Initiative for Climate Action Transparency - ICAT -

Institutional Arrangements for the National MRV System for Mozambique

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Institutional Arrangement for the National MRV System for Mozambique

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Abbreviations and Acronyms

ACM: Academy of Science of Mozambique (Academia de Ciências de Moçambique)

ADB: African Development Bank

AFOLU: Agriculture Forest and Other Land Use

BDA: Bilateral development agencies (USAID, JICA, SIDA, etc.)

BTR: Biennial Transparency Reports

BUR: Biennial Update Reports

CBIT: Capacity Building Initiative for Transparency

CCU: Climate Change Coordination Unit (Unidade das Mudanças Climáticas)

CGCMC: Knowledge Management Center of Climate Change (Centro de Gestão de Conhecimento em Mudanças Climáticas)

CONDES: National Council for Sustainable Development (Conselho Nacional de Desenvolvimento Sustentável)

CRF: Common Reporting Formats

CT-CONDES: Technical Council of CONDES (Conselho Técnico do CONDES)

DAGRC: Climate Risk Management and Adaptation Department "Departamento de Adaptação e Gestão do Risco Climático",

DINAB: National Directorate of Environment (Direcção Nacional do Ambiente)

DMC: National Directorate on Climate Change (Direcção Nacional de Mudanças Climáticas)

DMDBC: Low Carbon Development and Mitigation Department " Departamento de Mitigação e Desenvolvimento de Baixo Carbono"

DNM: National Directorate of Monitoring (Direcção Nacional de Monitoria)

DNMC: National Climate Change Director " Director Nacional de Mudanças Climáticas",

DPC: Directorate of Planning and Cooperation (Direcção de Planificação e Cooperação Internacional)

DSIC: Department of Systematization of Climate Information " Departamento de Sistematização da Informação Climática"

DTU: Technical University of Denmark

EMU: University Eduardo Mondlane

ENAMMC: National Climate Change Adaptation and Mitigation Strategy (Estratégia Nacional de Adaptação e Mitigação as Mudanças Climáticas)

FNDS: Fundo Nacional de Desenvolvimento Sustentável (National Sustainable Development Fund)

FUNAB: Environment Fund (Fundo do Ambiente)

GACMO: Greenhouse Gas Abatement Cost Model

GHG: Greenhouse gases

GIIMC: Inter-Institutional Group of Climate Change (Grupo Interinstituicional para as Mudanças Climáticas)

ICAT: Initiative for Climate Action Transparency

INDS: National Institute for Sustainable Development (Instituto Nacional de Desenvolvimento Sustentável)

INE: National Statistics Institute (Instituto Nacional de Estatística)

INGC: National Disasters Management Institute (Instituto Nacional de Gestão de Calamidades)

IPPU: Industrial Processes and Products Use

MA: Multilateral Agents (Agentes Multilaterais)

MADER: Ministry of Agriculture and Rural Development of Mozambique (Ministério da Agricultura e Desenvolvimento Rural), current MASA

MAEFP: Ministry of State Administration and Public Affairs (Ministério da Administração Estatal e Função Pública)

MASA: Ministry of Agriculture and Food Security (Ministério da Agricultura e Segurança Alimentar)

MCTES: Ministry of Science and Technology and Higher Education (Ministério de Ciência e Tecnologia e Ensino Superior)

MEF: Ministry of Economy and Finances (Ministério de Economia e Finanças)

MGCAS: Ministry of Gender, children and Social Action (Ministério do Género Criança e Acção Social)

MIC: Ministry of Industry and Trading (Ministério da Indústria e Comércio)

MICOA: Ministry for the Coordination of Environment Action (Ministério para a Coordenação da Acção Ambiental, current MTA)

MIMAIP: Ministry of Sea, Inland Water and Fisheries (Mininstério do Mar, Águas Interiores e Pescas)

MIREME: Ministry of Mineral Resources and Energy (Ministério dos Recursos Minerais e Energia)

MISAU: Ministry of Health (Ministério da Saúde)

MITADER: Ministry of Land, Environment and Rural Development (Ministério da Terra, Ambiente e Desenvolvimento Rural) current MTA

MOPHRH: Ministry of Public Works, Housing and Water Resources (Ministério das Obras Públicas, Habitação e Recursos Hídricos)

MoU: Memorandum of Understanding

MPG: Procedures and Guidelines

MRV: Measuring Reporting and Verification

MTA: Ministry of Land and Environment of Mozambique (Ministério da Terra e Ambiente)

MTC: Ministry of Transport and Communication (Ministério dos Transportes e Comunicações)

NDC: Nationally Determined Contributions (Contribuição Nacional Determinada)

NGOs: Non-Governmental Organizations

SDGs: Sustainable Development Goals

SNIGEE: National Inventory System of Greenhouse Gas (Sistema Nacional de Inventários de Gases de Efeito Estufa)

SNMAMC: National Climate Change Monitoring and Evaluation System (Sistema Nacional de Monitoria e Avaliação)

UMC: Climate change coordination Unit (Unidade das Mudanças Climáticas)

UN: United Nations Agencies

UNEP: United Nations Environmental Program

UNFCCC: United Nations Framework Convention on Climate Change

Contents

1. Introduction

The 2015 conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) concluded with a declaration, dubbed "the Paris Agreement" (Bakhtiari, Hinostroza, & Puig, 2018). The Parties recognized that there is "a need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge" and "recognizing the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, as provided for in the Convention".

In order to achieve the long-term temperature goal, set out in Article 2 of the Paris Agreement, "holding the increase in the global average temperature to well below 2°C above preindustrial levels, and pursuing efforts to limit the temperature increase to 1.5°C", it was decided that Parties shall prepare, communicate and maintain successive Nationally Determined Contributions (NDC) that it intends to achieve, and that parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

Additionally, Article 13 of the Paris Agreement, states the need of enhancing reporting and transparency. In the Article 13, Paragraph 1 it is stated that, "In order to build mutual trust and confidence and to promote effective implementation, an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience is hereby established ". Article 13 paragraph 7, further defines the reporting requirements, that include: (1) a national inventory report of anthropogenic emissions by sources and removals by sinks of Greenhouse gases (GHG), prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Agreement; and the (2) information necessary to track progress made in implementing and achieving its NDC. Article 13 is further circumstantiated by its Modalities, Procedures and Guidelines (MPG), laying out details of the information to be reported through Biennial Transparency Reports (BTR) and other processes related to transparency of the Paris Agreement.

"In order to collectively address climate change and achieve the objective of the Convention and the purpose and goals of the Paris Agreement, countries need to mobilize actions that maximize opportunities for reducing GHG emissions and promote climate-resilience, sustainable development, including, social cohesion and environmental protection and minimize risks to financial returns. Mobilizing climate action requires prioritizing which action to take and mobilize investment. Doing so requires an understanding not only of the problems to be addressed, the capability of different interventions to solve them, the costs of these actions, and the co-benefits or conflicts of the actions with national development strategies and Sustainable Development Goals (SDGs) – but also of the opportunities and actions to harness them" (Consultative Group of Experts, 2020).

The regular collection, analysis and use of reliable information on climate action and support to reduce GHG emissions and increase resilience, and data on GHG emission trends, both historical and projected, is essential for evidence-based decision-making and information-sharing. This information is required to build trust and understanding and promote stakeholder engagement, and to fulfil the requirements of the Paris Agreement. Data collection and reporting forms a critical component of what is commonly known as Measuring Reporting and Verification (MRV) under the Convention and has recently been encapsulated by the term 'transparency' under the Paris Agreement. Thus, in order to compile and report this information on a biennial basis, or more frequently for other national needs, countries need appropriate institutional arrangements.

Mozambique is a country particularly vulnerable to the impacts of climate change and has been taking action to increase its resilience while taking advantage of mitigation opportunities and pursuing low-carbon development. Mozambique is a Party to the UNFCCC and has already ratified the Paris Agreement (CAOS, 2018), and by doing so it has the obligation of proposing and submit an NDC every five years, submit a GHG inventory and National Communications every four years (taking the available capacities into consideration), and submit every two years a Biennial Update Reports (BUR), including a national GHG inventory. With the Paris Agreement the BUR will be discontinued and replaced by BTR by the end of 2024 the latest, which also includes a GHG inventory. Least developed countries and small islands development states can submit BTR at their discretion taking into consideration their respective capacities, and have like other developing countries also flexibility on some of the details and amount of information that needs to be reported. The MPG although, also envision the need for continuous improvement of transparency capacities, and it is expected that countries improve their reporting over time.

The Initiative for Climate Action Transparency (ICAT) puts into practice the request to strengthen capacities to meet the standards on enhanced transparency, which were put forward by the Paris Agreement. ICAT is supporting Mozambique on strengthening its institutional framework for MRV of GHG emissions, mitigation actions, and support; and enhancing capacities for climate policy planning and assessment with the application of ICAT's Guidance documents to assess the impacts of policies and actions that are part of the country´s NDC. In addition, ICAT also provides training in the use of modelling tools (GACMO) and stakeholder participation.

2. Relevance of the robust institutional arrangement

The robust institutional arrangement and the MRV System is a tool that will allow the government of Mozambique to monitor the impacts of adaptation and mitigation measures adopted through implementation of actions listed in the ENAMMC, particularly the NDC. Using the indicators defined for monitoring the ENAMMC and the NDC, it will be possible to evaluate different aspects, such as, the level of deforestation, land use changes, usage of fuels in different sectors, the impact of climate extreme events, thus allowing for planning the sustainable exploitation of forest resources, appropriate afforestation and land use actions, plan investments to improve energy efficiency and improve response systems to extreme events.

The monitoring reports generated by the National MRV System will also allow for doing cost benefit analysis of the of the resources allocated to climate change mitigation and adaptation measures, thus allowing for allocation of more resources to activities that produce more benefits. Additionally, the system will allow collecting information for updating the public policies and strategies for all sectors included in the system, such as, environmental protection, planning response to extreme events, building and infrastructure, industry, energy and mineral resources and public administration.

The MRV System experts will benefit from training, enhancing their understanding on the climate related funding available, and improve project proposal writing and implementation, thus allowing them to makiebetter use of the available climate funding opportunities. Actually, if the funding opportunities are better used, the system will represent much lower cost to the government compared to the benefits.

Finally, the system will ensure timely submission of relevant information to the UNFCCC, to comply with the commitments under the Convention and Paris Agreement. This reports and documents include the NCs, BTRs and updated NDC.

3. Objectives

The objective of the ICAT support in Mozambique is to enhance capacities in order to ensure compliance of commitments assumed by Mozambique by ratifying the UNFCCC and Paris Agreement, that include, preparing and submitting timely the GHG inventories, National Communications and Biennial Transparency Reports. With ICAT support, Mozambique is developing robust institutional arrangements for its national MRV System. With robust institutional arrangements, it is expected that Mozambique will enhance its MRV capabilities, as well as its compliance to the reporting requirements of the UNFCCC and the Paris Agreement, while also enhancing its national capacities for planning and evidence based decision making.

The purpose of this specific deliverable report is to analyse and present appropriate and robust MRV institutional arrangements which can contribute to the overall ICAT project objective in Mozambique. The robust institutional arrangement for MRV System proposed for Mozambique should ensure the MRV of the GHG emissions by sources and removals by sinks, the impact of mitigation and adaptation actions listed in the ENAMMC, and particularly in the NDC, and support needed and received. The robust institutional arrangement proposed should also contribute to improve inter-institutional coordination for transparent implementation of climate actions to promote more sustainable social and economic development of Mozambique.

4. Methods

The main activities conducted to develop the institutional arrangement proposed in this document are, revision of relevant documentation, regular meetings with professional of the National Directorate on Climate Change (DMC) of the Ministry of Land and Environment (MTA) of Mozambique and ICAT facilitators, and stakeholder's consultation. The development of the institutional arrangements was done considering the four phases proposed in the Handbook on institutional arrangements to support MRV/transparency of climate action and support published by UNFCCC in June 2020, that include: (1) Scoping, (2) Identifying key stakeholders and organizational mandates, (3) Developing systems, processes and agreements to maintain data flows, and (4) Reviewing and improving.

The main documents reviewed are the (1) Handbook on institutional arrangements to support MRV/transparency of climate action and support published by UNFCCC in June 2020, (2) A Road Map for the Establishment of a National MRV System of Climate Change Actions in Mozambique under ICAT Phase 1, (3) Mozambican National Climate Change Strategy, (4) National System of Monitoring and Evaluation of climate change (5) National Inventory System, and (6) the mandates of the institutions.

The stakeholders' consultation was done mainly through two workshops. The first workshop was conducted in 8 and 9 of October with about 50 participants. The first day, and the morning of the second day of the workshop was dedicated to revision and validation of NDC tracking elements, but the afternoon was used to introduce the stakeholders to the MRV System and collecting ideas to propose two options of institutional arrangements. A second workshop conducted on 21st and 22nd of December was dedicated to present and validate the objectives of institutional arrangements for MRV, present two options of institutional arrangement and select the most appropriate, evaluate the data flow mechanisms and implementation plan. A centralized and decentralized approach proposed in this document was presented to the participants and they agreed that the centralized approach should be implemented first and slowly move to decentralized approach.

In addition to this activities, physical meetings were conducted regularly with professional from the DMC at the MTA and the ICAT-Project Coordinator in Mozambique to discuss administrative and technical aspects of the project. Virtual meetings were also conducted with professionals from DMC, the Project Coordinator and the facilitators of the UNEP DTU Partnership in Denmark.

5. Evolution of institutional set-up

Different institutional set-ups and information sharing mechanisms have been proposed and implemented in Mozambique in the past and for several purposes. There is (1) Institutional arrangement for Monitoring and Evaluation of Coordination, Implementation and Financing, proposed in 2012, (2) Information Sharing System Proposed for the National Inventory System in 2013, (3) Mechanism for Sharing Information of the National Climate Change Monitoring and Evaluation System (SNMAMC) approved in 2014, and (4) Information Sharing Mechanism Proposed in the NDC Operational Plan, published in 2018. These systems were greatly affected by changes of the institutional arrangement of the government. Ministries changed their names and mandates several times, and directorates and departments disappeared or were created.

5.1 Institutional Arrangement for Monitoring and Evaluation of Coordination, Implementation and Financing

The former information sharing mechanism for MRV of climate change was composed by the Ministry of Coordination of Environmental Affairs (MICOA) (MICOAs former mandate and tasks are now under MTA) that used to receive information from the Climate Change Coordination Unit (CCU), that had the responsibility on reporting on climate change after validation by the Council of Ministers, **Figure 1**. The Inter-Institutional Group of Climate Change (GIIMC), constituted by ministry representatives was crucial for the preparation of the National Climate Change Strategy (ENAMMC). The members of GIIMC provided sectoral information for preparation of the ENAMMC and commented on the last version of the strategy. An additional role of GIIMC was to provide inputs on capacity development needs included in ENAMMC.

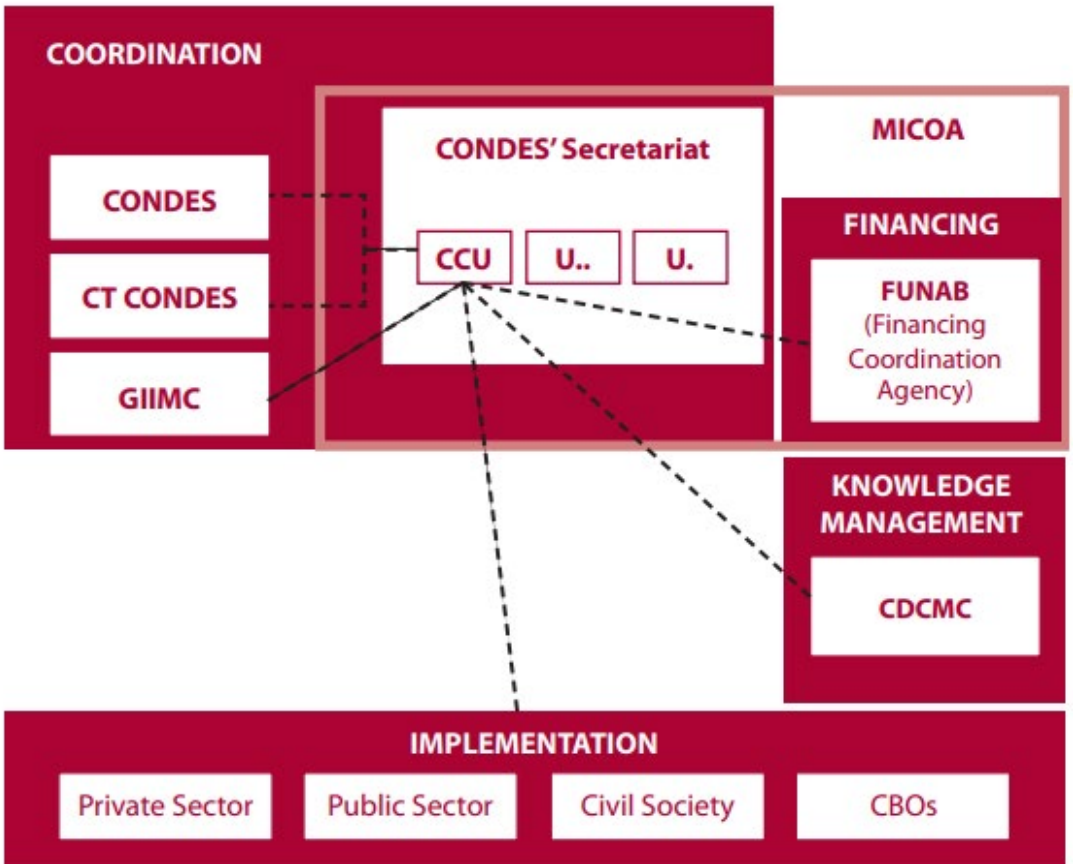

Figure 1 *- Institutional Arrangement for Monitoring and Evaluation of Coordination, Implementation and Financing, published in 2012 [CBOs: Organizações Baseadas na Comunidade (Community Based Organizations) CCU: Unidade das Mudanças Climáticas (Climate Change Coordination Unit) CDCMC: Centro de Conhecimento em Mudanças Climáticas (Knowledge Center of Climate Change) CONDES: Conselho Nacional de Desenvolvimento Sustentável (National Council for Sustainable Development) CT CONDES: Conselho Técnico do CONDES (Technical Council of CONDES) FUNAB: Fundo do Ambiente (Environment Fund) GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change) MICOA: Ministério para a Coordenação da Acção Ambiental (Ministry for the Coordination of Environment Action) U..: Unidades (Unities) (Other possible units not predetermined)]* (CONDES, 2014)

The technical council (CT-CONDES) of the National Council on Sustainable Development (CONDES) hosted the presentations, discussions and revisions of ENAMMC before submission to CONDES, where the document was endorsed to be submitted for approval by the Council of Ministers. CONDES hosted the climate change unit (CCU), responsible for developing the SNMAMC for the ENAMMC. The National Environment Fund (FUNAB) was responsible for coordination of finance, and the Knowledge Management Center of Climate Change (CDCMC) had a task to systematize and document scientific, technical and local knowledge. Community Based Organizations (CBO), private sector and civil society were responsible for supporting the operationalization of climate change agenda and implementation of climate change actions at community level. Public sector was responsible for defining policies, regulations and technical standards in line with climate change, as well as designing and implementing the climate change projects. The reporting process used to mandate sectors to submit climate change information directly to Ministry of Land, Environment and Rural Development (MITADER), (former mandate was under MICOA and currently is under MTA), via the CCU, in order to produce reports to be submitted to the UNFCCC.

This structure had the public sector, private sector, and civil society at the same level of responsibility in reporting, which affected the mandate for provision of information from subordinated institutions in the private sector and civil society to the lead sectors. The National Institute of Statistics and the institutions controlling the financial support had very limited influence in the structure.

5.2 Information Sharing System proposed for the National Inventory System

The National Inventory System published in 2013, was developed to facilitate data collection for calculating GHG emissions and removals. Five participating entities and actors can be distinguished in this arrangement, **Figure 2**. MICOA, was the institution responsible for coordinating climate change activities (currently under the mandate of MTA), thus being the **Coordinating Entity**. **Guardian Entity** is an entity that is responsible by organizing the work for doing sectoral estimates of GHG emission and / or removal, as well as guarantying the application of the procedures of quality control are applied and the information is archived, including a documentation system. In each guardian entity there is a sectorial **Focal Point**. The guardian entities are the Ministry of Energy for **Energy Sector**, the Ministry of Industry and Trading for **IPPU**, the Ministry of Agriculture for **Agriculture and LULUCEF Sectors**, and MICOA and for MOPHRH, **Waste Sector**. **Entity involved** is any institution, public or private, that is a producer or holder of data and/or information, statistics and parameters relevant for GHG Inventories. Finally, **Experts** are people who through experience are called to contribute or give an opinion.

The mandate of the aforementioned entities is articulated in the implementation frameworks of ENAMMC and specifically of GIIMC. The GIIMC was created to approve the plans for preparation of the GHG inventories, and the Climate Change Network within the scope of the Knowledge Center of Climate Change (CDCMC) was responsible on Quality Control and Quality Assurance (QA/QC) and preparation of studies to generate knowledge for data and methodologies. If the Climate Change Network is called on to appoint experts, it should ensure that they have not been involved in calculating the GHG emissions and/or removals, as well as other GHG compilation activities, to avoid that those who did the work also do the review. Unfortunately, the Climate Change Network was never created.

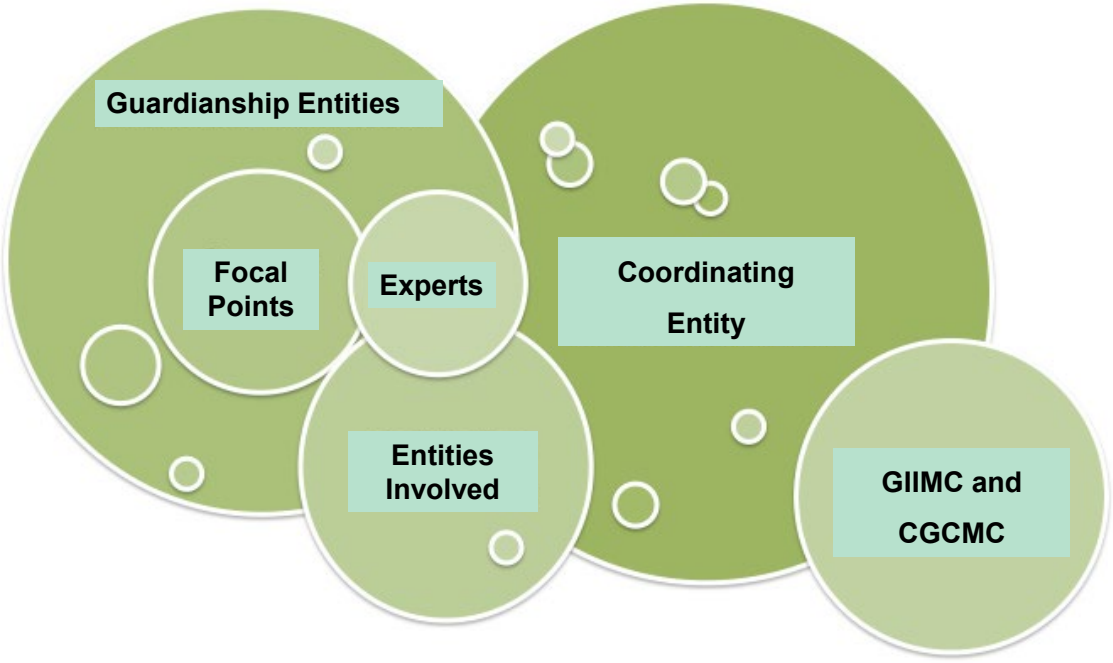

Figure 2 - *Institutional Arrangement for National Inventory System [*GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change), CGCMC: Centro de Gestão do Conhecimento das Mudanças Climáticas (Climate Change Knowledge Management Centre)*] (MICOA, 2013)*

5.3 Mechanism for sharing information of SNMAMC

The mechanism for sharing information proposed in the SNMAMC, published in 2014, is presented in figure 3. The overall coordination of the implementation of SNMAMC is the responsibility of MITADER (currently MTA) through the Department of Climate Change (currently National Directorate for Climate Change, DMC). MITADER is supposed to summarize information to produce the SNMAMC report. In order to operationalize the SNMAMC, the DMC needs to work closely with the Ministry of Economy and Finance (MEF), who receives information from other ministries. The information would be collected through the Economic and Social Plans (PES), deposited at the MEF.

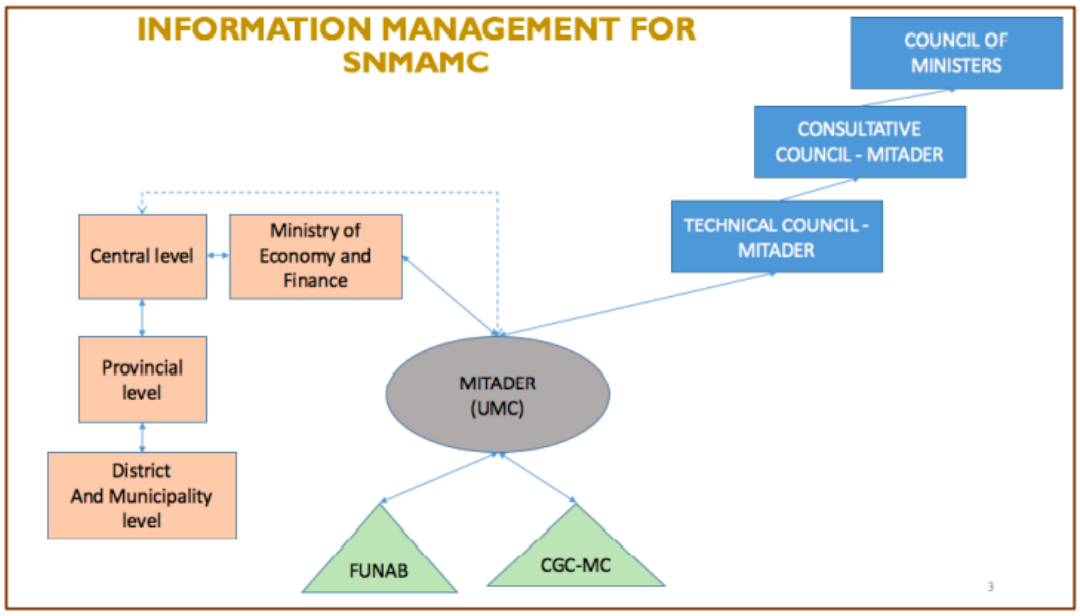

Figure 3 *- Mechanism for sharing information of SNMAMC [CGC-MC: Centro de Gestão de Conhecimento em Mudanças Climáticas (Knowledge Management Center of Climate Change) CONDES: FUNAB: Fundo do Ambiente (National Environment Fund) MITADER: Ministério da Terra, Ambiente e Desenvolvimento Rural (Ministry of Land, Environment and Rural Development) UMC: Unidade das Mudanças Climáticas (Climate change coordination Unit)] (CONDES, 2014)*

Two institutions were given a supporting role: the National Environment Fund (FUNAB), with the role of fiduciary institution to provide information on climate change expenditure, and the Knowledge Management Centre for Climate Change (CGC-MC), with a mandate to assist MITADER with the peer review of SNMAMC report. Following the elaboration of the SNMAMC report, the technical-council of MTA would revise it and submit it to the consultative-council before being sent to the Council-of-Ministers for final approval, Figure 3.

In comparison to the Institutional Arrangement for Monitoring and Evaluation of Coordination, Implementation and Financing, CONDES seems to not have a specific role in this information sharing system, and the climate change information is collated through a system that the MITADER has limited influence in, while its technicians are the ones that own the knowhow on the information required for reporting climate change. This structure was not likely to not be implemented and until now the GHG inventories, BURs and other climate change reports are prepared by external consultants.

5.4 Information Sharing Mechanism Proposed in the NDC Operational Plan

The NDC Operational Plan published in 2018 also include institutional arrangements for sharing information. These institutional arrangements represent an update of the Institutional Arrangement for Coordination, Implementation and Financing for M&E, thus it gives more influence to MITADER on reporting the climate change information and it is most likely to work. This arrangement proposed the introduction of the Department of Planning and Cooperation (DPC) to coordinate implementation of the planning cycle of the ministries, especially the Social and Economic Plans (PES). The National Fund for Sustainable Development (FNDS) with broader perspective was introduced with similar role as FUNAB in the information management system for SNMAMC, and the Community Based Organizations (CBOs) were replaced by the academia for technical support and enhance research.

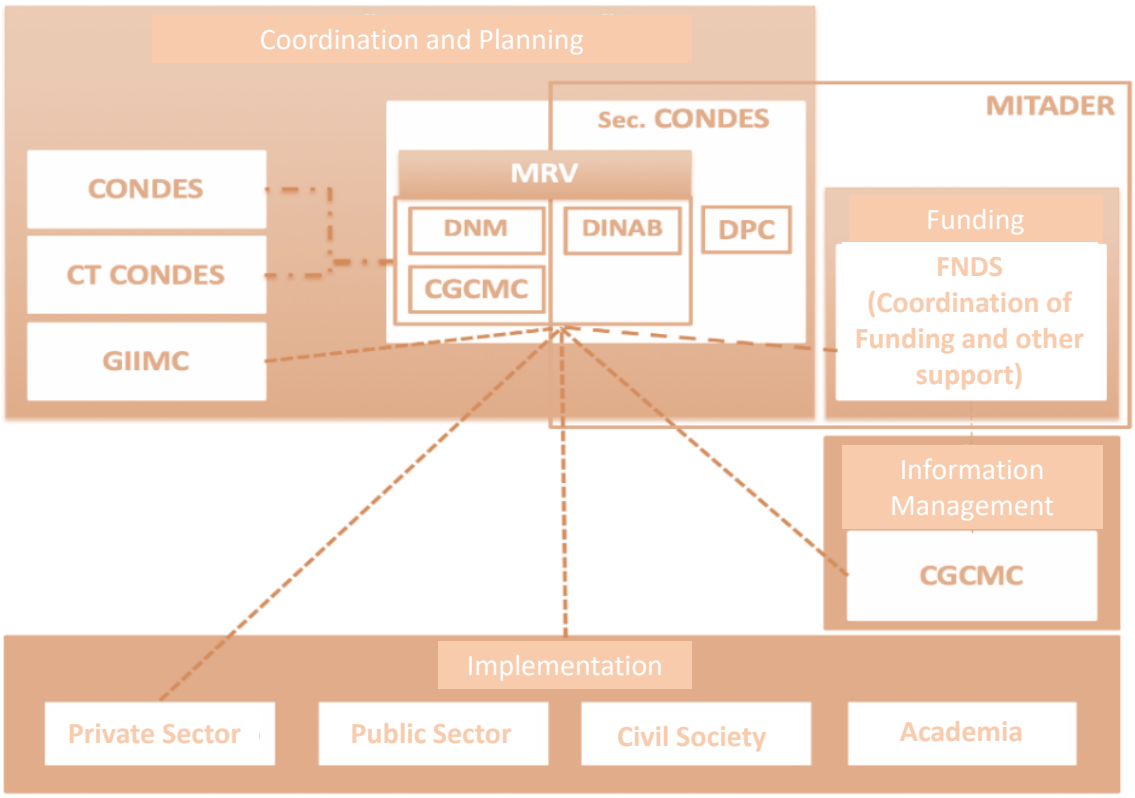

Figure 4 - Information Sharing Mechanism Proposed in the NDC Operational Plan *[CGCMC: Centro de Gestão de Conhecimento em Mudanças Climáticas (Knowledge Management Center of Climate Change) CONDES: Conselho Nacional de Desenvolvimento Sustentável (National Council for Sustainable Development) CT CONDES: Conselho Técnico do CONDES (Technical Council of CONDES) DINAB: Direcção Nacional do Ambiente (National Directorate of Environment) DNM: Direcção Nacional de Monitoria (National Directorate of Monitoring) DPC: Direcção de Planificação e Cooperação Internacional (Directorate of Planning and International Cooperation) FNDS: Fundo Nacional de Desenvolvimento Sustentável (National Fund for Sustainable Development) GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change) MRV: Medição, Reporte e Verificação (Measuring, Reporting and Verification]*

6. Description of the institutions and mandates

The mandates of the institutions are crucial for designing robust institutional arrangements for the MRV System. Most institutions owning the data to enable GHG emissions calculations and/or responsible for proposing and monitoring the implementation of NDC actions are ministries or are institutions guarded by ministries. The names of the ministries, their mandates and internal institutional arrangements are defined by the government. As stated before, in the last years, the names, mandates and internal institutional arrangement of the ministries had been subjects to changes. These changes were made to optimize their functionality but on the other hand they compromised the implementation of existing sectoral strategies.

Regardless of the changes within and between governmental institutions there are always institutions responsible for the sectoral data that allow GHG emission calculations, and for proposing, promoting, implementing and monitoring the policies and strategies for areas that are relevant for the implementation of the NDC. These include environment, energy, industry, agriculture, forest, mineral resources, transport, water resources, health, finance, academia, science and technology, social action including gender, public works and housing. The current government has 20 ministries, but only 12 have oversight of data for calculation of GHG emissions by sources and removals by sinks, monitoring the implementation of the NDC actions, and the support needed and received. These Ministries are, the (1) Ministry of Land and Environment, (2) Ministry of Agriculture and Rural Development, (3) Ministry of Mineral Resources and Energy, (4) Ministry of Industry and Trading, (5) Ministry of Economy and Finance (6) Ministry of Sea, Inland waters and Fisheries, (7) Ministry of Public Works, Housing and Water Resources, (8) Ministry of Health, (9) Ministry of Transport and Communication, (10) Ministry of Gender, Children and Social Action; (11) Ministry of Science, Technology and Higher Education, and (12) Ministry of State Administration and Public Service.

The ministries that own most data for calculating the GHG emissions are, the Ministry of Land and Environment, Ministry of Agriculture and Rural Development, Ministry of Mineral Resources and Energy, and the Ministry of Industry and Trading for the Waste, covering the AFOLU, Energy and IPPU sectors, respectively. The ministries owning data for calculating the GHG emissions also proposed and are responsible for implementation of some actions listed in the NDC of Mozambique. However, there are other institutions that are not responsible for GHG emissions calculation but who proposed and are responsible for implementing actions listed in the NDC. These institutions are the Ministry of Transport and Communications, Ministry of the Sea Interior Waters and Fisheries, Ministry of Public Works, Housing and Water Resources, Ministry of Science Technology and Higher Education, Ministry of Health, Ministry of Gender, Children and Social Action, Ministry of Economy and Finance, Ministry of State Administration and Public Service, National Institute for Disaster Management, National Institute of Meteorology, National Institute of Statistics, and Eduardo Mondlane University. Mandates of these institutions, considering their contribution to the implementation of MRV System are described below.

Ministry of Land and Environment

The Ministry of Land and Environment (MTA) is responsible for developing proposals for implementation of policies, legislation and strategic decisions that integrate land and environment recreation, as well as preservation of conservation areas taking into consideration climate change. To respond to its duties related to climate change, the ministry has the following competences: (1) to promote and coordinate the implementation of activities that ensure the compliance of the commitments under the UNFCCC; and (2) to monitor, oversee and evaluate climate change adaptation and mitigation actions, as well as the support needed and received and report to the

government the implementation of mitigation and adaptation actions. Among other directorates, MTA has the National Directorate for Climate Change and Directorate for Planning and Cooperation. The National Directorate for Climate Change is responsible for coordinating all activities related to climate change and the Directorate for Planning and Cooperation is responsible for doing statistics and coordinating cooperation with other institutions. Additionally, the MTA is the focal point institution for climate change related issues and organizations, such as, (1) UNFCCC, (2) GHG Inventories (3) gender and climate change, through the National Directorate of Environment (DINAB) and (4) National Entity for de Adaptation Fund, thus approving adaptation projects through permanent secretariat.

Ministry of Agriculture and Rural Development

The Ministry of Agriculture and Rural Development of Mozambique (MADER), among other Directorates, has the, (1) Directorate for Planning and Policies and (2) Directorate for Cooperation and Markets. The mandate of Directorate for Planning and Policies includes (1) to identify, formulate, monitor and evaluate the guidelines, policies, strategies, programs, plans, projects and draw up technical and economic feasibility opinions and (2) Produce and publish statistics that allow the evaluation of the implementation of agricultural and rural development activities; while the Directorate for Cooperation and Markets includes in its competences, the responsibility on (1) ensuring the harmonization of sectorial policies, legislation and strategies within the national, regional and international frameworks, (2) and participate in the intergovernmental and non-governmental meetings at national and international level. Additionally, MADER is the GEF Political Focal Point and its Operational Focal Point, through FNDS.

Ministry of Mineral Resources and Energy

The Ministry of Mineral Resources and Energy (MIREME) has several duties related to the development of the energy sector, and the exploration and preservation of mineral resources, which are relevant for the development of institutional arrangement for the National MRV System. These duties include development of policies and legislation for the sector, research and management of mineral resources, as well as promoting and monitoring the development of the sector. Among other directorates, the ministry has one Directorate for Planning and Cooperation, that is responsible on (1) monitoring the implementation of the investments, (2) organize and update the statistics of the sector of mineral resources, fuels and energy and communicate to the stakeholders, and (3) coordinate and do the follow up of negotiations, and the establishment of agreements with other institutions.

Ministry of Industry and Trading

The Ministry of Industry and Trading has the responsibility for proposing and monitoring the implementation of policies and strategies aimed at supporting the development of industry, trading and services. The Ministry has a Directorate for Planning and Studies which can facilitate de development of institutional arrangements. Among other responsibilities, the Directorate for Planning and Studies has to (1) lead the development of statistics, including: data collection, processing and doing predictions and (2) Participate in the definition of statistical indicators needed for monitoring its activities.

Ministry of Transport and Communication

The Ministry of Transport and Communication (MTC) has the responsibility for proposing and monitoring the implementation of policies and strategies aimed at the development of the transport sector and communication systems. This ministry has different institutional arrangements, not

having a directorate for planning and inter-ministerial cooperation. This makes it challenging getting statistical data needed for either doing GHG calculations or monitor the implementation of NDC actions related to this sector. This ministry is also guarding the National Meteorology Institute which is responsible for weather forecast, and communicating warnings for emminent climate disasters.

Ministry of Sea, Inland waters and Fisheries

The Ministry of Sea, Inland Waters and Fisheries is responsible for managing, doing operational oversight of the resources of the sea and inland waters, and preservation of these ecosystems. This Ministry has a Directorate for Studies and Planning which is responsible on planning, doing statistics and studies. This Directorate also has the Department of Monitoring and statistics which is responsible for generating sectoral statistics.

Ministry of Public Works, Housing and Water Resources

The Ministry of Public Works, Housing and Water Resources is responsible for proposing, implementing, monitoring and overseeing the policies and strategies of infrastructure development and water resources management. The ministry also has a Directorate for Planning and Cooperation which is responsible for coordinating the preparation and dissemination of activities and reports in the public works sector, housing and water resources.

Ministry of Science, Technology and Higher Education (MCTES)

The Ministry of Science and Technology and Higher Education is responsible for proposing, implementing, monitoring and overseeing the policies and strategies for the development of science and technology through research and higher education. As institution coordinating the development of the research and higher education it is also responsible for the inclusion of Climate Change in the curriculum and promote research on related matters. The MCTES is the national entity in charge for the development and transfer of technologies, thus approving technology transfer projects related to climate change.

Ministry of Health

The Ministry of Health (MISAU) is responsible for proposing, implementing and monitoring the of policies, strategies for the heath sector. The Ministry of health also has a Directorate of Planning and Cooperation which has the responsibility for compiling the sectoral statistics, that include the data collection, analysis and predictions.

Ministry of Gender, Children and Social Action

The Ministry of Gender, children and Social Action (MGCAS) is responsible for proposing, implementing and monitoring the implementation of policies and strategies to promote gender equality and equity in economic, social, political and cultural development. This includes social assistance to people and households' family members in situations of poverty and vulnerability, namely, woman, children, the elderly, persons with disabilities and people with chronic degenerative diseases. The ministry has a Directorate for Planning and Cooperation which is responsible for collecting, centralizing and systematizing statistical information on the target groups of the sector, and coordinate assessment of impacts of sector programs. The Directorate for Planning and Cooperation, is also responsible on coordinating cooperation with other institutions.

Ministry of Economy and Finance

The Ministry of Economy and Finance (MEF) is responsible for managing the state assets of state holdings. This ministry has three Directorates that could be used for the development and operationalization of the MRV System, the National Directorate of Planning and Budgeting, Directorate for Cooperation and National Directorate of Monitoring and Evaluation. These directorates together can generate information on financial resources needed and received, related to climate change mitigation and adaptation actions, as well as the sharing the with the interested stakeholders. Additionally, the MEF is the National Designated Authority for the Green Climate Fund.

Ministry of State Administration and Public Affairs (MAEFP)

Among other responsibilities, this ministry coordinates disaster prevention and management actions, and is hosting the National Institute for Disaster Management. The ministry also has a Directorate for Planning and Cooperation which is responsible for (1) controlling and evaluating the execution of plans, programs and prepare the respective reports and (2) participate, when requested, in the preparation of conventions and agreements with cooperation partners.

7. A Road Map for the Establishment of a National Measurement, Reporting and Verification (MRV) System of Climate Change Actions in Mozambique

In November 2019 a document called Road Map for the Establishment of National Measuring, Reporting and Verification (MRV) System of Climate Change Actions in Mozambique was developed under the first phase of ICAT support through assistance of UNEP DTU Partnership. This document presents a detailed review of the previous institutional arrangements, mandates and arguments for the establishment of robust institutional arrangements, and finally proposes options for revised robust institutional arrangements.

The main constrains for establishment of robust institutional arrangement presented in the Road Map are:

- weak coordination and outdated institutional configuration;
- lack of consistent data;
- lack of robust data collection mechanism;
- lack of information sharing mechanism for climate action;
- limited capacity of institutions to collect "metadata"; and
- lack of legal instruments to operationalize the information sharing mechanism.

In the same document it is proposed an updated structure for the national MRV system that:

- replaces institutions that no longer operate, such as the Climate Change Unit (UMC) and the Environment Fund (FUNAB);
- revitalizes institutions that currently have little involvement, such as the National Council for Sustainable Development (CONDES);
- it includes other institutions with a more active role, such as the National Statistics Institute (INE) and the Ministry of Economy and Finance (MEF);
- introduction of an instrument that regulates the climate change reporting process (law or decree-law) to ensure that data related to climate change are shared between the institutions and the MTA, in order to allow the MTA to fulfil its mandate of Report Nationally and Internationally (UNFCCC and PA).

The Road Map for the Establishment of National Measuring, Reporting and Verification (MRV) System of Climate Change Actions in Mozambique also indicate that some actions had been developed that can be useful for the establishment of robust institutional arrangement, such as:

- MTA, previously known as MITADER, is already engaged in the development of protocols for information sharing. A protocol was signed between MTA and University Eduardo Mondlane (EMU) support in reporting on climate change; and
- A draft protocol (MoU) was submitted to MISAU, MIREME, MOPHRH, MIREME, MIC, and MASA for provision of information for GHG reporting. However, these

latter protocols have not been signed, despite being submitted a long time ago. Moreover, there is no guarantee about the operationalization of the protocols, because their utilization is not mandatory and rely on the level of interest of the sector leader.

Finally, an institutional arrangement for data sharing, in figure 5, was proposed. Under the proposed future structure, the Inter-Institutional Group for Climate Change (GIIMC) will continue playing its role and MTA will continue with a coordinating role for the multi-sectoral group. The Academy of Science of Mozambique (ACM) was expected to be responsible on elaboration and revision of climate change documents, as well as conduction of studies on specific matters on climate change topics.

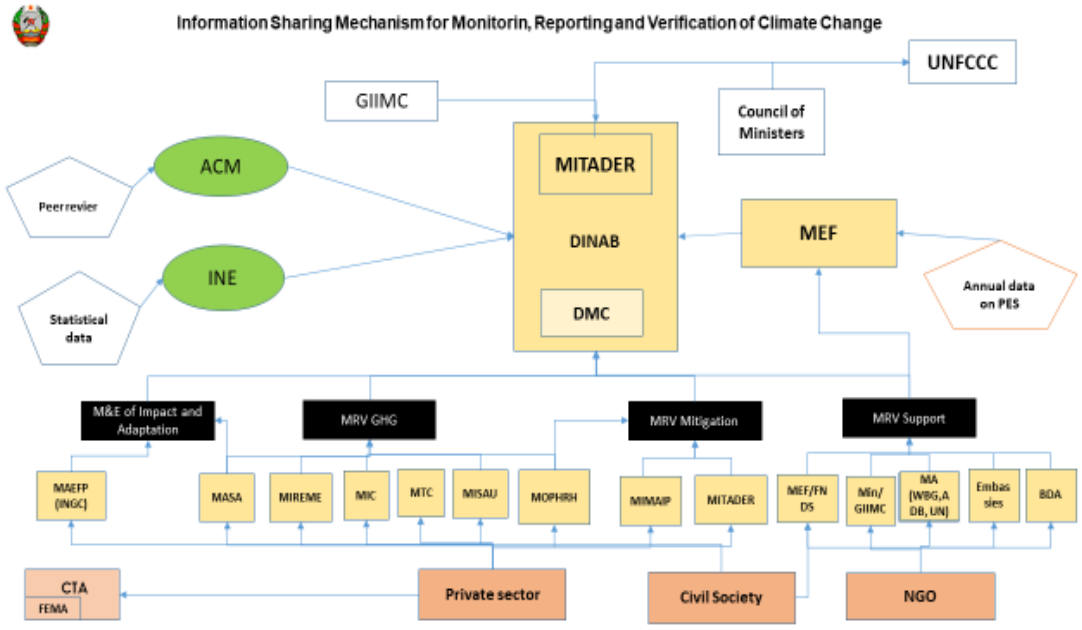

Figure 4 Proposed information sharing mechanism for robust institutional arrangement in the Road Map for the Establishment of National Measuring, Reporting and Verification (MRV) System of Climate Change Actions in Mozambique. *[ACM: Academia de Ciências de Moçambique (Academy of Sciences of Mozambique) ADB: African Development Bank BDA: Bilateral development agencies (USAID, JICA, SIDA, etc.) DINAB: Direcção Nacional de Ambiente (National Directorate of Environment) DMC: Direcção Nacional de Mudanças Climáticas (National Directorate on Climate Change) FNDS: Fundo Nacional de Desenvolvimento Sustentável (National Fund for Sustainable Development) GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change) INE: Instituto Nacional de Estatística (National Statistics Office) INGC: Instituto Nacional de Gestão de Calamidades (National Institute of Management of Calamities) MA: Agentes Multilaterais (Multilateral Agents) MAEFP: Min. de Administração Estatal e Função Pública (Ministry of State Administration and Public Affairs) MASA: Min. de Agricultura e Segurança Alimentar (Ministry of Agriculture and Food Security) MEF: Min. de Economia e Finanças (Ministry of Economy and Finances) MIC: Min. da Indústria e Comércio (Ministry of Industry and Trading) MIMAIP: Min. do Mar, Águas Interiores e Pescas (Ministry of Sea, Inland Water and Fisheries) MinGov: GovernmentCC relevant Ministries MIREME: Min. dos Recursos Minerais e Energia (Ministry of Mineral Resources and Energy) MISAU: Ministério da Saúde (Ministry of Health) MITADER: Min. da Terra, Ambiente e Desenvolvimento Rural (Ministry of Land, Environment and Rural Development) MOPHRH: Min. das Obras Públicas, Habitação e Recursos Hídricos (Ministry of Public Works, Housing and Water Resources) MTC: Min. dos Transportes e Comunicações (Ministry of Transport and Communication) UN: United Nations Agencies UNFCCC: United Nations Framework Convention on Climate Change WBG: World Bank Group] (Fote, 2019)*

MEF was included to gather and share climate change information through the Social and Economic Plans (PES), and INE would produce annual yearbooks with basic climate change information. MTA would take responsibility over the MRV and fulfil the recommendations of the National Climate Change Strategy (ENAMMC) through DMC. The DMC would coordinate climate change reporting at a higher level.

MITADER (currently MTA) was advised to elevate the discussions from department level to a higher level, at the level of National Director or at the managerial level within the ministry. It is expected that the proposal of the structure in figure 4, also would strengthen and improve the linkage between the ministries overseeing the sectors and the private sector companies, while in the past MTA had itself to seek information directly from private sector companies. For example, the information about the aluminium smelter MOZAL would in these revised arrangements be requested from the Ministry of Industry and Trading (MIC), while the information from the oil and gas company PETROMOC would be gathered by the Ministry of Mineral Resources and Energy (MIREME).

This institutional arrangement was proposed to allow for a smoother collection of sectoral data by the responsible institutions, and organized into four categories, namely: (a) MRV of greenhouse gas emissions, (b) MRV of mitigation actions, (c) M&E (monitoring and evaluation) of climate change impacts and adaptation, and (d) MRV of support needed and received. The institutions depicted in figure 4, under each category, were expected to be responsible for collecting information to be able to measure, report, and verify data on GHG emissions, mitigation actions, impacts of climate change and adaptation, and support needed and received, in the light of a climate change law that is expected to be established.

The information collected would be made available in the official webpages for other users and for other studies. The MRV of GHG emissions would be done through the National Inventory System of Greenhouse Gas (SNIGEE), overseen by MTA, under the National Directorate of Environment. MTA would use the SNIGEE to guide sectors for data collection on GHG indicators. Usually the country hires lecturers from the university as consultants for preparing the national GHG inventory. The MRV of GHG emissions was expected to involve 6 ministries, namely MIREME, MASA, MIC, MTC, MISAU and MOPHRH, with the coordination of MTA.

Each ministry would create a technical working group that would lead the information sharing and reporting of information necessary for the MRV of GHG emissions. These technical working groups would consist of groups of institutions under different thematic areas for the national system for GHG inventory. Therefore, the energy group would be composed by the sectors of energy and transport; the agriculture group is composed by the sectors of agriculture and environment; the industrial processes would be composed by the trade and industry sectors; and the waste group would be composed by the health, environment and public works. Each ministry would be responsible for collecting information from the organizations, agencies, and bodies subordinated to their jurisdiction, including private sector and civil society.

8. Stakeholders consultation

Stakeholders consultation was determinant for the development of the following proposal of robust institutional arrangements for national MRV of climate change information in Mozambique. Two workshops were conducted for the development of this proposed institutional arrangements. The first workshop was conducted after revision of relevant climate change documents and the UNFCCC Handbook on institutional arrangements to support MRV/transparency of climate action and support, and the second workshop was conducted to present two proposals of institutional arrangements, select one and refine all sections of the institutional arrangements document.

8.1 Workshop I

The issues discussed in the workshop I are listed in the workshop program in the Appendix 1. During the first workshop conducted in Macaneta on 8th and 9th of October 2020, the stakeholders were introduced to the four phases and nine steps, according to the UNFCCC handbook, for setting up robust institutional arrangement for National MRV Systems, and what is already built in as institutional arrangement for MRV in Mozambique. The stakeholders agreed that there are institutional arrangements already, more precisely, there are many institutional arrangements overlapping, as described above, although not working efficiently and effectively.

The institutional arrangements are failing because there is no protocol across ministries and legislation for operationalization of the institutional arrangements. The workshop participants also underlined the issue that conclusions and discussions held in technical meetings were not necessarily being accepted at higher level. There is a need of enhancing communication between the ministries to reduce the time for developing, approving and implementing climate change related legislation. Discussions on institutional arrangements have to be conducted at higher level to allow the decision makers to understand the proposed systems and accelerate the approval process.

The participants of the workshop recommended the DMC to continue the development of the Inter-Ministerial Protocol for climate change for allowing the operationalization of the National MRV System. The participants also highlighted that there is a chance for it to be accepted, due to the change in government and the new leadership seeming more committed to climate change issues. Some participants suggested that the DMC should have specialized experts on climate change issues in general and for MRV System in particular to establish a centralized MRV System, and other institutions should commit themselves on supplying data.

Participants form the MADER proposed to have a decentralized system because they have a climate change unit that can at least do the sectoral GHG inventories and the reports can be sent to MTA. Participants from the MIC also proposed to have a decentralized MRV System as they also can do the inventories.

Due to constant changes of the internal arrangements of the ministries it is important that the MTA owns one unit for MRV, and a centralized system. The specialized unit will be responsible for maintaining and operating the MRV System, even with changes of the structures of the ministers.

Even without having a direct responsibility on inventory production, the ministry of health has a Climate Change and Heath Department working with other institutions. Currently, the institution does not own data, but it can be responsible for collecting information regarding mitigation and adaptation actions. An instrument for monitoring heath climate change actions could be put in place easily.

8.2 Workshop II

Workshop II dealt with the issues covered in the agenda in Appendix II. The second workshop included three parts, (1) a presentation of the guidelines for the establishment of an MRV system including a brief description of the systems existing in Mozambique, (2) presentation of two proposals of institutional arrangement for the MRV System for Mozambique, (3) discussion in groups based on different sections of the institutional arrangements document proposal, and the two proposals of institutional arrangement for the MRV System for Mozambique, (4) plenary discussion to improve the sections of the proposed document and selection of an MRV system for Mozambique.

To enrich the discussions for the development of the National MRV System, the workshop included a presentation on MRV in the scope of BUR development that is being developed for Mozambique, see the workshop program II, Appendix II. The presentation highlighted the need to involve INE in the National MRV System and proposed the creation of a National Institute for Sustainable Development (INDS) that would be at the same level as INE and INGC, as operational elements of the National Statistics System.

Group work and plenary discussion were the tools used to collect input from participants to improve the institutional arrangements. For this purpose, five groups were created and had the task of analyzing the proposals of institutional arrangements, in addition each group had to analyse a section of the document proposal. The tasks of the groups are shown in table 1.

Table 1 Group Work – Workshop II

Group	Contents for discussion
Group I	Institutional Arrangement and Objectives
Group II	Institutional arrangement and data flow
Group III	Institutional Arrangement and Legislation
Group IV	Institutional Arrangement and Sustainability
Group V	Institutional Arrangement and Implementation Plan

The first working group analysed the two proposals of institutional arrangements and the objectives of the document proposal. The group proposed to extend the objective to not only consider complying with the commitments made under the Convention and the Paris Agreement, but also to produce results regarding the sustainable development of Mozambique. With regard to the institutional arrangements, the group proposed to change the coordinating entity of the MRV System from DMC, which is a directorate, to a higher level, considering the MTA itself, as it will then have access to interact with the Council of Ministers directly. The group also proposed to change the Marine Resources Sector to the Sea and Inland Waters Sector, for allowing inclusion of activities carried out in inland waters, such as aquaculture.

The second group did not propose many changes to the institutional arrangements, but made proposals on the mechanism of data flow between institutions. The group proposed that the MTA create a national climate information management system and inter-institutional cooperation agreements for sharing and analysing information. The group also considered that, as most information is statistical and INE should have an active role in the National MRV System. Finally, the group proposed that instruments should be created to facilitate the data collection process, including methodological documents, and concept and good practices manuals.

The third group made considerations about the institutional arrangements and legislation. The group proposed to give a responsibility of coordinating the MRV system to INE at the same level as DMC.

With regard to legislation, it proposed the revision and updating of sectoral laws in order to compel institutions to provide reliable data within stipulated deadlines. The group proposed to pass the responsibility of doing QA/QC to the academia.

The fourth group presented proposals for improving the institutional arrangements and guaranteeing the sustainability of the MRV System. The group proposed that: statistical data should be produced by sectors; the data sharing policy should be systematically reviewed; the academia must carry out research to improve the methodologies employed and improve quality control. The group referred that there is no need to create an INDS, which would include climate change issues, but rather to strengthen technical capacity and budget availability for the existing administrative structure to avoid duplication; and finally they recommended that the system should be centralized and the sectors should make the data available for the MTA to produce reports. The group also discussed mechanisms to make the National MRV System sustainable, which highlighted the need to ensure that the institutions and individuals involved are motivated; guarantee budget availability through political support; strengthening of technical capacity and awareness of sectors to make data available systematically; and creating mechanisms for the rising funds for the environment sector.

The fifth group also presented proposals for improving the institutional arrangements and creating the implementation plan. The group proposed to establish, in the medium term, a decentralized National MRV System, while building capacity in the sectors; and in the long term, explore opportunities to establish an entity that takes care of sustainable development issues (SDGs and Environmental Conventions). The group proposed that the AFOLU sector should be split in two: (1) Agriculture and Livestock, and (2) Forests and Other Land Use and suggested that the MTA be the institution responsible for compiling and presenting the results and reports, including submission to the Convention.

After the group discussion, the proposals of the different groups were presented and analysed in plenary and the following considerations were produced:

- The coordinating entity of the National MRV System should be the MTA;
- The name of the coordinating entity, should not appear in the flowchart of the institutional arrangement to prevent it from being affected by changes in the names of institutions and government structure;
- The diagram should show that the GIIMC is not at the same level as the Council of Ministers and this should be represented below in the flowchart of the institutional arrangements;
- The design of the institutional arrangements should be done considering Law 7/96 of 28 August and Decree 01/2020 of January that creates the Ministry of Land and Environment;
- INE should assume the tasks of the proposed INDS and avoid creating another institution;
- INE would be responsible for producing statistical data using its normal process and DMC would be responsible for mitigation and adaptation actions;
- The Academy of Science would be responsible for QA/QC;
- The AFOLU sector should be divided into Agriculture and Livestock under the responsibility of MADER and Forests and Other Land Use under the responsibility of MTA;
- Adopt the centralized system in the short and medium term and move to a decentralized system in the long term because it needs to update legislation and create protocols;
- See how the sectors are organized in the national climate change strategy and in the NDC, why not use the same categories?;
- In the sectors listed it is not clear where biodiversity, ecosystems and land use are included;

- There is a need to create legislation to operationalize the MRV System;
- The Monitoring and Evaluation Department of the DMC already has a database created for the systematization of climate information;
- An internal meeting at the MTA is required, with the National Director of Climate Change to adapt the proposed institutional arrangements to the organic structure of the DMC;
- It is necessary to create a sustainable development fund;
- It is necessary to create technical capacity and train technicians;
- It is necessary to increase the number of technicians to face the workload;
- There is a budget constraint for the implementation of the MRV System, so there is a need to consider only what is essential;
- For the implementation of the MRV System, it is necessary to have a training plan for technicians, and include a pilot phase with 5 years with annual monitoring, in this phase the institutional arrangements will be susceptible to structural changes according to the need.

The recommendations from workshop I were used to produce the proposal of institutional arrangement in chapter 8, while he recommendations obtained from this workshop II were the main source used to make changes to the institutional arrangements proposed in chapter 8 to produce, the selected robust institutional arrangement, chapter 9. Chapter 9 presents the first version of the institutional arrangements for implementation.

9. Development of institutional set-up

Two institutional arrangements are proposed, one considering a centralized and other considering a decentralized approach, Figure 5. These are proposed based on the available proposals and institutional arrangements, mandates of institutions, result of the Road Map for the Establishment of a National MRV System developed under ICAT Phase 1, and recommendations from the stakeholders during the first workshop, discussed in chapters 4, 5, 6 and 7 of this document.

For both institutional arrangements proposed, there are two main aspects considered. One is measuring and reporting and the other verification. No institutions are listed in figure 5, instead, fifteen sectors were identified for the MRV System. This is to reduce the effect of changes of names and administrative set-up of the ministers to the National MRV system.

All sectors included in this section have responsibility on measuring and reporting the implementation of mitigation and adaptation actions included in the NDC, and information on support needed and received. These sectors are represented by the ministries that are responsible for the activity, as well as collecting data on activities implemented internally, and by other institutions and sectors, including the private sector, civil society and NGOs. The sectors can also make use of information published in the statistics yearbooks published by the institution responsible on national statistics, Statistics Sector.

Among all sectors included in the measuring and reporting section, there are four that have additional responsibility. The Energy, IPPU, AFOLU and Waste sectors are also responsible on measuring and reporting for GHG inventories for the respective sectors in the IPCC Guidelines. This keeps what was suggested in the SNIGEE, although, there are other institutions owning data for reporting GHG emissions and removals.

All sectors report on the implementation of the NDC actions, GHG emissions, support needed and received to the DMC with technical support of the academia. The academia is also responsible for supporting the development of climate change documents, provide technical support and training to sectorial experts, as well as, developing research to support the MRV System. The DMC will be responsible for compiling the National Communications, GHG Inventories, and BUR that are expected to be replaced by BTR by end 2024. After compilation, the DMC will send the reports to the Statistical Sector for verification of the statistical procedures, and production of proposal of summary for national publication; and to the Academia for verification of the methods used to calculate the emissions and indicators. The reports verified by Statistics Sector and Academia should be further submitted for verification and approval by the GIIMC. Afterword, the DMC will submit the reports to the Council of Ministers for the last verification and approval before submission to the UNFCCC. After approval by the Council of Ministers, the summary of the main results of the GHG emissions, progress of implementation of NDC actions, and support needed and received proposed by the Statistics Sector, can be published.

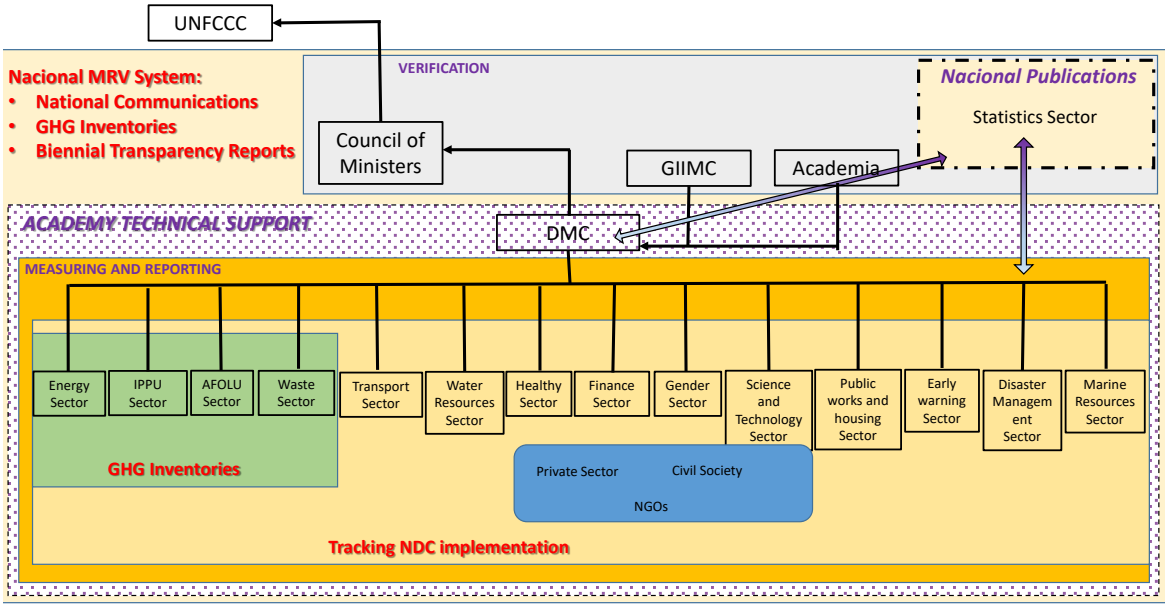

Figure 5 Proposed information sharing mechanism for robust institutional arrangement for National MRV System *[DMC: Direcção Nacional de Mudanças Climáticas (National Directorate on Climate Change); UNFCCC: United Nations Framework Convention on Climate Change; GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change); NGOs Non-Governmental Organizations; IPPU: Industrial Processes and Products Use; and AFOLU: Agriculture Forest and Other Land Use]*

The sectors can also use data published in the statistics yearbooks by Statistic Sector and the Statistics Sector may receive climate change information from other sectors. All sector represented by ministries, the private sector, civil society and NGOs are classified as, sources of data.

The institutions responsible for the National MRV Sectors presented in figure 5, are listed in table 1 in the current government structure. This might change if the ministries change names or mandates, in which case the DMC will be responsible for allocating responsibility for MRV of the sector or sub sector to a new ministry with the appropriate mandate, after consultation with the GIIMC. If a new ministry or Department of ministry is allocated an MRV sector, it has to be provided training on how to report the implementation of NDC actions and support needed and received, and in some cases on reporting GHG emissions and removals.

Table 1 Institutions responsible for the National MRV Sectors in the current government

#	Sector	Responsible Institution	Abbreviation
1	Energy	Ministry of Mineral Resources and Energy " Ministério de Recursos Minerais e Energia"	MIREME
2	Industry	Ministry of Industry and Trading " Minsitério da Industria e Comércio"	MIC
3	Agriculture Forest and Other Land Uses (AFOLU)	Ministry of Agriculture and Rural Development " Ministério da Agricultura e Desenvolvimento Rural	MADER

4	Waste	Ministry of Land and Environment “ Ministério da Terra e Ambiente”	MTA
5	Transport	Ministry of Transport and Communications “ Minstério do Transporte e Cominicações	MTC
6	Water Resources	Ministry of Public Works, Housing and Water Resources " Ministério das Obras Públicas e Habitação e Recursos Hídricos"	MOPHRH
7	Public Works, Housing	Ministry of Public Works, Housing and Water Resources " Ministério das Obras Públicas e Habitação e Recursos Hídricos"	MOPHRH
8	Health	Ministry of Health " Minstério da Saúde"	MISAU
9	Finance	Ministry of Economy and Finance “Ministério de Economia e Finanças”	MEF
10	Gender	Ministry of Gender, Children and Social Action " Ministério do Género, Criança e Acção Social"	MGCAS
11	Science and Technology	Ministry of Science Technology Higher Education " Ministério de Ciencia e Tecnologia, Ensino Superior "	MCTES
12	Early warning Sector	Ministry of Transport and Communications “ Minstério do Transporte e Cominicações through, National Institute of Meteorology “ Instituto Nacional de Meteorologia”	MTC, through INAM
13	Disaster Management Sector	Ministry of State Administration and Public Service “ Ministério da Administração Pública” through National Institute for Disaster Management “Instituto Nacional de Gestão de Calamidades”	MAP through INGC
14	Marine Resources, Sector	Ministry of the Sea Interior Waters and Fisheries “ Minsitério do Mar Águas Interiores e Pesca”	MIMAIP
15	Statistics	National Statistics Institute “Instituto Nacional de Estatística”	INE

Most institutions responsible for the sectors are ministries, except the National Institute of Meteorology, and the National Statistics Institute, which are institutions with free administration, guarded by ministries. As described in chapter 5, most ministries have departments or directorates for planning and cooperation. These departments should be responsible for compiling the information required for the National MRV System and share it with the DMC in the MTA.

As stated before, two options of the proposed systems are proposed, the one is centralized and the other is decentralized. During the stakeholder's consultation in workshop I and II, there were different opinions regarding which approach would be the better option for the MRV System. The centralized and decentralized systems proposed are described below.

9.1 Option 1 – Decentralized System

For the decentralized system, the sectors are expected to establish an NDC tracking system and apply GHG calculation methods. This entails collecting data, establish, monitor and calculate NDC indicators and GHG emissions by sources and removals by sinks, and report metadata and propose methods for improving the MRV System. Under this approach the sectors will report information on NDC indicators and emissions and removals to the DMC, calculated using the Common Reporting Format/tables[1] (CRFs), including metadata, and recalculations. As they will be responsible for calculations, they should also prepare sectorial reports on the implementation of NDC and GHG emissions that will be sent to DMC.

The DMC will develop and share CRFs with all sectors and will compile NC and BUR that will be replaced by BTR by end 2024, based on the sectorial reports received, as well as interacting with the Statistics Sector for verification of data used and with academia for QA/QC and propose updating the calculation methods based on research. Further, the DMC should submit the reports for verification by the GIIMC and by the Council of Ministries before submitting them to the UNFCCC. DMC will also be responsible for training the sectorial experts on methodological issues.

Once the Statistics Sector receive the reports, they should interact with other sectors for clarification and collecting additional data and/or metadata, as part of the quality assurance and quality control mechanism for the MRV system. The focus should be on the indicators used to track the NDC actions, including the support needed and received, as well as the GHG emissions by sources and removals by sinks. Statistics Sector review should be made on the data used for calculations, including predictions and other statistical procedures.

The Academia will have a chance to review the final reports, NC, BUR/BTR. The Academia, interacting with DMC and other sectors, should review the calculation methodologies, recalculations and suggest improvements. This review should be extensive, applying the principles of transparency, consistency, comparability, completeness and accuracy

Beside verification, the GIIMC will be responsible for approving the reports before submitting to the Council of Ministers. Compiled NCs and BTRs will be sent in advance to the members of the GIIMC for review and comment, and the final document should be discussed and approved in a meeting.

[1] The Common Reporting Format/tables are being discussed and developed by the Subsidiary Body for Scientific and Technological Advice for the Paris Agreement, and were expected to be presented for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement during COP 26 in 2020. This has been postponed due to the Covid-19 pandemic, and is expected to take place in Glasgow in November 2021. Although the final format is not available yet, the information required is still described in the MPG.

This system requires trained experts in the sectors and it will be affected seriously by changes on the administrative set-up of the institutions. The system is also prompt to failure because some sectors might not be committed on activities related to the MRV system.

9.2 Option 2 – Centralized System

For the Centralized System, the sectors will only collect data and metadata. The sectors will not calculate emission reductions and adaptive measures based on the NDC indicators, neither the GHG emissions by sources and removals by sinks for the GHG inventory. They will instead report the sectoral data related to NDC actions needed to track the implementation and achievement the NDC, information on support needed and received, sectoral activity data needed to calculate GHG emissions for the national GHG inventory, including metadata to the DMC. Calculations of NDC indicators, national overview of support needed and received, as well as the calculation of GHG emissions will be done in the DMC. After the calculations the DMC will compile the GHG Inventories, NCs and BURs/BTRs.

The DMC will submit the reports to the Statistics Sector for verification of data used and to the academia for QA/QC (verification and updating the calculation methods based on a research). Further, the DMC should submit the reports for verification by the GIIMC, and the Council of Ministries before submitting to the UNFCCC.

As part of the quality assurance and quality control procedures for the MRV system, once the Statistics Sector Receive the report, they should interact with DMC and other sectors for clarification and collecting additional data and/or metadata, if necessary. The focus of the review should be on the indicators used to track the NDC actions, including the support needed and received, as well as the GHG emissions by sources and removals by sinks. Statistics Sector review should be involved on data for calculations, including the establishment of GHG emission projections and mitigation scenarios, and other statistical procedures.

The Academia will review the final reports as part of the quality control procedures. The Academia should as part of the quality assurance procedures, interact with the DMC for reviewing the calculation methodologies, recalculations and suggest improvements. This review should be extensive, applying the principles of transparency, consistency, comparability, completeness and accuracy.

The Centralized System requires a Department for Climate Transparency with experts to deal with specific issues of the MRV. Ideally the department will have access to 7 experts in the DMC that will be responsible on calculating the GHG inventories and NDC indicators, namely a (1) head of department or MRV System Coordinators, (2) Energy Expert, (3) IPPU Expert, (4) AFOLU Expert, (5) Waste Expert, (6) Generalist Expert, and (7) one expert on NDC actions tracking. Creating a new department requires changes in the organizational structure of the DMC, and appointing and training technical staff, which requires time. However, this system is much less prompt to be affected due to changes on the administrative set-up of the institutions and it minimizes the impact of sectors not being committed on activities related to the MRV system.

10.Institutional Set-up selected

Following the recommendations from the workshop II, the institutional arrangement should be centralized, because with the current administrative structure and expertise it is easier to implement. The final institutional arrangement organization chart is presented in Figure 6. As in the proposal presented in the workshop II, described in chapter 8, this organization structure presents two main sub-systems, one for (1) Measuring and Reporting and other for (2) Verification, both coordinated, by the coordinating institution, which is currently MTA, through DMC. The Institutional arrangement also includes the 15 sectors within public institutions, Private Sector, Civil Society, NGOs, GIIMC, Academia and the Council of Ministers.

All sectors included in the Measuring and Reporting sub-system have responsibility on measuring and reporting for the implementation of mitigation and adaptation included in ENAMMC, particularly, in the NDC, and support needed and received. These sectors are represented by the ministries and responsible for collecting data on activities implemented internally, and by other institutions including the private sector, civil society and NGOs. The sectors can also make use of information published in the statistics yearbooks published by the institution responsible on national statistics. The private sectors are composed by private companies, and civil society, which includes associations, such us the Association of Municipalities, that own data for calculating GHG emissions and removals, responsible on implementing activities included in the ENAMMC, and particularly the NDC actions, thus owning data for monitoring the NDC actions and/or having data for calculating the resources needed and received. The NGOs include organizations that work with assessment of activities, promote the implementation of NDC actions, thus making them primary data holders.

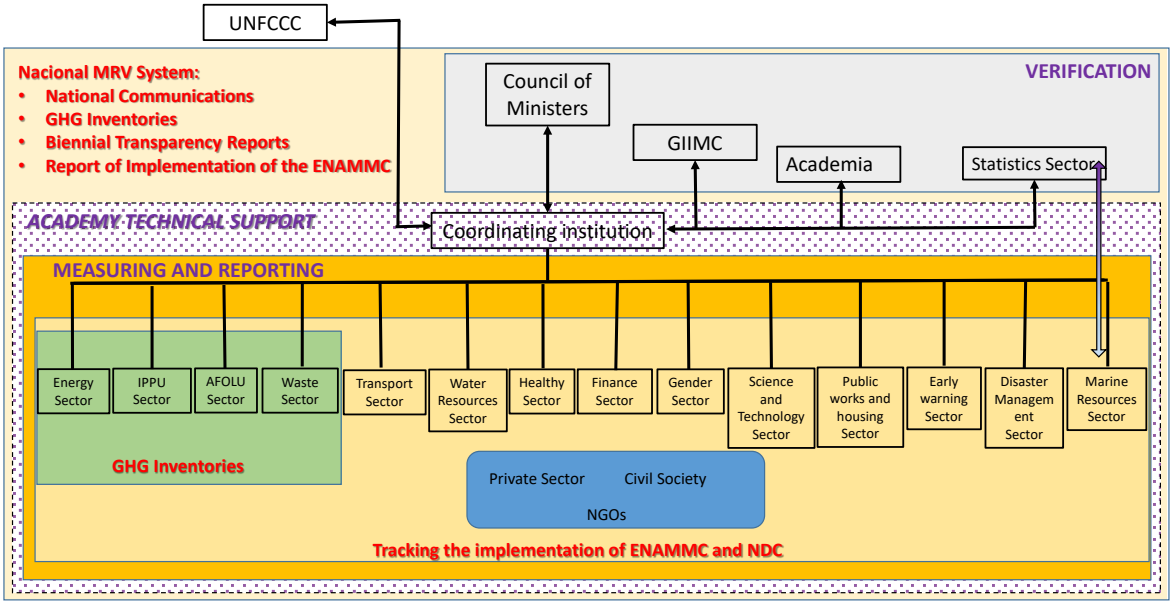

Figure 6 Information sharing mechanism for robust institutional arrangement for National MRV System *[DMC: Direcção Nacional de Mudanças Climáticas (National Directorate on Climate Change); UNFCCC: United Nations Framework Convention on Climate Change; GIIMC: Grupo Inter-institutional de Mudanças Climáticas (Inter-Institutional Group of Climate Change); NGOs Non-Governmental Organizations; Climate change Coordinator IPPU: Industrial Processes and Products Use; and AFOLU: Agriculture Forest and Other Land Use]*

Among all sectors included in the Measuring and Verification Sub-System, there are four that have additional responsibility. The Energy, IPPU, AFOLU and Waste sectors are also responsible on

measuring and reporting for GHG emissions for the respective sectors in the IPCC Guidelines. This keeps what was suggested in the proposal of the SNIGEE, although, there are other institutions owning data for reporting GHG emissions and removals. The four institutions that own most data were selected to collect data from others and calculate GHG sectorial emissions and removals.

All sectors reporting on the implementation of the ENAMMC, particularly the NDC actions, GHG emissions, support needed and received to the Coordinating Institution will receive technical support from academia. The academia is also responsible for supporting the development of climate change documents, provide technical support and training to sectorial experts, as well as, developing research to support the MRV System. The Coordinating Institution will be responsible for compiling the NCs, GHG Inventories, BUR that are expected to be replaced by BTR by end 2024. After compilation, the Coordinating Institution will send the reports to the Statistical Sector for verification of the statistical procedures; and to the Academia for verification of the methods used to calculate the emissions and indicators. The reports verified by Statistics Sector and Academia should further be submitted for verification and approval by the GIIMC. Afterwards, the Coordinating Institution will submit the reports to the Council of Ministers for the last verification and approval before submission to the UNFCCC.

Currently, the GHG inventories and the other climate change reports are prepared by consultants that collect data from primary data holders. The process of reporting for climate change is not consistent because it depends on external consultants and commonly they have problems to access data because they do not have enough authority to enforce the primary data holders to supply them with accurate data.

The way forward is to enable the available administrative arrangement at the MTA, particularly at the DMC for doing the climate change monitoring and reporting. Currently the DMC has the following departments: (1) Climate Risk Management and Adaptation Department “Departamento de Adaptação e Gestão do Risco Climático”, (2) Low Carbon Development and Mitigation Department “ Departamento de Mitigação e Desenvolvimento de Baixo Carbono”, (3) Department of Systematization of Climate Information “ Departamento de Sistematização da Informação Climática”.

The Low Carbon Development and Mitigation Department will be responsible on doing the GHG inventories and reporting for mitigation actions listed in the ENAMMC and the NDC and the Climate Risk Management and Adaptation Department will be responsible on reporting adaptation actions listed in the ENAMMC and listed in the NDC Operational Plan. The Department for Systematization of Climate Information will give technical support on complaining GHG inventories NDC indicators including metadata, as well as, publishing the climate change information in the website, and responding to general aspects of BRTs and NCs.

In long term perspective it might be reasonable to create the Climate Change Institute. Among other activities, this institute will be responsible for coordinating the implementation of the MRV System, thus replacing the DMC at MTA as Coordinating Institution. This will make the MRV System more consistent but it will take time for approval and for allocating resources.

10.1 Need of Experts, their Roles and responsibilities

To enable the implementation of the MRV System, 10 experts, from the DMC have to be allocated to coordinate the collection of information and preparation of the GHG inventories, report the implementation of ENAMMC, particularly the NDC and adaptation actions listed in the NDC Operational Plan, as well as preparing the climate change reports, that include BTRs and NCs. Additionally, sectorial experts, in institutions other than the Coordinating Institution should be

indicated, that will be responsible on collecting sectoral data. The experts to operationalize the National MRV System and their roles are listed in table 2.

Table 2 MRV Experts and Their roles. *[DNMC: National Climate Change Director "Director Nacional de Mudanças Climáticas", DAGRC: Climate Risk Management and Adaptation Department "Departamento de Adaptação e Gestão do Risco Climático", DMDBC: Low Carbon Development and Mitigation Department "Departamento de Mitigação e Desenvolvimento de Baixo Carbono" DSIC: Department of Systematization of Climate Information "Departamento de Sistematização da Informação Climática", CD: Head of Department "Chefe do departamento"]*

Institution	**Role on the MRV institutional arrangement**	**Name of experts**
MRV System Coordination Team		
MTA – DMC – DNMC	MRV Coordinator	
MTA – DMC – CD – DMDBC	Mitigation Expert – Coordinator	
MTA – DMC – DMDBC	Energy Expert	
MTA – DMC – DMDBC	IPPU Expert	
MTA – DMC – DMDBC	AFOLU Expert	
MTA – DMC – DMDBC	Waste Expert	
MTA – DMC – CD – DAGRC	Adaptation Expert - Coordinator	
MTA – DMC – DAGRC	Adaptation Expert	
MTA – DMC – CD – DSIC	Generalist Expert – Coordinator	
MTA – DMC – DSIC	Generalist Expert	
Sectoral Experts		
MIREME	Energy Expert – Sector Coordinator	
MIREME	Energy Expert	
MIC	IPPU Expert – Sector Coordinator	
MIC	IPPU Expert	
MADER	AFOLU – Agriculture and Livestock Expert – Sector Coordinator	
MADER	AFOLU – Agriculture and livestock Expert	
MTA	AFOLU Forest and Other Land Uses Expert	
MTA	AFOLU Forest and Other Land Uses Expert	
MTA	Waste Expert – Sector Coordinator	
MOPHRH	Waste Expert	
MAEFP	Waste Expert	
MTC	Transport Expert – Focal Point	
MOPHRH	Water Resources Expert – Focal Point	
MOPHRH	Public Works, Housing Expert – Focal Point	
MISAU	Health Expert – Focal Point	
MEF	Finance Expert – Focal Point	
MGCAS	Gender and Social Issues Expert – Focal Point	

MCTES	Science and Technology Expert – Focal Point	
MTC, through INAM	Early Warning Expert – Focal Point	
MAP through INGC	Disaster Management Expert – Focal Point	
MIMAIP	Marine and Inland Resources Expert – Focal Point	
INE	Statistics – Focal Point	
EMU	Academia – Focal Point	

The MRV Coordination Team will be responsible for:

- Interacting with UNFCCC for clarification, as applicable;
- Delivering the CRFs, to all sectors to collect data and calculate the GHG emissions by sources and removals by sinks, indicators for monitoring the implementation of ENAMMC, including the NDC, as well as the resources needed and received:
- Collecting additional information needed for BTRs and NCs according to the UNFCCC MPGs, through CRFs created for this purpose;
- Prepare proposals to apply for funds to finance climate-related activities;
- Preparing and updating climate change reports and documents;
- Provide training of sectoral experts on data collection;
- Identify needs of training;
- Approve sectoral reports;
- Prepare proposals to apply for funds to finance climate-related activities to support the activities of the National MRV System; and
- Coordinate all activities to improve the data collection, such us developing protocols with other institutions, improving and suggesting improvement of sectorial legislation.

The System MRV Coordinator will be responsible for:

- Organizing the MRV meetings;
- Ensuring the compliance of the MRV System implementation cycle;
- Set the deadlines for compilation and submission of sectorial reports;
- Coordinate the preparation of NCs, BTRs, as well as reports on the implementation of ENAMMC, NDC and Adaptation Actions;
- Coordinate the preparation of proposals to apply for funds to finance climate-related activities to support the activities of the National MRV System;
- Coordinate the revision of the ENAMMC, NDC and the National MRV System; and
- Present the climate change reports and proposals of reports in official meetings.

The Generalist Expert Coordinator will be responsible for:

- Participate in the MRV meetings;
- Conduct sectorial meetings;
- Set the deadlines to ensure compliance of sectoral activities;
- Report and respond for the generalist aspects of the GHG inventories, NCs and BUR;
- Support the preparation of templates for collecting sectorial information;
- Manage and store digital records, as well as, publishing Climate Transparency Information in the website; and

- Managing the QA/QC process, thus ensuring transparency, consistency, comparability, completeness and accuracy of all process.

The Mitigation Expert – Coordinator will be responsible for:

- Participate in the MRV meetings;
- Conduct sectorial meetings;
- Set the deadlines to ensure compliance of sectoral activities;
- Coordinate the updating of the GHG and implementation of the mitigation actions of the ENAMMC and NDC;
- Coordinate the preparation and compilation of all mitigation information required for climate change documents and reports (NC, BTRs, implementation reports, as well as the revision of ENAMMC and NDC), taking into account the MPG described in Decision 13 / CP24, chapters II, III, and VI, considering the updates;
- Share CRFs to report data for calculating ENAMMC indicators, particularly the NDC, including updating targets and other relevant information for sectors; and
- Coordinate the revision of NDC of Mozambique.

The Adaptation Expert Coordinator will be responsible for:

- Participate in the MRV meetings;
- Conduct sectorial meetings;
- Set the deadlines to ensure compliance of sectoral activities;
- Coordinate the preparation and compilation of all mitigation information required for climate change documents and reports (NC, BTRs, implementation reports, as well as the revision of ENAMMC and NDC), taking into account the MPG described in Decision 13 / CP24, chapters IV and VI, considering the updates; and
- Share CRFs to report data for calculating ENAMMC indicators, particularly the NDC, including updating targets and other relevant information for sectors.

All experts of the Coordination Team, excluding the Coordinator of the National MRV System, Generalist Expert - Coordinator, Mitigation Expert Coordinator and Adaptation Expert - Coordinator are responsible for:

- Participate in the MRV meetings;
- Coordinate the data collection with sectoral experts, as applicable;
- Calculate indicators for monitoring the implementation of the ENAMMC, particularly the ones listed in the NDC tracking system;
- Calculate the GHG emissions by sources and removals by sinks, as applicable;
- Participate in the compilation of climate change reports; and
- Support the Mitigation Expert Coordinator, Adaptation Expert Coordinator and Generalist Expert Coordinator during the preparation of sectoral reports, as applicable.

Sectoral Coordinators, not in the Coordination Team, will be responsible for:

- Participate in the MRV meetings;
- Ensuring that the deadlines set by the Coordination Team are met for submitting the data CRFs;
- Organizing sectoral meetings, in their institutions;
- Coordinating collection of information in their institutions, including metadata, using the templates and CRFs supplied by the Coordination Team;

- Supplying the MRV Coordination Team with all information required for preparation of climate change reports and documents; and
- Propose improvement of sectoral legislation to improve data collection from primary data holders, as well as the data collection system itself.

Sectoral Focal Point, not in the Coordination Team, excluding Statistics and Academia, will be responsible for:

- Participate in the MRV meetings;
- Ensuring that the deadlines set by the Coordination Team are met for submitting data through CRFs;
- Collecting data from statistics yearbook and primary data holders, including metadata;
- Supplying the MRV Coordination team with all information required for preparation of climate change reports and documents; and
- Propose improvement of sectorial legislation to improve data collection from primary data holders, as well as the data collection system itself.

Other sectorial experts, not in the Coordinating Institution, excluding Sectorial Coordinators will be responsible for:

- Participate in the MRV meetings;
- Support sector coordinators to compile additional information for the preparation of climate change documents and reports;
- Collecting data from statistics yearbook and primary data holders, including metadata; and
- Suggest improvements in the legislation and data collection system.

Academia Focal Point will be responsible for:

- Participating in the MRV meetings;
- Selecting experts from academia for reviewing the climate change reports and to support the MRV Team of experts, if necessary;
- Coordinate the revision of climate change reports;
- Collecting proposals for improvement of methodologies and communicate to the MRV Coordination Team; and
- Coordinating the preparation of climate change trainings.

Statistics Focal Point will be responsible for:

- Participate in the MRV meetings;
- Coordinate the revision of climate change reports; and
- Facilitate all MRV experts on accessing data relevant for preparation of climate change reports and documents.

Responsibilities of GIIMC

The Inter-Institutional Group of Climate Change, composed by senior experts of institutions, nominated by the minister of the sector, that are part of the robust institutional arrangement for the MRV, excluding the experts included in the MRV System indicated in table 2, has responsibility on reviewing and approving the following documents:

- National Climate Change Strategy;
- Reports of Implementation of the National Climate Change Strategy;

- All other climate change related documents, including BTRs, GHG inventories, NDC implementation Reports, NCs;
- Updated NDC of Mozambique; and
- Revised MRV System.

GIIMC also have the responsibility to decide and approve the allocation of sectors of the MRV institutional arrangements to a new institution, in case of changes.

10.2 Link between the GHG inventories sectors, categories used to classify the ENAMMC and NDC actions, and sectors of the National MRV System.

The sectors defined for GHG inventories by the IPCC were used to assist in defining sectors for the MRV System. Some actions of the ENAMMC and NDC fit into these sectors, especially mitigation actions. However, most adaptation actions do not fit into these sectors. New Sectors were created to accommodate these actions, see Figure 6.

Different classification was adopted to classify the actions in the ENAMMC and NDC, in the NDC tracking elements. This classification is in line with the classification defined in the NDC Operational plan but creates issues when comparing the sectoral reductions of emissions, due to implementation of NDC, with sectors defined for GHG inventories, However, the institutions are allocated to the NDC actions in the table of NDC tracking elements included into this document as appendix III.

11.Data flow within the institutions

Currently there is no inter-institutional agreement that facilitate the MRV System and data collection from primary data holders. Experts are hired as consultants to prepare the climate change documents and reports, and data is collected from primary data holders using official letters for requesting data through the MTA. This process takes time and sometimes the primary data holders do not provide the requested data. Additionally, this data collection system does not allow continuous improvements because each time a report is prepared, new experts are hired and letters requesting data may be sent to different departments where there are no records on previous data collection events.

For this MRV System, the data collection should be done using the CRFs delivered to the sectorial experts by the MRV Coordination Team. The Coordination Team has responsibility on training the sectorial experts on filling the CRFs. For GHG emissions, data is to be filled directly in the IPCC CRFs. The coordination team has a responsibility of training the sectorial experts on filling the CRFs, including how to report the metadata.

The Academia will be invited to support the coordination team on developing and updating the CRFs for monitoring the implementation of the ENAMMC and NDC. Additionally, academia will train the coordination team and sectorial experts on filling the GHG emissions by sources and removals by sinks, and ENAMMC and NDC monitoring CRFs. The Coordination Team might propose changes in the CRFs based on the constrains identified during the implementation of the system, and the flexibility provisions provided by the MPG.

The sectoral experts will use different sources to collect primary data, regular reports submitted to them, by private sector, civil society and NGOs and statistics yearbooks by INE. Data not included in regular reports and statistics yearbooks should be requested using letters to the primary data holders. With time the sectoral experts should propose to update the report requirements submitted by primary data holders to include necessary dada and metadata for reporting GHG emissions, for monitoring the implementation of the ENAMMC and NDC, and support needed and received, thus reducing the amount of data requested using letters.

The data flow mechanism proposed above is to be regarded as a preliminary approach taken as Mozambique transitions towards a more effective mechanism in which the primary data holders fill-in the required data in to a web-based data collection system. The Coordination Team, should work together with the Department of Systematization of Climate Information “Departamento de Sistematização da Informação Climática” of DMC, for developing a web-based data collection system in which different users should have access to perform their tasks, such as, filling data, reviewing and compiling final reports. The academia should be invited to support the Department of Systematization of Climate Information, to establish the web-based data collection system to produce the GHG inventories, monitor the implementation of the ENAMMC and the NDC and support needed and received, and other climate relevant information.

This will make sure that the data is collected using the same channels, and records will be kept as the data is transferred from one institution to other allowing for improvement of the system. Even if the professionals of the sectors are changed, the data collection records will be kept and will facilitate other professional to track the records of data supplied previously.

12.Legal set-up

The “Diploma ministerial 44/2020” from August 18, 2020, that approve the internal regulation of the MTA defines its mandate and in its article 3 e) defines the attributions of MTA regarding to climate change, that include (1) development, implementing, and promoting the implementation, and monitoring of climate change policies and strategies, (2) Coordinate and submit timely the reports required under the implementation of ratifies conventions and agreements.

As described above, all ministries have mandates that facilitate their interaction during the development of their activities through the Planning and cooperation departments and/or directorates. Sectorial legislation also is designed to enforce the primary data holders to submit reports to support development of sectorial statistics and plan future development, and monitor sectorial social, economic and environmental impacts.

Nevertheless, there is no consistent legal set-up to enable the implementation of the MRV System which require an inter institutional agreement to facilitate the data sharing and improvement of sectorial legislation to enforce the primary data holders to supply with data required to calculate GHG emissions by sources and removals by sinks, and for monitoring the implementation of the ENAMMC and the NDC of Mozambique, including the support needed and received.

Three changes are suggested to improve legislation to enhance the implementation of the MRV-System, that include, (1) develop institutional collaboration agreement between the institutions involved in the arrangement; (2) improve sectorial legislation to promote and/or enforce the primary data holders to supply information required for reporting the implementation of the ENAMMC and to enabling Mozambique to adhere to its reporting requirements under international conventions; and (3) improve legislation to allow incentives to institutions and experts based on the deliverables during the implementation of the MRV System. Regarding to legislation, the primary task of MRV Coordination Team is to prepare inter-institutional agreement and the sectoral experts should work on the sectorial legislation.

13.Sustainability of the institutional arrangement

There are several issues that can compromise the implementation of the MRV System, that include, (1) availability of human and financial resources, (2) weak legislation, and (3) lack of motivation. The technicians available in the MTA, particularly at the DMC are limited regarding to number and expertise to cover all sectors of the institutional arrangements. The limitations of technicians are also notable in the sectors. Implementation of the MRV System requires training of the available experts, and in some cases hiring new experts.

Availability of financial resources is also a limitation for the implementation of the MRV System. There are two opportunities to overcome this limitation, (1) the MRV system should generate information relevant for planning economic and social development, thus making the MRV priority for the government and (2) making use of funding opportunities for climate change activities. For making use of funding opportunities for climate change activities it is necessary to have an MRV Coordination Team with knowhow to prepare the applications and/or strengthen the collaboration with academia for support during the preparation of applications.

To overcome the problem with legislation, the MRV Coordination Team should work on developing the inter-institutional collaboration agreement and support sectorial experts on improving their sectoral legislation. There is a need of clear and detailed plan for improving the sectoral legislation.

One issue that is usually ignored but it is crucial for implementation of any activity is the motivation of institutions and its personnel. Limited benefits gained by the institutions and personnel working in the government is one of the main constrain for implementation of any activity. Climate change activities a seen as extra activities with extra burden and without remuneration. A system in which the institutions and the experts are awarded for delivering results is necessary. The MRV System should have budget to pay the institution and experts for delivering annual reports, this payment should be done when the sectorial reports are approved by the MRV Coordination Team. The Coordination Team should not decide on their payment for the work delivered, this team should receive payments when the reports are approved by the Council of Ministers. The Incentives can only be attributed to institutions and technicians when there is financial availability or through funded projects and this should not compromise the functioning of the MRV System.

14.Implementation Plan

Having an implementation plan is crucial for the success of the MRV System. This implementation plan includes two parts: (1) initialization and training of the MRV System; and (2) MRV System implementation cycle and process monitoring. The MRV System initialization and training defines the necessary steps to initiate the system. The MRV System implementation cycle and process monitoring, defines the indicators for monitoring its implementation and the steps taken from defining the MRV System objectives to the revision of the process and definition of new objectives.

14.1 Initialization and training of the MRV System

Experts to play the roles indicated in the table 2 have to be carefully selected. In case no one applies to the role in the institution, they have to be hired. After the selection of personnel to play the different roles in the MRV System, there is a need of mapping the available competences, train the experts, the training should include the contents listed in table 3.

In parallel with the trainings of a team of experts, it is recommended that for each member of the MRV Coordination Team (Table 2) a consultant from academia is hired to support the MRV Coordination Team in implementing the CRFs to report the GHG emissions and removals, monitoring the implementation of the ENAMMC and NDC actions, including the support needed and received. In this phase training the experts on how to fill-in correctly the CRFs, is crucial. To ensure that the MRV System experts are familiarized with the system, the experts from the academia should make sure to provide updated information on GHG inventory, records of the first values of the ENAMMC and NDC indicators, the NDC targets with more realistic values, and resources needed are received, ensuring the information needed for the first upcoming BTR and NC are available. The MRV Coordination team should be assisted until the first MRV implementation cycle is completed, capacities within the institutions are built, and the system becomes self-sustainable.

Table 3 Initial Training for the MRV Experts listed in table 2

Item	Content
1	MPG of the Paris Agreement
2	National MRV System roles and responsibilities
3	National NDC Tracking Framework
4	GHG Inventories (IPCC guidelines)
5	Stakeholders Consultation
6	Approaches to map support needed and received
7	Emission and mitigation scenarios
8	Assess climate impacts and report adaptation actions

The most sustainable way to initialize the implementation of the MRV System should be through a funded project with a duration of one MRV implementation cycle to include, training of experts, production of at least one of deliverables of the system and final evaluation.

The Initialization of the system is expected to be done using the Capacity Building Initiative for Transparency (CBIT) project. Mozambique submitted to CBIT a project proposal with a title “Capacity building for Mozambique’s climate change transparency system” with a duration of 36 months. Through this project it is expected to produce the outputs listed in table 4. The project duration is two years less than the MRV System implementation cycle, however other sources of funds are expected to be used to ensure continuation of the initialization phase, such as the funds

for elaboration of NCs and BTRs. During the first cycle a funds rising process have to be set to allow sustainability of the system even after the project.

Table 4. Main outputs of the Capacity building initiative for transparency (CBIT) project proposed by Mozambique

Project Outputs
Output 1: National institutions strengthened to coordinate, manage and implement climate transparency activities
Output 2: Technical support, training and tools provided to the country to submit transparent, consistent, comparable, complete and accurate GHG inventories
Output 3: Technical support, training and tools provided to the country to track Nationally Determined Contributions (Mitigation/Adaptation) and support needed and received
Output 4: Technical support, training and tools provided to the country to use climate analysis in decision-making

14.2 MRV implementation cycle and process monitoring

The MRV processes have to be monitored to allow their continuous improvement. The evaluation of the implementation of the MRV processes have to be done every five years by evaluating the indicators listed in table 5.

Table 5 Indicators to monitor the implementation of the MRV System

Item	Indicator	Unit	Target
1	NDC actions monitoring indicators	Not applicable	Updated every year
2	GHG inventories	Not applicable	Updated every year
3	ENAMMC implementation report	Not applicable	Updated every year
4	Number of BTRs Submitted	Not applicable	One every two years
5	NCs submitted	Not applicable	One every four years
6	Updated NDC	Not applicable	Updated every five years
7	Updated ENAMMC	Not applicable	Updated ten five years
8	Financial resources allocated to the MRV System	USD/Year	Not defined

An implementation cycle of five years will allow the production of at least one of the main deliverables of the system, including updating the National NDC before revision of the system. The timeline proposed for the MRV System is presented in table 6. The MRV Coordination team should work to make sure that the sectors submit the sectoral reports to allow having by the end of each year an updated GHG inventory, NDC implementation actions indicators. MRV Coordination Team should also make sure that every two years the BTRs are submitted, and every four year NCs are submitted, and every five years updated NDCs are submitted to the UNFCCC.

The System should also guarantee the updating and production of ENAMMC's implementation reports. Reports on the implementation of ENAMMC should be prepared annually. The updating of ENAMMC should be done every 10 years, that is, every two cycles of implementation of the National MRV System. The preparation of detailed activity plans to ensure that the submissions are done on time is the responsibility of the MRV Coordination Team.

By the end of each implementation cycle, the MRV Coordination Team should prepare an implementation report that include the values of MRV System indicators, listed in table 5, main constrains for the implementation of the MRV System and proposal of improvements to be discussed in a meeting that include experts from all sectors and members of GIIMC. The meeting should produce an updated MRV System objectives and changes in the system itself.

Table 6 Timeline for the MRV System Deliverables

MRV Implementation Cycle	**1**					**2**				
	Years									
Main Deliverables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Updated ENAMMC indicators	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated
Updated NDC indicators	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated
Updated GHG inventories	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated	Updated
BUR or BTRs		Submitted		Submitted		Submitted		Submitted		Submitted
NCs				Submitted				Submitted		
Report on the implementation of ENAMMC	Submitted	Submitted	Submitted	Submitted	Submitted	Submitted	Submitted	Submitted	Submitted	Submitted
Updated ENAMMC										Submitted
Updated NDC					Submitted					Submitted
Revision of the MRV System					Revision					Revision

14.2.1 Updating GHG inventories, ENAMMC and NDC indicators, and ENAMMC implementation reports

The GHG inventories and the monitoring indicators of the ENAMMC and NDC are expected to be updated every year, as indicated in table 6. After the initialization phase, the timeline to update the GHG inventories, the information for monitoring the ENAMMC and NDC, and preparation of the report of implementation of the ENAMMC is proposed and presented in table 7. The data used for calculating the GHG inventories and the indicators to monitor the ENAMMC is data from the previous year, this means that the GHG inventories, and the ENAMMC and NDC indicators will be calculated with a lag of one year. The GHG inventories and the ENAMMC and NDC tracking elements are updated every year but they are not sent for verification by the **academia** and **statistics sector.** Differently, a report on implementation of the ENAMMC will be compiled and submitted for verification and approval by GIIMC and the Council of Ministers. The ENAMMC implementation report will not go through the verification by the academia and the statistics sector to simplify the process, as they have to be prepared every year. Only the last report of the implementation of the ENAMMC, in the year 9, before revision of the strategy has to be verified by the Academia and the Statistics Sector.

Table 7 Timeline for updating the GHG inventories and information for monitoring the implementation of the ENAMMC and the NDC, including the preparation of ENAMMC implementation report.

Activity	Months											
	Jan.	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Jul.**	**Aug.**	**Sep.**	**Oct.**	**Nov.**	**Dec**
MRV System coordination team shares updated CRFs and trains the experts on how to complete CRFs for GHG inventories and track implementation of ENAMMC and NDC, as applicable												
Filling the CRFs with data and metadata												
Submission of the CRFs by sectorial experts to the DMC												
Compilation of GHG inventories and tracking elements of the implementation of the ENAMMC and NDC, as well as the implementation monitoring report of the ENAMMC, by the MRV System coordination team												
Meeting with all MRV System technicians to present and discuss the GHG inventories and the tracking elements of ENAMMC and NDC, including trend analysis, and the annual report on the implementation of ENAMMC.												
Verification and approval by the GIIMC of the ENAMMC implementation report.												
Verification and approval by the Council of Ministers of the ENAMMC implementation report.												
Publication of the ENAMMC implementation report												

14.2.2 Preparation and submission of BTRs and NCs

The timeline for preparation of BTRs and NCs is similar. However, the BTRs are prepared every two years and NCs every four years, and they should be timed so the BTR and NC can be submitted in conjunction. see table 6. During the first two years the activities presented in table 8 are developed to produce the BTR and during the following two years, both BTR and NCs will be produced, revised and published through the same process to avoid duplication of efforts. As the GHG inventories and the NDC monitoring elements are updated every year, the compilation of the reports is done by the MRV System Coordination Team based on the information already produced. The other experts will have a chance to comment on the reports prepared immediately after the compilation, table 8.

Table 8 Timeline for BTRs and NCs

Activity	Year 1		Year 2											
	Semester I	Semester II	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Updating information on national circumstances														
Compiling (every two years for BTRs) and (every four years NCs) GHG inventories.														
Compiling (every two years for BTRs) and (every four years NCs) information on NDC monitoring (mitigation and adaptation actions), including resources needed and received.														
Compiling the (every two years) BTR, and NCs (every four years)														
Presentation of the draft of report(s) for approval by all MRV experts in a meeting														
Submission of report(s) for revision by academia														
Submission of report(s) for revision by statistical sector														
Sectorial experts ready to respond questions during revisions														
Verification and approval by GIIMC														
Verification and approval by the Council of Ministers														
Publication of the summary o in the statistics yearbook														
Submission to UNFCCC														

14.2.3 Revision of the ENAMMC, the NDC and the National MRV System

Every five years, the MRV Coordination Team will launch a one-year program to review the NDC, including the tracking elements, and the MRV system, including its institutional arrangements, according to table 5 and this process is led by the MRV Coordinator. This one-year program aims to update the NDC and the MRV System based on the results obtained during the five years' activities of the National MRV System Team of experts and consultation to the stakeholders. This will include updating the transparency system to align with changes adopted in international and national agreements. The program will follow the schedule proposed in table 8. Additionally, in the ninth year of the implementation of ENAMMC, the MRV System Coordination Team should begin the process of reviewing ENAMMC and end with the publication of the strategy after approval by the Council of Ministers. The review process begins with a meeting to launch the revision of the ENAMMC. The meeting will serve to gather inputs for the revision of the strategy document. The ENAMMC review process will also follow the timeline presented in table 9.

The review year of the NDC, is also defined as the year before the targeted COP, to make sure the UNFCCC has the required 9-12 months for reviewing the document before the conference. This has to be adjusted when defined the first year of implementation of the National MRV System, to make sure that the NDC and the MRV System are reviewed in the same year.

Table 9 Timeline for revision of the ENAMMC and NDC, including its tracking elements and the MRV System, including its institutional arrangement.
Note: The revision of the ENAMMC is done every ten years, this means that, starting in the ninth year of its implementation.

Activity	Months											
	Jan.	**Feb.**	**Mar.**	**Apr.**	**May**	**Jun.**	**Jul.**	**Aug.**	**Sep.**	**Oct.**	**Nov.**	**Dec**
Meeting to launch the revision of the ENAMMC and the NDC and National MRV System												
Sectorial experts send proposals for improvement												
Compilation of sectoral contributions and writing the final reports on the implementation of the MRV System, ENAMMC and NDC												
Preparation of updated proposals of ENAMMC, NDC, National MRV System												
Meeting with the MRV System Technicians for verification and approval of the proposed documents												
Meeting with GIIMC, including academia and statistical sector experts for verification and approval of the proposed documents												
Submission of the documents to the Council of Ministers for verification and approval.												
Publication of updated ENAMMC and MRV System, including its institutional arrangement												
Submission of the updated NDC to UNFCCC												

15. References

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Transparency

Appendixes

Appendix I – Agenda do Workshop I

REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO DA TERRA E AMBIENTE

DIRECÇÃO NACIONAL DE MUDANÇASS CLIMÁTICAS

Departamento de Mitigação e Desenvolvimento de Baixo Carbono

Estabelecimento de elementos para a Monitoria das Acções da NDC de Moçambique e desenvolvimento de um sistema robusto de MRV Nacional

Proposta de Programa (08 e 09 de Outubro de 2020)

Dia	Hora	Actividade	Orientador	Tipo de Sessão
	08.00	Partida para Macaneta		
	09.30	Chegada a Macaneta		
	09.45 – 10.00	Registo dos participantes		
	Sessão de Abertura			
	10.00 – 10.15	Apresentação dos participantes		
	10.15 – 10.30	Abertura Oficial	DNMC	
	10.30 – 11.00	Intervalo do café		
	11.00 – 11.20	Apresentação dos objectivos do encontro de trabalho, da proposta de agenda e aprovação	DNMC	
	Elementos de monitoria da NDC de Moçambique			

1	11.20 – 11.50	Apresentação das acções e indicadores e metas propostos para a NDC de Moçambique	CN	Apresentação
	11.50 – 12.20	Elementos de monitoria da NDC	CN	Apresentação
	12.20 – 13.20	Análise dos indicadores (instituições responsáveis, valores dos indicadores no ano base, disponibilidade de dados, metas, periodicidade, desafios e lacunas)	Grupos	Discussão
	13.20 – 14.00	Intervalo para o almoço		
	14.00 – 16.30	Validação dos indicadores para as acções da NDC de Moçambique	Todos	Discussão
2	9.00 – 10.45	Validação dos indicadores para as acções da NDC de Moçambique	Todos	Discussão
	10.45 – 11.15	Intervalo do café		
	11.15 – 13.00	Validação dos indicadores para as acções da NDC de Moçambique	Todos	Discussão
	13.00 – 14.00	Intervalo para o almoço		
	Medição (M) Relatório (R) e Verificação (V)			
	14.00 – 14.20	MRV Nacional vs compromissos de Moçambique	DNMC	Apresentação
	14.40 – 15.00	Procedimentos para estabelecimento de um sistema robusto de MRV	CN	Apresentação
	15.o0 – 16.00	Objectivos, importância e operacionalização do MRV Nacional	Todos	Discussão
	16.00 – 16.15	Considerações finais e passos subsequentes	DNMC	

Nota: CN – Clemêncio Nhantumbo

Appendix II – Agenda do Workshop II

REPÚBLICA DE MOÇAMBIQUE *MINISTÉRIO DA TERRA E AMBIENTE* DIRECÇÃO NACIONAL DE MUDANÇAS CLIMÁTICAS	ICAT | INITIATIVE FOR Climate Action Transparency

AGENDA DO SEMINÁRIO

Seminário sobre Sistema Robusto de MRV Nacional e MRV no âmbito de desenvolvimento do BUR – Mulotana Lodge (21 e 22 de Dezembro de 2020) (Moderação Paula Panguene)

Dia	Hora	Actividade		Tipo de Sessão
1	08.30 – 09.00	Registo dos participantes		Organização
	Sessão de Abertura			
	09.00 – 09.15	Apresentação dos participantes		Todos
	09.15 – 09.35	Abertura Oficial		DMC
	09.35 – 10.20	Foto família e intervalo de café		Organização
	10.20 – 10.50	Apresentação dos objectivos do encontro de trabalho, da proposta de agenda e aprovação.		DMC
	Medição Relatório e Verificação (MRV) Nacional			
	10.50 – 11.30	Apresentação do MRV Nacional vs compromissos de Moçambique		TM

	11.30 – 12.30	Apresentação de Procedimentos para estabelecimento de um sistema robusto de MRV	CN
	12.30 – 14.00	Intervalo para o almoço	Organização
	14.00 – 14.45	Proposta de arranjo institucional MRV Nacional	CN
	14.45-15.30	MRV no âmbito de desenvolvimento do BUR	BG
	15.30 – 16.30	Trabalho em grupo sobre análise dos objectivos e imagem do arranjo institucional robusto; e MRV no âmbito de desenvolvimento do BUR	CN/BG
dia 22 de Dezembro			
2	9.00 – 09.30	Discussão em plenário da Validação dos objectivos e MRV no âmbito de desenvolvimento do BUR	Todos
	9.30 – 10.00	Discussão em plenário da Validação dos objectivos e imagem do arranjo institucional	Todos
	10.00 – 10.45	Intervalo do café	Organização
	10.45 – 11.45	Trabalho em grupo sobre Análise do fluxo de dados e aspectos transversais (mandatos das instituições, necessidades de legislação e constragimentos) do arranjo institucional.	CN
	11.45 – 13.00	Discussão em plenário da Validação do mecanismo de fluxo de dados.	Todos
	13.00 – 14.00	Intervalo para o almoço	Organização
	14.00 – 15.00	Trabalho em grupo sobre Análise do plano de implementação.	CN
	15.00 – 15.45	Discussão em plenário da Validação do Plano de Implementação	Todos
	15.45 – 16.00	Considerações finais e passos subsequentes	DMC

Nota: CN – Clemêncio Nhantumbo, BG – Benard Guedes, TM – Telma Manjate e DMC – Direcção Nacional de Mudanças Climáticas

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Appendix III – NDC tracking elements

Overall NDC Indicators								
No.	**Indicator**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comments**
1	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	Not defined	This is the sum of all resources allocated to the NDC actions
2	Avoided GHG emission	MtCO2eq	MTA	Sum of GHG emissions avoided by implementing mitigation actions	0	Available	31.19	This indicator is total comulative GHG emissions reduction
3	Share of renewables in total energy consumption (SDG7)	%	MIREME	Specific	Not available	Not available	Not defined	This indicator is not related to a single action, is a result of combined actions and MIREME should develop specific method to calculate this indicator
4	Amount of reserved water	Liters/person	MOPHRH (DNGRH)	Specific	Not available	Not available	Not defined	This indicator is the amount of water reserverved per person in Mozambque.
5	Burned areas	ha/year	MADER and MTA	Specific	14.810.076	Available	40% reduction in the prevalence of uncontrolled fires	The purpose of this indicator is to monitor the reduction area of land burnt per year.
6	Restored mangrove area	ha	MIMAIP	Specific	1110	Available	5000	
7	Losses due to climatic disasters per number of people in affected areas	Millions of USD per capita	MTA, INGC and INAM	Specific	Not available	Not available	Not defined	This indicator is a result of combined actions of INAM, INGC, MADER and MOPHRH and it can only be calculatedd by MTA. Consistant methodology should be created with a description sheet

Mitigation														
Energy														
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Challenges and gaps**	**Comment**	
1	Improving access to renewable energy 4.6.2.2.1	1.1	Promotion of the use of renewable energy sources - hydro (4.6.2.1.1.2)	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	138,3	Data on installed capacity of hydro power provided by institutions is not consistant. To avoid publishing non realistic data, the indicator: installed capacity and energy produced were defined as, installed capacity and energy gererated	The start-up year may be postponed due to funding constraints. Water scarcity at the plant in times of light rain
					Avoided GHG emission	MtCO2eq	MIREME and MTA	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		
					Number of new jobs generated	Units	MIREME and MTA	Specific	Not available	Not available	Not defined		
					Percentage of women in new jobs	%	MIREME and MTA	Specific	Not available	Not available	50%		
					Installed capacity for power plants above 30 MW during the implementation of NDC	MW	MIREME and MTA	Specific	0	Available	50		

					Installed capacity for plants up to 30 MW during the implementation of NDC	MW	MIREME	Specific	0	Available	15.5	during the period of implementation of NDC, thus making the value in the base year zero.	
					Energy produced	MWh	MIREME	Specific	0	Not available	65.5		
		1.2	Promotion of the use of renewable energy sources - wind 4.6.2.2.1.2	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	0	Available	144	The zero for the value of wind power produced in the base year, means that data is currently not available but also, the wind power generation is not developed in Mozambique	Project investment delays, wind regimes
					Avoided GHG emission	MtCO2eq	MIREME	Grid emission factor (tCO2eq / kWh)	0	Available	Defined as "Mitigation overall contribution"		
					Number of new jobs generated	Units	MIREME and MTA	Specific	Not available	Not available	Not defined		
					Percentage of women in new jobs	%	MIREME and MTA	Specific	Not available	Not available	50%		
					Total installed capacity	MW	MIREME	Specific	0	Available	240		
					Total energy generated	MWh	MIREME	Specific	0	Available	240		
		1.3	Promotion of the use of renewable	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	257	Data on PV energy production	Potential risks could be delays

			energy sources - PV 4.6.2.2.1.3		Avoided GHG emission	MtCO2eq	MIREME	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"	is more consistent than the hydro power. The indicator is defined as total PV capacity and energy production.	in financing the project
					Number of new jobs generated	Units	MIREME and MTA	Specific	Not available	Not available	Not defined		
					Percentage of women in new jobs	%	MIREME and MTA	Specific	Not available	Not available	50%		
					Total installed capacity	MW	MIREME	Specific	41.3	Available	241		
					Total energy generated	MWh	MIREME	Specific	Not available	Not available	241		
		1.4	Promotion of expansion of the national grid or creation of energy distribution micro-grids (4.6.2.1.1.3.)	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	Not defined	Information on the targets and value of indicator in the base year was not provided	Not identified
					Avoided GHG emission	MtCO2eq	MIREME	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		
					km of Expanded grid	km	MIREME		Not available	Not available	Not defined		

					Number of new domestic consumers connected	Units	MIREME	Specific	Not available	Not available	Not defined		
2	Planning and management of biodiversity and coastal ecosystems 4.6.2.3.3	2.1	Promotion of the use of biomass energy in a sustainable way 4.6.2.3.3.4 & 4.6.2.1.1	SDG13	Financial resources allocated	Millions of USD	MTA	Specific	0	Available	7.6		Weak technology adoption
					Avoided GHG emission	MtCO2eq	MTA	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Not defined		
					Restored forest area	ha	MTA	Specific	1.600	Available	90.000		
					Number of orgainized community associations for the production and marketing of charcoal	Units	MTA	Specific	70	Available	140		

					Number of associations trained in sustainable charcoal production techniques	Units	MTA	Specific	70	Available	140		
					Percentage of women trained in sustainable charcoal production techniques	%	MTA	Specific	Not available	Not available	50%		
					Community “woodlots” established for the production of charcoal	Units	MTA	Specific	600	Available	3000		
3	Promotion of low carbon urbanization (4.6.2.1.4)	3.1	Development of micro power generation projects and programs in commercial and residential buildings (4.6.2.1.4.2)	SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	193.2		Not identified
					Avoided GHG emission	MtCO2eq	MIREM	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		
					Number of photovoltaic and / or wind lighting systems installed	Units	MIREME	Specific	1290	Available	50000		

					Number of solar PV systems for pumping water	Units	MIREME	Specific	Not available	Not available	5000		
		3.2	Encouraging the use of solar thermal systems in large commercial and industrial buildings, public and residential buildings (4.6.2.1.4.3)	SDG13	Financial resources allocated	Millions of USD	MIREME /FUNAE	Specific	Not available	Not available	Not defined		Not identified
					Avoided GHG emission	MtCO2eq	MIREME /FUNAE	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		
					Generated energy	MWh	MIREME /FUNAE	Specific	Not available	Not available	Not defined		
		3.3	Encouraging the replacement of incandescent lamps with low consumption lamps (4.6.2.1.4.4)	SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	Not defined		Not identified
					Avoided GHG emission	MtCO2eq	MIREME	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		
					Energy saved	MWh	MIREME	Specific	Not available	Not available	Not defined		
			Promotion of the use of efficient appliances - new	SDG13	Financial resources allocated	Millions of USD	MIREME	Specific	Not available	Not available	Not defined		It is difficult to monitor the results of this action because this is a strategic
					Avoided GHG emission	MtCO2eq	MIREME /FUNAE	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Defined as "Mitigation overall contribution"		

					Generated energy	MW	MIREME/FUNAE		Not availabl e	Not available	Not defined		action that is being developed by several sectors, Delay in disbursement of funds for the continuity of the project
					Number of glacier systems based on photovoltaic and / or wind turbine systems	Units	MIREME/FUNAE	Specific	108	Available	5000		
4	Promotion of the production and sustainable use of charcoal	4.1	Promotion of the Development of Environmentally Beneficial Energy Conservation and Use of Energy as a means of Reducing the Level of Deforestation in the Country	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME and MTA	Specific	Not availabl e	Not available	6.58		Lack of legal policies and mechanisms to regulate the production of legal and sustainable coal
					Avoided GHG emission due to change in kilns and sustainable forestry practices	MtCO2eq	MIREME, MTA and Greenlight	IPCC 2006 Guidelines, Vol-II, Chapter 3	Not availabl e	Not available	0.112		
					Avoided GHG emission due to the introduction of improved stoves	MtCO2eq	MIREME, MTA and Greenlight	IPCC 2006 Guidelines, Vol-II, Chapter 3	Not availabl e	Not available	0.094		
					Number of improved stoves introduced	Units	MIREME, MTA and Greenlight	Specific	Not availabl e	Not available	100000		

					Spared forest area	ha	MIREME, MTA and Greenlight	Specific	Not available	Not available	Not defined		
					Charcoal savings	TJ	MIREME, MTA and Greenlight	Conversion of kg or liters to TJ, check the IPCC 2006 Guidelines, Vol-II, Chapter 3	Not available	Not available	Not defined		
		4.1	Distribution of 100,000 improved stoves in homes that rely on biomass as an energy source	SDG7 and SDG13	Financial resources allocated	Millions of USD	FUNAE	Specific	0.11	Available	2.48		ADelay in disbursement of funds for project continuity. Poor acceptance of stoves improved by communities
					Avoided GHG emission	MtCO2eq	FUNAE	IPCC 2006 Guidelines, Vol-II, Chapter 3	Not available	Not available	Defined as "Mitigation overall contribution"		
					Number of improved stoves introduced	Units	MIREME/FUNAE and Greenlight	Specific	4038	Not available	100000		

					Spared forest area	ha	MIREME /FUNAE and Greenlight	Specific	Not availabl e	Not available	Not defined		
					Charcoal savings	TJ	MIREME /FUNAE and Greenlight	Conversio n of kg or liters to TJ, check the IPCC 2006 Guideline s, Vol-II, Chapter 3	Not availabl e	Not available	Not defined		
Transport													
N o.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribu tion to the achieve ment of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculati on methodo logy**	**Value of Indicat or in base year (2020)**	**Data availabili ty**	**Terget (2025)**	**Comment**	**Challenge s and gaps**
5	Promotion of low carbon urbanizatio n 4.6.2.1.4	5.1	Promotion of widespread use of gas for domestic, industrial and public and private transport as an alternative to	SDG7 and SDG13	Financial resources allocated	Millions of USD	MCT, PETROMOC and Autogás	Specific	Not availabl e	Not available	20		Resistanc e to change; Impact of exchange rate changes
					Avoided GHG emission	tCO2eq/a no	MIREME/MCT/PET ROMOC and Autogás	IPCC 2006 Guideline s, Vol-II, Chapter 3	Not availabl e	Not available	Not defined		

			less clean energy sources (4.6.2.1.4.5) - conversion of gasoline-powered vehicles to natural gas		Number of CNG stations in operation	Units	MIREME/MCT/PETROMOC and Autogás	Specific	5	Available	10		
					Number of vehicles traveling through GNC	Units	MIREME/MCT/PETROMOC and Autogás	Specific	2200	Available	25000		
					Number of equivalent liters of CNG sold	Leq/ano	MIREME/MCT/PETROMOC and Autogás	Specific	3401852	Available	3.9E+07		
		5.2	Promotion of widespread use of gas for domestic, industrial and public and private transport as an alternative to less clean energy sources (4.6.2.1.4.5) - Acquisition of buses powered by natural gas	SDG7 and SDG13	Financial resources allocated	Millions of USD	MIREME/MCT/PETROMOC and Autogás	Specific	0	Available	4.5		Lack of funding
					Avoided GHG emission	MtCO2eq	MIREME/MCT/PETROMOC and Autogás	IPCC 2006 Guidelines, Vol-II, Chapter 3	0	Available	Not defined		
					Number of buses with a capacity of 75 seats to run on CNG	Units	MIREME/MCT/PETROMOC and Autogás	Specific	0	Available	150		
Waste													

No.	NDC action name	NDC Specific lines of action in policies and strategies (NDC Operational Plan)		Contribution to the achievement of the SDGs	Indicator (s) to monitor the action	Unit	Responsible institution	Calculation methodology	Value of Indicator in base year (2020)	Data availability	Terget (2025)	Comment	Challenges and gaps
6	Waste management and recovery 4.6.2.4.1	6.1	Promotion of sustainable waste management in Mozambique (NAMA waste)	SDG1, SDG6, SDG7,SDG8, SDG9, SDG11, SDG12, SDG13 and SDG17	Financial resources allocated	Millions of USD	MTA	Specific	18	Available	21.60		Not identified
					Avoided GHG emission -in the landfills	MtCO2eq	MTA	IPCC 2006 Guidelines, Vol-V	0	Available	2.0		
					Avoided GHG emission of methane emissions in uncontrolled landfills	MtCO2eq	MTA	IPCC 2006 Guidelines, Vol-V	0	Available	1.5		
					Avoided GHG emission - replacing the use of fossil fuels in cement production	MtCO2eq	MTA	IPCC 2006 Guidelines, Vol-V	Not available	Not available	0.09		

					Construction of landfills	Units	MTA	Specific	0	Available	12		
					Installation of biomedical waste incinerators	Units	MTA	Specific	0	Available	42		
					Technicians from the stakeholders trained in waste management and recycling	Units	MTA	Specific	0	Available	450000		
					Percentage of woman in the technicians from the stakeholders trained in waste management and recycling	%	MTA	Specific	Not availabl e	Not available	50		
					Recovery rate of cooling and air conditioning gases through recovery and recycling centers	Units	MTA	Specific	0	Available	Not defined		

					Number of biodigesters built and / or reactivated	Units	MTA	Specific	0	Available	Not defined		
					Income from sustainable waste management	Millions of USD	MTA and MAEFP	Specific	Not available	Not available	Not defined		
Adaptation													
Water Resources													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**
1	Increasing the capacity of water resources management 4.6.1.2.1	1.1	Improvement of knowledge about the quality and quantity of water resources 4.6.1.2.1.3	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	99,45		Lack of funds
					Number of hydrometeorological and piezometric stations	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	Not defined		Lack of funds

					Water resources monitoring reports and bulletins	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	Not defined		Lack of funds
2	Increased access and capacity for water collection, storage, treatment and distribution 4.6.1.2.2	2.1	Increase in storage capacity per capita at all levels (domestic, community, urban, national) to guarantee water supply to the population and economic sectors 4.6.1.2.2.3	SDG and SDG13	Financial resources allocated for the construction of new dams	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	5668,70		Lack of funds and technology
					Financial resources allocated for the rehabilitation of dams	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	92,70		Lack of funds and technology
					Number of Hydraulic infrastructures rehabilitated	Mm3 /year	MOPHRH (DNGRH)	Specific	Not available	Not available	5		Lack of funds and technology
					Number of Hydraulic infrastructures built	Mm3 /year	MOPHRH (DNGRH)	Specific	Not available	Not available	39		Lack of funds and technology
		2.2	Increase in per capita storage capacity at all levels (domestic,	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	2.0		Lack of funding; political insecurity, theft of

			community, urban, national) to guarantee water supply to the population and economic sectors 4.6.1.2.2.3 - PACA II - Community Adaptation Action Plans - new		Number of people benefited by vulnerable group	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	>350 000		installed equipment, non-appropriation by communities
					Percentage of women in people benefited by vulnerable group	%	MOPHRH (DNGRH)	Specific	Not available	Not available	50		
		2.3	PACA III – new	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	1.7		Lack of funding; political insecurity, theft of installed equipment, non-appropriation by communities
					Number of people benefited by vulnerable group	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	>350 000 habitantes do grupo alvo		
					Percentage of women in people benefited by vulnerable group	%	MOPHRH (DNGRH)	Specific	Not available	Not available	50		
		2.4	Conservation of rainwater in excavated and underground	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	7.4		Lack of funds and absence of

			reservoirs, mainly in the South area 4.6.1.2.4		Amount of reserved water	Liters/person	MOPHRH (DNGRH)	Specific	Not available	Not available	Not defined	precipitation
					Number of people who joined the technologies	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	Not defined	
		2.5	Construction of agro-hydraulic infrastructures in the main surface courses and small dams that are easy to maintain for the purposes of irrigation and drinking of animals 4.6.1.2.6	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH (DNGRH)	Specific	Not available	Not available	1346,0	Lack of funds
					Number of agro-hydraulic infrastructures built and / or rehabilitated	Units	MOPHRH (DNGRH)	Specific	Not available	Not available	3	Lack of funds
					Volume of water stored by infrastructure per year	Mm3 /year	MOPHRH	Specific	Not available	Not available	Not defined	Lack of funds
		2.6	Promotion of low water consumption systems and	SDG6 and SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined	Not identified

			reducing waste in the urban water distribution network 4.6.1.2.1.8		Percentage of water saved due to the use of low consumption systems	%	MOPHRH	Specific	Not available	Not available	Not defined		
Agriculture, fisheries and forest													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**
3	Increase the resilience of agriculture and livestock 4.6.1.3.1	3.1	Make available technologies and inputs suitable for climate change (Action updated to: Promote technologies and technological packages appropriate to climate change)	SDG2, SDG3, SDG12 and SDG13	Financial resources allocated	Millions of USD	MADER	Specific	0.52	Available	2.6		Weak community acceptance of new technologies, lack or delay in allocating funds
					Technology packages produced	Units	MADER	Specific	12	Available	Not applicable		
		3.2	Expansion of the electricity network and improvement	SDG2, SDG3, SDG12	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	83.4		Weak involvement of local communit

			of the quality of energy to make agricultural enterprises viable and encourage investment in the six agricultural development corridors - new	and SDG13	Number of producers using energy for agricultural production	Units	MADER	Specific	Not availabl e	Not available	Not defined		ies; poor coordinati on between stakehold ers; lack or delay in the allocation of funds; the weak network of extension services, low coverage of extension services, dispersed producers
		3.3	Transition to a resilient Blue Economy in the western	SDG13, SDG14 and SDG15	Financial resources allocated	Millions of USD	MIMAIP and MTA	Specific	0	Available	Not defined	Tracking elements of this activities were not	Poor coordinati on between stakehold

			Indian Ocean region - new		Sector contribution to the GDP	%	MIMAIP and MTA	Specific	Not available	Not available	Not defined	approved by the sectorial experts. They did not provide the information requested during the development of the NDC tracking elements matrix	ers; lack or delay in the allocation of funds; The weak network of extension services
		3.4	Diffusion of improved agricultural production technologies, agro-forestry systems, natural resource management, conservation agriculture, irrigation, vaccinations, artificial insemination, reduction of post-harvest losses and processing of	SDG13	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	5.0		The weak involvement of local communities; Poor coordination between stakeholders; lack or delay in the allocation of funds; Low coverage of the extension network
					Number of families adopting new technologies in areas at risk from climate change	Units	MADER	Specific	Not available	Not available	50% of families adopting new technologies in areas at risk of climate change		
					Number of extension workers hired to provide technical assistance	Units	MADER	Specific	2158	Available	7100		

			products of plant and animal origin, and food and nutrition education - new		Percentage of women in the extension workers hired to provide technical assistance	%	MADER	Specific	Not available	Available	50%		
		3.5	Incentive to seed production and conservation - new	SDG 12	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	500		The weak involvement of local communities; Poor coordination between stakeholders; lack or delay in the allocation of funds; Low coverage of the extension network
					Quantity of seed produced	ton	MADER	Specific	Not available	Not available	Not defined		
					Number of producers covered and benefited	Units	MADER	Specific	630000	Available	850000		
					Percentage of women in the producers covered and benefited	%	MADER	Specific	Not available	Not available	50		
4	Increased fishing resilience 4.6.1.3.2	4.1	Restoration of mangroves and implementation of protection measures for algae and seagrass, corals and	SDG13, SDG14 and SDG15	Financial resources allocated	Millions of USD	MIMAIP	Specific	Not available	Not available	4.73		The weak involvement of local communities; Poor coordination between stakehold
					Avoided GHG emission	MtCO2eq	MIMAIP and MTA	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		

			other areas for breeding and feeding fish 4.6.1.3.2.2		Restored mangrove area	ha	MIMAIP	Specific	1110	Available	5000		ers; lack or delay in the allocation of funds; The weak network of extension services
					Number of total mangrove protection areas	Units	MIMAIP	Specific	0	Available	5		
		4.2	Development of tools for integrating adaptation into the fisheries planning and budgeting process - new	SDG13	Financial resources allocated	Millions of USD	MIMAIP	Specific	Not available	Not available	3		Weak involvement of local communities; Poor coordination between stakeholders; The lack or delay in the allocation of funds
					Level of integration of adaptation in the fisheries planning and budgeting process	%	MIMAIP	Specific	Not available	Not available	100%		
5	Development of low carbon agricultural practices 4.6.2.3.1		Promotion of conservation agriculture / evergreen agriculture for the production of fodder and food 4.6.2.3.1.1	SDG12 and SDG13	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	8.4		Low adoption of Conservation farming techniques and low dissemination of Conservat
		5.1			Avoided GHG emission	MtCO2eq	MADER	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		

					Demarcated regions of organic agriculture	Units	MADER	Specific	0	Available	6		ion farming practices, lack of coordination between the institutions involved, lack of funds
					Number of farmers who have adopted conservation agriculture systems	Units	MADER	Specific	Not available	Not available	75% of the population living in arid and semi-arid regions		
		5.2	Promotion of the use of integrated agroforestry systems for the recovery of areas degraded by shifting agriculture 4.6.2.3.1.2	SDG12 and SDG13	Financial resources allocated	Millions of USD	MADER and MTA	Specific	Not available	Not available	0.084		Low adoption of agroforestry systems by communities
					Avoided GHG emission	MtCO2eq	MADER and MTA	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		
					Farming fields converted to agroforestry systems and conservation agriculture	%	MADER and MTA	Specific	Not available	Not available	> 50%		
		5.3	Promotion of the use of methane from rice cultivation systems for energy	SDG13	Financial resources allocated	Millions of USD	MADER	Specific	0	Available	0.168		Low technology adoption, availability of funds
					Generated energy	MW	MADER	Specific	0	Available	Not defined		

			production / improved low emission rice production systems 4.6.2.3.1.2		Number of producers who have adopted the technology	Units	MADER	Specific	0	Available	Not defined		
					Increased cultivation area	ha	MADER	Specific	0	Available	Not defined		
					Avoided GHG emission	MtCO2eq	MADER	Grid emission factor (tCO2eq / kWh)	0	Available	Not defined		
		5.4	Promotion of the use of renewable energy for irrigation / water pumping systems 4.6.2.3.1.3	SDG13	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	Not defined		Weak adoption due to initial cost, viability of technology adoption
					Number of pumping / irrigation systems they use that use renewable energy	Units	MADER	Specific	3850	Available	Not defined		
					Number of beneficiaries	Units	MADER	Specific	Not available	Not available	Not defined		
					Generated energy	MW	MADER	Specific	Not available	Not available	Not defined		
					Avoided GHG emission	MtCO2eq	MADER and MTA	Grid emission factor (tCO2eq / kWh)	Not available	Not available	Not defined		

		5.5	Prevention of uncontrolled fires associated with shifting agriculture	SDG13	Financial resources allocated	Millions of USD	MADER and MTA	Specific	0	Available	0.9		Poor coordination with communities, loss of forest areas, loss of biodiversity, increase in GHG of local infrastructure and human lives
					Avoided GHG emission	MtCO2eq	MADER and MTA	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		
					Number of fire outbreaks	Units	MADER and MTA	Specific	66.794	Available	Not defined		
					Burned areas	ha/year	MADER and MTA	Specific	14.810.076	Available	40% reduction in the prevalence of uncontrolled fires	This indicator is included to eveluate the reduction of burnt areas	
6	Reduction in the rate of deforestation and uncontrolled fires 4.6.2.3.2	6.1	Establishing and increasing the adoption of integrated agro-forestry systems (agro-silvo-pastoral); use of multiple-use forest species: shade / nitrogen fixation / forage (REDD	SDG3 SDG12 and SDG13	Financial resources allocated	Millions of USD	MADER and MTA	Specific	Not available	Available	0.0125		Low adoption of SAFs practices by comUnits, limited rural extension services focused on forest extension
					Number of trees planted in SAF	Units	MADER and MTA	Specific	Not available	Available	Not defined		
					Areas with established agroforestry systems	ha	MADER	Specific	4.000	Available	41000		

			+, MozBIO, Sustenta, payment for carbon credits in Zambézia) 4.6.2.3.2.2		Avoided GHG emission	tCO2eq	MADER and MTA	IPCC 2006 Guidelines, Vol-IV, Chapter 77	0	Available	Not defined		
		6.2	Rehabilitation of degraded ecosystems and pastures through landscape rehabilitation - new	SDG13	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	Not defined		Weak community engagement
					Avoided GHG emission	MtCO2eq	MADER and MTA	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		
					Degraded pasture areas rehabilitated	ha	MADER	Specific	Not available	Not available	At least 50% of the bounded pasture areas (1 million hectares with potential and availability for mapped restoration and reforestation)		
Early warning system													

No.	NDC action name	NDC Specific lines of action in policies and strategies (NDC Operational Plan)		Contribution to the achievement of the SDGs	Indicator (s) to monitor the action	Unit	Responsible institution	Calculation methodology	Value of Indicator in base year (2020)	Data availability	Terget (2025)	Comment	Challenges and gaps
7	Strengthening the early warning system 4.6.1.1.1	7.1	Strengthening INAM's capacity to provide dedicated and adequate meteorological information to each user 4.6.1.1.1.1	SDG13	Financial resources allocated	Millions of USD	INAM	Specific	Not available	Not available	4.74		Poor coordination on between stakeholders; The lack or delay in the allocation of funds
					Number of sectors with weather information dedicated to their needs	Units	INAM	Specific	0	Available	5		
		7.2	Scale up of the early warning system, reaching district 4.6.1.1.1.2	SDG13	Financial resources allocated	Millions of USD	INAM	Specific	Not available	Not available	23.21		The lack or delay in the allocation of funds
					Number of Districts with an increased early warning system	Units	INAM	Specific	30	Available	Not available		
		7.3	Strengthening of data systems and dissemination	SDG11 and SDG13	Financial resources allocated	Millions of USD	INAM	Specific	Not available	Not available	0.47		Lack of funding; weak institution

			of meteorological and hydrological information 4.6.1.1.3		Number of users with access to weather information	Units	INAM	Specific	Not availabl e	Not available	Not defined		al coordinati on between data providers
					Number of hydrological bulletins, reports and yearbooks published	Units/an o	DNGRH	Specific	Not availabl e	Not available	Not defined		
		7.4	Reinforcement of INAM's role in coordinating the collection and monitoring of climate data - new	SDG13	Financial resources allocated	Millions of USD	INAM	Specific	1.9	Available	6.0		Lack of financing for the acquisitio n and assembly of weather stations
					Number of districts with operational weather stations	Units	INAM	Specific	48	Available	154		
		7.5	Establishment of standards for the development and coordination of early warning systems for multiple events - new	SDG13	Financial resources allocated	Millions of USD	INAM	Specific	0	Available	0.06 milhões USD		Lack of stakehold er interest derived from defending sectoral interests instead of a holistic view
					SAPs coordination mechanism submitted to CM for approval	%	INAM	Specific	20	Available	100%		

		7.6	Strengthening of the climate and meteorological information system for drought - new	SDG13 and SDG15	Financial resources allocated	Millions of USD	INAM	Specific	0	Available	0.086		Not identified
					Report on the establishment of the system	%	INAM	Specific	0	Available	Operational drought monitoring and forecasting system; disseminated drought warning notices		
					Percentage of children suffering from chronic malnutrition	%	MISAU	Specific	27%	Available	15%		
8	Strengthening the capacity for Preparing and Responding to Climate Risks 4.6.1.1.2	8.1	Improving preparedness for imminent climate disasters 4.6.1.1.2.1	SDG2, SDG11 e SDG13	Financial resources allocated	Millions of USD	INGC	Specific	12	Available	Not available		Lack of funding
					Number of districts with risk mapping	Units	INGC	Specific	40	Available	154		
					Number of deaths from climate disasters in affected areas	units	MADER/MISAU/INGC	Specific	Not available	Not available	0%		

					Percentage of women in deaths from climate disasters in affected areas	%	MADER/MISAU/INGC	Specific	Not available	Not available	Not Defined		
					Losses due to climatic disasters	Millions of USD	MADER/MISAU/INGC	Specific	Not available	Not available	Not defined		
		8.2	Strengthening INGC's role in coordinating climate disaster response and recovery operations 4.6.1.1.2.2	SDG11 and SDG13	Financial resources allocated	Millions of USD	MADER/MISAU/INGC	Specific	Not available	Not available	1.384		Insufficient funding
					Number of early warning systems	Units	MADER/MISAU/INGC	Specific	18	Available	Not defined		
					Losses due to climatic disasters	(Millions of USD) /ano	MADER/MISAU/INGC	Specific	Not available	Not available	Not defined		
		8.3	Strengthening the coordinating role of INGC and its partners in reducing vulnerability to drought in arid and semi-arid areas 4.6.1.1.2.3	SDG2, SDG13 and SDG15	Financial resources allocated	Millions of USD	INGC	Specific	Not available	Not available	0.2938		Not identified
					Action plan to implement the mechanism	Not applicable	INGC	Specific	ongoing	Available	Completed		

		8.4	Strengthening the role of Multiple Use Resource Centers (CERUM) in supporting local communities 4.6.1.1.2.4	SDG2, SDG13 and SDG15	Financial resources allocated	Millions of USD	INGC	Specific	10	Available	10		Not identified
					Number of communities benefiting from CERUMs in each of the three districts	Units	INGC	Specific	9	Available	Not defined		
		8.5	Increase and reinforcement of the capacity of CLGRC and its equipment with readiness kits 4.6.1.1.2.5	SDG13	Financial resources allocated	Millions of USD	INGC	Specific	9	Available	9		Not identified
					CLGRC trained and equipped with readiness kits	Units	INGC	Specific	375	Available	1500		
		8.6	Improvement of the system for the dissemination of early warnings at the local level - new	SDG13	Financial resources allocated	Millions of USD	MADER/MISAU/INGC	Specific	2.95	Available	2.25		Lack of funds for training
					Number of alert messages for extreme events and measures to be taken by the DATAWINERS platform	Units/epoca	INGC	Specific	3000	Available	1350000		

		8.7	Strengthening the role of CLGRC in reducing climate risk at the local level - new	SDG13	Financial resources allocated	Millions of USD	INGC	Specific	Not available	Not available	0.1		Lack of stakeholder interest derived from defending sectoral interests instead of a holistic view
					CLGRC operating regulations	%	INGC	Specific	0	Available	100%		
		8.8	Strengthening of the early warning system for the agriculture sector - new	SDG2,SDG12 and SDG13	Financial resources allocated	Millions of USD	INGC and MADER	Specific	Not available	Not available	2.8		Lack of Funds
					Number of trained extension workers	Units	INGC and MADER	Specific	Not available	Not available	Not defined		
					Perecentage of women in trained extension workers	%	INGC and MADER	Specific	Not available	Not available	50		
					Agricultural losses due to climatic disasters	(Millions of USD) /(ano x pop. afectada)	INGC and MADER	Specific	Not available	Not available	Not defined		
Social protection													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**

9	Increasing the adaptive capacity of vulnerable people 4.6.1.4.1	9.1	Development and application of innovative approaches to community-based adaptation 4.6.1.4.1.1	SDG2 and SDG13	Financial resources allocated	Millions of USD	MGCAS /INAS	Specific	Not available	Not available	0.882		Lack of Funding
					Number of adaptation projects implemented in all 24 selected districts	Units	MGCAS /INAS	Specific	Not available	Not available	Not defined		
		9.2	Reinforcement of existing social protection systems with regard to climate change so that they contribute to the resilience of vulnerable populations 4.6.1.4.1.2	SDG2 and SDG13	Financial resources allocated	Millions of USD	INAS /MGCAS and MTA	Specific	Not available	Not available	14.46		Insufficient funds
					Number of families benefiting from basic social protection measures	Units	INAS /MGCAS MTA	Specific	Not available	Not available	Not defined		
		9.3	Strengthening the capacity, guidance and targeting of basic productive social protection programs to increase the resilience of vulnerable groups 4.6.1.4.1.3	SDG2 and SDG13	Financial resources allocated	Millions of USD	INAS /MGCAS MTA	Specific	Not available	Not available	13.35		Lack of Funding
					Percentage of people in vulnerable areas covered by the project	%	INAS/MGCAS MTA	Specific	Not available	Not available	Not defined		

			Strengthening the links between social protection systems and natural disaster response systems, including articulation with early warning systems		Financial resources allocated	Millions of USD	INGC /INAS MGCAS MTA	Specific	Not availabl e	Not available	0.189		
		9.4	4.6.1.4.1.4	SDG2 and SDG13	CTGC members informed and aware of the importance of social protection programs in reducing climate vulnerability	Units	INGC/INAS MGCAS MTA	Specific	Not availabl e	Not available	Not defined		Little interest from other CTGC actors
Health													
N o.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribu tion to the achieve ment of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculati on methodo logy**	**Value of Indicat or in base year (2020)**	**Data availabili ty**	**Terget (2025)**	**Comment**	**Challenge s and gaps**
10	Reducing people's vulnerabilit y to vectors of disease	10. 1	Strengthening of the capacity to prevent and control the spread of	SDG3 and SDG13	Financial resources allocated	Millions of USD	MISAU	Specific	0	Available	0.25		Not identified

	transmission associated with climate change 4.6.1.5.1		vector diseases through the correct mapping of their distribution and spatial mobility 4.6.1.5.1.1		People infected with vector-borne diseases associated with climate change	Not applicable	MISAU	Specific	Planned	Available	Risk maps for the spread of vector diseases in the main cities surveyed **complete**		
		10.2	Conducting a baseline study on diseases that are favored by climate change 4.6.1.5.1.3	SDG3 and SDG13	Financial resources allocated	Millions of USD	MISAU	Specific	Not available	Not available	0.25		Lack of good resolution data to support the study
					Install incinerators for biomedical waste in health facilities	Not applicable	MISAU	Specific	Not available	Not available	Not Defined		
					Development of the National Plan for Adaptation to Climate Change in the Health Sector	Not applicable	MISAU	Specific	Planned	Available	Completed		
					Identification and recommendations for disease prevention measures favored by climate change approved by the CTGC	Not applicable	MISAU	Specific	ongoing	Available	Completed		

		10.3	Establishment of a specific surveillance system and control measures on diseases favored by climate change 4.6.1.5.1.4	SDG3 and SDG13	Financial resources allocated	Millions of USD	MISAU	Specific	0	Available	0.334		Lack of Funding
					State of development of the disease surveillance system favored by climate change	%	MISAU	Specific	0	Available	100		
					State of development and dissemination of control and prevention measures	%	MISAU	Specific	0	Available	100		
Biodiversity													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**

11	Planning and management of biodiversity and coastal ecosystems 4.6.2.3.3	11.1	Rehabilitation of deforested areas for pasture creation, agricultural practice, exploitation of forest resources 4.6.2.3.3.1	SDG13	Financial resources allocated	Millions of USD	MADER	Specific	Not available	Not available	6.97		
					Percentage of the area rehabilitated in relation to the total area deforested due to fires	%	MADER	Specific	Not available	Not available	20%		
					Avoided GHG emission	MtCO2eq	MADER	IPCC 2006 Guidelines, Vol-IV, Chapter 77	Not available	Not available	Not defined		Fraco engajamento das comUnits
12	Ensuring the protection of	12.1	Identification and implementation of adaptation	SDG2, SDG12, SDG13 and SDG15	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	0.014		Weak capacity to document and

	biodiversity 4.6.1.6.1		actions that guarantee the protection of species of flora and wildlife at risk of extinction 4.6.1.6.1.2		Number of mitigation and adaptation projects implemented efficiently in vulnerable ecosystems	Units	MTA	Specific	Not available	Not available	Not defined		disseminate lessons learned, poor acceptance of communities to new technologies, lack or delay in allocating funds, weak network of extension services capable of providing technical assistance and transfer of necessary and appropriate technology to the production system
		12.2	Establishment of cross-border conservation areas to	SDG1, SDG2, SDG13	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	0.07		Lack of interest by neighbori

			maintain the functions of ecosystems and allow migrations of wildlife - 4.6.1.6.1.3	and SDG15	Area under ACTF	unidade	MTA	Specific	Not available	Not available	1		ng countries to join these cross-border initiatives, weak technical capacity for international negotiations, lack or delays in allocating funds, weak network of services
		12.3	Reclassification and resizing of conservation areas, identifying areas at risk of loss of biodiversity	SDG1, SDG2, SDG13 and SDG15	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	0.056		Weak technical capacity for mapping Lack or delay in the allocation of funds, poor understanding of processes that lead to the
					Percentage of degraded critical ecosystems assessed and mapped	%	MTA	Specific	Not available	Not available	Not defined		

													degradation of AC
		12.4	Promotion of the raising of knowledge about the contribution of biodiversity to the increase of carbon stock, with a view to mitigating and adapting to climate change	SDG1, SDG2, SDG13 and SDG15	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	0.19		eak technical capacity for inventorying carbon reserves lack or delay in allocating funds, poor understanding of processes leading to deforestation
					REDD strategy development	%	MTA	Specific	Not available	Not available	100%		
					REDD projects implemented with funds raised	Millions of USD	MTA	Specific	Not available	Not available	Not defined		
		12.5	Application of management practices that increase the adaptive capacity of	SDG2, SDG12, SDG13 and SDG15	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	5		Weak acceptance of comUnits to new technologi

			ecosystems, maximizing the use of habitats and the conservation of biodiversity 4.6.1.6.1.3		Increased mangrove and wetland areas recovered in the Grande Maputo region	ha	MTA	Specific	Not available	Not available	94		es, lack or delay in the allocation of funds, weak network of extension services capable of providing technical assistance and transfer of necessary and adequate technology to the production system, lack of input providers
					Quantity of inputs and technologies available	Millions of USD	MTA	Specific	Not available	Not available	Not defined		
Infrastructures, urban areas, settlements, and tourist and coastal areas													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**
13	Development of resilience	13.1	Elaboration and updating of climatically	SDG9 SDG11	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	Not defined		Not identified

	mechanisms in urban areas and other settlements 4.6.1.8.1		robust planning and spatial planning instruments and strengthening of their implementation	and SDG13	Number of spatial planning instruments developed and implemented	Units	MTA	Specific	Not available	Not available	Not defineds		
		13.2	Mapeamento das infra-estruturas vulneráveis ou em risco, em função do tipo de fenómeno climático (cheias, ciclones, aumento do nível do mar)	SDG6, SDG9 SDG11 e SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified
					Mapped areas	ha	INGC	Specific	Not available	Not available	Not Defined		
		13.3	Reformulation of building codes for transport, telecommunic	SDG6, SDG9 SDG11 and SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified

			ations, energy distribution, buildings, hydraulic and wastewater treatment infrastructures in order to make them climate resilient		Level of development of building codes for transport, telecommunications, energy distribution, buildings, hydraulic infrastructures and wastewater treatment, in order to make them climate resilient	Not applicable	MOPHRH	Specific	Planned	Available	Completed		
		13.4	Ensuring that investments, particularly public, in risk areas are climate resilient	SDG9 SDG11 and SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Available	Not defined		Not identified
					Losses related to public infrastructure caused by disasters related to climate change	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		
		13.5	Promotion of the design and implementation of potential insurance mechanisms against climatic risks in	SDG9 SDG11 and SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified
					Number of insurers offering climate risk insurance for buildings	Units	MOPHRH	MOPHRH	Not available	Not available	Not defined		

			the built heritage										
		13.6	Strengthening the resilience of the city of Quelimane and Nacala regarding flood control and erosion	SDG9 SDG11 e SDG13	Financial resources allocated	Millions of USD	MOPHRH/AIAS	Specific	Not available	Not available	Not defined		Not identified
					Urban structure plans	units	MOPHRH/AIAS	Specific	Not available	Not available	Not defined		
		13.7	Mapping of regions prone to the occurrence of soil erosion and landslides	SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified
					Mapped areas	ha	INGC	Specific	Not available	Not available	Not defined		
		13.8	Elaboration of projects for the construction of water supply infrastructures taking into account the occurrence of the main natural phenomena	SDG13	Financial resources allocated	Millions of USD	MOPHRH(DNAAS	Specific	Not available	Not available	Not defined		Not identified
					Number of water supply infrastructure construction projects that consider climate change	Units	INGC/INAS MGCAS MTA	Specific	Not available	Not available	Not defined		
		13.9	Adoption of measures resilient to	SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified

			natural risks during the implementation of water supply infrastructures (collection, storage, transport and distribution)		Percentage of water supply infrastructures adapted to take into account climate change	%	INGC	Specific	Not available	Not available	100%		
14	Development of tourist areas and coastal zones ensuring minimum impacts of climate change 4.6.1.8.2	14.1	Assessment of the main climatic risks on resources and areas of tourist interest	SDG13	Financial resources allocated	Millions of USD	INGC	Specific	Not available	Not available	Not defined		Not identified
					Level of development of the assessment of the main climatic risks in tourist areas	%	INGC	Specific	Not available	Not available	100%		
		14.2	Advice the operators on appropriate building codes	SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not available	Not available	Not defined		Not identified
					Number of operators trained in building codes	Units	MOPHRH	Specific	Not available	Not available	Not defined		

					Percentage of women in theoperators trained in building codes	%	MOPHRH	Specific	Not availabl e	Not available	50%		
		14. 3	Promotion of good practices among operators and tourists, through public-private partnerships, aimed at the resilience of the sector and the conservation of ecosystems	SDG13	Financial resources allocated	Millions of USD	MOPHRH and MTA	Specific	Not availabl e	Not available	Not defined		Not identified
					People trained in good construction practices	Units	MOPHRH and MTA	Specific	Not availabl e	Not available	Not defined		
					Percentage of women trained in good construction practices	%	MOPHRH and MTA	Specific	Not availabl e	Not available	50		
		14. 4	Development of coastal conservation and protection practices	SDG13	Financial resources allocated	Millions of USD	MTA	Specific	Not availabl e	Not available	Not defined		Not identified
					Level of development of coastal conservation and protection practices (perhaps guidelines)	%	MTA	Specific	Not availabl e	Not available	100%		
		14. 5	Promotion of the adoption of climate	SDG13	Financial resources allocated	Millions of USD	MOPHRH	Specific	Not availabl e	Not available	Not defined		Not identified

			insurance for tourist activities and infrastructure 4.6.1.8.2.5		Percentage of tourist activities and infrastructures insured	%	MTA	Specific	Not available	Not available	100%		
Communication, education, training and raising awareness													
No.	**NDC action name**	**NDC Specific lines of action in policies and strategies (NDC Operational Plan)**		**Contribution to the achievement of the SDGs**	**Indicator (s) to monitor the action**	**Unit**	**Responsible institution**	**Calculation methodology**	**Value of Indicator in base year (2020)**	**Data availability**	**Terget (2025)**	**Comment**	**Challenges and gaps**
15	Communication, education, training and raising awareness	15.1	Implementation of the communication and awareness plan for adapting and mitigating climate change	SDG4 and SDG13	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	1.9		Not identified
					Number of episodes of the radio soap opera	Units	MTA	Specific	0	Available	3		
					Number of radio soap opera emissions	Units	MTA	Specific	0	Available	345		
					Number of people involved in raising awareness (teachers and	pessoas	MTA	Specific	0	Available	> 7 millions		

					students, and general public)								
					Percentage of women involved in raising awareness (teachers and students, and general public)	%	MTA	Specific	0	Available	50		
		15.2	Integration of subjects and development of programmatic content on climate change in school curricula from 1st to 12th grade	SDG4 and SDG13	Financial resources allocated	Millions of USD	MINEDH	Specific	Not available	Not available	10		
					Integrating climate change content into curricula	Not applicable	MINEDH	Specific	Not available	Not available	Curricula at all levels from 1st to 12th grade with climate change content		Availability of funds
		15.3	Promotion of studies and research on climate change with the aim of reducing climate risk and GHG emissions (or low carbon development)	SDG13	Financial resources allocated	Millions of USD	UEM/MTA	Specific	Not available	Not available	2		
					Number of studies and research projects aiming to reduce climate risk and GHG emissions	Units	UEM/MTA	Specific	Not available	Not available	Not defined		Availability of funds

		15.4	Integration of subjects and development of programmatic content on climate change at the training institute for technical staff	SDG13	Financial resources allocated	Millions of USD	UEM	Specific	Not available	Not available	10		Availability of funds
					Level of integration of climate change content	Not applicable	UEM	Specific	Planned	Available	Completed		
					Number of short courses on climate change implemented	Units	UEM /MTA	Specific	Not available	Not available	Not defined		
		15.5	Establishment of support infrastructures and human resources for laboratories dedicated to research, monitoring and	SDG13	Financial resources allocated	Millions of USD	UEM	Specific	Not available	Not available	15		Not identified
					Number of adaptation and mitigation projects financed	Units	UEM	Specific	Not available	Available	Not defined		

			verification of adaptation and mitigation projects to climate change		Equipped and functional laboratories in all educational institutions dedicated to environmental training	Units	UEM	Specific	0	Available	2		
					Number of employees trained	Units	UEM	Specific	Not available	Not available	Not defined		
					Percentage of women in the employees trained	%	UEM	Specific	Not available	Not available	50		
		15.6	Maintenance and feeding of the NDC transparency portal	SDG13	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	0.357		Not identified
					Stage of establishment of a portal on the National MRV system	Not applicable	MTA	Specific	Not available	Not available	Portal funcional e alimentado periodicamente com informação sobre do sistema Nacional de MRV		

		15.7	Institutionalization of the GIIMC, CGCMC and the Climate Change Network and their strengthening with a view to their sustainability	SDG13	Financial resources allocated	Millions of USD	MTA	Specific	Not available	Not available	2.87		No fundraising support to ensure the sustainability of CGCMC and the Network
					Reports submitted and validated by the UNFCCC (NCs and BURs)	Not applicable	MTA	Specific	Not Applicable	Available	NCs every five years and BURs every two years		