

## DOCUMENT FOR ADVOCACY

# Promoting Sustainable Management of Natural Resources at Cabo Delgado, Mozambique

PROJECT CLIMA DE MUDANÇA A PATH TO CREATING AND STRENGTHENING AN ENVIRONMENTALLY CONSCIOUS GENERATION IN MOZAMBIQUE

IMPLEMENTED BY:



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## 1. INTRODUCTION

Project Clima de Mudança: a path to creating and strengthening an environmentally conscious generation in Mozambique, co-funded by the European Union has the general objective of promoting the consolidation of good environmental governance in Mozambique. A Consortium of international organizations (WeWorld-GVC, Instituto de Cooperação Económica Internacional - ICEI) and national organizations (Centro Terra Viva - CTV and Conselho Nacional do Voluntariado - CNV) will implement the project.

This intervention aims to raise awareness among young people, civil society organizations, local authorities and citizens about climate change and its effects, about their role and responsibility as agents of change, the importance of youth inclusion in decision making process and about how to jointly improve natural resources management in Cabo Delgado, Nampula, Zambézia and Maputo provinces.

The content and opinions at this document of advocacy are a result of the process of analysis, interpretation and reflection of the information collected in the documentary and field research carried out in the Province of Cabo Delgado, specifically at one urban community - Pemba City and one rural community – Mecúfi District.

At Pemba City, the target group for the research was the provincial delegations of national institutions. Namely, the National Institute for Disaster Risk Management and Reduction (INGD), National Institute of Meteorology (INAM), National Administration of Conservation Areas, Institute of Social Communication, Provincial Direction of Land and Environment, Provincial Services of Economic Activities, Municipal Council of Pemba and Provincial Services of Planning and Infrastructures respectively.

At Mecúfi district, the target group was the District Services of Economic Activities, District Services of Planning and Infrastructures, District Services of Health, Women and Social Action, Natural Resources Management Committees, Community Leaders and two focus groups.

In addition to these key actors, young people and adults living in the City of Pemba (Chibuabware Neighborhood) and District of Mecúfi (Milapani Community) participated in the research.

Cabo Delgado province is facing significant challenges due to extreme weather events such as storms, floods which are becoming more frequent and intense because of climate change. At urban areas, the impacts of sea level rising such as (flooding, erosion) loss of land, housing and

## INTRODUCTION

infrastructures are visible. In Mecúfi district, located northwest of Pemba, additional problems are emerging including floods that adversely affects local agriculture and local population livelihood.

Climate change impacts affect negatively fishing and agriculture activities of rural and urban communities of this region affecting families' economy and putting food security at risk. Crop losses because of climate change affect families' ability to feed themselves and generate income contributing for poverty and instability at that area.

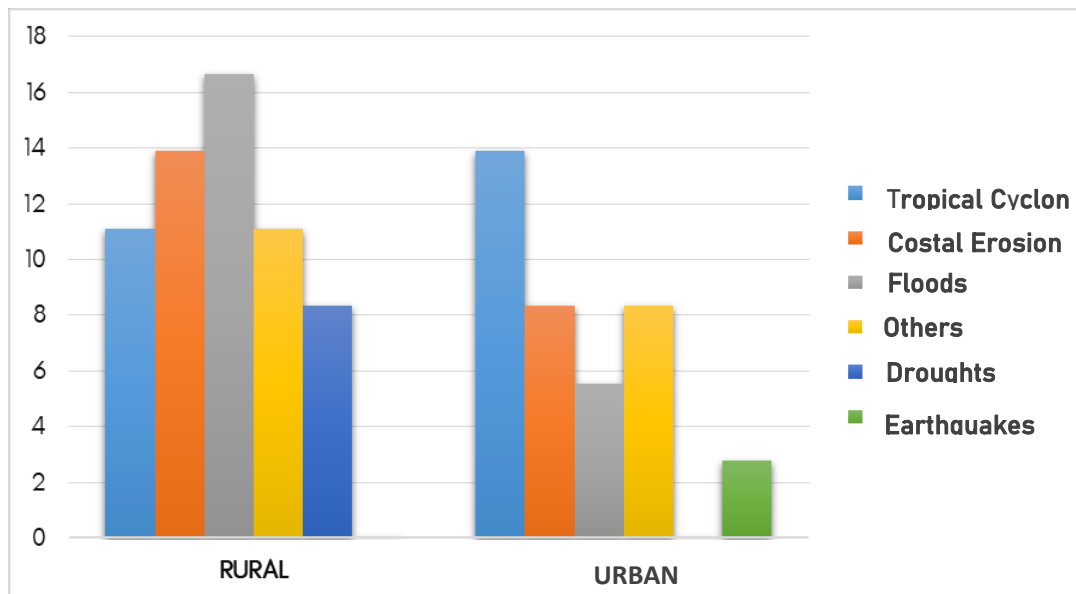
Food security and livelihoods of communities in Pemba and Mecúfi are at risk. Crop losses due to extreme weather events undermine families ability to feed themselves and generate income, contributing to poverty and instability in these areas.

Urgent action is necessary to protect the lives and property of coastal communities. This includes building safe shelters, establishing early warning systems and engaging communities in natural resource management to reduce the long-term impacts of climate change.

Throughout this document we will explore the ways in which local communities can face these challenges, adapt to climate change and build a more sustainable and resilient future in Cabo Delgado Province, as well as in other provinces.

## 2. CLIMATE CHANGE AND NATURAL DISASTERS

To have a firm mental grasp of the issues faced by Cabo Delgado coastal communities, it is crucial to take a broader view of how climate change manifests itself and its effects.



**Figure 1:** Type of disasters that affect Mecúfi District (rural area) and Pemba City (urban area)

**Source:** (Optimaize Serviços e Consultoria, 2024)

As you can see at the graph above the natural disaster that affect Pemba City (Urban area) and Mecúfi district (rural area) are tropical cyclones, coastal erosion, floods, droughts and earthquakes, with droughts<sup>1</sup> only occurring in rural areas and earthquakes in urban areas. Floods and tropical cyclones are the most frequent natural disasters that occur in Mecúfi district and Pemba City respectively. This is directly linked to the location and structures of these areas, which has influenced the intensity of certain types of disasters.

One of the main consequences of climate change in Pemba City is sea level rise, what increases coastal erosion risk and flooding in the city threatening homes, roads and critical buildings such as hospitals, schools and markets. In Mecúfi frequent floods and storms result in severe damages to coastal areas affecting agricultural crops and destroying homes (Jones et al., 2019).

<sup>1</sup> Refers to agricultural drought, since a large part of the population in rural areas depends on agriculture for their survival.

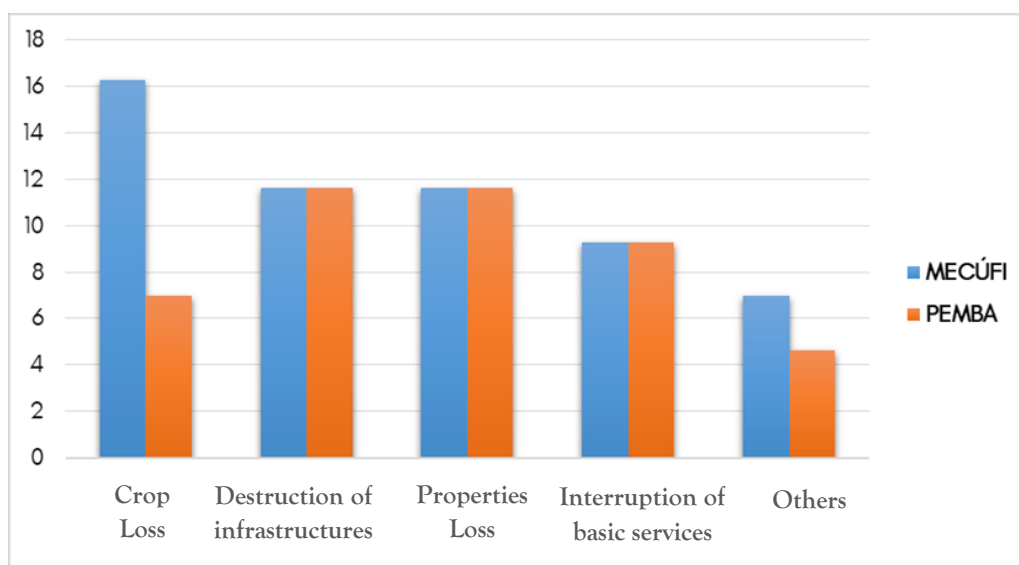


**Figure 2:** Costal erosion in Pemba City putting in risk residential areas and infrastructure.

**Source:** (Optimaize Serviços e Consultoria, 2024)

### 2.1. IMPACTS OF CLIMATE CHANGE at PEMBA City AND THE DISTRICT OF MECÚFI

In general, the occurrence of climate events in Cabo Delgado results in losses of human lives, crops and property, ecosystems damage and increase of occurrence of diseases whose vectors are climate related.



**Figure 3:** Natural disasters impacts in Pemba City and Mecúfi District

**Source:** (Optimaize Serviços e Consultoria, 2024)

According to respondents living in Pemba and Mecúfi, the economic consequences of natural disasters on their communities and/or households are vast and impactful. In urban areas, damage to infrastructure, loss of property and the interruption of basic services such as education, health, commerce and transport are highlighted as some of the main consequences. This highlights the vulnerability of urban areas to the disruption of essential infrastructure that sustains the normal functioning of these communities.

In rural areas, crop losses are the main consequence of natural disasters, highlighting the vulnerability of farming communities to extreme weather events. In addition, property losses in both rural and urban areas and damage to local infrastructure such as markets, hospitals, schools, roads and bridges underscore the far-reaching economic impacts of these disasters.

### 2.2. SOCIAL AND ECONOMIC CONSEQUENCES

Climate change has specific social and economic effects in Pemba and Mecúfi:

- In Pemba, coastal erosion directly damages local infrastructure and the economy. The destruction of roads, hospitals and tourism facilities affects access to essential services and sources of income.
- In Mecúfi, floods compromise agricultural livelihoods communities. Crop loss and property destruction affect food security and local economy.

Despite their differences, both communities need to take action to address and adapt to climate change:

- In Pemba, adaptation strategies such as building coastal barriers and restoring mangroves are crucial to reduce the impacts of coastal erosion.
- In Mecúfi, promoting sustainable agriculture and implementing early warning systems for floods are essential measures to protect livelihoods





**Figure 4:** Coastal erosion in Pemba City putting in risk residential areas and infrastructures.

**Source:** (Lyra, 2024)



**Figure 5:** Erosion at the entry of Chibuabuare neighborhood -Pemba

**Source:** (Carta de Moçambique, 2024)





**Figure 6:** Food security affected by crop losses at rural communities

**Source:** (*Diário Económico*, 2024)



**Figure 7:** Floods affect agricultural livelihood in Mecúfi

**Source:** (*O País*, 2024)



### 3. STRATEGIES AND ACTIONS FOR ADAPTATION TO ENVIRONMENTAL RISKS

Adaptation to environmental risks involves developing strategies and actions to address the challenges posed by climate change. These strategies and action seek to increase the resilience of communities to extreme weather events and other environmental threats.

Thus, the following adaptation actions were designed/proposed for Pemba and Mecúfi:

#### 3.1. PEMBA: PROTECTION AGAINST COSTAL EROSION

Planting and restoring mangroves is a key strategy to preserve coastal areas as these ecosystems act as natural barriers against coastal erosion.



**Figure 8:** Mangrove restoration in Cabo Delgado

Source: (Diário Económico, 2024)

In order to address the decrease in fish populations due to climate change, sustainable fishing practices have been promoted which includes regulation of fishing catching size, the use of selective nets, as well as the protection of fish breeding sites.

Adaptation to environmental risks is crucial for the protection of coastal communities. Measures such as coastal barriers through vetiver planting have proven effective in Pemba" (Martins et al., 2021). Vetiver grass plays a prominent role in relation to other plants used to form coastal barriers mainly due to its high hardiness and adaptability to different soil and climate conditions, rapid growth and deep rooting.



**Figure 9:** Restoration of degraded areas through Vetiver Planting

Source: (Fruticad, 2024)

### 3.2. MECÚFI: FLOOD MANAGEMENT AND SUSTAINABLE AGRICULTURE

In Mecúfi, adaptation to environmental risks focuses mainly on flood management and the promotion of sustainable agriculture, which play a fundamental role in adapting to climate variability (Santos & Pereira, 2019)

Water resource management helps reduce the impacts of flooding. This involves building dams or reservoirs to control water flow and developing early warning systems so communities can prepare in advance.





**Figure 10:** Example of a dam for controlling water flow

**Source:** (Jornal Faisca, 2020)

Conservative agriculture is promoted as a strategy to protect soil from erosion and increase crop resilience. This includes implementing techniques such as no-till farming and crop rotation.

In both places, success in adaptation depends on active community participation and ongoing education on sustainable practices and adaptation measures. Empowering communities to lead in protecting their livelihoods and strengthening their resilience is essential.



**Figure 11:** Direct seeding, a practice used in conservation agriculture.

Source: (Agro2.0, 2019)

### 3.3. ADAPTATION BENEFITS

Adaptation to environmental risk bring several benefits.

- **Damage Reduction:** Helps reduce damage caused by extreme weather events, such as flooding and coastal erosion;
- **Sustainability:** Promotes sustainable practices that protect natural resources in the long term and;
- **Community Resilience:** Makes communities more resilient and able to face climate change challenges.

### 3.4. LOCAL COMMUNITY STRUCTURES TO BE INVOLVED AT THE PROCESS OF IMPLEMENTATION OF ADAPTATION ACTIONS AND STRATEGIES IN MECÚFI AND PEMBA.

For all types of adaptation interventions to be carried out by communities and young people, the following local community structures must be involved to ensure their success. Actions taken without the involvement of these local community structures do not bring satisfactory results, and it is imperative that young people and women work alongside them.

Local Community structure	Responsibility
Fisheries Management Committee	Ensure the involvement of fisheries management committees in raising awareness and monitoring fishing activities.
Natural Resources Management Committee	Ensure the involvement of natural resource management committees at community-level to respond to natural disasters and climate change
Natural Disaster Management Committees	Monitor disasters and intervene in cases of natural disasters.
National Institute for Risk Management and Disaster Reduction	Creation and revitalization of natural disaster management committees
Municipal Council of City of Pemba	Monitoring of natural disasters and intervention in urban areas; Monitoring compliance with environmental laws
SDAE Mecúfi	Train, educate and monitor the community on aspects related to climate change.
School Committees	Environmental education

**Table 1:** Local community structures to be involved at the process of implementation of adaptation actions and strategies in Mecúfi and Pemba.

### 4. DIFFERENCES BETWEEN URBAN AND RURAL CONTEXTS

#### 4.1. URBAN CONTEXT: PEMBA

As an urban area, it faces specific challenges and dynamics related to natural resource management and climate change.

Generally have better access to resources and infrastructure, including education, health and public services. However, also face challenges due to pressure on natural resources, such as coastal fisheries and water supplies.

Urban populations, due to proximity to government and non-governmental organizations, often have greater access to environmental awareness and climate change education. This can lead to more informed and sustainable resource management practices.

#### 4.2. RURAL CONTEXT: MECÚFI

As a rural area, it has distinct characteristics and challenges regarding natural resource management and adaptation to climate change.

Rely heavily on subsistence agriculture as their main source of livelihood, making them particularly vulnerable to climate change, as extreme weather events such as floods and droughts directly affect food production.

Rural areas in Mecúfi often have limited access to basic services such as education and healthcare. This can make it difficult to access information on sustainable natural resource management practices and adaptation measures.

#### 4.3. COMPARING PERCEPTIONS AND PRACTICES

The comparison between urban and rural contexts reveals differences in perceptions and practices of natural resource management:

- **Resource Use:** In urban areas, the demand for natural resources is higher, but there is also a greater awareness of the need for conservation. In rural areas, direct dependence on natural resources can lead to traditional resource use practices, such as felling trees to produce charcoal for domestic use, uncontrolled burning and the use of mosquito nets for fishing.
- **Level of Awareness:** Urban communities tend to have greater access to environmental awareness and education about climate change. In rural areas, awareness may be limited, but traditional conservation practices are still common.



## DIFFERENCES BETWEEN URBAN AND RURAL CONTEXTS

- Adaptation: Both contexts face adaptation challenges, but strategies may vary. While urban areas may focus more on resilient infrastructure, rural areas may prioritize sustainable agriculture.

Comparing urban and rural settings highlights the crucial need for collaboration between these distinct contexts. In urban communities, there are valuable lessons to be learned from traditional resource management practices in rural areas. For example, sustainable agricultural techniques that have been refined over generations can inspire more effective land use and resource conservation methods in urban settings. In addition, community-based natural resource management in rural areas can serve as a model for promoting sustainability in urban spaces.

On the other hand, rural areas can benefit significantly from collaboration with urban areas. Access to advanced education and technological resources that are present in urban areas can strengthen rural communities. For example, implementing more efficient agriculture practices, introducing water conservation technologies, and developing innovative production methods can result in substantial improvements in quality of life and sustainability in rural areas.

This collaboration between different contexts not only promotes the exchange of valuable knowledge, but also contributes to sustainable development providing solutions adapted to the specific needs of each region.

Regardless of the context, sustainable management of natural resources, adaptation as well as awareness about climate change are essential.

### 4.4. COMPARING ACCESS TO NATURAL RESOURCES AND NATURAL RESOURCES MANAGEMENT PRACTICES

ASPECT	PEMBA (URBAN CONTEXT)	MECÚFI (RURAL CONTEXT)
Access to Drinking Water	Relatively more easy, urban water supply	Dependence on local sources, wells and rivers
Access to electricity	Greater access, available power grid	Limited electricity, solar energy in use
Access to health services	Accessible clinics and hospitals	Limited access, remote health
Food Availability	Variety of options, local	Dependence on subsistence

## DIFFERENCES BETWEEN URBAN AND RURAL CONTEXTS

	markets	agriculture
Access to education	Available schools, access to education	Access remote limited, schools
Access to information on changes climate	Easier awareness	Limited awareness

**Table 2:** Differences between Pemba and Mecúfi - access to natural resources

ASPECT	PEMBA (URBAN CONTEXT)	MECÚFI (RURAL CONTEXT)
Use sustainable from the fishing	Sustainable fishing practices	Fishing regulation traditional without
Water conservation	Efficient use of water, less dependence	Dependence on rainfall, water shortage is common
Waste management	Waste collection and recycling	Lack of waste management infrastructure
Sustainable Agriculture	Less dependence of agrochemicals	Traditional agriculture practices, less inputs
Participation in decision making	Involvement in environmental policies	Limited participation in local decisions
Awareness about climate changes	Greater access to environmental education	Low awareness about climate changes



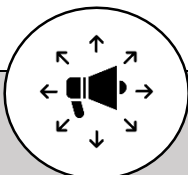
**Table 3:** Differences between Pemba and Mecúfi - natural resource management practices

## OPPORTUNITIES FOR IMPROVEMENT



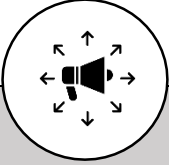
### 5. OPPORTUNITIES FOR IMPROVEMENT

There are significant opportunities to improve the management, preservation and sustainable use of natural resources in Pemba and Mecúfi,. Identifying these opportunities is essential to building a more sustainable and resilient future. Here are some opportunities that can be carried out:

Table 4: Significant opportunities to improve management, use and preservation of natural resources

			
	ACTIONS	ACTIONS EXEMPLES	DISCLOSURE MEANS
Community Involvement	<p><b>-Training:</b> Provide communities with the knowledge and skills needed to manage sustainably their natural resources</p> <p><b>-Participation in Decision Making:</b> Encourage the active participation of communities in the formulation of policies and practices related to natural resources.</p>	<p><b>-Community Training Sessions:</b> Conduct training sessions in communities to increase knowledge about natural resource management practices and how they directly affect quality of life.</p> <p><b>-Decision Making Meetings:</b> Organize regular meetings where community members can participate in decision-making on local environmental issues.</p>	<p><b>-Communicators:</b> Recruit and train local communicators to disseminate information and facilitate training sessions.</p> <p><b>-Printed Material:</b> Create leaflets, posters and informational pamphlets to distribute in communities.</p>
Education and Awareness	<p><b>-Environmental Education Programs:</b> Develop environmental education programs in local schools and communities to promote understanding of climate change and the importance of conservation.</p> <p><b>-Awareness Campaigns:</b> Carry out awareness campaigns on sustainable resource management practices, such as selective waste collection or water conservation</p>	<p><b>-Environmental Education Programs in Schools:</b> Introduce environmental education curricula in schools to teach children about climate change, resource conservation and practices sustainable.</p> <p><b>-Environmental Awareness Campaigns:</b> Conduct awareness campaigns in schools, churches and community events to highlight the importance of conservation and climate change mitigation</p>	<p><b>-Lectures and Workshops:</b> Organize lectures and workshops in schools and communities to educate about environmental issues</p> <p><b>-Social Media and Websites:</b> To use social media platforms and websites to share information and educational resources.</p>

## OPPORTUNITIES FOR IMPROVEMENT



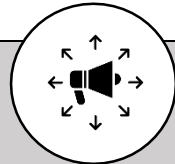
			
Technology Use and Innovation	<b>ACTIONS</b> <p><b>Environmental Monitoring:</b> Use monitoring technologies to track environmental conditions such as water levels, soil quality and biodiversity.</p> <p><b>Agriculture Applications:</b> Develop mobile applications that provide information on sustainable agricultural practices and climate alerts.</p>	<b>ACTIONS EXEMPLES</b> <p><b>Sustainable Agriculture Applications:</b> Develop mobile applications that provide guidance on sustainable agricultural practices, including information on planting and harvesting crops</p> <p><b>Early Warning Systems:</b> Implement early warning systems to inform communities of imminent climate threats such as floods.</p>	<b>DISCLOSURE MEANS</b> <p><b>Training in Technology:</b> Provide training to community members on how to use apps and alert systems</p>
Partnerships and Collaborations (Local organizations, NGOs, government and private sector)	<p><b>Partnerships with Companies:</b> companies can support sustainable initiatives such as reforestation or recycling programs.</p> <p><b>Intergovernmental Cooperation:</b> collaboration between municipalities, provinces and national governments can promote more effective resource management policies.</p>	<p><b>Partnerships with Local Companies:</b> Partner with local businesses to fund environmental conservation projects such as reforestation, recycling or agroforestry programs</p> <p><b>Intergovernmental Cooperation:</b> Work with local and national government agencies to develop more effective resource management policies and regulations..</p>	<p><b>Online Disclosure: applications and alert systems promotion through online advertisements and social media</b></p> <p><b>Community Radios:</b> use community radio stations to issue warnings and guidance on climate threats and sustainable agricultural practices</p>
Young people Involvement	<p><b>Education and Training:</b> Offering education and training opportunities for young people on climate change and natural resource management.</p> <p><b>Civic Engagement:</b> promoting active involvement of young people in decision making and environmental preservation initiatives</p>	<p><b>Youth Environmental Clubs:</b> Establish environmental youth clubs in schools and communities to engage young people in conservation and environmental education projects.</p> <p><b>Contests and Challenges:</b> conduct creative contests and challenges related to environmental conservation to encourage youth involvement.</p>	<p><b>Education and Training:</b> Provide education and training opportunities for young people on climate change and natural resource management.</p> <p><b>Civic Engagement:</b> Promote the active involvement of young people in decision making and environmental preservation initiatives and identification of alternatives to improve income and quality of life, minimizing the risks of rural exodus.</p> <p><b>Social media:</b> Use social media platforms popular with young people and local community radio stations to promote clubs and events related to the environment.</p> <p><b>Partnerships with Schools:</b> Collaborate with schools to integrate environmental education activities into curricular activities.</p>



## OPPORTUNITIES FOR IMPROVEMENT

Woman  
Involvement

Continuous  
Assessment and  
Apprenticeship

			
	ACTIONS	ACTIONS EXAMPLES	DISCLOSURE MEANS
Woman Involvement	<p><b>Education and Training:</b> Provide women with education and training opportunities</p> <p><b>Awareness Campaigns:</b> Conduct awareness campaigns encouraging women's participation in Natural Resource Management Committees (CGRNs) and Local Natural Disaster Management Committees (CLGDN).</p>	<p><b>Literacy courses:</b> introduce basic literacy and entrepreneurship courses for women.</p> <p><b>Identifying and supporting women champions:</b> These can be local or from other areas that serve to inspire other women.</p> <p><b>Awareness Campaigns:</b> Conduct awareness campaigns in schools, churches and community events to highlight the importance of women's participation and involvement in conservation and climate change mitigation actions..</p>	<p><b>Lectures and Workshops:</b> Organize talks and workshops in communities to educate about environmental issues</p> <p><b>Community Radios:</b> use community radios to raise awareness and disseminate information about the importance of women's participation in Natural Resource Management Committees (CGRNs) and Local Natural Disaster Management Committees (CLGDN)</p>
Continuous Assessment and Apprenticeship	<p><b>Impact Assessment:</b> Assess the impact of implemented measures in terms of resilience, sustainability and community well-being.</p> <p><b>Knowledge Sharing:</b> share experiences and lessons learned across communities and regions to promote best practices.</p>	<p><b>Periodic Impact Assessments:</b> Conduct regular assessments to measure the impact of natural resource management and adaptation practices to climate change on communities.</p> <p><b>Sharing Lessons Learned:</b> Share assessment results and lessons learned with other interested communities and organizations.</p>	<p><b>Community Reports:</b> Produce evaluation reports that are accessible and understandable to the community.</p> <p><b>Sharing Workshops:</b> Hold workshops to share assessment results and promote discussion and collective learning.</p>

### 6. FINAL CONSIDERATIONS

Throughout this paper, we explore the importance of participatory management, preservation and sustainable use of natural resources in the local communities of Pemba and Mecúfi, in the coastal areas of Cabo Delgado Province. We address climate change, its consequences, participatory management of natural resources, adaptation to environmental risks, differences between urban and rural contexts and opportunities for improvement.

It has become clear that communities play a central role in environment protection and building a more resilient future. When communities are involved in decision-making and implementing sustainable practices, everyone benefits.

The involvement of civil society, local organizations, non-profit organizations, governments, as well as young people, play a fundamental role in decision-making and raising awareness in concrete actions on climate change.

How can communities contribute to improving the management of natural resources and adapting to climate change impacts?

- Adoption of Sustainable Practices
- Practice selective waste collection;
- Reduce plastic consumption;
- Adopt measures to save water (repair leaks and collect rainwater);
- Implement policies that defend sustainable agriculture;
- Adoption of practices that protect the soil and avoid the excessive use of agrochemicals;
- Implementation of measures to mitigate overfishing.

#### Community Involvement

- Promotion of community meetings as a contribution to decision-making about the environment;
- Encourage sharing and knowledge dissemination about climate change and sustainable practices;
- Enhance communities (young people, particularly women) participation and direct involvement in climate actions or intervention and management committees.

## FINAL CONSIDERATIONS

### *Youth Support*

- Engage young people to actively participate in environmental initiatives;
- Create opportunities for them to lead projects;
- Environmental Education in Schools: Promote the inclusion of environmental education in school curricula.

### *Partnerships and Collaborations*

- Work together with organizations/companies to strengthen conservation projects;
- Advocate for sound and effective environmental policies; Collaborate with government authorities.

### *Assessment and Continuous Learning*

- Constant monitoring of the impact of environmental actions;
- Evaluation and discussion of specific action plans;
- Sharing experiences and lessons learned with other communities and organizations.

*Protecting the environment and adapting to climate change are global challenges, but change starts locally, in our own communities. We can contribute to a more sustainable and resilient future for Pemba, Mecúfi and all communities.*

*We can do this. We can concretely improve the environment, in which we live, respecting it and becoming aware that we all have rights, but also duties towards the environment that surrounds us.*

*Determined and visionary leadership will be essential, and it will require immense courage. There is still time to mitigate the consequences of climate change, but only if we are willing to change and get involved.*

*Did you know that when you do act, many people will be right behind you, especially young people. Recognizing it not only as a duty, but also as an opportunity to take ownership of actions to significantly improve the impact of climate change.*

*Together for a Climate of Change!*

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