE aimed at reducing the risk of natural disasters and that can be easily adopted by local communities is also essential. Thus, the establishment of laboratories, research groups, and the adjustment of school curricula at all levels will be necessary for formal education, while systems of public awareness will be established so that information for public use is disseminated for the purpose of raising the awareness of Mozambicans on the need for adjustments to live in a world with climate change.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

The establishment of a knowledge-based society is a fundamental part of sustainable development. It is in this context that several of the sustainable development goals aim to ensure that people have access to quality education and information, and that this can help prevent and reduce the risk of disasters. It is thus, in the pursuit of these SDGs and the need to promote science-informed policies that it is proposed to strengthen research capacity and include material on climate change in school curricula at all levels as a way to ensure that future generations can grow with the necessary knowledge to face the adversities that tend to increase with climate change.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

One of the main problems pointed out in the planning and implementation of climate change adaptation measures is the deficient national capacity for planning, budgeting, implementing, monitoring, and coordinating climate actions. Additionally, the lack of knowledge extends to the lack of access to technologies and the reduced ability to plan and design projects to access climate funds, as well as the lack of consistent data that substantiate the impacts of climate change, identification of zones and types of risks, among others. Even where knowledge exists, it is limited in scope and often only found at national levels. Establishing research and teaching capacities would significantly help to address the knowledge and capacity deficit at provincial and district levels in order to build teams that can lead and support the planning and implementation of adaptation plans, including local adaptation plans of action (LAPAs).

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

Jointly, the Ministry of Education and the Ministry of Science and Technology and Higher Education shall take the lead in designing and implementing school curricula up to higher education and promoting the establishment and consolidation of research programs on climate change. Research institutions, in addition to generating knowledge and systematizing knowledge on the subject, must include a system of public awareness, where scientific results are presented to the general public in a simpler language that can be used to influence policies, regulations, sectoral standards, among others. The use of social networks and mass media is particularly encouraged, which is why there is a need for a close connection between researchers and public and private information bodies that can facilitate the transmission of information to the public in a format and accessible language for the target audience.

1.4 OBJECTIVES AND EXPECTED RESULTS

The main objectives of this action are, among others:

(i) To establish a national climate change knowledge base that can support policy development and implementation of climate change adaptation measures;

(ii) To establish bases for training national technicians who may guide and support the implementation of adaptation plans, including the LAPAs;

(iii) To build a knowledge society that may align its policies based on knowledge and seek vulnerability

reduction solutions in the local knowledge;
(iv) To facilitate the involvement and training of children and adolescents in adapting to climate change.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

An informed society is a developed society as its actions are based on scientific knowledge and evidence. Therefore, knowledge management, education and public awareness are extremely important steps towards the self-improvement of communities, partly through adjusting the way of life, and partly through the use of technologies and knowledge to reduce risk and increase adaptation ability.
This action improves understanding of natural disaster risk, which is priority 1 of the Sendai Framework for Disaster Risk Reduction (DRR).

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

(i) Teacher training on climate change;
(ii) Trainer training on climate change;

(iii) Updating of teacher training curricula, with a view to integrating climate change topics;
(iv) Updating curricula from Grade 1 to 12, with a view to integrating climate change topics;
(v) Establishment of higher education and research programs on climate change;
(vi) Implementation of communication and awareness plans for climate change adaption and mitigation;
(vii) Establishment of platforms for empowering adolescents and young people on climate actions, as well as improving their involvement in disaster risk reduction actions;
(viii) Support for climate activist children and adolescents and youth representatives from Mozambique on global platforms;
(ix) Support for climate communication initiatives led by children and adolescents (blogs, social media, newspapers, community radios);
(x) Support for the involvement and participation of adolescents in actions on climate change (radio programs, children's parliament, etc.);
(xi) Development of channels and materials adapted to ensure reach, awareness and information for different population groups;

(xii) Incorporate the systematic performance of gender analyzes for different risks related to climate change;

(xiii) Collaborate with the Ministry of Education and Human Development (MINEDH) to include modules related to climate change and adaptation in school curricula;

(xiv) Organize mass information campaigns to prepare the population for critical seasons/periods such as the pre-cyclone, rainy season.

(xv) Identify and organize educational sessions dedicated to the categories most affected by climate change such as the group of fishermen, farmers.

(xvi) Structuring a decentralized system of periodic and inclusive awareness at the local level, adapted for people with less schooling, people with disabilities, children out of school, among other groups.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The Ministry of Education and Human Development and the Ministry of Science and Technology and Higher Education lead the implementation of this action. Higher education institutions, institutes and research centers will implement the teaching and research programs. The media (radio, television, newspapers, etc.) and social networks will be used as the main platforms for disseminating information to the general public.

The contribution of other partners is crucial for the implementation of this action, which includes the UNDP, World Bank, Research and Academic Institutions, UN-Habitat, IUCN, SREP and CEP.

3. ESTIMATED BUDGET

The projected budget is based on the baseline of Mozambique's updated NDC activities and is estimated at USD976,000,000.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This is a nationwide action, but to facilitate its implementation, a Center should be established in each region of the country, especially in the regional capitals (Maputo, Sofala and Nampula). Actions shall be implemented between 2023 and 2030.

4. CLIMATE FINANCE

Training on project design, management of climate funds and preparation of financing strategies for the NAP.

PROJECT TITLE

Strengthening national capacities for climate finance.

SUMMARY

Brief description of proposed actions

In recognition of the need and urgency to implement measures to adapt to climate change, the United Nations Framework Convention on Climate Change (UNFCCC) established financial mechanisms to support developing countries, particularly least developed countries (LDC), as is the case of Mozambique. These financial mechanisms, such as the Adaptation Fund, the Least Developed Countries Fund (LDCF), the Green Climate Fund (GCF), the Global Environment Facility (GEF), established the rules for accessing funds in order to respond to the priorities for adaptation to climate change, promotion of low-carbon development, removal of barriers (institutional, legal, technological, etc.), creating local capacities, among others, to facilitate the integration of climate actions in development plans and therefore facilitate the implementation of climate actions, particularly the adaptation to climate change. Although the Convention has made efforts to mobilize resources so that countries may benefit, access mechanisms are considered complex. Converting project ideas into fundable projects is still a challenge. In part, the lack of national and regional capacities, the lack of consistent information for demonstrating impacts, the lack of statistics on the number of people affected and the level of damage, the difficulty of estimating climate additionality, among others, are often pointed out as impediments to countries submitting good project proposals. Currently, six regional, national and subnational projects (3 are adaptation) funded by the Green Climate Fund (GCF), totaling US$26.7 million, are being implemented in Mozambique. Still, the financing needs for adaptation to climate change are greater than the amount available. Estimates of the costs of recovering from the impacts of extreme weather events show an increase in the financial deficit which, since 2016, has already exceeded 9 billion meticais, which means that greater efforts must be made to ensure the availability of financial resources for the implementation of low-carbon adaptation and development plans.

Local Adaptation Plans (LAPs) were prepared in an equal number of districts and municipalities, however the evaluation of the implementation of these plans indicates that only a small part of these was carried out using funds from the State Budget, which is deficient itself.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

In 2015, the National Sustainable Development Fund (FNDS) was established, an institution subordinate to the Ministry of Agriculture and Rural Development and the Ministry of Economy and Finance, being the entity that will support and coordinate the financial mechanism for the mobilization and management of sustainable development funds. In this way, the FNDS is in preparation to become the accredited national institution for the preparation and submission of projects for climate funds. In 2017, the GCF approved a Readiness Program aimed at strengthening the Designated National Authority of Mozambique by establishing a coordination mechanism with an Advisory Committee and preparing and executing an institutional capacity plan. The implementation of this climate action will strengthen institutional capacity for project preparation as well as the establishment of an accredited national financial agency, and thereby increase the capacity to raise climate funds and the capacity to implement and manage climate change adaptation projects and low-carbon development. The main purpose of this action is to establish a NAP financing strategy that may ensure sufficient financial flows for the implementation of climate change strategic adaption actions.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Integrating climate change into planning and budgeting is a decisive step towards reducing climate vulnerability. It is recognized that these processes are still a challenge, but currently, the country has taken significant steps in the introduction of climate markers and indicators in the national planning and budget system. However, a plan will be of no use if funds for its implementation are not secured. As mentioned before, 135 LAPs were prepared, but very few of these plans were implemented, in part due to lack of funds for their materialization. Carrying out planned

investments that incorporate adaptation to climate change can contribute to lower vulnerability, thus increasing adaptive capacity at national and community levels.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The National Sustainable Development Fund (FNDS) is the key institution in the implementation of this climate action. Given its functions, the FNDS must coordinate its actions with the Ministry of Economy and Finance (which coordinates development priorities), the Ministry of Agriculture and Rural Development (to which it reports) and the Ministry of Land and Environment (which coordinates climate actions). Other actors include accredited international agencies that have supported Mozambique in the preparation and implementation of climate change adaptation and low-carbon development projects, particularly United Nations Agencies, International Financial Agencies such as the World Bank and the African Development Bank.

The main beneficiaries of the implementation of this climate action are the most vulnerable communities that will have the opportunity to benefit from the implementation of adaptation projects, but in general, society and the local and national economy will benefit from the reduction of vulnerability and climate risk.

1.4 OBJECTIVES AND EXPECTED RESULTS

The objectives of this climate action include, among others, the following:

(i) Reinforcement of capacity to prepare and implement local adaptation plans - Government technicians at the local level trained in PFM - Public and Financial Management Systems (eg Planning, Budget, Monitoring, Audits, etc.) and climate change adaptation integration in the provincial plans;

(ii) Training for the advisory committee of the designated national authority - NDA in the design and analysis of projects and strategies for mobilizing resources;

(iii) Training for the National Sustainable Development Fund (FNDS) and the Ministry of Economy and Finance for identification, preparation, implementation, and monitoring of climate projects;

(iv) Mapping of UNFCCC climate funds and independent funds (public or private) and identification of potential funders for specific projects (matching projects with potential funders);

(v) Design of fundraising strategy to maintain a sustainable financial flow for the NAP implementation.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Creating national capacities for resource mobilization has the advantage not only of reducing dependence on accredited international agencies, but also of accelerating procedures for converting ideas into projects that are part of national priorities. At the same time, operations carried out through an accredited national agency have the possibility of reducing operating costs for project preparation and their submission to climate finance agencies established by the UNFCCC and other independent climate funds, public or private. Adaptation is a very expensive process, so with access to climate finance, we would be moving towards achieving several SDGs, specifically those related to eradicating poverty (objective 1), eradicating hunger (objective 2), quality health (objective 3), reduction of inequalities (objective 10), sustainability of communities and cities (objective 11). This is because weather events, when they occur, tend to set back or compromise the achievement of these objectives.

On the other hand, this action guarantees the implementation of priority 3 of the Sendai Framework for DRR, which promotes investment for reducing disaster risks and increasing resilience to climate events.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The following activities will be put into practice to materialize this climate action:

(i) Financing of local adaptation plans;

(ii) Training for district technicians on the public and financial management system;

(iii) Training for the advisory committee of the designated national authority - NDA in the design and analysis of projects and strategies for mobilizing resources;

(iv) Capacity building for the FNDS as an accredited national agency for the identification, preparation and implementation of climate change adaptation and low-carbon development projects;

(v) Design of funding strategy for the NAP.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The implementation of this climate action will be led by the Ministry of Economy and Finance, but with the participation of the National Fund for Sustainable Development (FNDS), Ministry of Land and Environment (MTA) and other relevant sectoral ministries. This is an action that still involves several partners for its implementation, which include: UNDP, WFP, ENABEL, FAO, World Bank, JICA, AfDB, AFD, Millennium Challenge Corporation, USAID, the Belgian Cooperation, among others.

3. ESTIMATED BUDGET

This action is budgeted at around USD 1 million, estimated within the scope of the activities of Mozambique's updated NDC, the source of information of the budget of the strategic actions of this NAP.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This is a strategic action that should ideally be implemented on a national scale, however priorities may vary depending on the climate challenges of each region. The capabilities for mobilizing climate funds go through the accreditation of a national institution for the preparation of project proposals for climate finance. This project note aims to reinforce the current capacity of the FNDS and the Ministry of Finance, but considering the identification of individual technical capacities that may be based on different geographical regions of the country. The time horizon for the implementation of this action is 5 years, 2023 to 2027.

5. INCREASED ADAPTIVE CAPACITY OF VULNERABLE PEOPLE - INTEGRATION OF GENDER AND CHILDREN IN POLICIES AND ACTIONS

Reinforcement of basic social protection measures with regard to climate change so that it contributes to the resilience of vulnerable populations.

Reinforcement of the ability to guide and focus the Productive Social Action Program to increase the resilience of vulnerable groups.

PROJECT TITLE

Improving the adaptive capacity of climate change vulnerable groups.

SUMMARY

Brief description of proposed actions

Mozambique is a developing country where poverty rates are high and a large part of the country's population lives in the coastal zone, exposed to cyclones, tropical depressions and storms, rising sea levels, floods and droughts. Given the country's high vulnerability and high exposure to climate events that are projected to grow in the coming decades (INGC, 2009) it is crucial that the country prepares itself for adaptation to achieve socioeconomic development and increase the adaptive capacity, mainly of the most vulnerable groups that basically include children, women, the elderly, the disabled and the poor. Although the entire population is affected in some way by extreme weather events, they strongly affect women, the poorest, the elderly, children and the disabled because they are at extremely high risk and do not have the means to reduce their exposure to weather events.

To increase the adaptive capacity of the most vulnerable groups, three factors are needed, including knowledge, technology and financing. These three factors allow taking effective and proactive actions before the occurrence of climatic adversities, as well as allowing an objective reaction to the occurrence of climatic events and thus reducing their adverse impacts. However, even though the country has access to these factors, the most vulnerable groups do not have access and remain increasingly vulnerable. Hence the need to adopt policies and practices to particularly favor these groups and give them the opportunity to increase their adaptive capacity.

It should be noted that unequal gender power relations permeate dynamics at the community and family level, relegating women and girls to a reproductive role, unpaid care and family work, and excluding them from decision-making processes, access to and control over resources and the free, informed and autonomous capacity to make strategic decisions about their health and well-being. In this context, they are less resistant to natural hazards and more exposed to violence, harmful practices and negative survival strategies.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Increasing adaptation of these communities that live in a context of high exposure to climatic events with a focus

on vulnerable groups that are devoid of adaptation and response mechanisms to natural disasters is essential. By increasing the adaptability of these most vulnerable groups, we would be reducing several severe socioeconomic and development impacts that arise when climate disasters occur, which include loss of human life, loss of housing and material goods in communities, recurrent resettlements of communities, reduced susceptibility to contracting diseases associated with natural disasters such as malaria and cholera.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Although it is interesting to reduce vulnerability in all elements, in specific groups that are mainly more vulnerable, which include children, the elderly and women, it seems to be a high priority due to the lack of means of response for these groups. Increasing the adaptive capacity, especially of the most vulnerable people, and integrating gender into adaptation policies and actions makes it possible to reduce the vulnerability of these high-risk groups and thus reduce the severe socioeconomic impacts of climate disasters.

Additionally, increasing the resilience of vulnerable groups that are often oppressed in society and with less voice for socio-cultural reasons would ensure the integration of all elements of society in climate change adaptation actions because when these events arrive they are not selective, they need to be faced by all.

Women and girls, who should be agents of change, are deprived of the possibility of actively contributing to the planning, implementation and monitoring of adaptation strategies. They do not have sufficient access to information or weight in decisions taken at family and community levels. Their volatile income is easily erased by the risks induced by climate change and the low level of human capital and access to productive means and resources that hinder their resilience after disasters and emergencies.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

While it is recognized that natural disasters affect all groups in society, the most vulnerable groups tend to be the hardest hit, most often having high exposure and poor response. Priority groups whose adaptive capacity needs to be reinforced include mainly: women, children and adolescents, the elderly, the disabled and people living in extreme poverty or suffering from illnesses.

Statistics on those affected in terms of gender are scarce, but it is clear that more than half of those affected are women, children and the elderly, who are often also heads of their households. These are the ones that take refuge in the accommodation and resettlement centers as an evidence of their lack of capacity to deal with the impacts of extreme weather events. In accommodation centers, women are particularly vulnerable to harassment and gender-based violence. Furthermore, parents force young girls into premature marriages on the grounds of poverty exacerbated by extreme weather events.

1.4 OBJECTIVES AND EXPECTED RESULTS

Increasing the adaptive capacity of vulnerable people and mainstreaming gender in adaptation policy and actions will allow:

(i) Strengthening the response to gender issues, social protection and increase the resilience of vulnerable populations;

(ii) Ensuring better guidance of vulnerable populations in order to increase their resilience and response to climate events and prioritization of concerns of vulnerable groups;

(iii) Gender mainstreaming in policy, strategy design, regulations and sector planning within the framework of implementing climate change adaptation actions, while guaranteeing women and girls an identity and voice in the different processes of adaptation and preparation and response to emergency situations.

(iv) Creation of budgets and funding mechanisms to address gender-specific issues and vulnerable groups.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

The consideration and prioritization of adaptation of vulnerable groups and gender integration prevents the government and other actors with specific development and support actions for vulnerable groups from having recurrent setbacks whenever climatic events occur due to having to assist the victims, resettle them and rebuild socio-economic infrastructure. The implementation of this climate action contributes to the fulfillment of SDG 5 on gender equality, thus reducing gender inequalities in the access to EWS information, decision-making opportunities, and access to the support granted among affected people.

On the one hand, it constitutes a significant step towards achieving SDGs 1 and 2, which consist of eradicating poverty and hunger at all levels.

On the other hand, it ensures that the country is considering priority 4 of the Sendai Framework for DRR as it is improving the preparedness, response and recovery of people, particularly those vulnerable to climate events.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities related to this action include:

(i) Reinforcing basic social protection measures that may increase populations resilience and response;

(ii) Guiding and ensuring proactive responses of vulnerable groups, particularly women and female-headed households;

(iii) Reinforcing the articulation between the social protection system and the natural disaster response system, including articulation with early warning systems;

(iv) Establishing funding or budget aimed at responding to gender and vulnerable groups issues;

(v) Improving the system for collecting and storing gender statistics on vulnerable groups and those affected by climate disasters;

(vi) Establishing inclusive participatory mechanisms to involve women and youth in the planning, implementation and monitoring of local adaptation strategies;

(vii) Strengthening the capacities and leadership of women and girls to make decisions about climate adaptation and emergency preparedness and response;

(viii) Mobilizing women-led community grassroots organizations and civil society organizations in gender assessments to inform adaptation plans and response interventions and to monitor the impact of emergencies on gender inequalities.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The implementation of this activity must be led by the Ministry of Gender, Children and Social Action (MGCAS) and must have the support of the INGD and cooperation partners. Strategic partners in the implementation of this action include the UN-Women and UNICEF, whose actions focus on the promotion and development of women, FAO and the World Vision.

3. ESTIMATED BUDGET

The projected budget is based on the baseline of Mozambique's updated NDC activities and is estimated at USD60,364,253.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action must have a nation-wide coverage and be implemented from 2022 to 2030.

6. INTEGRATED LOCAL GOVERNANCE PLANS

Implementation of Local Adaptation Plans, Territory Management and Local Adaptation Committees.

PROJECT TITLE

uilding robustness and integration into climate change planning and governance in Mozambique.

SUMMARY

Brief description of proposed actions

The institutional framework for implementing the NDC and NAP in particular needs to be strengthened at the local level, where actions take place and cause the greatest impact. This action means building local governance capacities for an effective implementation of climate actions in general. As part of the efforts undertaken by the Government to materialize the National Strategy for Adaptation and Mitigation of Climate Change, 135 Local Adaptation Plans (LAP) were prepared at district and municipal levels. Most of the LAPs were prepared by central level technicians using participatory methodologies, where climate risks and vulnerability were mapped, the main affected identified and potential solutions identified. Despite the fact that technicians and local governments have participated in the preparation, the mobilization of resources, coordination of actions and their implementation is deficient, and little was achieved as compared to the impact that was expected from the LAPAs. This action aims to increase the capacity of local governments in planning, budgeting, resource mobilization and implementation of local adaptation plans (LAPAs).

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

The LAPAs preparation is a significant step in the ENAMMC and NAP implementation. However, the local adaptation plans (LAPAs) are only the first step of several others that must be taken before effectively reducing the climate vulnerability of communities. In this sense, while the

country has made significant advances in the preparation of LAPAs, it still has the challenge of making these plans implementable, which requires good governance, intersectoral coordination, an excellent connection between implementers and beneficiary communities. These requirements only constitute a working environment, and additionally, it is necessary that the budget be materialized by financial, technical and technological availability compatible with local conditions.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Participatory processes such as those used for the preparation of Local Adaptation Plans (LAPAs) have the advantage of involving all stakeholders, including beneficiaries of identified initiatives, to reduce vulnerability. When, after planning, there are no follow-up and implementation actions, this can create frustration for the parties involved when the expectations created are not met. In the analysis of the LAPAs implementation, it was evident that the lack of follow-up and implementation was mainly due to the lack of financial resources, but also, in part, to the weak capacity of Governments and local technicians to mobilize financial resources to face planned actions. The materialization and operation of local adaptation committees will only be achieved when there are resources to support the expenses of their functioning. Thus, this climate action will support local governments to operationalize their LAPAs, and by so doing help their communities to create their capacity to adapt and overcome themselves.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The main actors for the implementation of this action are the local governments (district and municipal) and the respective development cooperation partners and beneficiary communities. Particular emphasis will be given to local grassroots organizations through the establishment of support mechanisms with the early warning system (EWS) and training for the implementation of the preparedness response plan, as well as adaptation in techniques and technologies for the use of resilient natural resources. This action aims to support the implementation of 11 LAPAs in critical districts and municipalities (one per province, including Maputo City) with the potential to benefit more than 4 million inhabitants of these districts and municipalities.

1.4 OBJECTIVES AND EXPECTED RESULTS

Supporting the implementation of Local Adaptation Plans (LAPAs) will entail, among others, the following:

(i) Training of local governments to prioritize climate actions in their development plans;

(ii) Training of local technicians (districts and municipalities) in the implementation and monitoring of climate action projects;

(iii) Training of local communities through existing local bodies or local adaptation committees to be established;

(iv) Provision of resources to projects identified in the LAP with a view to implementing concrete vulnerability reduction activities;

(v) Establishing linkage mechanisms between LAP implementation actions with other local or national or regional initiatives with a view to creating synergies and increasing the impact of interventions.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Adaptation, in response to current climate change, is reducing climate risks and vulnerability primarily through adjustment of existing systems. Many adaptation options exist and are used to help manage the projected impacts of climate change, but their implementation depends on the capacity and effectiveness of governance and decision-making processes. These and other enabling conditions can also support climate resilient development. The LAPs are primarily focused on reducing vulnerability and increasing the adaptive capacity of communities. Achieving the effective implementation of the LAPs would therefore mean managing to increase local capacities to promote sustainable and climate-resilient local development, thereby reducing losses and damages associated with extreme weather events. Additionally, the implementation of this action has the potential to contribute to the achievement of several SDGs, but particularly SDG 13 on action against climate change. It also ensures that the country is considering priority 2 of the Sendai Framework for DRR.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities to be carried out in this action are:

(i) Training of technicians and district governments on public and financial management systems;

(ii) Financing of local adaptation plans;

(iii) Training of local adaptation committees and other grassroots community organizations to implement adaptation actions;
(iv) Establishing mechanisms for linking and exchanging experiences with other adaptation initiatives at local, regional and national levels.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The implementation of Local Adaptation Plans is the responsibility of local governments (district and municipal) with the collaboration of the respective local development partners (private, civil society) and local communities, through local adaptation committees or other local grassroots organizations that prove to be relevant for climate change adaption.

3. ESTIMATED BUDGET

This action is budgeted at approx. USD 8,800,000, estimated within the scope of the activities of Mozambique's updated NDC, the source of information of this NAP's strategic actions budget.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action must have a nation-wide coverage and be implemented between 2023 and 2030.

7. RESILIENCE MECHANISMS FOR URBAN AREAS AND OTHER SETTLEMENTS DEVELOPED

Preparation and implementation of climate change resilient urbanization plans.

PROJECT TITLE

Climate resilience based on an integrated and community approach in the south, center and north region of the country.

SUMMARY

Brief description of proposed actions

The main urban centers of the country, namely the cities of Maputo, Matola, Beira, Quelimane, Pemba and Inhambane

are located in the coastal zones and have questionable territorial planning plans, which makes the populations living in these centers and their socioeconomic infrastructure highly vulnerable to weather events. As proof of this, these cities were successively hit between 2019 and 2022 by cyclones Idai, Kenneth, Eloise, Ana and Gombe. Cyclone Idai, a Category 2 cyclone, was the deadliest storm ever to hit Africa and the biggest humanitarian disaster of 2019, causing 1300 deaths across Southeast Africa. In Mozambique, Cyclone Idai resulted in 603 deaths, more than 400,000 people were displaced, and 1.8 million people were affected. Furthermore, this cyclone caused the destruction of 700,000 hectares of agricultural crops, and more than a billion US dollars in damage[24] .

Due to the high risk of climatic events to these urban centers, betting on mechanisms that guarantee the resilience of these areas is crucial. To this end, actions that include urban planning, transport, sanitation (supply of drinking water, sanitary sewage, urban cleaning, management of urban solid waste, drainage and management of rainwater), housing and other infrastructure (roads, bridges, irrigation, electricity transmission lines, urban ports) are essential components to ensure greater resilience and sustainability of urban centers.

Other preponderant actions to ensure the resilience of urban centers consist of greater capacity for preparation and innovation. The tense and bitter experiences of the past are what guide the best preparation and innovation in urban centers.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

The proximity to the coast of the country's main urban centers means that these urban areas are recurrently affected by storms, cyclones and tropical depressions. Additionally, the risk of flooding from sea water resulting from sea level rise in these urban centers is high. The high susceptibility of these urban centers combined with poor urban planning, the questionable quality of urban infrastructure and greater population density make them severely affected by the impacts of climatic events mainly related to loss of human lives and property of urban populations, infrastructure, human settlements, contracting diseases related to poor health, worsening poverty. To mitigate these negative impacts, actions that ensure greater resilience of these centers are necessary.

Ensuring the resilience of urban centers and other settlements is an exercise that involves all elements and groups of society that are found in cities.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

The implementation of this activity will ensure that the country's urban centers are not severely affected and impacted by adverse weather events. In this way, the need for reconstruction of these urban centers after the occurrence of climatic extremes will be avoided or reduced, as the socioeconomic and environmental damages of climatic events will be low. Experiences in planning for resilient[25] cities reveal that early resilient planning of urban settlements, designing infrastructure resilient to climate hazards, and organization of preparedness teams for the implementation of urban emergency plans can significantly reduce losses and damages associated with the occurrence of extreme weather phenomena. Thus, this action aims to introduce urban resilience planning using tools such as CityRAP (city resilience action planning tool).

In addition, this action contributes to the cities presenting progressive infrastructural, economic and social growth, as well as the preservation of the urban environment so that it is cleaner and healthier. It also ensures that urban areas are safe, attractive and sustainable.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

Ensuring the resilience of urban centers and other settlements is an exercise that involves several actors from the various development sectors, but municipalities play a preponderant and leading role, with the support of all ministries, the private sector, cooperation partners and urban communities from all social and cultural groups. Implementing this action is reducing negative surprises when a climate disaster occurs. The main beneficiaries of this action are the populations residing in coastal cities, estimated at more than 10 million inhabitants, with a focus on informal settlements, but also all investments in urban infrastructure in these cities, including industrial parks, public works, water supply systems, electricity and communications.

1.4 OBJECTIVES AND EXPECTED RESULTS

Investing in urban resilience and other settlements is to ensure:

(i) Better planning, territorial organization and robustness of the various urban infrastructures that include buildings, housing, transport, telecommunications, distribution of energy and water, sanitation, among others, considering climate events and consequently reduce its destructive effect.

(ii) The construction of cities that comply with established standards and regulations to ensure greater security of infrastructures.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Future human vulnerability will continue to be concentrated where the capacities of local, municipal and national governments, communities and the private sector are least able to provide infrastructure and basic services. Under the current trend of rapid urbanization, human vulnerability will also be concentrated in informal settlements and rapidly growing smaller settlements. The additionality of considering urban resilience in other settlements is to avoid recurrent setbacks resulting from their destruction whenever climate disasters occur, especially in a context in which these climate events tend to be more frequent and intense. The destruction of urban infrastructure often leads to consequences such as job losses, increased delinquency, insecurity resulting from the loss of property and assets. Urban actions such as waste management have potential for mitigation, mainly the reduction of methane emissions produced by municipal waste. The implementation of this action has the potential to contribute to SDG 11 to ensure resilient, sustainable and safe cities and communities, as well as contributing to the achievement of SDG 9 relating to industrialization, innovation and development of quality and resilient infrastructures. On the other hand, it ensures improved preparedness, response, recovery and reconstruction of urban centers, priority 4 of the Sendai Framework for Disaster Risk Reduction (DRR).

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities to be implemented to ensure the resilience of urban and other settlements are:

(i) Ensuring that all investments, especially public ones, are climate proof;

(ii) Mapping zones which are highly prone to climate disasters;

(iii) Preparing urban resilience plans for coastal cities (Maputo, Matola, Beira, Inhambane, Quelimane, Pemba);

(iv) Training leaders and technicians of municipalities and local governments in the implementation of urban resilience plans;

(v) Preparing and/or updating and disseminating legal and strategic instruments that guide the construction of all government, private sector and community infrastructures in general, given the current reality of climate change.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

Urban and other settlements resilience must be led by municipalities and local governments and its implementation should consider all development sectors at all levels, from government entities, the private sector and the general community. A strategic partner in urban resilience planning is UNHabitat, which advises, trains and provides technical support to municipalities and local governments in the planning and implementation of urban resilience plans. Additionally, the involvement of the UNDP, CDF, World Bank, FCDO and Sweden is highlighted.

3. ESTIMATED BUDGET

The projected budget is based on the baseline activities of Mozambique's updated NDC and is estimated atUSD9,000,000.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action shall focus on the main urban centers in the country, which present greater risk to climatic events, namely Beira, Maputo, Matola, Quelimane, Pemba, Inhambane and Xai-Xai. This action shall be implemented between 2023 and 2030.

8. MORE RESILIENT AGRICULTURE

Productivity (alternatives to shifting cultivation, conservation agriculture, agroforestry systems), reduction of post-harvest losses (storage and processing, value chains), pests and diseases.

PROJECT TITLE

Increased agricultural production capacity in the context of climate change and nature conservation.

SUMMARY

Brief description of proposed actions

Agriculture is the largest economic activity in Mozambique and contributes about 24% of GDP, guarantees food security, job creation, alleviation and fight against poverty. Despite the foregoing, agriculture is mainly carried out in rudimentary ways, in a rain-fed system and without improved inputs. Given the predominance of shifting cultivation in the country and the rapid growth of the Mozambican population, which is projected to double (60 million) by 2030[25], the pressure on the agriculture sector to produce more food will increase. This will result in shorter fallow cycles, which will lead to reduced soil fertility as well as soil and environmental degradation and erosion (INGC, 2009). On the other hand, the weak infrastructure to support agriculture (e.g. irrigation systems, access roads for the transport and disposal of products, storage systems and processing industry) places Mozambican agriculture among the most vulnerable to extreme weather events. Climate change creates the potential for the emergence of new agricultural pests and diseases of economic importance. For example, the emergence and spread of fruit flies and corn stem borers, with enormous consequences for the economy and food security, have been linked to the climate change. Faced with this reality, resilient agriculture is mandatory. Resilient agriculture implies using short-cycle and high-yielding varieties resistant to drought, pests and salinity environments; investing in irrigation systems, adopting agroforestry systems, using bio-fertilizers and nitrogen-fixing crops, and integrating biological control. Part of these techniques (e.g. use of improved inputs, agroforestry systems) are already being implemented in the country by some programs such as SUSTENTA, however, the challenges of spreading these techniques throughout the country still prevail due to the environmental and agricultural challenges faced in each specific region.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Agriculture is the very important sector and the basis of the country's economy and is predominantly practiced in the itinerant regime and very dependent on the rainfall regime. In the current context of intensification and increase in the frequency of droughts, mainly in the southern regions of the country, including the increase in floods in the central regions of the country and along the banks of the main river basins as a result of the excessive rainfall that is felt, the loss of agricultural production as a result of extensive droughts, delayed onset of the rainy season and flooding, the salinity of soils in coastal areas is recurrent. As an example, Cyclone Idai is reported to have affected over 700,000 hectares of agricultural land and caused losses of US$258 million in destroyed crops.

Faced with this scenario of high adversity imposed by climate change, more resilient agricultural practices (crops tolerant to drought and saline soils, use of short-cycle crops, installation of irrigation systems using renewable energies, agro-forestry systems, avoiding the use of fire for openings of new fields of cultivation) are the best solution to soften the socioeconomic impact and worsening of poverty, mainly in rural areas where agriculture is the main basis of subsistence and source of income for these environmental extremes. Furthermore, resilient agriculture can help to avoid continued and accelerated deforestation and land degradation in response to the continued and accelerated growth of the Mozambican population.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Resilient agriculture serves as an opportunity to take a step forward in overcoming the historical challenges that plague this sector in the country, as well as being an essential step to face the current reality of climate change. Resilient agriculture makes it possible to: (i) minimize the negative impact of adverse weather events on rural communities and avoid compromising sustainable development objectives, particularly those related to poverty eradication and food security; (ii) the intensification of agriculture and thus alleviate the problems of soil degradation, (ii) solve the problems of low yields that characterize our cultivation systems; (iii) promotes the conservation of agricultural ecosystems; (iv) avoid the situation of despair and food insecurity of families during the occurrence of

bad weather; (v) guarantee the sustainability of agricultural systems by adopting practices that are environmentally friendly, less polluting and with low forest carbon emissions. While women represent a significant proportion of workforce in agriculture, their lack of control over assets, land and resources puts them in a vulnerable situation against the risks caused by climate change.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The Ministry of Agriculture and Rural Development (MADER) and farmers are key players in this action. MADER takes part in the coordination, articulation of implementation, mobilization and management of funds, search and transfer of technologies, facilitation of access and provision of improved inputs. Farmers are fundamentally involved in adopting and implementing resilient farming practices. It is recognized that these two actors do not complete the chain and there are other important parties such as the private sector that generally guarantee the commercialization of the intended inputs. There are consumers and exporters who participate in the production utilization component. Resilient agricultural practices generally lack technology and high investment in this regard. Cooperation partners have been important in providing funds for access to these innovative practices. It is estimated that more than 80% of the Mozambican population practices subsistence agriculture, with women representing a greater percentage in this practice and producing most of the food consumed in the country and various agricultural commodities for the international market.

1.4 OBJECTIVES AND EXPECTED RESULTS

The implementation of resilient agriculture aims to achieve the following objectives:

(i) Availability of suitable technologies and inputs for climate change;

(ii) Implementation of resilient blue economy throughout the country;

(iii) Implementation of improved technologies that improve the productive capacity and conditions of the agricultural ecosystem over time, such as agroforestry systems and other conservation agriculture practices;

(iv) Integration of seed production and storage into agricultural production;

(v) Diffusion of improved irrigation systems and the adoption of renewable energies to supply irrigation systems;
(vi) Reinforcement of equitable and sustainable agriculture techniques and approaches.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Resilient agriculture comes to solve the recurring problems of loss of agricultural production, despair of families, food insecurity whenever there are droughts, floods, rainy season delay, and outbreak of pests, among other adversities related to climate change.

On the other hand, the implementation of resilient agriculture will help the government and cooperation partners to be able to incorporate the aid package for communities in situations of hunger and food insecurity.

In addition, resilient agriculture will reduce the high rates of soil and environmental degradation resulting from current shifting farming practices, and therefore also contribute to mitigation through carbon storage in agricultural ecosystems.

It is essential to emphasize that with this action, the country is taking a step towards SDG 1 related to the eradication of poverty, SDG 2 - eradication of hunger, SDG 12 - sustainable production and consumption and SDG 13 - climate action to combat and mitigate the impacts of climate change. It also allows the achievement of priority 3 of the Sendai Framework for DRR, which has to do with the need to carry out public and private investment for the prevention and reduction of disaster risk.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The implementation of this action requires the following activities:
(i) Availability of suitable technologies and inputs for climate change;
(ii) Expansion of electrical networks and improvement of energy quality to make agricultural enterprises viable and stimulate investments in the six agricultural development corridors;
(iii) Diffusion of improved technologies for natural resources: agroforestry systems;
(iv) Incentive to seed production and conservation: Implementation of action plan for seed production

and conservation and promotion of low-cost grain and seed storage systems, contained in the Technological Adaptation Action Plan for Agriculture;
(v) Dissemination of improved technologies for conservation agriculture and livestock;
(vi) Dissemination of improved irrigation technologies;
(vii) Dissemination of improved livestock technologies;
(viii) Promotion of conservation agriculture/climate--smart agriculture for fodder and food production;
(ix) Promotion of the use of integrated agroforestry systems for the recovery of areas degraded by the shifting cultivation;
(x) Promotion of methane use from rice cultivation systems for energy production / improved low-emission rice production systems;
(xi) Promotion of the use of renewable energy for irrigation / water pumping systems;
(xii) Prevention of wildfires associated with shifting cultivation;
(xiii) Ensure women have access to land (land use and benefit deed), goods and access to credit;
(xiv) Training and empowerment of women in technology and adaptation solutions;
(xv) Ensure oversight of problems relating to gender inequalities in the agricultural sector.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The Ministry of Agriculture and Rural Development (MADER) is the key institution that must lead the implementation of this strategic action. But there are some practices that should be implemented in close cooperation with the Ministry of Land and Environment (MTA) (e.g. the implementation of agroforestry systems), Ministry of Mineral Resources and Energy (MIREME) and the Ministry of Public Works, Housing and Water Resources (MOPHRH) (e.g.: the implementation of irrigation systems using renewable energies). The contribution of cooperation partners, NGOs and the private sector is equally relevant.

3. EXPECTED BUDGET

The projected budget is based on the baseline of Mozambique's updated NDC activities and is estimated at USD415,651,532.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

Agriculture is the livelihood of the majority of Mozambican population and is practiced throughout the country. Therefore, this action must be implemented throughout the country, considering the variations in the agro-ecological potential of the country. This action shall be implemented from 2023 to 2030.

9. STRENGTHENED FOOD AND NUTRITIONAL SAFETY

Availability, access, use, and stability of supply (including food preferences, nutritional value and positive eating and consumption behaviors).

PROJECT TITLE

Food and nutrition security as a step towards the well-being and development of Mozambique.

SUMMARY

Brief description of proposed actions

Food and nutrition security occur when all people have permanent physical, social and economic access to nutritious food in sufficient quantity to meet their nutritional needs and food preferences, in order to ensure an active and healthy life. To ensure food and nutritional security, it is necessary to ensure the production, transport, storage, distribution, access and preferential consumption of adequate food with nutritional value. In Mozambique, more than 50% of households live in a situation of food insecurity. Children are the most affected group by this problem, where 38% of them in the country live with chronic malnutrition (IOF 2019/2020). The country has been struggling with food insecurity for decades, yet this problem has remained unchanged over the last 15 years4. Among the various strategies and policies that the country has designed to deal with this problem, focus goes to the first Food Security and Nutrition Strategy (ESAN) established in 1996 (with the current version III to be revised), the Agricultural Policy and Implementation Strategy (PAEI), the inclusion of this issue in the Government's five-year programs, in the Sustainable Development Goals (SDG), in the Multi-sectoral Action Plan for the Reduction of Chronic Malnutrition (PAMRDC) and in the Action Plans for the Reduction of Absolute Poverty (PARPA). Despite these efforts, the challenges are still huge in the country because there is a number of factors that affect food and nutrition security, which include the existence of high waste in the production chain, severe weather events (floods, droughts, cyclones), instability and population displacement due to conflicts, global fluctuations in commodity prices and supply chains, changes in mandates and poor coordination between sectors, limited access to food production, processing and preservation technologies, among other challenges. In a context of worsening extreme weather

events that could lead to reduced agricultural harvests and rapid population growth in the country, ensuring production, distribution and food access to guarantee food and nutritional security is vital to ensure people's health and well-being, the achievement of the country's development and economic growth and greater resilience of communities to climatic, political and economic adversities.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Food and nutrition insecurity is a priority problem for the nations for they bring with them irreversible socioeconomic impacts that can affect the entire nation and compromise and set back the development, stability and economic growth of a country, continent and globe. Food and nutrition insecurity reduce the GDP's productive capacity, reduces labor productivity, people's life expectancy, and it can lead communities to engage in criminal practices, wars, sexual exploitation, child labor, among other illicit and conflicting situations, which can make people become fragile and conducive to catching illnesses and aggravate the impact of climate change.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Investing in food and nutrition security in the country would help to reduce the current extremely high levels of food insecurity and chronic malnutrition that mainly affect children under 5 years of age, particularly in the provinces of Nampula, Cabo Delgado, Niassa and Zambézia where the situation is more intense as 43-47% of children living in these provinces are short height for their age.

Food and nutrition security help to avoid problems related to hunger and malnutrition, which include: delayed development and growth of children, increased risk of infant mortality, inequalities in human development, school absenteeism, increased risk of diseases related to malnutrition such as anemia, gastrointestinal problems, reduction of the impact of chronic diseases on chronically ill people, avoiding despair among the households and the reduction of labor productivity. The high levels of chronic malnutrition have a direct impact on economic development and the Government's response capacity.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

Given that food and nutrition security is a serious problem that affects vulnerable groups made up of children, the elderly, the disabled, pregnant women and people suffering from chronic diseases, living in situations of extreme poverty, this action must pay special attention to these groups. Since this action has three main components (food production, access and consumption), its implementation involves different actors in each of these phases, who lead the process, although in some cases there may be actors who are involved in more than one phase. At the central level, the Ministry of Agriculture and Rural Development and the Ministry of Sea, Inland Waters and Fisheries participate to ensure sufficient quantity and quality of food production, the Ministry of Industry and Commerce (MIC) and the Ministry of Transport and Communications (MTC) to lead the processing, distribution and marketing of food, and the Ministry of Health (MISAU) to promote nutritious and safe consumption and use practices. The Technical Secretariat for Food and Nutrition Security (SETSAN), based at the Ministry of Agriculture and Rural Development (MADER), is the lead entity to facilitate multisectoral actions at national, provincial and district levels to address the issue of food insecurity and malnutrition.

These actors alone are not capable of guaranteeing food and nutrition security, which is why they need the collaboration of other public sectors (Education, Gender and Social Action), as well as food producers and distributors, academia and other research institutions, civil society and cooperation partners.

1.4 OBJECTIVES AND EXPECTED RESULTS

The implementation of this action allows the achievement of the following results:

(i) Implementation of sustainable and nutritious food production, processing and distribution practices;

(ii) Improvement of people's diet, health and well-being through the integration of essential and healthy foods, rich in nutrients, and through the promotion of healthy eating and consumption behaviors;

(iii) Transformation of agricultural production systems that are sensitive to nutrition, which will allow for greater investments, reduction of waste in the production chain, and resilience of the agricultural sector and people against climatic, political and economic adversities, with quality production;

(iv) Combating inequalities in the access to nutritious food, particularly among vulnerable groups that include children, pregnant women, the elderly, the disabled, the sick and individuals living in extreme poverty;
(v) Design and implementation of consolidated policies that guarantee that food reaches the various social groups in a stable and accessible way and contributes to their well-being and improvement of their health.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Ensuring food and nutrition security brings the following additional features:
(i) Ensuring that food and nutrition are a fundamental human right for people to live a life of dignity;
(ii) Ensuring the construction of healthy nations that will use their health to contribute to the various sectors of development by providing their physical and intellectual manpower;
(iii) Reducing people's vulnerability to engage in criminal practices, conflicts, wars, situations of extreme poverty, begging, early mortality, inequality and exploitation of vulnerable groups (women, children, elderly and disabled and poor);
(iv) Ensuring construction of resilient societies to various adversities that include diseases, epidemics, pandemics, economic shocks and climate change events;
(v) Ensuring the achievement of sustainable development objectives, international, regional and national policies and strategies related to combating and eradicating poverty, zero hunger, healthy people, reducing the vulnerability of disadvantaged groups and reducing socioeconomic inequalities between people, communities and nations.
(vi) Contributing to the achievement of SDG 2 on eradicating hunger, SDG 10 on reducing inequalities and SDG 13 on climate action.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities of this action include:
(i) Ensuring the availability of production inputs for subsistence farmers and promote diversified production;
(ii) Intensifying actions that promote the production

of adequate, nutritious and high-quality food (rich in calories, fatty acids, proteins, vitamins and minerals) is an essential component to ensure a balanced diet;

(iii) Ensuring access to food and fair distribution of income and food at the national level and food assistance to the neediest populations;

(iv) Ensuring stable access to nutritious food at various levels (individual, family and social);

(v) Ensuring better processing and conservation of food through the dissemination of food preservation practices during the post-harvest period at the household level;

(vi) Strengthening the monitoring of food product market operations, particularly in remote regions, in order to assure access to food in these regions;

(vii) Improvement of access routes, prioritizing the connection between the production and consumption poles in order to improve access to food;

(viii) Capacity building of households in food practices (especially of young children), adequate consumption of food and drink (sufficient quality, quantity and frequency) which is vital for the growth and maintenance of the health of all family members.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

Food and nutrition security has four main dimensions, namely availability, accessibility, use and stability. Due to the complexity of this action, several actors are responsible for its implementation. SETSAN is the critical platform and is the entity that leads and addresses the complexity and promotes, coordinates, plans and monitors multisectoral food and nutrition security interventions.

The food production component should be led by the Ministry of Agriculture and Rural Development (MADER) and supported by the Ministry of the Sea, Inland Waters and Fisheries (MIMAIP).

Food access should be headed by the Ministry of Industry and Commerce (MIC) and the Ministry of Transport and Communication (MTC).

The Ministry of Health (MISAU) has a crucial role in ensuring the consumption and effective use of food.

In addition to these actors identified to lead each of the dimensions of food and nutrition security, there are other important actors in this exercise, which include: all ministries that are members of the National Council for Food and Nutritional Security (CONSAN); provincial and district

governments, the Mozambican Agricultural Research Institute (IIAM); multilateral and bilateral development and cooperation partners such as FAO, UNICEF, the Chinese and Dutch Governments, JICA, Development Banks, key donors; associations of producers, community authorities, civil society, producers, traders and consumers.

3. ESTIMATED BUDGET

The projected budget is based on the baseline of Mozambique's NDC updated activities, and is estimated at USD47,133,013.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action shall be prioritized in the central and northern regions of the country, where the rates of food and nutritional insecurity are extremely high. It is an action that shall be implemented between 2023 and 2030.

10. RESILIENT PUBLIC INFRASTRUCTURES

Roads and bridges, health centers and schools.

PROJECT TITLE

Building robustness and resilience in Mozambique public infrastructure

SUMMARY

Brief description of proposed actions

Mozambique is one of the most vulnerable countries to weather events, ranking third among the most exposed African countries to weather events. This high exposure and vulnerability make the country recurrently affected by bad weather. Among other damages, when these storms arrive, they totally or partially destroy public and private infrastructure. From 2019 to the present alone, weather events have destroyed 76[27] bridges, 32,9334 school infrastructures, and compromised about 47774 km of road. When these destructions occur, not only the Mozambican government is affected, but the whole of society as well as the economic growth and development of the country. For example, the bridge over the Revúbuè river, in the city of Tete,

was rehabilitated in 2019 after cyclone IDAI in an investment that cost 3.7 million dollars and this infrastructure collapsed again in 2022 during the occurrence of Gombe storm, which had implications on the State budget and the whole of society, as days went by without transitability on the road. When IDAI occurred, around 5700004 consumers were left without access to electricity and the damage on electrical infrastructures was estimated at around USD 133.5 million. During the passage of the same cyclone, 944 health units were destroyed, causing economic losses to the health sector of around USD 81,486,4044 and additional USD 12,074,398 from the reconstruction process.

The Government, aware of the negative implications and setbacks, has been making efforts to increase the resilience of the country's public infrastructure. One of the first relevant efforts was adopted in the 2000s after the catastrophic floods that devastated southern Mozambique between February and March, 2000. Still within the scope of the same efforts, in 2006 the Government approved the Master Plan for the Prevention and Mitigation of Natural Disasters (PDPMCN) for the period 2006 to 2016. In 2017, the Government updated the previous Plan in order to adapt it to the current reality, through the creation of Disaster Risk Reduction Master Plan for 2017-2030. Still in this effort of providing resilience in public infrastructures and assuring better prevention and response of public infrastructures to climatic events, in 2012 the Government integrated the SADC Infrastructure Master Plan, whose purpose is to define the requirements of regional infrastructures and the conditions that facilitate building essential infrastructure in the areas of energy, water, transport, tourism, meteorology and telecommunications by 2027.

These infrastructures should enable the SADC region to achieve regional integration, economic growth and poverty eradication. In addition to these initiatives, there are other initiatives in the country that are implemented in cooperation with international partners, such as the Mozambique Cities and Climate Change Project, financed by a US$120 million credit from the International Development Association (IDA).

Although there are numerous efforts in the country to increase the resilience of public infrastructure to better respond to climate events, there is still a lot of work ahead of construction, rehabilitation and adaptation of basic social and economic infrastructure such as bridges, roads, ports, health centers, educational facilities, water supply and

sewage systems, telecommunication systems and power systems. One of the most important steps for the effective implementation of this action is the definition of critical infrastructures whose resilience guarantee is extremely mandatory so as not to compromise the economic growth and development of the country.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

The resilience of public infrastructure is essential to ensure the provision of basic social services, economic growth and development in the country, the southern region and the continent in general. In the case of Mozambique, investing in resilience is mandatory given the country's greater vulnerability and exposure to climate events and because it has basic social infrastructure (roads, bridges, public buildings) that were old and built in colonial times or shortly after independence. Additionally, even the relatively recent buildings when they were built, the country was not frequently and severely affected by climatic events, hence aspects of infrastructural resilience were not considered, so these infrastructures are easily destroyed when climatic adversities occur. The recurrent destruction of these infrastructures limits the country from achieving the international commitments it has assumed regarding Sustainable Development, the Millennium Development Goals, poverty eradication, among others. Likewise, these destructions have a negative impact on society as a whole because they are left in a situation of lack of essential social services for their survival and development related to access to health, mobility, transport of goods and agricultural production, access to electricity, access to drinking water, sanitation and telecommunication services.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

The destruction of infrastructure produces adverse impacts not only on the covered area, as usually it negatively affects the capacity to recover from climatic shocks and hinders the sustainable development and economic growth of a place, nation or region, including in areas not directly affected. Additionally, the lack of resilient infrastructure can increase inequality between sites and communities across a region and country. So, with resilience guarantee for the

country's public infrastructures, these socioeconomic and development impacts will be mitigated and avoided. On the other hand, it would ease the desperation and stress of people affected by climate shocks due to the lack of basic services and would prevent the government from taking decisions without due caution due to being in emergency situations, as well as allowing the country to prepare for a better response from weather adversities.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

This action mainly involves and benefits government entities, cooperation partners, the private sector and society in general. The main government entities involved include the Ministry of Public Works, Housing and Water Resources (MOPHRH), the Provincial Directorates of Public Works, Housing and Water Resources (DPOPHRH), the District Planning and Infrastructure Services (SDPI) and the municipal councils.

In the private sector, contractors and inspectors of public works stand out.

Among the cooperation partners, we can highlight some that are already implementing this action in the country, such as the World Bank, the International Development Association (IDA), UN-habitat, among others with which the country has bilateral and financing agreements.

The implementation of this action benefits the public sector at all levels (central, provincial, district and local) as they will stop mobilizing funds for the reconstruction of the same infrastructures. It benefits cooperation partners, as they will not be disbursing funds for the rehabilitation and reconstruction of very same infrastructures. Society in general benefits because it will not experience moments of shock and stress due to the lack of basic social services.

1.4 OBJECTIVES AND EXPECTED RESULTS

The following are the objectives and expected results for the implementation of infrastructure resilience:

(i) Consolidation of public investment processes, territorial planning and protection of public infrastructures against climatic events;

(ii) Reducing losses and damage to vital infrastructures, as well as preventing the environment from new disaster risks by increasing infrastructure resilience in the face of extreme and recurrent weather events;

(iii) The country will take a proactive approach of

preparation and response to weather events and reduction of adverse impact of climate change on the country's public infrastructure.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Infrastructure resilience means the capacity to plan, prepare and adapt to climatic adversities that tend to increase in frequency and intensity over time, especially in the context of Mozambique, which is in a situation of strong exposure to weather events. The implementation of this measure will prevent the country from being burdened by extremely high costs of recovery and reconstruction of infrastructure after the occurrence of climatic adversities.

Additionally, it will prevent the country's GDP from experiencing low moments due to the destruction of vital infrastructures, given that some public infrastructures that guarantee vital public services such as telecommunication and transport are paralyzed and have a negative impact on the country's GDP.

Ensuring the resilience of public infrastructure leads us to achieve SDG 9 related to innovation and development of quality and sustainable infrastructure and SDG 13, which promotes the need to adopt measures to combat climate change and its impacts.

This action also ensures that the country is considering priority 3 of the Sendai Framework for Disaster Risk Reduction, which encourages the adoption of structural and non-structural measures to reduce the risk of disasters and ensure better response and resilience to climate events.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

To ensure the resilience of public infrastructure, the country needs to carry out the following activities:

(i) Do the mapping of disaster-prone infrastructures and assess the risk in order to identify high-risk infrastructures based on their vulnerability and exposure, whose resilience is essential in order not to set back the development and economic growth of the country;

(ii) Do the necessary investment during the construction and rehabilitation of public infrastructure, considering the current reality of climate change;

(iii) Design schemes for an effective management of **public infrastructures to ensure their greater durability and thus confer resilience;**

(iv) Since building resilient infrastructure is generally costly, secure financial arrangements to increase the resilience of economic and social infrastructure, which are critical and vital to the functioning of the country;

(v) Contract climate insurance to insure the most vital public infrastructure and those prone to climate disasters;

(vi) Ensure greater supervision and accountability of contractors that build public infrastructures so they build infrastructures with the desired and expected quality and durability;

(vii) Increase information exchange and partnerships between stakeholders (ministerial sectors) on the availability of information on risk levels of public infrastructure.

(viii) Ensure compliance with resilience rules in the reconstruction and rehabilitation of all infrastructure affected by climate disasters.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

This action of ensuring resilience of public infrastructure must be led by the Ministry of Public Works, Housing and Water Resources, which has the mandate to regulate, supervise and inspect the construction process of public infrastructure, as well as assure the quality of public works in the country.

Ensuring resilience of public infrastructure is a process that involves high costs, which is why the country must rely on the various cooperation partners for the materialization of this action.

3. ESTIMATED BUDGET

This action is budgeted at 8,662,500, within the scope of Mozambique's updated NDC activities, the source of information of this NAPs strategic actions budget.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

The public infrastructures of the various regions of the country are disaster-prone and regularly affected by climate change events, particularly floods, cyclones, windstorms and storms. For this reason, this action must be

implemented on a national scale and considering the time horizon of 2023 and 2030.

11. MANAGEMENT OF WATER RESOURCES, WATER SUPPLY AND SANITATION

Reinforcing the ability to capture, store and build water supply infrastructure for human and animal consumption, irrigation, etc. Water saving, water reuse and irrigation systems.

PROJECT TITLE

Building a robust and resilient water resources management system.

SUMMARY

Brief description of proposed actions

Mozambique has a diversity and richness of water resources. In the country, there are 104 main river basins with an extension that varies between about 1000 km2 to 100 thousand km2. The Zambezi and Rovuma rivers are the basins that have the largest water catchment areas, with more than 100,000 km2. Most of the main rivers (Maputo, Umbeluzi, Limpopo, and Incomáti Save, Búzi, Pungué, Zambezi, and Rovuma) in the country are shared rivers and originate from neighboring countries. The sharing of these main rivers forces the country to plan the integrated management of the same and to consider the events that can happen beyond national borders, and this exercise makes the sustainable management of these resources a huge challenge for the country. On the other hand, population growth, urban development and climate change are aggravating the problems of water resources pollution, creating problems of water availability in the necessary quantity and quality. Due to the fact that water is a vital resource for life, health, socioeconomic development, poverty eradication, the fight against hunger and the reduction of infant mortality and the reduction of inequalities, it is essential to strengthen the capacity to capture, store and distribute water to human consumption, animals, irrigation, saving and reuse of water in order to guarantee its sustainable management. To carry out this sustainable management, it is necessary to define a set of coordinated actions between the various sectors and stakeholders. The country needs to develop water supply and sanitation infrastructures that are sustainable, safe and resilient to the

risk of climate change, including taking measures to protect public health. - more appropriate structures for rural sanitation and hygiene from the point of view of environmental protection and preservation; develop water safety plans, promote the exploitation and development of deep aquifers as an alternative water supply in areas affected by drought and construction of small water storage infrastructure for human consumption, livestock watering and irrigation, as well as the establishment of an optimal water resources monitoring network.

In 2007 the country prepared a National Strategy for Financial Assistance for the Management of Water Resources, whose main objective is to establish sustainable and adequate management of water resources. Although this step and others have been taken in the country, the challenge of sustainable management of water resources is still a reality, especially in the current context of climate change, accelerated population growth, and disorderly urban expansion.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Water availability is greatly affected by weather conditions. Mozambique's climate is characterized by two seasons, rainy and dry. This seasonal variation in weather results in fluctuations in water availability and presents distinct water resource management challenges; in the rainy season, the country is concerned with managing excess water events (floods and floods) and in the dry season, it is concerned with water scarcity events (extreme drought, delay in the onset of rains).

The management of water resources in Mozambique is further aggravated by the fact that the country shares its main rivers with neighboring countries such as South Africa, Swaziland, Botswana, Zimbabwe Malawi and Tanzania, and because Mozambique is located downstream of these rivers, in the periods of rain the upstream countries release water from their retention systems, which causes catastrophic flood situations. Additionally, disorderly urbanization, poor sanitation and hygiene in rural areas and urban centers, schools and health units, saline intrusion,

low soil water retention capacity, high evapotranspiration rate, deforestation, agricultural production have been factors that contribute to the scarcity of drinking water and pollution of water resources, a fact that further adds to the challenges of water resource management in the country.
Water is a vital resource for human survival. The fluctuation and reduction of its quantity and quality lead to a reduction in people's quality of life and health, a reduction in food production, a lack of drinking water, as well as compromising the development of nations and the stability of the planet and ecosystems. To overcome and alleviate these challenges, the country must ensure the sustainable management of water resources. This sustainable water management will ensure better distribution and use of water, help build climate resilience and alleviate poverty through improved human well-being, livelihoods, food production, ecosystems, industries and growing cities.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Improving access to water supply and sanitation services and ensuring their sustainable management is the achievement of almost all sustainable development goals, especially those related to people's health and well-being, access to drinking water and sanitation, responsible consumption and production, sustainable city and communities, poverty eradication, zero hunger and sustainable agriculture.

Additionally, this action guarantees the economic growth of communities and the country and nations, improves water scarcity problems, ensures that quality water is an available resource for current and future generations, and reduces social inequalities and environmental degradation.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The sustainable management of water resources is an action that involves and benefits various actors at different levels, from government entities, the private sector, cooperation partners and water consumers.

In the country, there are several government entities with different mandates. Among the various existing entities, the National Directorate for Water Supply and Sanitation (DNAAS) and the National Directorate for Water Resources Management (DNGRH) stand out. Both institutions are under the supervision of the Ministry of Public

Works, Housing and Water Resources (MOPHRH). These two institutions are responsible for planning, supervising, monitoring and regulating the distribution and management of water supply and sanitation and water resources in Mozambique.

To ensure the mandate of these two institutions, the Government created the Fund for Investment and Assets of Water Supply (FIPAG) which has the role of supplying water in urban centers (large cities and towns). To ensure water supply and sanitation in urban areas not covered by FIPAG and in small towns, the Government created the Administration of Water Supply and Sanitation Infrastructures (AIAS).

The Government also created the Water Regulation Council (CRA) which is the regulatory body for the urban water and sanitation subsector to ensure the protection of consumer interests. There are also regional water administration entities (ARAs) in the country with the mandate of ensuring the socio-economic management of water resources, supervision of development, conservation and sustainable use of water resources in the hydrographic basins; at the provincial level, the Provincial Directorates of Public Works (DPOP) and the Provincial Infrastructure Services (SPI). At the district level, the District Planning and Infrastructure Services (SDPI) are the arm of the district Government of the Ministry of Public Works, Housing and Water Resources (MOPHRH), responsible for implementing water supply and sanitation activities in rural areas.

1.4 OBJECTIVES AND EXPECTED RESULTS

The sustainable management of water resources and water supply allows the achievement of the following results:
(i) Increased capacity to manage water resources at all levels through the development of small infrastructures for impounding or storing water; and establishment of optimal water resources monitoring network;
(ii) Ensuring robust water supply and sanitation to the urban, peri-urban and rural population and to all economic sectors through the construction of multi-purpose water supply systems, including desalination for arid and semi-arid zones using clean energy sources; development of more appropriate infrastructure construction technologies for rural sanitation from the point of view of environmental protection and preservation; promotion of water safety plans and institutional capacity building for the main actors, and promotion of behavior change based in

the community to change roles and responsibilities and make water, sanitation and hygiene management more equitable;

(iii) Strengthening the technical and institutional capacity of entities involved in the management of water resources and water supply and sanitation, which will contribute to the safe access to water, better planning and monitoring of water supply systems;

(iv) Improve the capture, conservation and use of rainwater through construction of excavated and underground reservoirs, mainly in arid and semi-arid zones;

(v) Construction of agro-hydraulic infrastructures in the main surface courses and small easily maintained dams for the purposes of water supply, irrigation and animal watering;

(vi) Promotion of low water consumption systems and reduction of existing waste in the water distribution network, mainly in urban centers;

(vii) Strengthening the adaptation of semi-arid zones to the periods of water scarcity caused by drought, through increasing the availability of potable water to the vulnerable population through exploration and development of deep aquifers;

(viii) Undertake climate-resilient water, sanitation and hygiene technology assessment;

(ix) Planning and managing climate-resilient water, sanitation and hygiene services;

(x) Prioritization of water resources for water supply, sanitation and hygiene;

(xi) Provision of water and sanitation infrastructure for those schools and health facilities that are resilient to the climate change.

1.5 ADDITIONAL PROPOSED VALUES (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

The sustained management of water resources and access to water supply and sanitation services will lead to the achievement of the main objectives of sustainable development; it will ensure water savings, boost local, regional and national development, ensure the well-being and improvement of the health of beneficiary communities; it will also ensure better and multiple use of water, increase the resistance of communities against climatic shocks, mainly those events related to water, such as drought; it will catapult the

agrarian sector through access to irrigation and watering systems for livestock and human consumption. The implementation of this action also takes us towards achieving SDG 1 - the eradication of poverty and SDG 2 - the eradication of hunger, as the efficient use of water to supply the agricultural sector, SDG 6 - access to drinking water and sanitation, as well as SDG 13 - climate action to combat climate change and its impacts. This action will allow the country to invest and implement actions that ensure better resilience of water resources, which ensures that priority 3 of the Sendai Framework for Disaster Risk Reduction is considered.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities required to ensure the implementation of this action include:

(i) Ensure integration between water and territorial management to prevent territorial development from compromising water resources;

(ii) Creation of a network of multipurpose reservoirs to satisfy different needs (control of flooding, water supply and irrigation, but also ensuring the minimum environmental resources for an ecological water reserve), the construction of dikes to protect against floods, the construction of small dams and water holes to ensure access to water during droughts, all in line with the sustainable management of water resources;

(iii) Institutional capacity building and strengthening of the decentralization of operational management of water resources;

(iv) Development of water resources management plans in river basins;

(v) Installation of floodgates in national dams that still have no gates and construction of new dams from scratch to increase the water storage capacity and reinforce water supply;

(vi) Establishment of an optimal resource monitoring network;

(vii) Exploration and development of deep aquifers as an alternative for water supply in areas affected by drought;

(viii) Construction of multi-purpose water supply systems including desalination for arid and semi-arid zones using clean energy sources;

(ix) Promotion of water security plans and institutional capacity building of the main actors;

(x) Development of small infrastructures for impounding or storing water;
(xi) Development of more appropriate infrastructure construction technologies for rural sanitation from the point of view of environmental protection and preservation.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The implementation of this action at the central level will be led by the Ministry of Public Works (MOPHRH). This Ministry will implement its activities through the National Directorate of Water Supply and Sanitation (DNAAS), which is the entity that guarantees water supply and sanitation, and through the National Directorate of Water Resources Management (DNGRH), which is responsible for managing water resources. For an effective implementation of this action, it is necessary to involve other institutions, including the Water Supply Regulation Council (CRA), FIPAG, AIAS, the Regional Directorates for Water Administration (ARAs), the Provincial Directorates of Public Works (DPOP), District Planning and Infrastructure Services (SDPI) and cooperation partners.

3. ESTIMATED BUDGET

The estimated budget is based on the baseline activities of Mozambique's updated NDC, and is estimated atUSD2,829,772,972.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

The management of water resources is a serious constraint in the country both in the urban and rural context, so this is an action that must cover the whole country and must take place between the period 2023 and 2030.

12. IMPROVED ACCESS TO RENEWABLE ENERGY

Reduction and efficiency of energy from biomass, access to electricity and natural gas, other alternatives including mini-hydro, wind, solar (thermal and photovoltaic).

PROJECT TITLE

Harnessing the country's renewable energy potential.

SUMMARY

Brief description of proposed actions

Sustainable development, economic growth and poverty eradication are dependent on energy. Renewable energies, due to their restorative capacity and the fact that they are clean, do not emit or emit low carbon emissions, as well as guarantee the conservation of natural resources, are seen as an ideal option to face climate change, guarantee access to energy in rural poor communities and other groups in need who do not have access to other more expensive energy sources.

Mozambique has great potential for the development of renewable energies, with a potential of around 23,0264 GW. Out of this potential, 23,000 GW come from solar energy, 19 GW from water sources, 5 GW from wind energy, 2 GW from biomass energy and 0.1 GW from geothermal energy.

From the fact that the country recognizes its great potential and importance of renewable energies, it has made efforts to improve access to these resources. As part of these efforts in 2016 during the COP 22 in Marrakech the country signed a Joint Declaration with the European Union, Norway and 13 Member States to increase cooperation in the Renewable Energy sector and jointly combat the impact that the use of non-renewable energy has on the climate. Other efforts and additional goals were established in the country, such as the commitment to increase access to clean energy by 50% until 2020 in the Government's Five-Year Plan 2015-2019.

The implementation of these efforts and policies to improve access to renewable energies is faced with barriers at an institutional level, which include weak articulation and coordination of actions between key institutions in the sector, a lack of technical capacity and the absence of up-to-date and comprehensive procedures and tools of energy planning. However, these and other barriers should not weaken or set back the efforts of the government and other actors aimed at improving access to renewable energies.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

The country's energy production matrix is composed mainly by six renewable energy sources, specifically solar, water, wind, geothermal, waves and seas and biomass. Effective

exploitation of this energy diversity and guaranteed access is vital in context of the current challenges of global climate change.

In addition, improving access to these different sources of renewable energy in the country will help to solve the challenges of accessing energy in rural areas and for people without the financial strength to access other more expensive energy sources; it will provide a boost for economic growth at all levels from local to national; it will help solve energy access problems related to rapid population and urban growth; it will help diversify income-generating opportunities in communities.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

Strengthening access to renewable energy solves the following problems:

a) It reduces dependence on and use of energy sources that are very harmful to the environment and that contribute to the growing global problem of climate change;

b) It ensures the reduction of the challenges of lack of access to energy in rural areas and with low population density through the use of cheaper, independent and self-sufficient energy supply such as the use of solar energy;

c) It ensures the implementation of investments that will help create local development in regions without access to electricity.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The main actor, at central level, in improving access to renewable energies in the country is the Ministry of Mineral Resources and Energy (MIREME). But given the diversity of renewable energy sources in the country, this mandate is subdivided among various Government institutions, namely: the Electricity of Mozambique (EDM), which has the role of providing quality energy and expanding the capacity of generation and transmission of electricity in the country. There is also the Energy Fund (FUNAE) and the Energy Regulatory Authority (ARENE). The FUNAE's mission is to ensure the development, production and use of various forms of energy at low cost, as well as to promote the conservation and rational and sustainable management of existing energy resources in the country.

Energy Regulatory Authority (ARENE) is the institution that ensures the regulation and supervision of the electricity and liquid fuels' subsectors in order to ensure the

alignment of the energy sector with the best international practices.

In this exercise of improving access to renewable resources, there are many other multilateral, bilateral and financing partners.

From this action, not only the beneficiaries of these renewable energy sources gain, but the whole globe, due to the characteristics of renewable energies, particularly those related to the low emission of greenhouse gases, which avoids the degradation of the environment.

1.4 OBJECTIVES AND EXPECTED RESULTS

The main achievements of the implementation of this action include the promotion of the use of renewable energy sources to boost the socio-economic development of rural and urban communities and the country in general; the diversification of the country's energy matrix and better use of the high potential of the country's solar, water, wind and biomass energy sources; the strengthening of the country's energy matrix by energy sources that are increasingly cheaper in the long term because they demand low maintenance costs; equip the national energy matrix with more independent and autonomous energy sources.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY, AND LOCAL COMMUNITIES, SDGS)

Improving access to renewable energy promotes the use of energy sources without greenhouse gas emissions; it guarantees the sustainable use of natural resources through the use of inexhaustible and clean energy sources; it has less impact on the environment; allows the use of cheap energy sources without high costs in the long term; allows the use and exploitation of modern biomass resources specifically energy crops, agricultural, urban and industrial waste. Improving access to renewable and affordable energy ensures the achievement of SDG 7, as well as SDG 13, which consists of taking actions that help combat climate change and its effects. Additionally, it constitutes an important step towards achieving priority 4 of the Sendai Framework for DRR related to better preparation for effective response to climate events.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

To improve access to renewable energies in the country, the following activities are necessary:

(i) Improved coordination, technical capacity including that of youth for the implementation and monitoring of access to renewable energies and operation and maintenance actions;

(ii) Installation of 50,000 photovoltaic or wind turbine lighting systems in areas without electricity;

(iii) Installation of 5000 solar PV systems for pumping water for domestic, community or public use in isolated (SIE) or mixed (SILE/SIE) areas, including agricultural irrigation and livestock watering;

(iv) Installation of photovoltaic systems or wind turbines to supply 5000 refrigerators for domestic use in homes in areas isolated from the national electricity grid (SIE);

(v) Replacement of 2,500,000 incandescent light bulbs with low consumption light bulbs (LED);

(vi) Sustainable use of biomass energies.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

In institutional terms, the Ministry of Mineral Resources and Energy (MIREME) is the institution responsible for regulating and supervising the energy sector, so the implementation of this action is led by this ministry.

There are also other key institutions, the most relevant being EDM, FUNAE, multilateral and bilateral partners such as the African Development Bank, Arab Development Bank for Africa, Development Bank for Southern Africa, European Investment Bank, World Bank, Islamic Bank Development Agency, European Union, Korea International Cooperation Agency, Swedish International Development Cooperation Agency, German Development Cooperation Agency.

3. ESTIMATED BUDGET

The estimated budget is based on the reference of Mozambique's updated NDC activities, and is estimated at USD1.513.558.478.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action must be implemented on a national level and between the period 2023 and 2030.

13. REDUCED VULNERABILITY OF PEOPLE TO THE TRANSMISSION VECTORS OF DISEASES ASSOCIATED TO THE CLIMATE CHANGE

Water, sanitation and hygiene, urban waste management (domestic, hospital and industrial).

PROJECT TITLE

Strengthening preparedness, responsiveness and resilience of Mozambican communities to climate change diseases.

SUMMARY

Brief description of the proposed action

Higher temperatures tend to extend the amplitude and prolong the seasonality of transmission of diseases caused by vectors and bacteria, especially malaria and cholera. The frequency and intensity of extreme weather events influence the incidence of water-related diseases and pests. Mozambique is among the ten nations in the world most affected by malaria, causing between 44,000 and 67,000 deaths annually in all age groups, however pregnant women and children are the main victims. Despite the fact that Malaria in Mozambique affects all regions of the country, it is really disturbing in the coastal regions. Another health problem in the country is cholera and this health problem is more prevalent in the provinces of Nampula, Tete and Niassa. The northern provinces of the country are affected by repeated[28] outbreaks that often occur after natural or man-made disasters. These and other vector-borne diseases are conditioned by environmental variables such as temperature, humidity and land use patterns. As forecasts of changes in climate patterns show that they will worsen in the coming years, it is necessary for the country to prepare to reduce people's vulnerability to these diseases.

On the other hand, these diseases are a concern due to their fatality and the high pressure they place on the national health system. At the moment, the country has developed actions that include vaccination to prevent the development of serious forms of these diseases in patients, quick access to diagnostic and treatment services at community level, awareness campaigns have been developed for the prevention of these diseases through the promotion of the use of mosquito nets to prevent cases of malaria

and adoption of personal hygiene and food hygiene practices to prevent diarrhea and cholera.

Despite the fact that these efforts are achieving positive results in recent years (e.g. reduction of 19% from 2020-2019, and 24% from 2020-2021)[29] there are still many challenges. These challenges may continue, with the risk of getting worse in the near future if the country does not get ready, with the forecast of continuing changes in climate patterns.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

When we deal with a society in which people are weakened by illnesses, it becomes difficult to achieve local, regional and national economic growth due to the shortage of labour to work in the various development sectors. In a context where projections indicate that climate patterns could favor the occurrence of diseases associated with climate change if the country does not prepare to reduce people's vulnerability to these diseases, in addition to compromising the country's development, our health will suffer additional pressure in a context where the system is already under pressure and fragile, further aggravating inequalities. In this sense, it is necessary to ensure that the population is healthy in order to promote the country's economic development, thus calling for a holistic response through the awareness and necessary action for continuous access to health, education and other social services.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

The reduction of people's vulnerability to diseases associated with climate change means that the growth of the economy in places affected by bad weather does not present setbacks due to lack of labour to work in the various development sectors. Additionally, this action will ensure the implementation of measures to prevent diseases associated with climate change and thus prevent the country from panicking and the collapse of the health system in times of climatic events.

Diseases generally create environments of stress and despair within families, and the implementation of this action will prevent diseases and this negative impact on the social and economic structure of families will be avoided.

On the one hand, it is necessary to ensure that the health system is more resilient and responsive to the shocks and impacts caused by climate change. On the other hand, it is necessary to mobilize health workers to support prevention and response at all levels, from the provincial, district and community levels.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

This action will mainly benefit communities living in urban centers as these regions are highly susceptible to malaria and cholera due to poor environmental health in these areas, which favors the outbreak of these epidemics. People living in extreme poverty, children, pregnant women, the disabled and the elderly are priority groups in this action not just from the fact that they are more vulnerable to these diseases due to lack of access to drinking water and means of prevention, but because they are a group that they also have a higher risk of fatality when contracting these diseases due to their poor capacity for rapid access to diagnosis and treatment. However, a focus on all population groups is recommended, the issue of productivity and general well-being must be considered.

1.4 OBJECTIVES AND EXPECTED RESULTS

The implementation of this action allows the achievement of the following results:

(i) Reinforcing the capacity to prevent and control the spread of vector diseases through the correct mapping of their distribution and mobility and the improvement of vector control measures and behaviors linked to aspects of sanitation and hygiene with a focus on community systems for severely affected areas and consider vaccination against cholera and malaria;

(ii) Establishment and reinforcement of a surveillance system and specific control measures on diseases favored by climate change;

(iii) Improved understanding and identification of diseases and conditions exacerbated and caused by climate change and the mapping of their distribution across the country in order to define adequate prevention and combat actions, targeting specific vulnerable population groups, such as children, pregnant mothers and infants, the elderly, people living with HIV-AIDS.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

Prevention is always the best strategy to deal with illnesses. Therefore, by reducing people's vulnerability to diseases related to climate change we would be ensuring that the country saves resources and efforts in assisting these affected patients. These resources would be allocated to other actions in the health sector or to combat other diseases that plague our national health system. This action would ensure even better assistance to people affected by weather events considering that diseases are not the only problems caused by weather events, there are usually other problems such as displacement of families, injuries to people, lack of food and other means of survival.

On the other hand, the implementation of this action will guarantee availability of labour in good health conditions to perform several tasks in several development sectors. Additionally, reducing people's vulnerability is a step towards ensuring SDG 3 related to people's quality health and SDG 13 related to taking actions to combat climate change and its effects. This will ensure that priority 3 of the Sendai Framework DRR, relating to reducing risk and increasing resilience in people, is being viewed as a priority in the country.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities of this action include:

(i) Mapping the distribution and mobility of non-neglected tropical disease vectors;

(ii) Carry out a study on climate change and diseases related to water, sanitation and hygiene (WASH);

(iii) Carry out a study on emerging and re-emerging diseases, including non-neglected tropical diseases;

(iv) Strengthen entomological or vector surveillance and improve surveillance systems and specific control and prevention measures for diseases favored by climate change;

(v) Rehabilitate water, sanitation and hygiene infrastructures in health units, as well as guarantee the budget for operation and maintenance and for environmental cleaning.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

MISAU is the entity that should handle the implementation of this action. However, due to the fact that some diseases such as cholera and malaria are related to access to clean water and poor environmental health MOPH and managers of urban centers must add their contribution.

3. ESTIMATED BUDGET

The estimated budget is based on the reference of Mozambique's updated NDC activities, and is estimated at USD1.248.000.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action should focus on the main urban centers of the country and on the cities located along the coastal zones. This action shall be implemented from 2023 to 2030.

14. OCEANS AND COASTAL PROTECTED AREAS

Resilient tourism development, coastal erosion, rising sea level, saltwater intrusion, mangroves, fisheries (includes aquaculture - storage and processing, value chains); increased fisheries resilience.

PROJECT TITLE

Integrated management of ecosystems in coastal areas.

SUMMARY

Brief description of proposed actions

Mozambique is a country that is bathed to the east by the Indian Ocean and it means that this country has an extensive coastline comprising about 2700 km. Coastal areas in the country cover 10 of the 11 provinces, namely: Cabo Delgado, Niassa, Nampula, Zambézia, Sofala, Inhambane, Gaza, Maputo Province, Maputo City and Tete. Along the coastal areas there is a diversity of ecosystems that include mangroves, swamps, coastal lagoons, dunes, banks and coral reefs, among other ecosystems with a high socioeconomic and environmental contribution. These marine and coastal ecosystems provide various goods and services such as: fish, raw materials, iodine, tourism, cultural services, they are vital for the transport and trade sector due to their ability to connect different destinations. Despite this huge contribution from these regions these are the places where depressions and tropical cyclones form and with the rising sea level driven by climate change these and other weather events are expected to be

more intense in the future. In addition to that, these are favorable places for human habitation and this contributes most of the times to the pollution and contamination of these ecosystems, over-exploitation of resources, destruction of these habitats and coastal erosion. These actions compromise the functionality and sustainability of the oceans and coastal areas. So, in order to ensure better resilience of these ecosystems to climate change and continue to obtain socio-economic, cultural and environmental benefits from these ecosystems, it is necessary to implement ecosystem-based adaptation actions.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

On the one hand, oceans are the basis for international trade due to their ability to ensure the transport of large volumes of cargo at a relatively low cost as compared to other means of transport. On the other hand, coastal areas are the main shelter region for the Mozambican population, with over 60% of the national population and this region makes a great contribution to the main national economy through fishing, which contributes to more than 3% of the GDP and 4% of national exports[30]. The rising sea level, the occurrence of floods in the coastal area and changes in navigability and docking conditions in ports and the over-exploitation of these regions are factors that can bring about various social, economic and environmental constraints and national development. Therefore, the sustainable management of coastal areas is an essential step towards reducing the risk and impacts of rising sea levels, environmental degradation, while safeguarding people and goods.

1.2 PROBLEMS TO BE SOLVED OR GOALS TO BE ACHIEVED

The sustainable management of oceans and coastal areas guarantees better resilience of these ecosystems to climate change, ensures the sustainability of coastal and port activities, the progressive growth of coastal tourism and maintenance of long-term socio-economic and environmental contribution of marine and coastal environments; it also allows the reduction of degrading and polluting factors in marine and coastal ecosystems.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The resilience and sustainable use of marine and coastal ecosystems involves different actors and brings benefits to various elements of society and at all levels. In terms of government actors, this action involves provincial, district, municipal and local governments in regions where these ecosystems exist. Ministry wise, the Ministry of the Sea, Inland Waters and Fisheries (MIMAIP) and the Ministry of Land and Environment (MTA), Ministry of Transport and Communication (MTC) and the Ministry of Culture and Tourism (MICUTUR) have a prominent role in the implementation of this action. The INGD is another institution that has a considerable contribution, given the high vulnerability to the risk of climate events in these regions or ecosystems. The resilience and sustainability of coastal areas and oceans bring gains to these sectors as the activities of these ministry sectors are based on these same ecosystems.

1.4 OBJECTIVES AND EXPECTED RESULTS

With this action, the following results will be achieved:

(i) Development of resilient conservation and coastal protection practices;

(ii Promotion of good practices among operators and tourists, through public-private partnerships, aimed at the resilience of the sector and the conservation of ecosystems;

(iii) Identification and mapping of the main climate risks on resources and coastal, marine and tourist areas;

(iv) Reinforcement of knowledge related to the sustainable use of coastal and marine resources and resilience of these ecosystems.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY AND LOCAL COMMUNITIES, SDGS)

These actions bring an additional contribution because they allow the reduction of high pressure and disorderly use of marine and coastal ecosystems, which guarantees the maintenance of social, economic, environmental and

cultural functionality of these types of ecosystems that constitute the basis of the national economy by providing tourism, fishing resources and ensure the import and export of products. In this action, there is the potential for mitigation through carbon sequestration in mangrove ecosystems.

The sustainability and resilience of coastal areas and oceans will only be guaranteed when several parties are involved, so as this action can allow for interdisciplinarity, cooperation and coordination between those involved in this cause, so that some challenges can be managed jointly.

This action, in addition to guaranteeing the achievement of SDG 13 on climate action, it guarantees the achievement of other SDGs, specifically SDG 14 on the protection of marine life, SDG 9 on innovation and the development of resilient infrastructures, which will reduce the impact of climate events on coastal areas that are generally prone to weather events and SDG 11 related to building sustainable cities and communities considering the fact that our country's big cities and most people live and are found in coastal areas.

It will also provide greater resilience, preparedness and recovery of coastal areas, a fact that embodies priority 4 of the DRR Sendai Framework.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities of this action are:

(i) Assessment of the main climate risks on resources and areas of tourist interest;

(ii) Development of resilient coastal conservation and protection practices;

(iii) Promotion of good practices among operators and tourists, through public-private partnerships, aimed at the resilience of the sector and the conservation of ecosystems;

(iv) Operator counseling on resilient building codes;

(v) Promoting the adoption of climate insurance for tourism activities and infrastructure;

(vi) Implementation of the Technological Action Plan and Project Ideas for the Coastal Area and Infrastructure;

(vii) Ensure the economic empowerment of women and youth in coastal areas and in economic activities related to fishing and tourism.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

The MTC, MIMAIP and the managers of the cities located in the coastal areas should take the lead in implementing this action. The academies, the MTA and MOPH, the private sector and cooperation partners are stakeholders who also play a relevant role in ensuring the implementation of this action.

3. ESTIMATED BUDGET

The estimated budget is based on the reference of Mozambique's updated NDC activities, and is estimated at USD208,000,000.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This Project should focus on the coastal areas, specifically in the Districts of Matutuíne, Marracuene, Manhiça, Matola, Katembe, Maputo City, Bilene, Limpopo, Xai-xai, Chonguoene and Mandlakazi, Vilanculos, Govuro, Inharrime, Zavala, Massinga, Inhambane City, Quelimane, Angoche, Nacala and Pemba. The implementation of this action shall start from 2023 to 2030.

15. STRENGTHENED ABILITY TO PREPARE AND RESPOND TO CLIMATE RISKS AND DISASTERS

Risk reduction, disaster response, rescue operations and post-disaster response.

PROJECT TITLE

Prevention works, mapping of risk areas and response actions to climate disasters.

SUMMARY

Brief description of the proposed action

Climate change has contributed to the increase in climate disasters in the country. In Africa, Mozambique is recognized as one of the most vulnerable countries to climate disasters along its coast. As it has an extensive coastline (2700 km), more than 60% of the country's population lives in these areas due to the favorable socioeconomic conditions provided by the coastal regions. On the other hand, these areas are quite affected by climatic events (floods, rising sea levels, salinity) and this puts this population and its infrastructure, production areas, at high risk.

For recognizing its high vulnerability and exposure to the risk of climate events and for having had very bitter experiences during the occurrence of some environmental storms in the past, such as the case of cyclones Dineo in 2017, Idai and Kenneth in 2019, that almost resulted in the disappearance of some regions in the country, such as the city of Beira, and severely devastated the provinces of Tete, Zambézia, Cabo Delgado, Nampula and Niassa, the country has focused on environmental catastrophe response actions.

Since risk incorporates several components that include threat, vulnerability and exposure, the actions carried out in the country to better respond to climate disasters include the management of these 3 risk elements, which include reducing vulnerability, exposure and threat by means of improvement of the alert and timely action system, identification of safe areas for the evacuation and shelter of affected people, improvement of knowledge about risk management, among other actions. The specific vulnerability of women and girls to gender-based violence in the context of disaster displacement needs to be addressed through specific safe spaces for children and women. In Mozambique, schools are used as immediate temporary shelter for people displaced due to sudden events and may remain there for weeks/months until they are transferred to resettlement sites or return to their areas of origin.

Although there are initiatives in the country that aim to increase the resilience and response of vulnerable communities to disasters such as the "Rural Resilience Project of the North of Mozambique - Moz-Norte" and the existence of the Master Plan for Disaster Risk Reduction 2017-2030, among other initiatives, there are still significant challenges because risk management is a transversal theme and interconnects several sectors.

The great challenge the country faces in risk management is to prevent natural disasters from hitting the same people repeatedly, for that, people must be stabilized during the response phase to natural disasters and in this way, we would be building societies resilient to climate change.

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

When weather events occur various, socioeconomic and environmental constraints come up. These constraints

include loss of agricultural production, injuries to people, loss of public and private infrastructure, loss of human life, backtracking on government efforts, worsening poverty, creating despair in affected communities, increasing the contraction of diseases related to poor environmental health and environmental degradation.

These constraints cause local, regional and national development setbacks, as the national economy is negatively affected by the fact that local, national and foreign investors are afraid to invest in these recurrently affected regions.

When climate disasters occur, they affect physical, economic, social and environmental structures, so they must be constantly evaluated and monitored.

1.2 PROBLEMS TO BE SOLVED OR OBJECTIVES TO BE ACHIEVED

It is a fact that when climate disasters occur, they negatively affect the local and national economy, create setbacks in local, regional and national development, they also change the lifestyle of the affected people. Therefore, reinforcing the capacity to prepare and respond to the risk of climate disasters is to reduce the vulnerability of communities to climate disasters; improve post-disaster community resilience, priority 4 of the Sendai Framework DRR; to ensure better risk perception and better response to disasters, priority 1 of the Sendai Framework DRR; to incorporate climate risk management into local, regional and national planning, budgeting, investment and development, priority 2 of the Sendai Framework DRR.

In addition to that, this action will reduce the risk of human damage, the collapse of social systems, the destruction of infrastructure and agricultural systems and the reduction of dependence on external aid and donations.

1.3 ACTORS INVOLVED (BENEFICIARIESAND TARGET GROUP)

Natural disasters are not selective, they affect all elements of society; therefore, this action must integrate all elements of society from government entities, the private sector, civil society, the community in general, cooperation partners and the most and least affected sectors by climate disasters. Although acknowledging the transversality of natural disasters, this action must be prioritized for the most vulnerable groups as they are often more vulnerable and exposed to the risk of climate change and their response capacity is weak and sometimes almost non-existent.

With the reinforcement of the capacity to prepare and respond to the risk of climate disasters, all elements shall benefit, as we will have more proactive societies, observing continuous socioeconomic progress, with assured well-being, less disturbed and impacted by disasters, societies with better preparedness, response and rapid disaster recovery.

1.4 OBJECTIVES AND EXPECTED RESULTS

This action ensures the achievement of the following objectives and results:

(i) Improved preparedness, response and rapid recovery to climate disasters;

(ii) Improved knowledge related to the reduction of natural disasters for everyone and thus mitigate the negative impacts of these events;

(iii) Ensuring that natural disasters do not create profound socio-economic setbacks and environmental damage;

(iv) Ensuring that planning, budgeting and particularly public investments take into account climate disasters.

(v) Allowing better coordination and articulation of sectoral actions aimed at strengthening readiness, response and recovery to adverse weather events.

(vi) Allowing the appreciation and integration of past negative experiences for the design of future actions in order to build more resilient societies;

(vii) Ensuring that emergency response, preparedness and Disaster Risk Reduction (DRR) activities are child-sensitive (safe spaces for displaced children, DRR preparedness and activities involving children, ensuring continuity of service critics for children;

(viii) Resizing a resilient and green classroom model.

(ix) Disaster risk reduction plans at school level, (Emergency Basic School Plan -PEBE), not only in schools but also through youth/children's clubs.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO ACTIONS BY THE GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY, AND LOCAL COMMUNITIES, SDGS)

This action brings added value as it allows the management of the impacts of climate disasters in advance and hence the social, economic, environmental and development damages are avoided when the disasters occur. Additionally, the action allows the country not to be found in reverse by climatic events and to continue

to observe the progressive growth of its economy and have communities improving their social conditions and well-being despite being a highly vulnerable country and exposed to natural disasters.

This action also allows that, despite the forecast increase in the frequency and intensity of climate events in the coming decades in Mozambique, the country is continuously building a country that is less affected by the adverse impacts of climate change in all areas of development.

It is to ensure the progressive achievement of the SDG, mainly SDG 1 related to eradicating poverty, SDG 3 on health and well-being, SDG 9 related to industry, innovation and infrastructure, SDG 11 on sustainable cities and communities and SDG 13 on action against global climate change.

2. IMPLEMENTING ACTIVITIES AND INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities of this action are:

(i) Reinforcement of the system for forecasting, collecting and analyzing climate and meteorological information on weather events;

(ii) Improvement of the system for dissemination of early warnings at the local level (strengthening the capacity and involvement of information and communication media, including community radios, in the dissemination of community warning and awareness information on matters of climate change and management of disaster risk).

(iii) Reinforcement of Local Communities for the Management of Climate Risks (CLGRC) role in the reduction of climate risk at the local level (Preparation of CLGRC terms of reference, including actions for its sustainability; Strengthening its capacity and involvement in the flow of alert information and awareness of communities on matters of climate change and disasters; Promotion of the exchange of experience between local communities on local knowledge of extreme event management, including actions taken to minimize their effects)

(iv) Strengthening the rescue capacity of people affected by extreme weather events.

(v) Prepare natural disaster preparedness, response and recovery plans that include the provision of basic services in the immediate emergency response period during the occurrence of natural disasters and prepare social, economic and infrastructure reconstruction plans for the post-disaster period.

2.2 IMPLEMENTING INSTITUTION AND PARTNERS

Risk management is a cross-cutting issue because disasters affect all sectors, so risk reduction and response actions to natural disasters must be incorporated during the planning, budgeting and financing of sectoral actions. In the country, there is the INGD that leads and coordinates the planning and implementation of risk reduction actions and better response to climatic events. The other priority players who must implement this action are the ministries responsible for the sectors of Agriculture, Health, Public Works and Water Resources and Energy, as they are greatly affected whenever climatic events occur. The following actors are relevant partners in the implementation of this action: the UNDP, UNICEF, WORLD VISION, SAVE THE CHILDREN, WFP, RED CROSS, World Bank, Japanese Cooperation and Higher Education Institutions.

3. ESTIMATED BUDGET

The projected budget is based on the reference of Mozambique's updated NDC activities and is estimated at USD4,406,500.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

This action should focus on all districts and cities vulnerable to cyclones in coastal provinces. The Project implementation period shall be between 2023 and 2030.

16. MORE RESILIENT FORESTS

Sustainable Forestry Management, including processing of timber and non-timber forest products (NTFP), biodiversity conservation areas, ecotourism.

PROJECT TITLE

Forests as a low-carbon adaptation and development mechanism.

SUMMARY

Brief description of proposed actions

Mozambique is a country that has a considerable amount of forests, with about 31 million[31] hectares of woodland. These forests are indispensable for the survival of mainly rural communities as it is from the forests that wood products, wood fuel, medicinal plants, building materials

are extracted, as well as productive land for the practice of agriculture, among other benefits. This high dependence on forest resources leads to accelerated deforestation and forest degradation, such that in the period from 2003 to 2013 alone, 2.9[32] million hectares were lost in the country. In addition, climate change causes the occurrence of diseases and pests, droughts, as well as favoring the occurrence of fires due to delayed rainfall and high temperatures. Both deforestation and forest degradation as well as climate change make forest ecosystems less resilient. In the context of reduced resilience of forests due to anthropic actions and climatic phenomena, it is essential to adapt forest management to promote more resilient ecosystems in order to guarantee the preservation of forests. Necessary practices to ensure the resilience of forests include: Sustainable Forest Management, which embarks the processing of forest products and NTFPs, biodiversity conservation areas, ecotourism, the adoption of forestry practices, investment in agroforestry systems, promotion of natural restoration of forests. Monitoring and reducing deforestation and forest degradation, improving forest governance and using an integrated land use approach are other relevant practices for increasing forest resilience. Implementing these practices helps to capitalize on the socio-economic (provision of goods and services) and environmental (harvesting of greenhouse gases and climate change mitigation, conservation of soil and water resources) benefits of forests. Additionally, they ensure the preservation of forest ecosystems that are under high anthropic and natural threat (climate changes).

1. RELEVANCE

1.1 RELEVANCE OF THE TOPIC AND CONSTRAINTS FOR NATIONAL OR REGIONAL DEVELOPMENT GOALS

Anthropogenic activities and climate change are negatively affecting forests, particularly in sub-Saharan Africa. This reality creates consequences of lack of access to goods and services provided by forests, which are indispensable for the survival of communities, especially those who are in rural areas or live in poverty. On the other hand, in Mozambique the forestry sector contributes around 4%[33] of the national GDP.

Therefore, investing in the resilience of forests is:
(i) ensuring that Mozambique's economy continues to be based on renewable natural capital,
(ii) contributing to the reduction of rural poverty, because forests are fundamental for local communities as it is the place where they take various means of subsistence such as food, energy, medicine, shelter, source of income and obtain fertile land for the practice of agriculture,
(iii) to ensuring the sustainable management of the country's forests in a way that they are preserved to be useful even for future generations;
(iv) ensuring access to the environmental contribution of forests, particularly carbon sequestration and consequently mitigation of climate change;
(v) reducing deforestation and forest degradation.
Without resilient forests, rural poverty could get worse, the impact of climate events could be more aggravating in communities, especially rural, poor and other more vulnerable groups and the country could not be using this renewable resource to mitigate climate change, the problems of degradation of soils and the environment may worsen. These various problems have a negative impact on the country's economy and development and may affect the regional and global climate.

1.2 PROBLEMS TO BE SOLVED OR GOALS TO BE ACHIEVED

Mozambique has seen its forests being lost at a much-accelerated rate, where 2677 thousand hectares were lost per year, corresponding to a deforestation rate of 0.79%. In terms of emissions in the same period, 38[34] million tCO2e were emitted annually. Climate change also negatively affects forests. With the adoption of practices that guarantee the resilience of the country's forests, the first step to be achieved would be the reduction of deforestation and forest degradation. It will also allow the achievement of the following objectives: using forests to ensure the social resilience of communities in times of adversity (economic, political, pandemics, weather events) because they provide a variety of products and services, including a source of income; ensure environmental protection; promote ecosystem-based services; improvement of management, monitoring, inventorying of forests; consider priority 3 of the Sendai Framework DRR, which urges countries to make efforts to build resilience.

1.3 ACTORS INVOLVED (BENEFICIARIES AND TARGET GROUP)

The Ministry of Land and Environment (MTA), through the National Directorate of Forests (DINAF), and the National Directorate for the Environment (DINAB) are the entities with the mandate to define and update norms and procedures on the sustainable management of forest resources, and ensure the licensing, inspection, management, protection, conservation and monitoring of the use of forest resources. This action involves and benefits other actors that include the National Fund for Sustainable Development (FNDS), the National Agency for the Control of Environmental Quality (AQUA), the Provincial Directorates for Land, Environment and Rural Development (DPTADR), the Provincial Directorates for Territorial Development and Environment (DPDTA), the District Services for Economic Activities (SDAE), the Academies and forest operators.

1.4 OBJECTIVES AND EXPECTED RESULTS

The objectives and results expected from the implementation of this action are:

(i) Reduction of forest threats, particularly the reduction of deforestation and forest degradation, uncontrolled fires, prevention of the introduction and spread of invasive species;

(ii) Adoption of sustainable forest management practices, which will avoid the exploitation of forests and species threatened by pests, diseases, climate change;

(iii) Promotion of diversity and variability species genotypically resistant to climatic adversities;

(iv) Implementation of projects aimed at promoting services based on ecosystems;

(v) Improvement of the national forest inventory and information system;

(vi) Adoption of forestry initiatives;

(vii) Development and implementation of management plans using new criteria defined by the Government;

(viii) Adoption of technology for forest monitoring and available land use.

1.5 ADDITIONAL PROPOSED VALUE (REFERENCE TO THE ACTIONS BY GOVERNMENT, PRIVATE SECTOR, CIVIL SOCIETY, AND LOCAL COMMUNITIES, SDGS)

Investing in the resilience of forests brings several socio-economic and environmental additions, specifically:

guaranteeing access to forest products and services in the long term; using forests for climate change mitigation, soil conservation and sustainability of the water cycle; improving revenues from forest holdings; using forests for community development and economic growth in the country; reducing key threats to forests, particularly deforestation and forest degradation and negative impacts of climate change.

Additionally, this action would aim to protect life on earth (SDG 15) and ensure sustainable production and consumption (SDG 12), considering the fact that forests are an essential element in guaranteeing the balance of the planet due to their contribution to maintenance of the hydrological cycle, maintenance of biodiversity and guarantee of human livelihood.

2. ACTIVITIES AND IMPLEMENTING INSTITUTIONS

2.1 MAIN ACTIVITIES

The main activities of this action are as follows:

(i) To strengthen forest governance through mechanisms that ensure resilience;

(ii) To strengthen the political, technological framework in order to promote resilience;

(iii) To promote the multiple uses of forests and the values that can be added to them, including the sustainable use of wildlife (trophy hunting, agriculture), non-timber forest products and ecosystem services to maximize their value;

(iv) To provide incentives and technical assistance to the private sector to adopt sustainable forest management practices and add value to timber products;

(v) To build and invest in institutional capacity; improve planning in resource allocation, concession management and the application of forest management regulations by concessionaires and forest operators at all levels;

(vi) To promote the restoration of degraded ecosystems and pastures;

(vii) To support forestry initiatives;

(viii) To promote projects based on ecosystem services;

2.2 IMPLEMENTING INSTITUTIONS AND PARTNERS

The implementation of this action shall be led by the Ministry of Land and Environment, through the National Directorate of Forests (DINAF). The collaboration of the National Sustainable Development Fund (FNDS), National Agency for the Control of Environmental Quality (AQUA), National Directorate for Water Supply and Sanitation (DINAS), Provincial Directorate for Land, Environment and Rural Development (DPTADR), Provincial Directorate for

Territorial Development and Environment (DPDTA), District Economic Activities Service (SDAE), and the National Administration of Conservation Areas (ANAC) is equally essential for the success of this effort. Academies and cooperation partners such as the WWF and the World Bank also play an important role in ensuring the implementation of this strategic action.

3. ESTIMATED BUDGET

The projected budget is based on the reference of Mozambique's updated NDC activities and is estimated at USD76.049.051.

4. GEOGRAPHICAL REGION AND PROJECT IMPLEMENTATION PERIOD

Forests in the southern region of the country are more fragile, so this action should focus on these southern provinces of the country, namely Maputo (specifically in the Districts of Matutuíne, Magude and Namaacha), Gaza (Districts of Massingir, Mabalane, Mapai, Guijá, Chigubo and Chicualacuala) and Inhambane (Districts of Mabote, Funhalouro, Vilanculos, Inhassoro, Panda and Govuro). This action shall be implemented for a period of 7 years, from 2023 to 2030.

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FOOTNOTES

1 Including the 7 urban districts of Maputo City
2 https: //www.desinventar.net/DesInventar/profiletab.jsp?countrycode=moz&continue=y
3 Fonte: *https://pt.wikipedia.org/wiki/Economia_de_Mo%C3%A7ambique*
4 This change may also be associated with cyclones but the response measures are the same
5 *https://napglobalnetwork.ong/stories/how-covid-19-is-reinforcing-the-need-for-climate-adaptation-in-vulnerable-countries/*
6 Disponível em *https://germanwatch.org/en/19777*
7 Disponível em *https://gain-new.crc.nd.edu/country/mozambique*
8 Disponível em *https://library.wmo.int/doc_num.php?explnum_id=10769*
9 Disponível em *https://www.undp.org/sites/g/files/zskgke326/files/publications/PDNA%20Mozambique%20Cyclone%20Idai%20-%20Post-Disaster%20Needs%20Assessment_Executive%20Summary.pdf*
10 *https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf*
11 *https://evidencias.co.mz/2022/05/13/mudancas-climaticas-expoem-mulheres-e-raparigas-a-violencia-e-unioes-prematuras/*
12 *https://www.ingd.gov.mz/wp-content/uploads/2020/11/Plano-Estrategico-de-Genero-INGC-2016-2020-1.pdf*
13 *https://www.climatelinks.org/sites/default/files/asset/document/2021-10/2018_USAID-ATLAS-Project_Climate-Risk-Profile-Mozambique_PT_updated_9.22.21%20%281%29.pdf*
14 *https://www.esi-africa.com/renewable-energy/mozambique-energy-transition-must-take-into-account-realities-of-a-country/*
15 *https://www.greenclimate.fund/sites/default/files/document/readiness-proposals-mozambique-fnds-nda-strengthening-and-country-programming.pdf*
16 *https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf*
17 *https://mozambique.un.org/pt/sdgs*
18 *https://drmims.sadc.int/pt/sendai-framework/sendai-framework-for-drr*
19 *https://www.un.org/ldcportal/content/local-climate-adaptive-living-facility-local#:~:text=The%20Local%20Climate%20Adaptive%20Living%20Facility%20helps%20local%20government%20authorities,and%20adapt%20to%20climate%20change.*
20 *http://www.luccc.org/*
21 *https://www.presidencia.gov.mz/por/Actualidade/PR-lanca-Estrategia-Nacional-de-Desenvolvimento-2015-2035*
22 *https://wribrasil.org.br/pt/blog/clima/o-que-sao-perdas-e-danos-das-mudancas-climaticas*
23 *https://reliefweb.int/sites/reliefweb.int/files/resources/Learning%20from%20Cyclone%20Idai%20and%20Cyclone%20Kenneth%20to%20Strengthen%20Early%20Warning%20Systems%20in%20Mozambique%20%5BPT%5D.pdf*

25 *https://unhabitat.org/city-resilience-action-planning-tool-cityrap*
27 *https://www.opais.co.mz/nem-tudo-esta-a-desabar-diz-ane/*
28 *For example in 2021: Cabo Delgado e Nampula: registered 3000 cases*
29 *https://www.misau.gov.mz/index.php/454-ministro-da-saude-quer-accoes-mais-energicas-no-combate-a-malaria.*
30 *http://www.mimaip.gov.mz/wp-content/uploads/2018/09/Brochura-das-Realiza%C3%A7%C3%B5es-do-Sector-das-Pescas.pdf*
31 *MITADER. (2018a). Inventário Florestal Nacional. MITADER. Maputo. 124p.*
32 *MITADER. (2018b). Desflorestamento em Moçambique (2003-2016). MITADER. Maputo. 42 p.*
33 *https://fnds.gov.mz/mrv/index.php/documentos/estudos/16-policy-brief-resultados-de-inventario-florestal-nacional-2018/file*
34 *MITADER. (2018c). Mozambique's Forest Reference Emission Level for Reducing Emissions from Deforestation in Natural Forests. MITADER. Maputo. 56 p.*

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