7 MOZAMBIQUE

A DOG WITH TWO MASTERS: FRAGMENTED AND INEFFECTIVE MANAGEMENT OF MANGROVES IN MOZAMBIQUE

By Manuel Castiano

Population: ≈ 29 million

Mangrove coverage: ≈ 337,000 ha.

MAIN THREATS:

Overharvesting
Infrastructure development
Agriculture
Mining
Tourism
Salt exploitation
Pollution
Coastal erosion
Sedimentation

MAIN USES OF MANGROVES:

Boat construction
Fences construction
Infrastructure construction

KEY INSTITUTIONS RESPONSIBLE FOR MANGROVES:

MIMAIP: Ministry of Sea, Inland Waters and Fisheries
MITADER: Ministry of Land, Environment and Rural Development
MIREME: Ministry of Energy and Mineral Resources
INGC: National Institute for Disaster Management
MOPHRH: Ministry of Public Infra-Structures and Housing
MASA: Ministry of Agriculture and Food Security

Legislation relevant to mangroves*

* https://www.ecolex.org/details/literature/legal-framework-for-mangrove-governance-conservation-and-use-mozambique-legal-instruments-ana-094746/?type=literature

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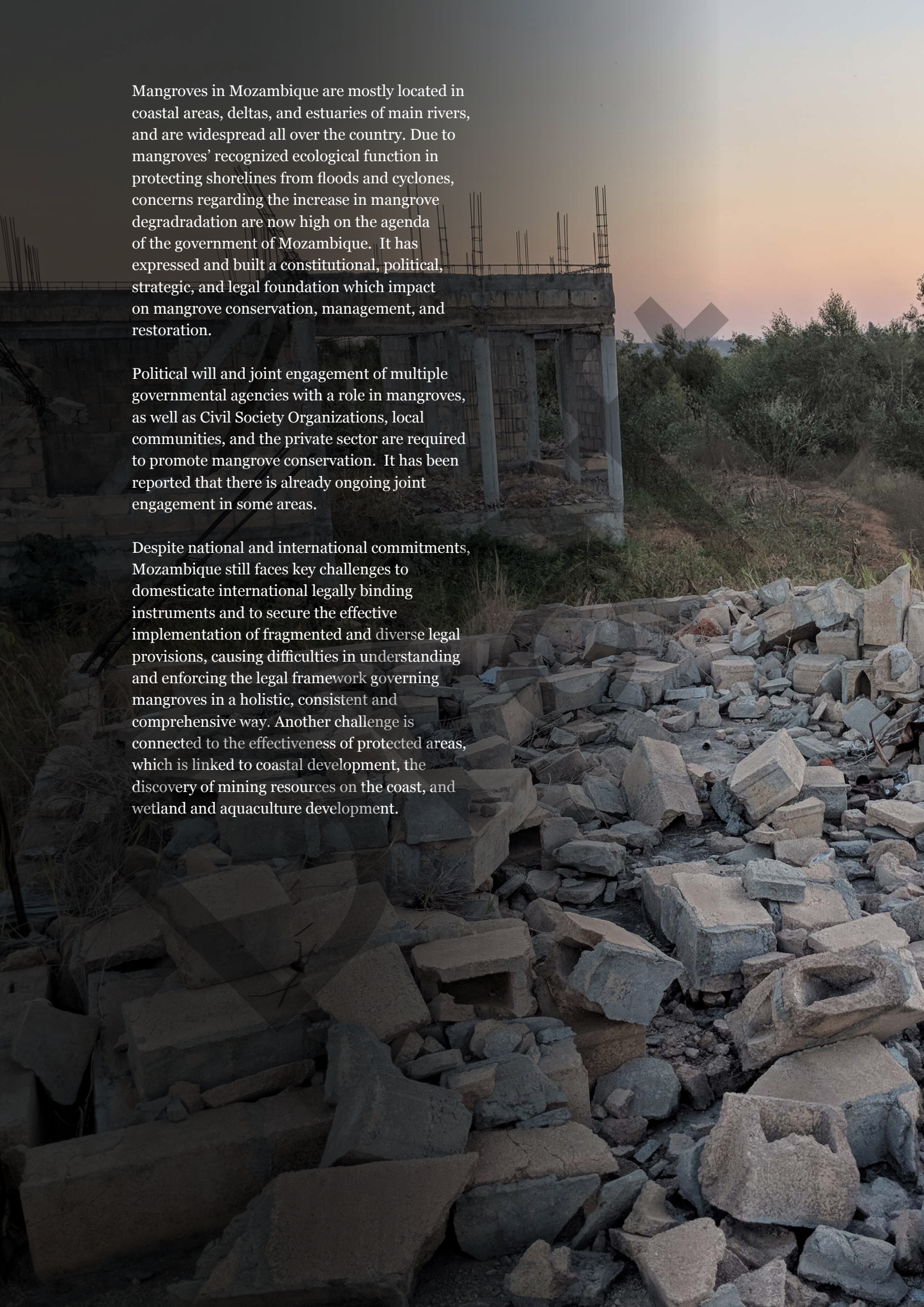
ABBREVIATIONS

ANAC	National Administration for the Areas of Conservation
AQUA	National Agency for Environmental Quality Control
CBD	Convention on Biological Diversity
CGRM	Management Committee for Mangrove Restoration
CONDES	National Council for Sustainable Development
DUAT	Land Use and Utilization Rights
EIA	Environmental Impact Assessment
INGC	National Institute for Disaster Management
MASA	Ministry of Agriculture and Food Security
MIMAIP	Ministry of Sea, Inland Waters and Fisheries
MIREME	Ministry of Energy and Mineral Resources
MITADER	Ministry of Land, Environment and Rural Development
MOPHRH	Ministry of Public Infrastructures and Housing
NDC	Nationally Determined Contribution
UNFCCC	United Nations Framework Convention on Climate Change



Mangroves in Mozambique are mostly located in coastal areas, deltas, and estuaries of main rivers, and are widespread all over the country. Due to mangroves' recognized ecological function in protecting shorelines from floods and cyclones, concerns regarding the increase in mangrove degradradation are now high on the agenda of the government of Mozambique. It has expressed and built a constitutional, political, strategic, and legal foundation which impact on mangrove conservation, management, and restoration.

Political will and joint engagement of multiple governmental agencies with a role in mangroves, as well as Civil Society Organizations, local communities, and the private sector are required to promote mangrove conservation. It has been reported that there is already ongoing joint engagement in some areas.

Despite national and international commitments, Mozambique still faces key challenges to domesticate international legally binding instruments and to secure the effective implementation of fragmented and diverse legal provisions, causing difficulties in understanding and enforcing the legal framework governing mangroves in a holistic, consistent and comprehensive way. Another challenge is connected to the effectiveness of protected areas, which is linked to coastal development, the discovery of mining resources on the coast, and wetland and aquaculture development.

7.1. Introduction: Misaligned priorities, an ongoing loss

With a coastline of 2780 km, Mozambique lies on the coast of East Africa, where it is vulnerable to tropical cyclones, producing intense rains, strong winds, and floods.[828] In the late 1990s and early 2000s, Mozambique's mangroves covered almost 400,000 ha.[829] Mozambique then had the second largest mangrove forest in Africa, and the largest in East Africa.[830] In the period since, Mozambique has lost around 60,000 ha down to an estimated 337,000 ha in 2015.[831]

The continuous degradation of mangrove areas, is mainly attributed to commercial exploration and lack of institutional capacity.[832] There is growing mining prospect activity along the Mozambican coastline, where the government has granted concessions and licences for surveying almost the entire coastal belt areas of Cabo-Delgado, Nampula, Zambézia, and Gaza provinces.[833]

The direct and indirect economic value of 37,034 ha of mangroves in the Zambezi Delta has been estimated to produce more than USD one billion per year.[834] Mangroves provide nurseries for fishery resources, water filtration, carbon storage, and shoreline protection from erosion and storms. It is predicted that mangrove degradation or destruction could cause immeasurable loss, including the death of coastal and marine living resources. People living in coastal regions may suffer from strong storm surges and consequent floods. From 2000 to 2015, Mozambique suffered 1,204 deaths caused by floods.[835] Mozambique was affected by several cyclones in the last 25 years namely: 1994 (Nádia); 2000 (Hudah; Gloria; Coline and Leon-Eline); 2003 (Japhet); 2007 (fávio); 2008 (Jokwe); 2012 (Funso); 2019 (Idai and Kenneth).[836]

Recently, Cyclone Idai seriously affected the coastal provinces of Sofala and Zambezia. The two major rivers, the Buzi and the Pungue, burst their banks, submerging entire villages and leaving bodies floating in the water; a preliminary assessment revealed that thousands of people were killed and 715,378 ha of crops were damaged.[837]

Climate change will increase the risks of natural disasters significantly, and by 2030 the central region will be seriously affected by cyclones and sea level rise.[838] Around 60% of Mozambican people live in large cities in coastal areas, particularly Maputo, Beira, Quelimane, and Pemba.[839] A 2012 study of coastal level vulnerability to climate change indicated that the most vulnerable cities are Beira, followed by other coastal cities including Maputo and Pemba.[840] Mangroves play an important role in mitigating these disasters but are also severely affected by these events.

828 Irish Aid (2018). *Mozambique Country Climate Risk Assessment Report*.

829 FAO (2005). *Global Forest Resources Assessment 2005: Thematic Study on Mangroves, Mozambique Country Profile*. Forestry Department, Rome.

830 *Ibid.*

831 FAO (2015). *Global Forest Resources Assessment 2015: Desk Reference*. FAO, Rome.

832 Macamo, C. and Sitoe, A. (2017). *Relatório de Governação Ambiental 2016 - Governação e gestão de mangais em Moçambique*. Maputo, Centro Terra Viva. 63pp.

833 *Mozambique Mining Cadastre Portal*. http://portals.flexicadastre.com/mozambique/en/ [Accessed 5 November 2018].

834 WWF (12 June 2017). *Mangal do Delta do Zambeze avaliado em mais de 1 bilião de dólares americanos*. https://www.wwf.org.mz/?2860/Mangal-do-Delta-do-Zambeze-avaliado-em-mais [Accessed 10 December 2018].

835 World Bank (2010). *Economics of Adaptation to Climate Change: Mozambique*. Washington, DC.

836 Ministério para a Coordenação da Acção Ambiental (2006). *Avaliação das Experiências de Moçambique na Gestão de Desastres Climáticos (1999 a 2005)* (first draft).

837 Reuters / Africa News (11 April 2019). *World Bank says Cyclone Idai cost Mozambique up to $773 million*. https://clubofmozambique.com/news/world-bank-says-cyclone-idai-cost-mozambique-up-to-773-million/ [Accessed on 18 April 2019].

838 *Ibid.*

839 Instituto Nacional de Estatística. *População 2017*. http://www.ine.gov.mz/ [Accessed 28 November 2018].

840 Van Logchem, B. and Queface, A.J. (Eds.). (2012). *Respondendo as Mudanças Climáticas em Moçambique: Relatório Síntese*. Maputo, INGC.

7.2. Instrumental level: Conflict and confusion between conservation and development

7.2.1 International legal instruments and their national implementation

Mozambique is party to international and regional legally binding instruments impacting mangroves, and has demonstrated a commitment to domestication, as it was recognized in the early 1990s that many policies and laws relating to environmental protection and natural resource management were outdated, particularly those related to land, the environment, forests, wildlife, fisheries, and mining.[841]

As a result of ratifying the Ramsar Convention, Mozambique declared two Ramsar sites, Niassa Lake (2011) and the Zambezi Delta (2004).[842] The 37,000 ha of mangroves in the Marromeu complex are part of the 1.2 million ha declared as the Zambezi Delta Ramsar site.[843]

The Quirimbas National Park became a UNESCO Biosphere Reserve in 2017 based on the recognition to host a vast biodiversity representation, including mangroves. The geography of this area is peculiar and has allowed an increase of approximately 1,104 ha of mangrove between 1991 and 2013, although there are still areas near urban centres, mainly in the southern part of the park, where there is a negative balance due to intensive exploitation and urbanization.

The implementation of some international legal instruments, such as the Convention on Biological Diversity (CBD), requires Mozambique to report on the fulfillment of the defined targets. In that context, Mozambique developed National Strategy and Action Plans (2015-2035), which identified the over-exploitation of mangrove timber as an energy source as a threat to biodiversity.[844]

Mozambique is vulnerable to natural disasters such as floods, erosion, and droughts, and persistent threats of increased desertification as a direct result of climate change and anthropological factors. Mangrove restoration and reforestation can play an important role in addressing these threats. In this context, Mozambique has ratified the United Nations Convention to Combat Desertification and has subsequently committed to rehabilitate at least 15% of degraded ecosystems/habitats, restoring their biodiversity with a view to mitigating the effects of climate change.[845]

The ratification of the Paris Agreement represents an opportunity for climate investments to move forward with actions to conserve mangroves, and it was in this context that Mozambique ratified the Credit and Donation Agreement with the International Development Association for USD 25 million dedicated to financing the Second Climate Change Development Policy Operation Project.[846] Mozambique also adopted a National Climate Change Strategy, which defines as one of the priority adaptation actions increasing the resilience of fish stocks through the regeneration of mangroves.[847] In its 2018 Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) and its three-year operational plan, Mozambique proposes to contribute to a reduction in emissions of around 31.9 MtCO2e, of which 30 MtCO2e are saved in the forest and land use sector, and 1.93 MtCO2e in other sectors

841 Walmsley, B. and Tshipala, K.E. (2007). *Handbook on Environmental Assessment Legislation in the SADC Region*. Development Bank of Southern Africa in collaboration with the Southern African Institute for Environmental Assessment. Midrand. 420pp.

842 Ramsar 2019. *Sites Information Service*. https://rsis.ramsar.org/ [Accessed 25 March 2019].

843 *Ibid*.

844 MITADER (2015). *Estratégia e plano de acção para a conservação da diversidade biológica em Moçambique*. Maputo. 112pp.

845 *Ibid*. Target 12.

846 *Resolução* No. 1/2015 of 5 February 2015 *ratifica os Acordos de Crédito n.º 5565-MZ e Donativo n.º D0130-MZ celebrados entre o Governo da República de Moçambique e a Associação Internacional de Desenvolvimento*.

847 Ministério para a Coordenação da Acção Ambiental. *Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas, 2013-2025*. Section 4.6.1.3.2.

(waste, electricity, and energy).[848] The Regulation for REDD+ creates a framework for investment and imposes mandatory and timely consultations for communities, different social groups, CSOs, and the private sector involved in REDD + activities (see Section 7.4.5).[849]

At a regional level, Mozambique is affiliated with several regional economic organizations that create obligations to prevent threats to the coastal environment and to secure an ecological balance resulting from the poor integration of the ecosystem in the development process derived from regional commitments.[850] The new development of the oil and gas industry in the north of Mozambique, the project of building a port in the south (Ponta Dobela-Techobanine) and the pollution from ships and land-based sources emphasize the need for the protection and preservation of fragile ecosystems, especially in protected areas. This is addressed by the Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean Region by Land Based Sources and Activities (LBSA Protocol), to which Mozambique is a party.[851]

Mozambique has ratified most of the biodiversity conventions, which is a positive development. However, it should not be satisfied merely with ratifying these instruments. These instruments have to be read carefully, effectively interpreted, modified as appropriate to Mozambique's needs and its specific situation, domesticated, and implemented through strengthening of institutional capacity.

7.2.2 The constitutional approach

The Mozambican Constitution recognizes the right to live in a balanced environment as a fundamental principle and imposes obligations on the State to defend and preserve the environment through different legal and customary mechanisms.[852] The Constitution establishes the State's role in relation to the environment, including the promotion of initiatives ensuring ecological equilibrium, conservation and preservation of the environment to improve the quality of life.[853]

The Constitution forms the basis for management of natural resources, including mangroves and their ecosystems. The management, governance, and usage of natural resources are based on the fact that at national independence and the first Constitutional Proclamation in 1975, natural resources were identified as strategic for the country's development. Hence, the ownership and control of land and other natural resources were entrusted to the State.[854]

Constitutional provisions establish obligations to adopt policies to ensure the rational usage of natural resources within their capacity to regenerate, taking into consideration the rights of future generations.[855] Through the Constitution, the State reaffirms its ownership over all natural resources.[856] Although the Constitution does not refer explicitly to mangroves, all provisions regarding State ownership over natural resources apply to them. Even if citizens cannot own mangroves, the Constitution allows their use and benefit in accordance with observed environmental legally established terms and conditions.[857] The Constitution also underlines the rules for its interpretation in line with international laws and embraces different

848 Mozambique's first Intended Nationally Determined Contribution (submitted 4 June 2018). UNFCCC.

849 *Decreto* No. 23/2018 of 3 May 2018 *Regulamento para Programas e Projectos Inerentes à Redução de Emissões por Desmatamento e Degradação Florestal Conservação e Aumento de Reservas de Carbono (REDD+)*. Article 4(f), 4(i).

850 *Resolução* No. 17/96 of 26 November 1996 *ratifica a Convenção para a Protecçao, Gestão e Desenvolvimento Marinho e Costeiro da Região Oriental de África, de 2 de Junho de 1985 e respectivos Protocolos*; *Decreto* No. 45/2006 of 30 November 2006 *aprova o Regulamento para a Prevenção de Poluição e Protecção do Ambiente Marinho e Costeiro*.

851 *Resolução* No. 3/2014 of 20 March 2014 *Protocolo para a Protecção do Ambiente Marinho e Costeiro da Região Ocidental do Oceano Índico por Fontes e Actividades Baseadas em Terra (Protocolo LBSA)*.

852 Constitution of the Republic of Mozambique of 16 November 2004. Article 4, 90, 117.

853 *Ibid*. Article 117.

854 *Ibid*. Article 98.

855 *Ibid*. Article 117(2)(d).

856 *Ibid*. Article 98(1).

857 *Ibid*. Article 98, 102.

models to solve conflicts that may arise over natural resources. The constitutional approach to mangroves is inextricably linked to the land and the environment with the objective of ensuring sustainable use of natural resources for present and future generations.[858] **Community-based natural resource management is one of the elements of legal pluralism enshrined in the Constitution.**[859] Subsequently, the State recognized the crucial role of traditional authorities in community forest management.[860]

7.2.3 Competing policies

Mozambique has adopted different natural resources policies which are applicable to mangroves or affect their conservation and restoration, but the key remaining issues lie in their transposition into by-laws and their implementation. Some of these political instruments directly tackle or mention mangroves in the text.

The main document applicable to mangroves is the Environmental Policy which proposes three priority actions on mangroves, including searching for options to avoid their continuous reduction, identifying degraded areas, and planning restoration and establishing mangrove protected areas and developing respective management plans.[861] The policy directive can't be implemented without a proper mangrove strategy, that was ignored in the first exercise done in 2015 but recently developed and on the way to adoption.

Although there are mangroves in coastal and marine protected areas, none of these areas are specifically declared mangrove protected areas, as envisaged by the Environmental Policy. This objective may be met when the Conservation Law is revised, or specific mangrove protected areas can be established under the current legal framework. The Conservation Policy and its Strategy aim at creating enabling conditions to expand the network of areas of conservation.[862] However, the scope of this Policy is limited to declared conservation areas (national parks and national reserves), either terrestrial or marine.[863] Other applicable measures are not enough to mitigate the threats to mangroves located outside conservation areas.

Complementing these policies and in a more comprehensive manner, the government has adopted the Sea Policy, which addresses all maritime activities and the surrounding ecosystems affecting the ocean's health, including mangroves.[864] However, the Fisheries Policy leaves out the importance of mangroves for fisheries, though it is well known that shrimp fisheries and mangrove crab fisheries depend entirely on the mangroves' health.[865] The Forest and Wildlife Policy refers to mangroves as reproduction areas for crustaceans and other marine species.[866] However, the revised Fisheries Law and Maritime Fisheries Regulation did not consider these areas.[867]

Along the same lines as the Sea Policy, the Biodiversity Strategy indicates that mangrove hotspots, mainly in the deltas and estuaries of major rivers, deserve special attention to address the degradation of the country's biodiversity as well as to secure their role in improving water quality, functioning as a filter storing all polluting substances and preventing them from entering the water cycle.[868]

858 *Ibid*. Article 110, 117.

859 *Ibid*. Article 4.

860 *Ibid*. Article 118; *Decreto* No. 12/2002 of 6 June 2002 R*egulamento da Lei de Florestas e Fauna Bravia*. Article 8.

861 *Resolução* No. 5/95 of 3 August 1995 *aprova a Política Nacional do Ambiente*. Section 3.6.2.

862 *Resolução* No. 63/2009 of 2 November 2009 *aprova a Política de Conservação e Estratégia de Sua Implementação*. Section 4.2.2.

863 *Ibid*. Section 2.1.

864 *Resolução* No. 39/2017 of 14 September 2017 *aprova a Política e Estratégia do Mar, abreviadamente designada por POLMAR*. Section 73.

865 *Resolução* No. 11/96 of 28 May 1996 *aprova a Politica Pesqueira e Estratégias de Implementação*.

866 *Resolução* No. 8/97 of 1 April 1997 *aprova a Politica e Estratégia de Desenvolvimento de Florestas e Fauna Bravia*. Section 57(ix).

867 *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*; *Decreto* No. 43/2003 of 10 December 2003 *Regulamento Geral da Pesca Marítima*.

868 Ministério da Terra, Ambiente e Desenvolvimento Rural (MITADER). *Estratégia e Plano de Acção Nacional para a Conservação da Diversidade Biológica (2015-2035)*. Section 5.5.

The Reforestation Strategy aims at conserving and restoring degraded mangrove areas with a reforestation target of 2,000 ha by 2029.[869] This target was updated in 2017, when **the government submitted its voluntary commitment to reforest 5,000 ha by 2022 through the implementation of the Strategy and Action Plan for Mangroves** under Goal 14 of the SDGs.[870] The Forest and Wildlife Policy is focused on the development and use of forest resources; it recommends the adoption of a management plan for conservation areas, including fragile ecological areas, and explicitly proposes establishment of mangrove management and conservation plans with the involvement of the local population.[871] However, no management plan was adopted for this purpose, nor does the forest authority considers mangroves under its competencies.

Mangroves are indirectly cited in additional policies and strategies, and their degradation has been commonly identified as an anthropogenic root cause of erosion.[872] Most political instruments mention mangroves indirectly by mentioning "forest," "natural resources," "ecosystem," "coastal habitat," and "biodiversity," all of which would include mangroves.[873] The risk of using such broad terms is the lack of clarity which may lead to different interpretations about whether the terminology covers mangroves or not. This lack of clarity can also potentially incentivize damage to mangroves.

The whole mangrove policy framework is comprehensible through different pieces of provisions of the various parts of sectoral policy. The design of individual pieces of policy guidance does not take into account previous policies or related sectoral policies, which provokes conflicting and inconsistent approaches. For example, **as a result of a disconnect between the Reforestation Strategy, the Erosion Action Plan and the Master Plan for disaster risk reduction, areas at risk of natural disasters, in particular floods, have no correlation with areas for reforestation.**[874] The Master Plan defines as a priority understanding the risk of disaster, strengthening disaster risk management, investing in risk reduction, and preparing for responses to disasters, but leaves out the role played by mangroves in preventing storms and floods.[875] Similarly, the Erosion Action Plan does not consider mangrove degradation as a cause of erosion and natural disasters.[876] In Maputo City, the destruction of the mangrove surface on the Costa del Sol had as one of its consequences the loss of the coastal shoreline until there was a need for engineering works to be done.[877]

The fundamental role of mangroves does not appear clearly in any policies, and the sectoral natural resource strategies give low or inadequate priority to mangroves. This is influenced by the lack of real economic, biological, and social information related to mangroves.

869 Ministério da Agricultura (2009). *Estratégia para o Reflorestamento*. Section 5.4.3(c).

870 United Nations 2019. *Mozambican Marine Spatial Planning for coastal and ocean management - Deliverables*. https://oceanconference.un.org/commitments/?id=17170 [Accessed 29 March 2019].

871 *Resolução* No. 8/97 of 1 April 1997 *aprova a Política e Estratégia de Desenvolvimento de Florestas e Fauna Bravia*. Section 57(iii), 57(ix).

872 Ministério da Terra, Ambiente e Desenvolvimento Rural (MITADER). *Estratégia e Plano de Acção Nacional para a Conservação da Diversidade Biológica (2015-2035)*. Section 3.3(a); *Resolução* No. 10/1995 of 17 October 1995 *aprova a Política Nacional de Terras e as respectivas Estratégias de Implementação*. Section III(14.IV); *Resolução* No. 8/1997 of 1 April 1997 *aprova a Política e Estratégia de Desenvolvimento de Florestas e Fauna Bravia*. Section 2.1.2, 3.

873 *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 4; *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica*, as amended by *Lei* No. 5/2017 of 11 May 2017. Article 2; Mozambique (2010). *Estratégia e Plano de Acção de Género, Ambiente e Mudanças Climáticas*.

874 Ministério da Agricultura (2009). *Estratégia para o Reflorestamento*; Ministério para a Coordenação da Acção Ambiental (2007). *Plano de acção para a prevenção e controlo da erosão de solos 2008-2018*; Conselho de Ministros (2017). *Plano Director para a redução do risco de desastres 2017-2030*.

875 Conselho de Ministros (2017). *Plano Director para a redução do risco de desastres 2017-2030*.

876 Ministério para a Coordenação da Acção Ambiental (2007). *Plano de acção para a prevenção e controlo da erosão de solos 2008-2018*.

877 Noticias (18 October 2015). *Segundo o jurista ambiental carlos serra: Cidades limpas reflectem maturidade da cidadania*. http://www.jornalnoticias.co.mz/index.php/1-plano/44917-segundo-o-jurista-ambiental-carlos-serra-cidades-limpas-reflectem-maturidade-da-cidadania [Accessed 20 January 2019].

7.2.4 State property and users' rights

Mozambique reaffirmed through its Constitution its sovereignty over all natural resources. It established that natural resources located in the soil and subsoil, in internal waters, in the territorial seas, on the continental shelf, and in the exclusive economic zone are State property.[878] State ownership over natural resources was also taken up in several sectoral laws.[879]

As the owner of natural resources, it is the State's responsibility to build capacity and knowledge, and define the terms and conditions for their exploration and exploitation while safeguarding national interests.[880] The law does not define the term "national interest" and consequently it is defined on an *ad hoc* basis by the government. State ownership does not necessarily mean that natural resources, including mangroves, cannot be exploited and enjoyed by the community in general or by individuals. For this purpose, people can be granted authorization to benefit from natural resources owned by the State. The State is entitled to withdraw, cancel, or set limits or terms and conditions for any licences.[881]

Although State ownership over natural resources is a firm concept in Mozambique, **there are problems and conflicts that arise with regard to accessing natural resources, in particular between the people who have been given the right to exploit these resources by the State authorities and the communities who got the right through occupancy.**[882] These rights are recognized by the law and established by Municipalities using customary laws.[883] With the aim of minimizing problems, mandatory public and community consultations are required prior to issuing permits under all sectoral natural resource laws and regulations.[884] There are challenges in the implementation of this intent as public participation can only be secured if communities are granted substantial rights to information.

7.2.5 Conservation areas

7.2.5.1. Conservation areas and protection zones framework

The mangrove conservation regime is complex and hybrid, requiring a crosscutting analysis of various laws and regulations. The Conservation Law creates a framework for areas of total conservation including natural reserves, national parks and cultural and natural monuments.[885] In addition, the Land Law establishes partial protection zones and total protection zones.[886] Prior to adoption of the Conservation Law in 2014, the Forest Law and the Environmental Law also established different types of protected areas.[887] The Conservation Law explicitly revokes these provisions.[888] Conservation areas and protection zones are in the public domain; they are not subject to private appropriation except for cultural and natural monuments, and in these areas nobody can hold DUAT. They are especially dedicated to the protection and maintenance of biological diversity.

While conservation areas and total protection zones are defined by the need to maintain

878 Constitution of the Republic of Mozambique of 16 November 2004. Article 98(1).

879 *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 3; *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 3; *Lei* No. 20/2014 of 18 August 2014 *Lei de Minas*. Article 4; *Lei* No. 21/2014 of 18 August 2014 *Lei de Petróleos*. Article 18; *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 10.

880 Constitution of the Republic of Mozambique of 16 November 2004. Article 102.

881 *Ibid*. Article 110(1).

882 Serra, C.M. et al. (2013). *Dinâmicas da Ocupação e do uso da Terra em Moçambique*. Escolar Editora. 225pp.

883 *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 13.

884 *Lei* No. 20/1997 of 1 October 1997 *Lei do Ambiente*. Article 8; *Lei* No. 19/2007 of 18 July 2007 *Lei de Ordenamento do Território*. Article 19, 22; *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 6, 36.

885 *Lei* no. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 14.

886 *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 7, 8.

887 *Lei* No. 20/97 of 1 October 1997 *Lei do Ambiente*. Article 13; *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 10(2).

888 *Ibid*. Article 64.

biological processes and ecosystems, partially protected zones are defined under the Land Law simply by their geographical locations, such as areas next to the seashore, the coastlines of islands, estuaries, and areas up to 100 metres inland.[889] In partially protected zones, mangroves cannot be commercially exploited without a licence. This approach is particularly important, as almost 50% of the mangrove areas in Mozambique are in coastal zones.[890]

The Conservation Law classifies areas by different levels of protection: (a) areas of total conservation, which include integral nature reserves; national parks; and cultural and natural monuments; and (b) conservation areas of sustainable use, which include special reserves, environmental protection areas, official coutadas, community conservation areas, sanctuaries, wild farms and municipal ecological parks.[891]

The main conservation areas protecting mangrove ecosystems in Mozambique are the Marromeu National Reserve, the Quirimbas National Park, and the Pomene National Reserve. The main conservation areas of sustainable use are the Maputo Special Reserve and the Area of Environmental Protection Ilhas Primeiras e Segundas. Although the precise figures may vary, it is reported that around half of Mozambique's mangroves are situated within protected areas.[892]

7.2.5.2. Activities allowed in conservation areas

The Land Law opens up the possibility of issuing special authorization for using protected zones for specific activities.[893] This possibility was also created under the nullified provisions of the Forest Law, which took into consideration the reasons of necessity, utility, or public interest in granting permits for the development of certain activities in conservation areas, as long as these activities did not undermine the main objectives of the area.[894] The Conservation Law, instead specifically mentions activities that cannot occur in national parks, and establishes a list of activities that can be developed in conservation areas according to the objectives of each category.[895] In areas of sustainable use, the extraction of resources is allowed up to certain levels, respecting the sustainable limits set by management plans.[896]

As a principle, in total conservation areas (integral natural reserve, national park, natural and cultural monument), all commercial activities are prohibited, including forest exploitation, mining, oil and gas extraction, fisheries, aquaculture and hunting etc.[897] There is an exemption for activities developed for scientific reasons or for management purposes.[898] Under the Forest Law, although commercial activities were prohibited in protected areas, exemption was possible in accordance with the management plan when these activities were justified for reasons of necessity, utility or public interest, in accordance with the objectives of each category of conservation area.[899] This provision

889 *Lei* No. 19/97 of 1 October 1997; *Lei de Terras*. Article 8.

890 Nicolau, D. et al. (2017). Mangrove change detection, structure and condition in a protected area of eastern Africa: the case of Quirimbas National Park, Mozambique. *Western Indian Ocean Journal of Marine Science* 16(1):47-60.

891 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 14, 18.

892 Chevallier, R. (2013). *Balancing Development and Coastal Conservation: Mangroves in Mozambique*. SAIIA Research Report 14. Governance of Africa's Resources Programme. Pg. 12.

893 *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 9.

894 *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 10(8).

895 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 16-26.

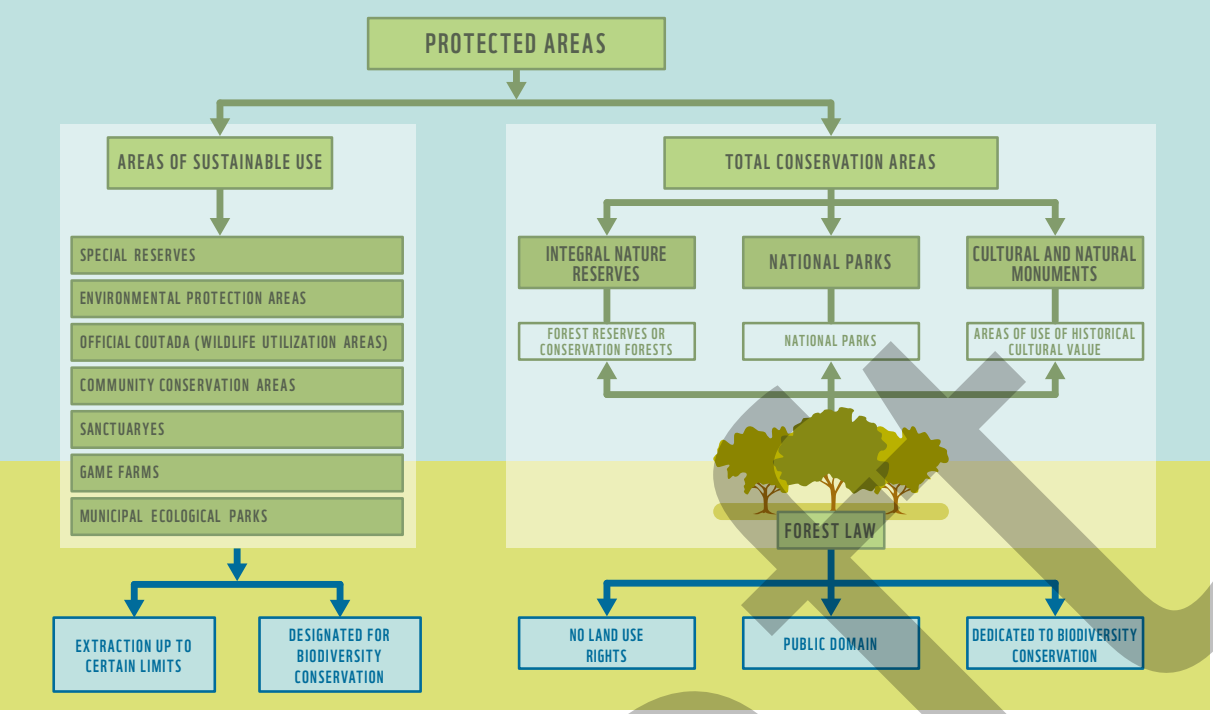
896 *Ibid*. Article 13(5).

897 *Ibid*. Article 13(4), 15, 16.

898 *Ibid*. Article 16(2).

899 *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 10(8).

Figure 16: Protected areas framework in Mozambique



has been explicitly revoked by the Conservation Law, so any authorization that may have occurred under the Forest Law has now become illegal.[900]

The effectiveness of Conservation Areas depends on the design of the management plan. This instrument is approved by the Minister who supervises the conservation area and generally establishes a buffer zone between the conservation area and the multiple use zone.[901] The specific activities permitted, conditioned, or prohibited within the buffer zone are detailed in the management plan and are subject to environmental licensing based on an EIA. A management plan approved by a Ministerial Order cannot revoke the creation of the conservation area established by Decree and, therefore, cannot open the door to cutting mangroves inside the buffer zone.

The Mining Law allows the government to launch public tenders for mining activities and operations, even in conservation areas, for reasons of public interest.[902] The question is: whose interests prevail in case of the discovery of mineral resources in a conservation area? This question is particularly relevant if mining and conservation are mutually considered to be of public interest. The text of the Mining Law is borrowed from a regulation adopted in 2004, which authorizes mining activities in national parks and reserves.[903] The situation has changed, as the Conservation Law and its regulation prohibit the exercise of such activities in conservation areas.[904] The Conservation Law explicitly revokes conflicting provisions in the Forest Law "as well as other legal provisions which contradict the present law."[905] This would apply to the Mining Regulation of 2004, but it is not clear how it applies to the mining law, adopted in the same year as the Conservation Law, though before that laws revision. In

900 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 15, 16, 19, 20, 64.

901 *Decreto* No. 89/2017 of 29 December 2017 *aprova o Regulamento da Lei No. 16/2014*. Article 32(a), 37(4).

902 *Lei* No. 20/2014 of 18 August 2014 *Lei de Minas*. Article 10.

903 *Decreto* No. 26/2004 of 20 August 2004 *Regulamento Ambiental para Actividade Mineira*. Article 19.

904 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 13(4).

905 *Ibid*. Article 64.

practice, the government has granted mining concessions along almost the entire coastline regardless of the status of conservation areas.[906]

7.2.6 Subsistence uses of mangrove resources

For communities living in the forest for a long time, the forests represent not only the source of their survival, but also a place for religious worship and other customary practices. They harvest mangroves for subsistence for firewood or charcoal production, or other purposes for their own survival.[907] Local communities are permitted to do so by law both within and outside conservation areas.[908] The legal recognition of these rights represents the implementation of constitutional provisions on the rights of local communities and role of customary law in relation to natural resources.[909]

Mozambican legislation creates an exceptional regime for the exploitation of timber and non-timber resources for their own consumption, whether inside or outside conservation areas.[910] The extraction of timber and non-timber forest products within conservation areas is subject to registration with the management authority.[911] Local communities living outside conservation areas, but still within forest areas, are granted free use of forest resources for their own consumption and survival, and are not subject to the tax for use of forest products.[912]

Under the Forest Regulation, forest products harvested for community consumption can only circulate within the limits of the Administrative Station where the community is located.[913] The implementation of this prohibition remains a challenge for authorities due to a limited number of officials and lack of assets, as well as corruption and the lack of transparency (see Section 7.4.1).

Subsistence use of forest products is allowed only insofar as it does not conflict with norms of protection and conservation, in the form of prohibitions on harvesting certain species, hunting quotas, or restrictions on use of certain equipment or methods.[914] However, communities are allowed to harvest forest resources at any time of the year, and are not bound by the closed season.[915]

Protected area management plans can specifically allow community use, provided that it does not harm conservation objectives and protected species. For example, **the Management Plan for Primeiras and Segundas Environmental Protection Area allows the local communities living in the area to cut down mangroves for their own use, such as building boats, repairing and building houses, as well as maintaining open roads and shortcuts to the beaches.**[916]

This scheme is applicable to any activities intended for a local community's own consumption or subsistence that has to occur in the mangrove forest, such as mangrove crab fishing. Subsistence fishermen can harvest crabs in the mangrove area without a licence and they are exempt from paying any fees regardless of whether the mangroves are within a protected area legal regime.[917]

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906 *Mozambique Mining Cadastre Portal*. http://portals.flexicadastre.com/mozambique/en/ [Accessed 25 January 2019].

907 Chevallier, R. (2013). *Balancing Development and Coastal Conservation: Mangroves in Mozambique*. SAIIA Research Report 14. Governance of Africa's Resources Programme.

908 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 15(1).

909 Constitution of the Republic of Mozambique of 16 November 2004. Article 4.

910 *Decreto* No. 89/2017 of 29 December 2017 *Regulamento da Lei da Protecção, Conservação e Uso Sustentável da Diversidade Biológica*. Article 87(3).

911 *Ibid.*

912 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 15.

913 *Ibid.*

914 *Ibid.* Article 8.

915 *Decreto* No. 12/2002 of 6 June 2002. *Regulamento da Lei de Florestas e Fauna Bravia*. Article 15(1).

916 Vaz, K. et al. (2015). *Plano de Maneio da Área de Protecção Ambiental do Arquipélago das Ilhas Primeiras e Segundas 2014-2019*. Administração Nacional das Áreas de Conservação, Maputo.

917 *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 39(3).

7.2.7 Permits and activities in mangrove areas

In order to implement constitutional requirements, Mozambique has adopted several laws and regulations to determine the terms and conditions under which people can benefit from natural resources. Sectoral laws and policies make a clear distinction between the right to use and benefit from the land, mining rights, petroleum rights, and forest rights.[918] **The Land Policy states the independence between these rights, but in case of conflict between mining and any other uses and occupations, mining activity prevails.**[919] It is not clear if this rule applies if there is a conflict between conservation and mining.

7.2.7.1. Land permits

As a principle, nobody can hold land use and utilization rights (DUAT) in total conservation areas, in areas of sustainable use, or in protected areas defined by the Land Law.[920] Indirect exploitation of resources, which does not involve the consumption, collection, damage, or destruction of natural resources, are allowed in total conservation areas, while in areas of sustainable use, the extraction of resources is allowed up to certain levels, respecting the sustainable limits set by management plans.[921] The extraction of mangroves is allowed for communities in conformity with customary laws and rules, under the condition that it does not undermine the objectives of these areas and that the exploitation is in conformity with the Constitution.[922]

Outside of these areas, if DUAT holders wish to exploit forest resources, they are required to obtain a licence (a simple licence or forest concession).[923] If the forest exploitation licence holder wishes to exploit forest resources in lands whose DUAT has already been assigned to third parties or belongs to the communities, he must negotiate with these DUAT holders and pay a fair compensation. The previous DUAT is then considered extinguished. It is not clear the extent to which these options are available in mangrove areas due to conflicting provisions in the Land Law and the Conservation Law.

7.2.7.2. Forest permits

There are three types of forest: conservation forests located within protection areas, productive forests located outside protected areas and with high forest potential, and multi-use forests located outside protected areas and with low forest potential.[924] In productive and multi-use forests, the forest legal framework foresees timber exploitation under simple licences and forest concessions, in addition to use for one's own consumption (see Section 7.2.6), simple licence, and forest concession.[925] Only exploitation for one's own consumption is allowed in conservation forests, now conservation areas where the extraction of resources for commercial purposes is not allowed.[926]

There are some commonalities between simple licences and forest concessions: both are subject to a closed season (January 1st to March 31st), an obligation to compensate third parties affected by forest exploitation and a requirement to channel

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918 *Lei* No. 21/2014 of 18 August 2014 *Lei de Petróleos*. Article 9; *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 9; *Resolução* No. 10/95 of 17 October 1995 *aprova a Política Nacional de Terras e as respectivas Estratégias de Implementação*. Section 35.

919 *Resolução* No. 10/95 of 17 October 1995 *aprova a Política Nacional de Terras e as respectivas Estratégias de Implementaçáo*. Section 39.

920 [93] *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 9.

921 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 13(4)-(5).

922 Constitution of the Republic of Mozambique of 16 November 2004. Article 12(a).

923 *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 14.

924 *Ibid*. Article 5.

925 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 15, 16, 25.

926 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica,* as amended by *Lei* No. 5/2017 of 11 May 2017. Article 16(2).

20% of forest revenue to the local communities where the forest resources were extracted.[927]

Forest products are classified as timber and non-timber, and mangroves can be put into the timber category.[928] Some mangrove species *(Avicennia sp*, *Barringtonia recemosa*, *Bruguiera gumborhiza*, *Ceriops tagal*, *Heritiera littoralis*, and *Rhyzophora mucronata)* are listed in Annex I of the Forest and Wildlife Regulation as third-class wood productive species, based on commercial value, scientific use, rarity, utility and strength.[929] These species can be harvested, as they are considered wood productive species, but they cannot be used for firewood or charcoal.[930] This regime applies only when these species are located outside conservation areas.

Only Mozambicans (natural and legal persons) and local communities are eligible to hold forest rights in the simple licence category, which is valid for a period of up to five years.[931] During the application process for a simple licence, it is mandatory to consult the local communities and get their opinion, if they are not the applicants themselves.[932] Forest exploitation with a simple licence should be made via the approved management plan and should correspond to an area of no more than 10,000 ha with a total annual quota of 500 cubic metres or the equivalent, except if it is obtained for firewood and charcoal, where the maximum area is 500 ha and the total volume is 1,000 annual cubic meters.[933]

Exploitation based on a simple licence is based on a contract between the operators and the government which, among other requirements, should contain the volumes and the annual quota per species to be exploited.[934] Forest rights can be granted to national and local communities, or foreigners, through a forest concession scheme valid up to 50 years and renewable for areas from 20,000 ha to 100,000 ha.[935] The validity of the authorization depends on submitting the management plan for the area within six months.[936] The forest concession and rights holders can exclusively exploit the forests in the granted areas regardless of their duty to apply for other permits for exploiting other resources in the same area.

Species listed in Annex I of the Forest and Wildlife regulations, which includes mangrove species, can be exported if obtained under a simple licence or forest concession. [937] In practice, there is broad confusion regarding whether and under what circumstances simple licence and forest concessions can be granted for mangroves.

7.2.7.3. Mining, oil, and gas permits

With the development of mining and the oil and gas industry in Mozambique, environment-related issues were gradually incorporated into the legal framework in order to meet the internationally accepted requirements and standards for these industries. The heavy sands mining industry is growing in Mozambique along the beaches and can destroy coastal mangroves. Contrary to the Petroleum Law, the Mining Law does not offer a clear direction for environmental protection, although it establishes that mining activities should consider, *inter alia*, the conservation of biodiversity.[938]

927 *Diploma Ministerial* No. 93/2005 of 4 May 2005.

928 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 9.

929 *Ibid*. Article 11, Annex I.

930 *Ibid*. Article 24.

931 *Decreto* No. 30/2012 of 1 August 2012 *define os requisitos para a exploração florestal em regime de licença simples e os termos, condições e incentivos para o estabelecimento de plantações florestais*. Article 2(1).

932 *Ibid*. Article 18(e), 35, 36.

933 *Ibid*. Article 1.

934 *Ibid*. Article 2.

935 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 26(1).

936 *Ibid*. Article 27(4).

937 *Ibid*. Article 11, 12.

938 *Lei* No. 20/2014 of 18 August 2014 *Lei de Minas*. Article 68.

When mining, oil, and gas activities occur on land, a specific permit should be requested along with the DUAT.[939] Before the Conservation Law came into force, the Mining Law and the Land Law foresaw the possibility of a special licence to be issued for activities in total and partially protected areas.[940] This was a kind of open door for administrative discretion to authorize the development of specific activities. The recent Conservation Law, which governs all activities in conservation areas and hence prohibits any activity which tends to extract resources. However, the 2014 Mining Law allows mining operations in areas of total and partial protection in the public interest.[941] This creates a clear conflict with the Conservation Law.

7.2.7.4. Fishing and aquaculture permits

Mozambique has great potential for the development of aquaculture in tanks in the coastal districts of Cabo Delgado, Nampula, Zambezia, and Sofala provinces, where important ecosystems also exist. It is reported that the total area with potential for aquaculture in tanks is 77,591,090 ha.[942]

Mozambique has already experimented with some aquaculture enterprises, including a 150 ha farm in Quelimane-Zambezia, a 132 ha farm in Beira-Sofala, and a 250 ha. farm in Cabo Delgado.[943] These enterprises demanded mangrove areas for their establishment. Unfortunately, at the time of establishing these ponds, there were no provisions in Mozambique's legal framework prohibiting conversion of mangroves for aquaculture; this was only later accommodated in the legal framework.[944]

The current aquaculture legal framework prohibits transformation of mangrove areas into aquaculture facilities, but it does allow some construction in mangrove areas in the form of water pumping stations, anchorage and water inlet channels in fixed ground installations, conditioned on obtaining a permit.[945] If mangroves are cut down, the operators have to compensate by planting an area corresponding to the area cleared.[946]

Fishing activities in mangrove areas remain largely unregulated, as there are few or no provisions in the fishery laws and regulations regarding zoning, protective regimes for crustacean nurseries, total allowed mangrove crab catches, fishing methods, and, in general, mangrove crab management measures, except for a minimum size.[947] Similar to other sectoral laws and regulations, the legal framework for fisheries exempts subsistence fishermen who target mangrove crabs from paying fishing licence fees, although they have to be registered with the fishing authorities.[948]

7.2.8 Environmental Impact Assessment

The pre-requisite for licensing and registering activities which may cause a significant impact on the environment is an environmental impact assessment (EIA).[949] Mozambique has adopted

939 *Ibid*. Article 20.

940 *Ibid*. Article 10; *Lei* No. 19/97 of 1 October 1997 *Lei de Terras*. Article 9.

941 *Lei* No. 20/2014 of 18 August 2014 *Lei de Minas*. Article 10.

942 Ministério das Pescas, Instituto Nacional de Desenvolvimento de Aquacultura (2011). *Actualização de Zonas Potenciais para Aquacultura Marinha em Moçambique*.

943 Menezes, A.M. (2000). *The Status of Commercial Shrimp Farming in Mozambique*.

944 *Decreto* No. 35/2001 of 13 November 2001 *Regulamento Geral da Aquacultura*. Article 26; *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 63(1).

945 *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 63(2); *Decreto* No. 35/2001 of 13 November 2001 *Regulamento Geral da Aquacultura*. Article 26(2).

946 *Decreto* No. 35/2001 of 13 November 2001 *Regulamento Geral da Aquacultura*. Article 26.

947 *Decreto* No 43/2003 of 10 December 2003 *Regulamento Geral da Pesca Maritima*. Article 108, Annex III.

948 *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 39(3).

949 Walmsley, B. and Tshipala, K.E. (2007): *Handbook on Environmental Assessment Legislation in the SADC Region*. Development Bank of Southern Africa in collaboration with the Southern African Institute for Environmental Assessment. Midrand. 420pp.

a sound legal and institutional framework for the implementation of EIA.[950] This is a tripartite process necessarily involving a central or provincial authority, the proponent of the project, and the EIA team (national and/or foreign).[951] The Ministry of Land, Environment and Rural Development (MITADER) is in charge of approving terms of reference for EIAs, reviewing completed EIAs, and auditing.[952] Although the implementation of the EIA is the sole responsibility of the proponent, MITADER should undertake a for any activity that is likely to have an impact on the environment in order to decide on the type of EIA to be carried out, whether the activity is exempt, or whether the activity should not be developed.[953]

There are four categories of activities that can impact the environment. A+ is for actions which due to their complexity, location, and/or irreversibility and magnitude of their possible impact, deserve not only a high level of social and environmental vigilance, but also the involvement of specialists in the EIA processes. A is for actions that significantly affect living beings and environmentally sensitive areas, and whose impact is of longer duration, intensity, magnitude, and significance. B is for activities with a less significant impact. C is for projects for which there is no expected significant impact.[954] The EIA process requires very stringent inter-ministerial coordination as well as mandatory public participation, in particular for the activities categorized A+, A, and B.[955]

Taking into consideration the content of Annex I – Categories A+ and A, any activities/projects proposed to be implemented in mangrove areas outside conservation areas should be subject to pre-assessment and an EIA, which should be accompanied by a management plan in view of avoiding or minimizing the impact, or rehabilitating and restoring the area.[956] The key issue when it comes to an EIA and implementing a management plan is environmental auditing. The environmental audit may be public, when carried out by a government authority; or private, when carried out by the environmental licence-holder.[957]

It is particularly important to note that the development of mining activities is also subject to EIAs, although it involves following specific regulations.[958] Within this framework, mining activities are classified into three levels, the second and third ones using mechanical technologies.[959]

The legislation has established that in certain areas, no activity that could potentially have a significant negative impact will be authorized. These include total conservation areas and total protection zones as well as areas with critically endangered species or endemic or migratory species that meet certain criteria, or areas crucial for provision of key ecosystem services at the national, provincial or district scale. The sole exception is for activities proposed by the conservation area management authority itself to improve its own management.[960]

7.2.9 Securing water flow

Mozambique is located downstream of nine of the main rivers in the Southern Africa Development Community region, and 80% of the freshwater flow in the south of the country is generated from outside national

950 *Lei* No. 20/97 of 1 October 1997 *Lei do Ambiente*. Article 6, 7; *Decreto* No. 54/2015 of 31 December 2015 *Regulamento Sobre o Processo de Avaliação do Impacto Ambiental*.

951 *Lei* No. 20/97 of 1 October 1997 *Lei do Ambiente*. Article 6, 7.

952 *Decreto Presidencial* No. 13/2015 of 16 March 2015 *define as Atribuições do MITADER*. Article 3(c)(ii).

953 *Decreto* No. 54/2015 of 31 December 2015 *Regulamento Sobre o Processo de Avaliação do Impacto Ambiental*. Article 8, 11.

954 *Ibid*. Article 8.

955 *Ibid*. Article 13, 15.

956 *Ibid*. Article 25.

957 *Decreto* No. 25/2011 of 15 June 2011 *Regulamento sobre o Processo de Auditoria Ambiental*. Article 3.

958 *Decreto* No. 26/2004 of 20 August 2004 *Regulamento Ambiental para a Actividade Mineira*. Article 8.

959 *Ibid*. Article 1, 3(1).

960 *Decreto* No. 54/2015 of 31 December 2015 *Regulamento Sobre o Processo de Avaliação do Impacto Ambiental*. Annex V.

borders.[961] This makes the country vulnerable in cases of floods and droughts, and subject to significant pollution.[962] Problems also arise within the country. **The Cahora-Bassa dam on the Zambezi River has resulted in a reduced flow of freshwater causing the degradation of mangroves and bank erosion.**[963]

The freshwater legal framework emphasizes the need to ensure that the use of water is carried out without prejudice to the minimum flow and ecological flow and respect, as far as possible, the natural regime of deposits and water courses.[964] More scientific knowledge of the freshwater ecosystems in all basins in Mozambique is needed to precisely predict the effects that land and water infrastructure development will produce. To this end, Mozambique aims at developing and implementing a national program of protection of aquatic ecosystems and ecological complexes which are part of the field of water resources, which will be developed with involvement of universities at national and regional level.[965]

7.2.10 Penalties

In natural resource legislation, the State has established administrative and civil liability for anyone who does not operate in conformity with legal permits. Financial penalties are underpinned by non-financial penalties, such as the cancellation or suspension of activities, or the revocation of licences.[966]

The Criminal Code, adopted in 2014, prohibits cutting protected mangroves or eroding or altering water bodies, and imposes up to twelve years imprisonment and a fine on those who destroy protected mangroves.[967] The implementation of this provision requires the definition of protected mangroves, which has not been undertaken. In the absence of such a list, the criminal prohibition cannot be enforced outside conservation areas.[968]

7.3. Institutional level: Strengths, gaps and overlaps

7.3.1 The roles of sectoral institutions

Mozambique has created ministries and institutions to ensure the implementation of the sectoral framework that governs natural resources. As already mentioned, the mangrove framework is dispersed and fragmented in several laws on natural resources, and consequently different institutions have their own roles in implementing certain legal or regulatory mangrove provisions, in part due to the fact that mangroves are considered to be an ecosystem that includes land, forest, fisheries, water, mining, etc.

This situation may bring positive or negative overlap of functions, where institutions can either refuse to solve a concrete issue, or multiple institutions will claim to be competent to address the case. Nevertheless, the institutional status quo allows us to reaffirm that, in theory, mangrove management is assured at all levels,

961 *Resolução* No. 43/2006, of 26 December 2006 *Estratégia de Desenvolvimento da Meteorologia*; *Resolução* No. 40/2018 of 24 October 2018 *Plano de Acção do Sector de Águas para a Implementação dos Objectivos de Desenvolvimento Sustentável 2015-2030 (MOZ).*

962 *Ibid.*

963 Barbosa, F.M.A, Cuambe, C.C. and Bandeira, S. (2001). Status and distribution of mangroves in Mozambique. *South African Journal of Botany* 67:393-398; Shapiro, A.C. et al. (2015). The Mangroves of the Zambezi Delta: Increase in Extent Observed via Satellite from 1994 to 2013. *Remote Sensing* 7(12).

964 *Lei* No. 16/1991 of 3 August 1991 *aprova a Lei de Águas*. Article 13(c).

965 *Resolução* No. 40/2018 of 24 October 2018 *Plano de Acção do Sector de Águas para a Implementação dos Objectivos de Desenvolvimento Sustentável 2015-2030 (MOZ).*

966 *Lei* No. 16/2014 of 20 June 2014 *Lei de Protecção, Conservação e Uso sustentável da Diversidade Biológica*, as amended by *Lei* No. 5/2017 of 11 May 2017; *Lei* No. 22/2013 of 1 November 2013 *Lei das Pescas*. Article 103, 104, 107.

967 *Lei* No. 35/2014 of 31 December 2014 *Código Penal*. Article 353.

968 *Ibid.*

Figure 17: Institutions in charge of mangroves and their respective roles in Mozambique

TABLE: INSTITUTIONS IN CHARGE OF MANGROVES AND RESPECTIVE ROLES

RESPONSIBILITIES	MITADER	MIMAIP	MIREME	INGC	MOPHRH	MASA
DEVELOPMENT, IMPLEMENTATION AND MONITORING OF TERRITORIAL PLANNING INSTRUMENTS;	LEAD, COORDINATE	ADVICE	ADVICE	ADVICE	ADVICE	ADVICE
LICENSING, MANAGEMENT PROTECTION, CONSERVATION AND MONITORING OF THE SUSTAINABLE USE OF FOREST RESOURCES AS WELL AS THE REDUCTION OF EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION;	PROPOSE AND IMPLEMENT					IMPLEMENT
ATTRIBUTION OF ENVIRONMENTAL LICENSING (EIA, SEA) FOR PROJECTS DEVELOPMENT (CATEGORY A AND B) AND ENVIRONMENTAL MANAGEMENT PLAN IN MANGROVE AREA;	LEAD, APPROVE AND ISSUE	ADVICE	REVIEW EIA FOR MINING ACTIVITIES	ADVICE	ADVICE	ADVICE
APPROVE MANAGEMENT PLANS FOR PROTECTED AREAS AND ENSURE RESTORATION OF FAUNA AND FRAGILE ECOSYSTEMS;	LEAD	LEAD FOR MARINE PROTECTED AREA				ADVICE ON TERRESTRIAL PROTECTED AREAS
DEFINITION OF REGULATORY FRAMEWORK FOR MARINE, INLAND WATER AND THE PUBLIC DOMAIN OF THE COASTAL ZONE (MANGROVE);	ADVICE	PROPOSE AND COORDINATE	ADVICE	ADVICE	ADVICE	ADVICE
AUTHORIZATION FOR PROJECT INSTALLATIONS/INFRASTRUCTURES ALONG THE COASTAL AREA INCLUDING AQUACULTURE PROJECT DEVELOPMENT IN MANGROVE AREA;	ADVICE /COORDINATE	APPROVE/ADVICE /COORDINATE/	ADVICE /COORDINATE	ADVICE /COORDINATE	ADVICE /COORDINATE	ADVICE /COORDINATE
LAW ENFORCEMENT OF ECONOMIC ACTIVITIES IN MANGROVE AREA AND MANGROVE EXPLOITATION CONTROL	IMPLEMENT	IMPLEMENT	IMPLEMENT	IMPLEMENT	IMPLEMENT	IMPLEMENT
PROMOTE AND DEVELOP FOREST PLANTATIONS INCLUDING FOREST RESEARCH	ADVICE					LEAD
APPROVAL OF LEGISLATION, POLICIES AND DEVELOPMENT STRATEGIES FOR FORESTS;	PROPOSE	ADVICE	ADVICE	ADVICE	ADVICE	ADVICE
PROMOTE FOREST PLANTING FOR BIOMASS PRODUCTION	ADVICE		LEAD			ADVICE
PROMOTE ECOLOGICAL REHABILITATION	LEAD			LEAD		
ATTRIBUTION OF LICENSING OF WATER USE AND WATER BASIN INTEGRATED MANAGEMENT TO SECURE E-FLOWS FOR MANGROVES AND OTHER ECOSYSTEMS	ADVICE	ADVICE			LEAD	ADVICE

MITADER: MINISTRY OF LAND, ENVIRONMENT AND RURAL DEVELOPMENT;
MIREME: MINISTRY OF ENERGY AND MINERAL RESOURCES; INFRA-STRUCTURES AND HOUSING
MIMAIP: MINISTRY OF SEA, INLAND WATERS AND FISHERIES
INGC: NATIONAL INSTITUTE FOR DISASTER MANAGEMENT
MOPHRH: MINISTRY OF PUBLIC WORKS, WATER RESOURCES AND HOUSING
MASA: MINISTRY OF AGRICULTURE AND FOOD SECURITY

but there are grey zones, especially where there may be overlapping interests.[969]

As a result of the 2014 elections, institutional reforms were made that shaped responsibilities related to mangrove management. Until 2014, the Ministry of Agriculture was responsible for the conservation and management of mangroves, as they fell within the land and forest legislation. Since 2015, the ministerial set up to manage mangroves has become very complex, as MITADER was given the responsibility for managing land-use rights and environmental licensing for those who want to develop any activity, and for conserving and monitoring the sustainable use of forest species and non-timber forest products in total and partially protected areas.[970] The forest component and the forest inspection agents were transferred to MITADER. In 2016, a National Agency for Environmental Quality Control (AQUA) was created under MITADER and was given competence to enforce laws and regulations regarding the exploitation and sustainable use of forest resources.[971] The associated human, material and financial resources were transferred to AQUA from the Sustainable Development Center, the agency previously responsible for research and advice on coastal management.[972] **There is an expectation that all forest inspection agents will be part of AQUA but in reality AQUA is not fully operational and remains unknown at the provincial level.**

The Ministry of the Sea, Inland Waters and Fisheries (MIMAIP) is another complex Ministry. Previously dealing only with fisheries, since 2015 this ministry has been responsible for ensuring the sustainable exploitation of marine living and non-living natural resources, and of rivers and lakes, for the development of fisheries and aquaculture.[973] It has authority for concessions contracts and other activities which demand the use of the sea.[974]

969 Macamo, C. and Sitoe, A. (2017). *Relatório de Governação Ambiental 2016 - Governação e gestão de mangais em Moçambique*. Maputo, Centro Terra Viva. 63pp.

970 *Decreto Presidencial* No. 13/2015 of 16 March 2015 *havendo necessidade de definir as atribuições e competências do Ministério da Terra Ambiente e Desenvolvimento Rural*. Article 2, 3.

971 *Decreto* No. 2/2016 of 10 February 2016 *altera o Decreto n.º 80/2010, de 31 de Dezembro, que cria a Agência Nacional para Controlo da Qualidade Ambiental e revoga os Decretos n.ºs 5/2003, 6/2003 e 7/2003, ambos de 18 de Fevereiro*.

972 *Ibid*. Article 11.

973 *Decreto Presidencial* No. 17/2015 of 25 March 2015 *define as atribuiçoes e competências do Ministério do Mar, Águas Interiores e Pescas*. Article 2, 3.

974 *Ibid*. Article 2.

Before the restructuring of MIMAIP, the mangrove issue was dealt with by MITADER. This situation changed when MIMAIP was given the authority to oversee all aspects related to the use of the sea, including mangrove management. So, this situation led these two Ministries to start the process of handing over authority over mangroves, including the design of the Mangrove Strategy and its Implementation Action Plan.[975] There is still a lot to be clarified, as MITADER will continue to secure environmental licensing for activities which tend to affect mangroves.

Finally, the Ministry of Energy and Natural Resources (MIREME) is responsible for licensing mining activities, promoting sustainable mining, promoting and incentivizing the use of renewable energies, and approving entrepreneurs' mineral resource exploitation.[976] With the recent discovery and development of the hydrocarbon industry, in particular in coastal zones and offshore, this Ministry has become important for mangrove governance. MIREME will play an important role in coastal mangrove conservation, as the licences for prospecting, seismic surveys, and concessions may compromise national and international obligations with regard to the conservation agenda.

The mangrove conservation regime can only be understood through the legal and institutional framework for conservation areas in Mozambique (see Section 7.2.5). The responsibilities for the management of these areas have shifted several times. They were first entrusted to the Ministry of Agriculture and Rural Development, then to the Ministry of Tourism, and today to MITADER through the National Administration for Conservation Areas (ANAC). MITADER oversees climate change mitigation and adaptation but implementation of commitments in this area is a cross cutting responsibility. Water resources management falls under the responsibility of the Ministry of Public Works, Housing and Water Resources (MOPHRH).

7.3.2 Overlapping competences and a lack of coordination undermining efficiency

There is an overabundance of agencies managing coastal ecosystems, which can lead to confusion and overlapping jurisdictions within this area (figure 17). The need for coordination in natural resources management was identified long ago and in 2013, the National Council for Sustainable Development (CONDES) was created by the Environmental Law to promote and co-ordinate the sustainable use of natural resources.[977] It's mandate is to ensure the effective integration of the principles and activities of environmental management in the country's sustainable development process, including through input into related sectoral policies.[978] The founding decree provides that CONDES will meet twice a year and be chaired by the Prime Minister.[979] The future of CONDES is currently unclear, as it is undergoing reforms around which there is little information available.

Although the roles of the various ministries following the 2014 restructuring process are yet to be refined to allow policy and legislative harmonization, integration, and coordination at an operational and ground level, there is some coordination at the provincial level. In particular, in Maputo and Sofala Provinces, there is cooperation in mangrove law enforcement campaigns and the creation of inter-agency task forces (see Section 7.4.3).[980]

Another opportunity derives from the ongoing process of adopting the Strategy and Action Plan for Mangrove Management, which foresees the creation of the Management Committee for Mangrove Restoration (CGRM) to coordinate,

975 MITADER (2015). *Estratégia e plano de acção nacional para a restauração de mangal 2015-2020*. DRAFT.

976 *Decreto Presidencial* No. 11/2015 of 16 March 2015 *define as atribuições e competências do Ministério dos Recursos Minerais e Energia*. Article 2, 3.

977 *Decreto* No. 13/2013 of 11 April 2013 *aprova o Regulamento do Conselho Nacional de Desenvolvimento Sustentável*.

978 *Ibid*. Article 2.

979 *Ibid*. Article 8.

980 Interview with César Maphossa, Chief Inspector of Provincial Director of Sea Inland Water and Fisheries of Sofala Province, 6 February 2019.

harmonize, monitor, and evaluate the implementation of the mangrove strategy.[981]

7.3.3 Decentralization of decision-making to the local level

To promote public decision-making at the local level, the government has adopted the Decentralization Policy and Strategy promoting the empowerment of local authorities, including the Provincial Governor, the District Administrator, and the government authorities in the community.[982] The overall intention of this policy is to bring public services closer to populations in order to guarantee clarity and the adequacy of decisions for local realities.[983] In the entire decision-making process, regardless if it is being taken at a provincial, district, or community level, the law imposes requirements for consultation and public participation, and the authorities are obliged to secure a broad level of participation, as well as define collaborative partnerships with CSOs.[984] Although the government has adopted this decentralization policy it still allows the community to manage natural resources using traditional and customary laws, as confirmed by the constitution.[985]

The government has also established a collaborative mechanism between local government and community authorities on issues related to the environment and land use.[986] Once these authorities are legitimized by the respective communities, they are recognized by the government and hence can engage with the government about natural resources.[987] In areas which can affect mangrove management, local authorities are entitled to participate in educating local communities about forms of sustainable use and resource management, including creating and guaranteeing the implementation of forest community policies, which is a form of recognizing local mangrove management measures.[988]

7.4. Behavioural level: Awareness of the problem but a lack of alternatives

7.4.1 Urban and rural communities

According to a recent census, Mozambique's population in 2017 was approaching 30 million, with almost 60% of people living in large cities in coastal areas (Maputo, Beira, Quelimane and Pemba) coinciding with the high rate of mangrove degradation.[989]

The influence of local communities over mangroves can be positive or negative, in both rural and urban areas. In rural areas, the main threats to mangroves are cutting of wood for firewood and charcoal for sale or domestic consumption, and for the construction of boats, fences, and various household items.[990] In urban areas, mangroves are mostly threatened by deforestation for infrastructure construction and pollution from solid and chemical waste.[991]

In 2008, the Maputo City Municipality destroyed 21 houses that were being built illegally (without the right to exploit and use the land) in the

981 MITADER (2015). *Estratégia e plano de acção nacional para a restauração de mangal 2015-2020*. DRAFT. Section 3.1.1.

982 *Resolução* No. 40/2012 of 20 December 2012 *Política e Estratégia de Descentralização*; *Decreto* No. 11/2005 of 10 June 2005 *Regulamento da Lei dos Órgãos Locais do Estado*. Article 8.

983 *Decreto* No. 11/2005 of 10 June 2005 *Regulamento da Lei dos Órgãos Locais do Estado*. Article 4.

984 *Ibid*. Article 20.

985 Constitution of the Republic of Mozambique of 16 November 2004. Article 4.

986 *Decreto* No. 35/2012 of 5 October 2012 *estabelece as formas de articulação dos órgãos locais do estado com as autoridades comunitárias*. Article 4.

987 *Ibid*. Article 5.

988 *Ibid*. Article 7.

989 Instituto Nacional de Estatística. *População 2017*. http://www.ine.gov.mz/ [Accessed 28 November 2018]; Chevallier, R. *supra* note 80.

990 Barbosa, F.M.A. et al. *supra* note 136.

991 Bandeira S.O. et al. (2009). Evaluation of mangrove structure and condition in two trans-boundary areas in the Western Indian Ocean. *Aquatic Conservation: Marine and Freshwater Ecosystems* 19(1):46-55.

mangroves in the Costa do Sol neighbourhood, after the builders were advised to stop.[992] Unfortunately, this kind of intervention has not been replicated in other coastal cities where mangroves are dominant and, consequently, mangroves have been further replaced by luxury houses and supermarkets along the coastline in Maputo City.[993]

As previously detailed, the Forest Law and its regulations allow mangroves and other forest resources to be harvested for people's own consumption within strict rules of not letting these products be transported to other administrative areas. In Beira City and the surrounding coastal areas, particularly on the estuaries of the Buzi and Pungue rivers and the administrative post of Nhangau, mangroves are being cut down for wood fuel and construction works. To avoid the control and inspection sites that are in place along the roads, mangrove traders use small daily boat trips along the coast, transporting between 220 and 500 large and small wooden stakes to the markets in Beira.[994] This allows the community to fraudulently harvest mangroves under the subsistence use permission and then illegally trade the mangrove stakes in town, taking advantage of law enforcement inaction.[995] **Mangrove poachers and traders say that they are aware that they are destroying marine resources, but they have no choice until there is an alternative form of income, as they rely on current activities for their survival.**[996]

Another community practice which is being increasingly undertaken by commercial sellers is mud crab fishing. This was originally considered to be a subsistence and artisanal form of fishing for people's own consumption due to the relatively small initial investment required.[997] Today communities have incentivizes to increase their mud crab fishing efforts, with the crab sold even before they are caught, which is causing undersized crabs to be fished, which can affect the mangroves' health. As a response, for the first time ever, the Government of Mozambique halted the 2019 mud crab season in the entire Sofala Bank from 1 January to 31 March 2019 for all operators, whether they were catching them for their own consumption or for commercial purposes.[998] This applied to transporting, processing, and selling mud crabs that originated from artisan fisheries.

7.4.2 Competing sectors and economic interests

Mozambique is experimenting with developing a hydrocarbon industry, especially in coastal and offshore areas, driven by the discovery of oil and gas in the Rovuma Basin next to Quirimbas National Park, as well as prospecting and exploring in the Marromeu Complex.[999] There is a clear overlap between economic development objectives and the need to conserve sensitive ecosystems that are under threat if the coastal Mozambican hydrocarbon map is not carefully analysed. Nevertheless, almost the entire Mozambican coastline was made available to, granted, or reserved for hydrocarbon development.

The government, the private sector, and local communities are fully aware of the legal requirement to get an environmental licence when they want to develop a project or activity which may impact on the environment. The coordination mechanism at every level is still an obstacle and there are fundamental challenges in coordinating actions which involve different ministries or governmental agencies. Recently, it was reported that there are people who hold

992 CANALMOZ (17 February 2011). *Conselho Municipal justifica a demolição de casas na Costa do Sol*. https://macua.blogs.com/moambique_para_todos/2011/02/conselho-municipal-justifica-a-demoli%C3%A7%C3%A3o-de-casas-na-costa-do-sol.html#more [Accessed 20 November 2018].

993 *Ibid*.

994 Interview with Carlos Sendela, Director of Ministry of Sea, Inland Water and Fisheries of Sofala Province, 2 February 2019.

995 Anon. (5 January 2018). "Autoridades apreendem 34 canoas 200 estacas de mangal e "chicocotas"". *Jornal Diário de Moçambique*.

996 Janeiro, A. (29 July 2014). *Corte desenfreado do mangal: Camarão sob risco em Sofala*. http://jornalnoticias.co.mz/index.php/1-plano/20267-corte-desenfreado-do-mangal-camarao-sob-risco-em-sofala [Accessed 28 November 2018].

997 Macia, A. et al. (2014). *The mud crab Scylla serrata (Forskål) in Maputo Bay, Mozambique*. WIOMSA.

998 Ministério do Mar, Águas Interiores e Pescas. *Aviso* No. 1/2019 of 5 November 2018.

999 *Ibid*.

DUAT in mangrove areas in Maputo issued by the Municipality and the Ministry of Sea Inland Water and Fisheries, though this violates the public status of mangrove ecosystems.[1000]

7.4.3 Law enforcement

There are different law enforcement agents who are entitled to enforce the mangrove legal framework. Under the Forest Law, forest inspection agents, sworn inspectors, and community agents are empowered to enforce the law.[1001] However, the specific Order which will define under which terms and conditions the sworn inspectors and community agents will exercise their enforcement powers is yet to be defined. AQUA represents an additional, parallel enforcement agency in provinces where it is beginning to establish itself (see Section 7.3.2).

Apart from these, there are fisheries inspectors and police forces for coastal, riverine, and lacustrine surveillance and municipality inspectors. Mangrove law enforcement mobile units now comprise an inter-agency task force operating in Maputo and Beira. As illegal mangrove cutting is considered environmental crime, police forces are leading these operations and bringing cases to the Provincial Prosecutor for action. For example, in Maputo in August 2018, 46 mangrove poles were confiscated and a fine of USD 450 was imposed and paid.[1002]

Box 5: Law enforcement task forces in Beira

Task force operations to address illegal mangrove use are being intensified in Beira City, and the results are visible. In 2017, there were three court cases where four mangrove poachers were convicted, a total of 9,172 mangrove trees were seized, and one vehicle carrying 100 pieces of mangrove wood was seized.[1003] For a long time, it was possible to see people selling huge quantities of mangrove stakes in the streets, avenues, and neighbourhoods in Beira City at an average cost of USD 0.3 cents, depending on the thickness and length of the stakes, and the shipyards were crowded with mangroves harvested from various coastal areas.[1004] Today there is no more open mangrove marketing in the streets and shipyards, and mangroves are now being sold on the same clandestine level as drug smuggling.[1005] This situation still needs to be addressed. However, owing in part to task force campaigns, mangroves are on the agenda of coastal province directorates of sea, inland waters and fisheries with involvement of other relevant directorates and agencies. These initiatives also helped to raise awareness about the prohibition on cutting mangroves for commercial purposes.]

There are still challenges in mangrove law enforcement. It is especially difficult to find someone in action cutting mangrove trees and hence the control measures are not *in situ*. This situation is aggravated by the lack of assets and financial resources to secure regular patrols in strategic points except road control posts and markets.

For adequate law enforcement, every pillar of the justice administration needs to be on the same page. Currently, the judiciary is not trained to respond to environmental crime demands, and lacks a full understanding of the value of natural resources. For example, judges can fix a freedom bond within the range of USD 50-100 in cases involving destruction of mangroves, which is much lower than the value of the resource destroyed, and creates an incentive for more illegal activity.[1006]

1000 Abibo, S. (13 January 2019). "Pescado escasseia na baía de Maputo". *Jornal Domingo*. Pg. 13.

1001 *Lei* No. 10/99 of 7 July 1999 *Lei de Florestas*. Article 37.

1002 Interview with William Cuna, Chief Inspector of Provincial Director of Sea Inland Water and Fisheries of Maputo Province, 5 February 2019.

1003 *Ibid.*

1004 Janeiro, A. (29 July 2014). *Corte desenfreado do mangal: Camarão sob risco em Sofala*. http://jornalnoticias.co.mz/index.php/1-plano/20267-corte-desenfreado-do-mangal-camarao-sob-risco-em-sofala [Accessed 28 November 2018].

1005 Interview with César Maphossa, Chief Inspector of Provincial Director of Sea Inland Water and Fisheries of Sofala Province, 6 February 2019.

1006 *Ibid.*.

Another example of a lack of satisfaction with the judiciary system was highlighted recently, when on 28 December 2018, a group of 20 suspects were arrested for their alleged involvement in the illegal exploitation of protected species of wood near the Gorongosa National Park. They were released by the District Judge on the basis of a small bond and giving their identities and addresses, despite the discomfort of the District Prosecutor, who had submitted the court case. These citizens were foreigners with no fixed abode. While not directly involving mangroves, this decision once again reflected the institutional indifference that has been a major obstacle to combating the unsustainable exploitation of natural resources.[1007]

As far as law enforcement is concerned, inspectors do not distinguish whether mangroves were cut down in partially or total protected areas, or whether they were for the perpetrators' own consumption or not. Any person transporting timber will fall under the presumption that they did the cutting, therefore the burden of proof is on them.[1008]

7.4.4 Civil society organizations

CSOs engagement in Mozambique, in particular in areas related to coastal and marine issues, have gained momentum. In 2014, five organizations, ABIODES (Associação para Desenvolvimento Sustentável), CTV (Centro Terra Viva), LIVANINGO, KUWUKA, and WWF Mozambique established a platform for information sharing, discussion, and cooperation in their areas of intervention. These organizations are filling the gaps in these areas by raising awareness about mangroves' importance and running mangrove planting campaigns in coastal areas where mangrove degradation is notorious.[1009] The combined efforts of CSOs in mangrove restoration are bearing fruit, as mangroves have already been replanted in several coastal areas.[1010]

In 2017, the Forum of Civil Society Organizations and the Ministry of Sea, Inland Waters and Fisheries held the first ever Government-CSO dialogue, where the Minister challenged all the Provincial Directors and CSOs to present their mangrove planting plans and results at the second forum in August 2018.[1011] The results revealed that the provinces were at different stages in this engagement, with some well advanced in terms of organization and participation of different stakeholders. Among all initiatives it was common to observe a lack of knowledge about which mangrove species were adequate to plant with high survival probability. The CSOs and community efforts need to have access to proper research information about which species are appropriate to plant in each kind of soil, otherwise they will not succeed in their efforts.

7.4.5 Disaster risk

Mangroves are well known for their complexity and their function in providing shoreline protection. Coastal populations, resources, and infrastructures are exposed to tropical cyclones and sea-level rises; the economic cost of the disasters that occurred in Mozambique between 1980 and 2003 was estimated to be 1.74 billion USD. Even greater losses are projected, estimated at between two and seven billion USD (real 2003) for the period 2003 to 2050, mostly associated with infrastructure and roads due to floods, although agriculture is also severely affected by droughts.[1012] There has been little investment in mangrove and coastal restoration, and from 2000 to 2015, floods affected about 4,629,000 people, caused 1,204 deaths, and

1007 Senda, R. (4 January 2019). "É no mínimo estranho". *Savana*. Pg. 8.

1008 *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 114(3).

1009 Abibo, S. (13 January 2019). "Pescado esacasseia na baía de Maputo". *Jornal Domingo*. Pg. 13.

1010 IUCN and WWF (2016). *National Blue Carbon Policy Assessment. Mapping of relevant policies and regulations for coastal carbon ecosystem management in five countries: From climate change to forestry and coastal marine resource management. Mozambique*. IUCN, WWF. 38pp.

1011 Ministério do Mar, Águas Interiores e Pescas (2017). *Relatório - Primeira Reunião entre o MIMAIP e as Organizações da Sociedade Civil para a Área Marinha e Costeira em Moçambique* (unpublished).

1012 World Bank (2010). *Economics of Adaptation to Climate Change: Mozambique*. Washington, DC.

damaged 1,176,000 houses, of which 638,700 were destroyed.[1013] Investment in mangrove management and restoration programs has been identified as a means to avoid greater social and economic losses.[1014]

Mangrove degradation has added to the problem. Logging of mangroves and reduction of water volumes from the Zambezi river after the construction of the Cahora-Bassa hydroelectric plant (1974) as well as the Kariba dam (1969) have left the Sofala Bay area highly vulnerable to erosion.[1015]

The existing disaster management legal framework focuses mostly on the interagency mechanisms of prevention and reacting to disaster, and setting up an information exchange platform.[1016] It does not deal with the root causes of these disasters, including mangrove degradation and climate change. The absence of cross-checking of all relevant policies, strategies and legislation to secure harmony within the system is a recurring legal challenge.

7.4.6 Mangroves and Reducing Emissions from Deforestation and Forest Degradation (REDD+)

Although Mozambique's historical emissions are insignificant in global terms, it has committed to make an effort to create the capacity for adapting to and mitigating climate change, through its NDC and regulatory framework for REDD+ (see Section 7.2.1).[1017] The need to better understand the ability of mangroves to contribute to mitigation led to a study in Zambezi River Delta that quantified mangrove carbon stocks density to range from 373.8 to 620.8 Mg per hectare.[1018]

The NDC action plan describes two mangrove REDD+ projects with a focus on adaptation, implemented in Inhambane and Cabo Delgado (Quirimbas National Park) Provinces.[1019] The first project is being implemented by Terre des Homme: MAHLAHLE – Protection of Forest and Mangrove Ecosystems through the Introduction of Sustainable Systems for the Use and Management of Natural Resources, while the second was concluded in 2018, implemented by AFD, with a focus on the impact of climate change and adaptation strategies for coral reefs, mangrove ecosystems, and the Miombo woodland ecosystems in Quirimbas National Park.

7.5. Outcome level: Continuing depletion, in the face of new urgency

The 1990s put particular pressure on mangroves, mainly due to the huge changes that had occurred in the occupation of the land at the end of the civil war in 1992, which led to a great rural exodus.[1020] The ensuing peace created living conditions that were conducive to economic development, especially along the coast.[1021] This led to increasing coastal development and use of mangroves for salt ponds, agriculture, and firewood. This scenario meant that Mozambique continued to lose mangrove coverage, corresponding to a loss of over 60,000 ha between 1990 and 2015.[1022] Though Mozambique has recognized the situation of ongoing depletion

1013 *Ibid.*

1014 Carter, H.N. et al. (2015). An International Assessment of Mangrove Management: Incorporation in Integrated Coastal Zone Management. *Diversity* 7:74-104.

1015 Domingos, P.F.B. (2016). *Characterization of Mozambique's Vulnerability to Coastal Erosion, Thesis.* Pg. 94.

1016 *Decreto* No. 7/2016 of 21 March 2016 *Regulamento de Gestão das Calamidades.*

1017 Mozambique's first Intended Nationally Determined Contribution (submitted 4 June 2018). UNFCCC.

1018 Stringer, C.E. et al. (2015). Carbon stocks of mangroves within the Zambezi River Delta, Mozambique. *Forest Ecology and Management* 354:139-148.

1019 Mozambique's first Intended Nationally Determined Contribution (submitted 4 June 2018). UNFCCC.

1020 Fatoyinbo, T.E. et al. (2008). Landscape-scale extent, height, biomass, and carbon estimation of Mozambique's mangrove forest with Landsat ETM+ and Shuttle Radar Topography Mission elevation data. *Journal of Geophysical Research* 113.

1021 *Ibid.*

1022 FAO (2005). *Global Forest Resources Assessment 2005: Thematic Study on Mangroves, Mozambique Country Profile.* Forestry Department, Rome.

of an important ecosystem, the government of Mozambique, civil society organizations, and communities have not extricated themselves in the interest of the national economy, as 60% of Mozambique's population live along the coastline and use the mangroves for their survival.[1023]

Despite the efforts of civil society organizations, provincial governments, and local communities seeking to replant mangroves, experience so far suggests that there is much to be done to ensure the technical capacity for mangrove reforestation. Nevertheless, in some regions the expansion of mangrove areas as a result of restoration or replanting activities, as well as natural expansion processes, has been successful.[1024]

Taking into consideration the fact that the institutional reforms, the strengthening of the political and legal framework and national commitments are very recent, it may be premature to claim that these efforts are changing the status quo. This requires the development and implementation of management plans and, where not possible, conducting assessments with a view to establishing baselines for monitoring the state of biodiversity and possible trends.[1025] Cyclical floods and cyclones affecting mainly coastal areas can have an adverse impact on efforts to maintain stable mangrove ecosystems. Although the Government of Mozambique is concerned with rebuilding the lives devastated by the recent cyclone Idai, it is urgent that stakeholders understand the true scale of the impact of the tragedy on the mangroves in Sofala and Zambezia, where there is a high mangrove concentration rate.[1026] There are well-known mangrove areas that have been totally devastated and water has taken over areas previously occupied by mangroves.

7.6. Conclusions and recommendations

Despite Mozambique having ratified most international and regional agreements related to mangroves and having incorporated some provisions into its domestic legislation, there are still some remaining challenges at different levels. There is still a need for full transposition and interpretation of international and regional legal instruments into national legislation, and effective implementation. Institutional capacity is not sufficient to effectively manage mangroves, taking into consideration the involvement of various stakeholders. The mangrove management framework is split across different institutions and there is a lack of interagency coordination. Aside from the proposed interagency coordination mechanism, the mangrove institutional framework could also benefit from engagement of municipalities.

The richness of the country's ecosystem leads to conflicts and overlapping regulatory frameworks on the conservation and management of biodiversity, including mangroves, forests, fisheries, aquaculture, and mining.[1027] Mozambique has a legal framework and institutions that deal with the environment, as well as natural resource protection and development. Nevertheless, there is growing concern about the continuous degradation of mangroves and biodiversity linked to social, economic, and institutional factors.

Mangrove degradation is a complex phenomenon combining poor and non-transparent governance systems, with the citizens and decision makers willing to take advantage of the weaknesses in the legal and institutional framework. **Without a robust institutional and transparent legal framework, economic objectives often tend to supplant ecological interests.** Most of the time, the responses and solutions

1023 Instituto Nacional de Estatísticas. *Estatísticas e Indicadores Sociais, 2013-2014*. Pg. 48.

1024 Macamo, C. and Sitoe, A. (2017). *Relatório de Governação Ambiental 2016 - Governação e gestão de mangais em Moçambique*. Maputo, Centro Terra Viva. 63pp.

1025 Ministério da Terra, Ambiente e Desenvolvimento Rural (2015). *Estratégia e Plano e Acção Para a Conservação aa Diversidade Biológica Em Moçambique 2015-2035*. MITADER, Maputo.

1026 Fatoyinbo, T.E. et al. *supra* note 193.

1027 GIZ (2009). *The Legal Framework for Licensing in Mozambique*. 55pp.

are neither uniform nor desirable. They go back and forth between different parts of the country, which means that change requires persistence. The next step is to assess to what extent Mozambique should address the balance between interests in natural resource governance.

Reversing the trend of mangrove loss and the growing vulnerability of coastal communities will require a genuine commitment by governments to develop and implement robust high-level policies and good management practices, as well as establish clear frameworks for managing mangroves.[1028] It is important to identify alternative livelihoods and fuel sources for communities in order to address their dependency on firewood, otherwise the laws will not be effective.

Recommendations

1. To avoid a fragmented legal approach to mangrove management, consider adopting and implementing a dedicated legal framework for mangroves and put in place an adequate monitoring and surveillance system which will be based on and underpinned by the Mangrove Strategy and Action Plan;

2. Establish an institutional mechanism for the management, conservation, and monitoring of mangroves; secure adequate integration and coordination between different sectors to implement a mangrove legal framework; and make yearly progress reports on the various milestones and recommend adaptive measures. This should be a bottom-up process starting from a local, provincial, and central level, and then reported at the annual Governmental and Civil Society Organization meeting led by the Ministry of Sea, Inland Water and Fisheries, as the current structure now stands.

3. Update the baseline on Mozambique's mangrove coverage as a matter of urgency. Raise awareness in communities about mangroves' role as shoreline protection and carbon absorber, and create incentives for their active participation in mangrove protection and conservation.

4. Refrain from issuing special authorization for activities to be developed in conservation areas which may impact directly or indirectly on mangroves, as these provisions are no longer in force due to strict prohibitions by the Conservation Law.

5. Consider a mandatory independent review of the EIA, and guarantee that project developers are issued with valid insurance to compensate for any degradation to ecosystems according to the Environmental Law.

6. Set up strict measures regarding local communities harvesting mangroves for their own consumption. Apart from the moratorium on mangrove crab fishing, adopt mangrove crab management measures and map out areas for nurseries of crustaceans in mangroves and protect them.

7. Reassess the mining policy, which states that in case of conflict between mining and any other uses and occupations, the mining activities prevail. Assuming that conservation could be one of these land uses, this policy undermines conservation objectives.

8. Maintain inter-sectoral task force teams for mangrove control and law enforcement, as they enhance transparency and minimize opportunities for interference and corruption.

9. Include mangroves within the disaster and erosion management legal and policy framework.

1028 Chevallier, R. *supra* note 80.