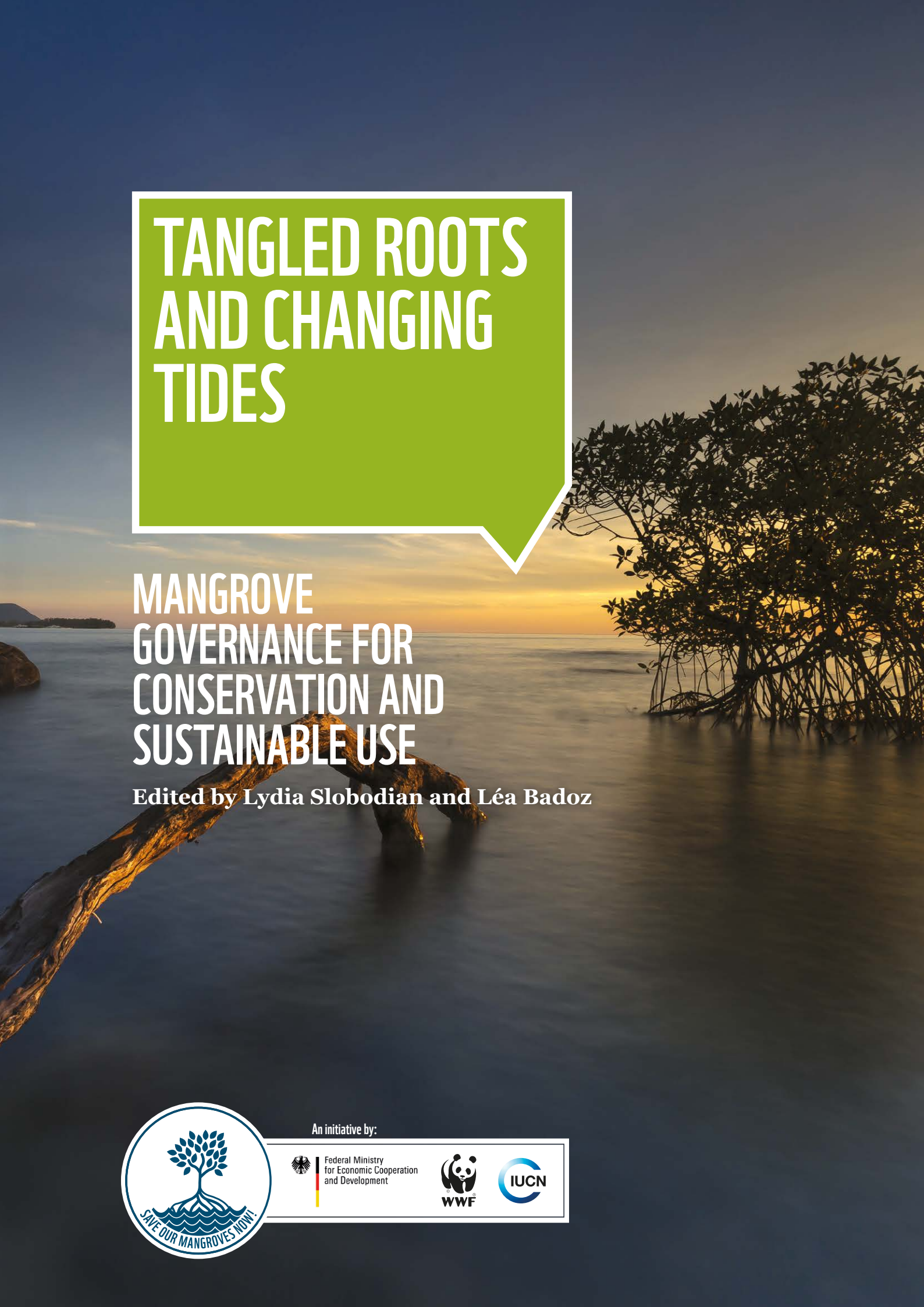


# TANGLED ROOTS AND CHANGING TIDES

## MANGROVE GOVERNANCE FOR CONSERVATION AND SUSTAINABLE USE

**Edited by Lydia Slobodian and Léa Badoz**

SAVE OUR MANGROVES NOW!

An initiative by:

Federal Ministry for Economic Cooperation and Development

WWF

IUCN


© James Morgan / WWF-US

Edited by Lydia Slobodian and Léa Badoz

# TANGLED ROOTS AND CHANGING TIDES

## MANGROVE GOVERNANCE FOR CONSERVATION AND SUSTAINABLE USE

Citation: Slobodian, L. N., Badoz, L., eds. (2019). *Tangled roots and changing tides: mangrove governance for conservation and sustainable use*. WWF Germany, Berlin, Germany and IUCN, Gland, Switzerland. xii+280pp.



ISBN: 978-3-946211-35-8

Design and layout by Imre Sebestyén/UNITgraphics.com



This publication is part of the “Save Our Mangroves Now!” initiative’s work to close existing knowledge gaps concerning mangrove protection. It has been produced with the financial support of the Federal Ministry for Economic Cooperation and Development (BMZ). The contents of this publication are the sole responsibility of “Save Our Mangroves Now!” and can in no way be taken to represent the views of BMZ.

Supported by the

Federal Ministry
for Economic Cooperation
and Development

# Photo credits

© James Morgan / WWF-US ..... b
© Siriporn Sriaram..... xi
© Ana Grillo / IUCN ..... xii
© Siwanan Kaewboonrueng / Dreamstime.com..... 5
© Eutah Mizushima / unsplash.com ..... 6
© James Morgan / WWF..... 10
© Kirill Neiezhmakov / shutterstock.com..... 13
© Antonio Busiello / WWF-US..... 26
© Fotomelia.com ..... 27
© Joel Vodell / unsplash.com ..... 28
© Kampee Patisena / Dreamstime.com ..... 34
© Jürgen Freund / WWF..... 45
© Pauline Dame ..... 48
© Tetyana Dotsenko / shutterstock.com..... 50
© Take photo / shutterstock.com..... 55
© Nash Ugalde / MarViva Foundation ..... 57
© J. Yong (SLU Sweden) ..... 63
© J. Yong (SLU Sweden) ..... 72
© Grethel Ulate..... 77
© J. Yong (SLU, Sweden)..... 81
© J. Yong (SLU Sweden) ..... 87
© Jonathan Caramanus / Green Renaissance / WWF-UK..... 89
© Robert Kibugi ..... 97
© Léa Badoz / IUCN ..... 100
© Robert Kibugi ..... 112
© Julika Tribukait ..... 116
© Julika Tribukait / WWF..... 119
© Léa Badoz / IUCN ..... 121
© WWF-Madagascar / WWF ..... 127
© Fabrice Mahavatra..... 133
© WWF-Madagascar..... 142
© Uwe Johannsen / WWF..... 147
© Léa Badoz / IUCN ..... 149
© Lydia Slobodian / IUCN..... 151
© Manuel Menomussanga..... 156
© Green Renaissance / WWF-US..... 164
© Manuel Menomussanga..... 167
© Lydia Slobodian / IUCN..... 172
© Lydia Slobodian / IUCN..... 177
© EcoPic / istockphoto.com ..... 179
© IUCN / Pakistan..... 181
© Dr. Babar Hussain ..... 187
© Cactuz Digital ..... 196
© Dr Babar Hussain / IUCN ..... 199
© Dr Babar Hussain / IUCN ..... 201
© MFF / LUAWMS ..... 203
© Brent Stirton / Getty Images / WWF-UK..... 205
© Brent Stirton / Getty Images / WWF-UK..... 210
© Brent Stirton / Getty Images / WWF-UK..... 215
© Lydia Slobodian / IUCN..... 224
© Brent Stirton / Getty Images / WWF-UK..... 229
© J. Yong (SLU Sweden) ..... 231
© Elizabeth Kemf / WWF..... 243
© MFF Vietnam ..... 252
© Le Duc Kim ..... 259
© KEkaratne ..... 260
© Nuk2013 / Shutterstock.com..... 263
© Tantyo Bangun / WWF..... 266
© Léa Badoz / IUCN ..... 269
© Damsea / Shutterstock.com..... 271
© Komjomo / shutterstock.com ..... 272
© Jürgen Freund / WWF..... 275
© Fotomelia.com ..... 279
© Dolvita108 / pixabay.com ..... 281

# ABOUT THE SAVE OUR MANGROVES NOW! INITIATIVE

The German Federal Ministry for Economic Cooperation and Development (BMZ), the World Wide Fund for Nature (WWF), and the International Union for Conservation of Nature (IUCN) have joined forces in the international mangrove initiative "Save Our Mangroves Now!" to halt the global loss of mangroves.

"Save Our Mangroves Now!" is a joint commitment of the above-named partners to intensify efforts in mangrove conservation. It aims to upscale and focus global efforts to stop and reverse the decrease and degradation of mangrove habitats, and supports the target of the Global Mangrove Alliance (GMA) to increase the global area of mangrove habitat by 20% over its current extent by 2030.

Backed by BMZ's strong bilateral portfolio and building on IUCN's and the WWF's wide engagement and sound experience in mangrove conservation, this initiative has the ambition to create a variety of partnerships and cooperation with other mangrove organizations, initiatives, and countries. "Save Our Mangroves Now!"– together with the GMA – provides a platform for knowledge sharing and the exchange of experience in order to encourage collaborations and to foster synergies.

"Save Our Mangroves Now!" acts in three fields of action:

1. Embedding ambitious objectives on mangrove protection and restoration in international and national political agendas such as the Sustainable Development Goals, the Aichi targets, and the NDCs under the Paris Agreement, increasing awareness among decision makers about the importance of mangrove conservation as part of global conservation, sustainable development, and climate solutions.

2. Pooling leading expertise, enhancing knowledge-sharing, and closing existing knowledge gaps on mangrove conservation and restoration.

3. Supporting innovative lighthouse projects, fostering the dissemination of best practices, and mainstreaming mangrove conservation into national development plans in the Western Indian Ocean.

"Save Our Mangroves Now!" is open for partnerships with countries and with other initiatives and organizations in order to increase the momentum for mangrove conservation.

# CONTENTS



# FIGURES AND TABLES

# ACKNOWLEDGEMENTS

Special thanks go to IUCN Legal Officers Lorena Martinez Hernandez and Joe Munga Mutua, Legal Assistant Justine Brossard, Programme Assistant Jil Self, Information and Documentation Officer Anni Lukács and IUCN Interns Julie Charvet, Sarah McKain, Pananya Larbprasertporn, and Eloise Marx for their significant contributions to this assessment.

Additional thanks go to the following contributors for their time and expertise in supporting this assessment by providing vital information and being available for interviews: Anne Itubo, Alexis McGivern, Maeve Nightingale, Jim Enright, Jennifer Hacking, Luis Carlos Solis, Nikolai Beresnev, Joe Lee, Dannick Randriamanantena, Mike Izava Olendo, Nguyen Hoang Tri, Pham Trong Thinh, Marcia Carranza, Rocio Cordoba, Maricela Rodriguez Porras, Gladys Martínez de Lemos, Jacklyn Rivera Wong, Haydée Rodríguez Romero, Marcos Solano Martínez, Francisco Pizarro Bustos, Marco Quesada Alpízar, Erick Ross Salazar, Rocío Córdoba, James Kairo, Josphat Mwamba, Lillian Mwihaki, Anne Kamau, Justin Tsofa, Rose Birgen, César Maphossa, Carlos Sendela, William Cuna, Riaz Ahmed Wagan, Shabir Anwar Kazi, Waris Ali Gabol, Ghulam Qadir Shah, Altaf Sheikh, the Rehri Goth community of fishermen, Fayaz Rasool, Babar Khan, Tahir Quershi, Daniel Lucas, WWF Guatemala/Mesoamerica, WWF Kenya, WWF Madagascar, WWF Mozambique, WWF Pakistan, WWF Tanzania, WWF Vietnam and WWF Greater Mekong.

Sincere gratitude is owed to the following experts for contributing their valuable time as external peer reviewers: Patricia L. Farnese, Carlos Antonio Martín Soria Dall'Orso, Erika J. Techera, Moritz Von Unger and Juan Manuel Herrera.

Finally, our greatest appreciation for the members of the "Save our Mangroves Now!" team - Raphaëlle Flint, Dorothée Herr, Julika Tribukait, Anouk Neuhaus, and Uwe Johannsen, and the German Federal Ministry for Economic Cooperation and Development (BMZ).

# ABBREVIATIONS

| | |
|---|---|
| **BMZ** | German Federal Ministry for Economic Cooperation and Development |
| **CBD** | Convention on Biological Diversity |
| **CITES** | Convention on International Trade in Endangered Species |
| **COP** | Conference Of the Parties |
| **CSO** | Civil Society Organisation |
| **EIA** | Environmental Impact Assessment |
| **ICJ** | International Court of Justice |
| **ICZM** | Integrated Coastal Zone Management |
| **ISME** | International Society for Mangrove Ecosystems |
| **IUCN** | International Union for Conservation of Nature |
| **MEA** | Multilateral Environmental Agreement |
| **MPA** | Marine Protected Area |
| **MRV** | Measurement, Reporting and Verification |
| **NAP** | National Adaptation Plan |
| **NAPA** | National Adaptation Programme of Action |
| **NDC** | Nationally Determined Contribution |
| **NGO** | Non-Governmental Organisation |
| **PES** | Payments for Ecosystem Services |
| **REDD** | Reduction of Emissions from Deforestation and Forest Degradation |
| **SEA** | Strategic Environment Assessment |
| **SDG** | Sustainable Development Goal |
| **UN** | United Nations |
| **UNCLOS** | United Nations Convention on the Law of the Sea |
| **UNECE** | United Nations Economic Commission for Europe |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **WWF** | World Wide Fund for Nature |

# EXECUTIVE SUMMARY

Mangroves cut across ecosystems, sectors, jurisdictions and governance regimes. While few countries have a specific mangrove law, many national and international regimes apply to or affect mangroves in some way. Marine and coastal law can protect mangroves as fish habitat and guardians of coastal integrity. Freshwater law can address pollution and allocate water resources. Mangroves can be found within protected areas or specially designated forests, while species of mangrove and species that live within mangroves can have protected species status. Land use planning, permitting and environmental impact assessment (EIA) processes apply to activities that affect mangroves. Basic governance frameworks relating to institutional setup, rulemaking procedures, budgetary allocation, judicial systems and land and resource tenure are critical determinants of how, and how effectively, mangroves can be managed. Guiding norms and concepts from international law and national constitutions shape treatment of mangroves under applicable law.

Mangrove governance involves local and regional actors as well as national and international policymakers. Customary authorities and community groups play key roles, whether they are formally recognized in constitutions, legislation or contracts, or operate without formal legal backing. Legal pluralism—overlapping systems of customary, statutory, community and common law norms and practices—characterizes mangrove governance in many countries.

Global and regional legal instruments create obligations relating to mangrove conservation and use, as well as frameworks for international cooperation and investment. Around the world, 268 Ramsar sites and 19 World Heritage sites contain mangroves. Mangroves are explicitly included in Nationally Determined Contributions (NDCs) under the Paris Agreement and National Biodiversity Strategy and Action Plans (NBSAPs) under the Convention on Biological Diversity (CBD). Internationally recognized principles such as the precautionary principle, the polluter pays principle and various principles related to procedural rights and sustainable development and use are reflected in national legislation and judicial decisions relevant for mangroves.

Despite the plethora of applicable laws, mangroves continue to deteriorate rapidly, driven by urbanization, population growth and unsustainable development. Mangroves are cleared for conversion of land for shrimp production and rice farming and other forms of aquaculture and agriculture. Their unique wood quality makes them a favoured construction material for houses and boats. Mangrove wood is also used for charcoal and firewood to meet energy needs of growing cities and local communities. Coastal infrastructure development, salt mining, oil exploration and tourism can all drive destruction and pollution of mangroves. Upstream diversion and pollution of watersources from agricultural and urban sources contribute to degradation of mangroves downstream. Existing legal tools are failing to address these and other threats leading to a global decline in mangrove health and coverage.

This assessment explores the many legal and governance approaches and enabling conditions relating to mangroves in an attempt to understand what works and under what conditions, and to provide recommendations on how to improve governance for mangrove protection and sustainable use. It begins with an assessment of international and national legal and policy instruments, and proceeds to examine how these instruments are implemented and with what results.

Seven case studies illustrate how mangrove governance plays out in practice. Each case study undertakes a four step analysis, asking:

1. how do legal and policy instruments relate to mangroves?
2. how are relevant institutions structured and how well do they operate?

3. how do instruments and institutions affect the behaviour of users, government officials and other stakeholders?

4. how do instruments, institutions and behaviour impact the health of mangrove ecosystems?

Each case study reveals different aspects of mangrove governance.

## COSTA RICA

In Costa Rica a solid legal framework has not been enough to protect mangroves from continued degradation. An extensive system of protected areas has been shown to be an effective mechanism for conservation of mangrove and wetland ecosystems, but can also provide a haven for illegal activities. The National Wetlands Inventory is a promising tool for informing government policy and action, but it needs to be used to inform planning processes at the national and local levels. The Environmental Administrative Tribunal provides an example of how a Green Court can contribute to enforcement of environmental regulations, as long as it has sufficient resources and support. Additional guidance and improved planning and coordination for institutions and stakeholders are needed to fully safeguard the health of mangroves in the country.

## KENYA

EIAs and strategic environment assessments (SEAs) provide key tools for mangrove conservation in Kenya, grounded in a constitutional right to a healthy environment. The 2017-2027 Mangrove Ecosystem Management Plan lays out zones with different permitted activities, and programmes for addressing management challenges. Community initiatives are a vital part of mangrove governance, but need more support from local and national government. Overall, there is a need for more clarity on institutional arrangements and how institutions should be coordinated with each other and with the Mangrove Ecosystem Management Plan.

## MADAGASCAR

Community groups or *Fokonolona* are primary agents of natural resource governance in Madagascar. *Fokonolona* are recognized in the Constitution as responsible for the natural and cultural environment, and operate through Dina, collective agreements that represent social codes. This system has been incorporated into laws on protected areas and community resource management, which have been used to set up systems of community management of mangrove areas. Lack of clarity on roles and responsibilities of different authorities and lack of capacity and legal power and authority on the part of local communities hampers the effectiveness of these systems. However, there is evidence that with civil society support and sufficient recognition, community management can be an effective mechanism for ensuring sustainability of mangrove ecosystems.

## MOZAMBIQUE

The role of mangroves in protecting coastlines from floods and cyclones has brought them to the attention of the highest levels of government in Mozambique, particularly in light of recent disasters. However, national policies and legislation related to mangroves are fragmented and potentially conflicting, creating confusion for government agencies and law enforcement as well as users. Despite prohibitions on activities in conservation areas, the government has granted concessions and licences for oil and gas exploration along almost the entire coast. At the same time, interagency task forces operating in two provinces have demonstrated some success in improving enforcement of mangrove protection law, despite lack of resources.

## PAKISTAN

In Pakistan, land and timber mafias have taken advantage of weak institutions and limited accountability to clear mangroves with impunity. Coastal communities work to protect and restore mangroves as coastal protection and breeding ground for fish species, through planting projects and political action. In doing so they risk their lives, as community activists have been reportedly killed by mafia involved in clearing. Migrants from other areas also undermine the effectiveness of community mangrove management. Despite this, mangrove coverage is increasing in Pakistan based in part on restoration and rehabilitation initiatives supported by IUCN and WWF. The National Wetlands Policy of 2009 recommends

development of a specific regulatory framework for wetlands, including mangroves, but to date such a framework has not been drafted.

## TANZANIA

Tanzania lacks specific mangrove legislation, and existing legal instruments related to mangroves are not well implemented because of lack of legal clarity, coordination, financial resources, capacity and public awareness. Policies and regulations designed without participation of local communities are seen as overly restrictive and alienating. However, local communities have expressed an understanding of mangroves' value and the need for sustainability. Joint Forest Management creates a framework for involving communities in mangrove management through joint management agreements which allocate rights, responsibilities and benefits.

## VIETNAM

In recent years, Vietnam has improved its mangrove-related legal framework, resulting in an increase in mangrove coverage. This increase belies the reality of degradation: Vietnam's primary mangrove forest is almost completely gone and the majority of mangroves now exist in fragmented, replanted, single-species patches. Gaps and overlaps in legal frameworks and institutional responsibilities, lack of coordination and integration in planning and a confusing and unclear tenure system are systemic flaws in mangrove management. Local political and social structures together with misaligned economic incentives and absence of alternatives create a culture of noncompliance with mangrove protections.

These case studies provide lessons on what ingredients are needed for effective mangrove governance. Different legal tools rely on different social, cultural, economic and political factors as well as enabling legal and institutional frameworks. Community-based management arrangements work best where benefits are direct and immediate, rights and responsibilities are clearly defined, land tenure is clear, communities have sufficient capacity and legal competence to fulfil their responsibilities and women and marginalized groups are empowered and involved. Bans on mangrove use require workable culturally appropriate alternatives, participatory processes and an express legal basis that balances flexibility with safeguards against abuse.

Several factors are cross-cutting. Legal frameworks should be unambiguous and based in science. They should take into account social and economic considerations and potential issues of compliance. Institutional coordination is essential. Institutions also need sufficient capacity, resources and access to scientific and technical information. Effective governance depends on transparency and accountability. This can be supported through procedural rights on access to information, participation and access to justice, as well as limiting discretion of decision-makers and assigning authority to the appropriate level. Decision-making should be informed by up-to-date scientific information; inventories and regular monitoring of mangrove ecosystems should be required input into planning and other governance processes. Legal effectiveness requires follow up, in the form of regular monitoring and reviewing of implementation, compliance and impact of legal tools.

Mangrove governance is highly tailored to the specific context. There is no single approach that will solve the problem of mangrove degradation in all countries. However, laying out the different options and studying examples and case studies provides an idea of how to effectively govern mangrove ecosystems to promote conservation and sustainable use.

© Siriporn Sriaram

# 1

# INTRODUCTION

Mangroves are among the world's most valuable ecosystems. They provide carbon sequestration, local climate regulation, water filtration, coastal protection from storm surges and erosion and habitat for numerous species, many of them endangered. Protecting and restoring mangroves could contribute substantially to achieving the Sustainable Development Goals (SDGs).

Despite this high value, mangrove ecosystems are under threat from a range of drivers, including, *inter alia*:

- clearing for aquaculture or agricultural use;
- cutting wood for construction or fuel;
- pollution from urban and agricultural sources;
- diversion and restriction of upstream water flows;
- land conversion for infrastructure development and urban expansion;
- and unsustainable fishing.

Ensuring mangrove conservation and sustainable use requires consideration of a range of sectors and jurisdictions at international, national and local levels. Customary legal frameworks and authorities play a key role in mangrove governance. Communities, civil society and the private sector are significant governance actors.

To understand how governance frameworks can best support mangrove conservation and sustainable use, this assessment gathered information through:

- global review of scientific, technical and legal literature;
- global analysis of international and regional legal instruments;
- desk assessment of national legal instruments in two countries;
- in-depth evaluation of legal effectiveness in seven countries, using a standardized methodology and legal matrix.

## 1.1 Mangrove conservation in the context of changing threats

Mangroves cover 150,000 km² globally and are found in more than 123 countries. Scientists have identified over 70 species and hybrids, some of which are endangered or critically endangered.[1] Mangrove ecosystems provide wood for fuel and construction, water filtration, carbon sequestration, and recreational opportunities.[2] They protect coastlines, which is especially important as storm surges, cyclones, and typhoons become more frequent.[3] They provide habitat and nursery sites for a range of species, including food species, and generate income for people around the world.[4] They have significant cultural importance and beauty.[5] Given the variety of functions that mangroves serve, their protection contributes to several of the SDGs, including ending poverty and hunger, achieving gender equality, conserving the marine environment, and mitigating and adapting to climate change.[6]

Historically, the primary threats to mangroves have come from cutting for timber or fuel and development of aquaculture and agriculture.[7] While these remain significant, new threats are emerging, including pollution from inland solid waste and effluent, diversion of upstream water sources, overfishing, climate change and land reclamation for urban development (Figure 1).[8]

A key issue is not just destruction but degradation of mangrove ecosystems, through pollution, siltation, changes in salinity and loss of biodiversity from unsustainable fishing and other use. These aspects pose challenges for legal frameworks as well as assessment of outcomes, as **it is easier to measure hectares than health of mangrove ecosystems.** Considering mangrove degradation and including an assessment of mangrove ecosystem health leads to a better understanding of the seriousness of the problem and recognition of a much greater area under threat.

Population growth and urban development lead to increased demand for mangrove products, such as seafood and charcoal, as well as diversion of water, increased agricultural load, and more municipal solid waste and sewage. In India, large coastal cities are turning tidal creeks and channels into disposal drains for large quantities of municipal sewage, much of which ends up in mangrove ecosystems.[9]

Many activities that affect mangroves do not take place within the mangrove area itself. In the case of pollution or interference with the hydrological cycle, harmful activities may take place upstream, even in a different country. In Vietnam, where more than 60% of mangroves are found within the Mekong Delta, major hydropower projects in China, Thailand, and Laos pose sig-

---

1 Krauss, K. and Friess, W. (2011). World Atlas of Mangroves. *Wetlands* 31(5):1003-1005; Among mangrove species listed as critically endangered are: *Bruguiera hainesii* and *Sonneratia griffithii*. IUCN (2019). *IUCN Red List of Threatened Species*. http://www.iucnredlist.org. [Accessed 3 June 2019].

2 Mehvar, S. et al. (2018). Quantifying Economic Value of Coastal Ecosystem Services: A Review. *Journal of Marine Science and Engineering*.

3 Losada, I.J. et al. (2018). *The global value of mangroves for risk reduction*. Technical Report. TNC; Mafi-Gholami, D. (2016). *An Overview on Role of Mangroves in Mitigating Coastal Disasters (With Special Focus on Tsunamis, Floods and Cyclones)*. ICAUCAE.

4 Robertson, A.I. and Duke, N.C. (1987). Mangroves as nursery sites: comparisons of the abundance and species composition of fish and crustaceans in mangroves and other nearshore habitats in tropical Australia. *Marine Biology* 96: 193-205; Blum, J. and Herr, D. (24 August 2017). *Mangroves: nurseries for the world's seafood supply*. https://www.iucn.org/news/forests/201708/mangroves-nurseries-world%E2%80%99s-seafood-supply [Accessed 25 July 2018]; Van Bochove, J. et al. (2014). *The Importance of Mangroves to People: A Call to Action*. UNEP-WCMC, Cambridge.

5 Van Bochove, J. et al. *supra* note 4.

6 General Assembly resolution 70/1. Transforming our World: the 2030 Agenda for Sustainable Development (Sustainable Development Goals) A/RES/70/1 (25 September 2015); *see also* Blum, J. and Herr, D. (16 March 2017). *Can restoring mangroves help achieve the Sustainable Development Goals?* https://www.iucn.org/news/forests/201703/can-restoring-mangroves-help-achieve-sustainable-development-goals [Accessed 25 July 2018].

7 *See, e.g.* López-Angarita, J. et al. (2016). Mangroves and people: Lessons from a history of use and abuse in four Latin American countries. *Forest Ecology and Management* 368:151-162; Rotich, B. et al. (2016). *Where land meets the sea - A global review of the governance and tenure dimensions of coastal mangrove forests*. CIFOR and USAID; Van Lavieren, et al. (2012). *Securing the future of mangroves*. UNU-INWEH, UNESCO-MAB with ISME, ITTO, FAO, UNEP-WCMC and TNC; Webber, M. et al. (2016). *Mangroves*. Oceans & Law of the Sea: United Nations.

8 Information from survey of experts 2018 (see Section 1.3).

9 Das Gupta, R. and Shaw, R. (2013). Changing Perspectives of Mangrove Management in India -- An analytical overview. *Ocean and Coastal management* 80:107-118.

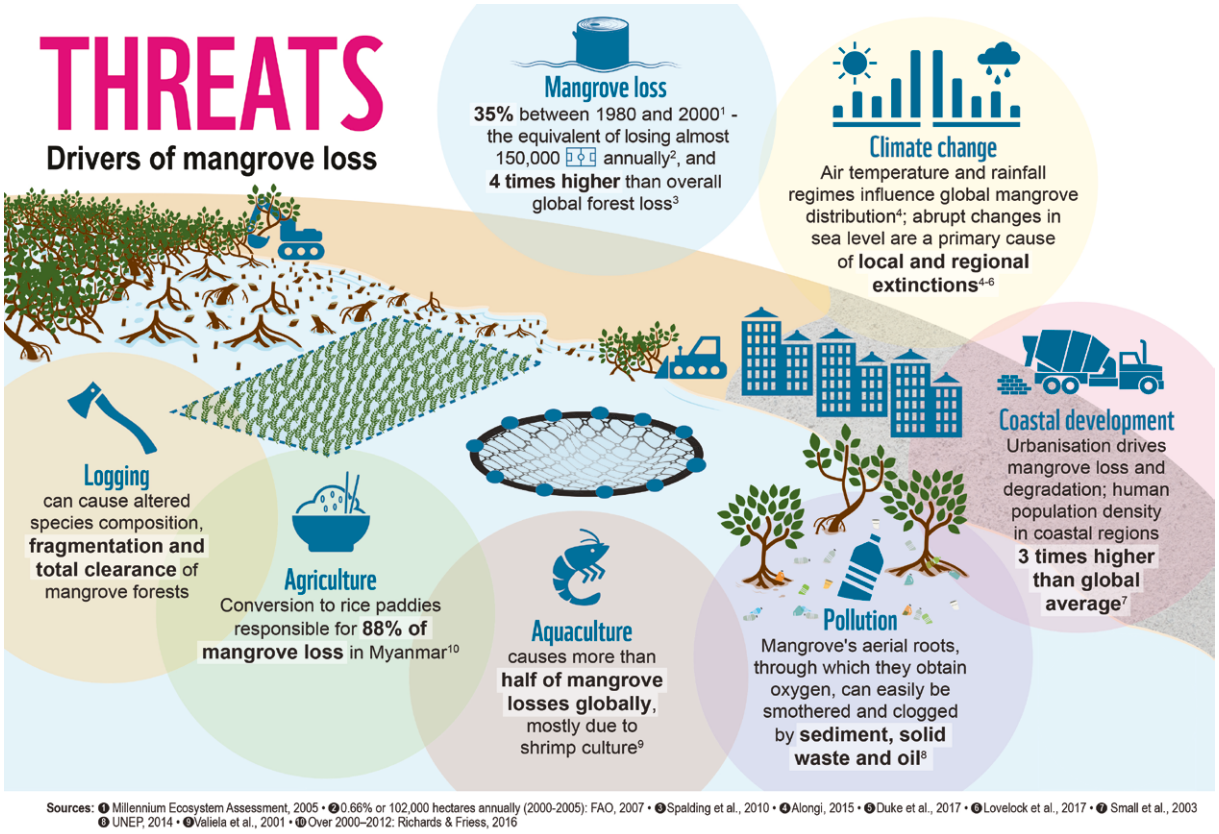



**Figure 1:** Drivers of mangrove loss

nificant threats.[10] An agreement among countries in the Mekong basin, as well as the 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses (UN Watercourses Convention), to which many of the countries are signatories, provide some mechanisms to address these threats, but solving these problems requires international cooperation (Chapters 2, 10).

Countries are beginning to recognize changing threats in policies, laws, and strategies. For example, the National Biodiversity Policy of Costa Rica acknowledges pollution by erosion, sedimentation, nutrients, and municipal solid waste, as well as infrastructure development and conversion for pineapple and palm oil plantations as drivers of loss of mangrove coverage and calls for measures such as improved waste management to prevent further degradation (Chapter 4). To fully address cumulative impacts, a holistic and coordinated approach to mangrove management is key.

## 1.2 Sectors and jurisdictions involved in mangrove governance

No single legal instrument is sufficient to address the range of threats to mangrove conservation. Different legal tools can be used to address diversion of freshwater sources, pollution, cutting for construction or fuel wood, conversion of mangroves for aquaculture or farming and other threats. Understanding the range of governance options and contexts for mangrove conservation requires examination of many sectors and areas of law, covering, *inter alia*, forests, marine areas, fisheries, land use, freshwater, biodiversity, protected areas, climate change, industry, and waste management.

Regulation of activities affecting mangrove areas and their connected ecosystems must be supported by integration of mangrove considerations in planning and permitting processes, as well as

10 Tran, T. (2016). Transboundary Mekong River Delta (Cambodia and Vietnam) in Finlayson et al. (Eds.) *The Wetland Book, Volume I: Structure and Function, Management and Methods.* Springer, Netherlands.

fair and effective systems for decision-making, dispute resolution and recognition of tenure and rights. Command and control measures can be complemented by market mechanisms and incentives. Prohibitions on use may be appropriate in some cases, while others warrant legal support for sustainable utilization, including benefit sharing systems to enhance community participation.

Mangrove governance occurs at all levels, from the central government to state or regional governments, to municipal or local councils. Many governance systems are characterized by legal pluralism, in which different legal regimes – including common law, civil law, customary law, and religious law – exist side by side. In Madagascar, *Fokonolona*, or communities of individuals, govern sustainable use of natural resources within their territory through *Dina*, a code of customary norms (Chapter 6). Even where there is no formal recognition of customary law, communities and indigenous groups may have traditional knowledge or practices that are relevant for mangrove governance. It is crucial to take the perspectives and needs of local communities and mangrove users into account if mangrove governance is to be effective (Chapter 3). Civil society also plays a role in mangrove governance at the international and national levels. Many countries rely on civil society support for operationalization of instruments for mangrove conservation and sustainable use (Chapter 3).

## 1.3 Purpose and methodology of this assessment

This study was designed to assess the ways in which law and policy can facilitate or impede mangrove conservation efforts, evaluate current gaps and opportunities, and identify tools and practices which could be used in different countries and sites looking to improve legal frameworks relating to mangroves. It aims to cover not just what laws look like on paper, but how they are perceived and implemented in practice, and ultimately how effective they can be in promoting mangrove conservation and sustainable use. It is impossible to create a model for mangrove governance that will work for all jurisdictions, but this assessment aims to describe an array of legal tools and practices as well as lessons from their implementation in different contexts that can help inform policy makers and decision makers in designing and implementing legal frameworks.

The assessment includes a global review of the literature and legal information on international and national laws and policies, a desk assessment of mangrove-related legal instruments in India and Mexico, and an in-depth evaluation of effectiveness of mangrove-related law in Costa Rica, Madagascar, Kenya, Tanzania, Mozambique, Pakistan and Vietnam. These countries were selected based on a preliminary literature review to capture a range of mangrove ecosystems, national contexts, legal systems and relevant and unique tools. Four countries – Kenya, Madagascar, Mozambique and Tanzania – are part of the Save Our Mangroves Now Initiative focal region of the Western Indian Ocean. The other three provide examples from different continents to broaden the perspective.

To gain a broader understanding of the legal instruments in practice, researchers conducted in-person and Skype interviews with experts at a global level and in the case study countries. A survey was conducted in three languages to assess the implementation and effectiveness of mangrove-related legal frameworks. Twenty experts took part in the survey, including representatives of government, civil society, and academia.

For the case study countries, a matrix was developed for the collection and analysis of mangrove-related law. The national legal analysis covered legislation, regulations, decrees, rules, and other legal instruments, as well as significant policy documents and judicial decisions. The completed matrices for the case study countries with links to all legislation analysed are available on the IUCN website.[11]

In the case study countries, national legal experts conducted in-depth four-level effectiveness assessments to understand how mangrove laws are implemented in practice. The assessments cover:

11 www.iucn.org/mangrovelaw.

1. Instrumental Level: How do national and sub-national legal instruments address or implicate mangroves and activities related to mangrove conservation, use, restoration, and exploitation, directly or indirectly?
2. Institutional Level: How are the institutions structured and how well do they operate in practice in relation to issues that may affect mangroves, directly or indirectly?
3. Behavioural Level: How do instruments and institutions affect the behaviour of users, government officials, regulated entities, communities, civil society, and other stakeholders connected to mangroves?
4. Outcome Level: How do legal instruments, institutions, and behaviour of relevant actors impact the health of mangrove ecosystems?[12]

The information to answer these questions was gathered through surveys, site visits, and interviews with government, community and civil society representatives. The results of the assessments comprise Chapters 4-10 of this study.

12 The methodology for this assessment is based on the framework developed for the legal component of the IUCN Natural Resource Governance Framework. Martin, P., Boer, B. and Slobodian, L. (Eds.). (2016). *Framework for Assessing and Improving Law for Sustainability*. IUCN, Gland, Switzerland.

# 2

# INTERNATIONAL LEGAL FRAMEWORKS

## A VARIEGATED CANOPY OF OBLIGATIONS AND OPPORTUNITIES

**By Lydia Slobodian**

International law provides principles, mechanisms and processes that can guide and support mangrove conservation and sustainable use. The principle of state sovereignty and responsibility for transboundary harm obligates states to take measures such as environmental impact assessment to prevent harm to the environment of other states and areas beyond national jurisdiction. The precautionary principle guides decision-making in the face of uncertainty, shifting the burden to a proponent of an activity to show that it does not cause harm. The polluter pays principle creates obligations for compensation or restoration. The concept of sustainable development implies a set of principles, including intergenerational and intragenerational equity, sustainable use and integration of environmental and economic interests. Principles of access to information, public participation and access to justice are essential for good governance. These principles appear in and guide application of national legislation and judicial decisions as well as international instruments related to mangroves.

International agreements applicable to mangroves include:

- Convention on Biological Diversity;
- Ramsar Convention on Wetlands of International Importance;
- World Heritage Convention;
- UN Framework Convention on Climate Change, and the Paris Agreement;
- UN Watercourses Convention and UNECE Water Convention;
- Aarhus Convention and Escazú Agreement addressing access to information, participation and access to justice.

Regional and bilateral agreements on marine areas, nature conservation and transboundary watercourses are relevant for mangroves, as are non-binding instruments and programmes.

# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **CBD** | Convention on Biological Diversity |
| **CITES** | Convention on International Trade in Endangered Species |
| **CMS** | Convention on Migratory Species |
| **COP** | Conference of the Parties |
| **EIA** | Environmental Impact Assessment |
| **ICJ** | International Court of Justice |
| **ILC** | International Law Commission |
| **ISME** | International Society for Mangrove Ecosystems |
| **ITLOS** | International Tribunal on the Law of the Sea |
| **MRV** | Measuring, Reporting and Verification |
| **NBSAP** | National Biodiversity Strategy and Action Plan |
| **NDCs** | Nationally Determined Commitments |
| **NAPs** | National Action Plans |
| **NAPAs** | National Adaptation Programmes of Action |
| **REDD** | Reducing Emissions from Deforestation and forest Degradation |
| **UNCLOS** | United Nations Convention on the Law of the Sea |
| **UNECE** | United Nations Economic Commission for Europe |
| **UNFCCC** | United Nations Framework Convention on Climate Change |

## 2.1 Mangroves and international law

Mangroves and their connected ecosystems often cross national boundaries, *e.g.* along the eastern coast of Africa, both coasts of Central America, and throughout Southeast Asia. Activities along the full course of transboundary rivers can affect mangroves located in the estuary. International demand for products deriving from or produced in mangroves, such as prawns or timber products, are significant drivers of mangrove destruction.[1] Climate change, one of the most serious threats to mangroves, is inherently global in nature. Mangroves are recognized as an internationally important resource, as a vital source of carbon storage and important habitat for globally valued biodiversity, including species with unique genetic properties that could have important applications.[2] For these reasons, the international community has a legitimate interest in mangrove conservation as well as a responsibility to support conservation efforts.

International law creates standards and principles that apply to mangroves and the activities that affect them, as well as structures and processes for discussion and sharing of ideas and best practices. The first part of this chapter discusses foundational international principles and concepts that inform mangrove conservation and sustainable use at the national and transboundary level. The second part outlines key multilateral conventions that apply to mangroves and related ecosystems and activities.

## 2.2 International legal concepts and principles

International law creates both general and specific obligations, deriving from binding treaties as well as international custom evidenced by judicial decisions, declarations, resolutions, legal opinions, and other instruments that show acceptance of a principle by the international community.[3] Certain legal principles have evolved over time to be regarded as binding customary international law and provide a cross-sectoral basis for environmental policy.[4] These principles shape national and international decision-making and inform legal frameworks.

The development of international environmental law has tracked a series of global conferences which lay out key principles and concepts. The United Nations Conference on the Human Environment in 1972 resulted in the Stockholm Declaration, which sets out 26 principles, many of which are now recognized as legally binding.[5] Twenty years later, the United Nations Conference on Environment and Development in Rio de Janeiro adopted the Rio Declaration and Agenda 21, a comprehensive plan for sustainable development in the 21st Century.[6] In 2012, the United Nations Conference on Sustainable Development, Rio+20, resulted in adoption of the outcome document "The Future We Want," and set in motion the process leading to the adoption of the SDGs in 2015.[7] Although these documents themselves are not legally binding, they constitute major markers for understanding and interpreting concepts and principles in international environmental law.

---

1 Thomas, N. et al. (2017). Distribution and drivers of global mangrove forest change, 1996–2010. *PLoS ONE*.

2 Donato, D. et al. (2011). Mangroves among the most carbon-rich forests in the tropics. *Nature geoscience* 4: 293–297; Macintosh, D.J. and Ashton, E. C. (2002). *A Review of Mangrove Biodiversity Conservation and Management*. Centre for Tropical Ecosystems Research, University of Aarhus, Denmark; Deshmukh, S. and Balaji, V. (Eds). (1994). *Conservation of Mangrove Forest Genetic Resources: A Training Manual*. JTTO-CRSARD Project, M.S. Swaminathan Research Foundation, Madras, India.

3 The Statute of the International Court of Justice art. 38 lists the following to be considered by the Court in deciding disputes: a) international conventions … b) international custom, as evidence of a general practice accepted as law; c) the general principles of law recognized by civilized nations; d) … judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.

4 Sands, P. and Peel, J. (2018). *Principles of International Environmental Law*. 4th Edition. Cambridge University Press.

5 Declaration of the United Nations Conference on the Human Environment (Stockholm, 16 June 1972).

6 United Nations Conference on Environment and Development. Agenda 21. (Rio de Janeiro, 3-14 June 1992).

7 General Assembly resolution 66/288. The Future We Want. A/RES/66/288 (27 July 2012); General Assembly resolution 70/1. Transforming our World: the 2030 Agenda for Sustainable Development (Sustainable Development Goals) A/RES/70/1 (25 September 2015). The SDGs were preceded by the UN Millenium Development Goals, adopted in 2000, which created priority targets for meeting the needs of the poorest people, including in terms of environmental sustainability. UN Millennium Declaration, 2000.

This section contains a non-exhaustive summary of key international principles relevant to mangrove conservation and sustainable use.

### 2.2.1 State sovereignty and responsibility for transboundary harm and the principle of prevention

The modern international legal system is built around the idea that states have the sovereign right to make decisions regarding their own territories and other matters within their jurisdictions, including their natural resources.[8] This is tempered by the obligation not to cause transboundary harm. As articulated in Principle 21 of the Stockholm Declaration:

> States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.[9]

The principle was reiterated twenty years later in the Rio Declaration.[10] However, the obligation to not cause transboundary harm is much older. In 1941, the arbitral tribunal considering the *Trail Smelter* case found that Canada was responsible for activities of a smelter operation that was causing damage across the border in the United States, based on principles of national and international law.[11] The principle of state responsibility for transboundary harm was articulated and developed in a series of cases before the International Court of Justice (ICJ).[12] It is included in the Convention on Biological


8 The concept of permanent sovereignty of states over natural resources was recognized in General Assembly resolution 1803 (XVII) of 14 December 1962. It appears in international agreements such as the Escazú Agreement. Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú, 4 March 2018). art. 3(i).

9 Stockholm Declaration *supra* note 5. Principle 21.

10 The Rio Declaration on Environment and Development (Rio de Janeiro, 12 August 1992). Principle 2.

11 *Trail Smelter Arbitration* (United States v. Canada) [1938 and 1941] 3 R.I.A.A. 1905.

12 *E.g. Corfu Channel Case* (United Kingdom v. Albania) [1949] ICJ Rep 244; *Legality of the Threat or Use of Nuclear Weapons* (Advisory Opinion) [1996] ICJ.Rep 226; *Pulp Mills on the River Uruguay* (Argentina v. Uruguay) [2010] ICJ Rep 113. Para. 204.

Diversity (CBD) and the UN Watercourses Convention, among others.[13]

A key tool for implementing the principle of responsibility for transboundary harm is the environmental impact assessment (EIA). **The requirement to assess the environmental impacts of planned activities and share the results of those assessments in circumstances where there a likelihood of significant adverse transboundary environmental impacts has itself attained the status of customary international law**. In 2010, the ICJ stated that:

> it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context ...[14]

It goes on to specify that failure to undertake an EIA in this case would constitute a failure to exercise due diligence.[15] The required scope and content of the EIA is a matter for national legislation.[16] The United Nations Economic Commission for Europe (UNECE) Convention on EIA in a Transboundary Context (Espoo) provides guidance around this obligation.[17]

The requirement to conduct EIAs as part of state responsibility to prevent transboundary environmental harm has been included, *inter alia*, in the UN Watercourses Convention, the UN Convention on the Law of the Sea (UNCLOS), the UN Framework Convention on Climate Change (UNFCCC), and the CBD, and is stated as Principle 17 of the Rio Declaration.[18] Failure to comply with this obligation can give rise to international liability or an obligation to provide compensation.[19]

State responsibility for international harm and the obligation to undertake an EIA apply in cases of transboundary water pollution and interference with hydrological flows, two significant threats to mangrove ecosystems. They are also relevant in cases of marine pollution or coastal damage originating from a transboundary source.[20]

This principle is linked to the principle of prevention, recognized by the Permanent Court of Arbitration as a principle of general international law.[21] It contains an obligation for states to exercise due diligence over activities within their control which may threaten transboundary environmental harm.[22] The principle of prevention may require a state to prevent environmental harm within its own jurisdiction through enactment and implementation of effective legal measures.[23]

### 2.2.2 The precautionary principle/ approach

Damage to mangroves can be close to impossible to remediate and can have extensive knock-on effects on connected ecosystems and the

13 Convention on Biological Diversity (CBD) (Rio de Janeiro, 5 July 1992). Article 3; Convention on the Law of the Non-navigational Uses of International Watercourses (UN Watercourses Convention) (New York, 21 May 1997). Article 7.

14 *Pulp Mills supra* note 12. Para. 204. Groundwork was laid for this decision in the *Lac Lanoux Arbitration*, which discussed the obligation for an upstream state to negotiation in good faith with a downstream state and consider its interests in decision-making relating to an international watercourse. (Spain v. France) [1957] 12 R.I.A.A. 281.

15 *Pulp Mills supra* note 12. Para. 204.

16 *Ibid.* Para. 205.

17 Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) (Finland, 25 February 1991). In 2014 the Convention was opened to accession by all UN Member States.

18 UN Watercourses Convention *supra* note 13. Article 7, 11-12; The United Nations Convention on the Law of the Sea (UNCLOS) (Montego Bay, 10 December 1982). Article 206; United Nations Framework Convention on Climate Change (UNFCCC) (New York, 4 June 1992). Article 4(1)(f).; CBD *supra* note 13. Article 14; Rio Declaration *supra* note 10. Principle 17.

19 *E.g. Pulp Mills supra* note 12; UN Watercourses Convention *supra* note 13, Article 7; "States shall also co-operate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction". Rio Declaration *supra* note 10. Article 13.

20 Maiti, S.K. and Chowdhury, A. (2013). Effects of Anthropogenic Pollution on Mangrove Biodiversity: A Review. *Journal of Environmental Protection* 4(12):1428-1434.

21 *Iron Rhine Arbitration* (Belgium v. Netherlands) [2005] Award ICGJ 373 (PCA 2005); ILC Draft Articles on Prevention of Transboundary Harm from Hazardous Activities (2001). Article 3.

22 *Pulp Mills supra* note 12. Para. 197; ITLOS Case no. 21, Request for an advisory opinion submitted by the Sub-Regional Fisheries Commission.

23 Sands and Peel *supra* note 4. pp. 212-213.

global environment.[24] The seriousness of these consequences implicates the precautionary principle.

The precautionary principle is stated in the Rio Declaration as:

> Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[25]

The principle has been incorporated in UNFCCC, the UNECE Water Convention, and the preamble of CBD, among others.[26] The ICJ has stated that:

> In the field of environmental protection, vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage.[27]

There is ongoing discussion regarding the binding nature of the precautionary principle.[28] It can be referred to as the precautionary approach, implying that it is not itself a legally binding principle; instead it has been characterized as a logical measure to ensure environmental protection and compliance with accepted legal obligations.[29] Ultimately, the question of whether it is a principle or approach may not matter – this discussion has been called an irrelevant "semantic squabble" – given the extent to which the principle influences national and international decision-making.[30]

The precautionary principle or approach guides decision making in the face of uncertainty and risk. Where the threshold of environmental risk is met, the principle shifts the burden to the proponent of an activity to show that it does not cause harm.[31] National courts have used the precautionary principle to evaluate the validity of EIA processes and subsequent permits.[32] Applied to mangrove conservation, the principle implies that measures to conserve and restore mangroves should not be dismissed because the harm they seek to address is uncertain, while

> "activities that potentially harm mangroves should be regulated even where there is not total certainty about their impact".

The precautionary principle is particularly relevant in the context of climate change; there may not be certainty about the effects of destruction of mangroves on the global climate and associated global conditions on Earth, but this is not a reason to delay action to conserve mangroves as important carbon sinks and adaptation resources.

### 2.2.3 The polluter pays principle

Mangrove ecosystems have significant value in terms of carbon sequestration, disaster risk reduction, timber and non-timber products, and other ecosystem services.[33] The fact that these

---

24 Blanco, J.F. et al. (2012). Ecosystem-Wide Impacts of Deforestation in Mangroves: The Urabá Gulf (Colombian Caribbean) Case Study. *ISRN Ecology* 2012.

25 Rio Declaration *supra* note 10. Principle 15.

26 UNFCCC *supra* note 18. Article 3(3); Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention) (Helsinki, 17 March 1992). Article 2(5)(a); CBD *supra* note 13. Preamble.

27 *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia) [1997] ICJ Rep 7. Para. 7.

28 *E.g.*, Fisher, E.C., Jones, J.S. and von Schomberg, R. (2006). *Implementing the precautionary principle: perspectives and prospects*. Edward Elgar Publishing; Marchant, G. E. (2003). From general policy to legal rule: aspirations and limitations of the precautionary principle. *Environmental Health Perspectives* 111(14):1799-1803. p. 1799; Wiener, J. (2018) "Precautionary Principle", in Krämer, L. and Orlando, E. (Eds.). *Principles of Environmental Law*. Cheltenham: Elgar Encyclopedia of Environmental Law, pp. 174–185.

29 *Southern Bluefin Tuna Cases* (New Zealand v. Japan; Australia v. Japan) [1999] ITLOS Separate Opinion of Judge Treves.

30 Sadeleer, N.D. (2002). *Environmental Principles: From Political Slogans to Legal Rules*. Oxford University Press.

31 *Ibid.* Pp. 162-167 (threshold); 201-203 (shifting burden of proof).

32 See, *e.g.*, *Odera v. NEMA* (2006) eKLR, in which the High Court of Kenya determined that NEMA had not adequately applied the precautionary principle in approving a project because in preparing the EIA proponents did not consider alternatives or follow requirements of public participation; *Telstra v. Hornsby* (2006) 146 LGERA 10, in which the Land and Environment Court of New South Wales stated that the precautionary principle dictates that where the threshold is met, decision-makers should assume that there will be serious or irreversible environmental damage unless the proponent can prove that the threat is negligible.

33 Mehvar, S. et al. (2018). Quantifying Economic Value of Coastal Ecosystem Services: A Review. *Journal of Marine Science and Engineering* 6(1).


high-value ecosystems are disappearing at an alarming rate suggests that either the activities resulting in destruction and degradation have a much higher value than the mangroves themselves, or the full cost of the damage is not being paid by the beneficiaries of the destructive activities. Ensuring that the cost of ecosystem harm is paid by those causing the harm can deter drivers of mangrove degradation and loss.

National and international legal systems have adopted the polluter pays principle to address this misalignment of costs and incentives. The principle that the cost of pollution should be borne by the actor who caused it was adopted by the OECD in 1972 and elaborated in 1974.[34] It is referenced in the Rio Declaration, the ASEAN Convention and the UNECE Water Convention, as well as several Regional Seas Conventions.[35] The principle can be invoked in the context of compensation and as a mechanism for covering the cost of restoration.[36] It is also an important means to create incentives not to cause harm, but this only works if the price charged is sufficient to change polluter behavior.[37]

Pollution, alongside other anthropogenic factors, causes substantial degradation to mangrove ecosystems. Agricultural run-off and municipal and industrial waste from areas adjacent to mangroves, or farther upstream, can find their way into mangrove ecosystems.[38] Application of the polluter pays principle supports imposing responsibility and charges on those involved in these polluting activities, as well as other types of activities that cause harm to mangroves.

### 2.2.4 Sustainable development and use

Sustainable development has emerged as a foundational concept in international environmental law. The 1987 Report of the World

34 Guiding Principles Concerning International Economic Aspects of Environmental Policies (OECD. Adopted 26 May 1972 C(72)128); The Implementation of the Polluter-Pays Principle (OECD. Adopted 14 November 1974 C(74)223).

35 Rio Declaration *supra* note 10. Principle 16; ASEAN Agreement on the Conservation of Nature and Natural Resources (Kuala Lumpur, 9 July 1985). Article 10(d); UNECE Water Convention *supra* note 26. Article 2(5)(b); Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) (Paris, 22 September 1992). Article 2(2)(b); Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki, 9 April 1992). Article 3, 4. The principle is also found in national legislation; for example, Kenya's Environmental Management and Coordination Act (2018) lists the principle as a guiding principle for the High Court to consider when hearing a suit to protect the human right to a clean environment. Section 3(5). It was integrated at an early stage into the environmental policy of the European Community. Recommendation 75/436/Euratom, ECSC, EEC of 3 March 1975.

36 Rio Declaration Principle 16 is referenced in the preamble of the ILC Draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities (2006).

37 Sadeleer *supra* note 30, Pp. 35-36.

38 Kawalekar, J.S. (2015). Impact of Anthropogenic Pollution on Mangrove Biodiversity: A Review. *International Journal of Multidisciplinary and Current Research* 3:1152-1154.

Commission on Environment and Development (Brundtland Report) defines sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs."[39] This builds on the recognition in the Stockholm Declaration that:

> The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.[40]

Sustainable development is based on the understanding that long-term economic and social development depends on appropriate management and conservation of environmental resources. According to the Brundtland Report, the "conservation of living natural resources – plants, animals, and micro-organisms, and the non-living elements of the environment on which they depend – is crucial for development."[41] The Rio Declaration echoes this, stating: "In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it."[42] The concept of sustainable development has been recognized in the Rio Declaration, CBD, and the UNECE Water Convention.[43] The World Heritage Committee has endorsed the integration of a sustainable development perspective into the processes of the World Heritage Convention.[44] Judge Weeramantry of the ICJ argued that the right to sustainable development and the linked principle of intergenerational equity have become part of international law.[45]

Sustainable development can be seen as a concept that encompasses a number of principles.[46] The principle of intergenerational equity represents the obligation of each generation to act as stewards of the planet and its resources for generations that follow.[47] The corollary principle of intragenerational equity or equitable use implies consideration of fairness in resource use among states and people. The principle of sustainable use emphasizes the need to utilize resources in a way that will not result in their depletion, and relates to requirements in different instruments that use must be wise, optimal, rational or appropriate.[48] The principle of integration requires consideration of environmental needs in economic decision-making, and vice-versa.[49]

The principle of sustainable development relates to the debated right to development, advocated by developing states to ensure that environmental obligations do not interfere with their economic growth.[50] The right to development is mentioned in the preambles of CBD and UNFCCC, as well as the Paris Agreement.[51] The Rio Declaration states that "the right to development must be fulfilled so as to equitably meet developmental

---

39 World Commission on Environment and Development (1987). *Report of the World Commission on Environment and Development: Our common future* (Brundtland Report). Oxford University Press, Oxford, England. Overview §27.

40 Stockholm Declaration *supra* note 5. Principle 2.

41 Brundtland Report *supra* note 39. Chapter 6§1.

42 Rio Declaration *supra* note 10. Principle 4.

43 Rio Declaration *supra* note 10. Principle 3; CBD *supra* note 13. Article 2; UNECE Water Convention *supra* note 26. Article 2(5)(c).

44 World Heritage Committee decision 39 COM 5D. World Heritage and Sustainable Development. WHC-15/39.COM/5D (8 July 2015).

45 *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests* (New Zealand v. France) [1995] ICJ Rep 288. Dissenting opinion of Judge Weeramantry (discussing a principle of intergenerational equity); *Gabcikovo-Nagymaros supra* note 27. Separate opinion of vice-president Weeramantry (discussing the right to sustainable development). *See also, Minors Oposa v. Secretary of the Department of Environment and Natural Resources* (1994) 33 ILM. 169.

46 Sands and Peel *supra* note 4.

47 Brown Weiss, E. (1993) Intergenerational equity: toward an international legal framework, in Brown Weiss (ed.) *Environmental change and international law: New challenges and dimensions*. Tokyo: United Nations Press. Pp. 333–354.

48 United Nations Agreement for the Implementation of UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 4 December 1995). Article 2; African Convention on Conservation of Nature and Natural Resources (Algiers, 15 September 1968). Article 2; Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) (Ramsar, 2 February 1971). Article 2, 6; Convention on the Conservation of Migratory Species of Wild Animals (CMS) (Bonn, 23 June 1979). Preamble; UNECE Water Convention *supra* note 26. Article 2(b).

49 Rio Declaration *supra* note 10. Principle 4; *Iron Rhine supra* note 21.

50 Sands and Peel *supra* note 4.

51 CBD *supra* note 13. Preamble; UNFCCC *supra* note 18. Preamble; Paris Agreement (Paris, 12 December 2015). Preamble.

and environmental needs of present and future generations."[52]

The concept of sustainable development and its component principles are also linked with the principle of reasonable and equitable use, which requires consideration of the needs and interests of all riparian states and balancing of social and economic factors with conservation.[53] It relates to the principle of common but differentiated responsibility, which requires consideration of national capabilities and needs in addressing global environmental challenges, and underlies the international legal framework for tackling climate change.[54]

Agenda 21 provides guidance for achieving sustainable development across economic, social, and environmental dimensions.[55] It encourages nations and corporate enterprises to "integrate environmental protection, degradation, and restoration costs in decision-making at the outset."[56] It recognizes mangroves as "among the most highly diverse, integrated and productive of the Earth's ecosystems" and calls on governments to:

> Take action where necessary for the conservation of biological diversity through the in situ conservation of ecosystems and natural habitats … In situ measures should include the reinforcement of terrestrial, marine and aquatic protected area systems and embrace, inter alia, vulnerable freshwater and other wetlands and coastal ecosystems, such as estuaries, coral reefs and mangroves.[57]

The SDGs adopted in 2015 do not explicitly reference mangroves, but mangroves will be key to realizing several of the goals. Goal 14 includes a target to manage and protect marine and coastal ecosystems, including by strengthening resilience and taking action for restoration.[58] Goal 15 includes targets on conservation, restoration, and sustainable use of forests and wetlands, halting deforestation, and reducing degradation of natural habitats.[59] Under Goal 13, states commit to integrating climate change measures into national policies, strategies and planning.[60] Targets on integrated water resource management and restoration of water-related ecosystems, including forests and wetlands, are also relevant for mangroves.[61] **Mangroves will play a role in realizing targets on eliminating poverty, achieving food security, and reducing loss from disasters**.[62]

### 2.2.5 The cooperation principle

In a separate opinion in the ICJ case on the *Legality of the Threat or Use of Nuclear Weapons,* Judge Weeramantry wrote:

> The principle [of good neighborliness] is one of the bases of modern international law, which has seen the demise of the principle that sovereign states could pursue their own interests in splendid isolation from each other. A world order in which every sovereign state depends on the same global environment generates a mutual interdependence which can only be implemented by co-operation and good neighborliness.[63]

This principle of "good neighborliness" or cooperation derives from the UN Charter, as interpreted by a series of UN Declarations and

52 Rio Declaration *supra* note 10. Principle 3.
53 UN Watercourses Convention *supra* note 13. Article 6.
54 Rio Declaration *supra* note 10. Principle 7; UNFCCC *supra* note 18. Article 3.
55 Agenda 21 *supra* note 6.
56 *Ibid.* Chapter 8.
57 *Ibid.* Para. 17.72; 15.5(g).
58 SDGs *supra* note 7. 14.2.
59 *Ibid.* 15.1, 15.2, 15.5.
60 *Ibid.* 13.2.
61 *Ibid.* 6.5.
62 *Ibid.* 1, 2, 11.
63 *Nuclear Test Case* supra note 45. Dissenting opinion of Judge Weeramantry. Para. 47.

Resolutions.[64] The Stockholm Declaration and the Rio Declaration recognize the need for cooperation in environmental matters.[65] CBD obligates Parties to cooperate "as far as possible and as appropriate" for conservation and sustainable use of biological diversity "in respect of areas beyond national jurisdiction and on other matters of mutual interest."[66] The UN Watercourses Convention recognizes a general obligation for watercourse states to cooperate "on the basis of sovereign equality, territorial integrity, mutual benefit and good faith."[67] The ICJ affirmed the importance of cooperation in the context of international watercourses.[68] The Ramsar Convention imposes obligations of consultation and coordination in the case of a "wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties."[69]

The principle of cooperation implies that states "immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States" and, "provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those states at an early stage and in good faith."[70] It is closely related to the principle of responsibility for transboundary harm (see Section 2.2.1).

The cooperation principle clearly relates to measures to address transboundary harm, which can threaten mangrove ecosystems. It can also be invoked as a basis for international cooperation in efforts to address mangrove deforestation and degradation, including allocation of financial and technical resources. The cooperation principle is the basis of the principle of common but differentiated responsibility, which underlies much of the international climate change regime, including mechanisms for Reduction of Emissions from Deforestation and forest Degradation (REDD) and trading in carbon offsets (see Section 2.2.4).

### 2.2.6 Good governance, access to information, public participation, and access to justice

Good governance and rule of law have been recognized as necessary prerequisites for conservation across sectors. Good governance has been described by the International Law Association as a principle of international law which commits states, *inter alia*:

a. to adopt democratic and transparent decision-making procedures and financial accountability;
b. to take effective measures to combat official or other corruption;
c. to respect the principle of due process in their procedures and to observe the rule of law and human rights ...[71]

Three key principles are essential for good governance of natural resources: access to information, public participation in decision-making, and access to justice. The UNECE Convention on Access to Information, Public Participation in Decision-making, and Access to Justice in Environmental Matters (Aarhus Convention) lays out guidance for these principles.[72] Although developed in the European context, the Aarhus Convention has

64 General Assembly resolution 2625 (XXV). Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations. A /RES/25/2625 (24 October 1970); General Assembly resolution 46/62. Development and strengthening of good-neighborliness between States. A/RES/46/62 (9 December 1991).

65 Stockholm Declaration *supra* note 5. Principle 24; Rio Declaration *supra* note 10. Principle 7.

66 CBD *supra* note 13. Article 5.

67 UN Watercourses Convention *supra* note 13. Article 8.1.

68 *Gabcikovo-Nagymaros supra* note 27.

69 Ramsar Convention *supra* note 48. Article 5.

70 Rio Declaration *supra* note 10. Principle 18, 19.

71 International Law Association (2002). New Delhi declaration of principles of international law relating to sustainable development. UN Doc. A/Conf.199/8. Principle 6.

72 Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus, 25 June 1998).

been recognized as globally relevant.[73] The Escazú Agreement, adopted in 2018, elaborates the principles of access to information, public participation and access to justice for the Latin American region.[74]

Both the Aarhus Convention and the Escazú Agreement operationalize Principle 10 of the Rio Declaration, which provides that:

> At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities ... and the opportunity to participate in decision-making processes... Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.[75]

The principle of access to information in environmental matters requires that public authorities, in response to a request for environmental information, ensure the availability of information to the public as soon as possible. This right should be guaranteed within the framework of national legislation.[76] National legislation should also establish systems for collection and dissemination of information related to environmental matters.[77]

The principle of public participation in decision-making processes requires that the public is well informed early in the process, and has time to "prepare and participate effectively during the environmental decision-making."[78] The principle includes obligations to provide "opportunities for public participation in the preparation of policies relating to the environment" and promote "effective public participation at an appropriate stage during the preparation by public authorities of executive regulations and other generally applicable legally binding rules that may have a significant effect on the environment."[79] The Escazú Agreement requires states to inform the public of "the grounds and reasons underlying the decision, including how the observations of the public have been taken into consideration."[80]

The principle of public access to justice in environmental matters means that any person who considers that his or her rights to access to information, or to participate in decision-making processes have been violated, has access to an independent and impartial review procedure, such as through a court of law.[81] These procedures should be "fair, equitable, timely and not prohibitively expensive" and should provide appropriate remedies "including injunctive relief as appropriate."[82]

The Escazú Agreement also includes a provision on guaranteeing the safety and rights of human rights defenders in environmental matters, including through taking measures to investigate and punish attacks.[83] This is highly relevant for mangroves, as **mangrove defenders face security threats in many areas of the world** (see Chapter 3).

The governance-related principles described here are important tools for mangrove conservation. They enable local communities and civil society to put pressure on government decision makers, improve transparency, and address problems of mismanagement and corruption. While there is some opportunity for international redress, for example in human rights tribunals, for the most part these principles need to be implemented through national measures (see Chapter 3).

---

73 Morgera, E. (2011). Aarhus Convention / MOP-4: Ensuring Global Relevance? *Environmental Policy and Law* 41(4/5):194-205. The Convention is open to ratification by states outside Europe, but to date its 47 Parties are located in the UNECE region.

74 Escazú Agreement *supra* note 8.

75 Rio Declaration *supra* note 10. Principle 10.

76 Aarhus Convention *supra* note 72. Article 4.

77 *Ibid.* Article 5.

78 *Ibid.* Article 6.

79 *Ibid.* Article 7; 8.

80 Escazú Agreement *supra* note 8. Article 7. *See also* De Silva, L. (2018). Escazú Agreement 2018: A Landmark for the LAC Region. 2 CJEL 93.

81 Aarhus Convention *supra* note 72. Article 9; Escazú Agreement *supra* note 8. Article 8.

82 Aarhus Convention *supra* note 72. Article 9; 4.

83 Escazú Agreement *supra* note 8. Article 9.

### 2.2.7 The non-regression principle

Downgrading environmental protections through degazettement of protected areas, opening up formerly protected ecosystems to development, and loosening regulations on pollution and damaging activities threaten species and ecosystems around the world. These forms of regression can be responses to growing needs and demands, changing political climates, or to the discovery of formerly unknown types of resources or sources of revenue.

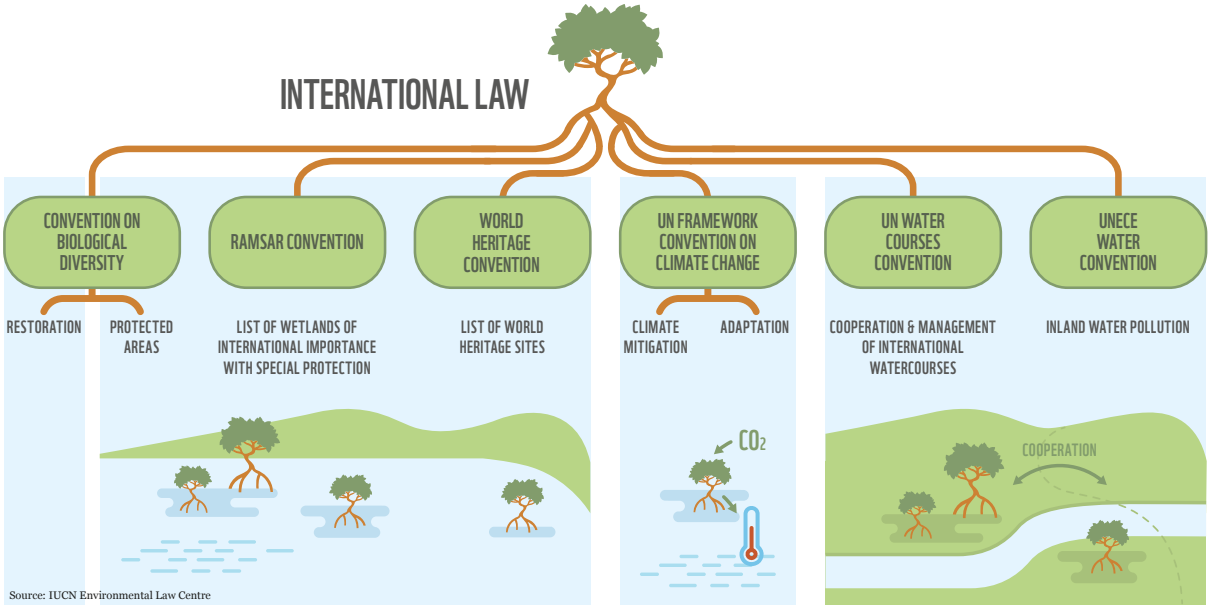
In some cases, destruction of ecosystems is seen as necessary to respond to pressures related to climate change, such as food insecurity and threat of natural disasters. However, in the long term, these responses will make problems much worse. For example, in Guyana, the construction of seawalls to protect coastlines from rising sea levels constrains the mangroves behind them and limits the interaction between the mangroves and the mud-banks, resulting in lower wave dissipation and erosion of the coast.[84]

At Rio+20, countries adopted the principle of non-regression, which underlines the necessity for each country not to backtrack from their environmental commitments, even when facing multiple crises.[85] A step beyond the principle of non-regression is the principle of progression, according to which measures to conserve the environment should be constantly improved in the light of the latest scientific and technological knowledge. This principle is implemented within the framework of the Paris Agreement, according to which the Parties' efforts should represent progression over time.[86]

## 2.3 International instruments

Mangroves and their conservation and use fall within the scope of several international conventions. These conventions create binding obligations relating to mangrove conservation and sustainable use. They also create and promote frameworks and tools such as lists of sites that can cover mangroves, mechanisms for investment and financing of mangrove conservation, and bilateral

**Figure 2:** Mangrove-related international instruments




84 Anthonya, E. and Gratiot, N. (2012). Coastal engineering and large-scale mangrove destruction in Guyana, South America: Averting an environmental catastrophe in the making. *Ecological Engineering* 47:268–273.

85 The Future We Want *supra* note 7. Para. 20.

86 Paris Agreement *supra* note 51. Article 3: "The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement". The concept of progression should not be confused with the principle of progressive realization of social and economic rights, which could potentially conflict with mangrove conservation.

**Table 1:** Ratification of mangrove-related instruments by the seven case study countries

| | Convention on Biological Diversity | UN Framework Convention on Climate Change | Ramsar Convention | World Heritage Convention | UN Water Courses Convention | UNECE Water Convention |
|---|---|---|---|---|---|---|
| **Costa Rica** | 1994 | 1994 | 1992 | 1977 | - | - |
| **Kenya** | 1994 | 1994 | 1990 | 1991 | - | - |
| **Madagascar** | 1996 | 1999 | 1999 | 1983 | - | - |
| **Mozambique** | 1995 | 1995 | 2004 | 1982 | - | - |
| **Pakistan** | 1994 | 1994 | 1976 | 1976 | - | - |
| **Tanzania** | 1996 | 1996 | 2000 | 1977 | - | - |
| **Vietnam** | 1994 | 1994 | 1989 | 1987 | 2014 (accession) | - |

and multilateral governance structures that can include mangroves within their scope (Figure 2).

Many of the key international frameworks have been widely ratified, including by the seven case studies analyzed in this global assessment, with the significant exception of the two watercourse conventions (Table 1). In the case of the UNECE Water Convention, this may relate to its initial conception as a European agreement. Countries may fear compromising their sovereignty over water resources, or may have other priorities (see Section 2.2.5).

### 2.3.1 Ramsar Convention on Wetlands of International Importance

The 1971 Convention on Wetlands of International Importance (Ramsar Convention) is a key international instrument for the conservation of mangroves.[87] It imposes obligations on State Parties to promote "as far as possible the wise use of wetlands in their territory", using a broad definition of "wetlands" that includes permanent or temporary areas of fresh, brackish or salt water with a depth of no more than 6 meters at low tide.[88] The wise use of wetlands is defined by the contracting Parties as "their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem."[89] The Ramsar Convention also establishes a List of Wetlands of International Importance. Each Contracting Party must designate at least one site to be included on the List, and the Parties should "formulate and implement their planning so as to promote the conservation of the wetlands included on the List."[90] There are over 260 mangrove sites on the List of Wetlands of International Importance, covering a total of almost 30,000,000 ha, and constituting more than 10% of Ramsar sites.[91] Of these, 62 are situated in Mexico, covering over 4,000,000 ha.[92] The rest are spread around the world. Each of the countries studied has designated at least one Ramsar site that includes mangroves.

Parties to the Ramsar Convention report regularly on the implementation of their commitments, including those relating to mangroves.[93] Every three years, at the Conference of the Parties (COP), these commitments are reviewed, and measures are adopted to address loss of wetlands. The Parties have adopted resolutions to encourage states to designate sites covering under-represented and threatened ecosystems such as mangroves; promote better management of mangroves through protection measures, cooperation and the modification of politics and strategies; and set out principles and guidelines

87 Ramsar Convention *supra* note 48..

88 *Ibid.* Article 3 (wise use); 1 (definition).

89 Ramsar COP Recommendation 3.3: Wise use of wetlands (27 – 5 June 1987); Ramsar Convention Secretariat. (2013). *The Ramsar Convention Manual: a guide to the Convention on Wetlands (Ramsar, Iran, 1971), 6th ed.*

90 Ramsar Convention *supra* note 48. Article 3.

91 Webber, M. *et* al. (2016). *Mangroves*. Oceans and the Law of the Sea: United Nations (citing 278 Ramsar sites containing mangroves); Ramsar 2018. *Sites Information Service*. https://rsis.ramsar.org/fr/ris-search/mangroves?language=fr&pagetab=0 [Accessed 6 August 2018].

92 Ramsar Sites Information Service *supra* note 91.

93 The obligation to report on changes to ecological character of wetlands has been extended by COP decisions to include obligations to report on progress in meeting commitments. Ramsar Convention Secretariat. (2013). *The Ramsar Convention Manual: a guide to the Convention on Wetlands (Ramsar, Iran, 1971), 6th ed.* Ramsar Convention Secretariat, Gland, Switzerland.

for incorporating wetland issues into integrated coastal zone management.[94]

### 2.3.2 World Heritage Convention

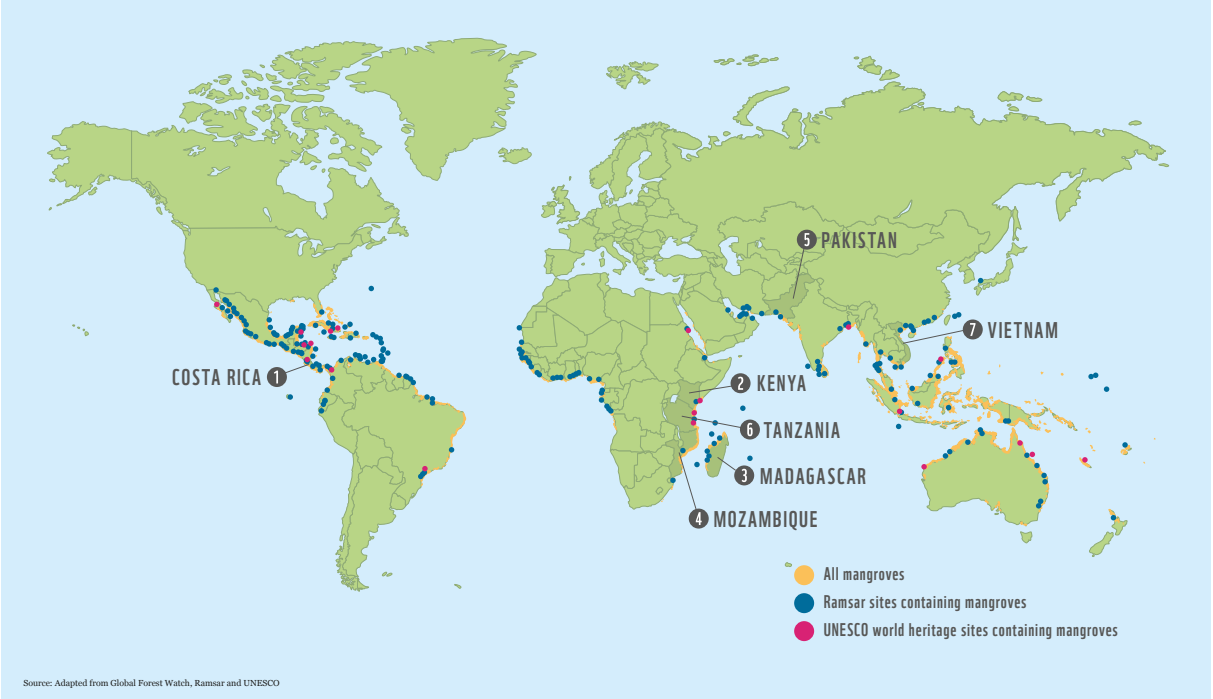
The World Heritage Convention promotes the protection of sites of outstanding universal value, and establishes a list of cultural and natural sites. **Mangroves are found in 26 world heritage sites, including both natural and cultural sites.**[95] The largest mangrove forest in the world, the Sundarbans forest in Bangladesh and India, is a World Heritage Site. Inscription on the World Heritage List can help promote tourism, direct political attention, and raise revenue for supporting a mangrove site. A memorandum of understanding has been signed between the World Heritage Convention and the Ramsar Convention to avoid conflict where a site is protected by both Conventions.[96]

Where a World Heritage Site is threatened by "serious and specific dangers," such as large-scale development projects, land use change, or natural disasters, it may be included on the List of World Heritage in Danger.[97] Inclusion on this list can help unlock financial resources and technical expertise or motivate a conservation response.

### 2.3.3 Convention on Biological Diversity

CBD does not explicitly refer to mangroves or wetlands, but many of its articles are relevant for mangrove conservation.[98] It requires Parties to integrate biodiversity considerations into sectoral and cross-sectoral plans, programmes

**Figure 3:** Ramsar and World Heritage sites containing mangroves




94 Ramsar Resolution VIII.11. Additional guidance for identifying and designating underrepresented wetland types as Wetlands of International Importance (18 – 26 November 2002); Ramsar Resolution VIII.32. Conservation, integrated management, and sustainable use of mangrove ecosystems and their resources (18 – 26 November 2002); Ramsar Resolution VIII.4. Principles and guidelines for incorporating wetland issues into Integrated Coastal Zone Management (ICZM) (18 – 26 November 2002).

95 Webber, et al. *supra* note 91.

96 Memorandum of Understanding between the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Bureau of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 14 May 1999).

97 Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO) (Paris, 16 November 1972). Article 11(4).

98 CBD *supra* note 13.

## World Heritage in Danger in the Belize Barrier Reef

The Barrier Reef System was added to the World Heritage List in 1996 and transferred to the List of World Heritage in Danger in 2008 because of the "sale and lease of public lands for the purposes of development within the property leading to the destruction of mangrove and marine ecosystems."[101] Following this decision, Belize put in place a mangrove-cutting moratorium and cancelled all new land transactions and land leases. It adopted revised regulations on the protection of mangroves, including strict regulation of activities in "priority mangrove areas."[102] In 2018, the site was removed from the list of World Heritage in Danger, in part because of the adoption of the new regulations which represent significant progress towards meeting the country's commitments on maintaining mangrove cover within the World Heritage Site.[103]

and policies, and national decision-making; specifically to develop national biodiversity strategies and action plans (NBSAPs).[99] It provides for incentives for conservation and measures to avoid or minimize adverse impacts on biological diversity, and requires Parties to establish a system of protected areas and restore degraded ecosystems.[100]

In 2010, the CBD COP adopted the Strategic Plan for Biodiversity 2011-2020, which includes theAichi Biodiversity Targets, specific, measurable goals to be achieved by 2020.

Several of the targets are relevant to mangrove conservation, including Target 5 (halve the rate of loss of natural habitats); Target 7 (sustainable agriculture, aquaculture, and forestry); Target 11 (protection of 17% of terrestrial and inland water and 10% of coastal ecosystems); Target 15 (restoration of 15% of degraded ecosystems).[104]

CBD and the Ramsar Convention have signed a Memorandum of Cooperation and established joint work plans, currently focused on achievement of the Aichi Targets.[105] CBD, UNFCCC and UNCCD have also engaged in collaboration through the Joint Liaison Group which is developing possible lines of cooperation including *inter alia* promotion of complementarity between NBSAPs and National Adaptation Programmes of Action (NAPAs).[106]

CBD has begun a consultative process to prepare a post-2020 Biodiversity Framework, while recognizing the need to continue working towards the achievement of the existing targets.[107] In addition to the Parties, the Secretariats of the Ramsar Convention and the Convention on International Trade in Endangered Species (CITES), have participated in this process.[108]

---

99 *Ibid.* Article 6; 10.

100 *Ibid.* Articles 8, 10, 11.

101 State of conservation of World Heritage properties inscribed on the List of World Heritage in Danger - Belize Barrier Reef Reserve System (Belize) (N 764).

102 Belize Forests (Protection of Mangroves) Regulations of 15 June 2018.

103 World Heritage Committee, Item 7A of the Provisional Agenda: State of conservation of the properties inscribed on the List of World Heritage in Danger. 42 Session, Manama, Bahrain (24 June – 4 July 2018 WHC/18/42.COM/7A.Add.).

104 The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, Annex part IV (adopted on 29 October 2010, UNEP/CBD/COP/DEC/X/2). *See also* Van Lavieren, H. et al. (2012). *Securing the future of mangroves*. UNU-INWEH, UNESCO-MAB. p. 38.

105 CBD and Ramsar. (2012). *The Convention on Biological Diversity (CBD) and the Ramsar Convention on Wetlands (Ramsar) 5th Joint Work Plan (JWP) 2011-2020.*

106 CBD Secretariat. *Joint Liaison Group*. https://www.cbd.int/cooperation/liaison.shtml [Accessed 15 June 2019].

107 CBD Decision XIII/1. Progress in the implementation of the Convention and the Strategic Plan for Biodiversity 2011-2020 and towards the achievement of the Aichi Biodiversity Targets (12 December 2016); CBD. *Preparations for the Post-2020 Biodiversity Framework*. https://www.cbd.int/post2020/ [Accessed 25 July 2019].

108 CBD Secretariat. *Submissions from Parties, other Governments, relevant organizations and indigenous peoples and local communities on the preparations for the Post-2020 Biodiversity Framework*. https://www.cbd.int/post2020/submissions.shtml; Ramsar. *Follow-up to the Strategic Plan for Biodiversity beyond 2020*. https://www.ramsar.org/news/follow-up-to-the-strategic-plan-for-biodiversity-beyond-2020 [Accessed 5 September 2019].

### 2.3.4 Climate change frameworks

Mangroves are recognized as an important resource for addressing climate change in terms of both mitigation and adaptation. Carbon sequestered by marine ecosystems or blue carbon represents more than half of all carbon sinks, and mangroves, salt marshes and seagrasses account for 50 – 70% of blue carbon.[109] Mangroves support climate change adaptation through key ecosystem services, such as local climate regulation, as well as livelihood and food security. They provide protection against storm surges, erosion, and other climate-related damage, and enhance the resilience of connected ecosystems.[110]

Climate change creates significant threats to mangroves in the form of weather unpredictability, rising sea-levels, modification of ocean salinity, changes to the hydrological cycle, and other effects, many of which are not well understood.[111]

In recognition of these connections, mangroves feature in Nationally Determined Contributions (NDCs) as well as National Adaptation Plans (NAPs) and NAPAs registered within the framework of the Paris Agreement.[112] NDCs provide high-level goals and targets which should be implemented through national programmes and initiatives, and as needed legal reform. NAPs identify adaptation needs and strategies to address them, while NAPAs are part of the work programme for least developed countries, and identify adaptation priorities as part of a process to access funding.

Several NDCs specifically mention mangroves. Mexico's NDC includes among its adaptation actions the implementation of a conservation and recovery scheme for "coastal and marine ecosystems such as coral reefs, mangroves, sea grass and dunes."[113] **Madagascar's NDC includes a target of restoration of 35,000 ha of primary forest areas and mangroves before 2020** and the restoration of 55,000 ha of forests and mangroves by 2030.[114] Madagascar has also included mangrove management in its NAPA (Chapter 6).

India's NDC includes mangrove-related initiatives under both mitigation and adaptation strategies. It states that the Green India Mission and other initiatives will increase forest cover by five million ha and improve the quality of forest cover by an additional five million ha, resulting in an additional carbon sequestration of approximately 100 million tons of $CO^2$ annually, and leading to an additional carbon sink of 2.5 to 3 billion tons of $CO^2$ equivalent by 2030. The Green India Mission specifies that the restoration of 0.2 million ha of mangroves and wetlands by 2020 will sequester 1.6 MtCo2 annually, a small but important component of this goal. The adaptation strategy included in India's NDC references the Mangroves for the Future initiative, coordinated by IUCN as a means to protect coastal livelihoods.[115]

The REDD+ mechanism developed by Parties to UNFCCC allows for the development of results-based finance schemes to encourage reduction of emissions from forested lands.[116] Participating countries implement measuring, reporting, and verification (MRV) to evaluate their forest carbon stocks, and receive payments for conserving and sustainably managing their forests.[117] This framework has largely not been applied to

109 Nellemann, C. et al. (Eds.) (2009). *Blue Carbon. A Rapid Response Assessment*. United Nations Environment Programme, GRID-Arendal.

110 Wilson, A., Meriwether, W. and Forsyth, C. (2018). Restoring near-shore marine ecosystems to enhance climate security for island ocean states. *Marine Policy* 93:284-294; Miththapala, S. (2008). *Mangroves. Coastal Ecosystems Series Volume 2*. Ecosystems and Livelihoods Group, Asia.

111 Feller, I. et al. (2017). The state of the world's mangroves in the 21st century under climate change. *Hydrobiologia* 803(1):1-12.

112 183 Parties have submitted NDCs, 13 have submitted NAPs and 51 have submitted NAPAs (175 countries have ratified the Paris Agreement, 197 Parties to the UNFCCC). http://www4.unfccc.int/ [Accessed 19 June 2019].

113 Mexico's first Intended Nationally Determined Contribution (submitted 21 September 2016); Failler, P. et al. (2015). Valuation of marine and coastal ecosystem services as a tool for conservation: The case of Martinique in the Caribbean. *Ecosystem Services* 11:67-75.

114 Madagascar's first Intended Nationally Determined Contribution (submitted 21 September 2016).

115 India's intended nationally determined contribution: working towards climate justice (submitted 2 October 2016). Section 2.4.

116 UNFCCC Decision 2/CP.13. Reducing emissions from deforestation in developing countries: approaches to stimulate action (14-15 December 2007); UNFCCC Decision 2/CP.17. Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (15 December 2009) para 64.

117 UNFCCC Decision 14/CP.19. Modalities for measuring, reporting and verifying (22 November 2013); UNFCCC Decision 9/CP.19. Work programme on results-based finance to progress the full implementation of the activities referred to in decision 1/CP.16, paragraph 70 (22 November 2013).

mangrove areas. In Kenya, the "Mikoko Pamoja" project to protect and restore mangrove ecosystems in Gazi Bay would sequester over 2,000 tonnes of carbon and provide $12,138 income from carbon credits per year.[118] However, this project is not within the REDD+ framework.

### 2.3.5 International water conventions

Mangroves are part of a larger freshwater system; some of the most serious threats to mangroves are from a reduction in the supply of freshwater or water pollution originating upstream.

The UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention) was adopted in 1992 to address transboundary impacts related to international watercourses. The Convention requires Parties to take appropriate measures to ensure conservation and restoration of ecosystems, and address pollution in relation to transboundary waters.[119] It requires Parties to cooperate "to develop harmonized policies, programmes and strategies" aimed at the protection of the environment influenced by transboundary waters, "including the marine environment."[120] It provides explicit guidance for states to "develop, adopt, implement and, as far as possible, render compatible relevant legal, administrative, economic, financial and technical measures" to ensure, *inter alia*, licensing or permitting of waste-water discharge, wastewater treatment, measures for the reduction of nutrient inputs, EIA, and promotion of the ecosystem approach for sustainable water resource management.[121] In 2013, the UNECE Water Convention was opened for accession by any UN Member State, but to date only two countries outside of Europe have become Parties.[122]

Between the adoption of the UNECE Convention and its amendment to allow global accession, the UN Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Watercourses Convention) was adopted in 1997 in New York. The UN Watercourses Convention promotes equitable and reasonable use of international watercourses, taking into account ecological and hydrological factors, as well as social and economic needs of watercourse states and local populations, and includes an obligation to "protect and preserve the marine environment."[123] It also provides for regular exchange of data and information, cooperation in management, and notification procedures for planned measures that might affect shared watercourses.[124] The UN Watercourses Convention entered into force in 2014, 17 years after its adoption.

Both the UN Watercourses Convention and the UNECE Water Convention have relatively low numbers of Parties.[125] The UNECE Water Convention is still seen largely as a European instrument. Both Conventions touch on issues that implicate sovereignty and potentially sensitive economic, social and political matters connected to water allocation. Both can still provide models and guidance on interpretation of the principle of reasonable and equitable utilization of water resources, recognized as an international legal requirement.[126]

Both agreements promote cooperation at a river or basin level through bilateral or multilateral agreements, or joint mechanisms and commissions. The UNECE Watercourses Convention creates a binding obligation to enter

---

118 The REDD desk. *Mikoko Pamoja Mangrove restoration in Gazi Bay*. https://theredddesk.org/countries/initiatives/mikoko-pamoja-mangrove-restoration-gazi-bay [Accessed 15 June 2019]; Iley, R. and Elvers, C. (2017). *Building trust in forest carbon payments (REDD+): Learning from the world of financial accounting*. Working Paper. Climate and Development Knowledge Network (CDKN).

119 UNECE Water Convention *supra* note 26. Article 2.

120 *Ibid.* Article 2(6).

121 *Ibid.* Article 3.

122 UNECE Water Convention Decision III/1. Reporting and review of implementation of the Protocol (6 February 2013); *See also,* Decision VI/3. Adoption of the workplan (6 February 2013) clarifying the accession procedure. As of June 2019, only two non-ECE countries have joined the Convention: Chad (accessed 22 February 2018) and Senegal (accessed 31 August 2018).

123 UN Watercourses Convention *supra* note 13. Article 5-6, 23.

124 *Ibid.* Article 9, 11-19, 24.

125 As of June 2019, the UNECE Water Convention was ratified by 43 countries and the UN Watercourses Convention was ratified by 36 countries.

126 *Gabcikovo-Nagymaros supra* note 27.

into these mechanisms, while the UN Water Convention does not.[127] Basin-level cooperation dates back to the establishment of the Rhine and Danube Commissions in the 19th Century.[128] Basin-level agreements create standards and promote cooperation along transboundary watercourses, which can have direct impacts for mangrove conservation, particularly where the threats are transboundary in nature. The Mekong Agreement, adopted in 1995, provides for maintenance of minimum flows and requires countries to make every effort to avoid, minimize and mitigate harmful environmental impacts in the Mekong River Basin.[129] However, China, a key upstream country, is not party to the agreement.[130]

### 2.3.6 Other instruments related to mangroves

Several other global instruments are relevant to mangrove conservation. The Convention on Migratory Species creates a framework for agreements among range states of migratory species, many of which depend on mangrove ecosystems for an essential habitat.[131] CITES includes in its Appendices species living in mangrove ecosystems, such as the mangrove hummingbird, the mangrove black hawk, and several species of reptiles.[132] To date it does not list any species of mangrove tree, though multiple species are listed on the IUCN Red List as endangered.[133] UNCLOS calls on states to protect and preserve the marine environment in zones under their jurisdiction, and to protect rare and fragile marine ecosystems.[134] Agreements such as the Aarhus Convention and Escazú Agreement establish procedural standards to support good governance which is essential to mangrove conservation and sustainable use (see Section 2.1.6).

Regional instruments are also relevant for mangrove conservation and sustainable use (Table 2).

Non-binding instruments and programmes provide guidance for sustainable use and conservation of mangroves. While there is no globally binding instrument on forests, internationally recognized forest principles outline priorities for sustainable use of forest products.[135] The United Nations Forest Instrument calls for national policies and programs to implement sustainable forest management following these principles.[136] Its implementation is supported by the International Arrangement on Forests, which aims to foster international cooperation and public-private partnerships on sustainable forest management objectives. The International Tropical Timber Organization, operating under the framework of the International Tropical Timber Agreement also undertakes work to support sustainable use and management of mangroves.[137]

The UNESCO Man and Biosphere Programme designates sites in the World Network of Biosphere Reserves – currently 88 of the 669 biosphere reserves include mangroves and 13% of the World Network is composed of mangroves.[138]

127 UNECE Water Convention *supra* note 26. Article 2(6); UN Watercourses Convention *supra* note 13. Article 8(2).

128 Caponera, D.A. (2007). *Principles of Water Law and Administration*. Brookfield: Rotterdam, Netherlands.

129 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (Mekong Agreement) (Chiang Rai, 5 April 1995). Article 5-7.

130 Paisley, R.K., Weiler, P. and Henshaw, T. (2016). *Transboundary Waters Governance Through the Prism of the Mekong River Basin*.

131 For example, the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA Convention) (Bonn, 16 June 1995) lists several migratory bird species found in mangroves in Annex 2; *see* Van Lavieren, et al. *supra* note 104. pp 38-39.

132 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Washington, 3 March 1979). Checklist of CITES Species, checklist.cites.org [Accessed 9 October 2018].

133 Endangered and critically endangered mangrove species include *Heritiera globosa*; *Camptostemon philippinense*, *Sonneratia griffithii*, *Bruguiera hainesii*. IUCN Red List. www.iucnredlist.org [Accessed 25 July 2019].

134 UNCLOS *supra* note 18. Article 192; 194.

135 Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all types of Forests, A/CONF.151/26 (Vol. III). Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, Annex III;

136 General Assembly resolution 62/98. Non-Legally Binding Instrument on All Types of Forests. A/RES/62/98 (17 December 2007). General Assembly resolution 70/199. United Nations forest instrument. A/RES/70/199 (22 December 2015).

137 International Tropical Timber Agreement (Geneva, 27 January 2006); ITTO 2019. *Mangroves*. https://www.itto.int/sustainable_forest_management/mangroves/ [Accessed 3 June 2019].

138 UNESCO. *Ecological Sciences for Sustainable Development - Mangroves*. http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/specific-ecosystems/mangroves/ [Accessed 12 August 2018].

The International Society for Mangrove Ecosystems (ISME), an international non-profit and non-governmental scientific society, drafted the Charter for Mangroves at its first meeting in 1991.[139] The Charter for Mangroves complements the United Nations World Charter for Nature with specific guidance for the conservation of mangroves.[140]

In 2003, the World Bank, ISME, and the Centre for Tropical Ecosystems Research published a draft code of conduct for the management and sustainable use of mangrove ecosystems. The Code contains guidelines, principles, and recommended practices that apply to the conservation and management of mangroves, helping relevant stakeholders to sustainably use these sensitive ecosystems. It details a number of best practices from fisheries and forestry to community issues and the precautionary approach, and provides examples from a wide range of countries. Article 3 stipulates that "States should ensure that effective policy, legal, institutional and administrative frameworks are developed at the local, national and transboundary levels, as appropriate, to support mangrove management." The other

**Table 2:** Selected regional instruments relevant to mangroves

| Instrument | Region (Parties) | Description |
|---|---|---|
| African Convention on The Conservation of Nature and Natural Resources (1968) | Africa (32 Parties) | Provides for the conservation and protection of forests. |
| Nairobi Convention for the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern African Region (1997, amended 2010) | Western Indian Ocean (10 Parties) | Provides guidance for the protection of the marine and coastal environment, particularly on combating pollution. |
| Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention) (1984) | West and Central African (17 Pparties) | Provides guidance on tackling pollution, reducing of coastal erosion, and creating protected areas. |
| The Convention for the Protection of the Natural Resources and Environment of the South Pacific Region, (Nouméa Convention) (1986) | South Pacific (12 Parties) | Framework for addressing marine pollution, protecting wild fauna and flora, and establishing protected areas. |
| Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1942) | Latin America, North America and the Caribbean (19 Parties) | Aims to protect all species of flora and fauna and their habitats, as well as other sites of high value, particularly through protected areas. |
| Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) (1983) | Gulf of Mexico, Caribbean Sea and adjacent Atlantic Ocean (25 Parties) | Requires countries to protect and preserve fragile ecosystems and endangered species' habitats and to address marine pollution. |
| Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (1986). | South-East Pacific (5 Parties) | Seeks to protect the marine environment and coastal zones within the EEZ of its Parties. |
| Charte et Plan d'actions pour une gestion durable des mangroves dans l'espace Programme Régional de Conservation de la zone Marine et Côtière de l'Afrique de l'Ouest (2010) | West Africa (6 Parties) | Contains specific and detailed action plans that each country will have to implement to address mangrove degradation. |

139 The International Society for Mangrove Ecosystems. (1991). *Charter for Mangroves*. Bangkok.

140 General Assembly resolution 37/7. World Charter for Nature. A/RES/37/7 (28 October 1982).


paragraphs in the article develop the necessity of clear responsibilities, appropriate zoning, concrete targets and EIA.[141]

## 2.4 International law in practice

Mangroves form part of forest, freshwater, wetland, and marine ecosystems, and correspondingly implicate a range of international and regional instruments, principles and concepts. International tools and standards can only be used for mangrove conservation if appropriately implemented in national law. In Pakistan, reporting obligations of international conventions stimulated collection of more data, which helped raise awareness and inform policy development (Chapter 8). In fulfillment of its obligations under the Nairobi Convention, Tanzania developed a National Integrated Coastal Environment Management Strategy, which led to the Rufiji Environment Management Project and Mangrove Management Project (Chapter 9). However, **many countries have not fully domesticated their international commitments in national legal frameworks**. For example, Mozambique has ratified most of the main Multilateral Environmental Agreements (MEAs), but many obligations have not been implemented in law or practice (Chapter 7).

In some cases, national legislation incorporates international law by reference and gives the relevant Minister authority to take steps to implement international obligations directly. For example, forest law and wildlife law in Kenya provide that the Cabinet Secretary may make regulations to ensure compliance with international instruments, conventions and agreements. Such provisions can be used to implement international obligations through regulation or subsidiary legislation, which can be faster and easier to adopt (Chapter 5).

141 Macintosh, D.J. and Ashton, E.C. (2003). *Draft code of conduct for sustainable management of mangrove forest ecosystems*.

3

# NATIONAL LEGAL FRAMEWORKS

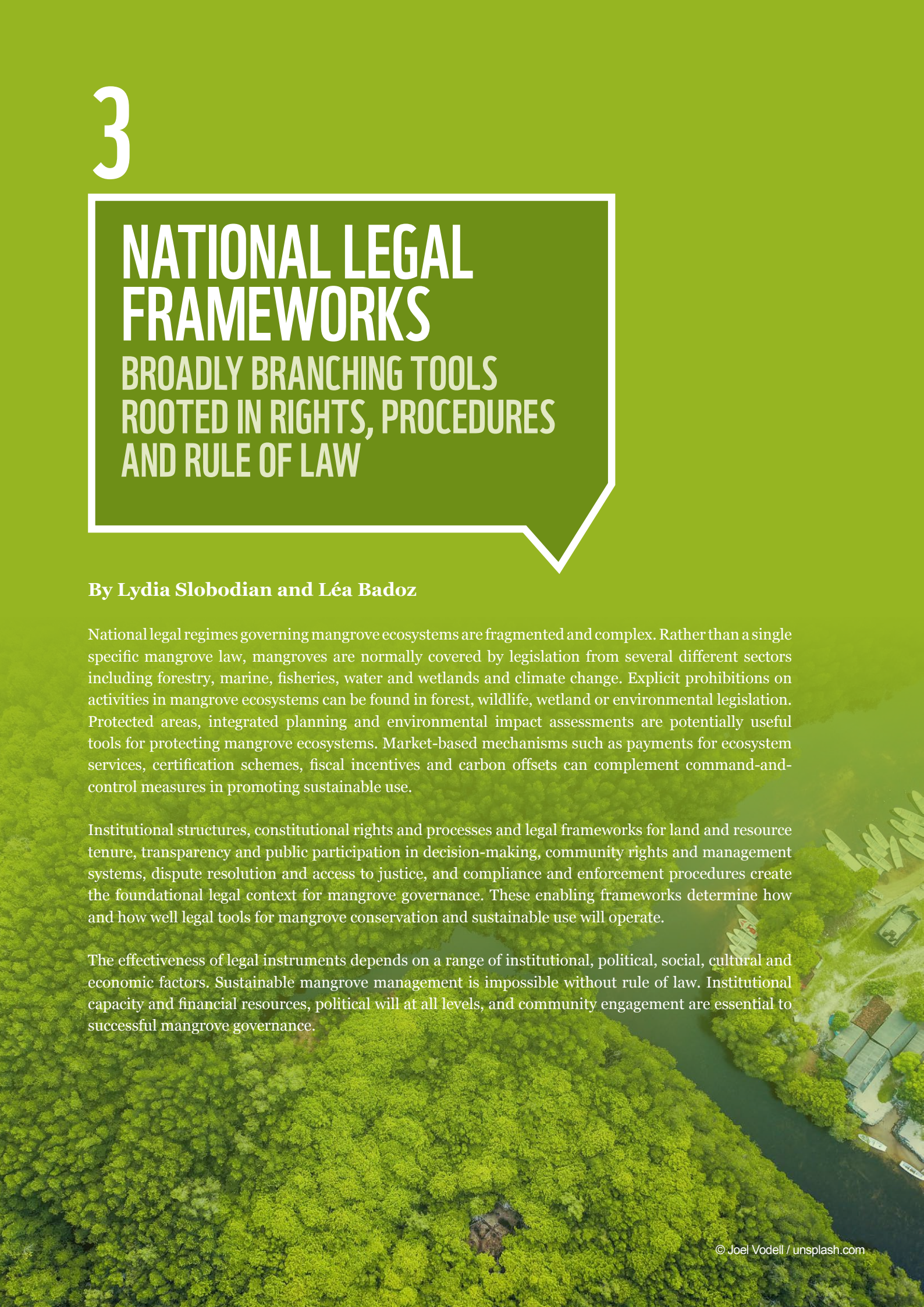
## BROADLY BRANCHING TOOLS ROOTED IN RIGHTS, PROCEDURES AND RULE OF LAW

**By Lydia Slobodian and Léa Badoz**

National legal regimes governing mangrove ecosystems are fragmented and complex. Rather than a single specific mangrove law, mangroves are normally covered by legislation from several different sectors including forestry, marine, fisheries, water and wetlands and climate change. Explicit prohibitions on activities in mangrove ecosystems can be found in forest, wildlife, wetland or environmental legislation. Protected areas, integrated planning and environmental impact assessments are potentially useful tools for protecting mangrove ecosystems. Market-based mechanisms such as payments for ecosystem services, certification schemes, fiscal incentives and carbon offsets can complement command-and-control measures in promoting sustainable use.

Institutional structures, constitutional rights and processes and legal frameworks for land and resource tenure, transparency and public participation in decision-making, community rights and management systems, dispute resolution and access to justice, and compliance and enforcement procedures create the foundational legal context for mangrove governance. These enabling frameworks determine how and how well legal tools for mangrove conservation and sustainable use will operate.

The effectiveness of legal instruments depends on a range of institutional, political, social, cultural and economic factors. Sustainable mangrove management is impossible without rule of law. Institutional capacity and financial resources, political will at all levels, and community engagement are essential to successful mangrove governance.



# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **BN-CCCREDD+** | National Office for Climate Change, Carbon and Reduction of Emissions from Deforestation and Degradation of Forests |
| **CAA** | Coastal Aquaculture Authority |
| **CBD** | Convention on Biological Diversity |
| **CIME** | Inter-Ministerial Environment Committee |
| **CNGIZC** | National Committee for Integrated Coastal Zone Management |
| **CONDES** | National Council for Sustainable Development |
| **EIA** | Environmental Impact Assessment |
| **EMCA** | Environmental management and Coordination Act |
| **ICCA** | Indigenous and Community Conserved Areas |
| **ICZM** | Integrated Coastal Zone Management |
| **MARD** | Ministry of Agriculture and Rural Development |
| **MONRE** | Ministry of Environment and Natural Resources |
| **NDC** | Nationally Determined Contribution |
| **NGO** | Non-Governmental Organisation |
| **PES** | Payments for Ecosystem Services |
| **PFES** | Payments for Forest Ecosystem Services |

At the intersection of land and ocean, freshwater and forest, mangroves are subject to uses and threats from many different sectors and sources. Mangrove resources and services are both nationally significant and essential to local communities. This complexity is reflected in the multitude of legal tools and frameworks that determine, affect, or implicate mangrove conservation and sustainable use.

Increasingly, countries explicitly address mangroves in national policies, targets and legal provisions, but most countries do not have a single mangrove law. Legal instruments from different sectors provide mechanisms for regulating activities that affect mangrove ecosystems – whether they take place within or outside mangrove areas – as well as basic institutional and procedural frameworks that structure and determine mangrove governance.

This chapter provides an overview of legal options for mangrove conservation and sustainable use, including prohibitions on activities in or affecting mangroves as well as permitting and planning requirements, market-based mechanisms, protected areas, and a range of sectoral tools. It describes governance frameworks that are relevant for mangrove conservation, addressing institutional structures, land tenure, rule of law safeguards, community management arrangements, dispute resolution and compliance measures. It concludes by exploring the reality of implementing legal tools and frameworks, including a range of cross-cutting challenges.

## 3.1 Tools and approaches

There are many legal tools available for conservation of mangroves, which can generally be categorized as area-based, species-based and activity-based. Area-based tools include protected areas networks and designation of sensitive areas or reserves as well as spatial planning and community management measures. Species-based tools encompass prohibitions on cutting, harvesting, hunting or otherwise taking of specific species as well as regulations on trade and protection of habitat. Activity-based tools address specific uses or threats through permitting and environmental impact assessment requirements as well as restrictions and bans. Approaches in each of these categories can involve command-and-control measures that rely on enforcement of stipulated rules or market-based mechanisms that create economic enabling conditions and incentives.

Legal tools related to mangroves may be found in different types and levels of law and regulation, and may incorporate and build on international principles, standards and processes (Chapter 2). Frameworks and rules can be created by legislation, regulations or executive decrees, judicial decision-making, or customary or religious law. Laws and institutions at national, provincial or local levels are relevant. Similar types of tools may be found in different instruments: regulation of forest uses may be embedded in a forest law in one country and a protected area law in another, while EIA requirements and procedures may be part of standalone regulations or sectoral frameworks. Different rules may apply in different parts of a country based on geography, ecosystem, or jurisdiction.

### 3.1.1 Direct protection of mangroves

Most countries do not have a special mangrove law, but there several examples of legal provisions explicitly aimed at protecting mangrove ecosystems. Often these employ protected status or classification for mangrove ecosystems, coupled with a ban on certain activities within or affecting mangroves. Such provisions can appear in framework environmental laws or in sectoral legislation on forests, fisheries or wetlands, among others.

Explicit protections are often partial or sector-specific. In Costa Rica, mangroves are considered part of the National Natural Heritage, which cannot be privately owned. Mangrove forest resources are protected from conversion, cutting, or use, except for the purposes of research, education or ecotourism and can be used only with prior approval from the Ministry of Environment and Energy. However, the use of aquatic resources

in mangroves can be allowed according to an approved management plan (Chapter 4).

In Mexico, it is forbidden to remove, fill, transplant, cut down, or do any work that affects the hydrological flow of mangroves or connected ecosystems. However, non-extractive activities may be allowed with prior authorization, following an EIA.[1] In 2016, in Cancun, significant mangrove forests were destroyed to build a resort, with government authorization. Legal proceedings contesting this decision are ongoing.[2] Meanwhile, reports assert that the legal framework protecting mangroves has led to the establishment of shrimp farms on saltmarshes.[3]

**Restrictions on activities that affect mangroves create problems if they lack public support or interfere with local livelihoods.** In Madagascar, where 90% of people depend on biomass as their main energy source, cutting mangroves for charcoal is rampant, and illegal. Certain non-governmental organisations (NGOs), are pushing for legalization for selective cutting and community-based sustainable management of mangrove forests. Otherwise, the prohibition on harvesting mangroves for charcoal may force charcoal harvesters into terrestrial forests to meet their demands.[4]

To address this, countries often allow subsistence use of mangroves by local communities; what is meant by "subsistence" is defined in the laws of each country according to its own circumstances. In Mozambique, communities may use mangrove wood for building boats and homes, or catch mangrove crab for their own consumption, on the condition that the harvested products must stay in the area where they were harvested. In practice, this exception can open the door to smuggling (Chapter 7).

Broad prohibition of activities in mangrove areas can also affect restoration efforts. In Thailand, it is illegal to bring heavy machinery into mangroves, so restoring hydrological flows can mean breaking down dykes by hand.[5] In other countries, restoration can be a requirement under laws connected to direct protection. In Haiti, a ministerial decree adopted in 2013 established a ban on construction, cutting, and fishing in mangrove forests, and required restoration of mangroves within 5 years.[6]

### 3.1.2 Planning, permitting and EIAs

Activities in or affecting mangroves can be regulated to ensure sustainability through a planning process and/or a system of permits that takes conservation into account. To be successful, such a system needs to be designed according to the principles of participation, access to information, and access to justice, prerequisites for transparency and legitimacy (Chapter 2). Where harm is unavoidable, offsets can be used to compensate, but only as a last resort.

#### 3.1.2.1 Sectoral and integrated planning

Planning is a fundamental tool for managing natural resources at different governance levels, and it is often sector specific. Within a single country there can be processes for agricultural planning, land use planning, coastal zone planning, freshwater planning, and protected area and environmental planning. National and sub-

1 *Ley General de Vida Silvestre* of 3 July 2000 (amended 19 January 2018). Article 60 TER, 99. Elaborated through the Official Mexican Standard NOM-022-SEMARNAT-2003, which establishes specific provisions for the preservation, conservation, sustainable use, and restoration of coastal wetlands in mangrove zones.

2 Varillas, A. (27 August 2018). *Confronta a ciudadanos bloqueo de accesos a malecón de Tajamar*. http://www.eluniversal.com.mx/estados/confronta-ciudadanos-bloqueo-de-accesos-malecon-de-tajamar [Accessed 19 September 2018].

3 Berlanga-Robles, C.A. et al. (2011). Impact of Shrimp Farming on Mangrove Forest and Other Coastal Wetlands: The Case of Mexico. *InTech* 17-28.

4 Minten, B. et al. (2012). Forest management and economic rents: Evidence from the charcoal trade in Madagascar. *Energy for Sustainable Development* 17(2):106-115; Interview with Jen Hacking from Blue Ventures Madagascar, 27 April 2017.

5 The Thaiger (24 May 2012). *Phuket lifestyle: Saving Thailand's mangroves*. https://thethaiger.com/thai-life/phuket-lifestyle-saving-thailands-mangroves [Accessed 6 August 2018].

6 *Arrêté Ministériel interdisant l'exploitation des mangroves* of 10 July 2013.

national development plans or environmental plans can cut across sectors.[7]

In Costa Rica, mangroves are considered to be part of the public area of the maritime terrestrial zone, where exceptionally public projects could be approved by the Ministry of Public Works and Transport, the Costa Rican Institute of Tourism, and the National Institute of Housing and Urbanism. The use of forest resources in mangroves also requires prior approval by the Ministry of Environment and Energy, including an EIA as appropriate. Fishing activities are subject to a management plan approved by the Ministry of Environment and Energy and the Costa Rican Institute for Fisheries and Aquaculture (Chapter 4).

Integrated planning is a tool to mainstream conservation and biodiversity across sectors. In India, the National Biodiversity Act provides for the Central Government to "integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies."[8] In wetlands, the State or Union Wetlands Authority should "coordinate implementation of integrated management plans based on wise use principles through various line departments and other concerned agencies."[9] The Kenyan EMCA provides for development of "an overall environmental management plan for a lake, river, wetland or coastal area, taking into account the relevant sectoral interest" (Chapter 5).[10]

Planning can take place at different levels of government. In India, District Planning Committees consolidate plans prepared by Panchayats and Municipalities into district development plans, while Metropolitan Planning Committees elaborate development plans for metropolitan areas; both district and metropolitan plans should consider coordinated spatial planning, sharing of water and other natural resources, and environmental conservation.[11]

**The implementation of legislation related to development and land use planning often does not prioritize conservation uses, and may discount the value of carbon sequestration, coastal protection and other ecosystem services as well as intrinsic and cultural worth.** High-value competing land uses, such as palm oil, aquaculture, or charcoal, are often seen as a better use of resources, at least in the short term. Proponents of such land uses may have political power over planning processes at a national or local level. Some countries have intentionally reversed this in their policies. Madagascar has made the inclusion of natural capital assets into economic and social development planning processes a priority in its National Development Plan.[12]

Planning processes can be coupled with an inventory of the ecosystem or resource, which serves as a baseline. In Kenya, the Environmental Management and Coordination Act (EMCA) requires development of an inventory of the coastal zone, which should contain "an inventory of the state of the coral reefs, mangroves and marshes" and preparation of an integrated national coastal zone management plan (Chapter 5).[13]

### 3.1.2.2 Permitting and Environmental Impact Assessments

Many countries require authorization for activities within or affecting mangrove ecosystems, subject to an EIA. These requirements can apply to activities involving use of mangroves resources, such as fishing or harvesting; activities that entail destruction of mangroves, such as clearing land for development; or activities with incidental impacts on mangroves, such as pollution. Permitting

7 Lausche, B. (2019). *Integrated Planning: policy and law tools for biodiversity conservation and climate change*. IUCN, Gland, Switzerland.

8 The Biological Diversity Act of 5 February 2003. Section 36(3).

9 Wetlands (Conservation and Management) Rules of 26 September 2017. Section 5(4)(l).

10 The Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 42(3).

11 The Constitution of India of 26 November 1949. Article 243ZD.

12 Ministère de l'économie et de la planification (2015). *Plan national de développement 2015-2019*. Section 1.1.2; IUCN and Blue Ventures (2016). *National Blue Carbon Policy Assessment*. IUCN, Gland, Switzerland. Pg. 28.

13 EMCA, *supra* note 10, Section 55.


and EIA requirements are often strengthened in protected areas (see Section 3.1.3).

Madagascar requires an environmental authorization or an environmental impact study for any public or private investment in activities which may harm the environment (Chapter 6). In Mexico, Environmental Impact Authorization is specifically required for activities in wetlands, mangroves, lagoons, rivers, lakes, and estuaries connected to the sea, as well as developments that affect coastal ecosystems and activities in protected areas. [14]

In Malaysia, EIAs are required for:

> Land-based aquaculture projects accompanied by clearing of mangrove forest…Conversion of an area of mangrove forest…for industrial, housing or agricultural use…Clearing of mangrove forest…on islands adjacent to any national marine park.[15]

Under Kenyan law, EIAs are mandatory prior to permitting of activities relating to rivers and wetlands, as well as mining activities and other activities on a list that can be amended by the Minister. Any licence issued prior to approval of an EIA study for a project is unlawful. EIAs are prepared by registered experts and conducted according to extensive regulations, and when an EIA licence is issued, it includes an environmental management plan with standards to be satisfied by the licence. Regular self audits by proponents and control audits by the National Environment Management Agency are provided for to ensure compliance with the plan (Chapter 5).

In some cases, permit requirements overlap. **In Tanzania, mangroves can be classified as both forest reserves and wetland reserves, meaning the same activities may need permits from both the Forest Department and the Wildlife Director** (Chapter 9). In Costa Rica, permits are required

14 *Ley General del Equilibrio Ecológico y la Protección al Ambiente* of 28 January 1988. Article 28.

15 The Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 of 5 August 2015. Section 3(1), First Schedule; *See also* Shukor, A.H. (2004). The use of mangroves in Malaysia, in *Promotion of mangrove-friendly shrimp aquaculture in Southeast Asia* 136-144. Tigbauan, Iloilo, Philippines: Aquaculture Department, Southeast Asian Fisheries Development Center.

for most activities in mangrove areas, including degraded areas (Chapter 4). Obtaining a permit for restoration activities is a slow process which requires applications to multiple departments and can cause long delays for restoration projects.[16]

### 3.1.2.3 Environmental offsets

Balancing commercial uses with conservation needs can involve offsetting requirements stating that any mangroves destroyed must be replaced by mangroves planted elsewhere. These can be included in permits or concession agreements, or applied through national legal tools.

Offsetting should only be used in accordance with the mitigation hierarchy, which comprises:

- **Avoidance**: measures taken to completely prevent impacts on biodiversity, such as careful planning and location of activities or infrastructure;
- **Minimisation**: measures taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided, such as use of best available technology to limit pollution;
- **Rehabilitation/restoration**: measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be avoided and/or minimized, such as replanting of converted forests;
- **Compensation or offset:** measures taken to compensate for residual impacts that cannot be avoided, minimized and/or rehabilitated or restored, such as restoration of degraded habitat, arrested degradation or averted risk to achieve no net loss or net gain of biodiversity.[17]

The mitigation hierarchy should be embedded in planning processes and the landscape/seascape level, and should be applied as early as possible in the project life cycle. **Offsetting should only be considered after all alternatives have been considered under the three previous stages in the mitigation hierarchy**. The purpose of offsets should always be to achieve no net loss or preferably net gain, meaning that additional benefits to mangrove ecosystems from compensatory measures should equal or exceed harm caused by the project. Offsetting approaches should be science-based, transparent and participatory and consider impacts on livelihoods.[18]

In Mozambique, if mangrove areas are cut down for aquaculture purposes, operators must compensate by planting areas of corresponding sizes (Chapter 7). In Vietnam, any harvested area of a protected forest must be replanted (Chapter 10).

Replanting requirements can help balance the damage done by necessary human use, but they can also provide a false sense that no harm has been caused. Mature mangrove forests are better than replanted forests in terms of ecosystem services and biodiversity value, and it can take decades for a newly planted forest to catch up.[19] In its Fifth National Report to the Convention on Biological Diversity (CBD), Vietnam recognized that planted forests have "a lower value in terms of biodiversity" than primary forests.[20] In that country, primary mangrove forests are rare; most of the mangrove forests in the country are monoculture plantations (Chapter 10).

## 3.1.3 Protected areas

Protected areas are among the oldest and most familiar forms of biodiversity management, and a common means to protect mangrove forests in many countries. The proportion of mangrove forests located within protected areas has been

16 Interview with Luis Carlos Solis, OSA Conservation, Costa Rica, 6 October 2017.

17 IUCN Policy on Biodivesity Offsets, WCC-2016-Res-059-EN.

18 *Ibid.*

19 Gibson, L.P. et al. (2011). Primary forests are irreplaceable for sustaining tropical biodiversity. *Nature* 478(7369):378–381.

20 Ministry of natural resources and environment (2014). *Vietnam's Fifth National Report to the United Nations Convention on Biological Diversity, Reporting period 2009-2013.* "Forest coverage is observed to be expanding, this is mainly due to an increase in planted forests, which has a lower value in terms of biodiversity, and in addition the area of natural forests with higher-level biodiversity values".

**Table 3:** IUCN Protected Area Categories

| Category | Description |
|---|---|
| Ia Strict Nature Reserve | Strictly protected for biodiversity and possibly geological/ geomorphological features, where human visitation, use, and impact are controlled and limited to ensure protection of the conservation values. |
| Ib Wilderness area | Usually largely unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition. |
| II National park | Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational, and visitor opportunities. |
| III Natural monument or feature | Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove. |
| IV Habitat/species management area | Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement for this category. |
| V Protected landscape/ seascape | Where the interaction between people and nature over time has produced a distinct character with significant ecological, biological, cultural, and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values. |
| VI Protected area with sustainable use of natural resources | Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management, and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims. |

estimated from as little as 7% to as much as 36% of the total mangroves worldwide.[21]

IUCN defines a protected area as:

> A clearly defined geographical space recognized, dedicated and managed, through legal and other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.[22]

A protected area can be compatible with sustainable use where it does not undermine the conservation objectives of the area. IUCN has defined a set of categories of protected areas according to their primary management objectives (Table 3). The names used for the different types of protected areas vary widely between countries, but nearly every country recognizes multiple types of protected area within their national protected area systems.[23]

Not every protected area is governed by the State. IUCN describes four types of protected area governance based on who has primary authority and control over decision-making:

- **Governance by government:** Describes national, provincial, and locally owned or controlled protected areas.
- **Governance by indigenous peoples or local communities:** Describes indigenous and community conserved areas (ICCAs).
- **Governance by private entities**: Describes areas governed by an individual owner, non-profit organization, or for-profit organization for the primary purpose of conservation.

21 Webber, M. et al. (2016). *Mangroves*. Oceans & Law of the Sea: United Nations (6.9%); Spalding, M. et al. (2014). *Attaining Aichi Target 11: How well are marine ecosystem services covered by protected areas?*. Discussion Paper prepared for the World Parks Congress, Sydney (36%); Van Lavieren, H., et al. (2012). *Securing the future of mangroves*. UNU-INWEH, UNESCO-MAB with ISME, ITTO, FAO, UNEP-WCMC and TNC (25%).

22 Dudley, N. (2008). *Guidelines for applying protected area management categories*. IUCN, Gland, Switzerland. 86pp.

23 Lausche, B. (2011). *Guidelines for Protected Areas Legislation*. IUCN, Gland, Switzerland.

- **Shared governance**: Describes areas jointly governed by diverse rightsholders and stakeholders.[24]

Mangroves may be included in different types of protected area with different governance arrangements, depending on the protected area's laws and frameworks for land, resource tenure, and rights. Special designations can be created under forest laws or national heritage laws, in addition to protected areas laws. While these areas may not always meet the formal definition of protected area they are still important tools for conservation.

Mangroves may be subject to protection under multiple designations in the same country. In India, mangroves can be classified as forest reserves or protected forests under the Forest Act, Wildlife Sanctuaries or National Parks under the Wildlife Act, or Biodiversity Heritage Sites under the National Biodiversity Act, each with different sets of requirements and restrictions.[25] While no mangrove site is currently listed as biodiversity heritage site, there are news reports stating that mangrove forests in Kerala and Kochi are under consideration for recognition.[26]

In most countries, protected areas are managed according to a management plan developed by the protected area authority or authorities, typically through a consultative process. The management plan lays out objectives for conservation as well as what activities should be allowed, permitted, or prohibited in the protected area as a whole or in different zones.[27]

To be effective, protected areas should be committed for the long term, preferably in perpetuity. Degazettement or declassification of protected areas threatens their biodiversity value and undercuts the conservation system. National legislation can help avoid this by making it more difficult to remove protections. [28] In Costa Rica, wetlands declared protected areas may only be downgraded by legislation, not by executive decree, and this downgrading must be justified by technical studies (Chapter 4). In India, alteration of a sanctuary or national park's boundaries requires a resolution passed by the State legislature.[29]

### 3.1.4 Sectoral regulations

Mangroves are a type of forest and a type of wetland, part of the marine and coastal environment, and part of freshwater systems. Where national legislation is organized by sector, this can create complexity in understanding and implementing laws in the context of mangroves. Sectoral laws are often not designed with mangroves in mind and may be implemented with a focus on other ecosystems within their scope. Even where mangroves are covered by more legal instruments than other ecosystems, they may still fall through the gaps.

#### 3.1.4.1 Forest law

Forest Law can create special types of forest, which may be considered a form of protected area or subject to special restrictions or processes. Vietnam classifies forests into special use forests, protection forests, and production forests. Protection forests, which make up the majority of mangrove forests, allow some commercial use, but should be managed for the protection of watersheds and ecosystem services. Production forests, which constitute almost one-third of mangrove forests, are intended for commercial use, while the smallest category, special use forests, are strictly protected and include national

24 Borrini-Feyerabend, G. et al. (2013). *Governance of Protected Areas: From understanding to action*. IUCN, Gland, Switzerland.

25 Indian Forest Act of 21 September 1927. Section 3, 26 (forest reserves); 29 (protected forests). Indian Wildlife (Protection) Act of 9 September 1972. Section 18 et seq. (wildlife sanctuaries); 35 (national parks). *See also* DasGupta, R. and Shaw, R. (2013). Changing perspectives of mangrove management in India: An analytical overview. *Ocean and Coastal Management* 80:107-118.

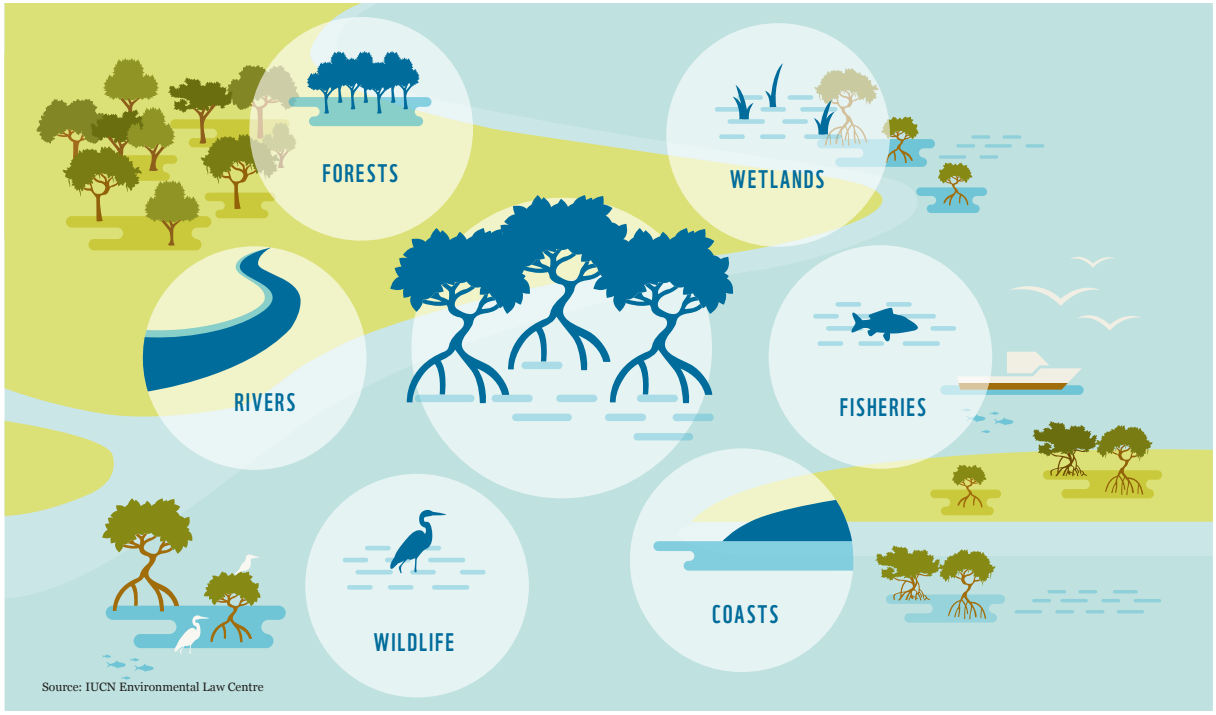
26 Sham, M. (24 July 2017). *Ashramam first biodiversity heritage site*. https://www.deccanchronicle.com/nation/in-other-news/240717/ashramam-first-biodiversity-heritage-site.html [Accessed 6 August 2018]; Nandakumar, T. (3 August 2017). *State to get three new biodiversity heritage sites*. http://www.thehindu.com/news/national/kerala/state-to-get-three-new-biodiversity-heritage-sites/article19418899.ece [Accessed 6 August 2018].

27 Lausche, B. *supra* note 23.

28 *Ibid*. Pp. 17-18.

29 Indian Wildlife Act *supra* note 25. Section 26A, 35.

**Figure 4:** Mangroves at the intersection of ecosystems and legal frameworks




parks, nature conservation zones, and landscape protection areas (Chapter 10).

In some countries, all forests are subject to special legal conditions. In Madagascar, mangroves fall within sustainable forest management regimes, under which clearing and burning are offences punishable by fines or imprisonment (Chapter 6).

In Pakistan, the Forest Law provides for the creation of protected forests, but to date, only one of the two provinces where mangroves are situated has declared mangrove protected forests (Chapter 8). In Kenya, mangroves obtained the legal status of government reserve forests in 1932, and in 1964, specific mangrove forests were listed in the gazette. They are now classified as public forests, in which no cutting, grazing, removal of forest produce, hunting, or fishing are allowed. However, a forest community or traditional user may make an application for special use (Chapter 5).

Reserve forests in India are constituted by the State Government; in these forests all clearing is prohibited, and the State can make rules for fishing and other uses. The State can also decide to apply protections to all forests over which it has rights, termed protected forests. It may assign rights over a reserve forest to a village community. In these village forests, the State Government makes rules describing the conditions according to which the community may use forest resources and the duties of the community to protect the forest.[30]

Forest legislation can create protections for specific species of trees. In Kenya, the Cabinet Secretary for forestry may declare any tree, species, or family of tree as protected in the whole country. Any person who cuts down, damages, or removes a protected tree is committing an offence. All ten species of mangroves found in Kenya are currently listed as protected trees (Chapter 5).

### 3.1.4.2 Marine and coastal law

Many countries provide legal frameworks for integrated coastal zone management (ICZM). The frameworks can cover surveying and assessment of coastal ecosystems, as well as integrated management planning involving multiple relevant agencies (see Section 3.1.2.1). National legislation can also create specific protections for coastal zones.

30 Indian Forest Act *supra* note 25. Section 3, 26, 28, 29.

In Madagascar, the decree on the integrated management of coastal and marine areas states that "in the coastal and marine area, environmental concerns must be systematically integrated into all other policies, including agriculture, forestry, energy, industry, tourism, fisheries, aquaculture, transport, human settlements development, other works and water management."[31] It also states that plans and development plans should specify the limits of the coastal zone and the conditions for the allocation and use of land and sea areas (Chapter 6).

In Costa Rica, all mangroves, even those located far from the coast, are considered part of the Maritime Terrestrial Zone and reserved for public use (Chapter 4). In India, mangroves fall within the Coastal Regulation Zone, where land reclamation, discharge of untreated waste, mining, and setting up of new industries are prohibited. New construction in mangrove areas is prohibited except in accordance with specific exceptions, such as construction of public utilities for traditional inhabitants of the Sundarban Biosphere Reserve area.[32]

Marine and fisheries legislation can also prove relevant for mangroves through the regulation of fishing activities allowed within mangrove areas, as well as restrictions on aquaculture (see Section 3.1.4.4). The Mexican General Law of Sustainable Fisheries and Aquaculture provides principles for the formulation of policy to restore coastal and aquatic ecosystems, and ensure that exploitation of fishery and aquaculture resources is compatible with their natural capacity for recovery.[33]

### 3.1.4.3 Water and wetlands law

Water and wetland-related legislation is relevant for mangroves on two fronts: 1) mangroves are often considered a type of wetland, and subject to the same rules and protections; and 2) activities relating to freshwater sources upstream from mangroves can cause significant damage to mangrove ecosystems, through pollution or interference with hydrological flows.

In Kenya, mangroves are considered wetlands, which "shall be utilized in a sustainable manner compatible with the continued presence of wetlands and their hydrological, ecological, social and economic functions and services."[34] Many activities in or affecting rivers, lakes, and wetlands require a permit issued following an EIA. These include building, altering, or demolishing any structure or draining or redirecting any river, lake, or wetland (Chapter 5).

In Costa Rica, mangroves fall within the legal concept of wetland. A series of resolutions from the Constitutional Chamber of the Supreme Court of Justice has reinforced this concept and determined that all wetlands are public interest and legally protected (Chapter 4).

Wetland Law, like Forest Law, can provide for special categories of area subject to special protection. In Tanzania, wetlands can be included in national parks, forest reserves, and other categories within the protected area network, but they are also subject to special restrictions on cutting, hunting, and grazing of livestock based on their status as wetland reserves (Chapter 9).

Water Law can help protect mangroves from pollution. The Indian Water Act provides for the regulation of water pollution according to standards determined by the State Board.[35] In Mexico, the National Waters Law addresses the preservation of wetlands affected by national water flow regimes.[36] In Kenya, a permit is required for discharge of pollutants or potentially harmful substances into a river, lake, or wetland (Chapter 5).

---

31 *Décret* No. 2010-137 of 23 March 2010 *portant réglementation de la gestion intégrée des zones côtières et marines de Madagascar*. Article 11.

32 Coastal Regulation Zone Notification of 6 January 2011. Section 7(i)(A)(a), 8(I).

33 *Ley general de pesca y acuacultura sustentables* of 24 July 2007. Article 17.

34 Environmental Management and Co-ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulation, of 2009. Section 5(1)(a).

35 The Indian Water (Prevention and Control of Pollution) Act of 23 March 1974. Section 17(1).

36 *Ley de Aguas Nacionales* of 1 December 1992. Article 86 Bis 1.

### 3.1.4.4 Aquaculture and fisheries

Aquaculture is one of the most serious and widely recognized threats to mangrove conservation. Many countries have responded with legal provisions regulating or prohibiting aquaculture activities that threaten mangrove ecosystems. Fisheries laws can protect mangroves as important habitats.

The Fisheries Code of the Philippines states: "It shall be unlawful for any person to convert mangroves into fishponds or for any other purpose."[37] Illegal conversion of mangroves is punishable by 6-12 years in prison, or a fine of 80,000 pesos, and orders for restoration.[38] In Ecuador, the destruction or alteration of mangroves during fishing activities is prohibited.[39] Applicants for authorization to set up aquaculture facilities must provide certification that the project area does not include mangroves.[40]

In 1996, the Supreme Court of India held that,

> The agricultural lands, salt pan lands, mangroves, wet lands, forest lands, land for village common purpose and the land meant for public purposes shall not be used/ converted for construction of shrimp culture ponds.[41]

Prevention of this conversion is one of the functions of the Coastal Aquaculture Authority.[42] Certain Indian States, such as Tamil Nadu, have adopted bans on shrimp aquaculture in mangrove areas.[43]

Some countries regulate aquaculture in mangrove areas, but fall short of a total ban. In Costa Rica, construction of canals in mangrove areas, though otherwise prohibited, is allowed in the case of aquaculture projects that have a technical justification and were authorized prior to the enactment of the Forestry Law (Chapter 4). Vietnam has issued a number of laws, regulations, and polices on land tenure, use rights and benefit sharing that apply to farmers who have shrimp-based livelihoods. It is prohibited to destroy mangrove forests for aquaculture activities, subject to fines up to approximately 4,400 USD. Where mangrove forests are used for combined aquaculture production, at least 60% of the area must be covered in trees (Chapter 10).

Many fishponds are abandoned, creating opportunities for restoration. In the Philippines, the Fisheries Code specifies that abandoned, undeveloped, or unused fishponds should be immediately restored to their original mangrove state.[44] In some countries, there can be legal obstacles to the restoration of abandoned fishponds, relating to questions of ownership and tenure as well as restrictions on activities in mangrove areas (see Section 3.2.3).

Given the continued high-profit potential of shrimp farming, even where strict legal regulations on the conversion of mangroves for aquaculture exist, they may not be well enforced. In Xuan Thuy National Park in Vietnam, land conversion to aquaculture is one of the most common violations of environmental regulations, caused by a dense local population and limited alternative livelihood opportunities. In Vietnam, aquaculture has high potential returns, but also high risk, and is seen as one of the main drivers of socio-economic inequality. There is evidence that local political elites facilitate aquaculture operations through their relatives and well-connected households, and suspend regulations and penalties for unsustainable activities (Chapter 10).

---

37 The Philippine Fisheries Code of 1998 of 25 February 1998. Section 94.

38 *Ibid.*; Howarth, W. et al. (2001). *Legislation governing shrimp aquaculture - legal issues, national experiences and options.* FAO, Rome, Italy; Ramos, G.E. and Osorio, R.L.E. (2013). REDD+ in the Philippines: legal status and conservation of mangrove forests in the Philippines. *International Journal of Rural Law and Policy* 1:1-12.

39 *Ley de Pesca y Desarrollo Pesquero (Codificación 2005-007)* of 26 April 2005. Article 44.

40 *Decreto* No. 1391 of 15 October 2008.

41 *S. Jagannath v. Union of India & Ors* [1996] INSC 1592 (11 December 1996).

42 Notification No. G.S.R 740(E) of 22 December 2005 enacting the Coastal Aquaculture Authority Rules. Section 5.

43 The Tamil Nadu Aquaculture (Regulation) Act, 1995 of 10 April 1995; Howarth, W. et al. *supra* note 38.

44 The Philippine Fisheries Code of 25 February 1998. Section 94.

### 3.1.4.5 Climate change

Climate change is highly relevant for mangrove conservation, and vice versa (Chapter 2). Most countries do not have a specific climate change law, but address climate change through a range of legal instruments.

Mexico is a notable exception. The General Law for Climate Change explicitly mentions mangroves as a priority ecosystem for conservation. It stipulates that the government should take action to strengthen the resilience of mangroves and other ecosystems, through restoration of ecological integrity and connectivity. It calls for the promotion of policies to reduce emissions and to improve carbon sequestration in the forest sector, and for strengthening the sustainable management and restoration of mangroves, as well as other forest and wetland ecosystems.[45]

Many countries include mangroves in their Nationally Determined Contributions (NDCs) under the Paris Agreement framework (Chapter 2). Several countries consider mangroves in adaptation plans. Madagascar's National Climate Change Adaptation Action Plan recognizes that coastal areas, such as mangroves, are vulnerable to sea-level rise, leading to coastal erosion and salt water intrusion, which will in turn reduce the ability of these ecosystems to sequester carbon and provides for improved management of mangroves as part of its adaptation strategy (Chapter 6).

The Strategy and Action Plan for the adaptation of the Costa Rican biodiversity sector to climate change also acknowledges that climate change will reduce carbon sequestration in mangrove ecosystems.[46] Carbon offsetting schemes relating to mangroves are discussed below (Section 3.1.5.3).

## 3.1.5 Market-based mechanisms and incentives

Mangrove ecosystems produce various resources and services useful for nature and human-beings (Figure 5). These resources and services have the potential to be sustainably monetized to support the conservation of mangroves through payments for ecosystem services (PES), product certification, carbon offsetting and REDD+, and fiscal incentives and disincentives.

### 3.1.5.1 Payments for ecosystem services

PES is a mechanism whereby users of benefits provided by healthy ecosystems make payments which are used to help maintain these ecosystems. These payments are often used to compensate landowners or rightsholders for conserving ecosystems and not converting them for unsustainable use. PES can take different forms, depending on who is paying whom and how the payments are structured. They can involve private contracts between companies and individuals, or public systems established by legislation under which governments pay individuals or communities for conservation measures, or private beneficiaries of ecosystem services pay taxes or fees to support conservation (Table 4).[47]

In Vietnam, a PES system was established in 2008 under the Biodiversity Law, which stated that "organizations and individuals using environmental services related to biodiversity shall pay charges to service providers."[48] The subsequent decree on the Policy for Payments for Forest Ecosystem Services (PFES) lists four environmental services eligible for inclusion in the system:

1. Watershed protection, including soil protection, reduction of erosion, and sedimentation of reservoirs, rivers, and

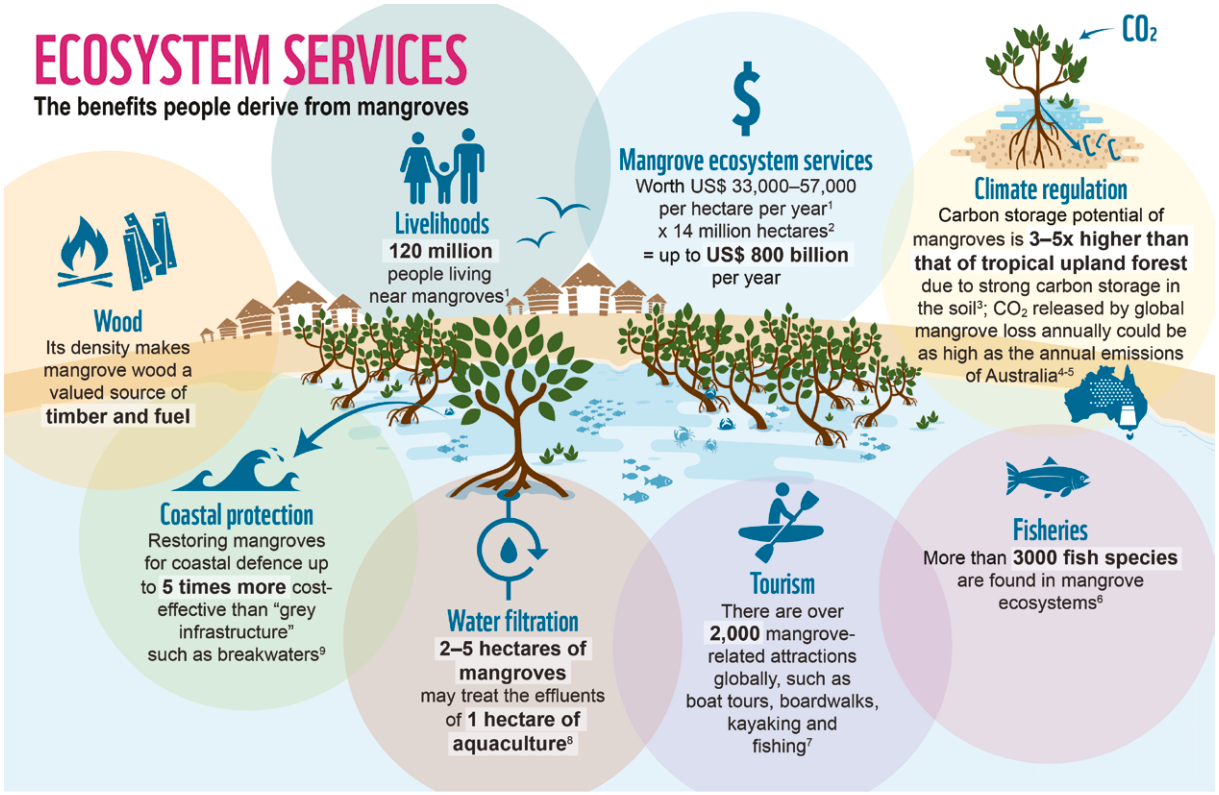
45 *Ley General de Cambio Climático* of 6 June 2012. Article 26, 30, 34.

46 IDB, MINAE, SINAC and DDC. (2015). *Strategy and action plan for the adaptation of the Costa Rican biodiversity sector to climate change (2015-2025)*. San José, Costa Rica. Pg. 3.

47 Greiber, T. (Ed.). (2009). *Payments for Ecosystem Services. Legal and Institutional Frameworks*. IUCN, Gland, Switzerland; Emerton, L. et al. (2006). *Sustainable Financing of Protected Areas: A global review of challenges and options*. IUCN, Gland, Switzerland and Cambridge.

48 Biodiversity Law of 13 November 2008. Article 74.

**Figure 5:** Ecosystem services provided by mangroves




Sources: ❶ UNEP, 2014 • ❷ Giri et al., 2011 • ❸ In the Indo-Pacific region: Donato et al., 2011 • ❹ Up to 450 million t $CO_2$: Pendleton et al., 2012 • ❺ In 2015: EDGARv4.3.2., 2018 • ❻ Sheaves, 2017 • ❼ Spalding et al., 2016 ❽ Primavera et al., 2007 • ❾ In Vietnam: Narayan et al., 2016

streams, and regulation and maintenance of water sources for production and living activities of the society.

2. Protection of the natural landscape and conservation of biodiversity of forest ecosystems for tourism,
3. Forest carbon sequestration and retention, reduction of emissions of greenhouse gases through measures for preventing forest degradation and loss, and for forest sustainable development.
4. Provision of spawning grounds, sources of feeds and natural seeds, and use of water from forest for aquaculture.

Any of these ecosystem services could potentially be provided by mangroves (Figure 5). Under this system, agreements are made between investors, government, and the service provider for payments from the ecosystem beneficiary. Given the complicated system for allocation of forest property rights in Vietnam, it is not always clear who is entitled to receive the payments. There are questions of transparency and accountability in distribution of benefits and potential problems of capture by local elites. To date, there have been no operational PFES systems related to mangrove forests in Vietnam (Chapter 10).

PES is determined by legal frameworks for mangrove rights and ownership (see Section 3.2.3). **Where mangroves are not subject to private ownership, PES may not apply.** Costa Rica has a well-developed PES framework for forest ecosystem services owned by private landowners, but mangroves are in the public domain and cannot be individually owned. Nonetheless, there is continued interest in finding an alternative market-based measure that could incentivize mangrove conservation in Costa Rica (Chapter 4).

PES systems operate by creating value for ecosystem services that is used to compensate owners for maintaining those services and incentivize conservation rather than unsustainable use. For example, the Mexican General Law of Sustainable Forestry Development provides that forest land owners who conserved or improved their environmental services, as a result of

**Table 4:** Forms of PES

| | Private payer | Public payer |
|---|---|---|
| Private provider | Private resource user pays community or individual for conservation of resource.<br>Example: private beverage company pays private landowners to take measures that protect the watershed.<br>Legal tools: private contract; offsetting. | Government pays community or individual for conservation of resource.<br>Example: government fund pays community for conserving forest.<br>Legal tools: public-private contract; public fund; subsidy; tax break; easement; PES legislation. |
| Public provider | Private resource user pays government agency or body for use of resource.<br>Example: private tourism industry pays fee to support national park.<br>Legal tools: tax, concession, offsetting, PES legislation. | Government entity pays a different government entity for ecosystem services.[1]<br>Example: State-owned hydropower plant pays State land management enterprise for conservation of watershed.<br>Legal tools: PES legislation |

sustainable forest management, will receive the economic benefits derived from these services.[49] Problems arise where competing uses promise higher payments than those available through PES. Mangroves typically provide value through multiple different services, such as shoreline protection, fish production, and climate change mitigation, which may benefit different users. Payments from any single user group may not be enough to offset the opportunity costs of a competing land use. In these cases, PES will not be effective unless there is a way to compensate for multiple ecosystem services, or otherwise ensure that payments for conservation are higher than the returns available for destructive uses.

In Madagascar, the management of fisheries resources and aquatic ecosystems can be transferred to groups of fishermen to establish locally managed fishing areas. They may use part or all of their area for projects generating PES, which can range from carbon sequestration to the exercise of ecotourism activities. In exchange, the manager of a locally managed fishing area must carry out systematic reforestation of mangroves (Chapter 6).

### 3.1.5.2 Product certification

Productive uses of mangrove ecosystems are not necessarily incompatible with sustainability. Promoting sustainable productive use can be an effective means of protecting mangroves, where sustainable uses are economically competitive with alternative unsustainable uses.

One way to encourage sustainable use is through certification schemes, which allow producers to charge a premium for products that meet a certain standard. The IUCN initiative Mangroves for the Future works with Fair Trade and other partners to test models for certification in Vietnam, Bangladesh, and other countries.[50] In Ca Mau Province, shrimp farmers have received training in sustainable aquaculture to meet Naturland organic certification standards. To be certified, shrimp operations need at least 50% mangrove coverage.[51]

In Madagascar, WWF and a group of shrimp farmers and fishermen designed an eco-labelling system under which shrimp farmers must remove

49 *Ley General de Desarrollo Forestal Sustentable* of 5 June 2018. Article 134 bis.

50 IUCN 2018. *Mangroves for the Future*. https://www.iucn.org/regions/asia/our-work/regional-projects/mangroves-future-mff [Accessed 20 July 2018].

51 REDD+ (2015). *Implementation Agreement between the Forest Management Board and the UN-REDD Provincial Programme Management Unit of Ca Mau*; Wylie, L. et al. (2016). Keys to successful blue carbon projects: Lessons learned from global case studies. *Marine Policy* 65:80; Friess, D.A. et al. (2016). Policy challenges and approaches for the conservation of mangrove forests in Southeast Asia. *Conservation Biology* 30(5):933-949; Pham, T.T. et al. (2013). *Payments for forest environmental services Vietnam: From policy to practice*. CIFOR: Bogor, Indonesia.

no more than 10% of mangroves in the project area to qualify for certification.[52]

Where product certification programs are implemented by civil society or private organizations, as in these examples, legal structures create essential enabling frameworks that allow for sustainable use and promote transparency and where aquaculture activities and other productive uses are illegal, product certification programs are not possible. Legislation can also directly create standards for the certification of sustainable products.

### 3.1.5.3 Carbon offsetting and REDD+

Mangroves represent significant carbon storage. Multiple initiatives have looked at ways to monetize this potential through REDD+ initiatives and selling carbon credits on the voluntary market. Such initiatives depend on legal enabling conditions that are absent in many countries, including legal definition of ownership of mangrove areas and their ecosystem services, legal definitions of carbon property rights, and standards for valuation of carbon. Lack of legal clarity and good governance in carbon markets drive away potential investors and can put conservation at risk.

In Mexico, the General Law of Sustainable Forestry Development defines ecosystem services to include carbon capture and climate regulation, and includes ecosystem services as a type of forest resource.[53] The Vietnam Decree on Policy for PFES also lists "forest carbon sequestration" as an environmental service eligible for inclusion in the PES system.[54] These provisions do not clearly define who has rights to carbon credits and how they can be sold.

Valuation of carbon can also create challenges. Rules for calculating value can be complicated, and the cost of compliance can be higher than the returns available from the sale of carbon credits.[55] Different methods of accounting used in different circumstances can undermine the certainty and legitimacy of the market. If the price of carbon or the payments available from REDD+ projects are too low, they can fail to act as an incentive. In Madagascar, payments from REDD+ projects may be significantly lower than the revenue that can be gained from the illegal exploitation of mangroves to produce charcoal. Payments as an incentive may also fail because they are made to communities managing the mangroves, who do not have power to control outside actors responsible for illegally exploiting mangroves (Chapter 6).

### 3.1.5.4 Fiscal incentives and disincentives

National legal systems can establish incentives for private action that promotes conservation of mangroves, as well as disincentives for harmful activities. Kenyan law allows for fiscal incentives to promote environmentally friendly practices. such as tax rebates for industries that invest in equipment for pollution control or water conservation (Chapter 5).

The purpose of fiscal incentives and disincentives is to change behaviour and decision-making to support conservation and sustainability. India has made this explicit in its National Environment Policy, which calls for development of standardized environmental accounting practices to encourage environmental responsibility in investment decision-making. It promotes incorporation of costs associated with degradation and depletion of natural resources into decisions of economic actors "to reverse the tendency to treat these resources as 'free goods' and to pass the costs of degradation to other sections of society, or to

---

52 GAPCM - Groupement des Aquaculteurs et Pêcheurs de Crevettes de Madagascar; UNEP (2009). *Evaluation intégrée des politiques liées au commerce et les implications en termes de diversité biologique dans le secteur agricole à Madagascar - La durabilité de l'aquaculture de crevette et les enjeux lies à la biodiversité.* UNEP, Madagascar.

53 *Ley General de Desarrollo Forestal Sustentable* of 5 June 2018. Article 7(LXII).

54 Decree No. 99/2010/ND-CP of 24 September 2010 on the policy on payment for forest environment services. Article 3.1, 4, 7.

55 Chapman, S. et al. (2014). Defining the Legal Elements of Benefit Sharing in the Context of REDD. *Carbon & Climate Law Review* 8(4):270-281; Interview with Nikolai Beresnev, 24 April 2017.

future generations of the country."[56] This reflects the polluter pays principle (Chapter 2).

## 3.2 Enabling frameworks

Mangrove conservation depends not only on specific legal tools for protection and management, but also on basic legal frameworks and norms that create the structures and context within which governments, managers, users, rightsholders, and other actors operate. The legal context determines what rights are available and how they can be exercised, how decisions are made and how decision makers can be held accountable.

Mangrove conservation is plagued by rule of law problems and institutional conflict, as well as land tenure confusion and failure to effectively involve local communities.[57] These issues are closely linked to governance frameworks and fundamental rights.

This section will explore constitutional rights, institutional structures, land and resource tenure systems, good governance elements, frameworks for involvement of local communities in mangrove governance and management, and legal processes for dispute resolution and compliance and enforcement.

### 3.2.1 Constitutional provisions

Most of the world's constitutions incorporate provisions related to environmental rights and responsibilities.[58] While it is uncommon to see explicit mention of mangroves in constitutions, these constitutional rights can create a fundamental framework for conservation that can be invoked to protect mangroves. In many cases, constitutions create both a right and a duty:


© Jürgen Freund / WWF

the right creates a legally protected interest that citizens can use to require government action for protection of ecosystems; the duty creates an obligation for citizens to protect the environment, which can be used to force action by private actors.

The right to a healthy environment is found in the constitutions of several countries. In Kenya, this includes the right to "have the environment protected for the benefit of present and future generations."[59] The State should "ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources...work to achieve and maintain tree coverage of at least 10% of Kenya's land area," and "eliminate processes and activities that are likely to endanger the environment."[60] The constitution goes on to specify tools to promote these aims, including public participation, EIAs,

56 Ministry of Environment and Forests (2006). *National Environment Policy 2006*. Section 5.1.3(vi).

57 IUCN/WWF survey of experts 2018. See Chapter 1.

58 Boyd, D.R. (2012). *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights, and the Environment*, Vancouver, UBC Press. Pg. 47 (as of 2012, 147 countries include direct or indirect references to environmental rights in their constitutions); Jeffords, C. (2013). Constitutional Environmental Human Rights: A Descriptive Analysis of 142 National Constitutions, in Minkler, L. (Ed.). *The State of Economic and Social Human Rights: A Global Overview*, pp. 329 - 64. Cambridge University Press (as of 2010, 142 constitutions include at least one reference to the environment; and 125 have a specific provision on environmental rights).

59 The Constitution of Kenya of 6 May 2010. Article 42.

60 *Ibid.* Article 69.

and environmental auditing and monitoring. It puts an obligation on every person "to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources." Finally, it creates a procedure for enforcing environmental rights and grants standing to any person to bring a case in court to ask for an order to prevent or stop any environmentally harmful act (Chapter 5). In Tanzania, the Constitution creates a duty for every citizen to protect natural resources, and an obligation for the Government to ensure that national wealth and heritage are preserved (Chapter 9).

Constitutional rights that are not explicitly linked to conservation can also be interpreted to support mangrove conservation. In Pakistan, courts have interpreted the right to life to include the right to a clean atmosphere and unpolluted environment, and to protection of natural ecosystems for present and future generations. In a recent case, the court used the right to life as the basis for introducing the concepts of climate justice and water justice as fundamental rights and requiring the government to implement the national Climate Framework (Chapter 8).

Constitutions are the foundations of national governance frameworks. They define sources of law, including international obligations, statutes, judicial decisions and customary law. They create processes and standards for rule-making and other decision-making, including safeguards for participation, transparency and accountability. They define the overall institutional setup of the country at national and subnational levels, and define systems of property rights and land tenure, including rules related to appropriation and public land. They create judicial structures and other mechanisms for dispute resolution and access to justice, as well as criminal and civil procedures. These aspects are touched on in the sections below.

### 3.2.2 Institutional structures

As mangroves can fall within multiple sectoral legal regimes, they can be covered by different institutions, including agencies responsible for forests, fisheries, coastal areas, environment, agriculture, aquaculture, land use, protected areas, biodiversity, and development.

In some countries, an institution is specially authorized to regulate a certain activity that threatens mangroves. In India, the Coastal Aquaculture Authority (CAA) was established to regulate activities related to aquaculture in coastal areas.[61] One of the functions of the CAA is to

> ensure that the agricultural lands, salt pan lands, mangroves, wetlands, forest lands [...] and national parks and sanctuaries shall not be converted for construction of coastal aquaculture farms so as to protect the livelihood of coastal community.[62]

There can be multiple overlapping authorities involved in mangrove governance. In Vietnam, the Ministry of Agriculture and Rural Development (MARD) has jurisdiction over the trees in mangrove forests, while the Ministry of Environment and Natural Resources (MONRE) has jurisdiction over the land itself. MARD has responsibility for managing the mangrove forests, while MONRE manages biodiversity in the forests. MARD regulates aquaculture and fisheries, while MONRE regulates geology, mining, and water (Chapter 10).

Some countries have created institutional coordination mechanisms to address these problems. In Mozambique, the National Council for Sustainable Development (CONDES) was created to coordinate sustainable use of natural resources. This has not had as much impact as the coordination at a provincial level through inter-agency task forces. The Draft Strategy and Action Plan for Mangrove Management, currently under consideration, foresees the creation of a management committee for mangrove restoration (Chapter 7).

61 Coastal Aquaculture Authority Act, 2005 of 23 June 2005. Preamble.

62 CAA Rules *supra* note 42.

In Madagascar, mangroves fall under the mandate of three different ministries: the Ministry in charge of the environment, the Ministry in charge of fisheries and the Ministry in charge of land development. There are mechanisms for cross-agency coordination, such as the National Committee for Integrated Coastal Zone Management (CNGIZC), responsible for coordinating sustainable development in coastal and marine areas, the National Office for Climate Change, Carbon and Reduction of Emissions from Deforestation and Degradation of Forests (BN-CCCREDD+), created to coordinate and implement climate change and REDD+ action, and the Inter-Ministerial Environment Committee (CIME), which aims to ensure that policies and strategies adopted within each ministry include an environmental or sustainability dimension. In 2015, a National Commission on the Integrated Management of Mangroves was created to ensure, under the authority of the Ministry of the Environment and the Ministry of Fishing, the sustainable management of mangrove areas and to review and evaluate all aspects of mangrove management (Chapter 6).

Mangrove governance often involves multiple levels of governance, from national to subnational and local. In India, the Central Government is responsible for developing national strategies, plans, and programmes for conservation and sustainable use of biological diversity, and may direct State Governments to take ameliorative measures where it has reason to believe biological resources are being threatened, offering the State Government "any technical and other assistance that is possible to be provided or needed."[63] Both the National Biodiversity Authority and State Biodiversity Boards should consult Biodiversity Management Committees – established by local bodies – in taking any decisions relating to the use of biological resources within the Committee's jurisdiction.[64] Indian States have the authority to reserve forests, but may not order the use of forests for non-forest purposes without the approval of the Central Government.[65] A user agency that seeks to use forest land for non-forest purposes must make a proposal to the nodal officer at the State Government. After a review, the State Government will send the proposal to the Central Government, which will seek advice from a Committee on applicable environmental protections, proposed use, alternatives, and offsetting and mitigating the environmental impact, after which the Central Government will approve or reject the proposal.[66] In Tanzania, local government authorities can regulate the use of forest and forest products, create reserves, and make bylaws that address the management of environmental resources, including mangroves (Chapter 9).

Customary and traditional authorities are an important part of the institutional structure in some countries. Malagasy law recognizes the role of *Fokonolona*, grassroots communities who play a role in natural resource governance through *Dina*, collective agreements that reflect customary rules governing management of natural resources. However there can be different interpretations of *Dina*, and in some cases different social codes can be in conflict (Chapter 6).

Decentralization to a local level is a widely used governance tool that can support legitimacy and appropriate and equitable management. However, in the case of mangroves, decentralization without considering the capacity and the political and social situation can be a problem. In Vietnam, local authorities typically come from the same communities as other users, and may have their own interests, or promote the interests of their relatives and networks. In theory, the local government needs the permission of the central government to authorize conversion of mangroves, but in practice the central government does not exercise the necessary oversight to ensure sustainability (Chapter 10).

### 3.2.3 Land and resource tenure and rights

Tenure describes the ways in which rights to land or other resources can be gained and

63 The Biological Diversity Act *supra* note 8. Section 36.

64 *Ibid.* Section 41.

65 Indian Forest Act, *supra* note 25. Section 3.

66 Notification No. G.S.R.23(E) of 10 January 2003 enacting the Forest Conservation Rules. Section 6-8.


held. Ownership, lease, public allocation, and customary rights can all be considered types of tenure. Tenure rules may come from different legal regimes, including statutory and customary or religious law, and in these cases there are often conflicts.

Tenure is one of the most complicated aspects of natural resource management, and it can be even more complicated in the context of mangroves. In many countries, such as Costa Rica, mangroves are considered part of the public domain by virtue of their location along the coast (Chapter 4). In other countries, mangroves are considered a type of forest, and around 86% of forests around the world are publicly owned.[67] Local communities often have special rights relating to mangroves based on customary laws or traditional use.

In Kenya, mangroves cannot be owned, privately or by communities, because they are legally classified as public forests. Private landowners neighbouring wetlands have a duty "to prevent the degradation or destruction of the wetland" and to 'maintain the ecological and other functions of the wetland.'[68]

In Ecuador, mangroves are considered public, and there is a legal framework for allocating concessions through agreements between the Ministry of the Environment and local communities. Communities gain usufruct rights over the mangroves, but must comply with the protective measures of the agreement. Serious non-compliance with the concession agreement and logging of mangroves are grounds for termination of community rights. Cutting, harvesting, altering, or destroying mangrove forests are punishable by fines.[69] However, concessions are granted to a small number of mangrove users, leading to conflicts between communities.[70]

It is important to distinguish between the problems of uncertainty and illegality in the

67 Siry, J.P. et al. (2009). *Global Forest Ownership: Implications for Forest Production, Management, and Protection*. World Forestry Congress. Buenos Aires, Argentina (in Brazil, 90% of forests are publicly owned, in China 100%, and in Australia 72.9%).

68 Wetlands Regulation *supra* note 34. Section 14.

69 Gravez, V. et al. (2013). Governance Systems for Marine Protected Areas in Ecuador, in Moksness, E. et al. (Eds.). *Global Challenges in Integrated Coastal Zone Management*. Wiley-Blackwell: New Jersey, United States; IUCN and CI Ecuador (2016). *Mapping of relevant policies and regulations for coastal carbon ecosystem management in 5 countries: From climate change to forestry and coastal marine resource management – Ecuador*.

70 López-Angarita, J. et al. (2016). Mangroves and people: Lessons from a history of use and abuse in four Latin American countries. *Forest Ecology and Management* 368:151-162.

land tenure regime. Illegal encroachment into mangroves is a problem exacerbated by lack of enforcement of land use rules together with high demand for certain products, or lack of livelihood alternatives. However, in some cases, the problem is not that the rules are not followed, but that the rules are not clearly defined. Unclear land tenure is a common and serious obstacle to mangrove conservation, restoration, and sustainable use. More than one person or group might think they have rights to a particular area of mangrove forest, and often people use mangrove forests when they do not have legally recognized rights.[71] Clear land tenure is essential for community involvement in conservation; uncertain tenure can disincentivize investment in conservation or block mangrove restoration.

In Thailand, numerous shrimp farming operations established during the aquaculture boom of the 1990s and 2000s are now abandoned. Many of these operations were partially situated on legal concessions and partially illegal encroachments into mangroves. In order to begin restoring these abandoned farms, it is necessary to identify the legal owners. Where this is not possible, as is often the case, restoration is difficult.[72]

Land tenure uncertainty is also a problem in Vietnam, where the complicated tenure system is not well understood. The government owns all forest land, but may allocate it to different State or private entities according to a complex system of rules depending on the legal classification of the forest land under multiple conflicting laws. In practice, mangrove use is dominated by informal tenure arrangements, where forest land is distributed based on family and political connections (Chapter 10).

### 3.2.4 Transparency and accountability safeguards

Mangrove governance, like all governance, depends on realization of core principles of good governance, including transparency, accountability, participation, and rule of law (see Chapter 2). Operationalization of these principles through national rights and processes is essential to ensure governance is effective, adequate and fair.

One of the most fundamental tools available to civil society and the public to ensure government accountability in the environmental sector is access to information. This internationally recognized right gives citizens the right to access public information on permits or concessions granted, activities approved, EIAs filed, and other documents or processes related to management of the natural environment, which can empower participation and promote accountability.

In Kenya, the right of access to information is embedded in the constitution and elaborated by the Access to Information Act of 2016. It provides that "every citizen has the right of access to information held by – (a) the State; and (b) another person where that information is required for the exercise or protection of any right or fundamental freedom."[73] Since environmental protection is recognized as a right in the Kenyan constitution, this provision should mean that any citizen has the right to important environmental information held by any private entity or corporation, including information on activities, plans, or environmental impacts related to mangrove ecosystems (Chapter 5). In Madagascar, the right to information is provided by the Constitution, while the right to environmental information and participation is provided by law in the Environmental Charter (Chapter 6).

Access to information is only the first step towards ensuring good governance. Meaningful public participation is key. In Costa Rica, public consultation and participation is required in the development and implementation of protected area management plans (Chapter 4). The Forestry Law in Vietnam requires participation of local people in forestry allocation and appropriation (Chapter 10). The High Court of Kenya has recognized the importance of public participation during EIA processes, finding that anything less

71 IUCN/WWF survey of experts 2018. See Chapter 1.

72 Norman, A. (2004). Shrimp farming and mangrove loss in Thailand. *Journal of Economic Literature* 43(3):958.

73 Access to Information Act of 31 August 2016. Article 4.


than full compliance with statutory requirements for participation renders a permit invalid (Chapter 5). Transparency and accountability can be further supported by co-management arrangements (see Section 3.2.5) and access to justice (see Section 3.2.6).

### 3.2.5 Community rights and co-management

Communities can significantly contribute to the planning and management of mangroves, based on their unique knowledge of these ecosystems and their use. Where communities are a driver of mangrove loss, their incentives can be adjusted by empowering them to participate in the benefits of conservation. Even where they are not themselves drivers of damage, they can serve as important monitors of illegal activity. In order to effectively support mangrove conservation, communities need clear legal rights and status. Community involvement and support is widely recognized as essential for effective mangrove conservation.[74]

Legislation can provide for co-management agreements between government and local communities, giving communities rights relating to management and use as well as obligations for conservation. In Tanzania, communities can enter into partnership agreements with central authorities to manage mangrove forest reserves. Under the agreements, the communities receive a share of the responsibility and a share of the benefits (Chapter 9).

For these systems, it is important to consider community capacity. **A community may excel at the conservation aspects of management, but need support in administration and bureaucracy.** A low literacy rate and complicated reporting requirements can make it difficult for communities to meet administrative requirements on their own. NGOs frequently provide assistance, without which community management would not be possible. In Pakistan, IUCN and WWF have worked extensively with fishermen communities to engage them in planting and protecting new forest (Chapter 8). In Madagascar, Blue Ventures has worked with communities to set up REDD+ projects. According to experts involved, even if the communities themselves were able to meet the administrative requirements for a REDD+ project, the cost of establishing a project through

74 IUCN/WWF survey of experts 2018. See Chapter 1.

to auditing and verification would make it nearly impossible for communities to do this on their own (Chapter 6).

### 3.2.6 Dispute resolution and access to justice

Effective mangrove governance requires access to justice and adequate dispute resolution. Dispute resolution processes and institutions are an essential mechanism for realizing access to justice, a foundational principle for designing dispute resolution frameworks. Clear pathways for addressing claims and resolving disagreements are necessary for functional mangrove conservation systems.

In the context of mangroves, claims and disputes can arise in a number of ways. A user may bring a grievance if a permit or authorization to conduct an activity in mangroves is denied. Affected communities and conservation advocates may seek to block a permit that has been granted, or otherwise seek stronger protection or better management of mangroves. In other cases, there may be disputes over land ownership or other resource rights.

A growing number of countries have special tribunals for adjudicating environmental cases. These are meant to provide a special focus and trained adjudicators in environmental cases, so that they are not lost among other cases which may be seen as higher priority.[75] The National Environment Tribunal in Kenya may consider appeals relating to environmental issues as well as refusals to grant licences or permits (Chapter 5). In India, a similar role is played by the National Green Tribunal.[76] In Costa Rica, the Environmental Administrative Tribunal has jurisdiction over complaints for violation of national environmental legislation, and the power to impose sanctions for the destruction of mangroves (Chapter 4).

Environmental tribunals can help with adjudication, but only if they are well designed and adequately resourced. In Pakistan, provincial environmental tribunals lack capacity, training, resources, and sentencing authority to serve as a real deterrent. They have complicated and time-consuming procedures, and are often nonfunctional due to vacancy of members (Chapter 8).

### 3.2.7 Compliance and enforcement measures

Compliance describes the degree to which legal rules are followed by people, corporations or groups. Compliance can be compelled by enforcement, or encouraged through facilitative programs. In practice, compliance is a complex behavior that involves social, cultural, economic and political factors.[77]

Compliance measures can be built into environmental and natural resource management laws or embedded in a different framework, such as a criminal code. Environmental tribunals and access to justice in environmental matters can be means of promoting compliance. Education and awareness raising are key compliance measures.

In Kenya, annual environmental audits are required to ensure compliance with the terms of EIA licences. Licence-holders are required to undertake self-audits each year, and the public can petition the National Environment Management Agency to undertake a control audit to confirm compliance with the licence (Chapter 5).

Many countries use criminal penalties to attempt to deter unsustainable mangrove use. In Madagascar, the penalty for cutting, collecting, selling or transporting mangrove wood without authorization is up to 20,000 USD, with imprisonment of up to 1 year (Chapter 6). In Costa Rica, use of mangrove flora or fauna without authorization can result in up to 4 years in prison (Chapter 4). In Mozambique, enforcement of criminal prohibitions on mangrove cutting have been strengthened through law enforcement

75 Pring, G. and Pring, C. (2016). *Environmental Courts and Tribunals: A Guide for Policy Makers*. UNEP, Nairobi, Kenya.

76 *National Green Tribunal*. http://www.greentribunal.gov.in/ [Accessed 8 August 2018].

77 Winter, S. and May, P. (2001). Motivation for Compliance with Environmental Regulations. *Journal of Policy Analysis and Management* 20(4).

task forces in certain provinces. In Beira, where mangrove poles were once sold openly on the street, the market has now been driven underground (Chapter 7).

Criminal sanctions are not always appropriate for ensuring compliance with laws designed to protect mangroves. In Vietnam, where local communities have little alternative to use of mangrove ecosystems and local authorities are often themselves involved in illegal aquaculture projects, attempts to deter mangrove use through criminal penalties have not been effective (Chapter 10).

## 3.3 Legal effectiveness

**There is often a gap between law on paper and law in reality. Many experts have reported that despite well-designed laws, mangrove degradation is ongoing.** In Costa Rica, despite a strict legal framework, the country has lost over 10,000 ha of mangrove since the 1990s (Chapter 4). In Vietnam, the total mangrove area has reportedly expanded, but the health and connectivity of the mangrove ecosystems has declined. Outside national parks, most primary mangrove forests have vanished, and the majority of Vietnam's mangroves are highly fragmented replanted forests with an average patch size of 100 ha (Chapter 10). This points to lack of effectiveness of mangrove-related law.

Available legal tools are not being fully utilized to protect mangroves. In Pakistan, different laws provide for the declaration of protected forests, wildlife sanctuaries, and national parks, but no mangrove forests have been declared national parks or wildlife sanctuaries, and only one mangrove area has been declared a protected forest (Chapter 8). In Tanzania, a National Mangrove Management Plan was developed in 1991, but never implemented due to a lack of funding and lack of institutional framework (Chapter 9).

In some cases, frameworks and policies are developed but never elaborated through specific laws and regulations that are required for implementation. Pakistan's Wetlands Policy, adopted in 2009, calls for improvement of the regulatory framework for mangrove conservation, but since its adoption no steps have been taken towards legal reform. Similarly, the Indus Water Apportionment Accord provides for the allocation of certain amounts of water that can be discharged into the sea – providing important freshwater for mangrove ecosystems along the way – but the exact quantities have never been determined (Chapter 8).

Where governments do take action to implement laws and policies through promulgating necessary regulations and guidance and operating appropriate institutions and processes, there still may be lack of compliance. This cannot always be addressed through compliance and enforcement measures, as it may relate to social, economic or political factors and require rethinking the legal framework itself. For example, in Tanzania, where communities surrounding mangroves depend on them for their livelihoods, restricting access has led to increased illegal harvesting (Chapter 9).

In all cases, legal effectiveness depends on adequate resources and capacity, legitimacy and trust, public participation and engagement, livelihood needs, legal clarity and specificity, political will, and rule of law. Some common obstacles to legal effectiveness, such as overlapping institutional structures and unclear land and resource tenure, have been discussed above (see Section 3.2). This section will focus on factors related to institutional capacity, rule of law, political context and social, cultural and economic considerations.

### 3.3.1 Institutional capacity and financial resources

Lack of institutional capacity and financial resources are two of the main problems in the implementation of mangrove related laws.[78]

In Pakistan, provincial governments have significant powers to manage and support mangrove ecosystems in theory, but in practice

78 IUCN/WWF survey of experts 2018. See Chapter 1.

these powers are rarely exercised. In part, this may be due to an insufficient organizational structure. In both provinces where significant mangrove areas are located, environment agencies operate with a skeleton structure and still have to spend the vast majority of their budget on salaries, with little to no resources left for monitoring and enforcement (Chapter 8).

In Costa Rica, a report presented by the Comptroller General of the Republic identified a series of weaknesses in mangrove conservation and governance, including weaknesses in management plans, a lack of information in the institutional GIS system, and weak enforcement. These problems lead to serious mangrove degradation, even within protected areas. For example, the Caño Negro wetland lost a substantial mangrove and wetland area to pasture expansion after it was declared a National Wildlife Refuge in 1984, due to a lack of financial and human resources for effective management. Pursuant to the report's recommendations, SINAC embarked on a project to conduct a national assessment of ecosystem services at Ramsar sites, to update information in the national cadaster and land registry and the national inventory of wetlands, and to develop a new National Wetlands Policy. As this project has recently concluded, it is not yet possible to determine the effectiveness of these actions in improving the governance of mangroves (Chapter 4).

In many countries, the government relies heavily on NGOs and donors to support mangrove conservation and restoration. On Chira Island, in the Gulf of Nicoya, Costa Rica, technical support from Conservation International has allowed women from the local community to receive micro-entrepreneurship training and engage in eco-tourism activities, building mangrove nurseries and mangrove clean-up initiatives (Chapter 4). In Madagascar NGOs provide extensive support for communities in setting up community forest management arrangements and meeting reporting requirements (Chapter 6). In all of the case study countries, civil society organizations play a key role in mangrove conservation, restoration, and management.

### 3.3.2 Good governance and rule of law

Corruption and mismanagement can be chronic problems for mangrove governance. In Tanzania, there are reports that government staff help illegal loggers smuggle products, and that permits are issued without following the required processes (Chapter 9). Madagascar is also reportedly affected by systemic corruption, which has an impact on mangroves' sustainable use. (Chapter 6). Improving transparency and local participation in decision-making are seen as key means to address corruption in these countries. In Mozambique, cross-sectoral task forces are also seen as a way to address corruption by increasing transparency and accountability across agencies (Chapter 7).

In some countries, criminal organizations operating with impunity undermine rule of law. Threats of violence as well as killing of community members, and mangrove defenders have been reported by several experts. In Costa Rica, mangroves have been reportedly used by narcotics traffickers to hide and transport drugs, thus creating serious dangers for local communities (Chapter 4). In Pakistan, the land mafia and timber mafia terrorize local communities. In one instance, **the land mafia was allegedly involved in murdering two fishermen who brought a public interest case to stop the clearing of mangroves in Sindh Province**. As a result, the case was dismissed and no follow-up was filed (Chapter 8).

### 3.3.3 Political context

Local political and economic realities can undermine national legal frameworks. In Vietnam, social networks and patronage systems at a local level shape the allocation of capital, land, and forest resources. Households with bureaucratic backgrounds and strong political connections benefit most from the expansion of aquaculture, leading to a conflict of interests, where the local elites who make the decisions relating to mangrove conservation are the same families who benefit most from the destructive activities (Chapter 10).

In Tanzania, political partisanship can get in the way of conservation. During the 2015 elections, political candidates promised unrestricted access to mangroves in return for votes. Communities from one political party reportedly refused to participate in mangrove management actions organized by the other parties (Chapter 9).

Political will is an essential factor for effective mangrove conservation. In many countries, political priorities are determined by economic factors and the possibility for short term gain, which can motivate unsustainable activities. Tourism, urban development, and agricultural expansion can receive higher governmental priority than mangroves, resulting in degradation. At the Térraba-Sierpe National Wetland Ramsar Site in Costa Rica, over 1000 ha of wetlands were replaced by livestock farming, rice, and African palm between 2008 and 2016. Costa Rican civil society and government representatives highlighted a difficult conflict between the short-term returns sought by investors and long-term ecosystem value lost to degradation. However, they also mentioned certain activities such as sport fishing and eco-tourism that depend on ecosystem services provided by mangroves, and may support their conservation financially and politically (Chapter 4).

### 3.3.4 Social, cultural, and economic factors

Legal effectiveness depends on social contexts and the needs of all actors. Users may understand that activities are illegal or unsustainable, but continue because of a lack of alternatives. This can relate to overlapping tenure regimes, where the customary use of a resource conflicts with statutory restrictions (see Section 3.2.3). In Mozambique, illegal users of mangrove resources say that they are aware that they are destroying the environment, but have no alternative sources of income. Often the populations involved have lived in mangrove areas and harvested mangrove resources for many years (Chapter 7).

Xuan Thuy National Park, a Ramsar site in Vietnam, is threatened by the frequent violation of environmental laws and regulations in both core and buffer zones, including tree felling, shellfish collection, cattle grazing, and illegal conversion to aquaculture, driven in part by high population density and a lack of alternative livelihoods are also significant factors. Local officials are reluctant to enforce conservation restrictions against poor resource users within their own communities (Chapter 10).

In Pakistan, coastal communities are aware of their dependence on mangroves, particularly as protection against cyclones and as breeding grounds for key species, and are active participants in conservation and replanting. They claim that migrants from inland cut down mangroves for fuel and other purposes (Chapter 8). Similarly, in Madagascar, local communities who live in regions where mangroves are located recognize their reliance on the resources provided by mangrove ecosystems, but users arriving from outside the area continue to drive degradation to fuel their demand for charcoal (Chapter 6). In Tanzania, there are conflicts between local farmers and pastoralists from other parts of the country who go to mangrove areas to access water. The resulting pressure leads to deforestation (Chapter 9).

Engagement with communities is essential to effective mangrove governance, but frameworks for engagement are often ineffective. In Tanzania, communities know about the restrictions on the use of mangroves and benefits from their preservation, but feel alienated when they themselves do not benefit from mangrove resources. In Madagascar, the National Committee for Integrated Coastal Zone Management (CNGIZC) has a mandate to involve local communities through regional committees, but the membership of the regional committees is not necessarily representative of the local communities, and may not hold or defend their interests. Community-based organizations working in the country claim that instead of top-down participation strategies, mangrove conservation strategies should take advantage of customary laws. The transfer of management to communities and the application of customary norms elaborated through a participatory process are considered to be some of the most effective approaches to mangrove governance (Chapter 9).

# 4

# COSTA RICA

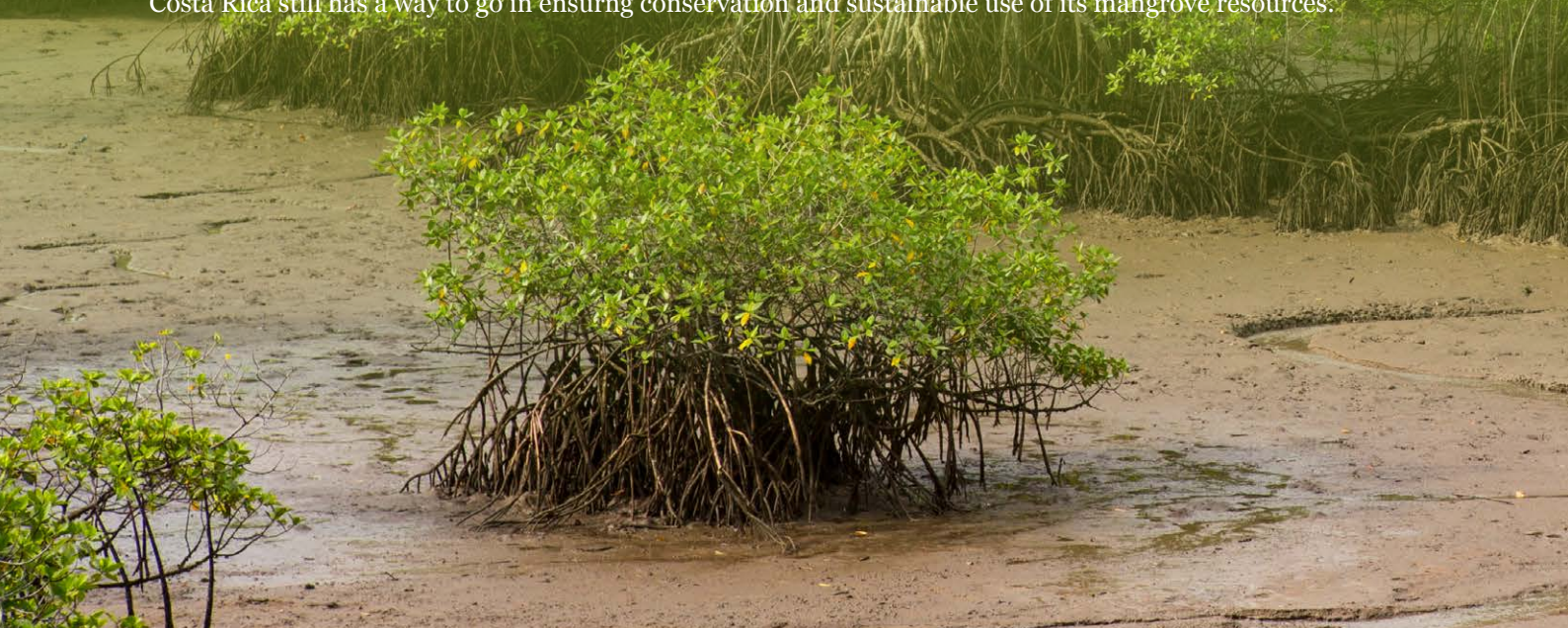
## FROM INDIFFERENCE TO RISING AMBITION

**By Mariamalia Rodríguez Chaves**

Costa Rica has built a reputation as a conservation leader, through the development of a legal and institutional framework for the conservation of ecosystems and biodiversity, and protection of over ¼ of its territory. Wetlands and mangroves have benefited from this framework, until recently have not been seen as a national priority, although they generate environmental, social and economic value.

This has started to change, as the country has developed institutional strategies and improved the generation of technical information for enhanced conservation and management. Best practices and prohibitions have been established for mangroves and wetlands in Costa Rica, raising awareness about the importance of their effective protection and sustainable use. Synergies and partnerships between government agencies, private stakeholders, NGOs and coastal communities, have been a key factor in the advancement of restoration and protection strategies for mangroves and wetlands.

However, Costa Rica continues to face challenges in implementation of legal provisions, owing in part to lack of financial resources, prioritization and ambition. While it has come a long way, it is clear that Costa Rica still has a way to go in ensurng conservation and sustainable use of its mangrove resources.



# KEY FACTS

## POPULATION: ≈ 5 million

## MANGROVE COVERAGE: ≈ 40,000 ha

## KEY INSTITUTIONS:

Ministry of Environment and Energy (MINAE)

National System of Conservation Areas (SINAC)

Vice-Ministry of Oceans

Ministry of Agriculture and Livestock (MAG)

Fisheries and Aquaculture Institute (INCOPESCA)

Municipalities

## MAIN THREATS:

- INFRASTRUCTURE DEVELOPMENT
- AGRICULTURE (FRUIT TREES)
- OVERPOPULATION
- POLLUTION

## MAIN USES:

- ECOTOURISM
- AQUACULTURE
- SALT PRODUCTION

## LEGISLATION:

www.iucn.org/mangrovelaw


- Ramsar sites containing mangroves
- UNESCO world heritage sites containing mangroves

# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **APREMAA** | Association of Piangüeros and Marine Resources of Ajuntaderas |
| **AyA** | Water and Sewage Institute |
| **CATIE** | Tropical Agriculture and Higher Education Center |
| **CBD** | Convention on Biological Diversity |
| **CI** | Conservation International |
| **EIA** | Environmental Impact Assessment |
| **CGR** | Comptroller General of the Republic of Costa Rica |
| **CONAVI** | National Road Council |
| **CINPE-UNA** | International Center of Economic Policy and Sustainable Development |
| **FONASEMAR** | National Fund to Incentivize the Conservation of Marine and Coastal Ecosystem Services |
| **FUNBAM** | Environmental Bank Foundation |
| **INCOPESCA** | Fisheries and Aquaculture Institute |
| **INDER** | Institute of Rural Development |
| **LZMT** | Law of the Maritime Terrestrial Zone |
| **MAG** | Ministry of Agriculture and Livestock |
| **MINAE** | Ministry of Environment and Energy |
| **MOPT** | Ministry of Public Works and Transportation |
| **NDC** | Nationally Determined Contribution |
| **SETENA** | National Environmental Technical Secretary |
| **SINAC** | National System of Conservation Areas |
| **UNFCCC** | United Nations Framework Convention on Climate Change |

## 4.1 Introduction: A valuable ecosystem left behind

Costa Rica has been investing in the protection of its natural capital since the 1970s and has gained an international reputation for successful conservation policies.[1] The country has consolidated its recognized status as an environmental leader through concrete actions. For example, almost a quarter of its land territory has been designated protected areas under a variety of conservation and management regimes, including national parks, wildlife refuges, and biological reserves, among others. Moreover, in 2012, 26.21% of Costa Rica's national territory was protected on land and 2.7% of its marine areas were in a protection category.[2]

However, as will be explored in the following sections, in recent decades not every ecosystem received the same degree of attention from the competent institutions in Costa Rica. For example, until the last couple of years, wetlands and mangroves were not seen as a national priority. Against this backdrop, large areas of mangroves were impacted in the early 1940s due to the expansion of productive activities such as agriculture, aquaculture, and wood extraction.[3] In 34 years, from 1979 to 2013, the country's mangroves were reduced by 42%.[4] This points to a weakness in the implementation of legal provisions, monitoring and control of threats from productive activities, as well as a passivity on the part of competent institutions.

Today, Costa Rica has a total of 307,315.99 ha of wetlands, classified under three categories: palustrine, estuarine, and lacustrine ecosystems, and covering approximately 7% of its national territory.[5] These areas include circa 40,000 ha of mangroves, mostly located on the Pacific coast.[6] Twelve Ramsar sites have been designated in the country, sheltering nearly 569,742 ha in total.[7]

These ecosystems generate environmental, social, and economic value. For example, an economic evaluation of environmental goods and services estimated that seven of the Ramsar sites contribute USD 3.215 million annually to the Costa Rican economy, considering both the current use of these assets and their future availability.[8] More specifically, the Térraba-Sierpe National Wetland, one of the many Ramsar sites that contain mangroves, generates approximately USD 1130/day in the extraction of shellfish.[9] Likewise, the ecosystem services provided by mangroves in the Baulas National Park have an estimated value of USD 20,198.[10] Nevertheless, although the benefits from wetlands and mangroves are unique, there are challenges involved in the effective conservation of these ecosystems in Costa Rica. Thus, it is necessary to raise awareness about the importance of their conservation and rational use, and prioritize effective management actions by the competent institutions.[11]

---

1 Evans, S. (1999). *The Green Republic: A Conservation History of Costa Rica*. Austin: University of Texas Press; Wallbott, L. et al. (2019). Beyond PES and REDD+: Costa Rica on the way to climate-smart landscape management? *Ecology and Society* 24(1). Pg. 1.

2 National System of Conservation Areas (2014). *State of the conservation of biodiversity in Costa Rica: First technical report of the Program of Ecological Monitoring of Protected Areas and Biological Corridors of Costa Rica*. Costa Rica: SINAC-PROMEC. Pg. 12; Programa Estado de la Nación en Desarrollo Humano Sostenible (2018). *Informe Estado de la Nación 2018/PEN-CONARE*. San José, Costa Rica. Pg. 135.

3 López-Angarita et al. (2016). Mangroves and people: Lessons from a history of use and abuse in four Latin American countries. *Forest Ecology and Management* 368:151-162.

4 State of the Nation Report (2015). Pg. 191

5 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Inventario Nacional de Humedales*. SINAC/PNUD/GEF. Pg. 31; Peña, M. (2011). *Legal protection of Wetland Ecosystems*. Judicial Journal No. 99, Costa Rica. Pg. 1; *See also* Wetlands Project SINAC-PNUD-GEF (2017). *Valuation of the ecosystem services offered by seven of the protected wetlands of international importance in Costa Rica*. SINAC / CINPE-UNA / UNDP. 144pp. Pg. 12.

6 Peña, M. (2011). *Legal protection of Wetland Ecosystems*. Judicial Journal No. 99, Costa Rica. Pg. 1; FAO (2007). *The world's mangroves 1980-2005*. FAO Forestry Paper 153, Rome. Pg. 29.

7 Ramsar 2018. *Ramsar Sites Information Service*. https://rsis.ramsar.org/ris-search/?f[0]=regionCountry_en_ss%3ACosta+Rica [Downloaded 5 December 2018].

8 Programa Estado de la Nación en Desarrollo Humano Sostenible (2018). Informe Estado de la Nación 2018/PEN-CONARE. San José, Costa Rica. Pg. 148.

9 SINAC, MINAE (2017). *Política Nacional de Humedales 2017-2030*. GEF, PNUD, San José, Costa Rica.

10 BIOMARCC-SINAC-GIZ (2014). Payments for ecosystem services of mangroves: A case study of the Savegre Delta, Costa Rica. San José, Costa Rica. Pg. 28; Wetlands Project SINAC-PNUD-GEF (2017). Valuation of the ecosystem services offered by seven of the protected wetlands of international importance in Costa Rica. SINAC/CINPE-UNA/UNDP. 144pp. Pg. 81.

11 SINAC, MINAE (2017). *Política Nacional de Humedales 2017-2030*. GEF, PNUD, San José, Costa Rica. Pg. 52; Interview with Maricela Rodriguez Porras, Chief Legal Advisor of the Viceministry of Oceans, 31 January 2018. The opinions expressed are in her personal capacity.

As will be seen in this case study, Costa Rica has developed a relatively robust environmental legal framework, but challenges in its implementation have undermined the effective management and protection of mangrove ecosystems. However, it should be highlighted that during the last couple of years, the country has improved its legal provisions, institutional strategies, and the generation of technical information for more adequate conservation and management action regarding wetlands and mangroves.

## 4.2 Instrumental level: A solid and diverse legal framework

Costa Rica has succeeded in positioning itself internationally as a conservation leader. Appropriately, it has been actively participating in international forums, such as the Ramsar Convention, and steering discussions towards more ambitious schemes of conservation and sustainable use of ecosystems and biodiversity. In this respect, many laws and Executive Decrees are part of the legal framework addressing the conservation and sustainable use of wetlands in the country. As a relevant departure point, it must be acknowledged that the legal concept of wetlands in Costa Rica has evolved into a comprehensive definition that encompasses mangroves, estuaries, corals, and other similar water-dependent ecosystems.[12]

### 4.2.1 High-level provisions: Constitution, International Conventions, and Policy Instruments

Wetlands, and therefore mangroves, are considered an integral part of the environment, and have well-recognized constitutional protection under the right to life and health, as well as the right to a healthy and ecologically balanced environment.[13] The constitution stipulates that one of the cultural purposes of the Republic of Costa Rica is to protect natural beauty.[14] This triad of provisions sets out the overarching constitutional protection of the environment in Costa Rica and as such, fully applies to mangrove ecosystems.

In supplementing the scope of this constitutional protection regime and, more specifically, in addressing the conservation of wetlands and mangroves, Costa Rica has ratified and signed a variety of International Conventions, consequently enhancing the legal framework applicable to these ecosystems. Some of the most relevant international instruments are the Ramsar Convention, the World Heritage Convention, Modify: the United Nations Convention on the Law of the Sea (UNCLOS), the Convention On Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. In parallel, Costa Rica has ratified a number of regional agreements affecting mangroves such as the Convention for the Protection of the Flora, Fauna, and Natural Scenic Beauties of the Countries of America (Washington Convention); the Convention for the Conservation of Biodiversity and Protection of Priority Wild Areas of Central America; the Convention for the Protection and the Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention); and the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement), among others. [15]

From an International Law perspective, Costa Rica has not yet fully internalized some of the commitments within the framework of the

12 *Decreto Ejecutivo* No. 22550-MIRENEM of 14 September 1993 *declara humedales a las áreas de manglares adyacentes a los litorales continentales e insulares del país*. Article 1; *Ley Orgánica del Ambiente* of 4 October 1995. Article 40.

13 The Constitution of Costa Rica of 8 October 1949. Article 21, 50.

14 *Ibid*. Article 89.

15 Convention for the Protection of the Flora, Fauna, and Natural Scenic Beauties of the Countries of America, ratified by *Ley* No. 3763 on 19 October 1966; Convention for the Conservation of Biodiversity and Protection of Priority Wild Areas of Central America, ratified by *Ley* No. 7433 on 14 September 1994; Convention for the Protection and the Development of the Marine Environment of the Wider Caribbean Region, signed by Costa Rica on 6 October 1999; Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú, 4 March 2018).

Ramsar Convention. It has declared 12 Ramsar sites, established a National Wetlands Policy and developed a strong legal framework, as described in this chapter. However, the country still has work to do to incorporate the obligations and Ramsar Resolutions into its legal system. It could improve the conservation and management of its mangroves and wetlands by using a variety of mechanisms specified in the Convention, such as advisory visits, working with experts, and exchanging information and experience, among others.[16]

In relation to policy guidelines, national instruments provide the main guidance for action relating to mangroves in Costa Rica. However, it is worth mentioning, from a regional perspective, the Central American Policy for the Conservation and Rational Use of Wetlands, which Costa Rica has endorsed.[17] This policy was agreed by the countries of the region to harmonize actions implementing commitments under the Ramsar Convention, as 8% of the Central American isthmus is covered by wetlands, of which approximately 567,000 ha are mangroves.[18] Collaborative objectives and actions set out the policy relate to mechanisms for the protection and sustainable use of wetlands; institutional, regional, national, and local capacities; and integrated management of watersheds with an ecosystem management approach, among others.[19] Even though this Policy could be considered a valuable example of regional coordination, this instrument is not currently being implemented in Costa Rica. However, its main objectives are similar to those included in the National Wetlands Policy of Costa Rica, addressed below. An additional regional tool is the Central American manual for measuring blue carbon in mangroves, which provides methodology recommendations for government technical officers and the identification of best practices to quantify blue carbon storage.[20]

On a national level, four main instruments shape the approach to managing mangroves in Costa Rica: the National Biodiversity Policy; the National Climate Change Strategy; the National Risk Management Policy; and the National Wetlands Policy.

The National Biodiversity Policy of Costa Rica recognizes the loss of mangrove coverage as a direct threat to biodiversity.[21] It identifies several activities as responsible for the decline of mangrove areas, including land use change due to infrastructure development (tourism, services, transportation, urbanization, trade); intensive agriculture (e.g. pineapple crops, palm oil trees); invasion of protected areas by people; lack of control and monitoring of critical habitats; erosion and pollution from domestic sources, industry, tourism operations, and municipal solid waste, among others.[22] Mangroves are incorporated into specific guidelines within this policy, in particular with the objective of strengthening wastewater and solid waste management capacities to prevent pollution.[23] Furthermore, this instrument calls for the consideration of highly threatened and fragile ecosystems, including mangroves, as well as ecosystems that support biodiversity life cycles and resilience.[24]

The National Climate Change Strategy defines key sectors where Costa Rica should work on adapting

16 Interview with Gladys Martínez de Lemos, Senior Attorney of the Marine Biodiversity and Coastal Protection Program, Inter-American Association for the Defense of the Environment, 7 February 2018.

17 Comisión Centroamericana de Ambiente y Desarrollo (2002). *Política centroamericana para la conservación y uso racional de los humedales*. San José, Costa Rica.

18 In addition, 31 wetlands in the region have been declared Ramsar sites, from which 22 contain mangrove ecosystems. Comisión Centroamericana de Ambiente y Desarrollo (2002). *Política centroamericana para la conservación y uso racional de los humedales*. San José, Costa Rica. Pg. 7; In addition, mangroves and wetlands provide multiple ecosystem services, including the mitigation of damage from storms, which "is a key service of outstanding value for the Central American region, as it is vulnerable to natural disasters and extreme weather events, as evidenced by the eye opening example of hurricane Mitch, which signified 6 billion dollars in damages, equivalent to 15% of the gross annual national product of all of Central America in 1998." *Ibid.* Pg. 25.

19 *Ibid.*

20 Cifuentes, J.M. et. al. (2018). *Manual Centroamericano para la medición de carbono azul en manglare*. Turrialba, Costa Rica: CATIE. Programa de Bosques, Biodiversidad y Cambio Climático.

21 Ministerio de Ambiente, Energía y Telecomunicaciones (2015). *Política nacional de biodiversidad 2015-2030 Costa Rica*. UNDP, San José, Costa Rica. Pg. 21.

22 *Ibid.* Pg. 71.

23 *Ibid.* Pg. 41.

24 *Ibid.* Pg. 44.


to climate change, including fisheries and coastal zones.[25] This instrument highlights the importance of restoring mangrove areas to reduce the vulnerability of coastal areas.[26] The strategy and Action Plan for the adaptation of the Costa Rican biodiversity sector to climate change (2015-2025) refers once to mangroves, when examining threats to biodiversity in continental waters, and indicates that a warming climate will reduce carbon sequestration rates in these ecosystems.[27] More broadly speaking, this strategy refers to biodiversity adaptation measures, including improved restoration techniques for wetlands.[28] Even though the National Climate Change Strategy does not address mangroves in-depth, a number of community-based projects have been working on restoration of mangroves linked to mitigating and adapting to climate change (see Section 4).

Likewise, the National System of Conservation Areas (SINAC) promoted initiative GRUAS II identified the urgency of protecting 1,126 km$^2$ of wetland areas as a means of adapting to climate change, in accordance with Costa Rica's Nationally Determined Contribution (NDC).[29] The NDC also addresses mitigation actions such as enhancing carbon sinks (land-use and reforestation), and seeks to strengthen the country's adaptation capacity through effective risk and adaptation management based in both communities and ecosystems.[30] Furthermore, the programme entitled "Reducing Vulnerability Focusing on Critical Sectors" pursues the restoration of mangroves as natural barriers to protect coastal communities from the impact of sea level rise and storms.[31]

---

25 Ministerio de Ambiente, Energía y Telecomunicaciones (2009). *Estrategia Nacional de Cambio Climático*. San José, Costa Rica.

26 *Ibid.* Pg. 66.

27 BID-MINAE-SINAC-DDC (2015). *Estrategia y plan de acción para la adaptación del sector biodiversidad de Costa Rica al cambio climático (2015-2025)*. San José, Costa Rica. Pg. 3.

28 *Ibid.* Pg. 6.

29 GRUAS II is an "initiative promoted by SINAC in conjunction with other agencies, which aims to guide national land use policies using the best available scientific knowledge, optimizing national efforts for the in situ conservation of biodiversity in terrestrial, freshwater, coastal and marine ecosystems". SINAC. Glossario. http://www.sinac.go.cr/ES/Paginas/Glosario.aspx [Accessed 22 January 2019]; Sistema Nacional de Áreas de Conservación. Grúas II. Propuesta de ordenamiento territorial para la conservación de la biodiversidad de Costa Rica: Vol 1. Análisis de vacíos en la representatividad e integridad de la biodiversidad terrestre / SINAC- MINAE. San José, Costa Rica; Programa Estado de la Nación en Desarrollo Humano Sostenible (2018). *Informe Estado de la Nación 2018/PEN-CONARE*. San José, Costa Rica. Pg. 39.

30 Costa Rica's first Intended Nationally Determined Contribution (submitted 13 October 2016). UNFCCC. Pg. 11, 12.

31 Corrales, L. (2017). *Cambio climático: Impactos y desafíos para Costa Ri*ca. Informe Estado de la Nación en Desarrollo Humano Sostenible. Pg. 34.

The Costa Rican National Risk Management Policy 2016-2030 provides for actions in relation to fostering resilience through territorial planning in coastal areas, where wetlands and mangroves are key allies in mitigating the impact of extreme weather events.[32] This Policy calls for the inclusion of risk management in planning instruments with the aim of reducing vulnerability in marine and coastal zones.[33] Weak territorial planning has been identified as one of the main threats for effective mangrove conservation in Costa Rica.[34]

A recent milestone is the approval of the National Wetlands Policy 2017-2030.[35] In advancing towards a comprehensive instrument, this Policy aims to converge the SDGs with international mandates, including the Ramsar Convention and the Aichi targets, as well as national mandates. The policy was formalized through an Executive Decree which requires those public institutions with competence regarding wetlands and mangroves to incorporate this action area into their institutional operating plans and allocation of budgetary resources.[36]

The overarching objective of the National Wetlands Policy is to fully manage wetland ecosystems in order to contribute to national development, while ensuring the long-term provision of goods and services from these ecosystems.[37] Five action areas form its backbone, namely: a) conservation of wetland ecosystems, their goods and services; b) provision of ecosystem services and climate adaptation; c) ecological rehabilitation of wetland ecosystems; d) institutional strengthening; and e) inclusive participation and democratic governance.[38] This Policy is a breakthrough, as wetlands and mangrove ecosystems have not been a priority on the environmental agenda in recent years.[39] In the past three years, some projects funded by international cooperation have delivered important technical tools that have positioned mangroves and wetlands as a priority.

Finally, the concept of the blue economy has begun to emerge in marine forums and national processes in Costa Rica. In this regard, the Vice-Minister of Oceans has indicated that one of the government's tasks is to create baselines for scientific, technical, and economic information that allow communities and all the other users of the ocean to realize the benefits of moving towards a more sustainable scheme where conservation and use go together.[40] **Within the blue economy national agenda, the restoration of mangroves has been set as a priority, with a focus on blue carbon initiatives and the specific restoration of these ecosystems.**[41] Nevertheless, a holistic approach and the identification of pathways for cooperation across these policies is needed to address fragmented governance in relation to mangrove conservation and management in the country.

### 4.2.2 Conceptual approach and juridical nature

The development of the legal concept of wetlands has evolved into a more comprehensive definition in Costa Rica. As an initial conceptual approach, the definition embedded in the Ramsar

32 Comisión Nacional de Prevención de Riesgos y Atención de Emergencias (2015). *Política Nacional de Gestión del Riesgo 2016-2030*. San José, Costa Rica; Proyecto Humedales de SINAC- PNUD-GEF (2017). *Valoración de los servicios ecosistémicos que ofrecen siete de los humedales protegidos de importancia internacional en Costa Rica: Palo Verde, Caribe Noreste, Caño Negro, Gandoca-Manzanillo, Maquenque, Térraba-Sierpe y Las Baulas*. SINAC/CINPE- UNA/PNUD. 144pp. Pg. 39.

33 Comisión Nacional de Prevención de Riesgos y Atención de Emergencias (2015). *Política Nacional de Gestión del Riesgo 2016-2030*. San José, Costa Rica. Pg. 54.

34 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

35 SINAC, MINAE (2017). *Política Nacional de Humedales 2017-2030*. GEF, PNUD, San José, Costa Rica.

36 *Decreto Ejecutivo* No. 40244-MINAE-PLAN of 6 March 2017; Interview with Maricela Rodriguez Porras, Chief Legal Advisor of the Vice-Ministry of Water, Oceans, Coastal Areas and Wetlands, 31 January 2018. The opinions expressed are in her personal capacity.

37 SINAC, MINAE (2017). *Política Nacional de Humedales 2017-2030*. GEF, PNUD, San José, Costa Rica. Pg. 41.

38 *Ibid.*

39 Interview with Maricela Rodriguez Porras, Chief Legal Advisor of the Vice-Ministry of Water, Oceans, Coastal Areas and Wetlands, 31 January 2018. The opinions expressed are in her personal capacity; Interview with Gladys Martínez de Lemos, Marine Biodiversity and Coastal Protection Program, Inter-American Association for the Defense of the Environment (AIDA), 7 February 2018.

40 Chacón, V. (8 January 2019). *"Hay que hacer cambios severos en el aprovechamiento de los mares"*. https://semanariouniversidad.com/pais/hay-que-hacer-cambios-severos-en-el-aprovechamiento-de-los-mares/?fbclid=IwAR0E9CpChoZijz7qbH7aqn9-8xKDDYz8B6EIvbEgUmbBOSmIbu-z1zuql4U [Accessed 8 january 2019].

41 Interview with Haydée Rodríguez Romero, Vice-Minister of Oceans. Ministry of Environment and Energy, 21 January 2019.

Convention was also included in the Wildlife Conservation Law and other legal instruments, namely: the Environment Organic Law, the Fisheries and Aquaculture Law, and Executive Decree No. 36786-MINAET.[42]

A step forward in constructing a more inclusive legal concept of wetlands came from a Resolution of the Constitutional Chamber of the Supreme Court of Justice of Costa Rica, where all wetlands are considered to be of public interest, whether or not they have been declared a protected area.[43] Consequently, the State's legal obligations with regard to the protection of wetlands extend to all ecosystems classified as such, including mangroves, estuaries, and corals, among others. Similarly, if an ecosystem's ecological characteristics classify it as a wetland, that ecosystem is allowed protection.

Reinforcing and clarifying this visionary idea, the Constitutional Chamber of the Supreme Court developed two dimensions of the legal concept of wetlands, namely: a) wetlands as an ecosystem; and b) wetlands as a management category of a protected area.[44] In the former, the definition identifies the ecological characteristics of a wetland, which coincide with those of the Ramsar Convention.[45] The second dimension refers to a wetland as a management category of a protected area, specifically established under the Environment Organic Law.[46] Here, the establishment of a protected area under the 'wetland' management category must comply with the legal requirements established in the Environment Organic Law, including its formal creation through a law or an Executive Decree.[47]

Therefore, in Costa Rica the comprehensive concept of wetlands currently includes mangroves and other water-dependent ecosystems. However, it must be highlighted that distinguishing between wetlands, mangroves, estuaries, and corals is relevant in Costa Rican environmental legislation, since different provisions and ranges of protection are applicable to these distinct ecosystems.

In addition, it must be emphasized that **the legal protection covering mangrove ecosystems is stricter, as they are considered to be in the public domain and, consequently, they are inalienable and imprescriptible, and cannot be the object of occupation under any title.**[48]

Finally, an important landmark in the overall legal regime that applies to mangroves is the premise that even though an area has been deprived of mangrove vegetation, it will maintain its public domain legal status.[49] This provision establishes the irreducibility of mangroves, in line with the precedent jurisprudence preventing degraded forests from becoming the subject of private appropriation.[50] Nevertheless, if there is no clarity about the location and extent of mangroves, it is difficult to control land use changes to the detriment of mangroves.[51] Accordingly, having an up-to-date national inventory of wetlands and mangroves is a key element of implementing this legal provision.

---

42 *Ley de Conservación de la Vida Silvestre* of 30 October 1992. Article 2; *Ley Orgánica del Ambiente* of 4 October 1995. Article 40; *Ley de Pesca y Acuicultura* of 1 March 2005. Article 2; *Decreto Ejecutivo* No. 36786-MINAET *manual para la clasificación de tierras dedicadas a la conservación de los recursos naturales dentro de la zona marítimo terrestre en Costa Rica* of 12 August 2011. Article 5(j).

43 Sala Constitucional de la Corte Suprema de Justicia. *Voto* No. 16938–2011 of 7 December 2011.

44 Sala Constitucional de la Corte Suprema de Justicia. *Voto* No. 14288 of 9 September 2009.

45 *Ibid.*

46 *Ley Orgánica del Ambiente* of 4 October 1995. Article 32(f).

47 *Ibid.* Article 36.

48 *Ley sobre la Zona Marítimo Terrestre y su Reglamento* of 16 December 1977. Article 11; *Ley Forestal* of 10 February 1996. Article 13.

49 *Decreto Ejecutivo* No. 29342-MINAE of 6 February 2001. Article 5.

50 Tribunal de Casación Penal. *Voto* No. 2004-0260 of 18 March 2004. This jurisprudence developed the principle of irreducibility of forests, by means of which, land use change in areas with forest coverage is not possible, being the State's obligation to do everything possible to restore such areas.

51 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Vice-Ministry of Oceans, 7 February 2018.

### 4.2.3 Connecting legal provisions: Linkages between sectoral regulations and the conservation and sustainable use of mangroves

Diverse sectoral provisions correlate with mangroves and wetland ecosystems in Costa Rica. The Forestry Law prohibits the cutting or use of mangrove forests, as well as the entry and establishment of settlements in wetlands and protected areas, in virtue of the previously mentioned public interest in these ecosystems and the consideration of mangroves as part of the National Natural Heritage as provided by the Forestry Law.[52] There are three exceptions to this prohibition: research, education, and ecotourism.[53] These activities require prior approval by the Ministry of Environment and Energy (MINAE), and, when appropriate, the presentation of an Environmental Impact Assessment (EIA).[54]

The transitional provisions of this law allow permits, concessions and contracts covered by previous legislation to remain in effect until they expire. This particular article was an antecedent of the Executive Decree which regulated the renewal of existing use permits in mangrove areas for the production of salt or shrimp. In this regard, an application for a specific permit renewal has to be submitted to the SINAC, and a management plan is required with the respective approval of the Institute of Fisheries and Aquaculture (INCOPESCA) on the technical aspects of its competence.[55] Currently there are 63 permits under the transitional provision in the Forestry Law.[56] The production of salt and shrimp in the Gulf of Nicoya covers an area of approximately 1,435 ha.[57]

Shrimp production in mangroves has become more complicated, as the number of farms operating without the required permits has increased.[58] On the Pacific coast, for example, approximately 100 shrimp farms are operating illegally.[59]

Planning regulations are also relevant to this study. The National Wetlands Policy binds those public institutions with competence regarding wetlands and mangroves to incorporate its action areas into their planning instruments.[60] For example, the formulation, review or reform of the Territorial Ordinance Plans should consider wetland ecosystems and an integrated approach for watershed management.[61] The Ordinance Plans cannot allow activities that would degrade mangrove ecosystems.

The Law of the Maritime Terrestrial Zone (LZMT) has established that mangroves located far away from coastlines are also considered part of the public area of the Maritime Terrestrial Zone, and subsequently they must be dedicated to public use, they cannot be occupied under any circumstance, and a claim of rights over them is not permitted.[62] Additionally, due to the legal condition of mangroves as public areas, they have a buffer area (or restricted zone) of 150 metres. Within the public zone the requirements imposed by the LZMT for the development of economic activities must be complied with.[63] Flora and fauna from the maritime zone or mangroves cannot be used without formal authorization; the punishment is between six months and four years in prison.[64]

Similarly, with regard to planning infrastructure along the coastline, the Law of Concession and Operation of Touristic Marinas prohibits the

52 *Ley Forestal* of 10 February 1996. Article 1, 13, 14, 15, 58.

53 *Ibid.* Article 18.

54 *Ibid.* Article 18.

55 *Decreto Ejecutivo* No. 29342-MINAE of 6 February 2001. Article 1, 2, 3.

56 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 May 2019.

57 SINAC (2019). *Estrategia Regional para el Manejo y Conservación de los Manglares en el Golfo de Nicoya-Costa Rica 2019-2030*. San José, Costa Rica. Pg. 12.

58 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Vice-Ministry of Oceans, 7 February 2018.

59 *Ibid.*

60 SINAC, MINAE (2017). *Política Nacional de Humedales 2017-2030*. GEF, PNUD, San José, Costa Rica. Pg. 65.

61 *Ibid.* Guidelines 1.1. Action Line 4.

62 *Ley sobre la Zona Marítimo Terrestre y su Reglamento* of 16 December 1977. Article 20.

63 *Ibid.* Article 11, 22.

64 *Ibid.* Article 61.

**Figure 6:** Prohibited activities in mangrove areas


Source: IUCN Environmental law Centre

granting of concessions for the construction of marinas and tourist docks in mangrove areas.[65]

Activities aimed at disrupting the natural cycles of wetland ecosystems, such as dam construction to prevent the flow of marine or continental waters, drainage, drying out, filling in or any other alteration that causes the deterioration and elimination of these ecosystems are prohibited by the Environment Organic Law.[66] In this same line, two Executive Decrees prohibit the construction of infrastructure for shrimp farms or salt production projects that could affect mangroves.[67] Furthermore, there is a total prohibition of any activity that interrupts the normal growth of mangroves.[68] Likewise, the Wildlife Conservation Law prohibits draining, drying out, or filling in wetlands, whether or not they are declared as a protected area; the punishment for this conduct is one to three years in prison.[69]

These provisions could give rise to the idea of a strong framework with regard to mangroves, but there are challenges in the practicalities of implementing such regulations. **For example, the institutional processes for geo-locating mangroves do not consider mangrove-associated vegetation to be an integral part of mangrove ecosystems, which translates into weak control of these areas and has led to abuses and land use changes by the production and tourism sectors.**[70] Additionally, territorial zoning plans have not been developed for all of the country's coastal territory,

65 *Ley de Concesión y Operación de marinas y atracaderos turísticos* of 19 December 1997. Article 1.

66 *Ley Orgánica del Ambiente* of 4 October 1995. Article 45.

67 *Decreto Ejecutivo* No. 39411-MINAE-MAG of 2 September 2015 *reglamento para el Aprovechamiento Racional de los Recursos Acuáticos Aprobados en los Planes Generales de Manejo de los Humedales*. Article 9; *Decreto Ejecutivo* No. 29342-MINAE of 6 February 2001 *permisos de uso en áreas de manglar*. Article 3.

68 *Decreto Ejecutivo* No. 22550-MIRENEM of 14 September 1993 *declara humedales a las áreas de manglares adyacentes a los litorales continentales e insulares del país*. Article 7.

69 *Ley de Conservacion de la Vida Silvestre* of 30 October 1992. Article 98.

70 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

thus making the decision-making processes that involve local governments (municipalities) and SINAC more difficult.[71]

Advancing into other regimes, EIAs are required for any type of activity that affects wetland ecosystems.[72] The importance of this as a global best practice should be emphasized. The Wetlands Policy seeks the strengthening of EIA processes, which should take into consideration the updated national inventory of wetlands.[73] Moreover, two Executive Decrees include provisions that reinforce the compulsory nature of the EIA requirement in relation to mangroves.[74] The Constitutional Chamber of the Supreme Court has made it mandatory to conduct EIAs prior to any activity, project or work that affects a wetland ecosystem, in close coordination with the National Environmental Technical Secretary (SETENA).[75]

A singular exception in the implementation of this obligation appears when specific activities approved by previous regulations are already in operation, and an EIA would not be the best instrument for addressing their impacts. The most appropriate tool for these cases is an Environmental Diagnosis with the objective of determining what corrective actions are necessary to mitigate environmental harm.[76]

Interventions in wetland ecosystems by SINAC and other competent authorities can be authorized to repair, maintain, construct or expand State public infrastructure that has been previously declared of national convenience, such as highways.[77] However, demonstration of environmental viability through an EIA is an essential condition for SINAC to authorize the requested intervention.[78]

Other sectoral provisions that apply to mangroves are those related to protected areas. Protected areas are established based on their importance in the conservation of special ecosystems, to protect endangered species, and for cultural and historic significance.[79] Moreover, wetlands are also considered one type of management category of protected areas.[80] Activities such as introduction of alien species, disposal of polluting substances and mining are prohibited within these areas, pursuant to the overall environmental legal framework.[81] However, the respective management plan is the instrument that establishes permitted and prohibited activities in a specific protected area.

MINAE/SINAC and INCOPESCA have competence to jointly establish and approve management plans for wetlands, with the exception of those included in national parks and biological reserves, which are under the exclusive competence of MINAE.[82] Activities such as the cultivation, repopulation, and rational extraction of molluscs and crustaceans can be authorized by management plans.[83] For example, fishing in mangroves that have been declared protected areas is restricted and may only be carried out

71 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

72 *Ley Orgánica del Ambiente* of 4 October 1995. Article 43, 44.

73 SINAC, MINAE (2017). Política Nacional de Humedales 2017-2030. GEF, PNUD, San José, Costa Rica. Action line 4.3. Specific Action 10.

74 *Decreto Ejecutivo* No. 29342-MINAE of 6 February 2001 *permisos de uso en áreas de manglar*. Article 5; *Decreto Ejecutivo* No. 31849-MINAE-MOPT-MAG-MEIC of 28 June 2004. Anexo No. 1.

75 Sala Constitucional de la Corte Suprema de Justicia. *Resolución* No. 00938-2001of 2 February 2001.

76 CCAD/UICN (2006). *Instrumentos para la agilización, armonización y modernización de los sistemas de EIA en Centroamérica*. UICN. Oficina Regional para Mesoamérica, San José, Costa Rica. Pg. 21; See also *Resolución* No. 2572-2009 SETENA of 2 November 2009.

77 *Decreto Ejecutivo* No. 39838-MINAE of 27 July 2016. Article 3. With the declaration of national convenience status, a particular project is exempt from two important legal environmental restrictions: the prohibition of land use change (*Ley Forestal* of 10 February 1996. Article 19) and the cutting of trees -including prohibited species (*Ley Forestal* of 10 February 1996. Article 33, 34).

78 *Ibid*. Article 4.

79 *Ley de Biodiversidad* of 27 May 1998. Article 58.

80 *Ley Orgánica del Ambiente* of 4 October 1995. Article 32(f); *Decreto Ejecutivo* No. 22550-MIRENEM of 14 September 1993 *declara humedales a las áreas de manglares adyacentes a los litorales continentales e insulares del país*.

81 Prohibited forms of conduct in wetlands are the following: harming populations of target fish species and the ecosystems on which they depend (*Ley de Conservación de la Vida Silvestre* of 30 October 1992. Article 97); the introduction of domestic or any alien species to mangroves (*Decreto Ejecutivo* No. 29342-MINAE. Article 4); the disposal of polluting substances in wetlands and related ecosystems (*Ley de Conservación de la Vida Silvestre* of 30 October 1992. Article 100, 128); mining exploration and exploitation in protected areas (*Codigo De Mineria* of 22 October 1982. Article 8; *Ley Orgánica del Ambiente* of 4 October 1995. Article 37, 42). See also *Ley de Pesca y Acuicultura* of 1 March 2005. Article 2, 35.

82 *Decreto Ejecutivo* No. 39411-MINAE-MAG of 2 September 2015 *Reglamento para el aprovechamiento racional de los recursos acuáticos aprobados en los Planes Generales de Manejo de los Humedales*. Article 4-9.

83 *Ibid*. Article 2.

when a specific management plan allows this activity.[84]

A number of wetlands do not currently have these approved management plans. In these cases INCOPESCA and SINAC can grant temporary authorization to associations and cooperatives of local communities for the exploitation of bivalve molluscs (e.g. piangua, clams, mussels), which have been used for food security, family trade, and eradication of poverty.[85] One example is the authorization of specific sizes and quantities for the extraction of piangua (*Anadara similis* and *Anadara tuberculosa*) in specific estuaries by members of the Cooperativa de Moluscos de Chomes.[86]

**A protected area can only be downgraded by Law in its level of protection, never by Executive Decree, and technical studies must be presented to justify this decision.**[87] This provision seeks high-level controls with a view to discouraging the decline of protected areas.

Under fishery and aquaculture regulations, the construction of canals in mangrove areas for aquaculture projects is only allowed when the project has a technical reason that justifies this activity.[88] Additionally, and as seen previously, the Fisheries and Aquaculture Law stipulates that fishing activities in wetlands are restricted to the specifications of the respective management plan.[89]

Further prohibitions apply to fishing gear, such as explosives, spear guns, cast nets and multiple lines, that could endanger species in wetlands considered part of the National Natural Heritage.[90] If this kind of fishing gear is used, there is a penalty of a fine of five to ten base salaries, or of two to eight months in prison, as well as confiscation of equipment or materials.[91] There is an exception for indigenous traditional use; a fishing practice that has been developed over millennia by indigenous communities in wetlands is excluded from criminality.[92] This has its background in CBD which provides for respect for the knowledge, innovations and practices of indigenous communities.[93] However, the delicate balance between recognized traditional uses and their environmental impact is a critical element to be taken into consideration by the competent authorities.[94]

## 4.3 Institutional level: Weaknesses identified but still to be addressed

### 4.3.1 Key institutions responsible for mangrove conservation and management

The institutional framework through which the regulations on mangroves are implemented starts with the main actor, the Ministry of Environment and Energy (MINAE), a complex entity made up of different dependencies and decentralized bodies. MINAE has evolved from a marginal background to consolidate itself as a relevant player in the national agenda.[95] The Ombudsman's Office has clarified that mangroves, as part of the public area

84 *Ibid.* Article 3.

85 *Ibid.* Article 11 as amended by *Decreto Ejecutivo* No. 40023-MINA-MAG.

86 *Acuerdo de Junta Directiva INCOPESCA* No. AJDIP/422-2018; *Decreto Ejecutivo* No. 39411-MINAE-MAG. Article 11 as amended by *Decreto Ejecutivo* No. 40023-MINA-MAG.

87 *Ley Orgánica del Ambiente* of 4 October 1995. Article 38.

88 *Decreto Ejecutivo* No. 23247-MIRENEM of 20 April 1994. Article 4.

89 *Ley de Pesca y Acuicultura* of 1 March 2005. Article 9, 13.

90 *Ley de Conservación de la Vida Silvestre* of 30 October 1992. Article 68.

91 *Ibid.* Article 97.

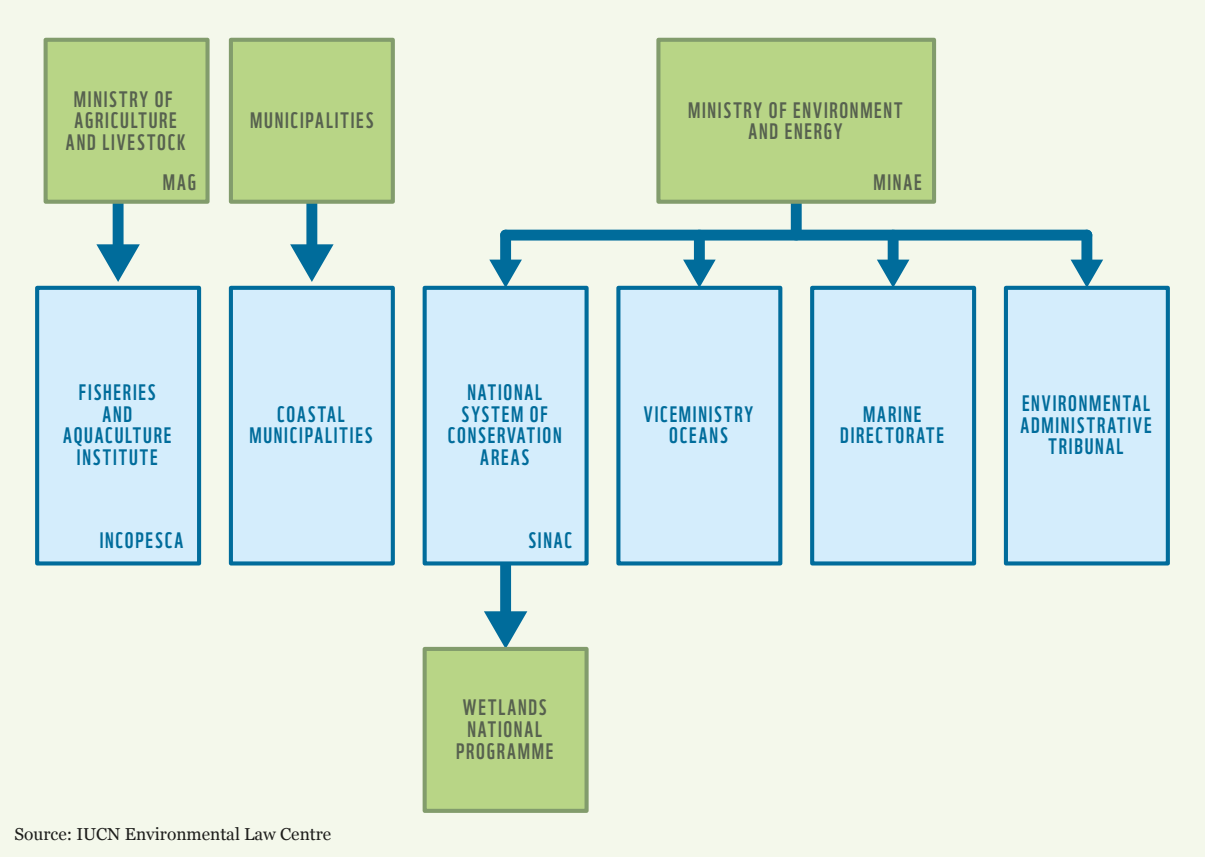
92 *Ibid.* Article 97.

93 Convention on Biological Diversity (Rio de Janeiro, 5 July 1992). Article 8.

94 Aguilar González, B. and Rodríguez Porras, M. (2015). *Régimen Jurídico Nacional de los Humedales en Costa Rica*. Fundación Neotrópica, Viceministerio de Aguas, Mares, Costa y Humedales del Ministerio del Ambiente. Pg. 25.

95 MINAE. *Historia del Minae*. http://www.minae.go.cr/acerca-de/historia-minae [Accessed 5 April 2019]. It was designated a competent institution on the environment through the Environment Organic Law in 1995.

**Figure 7:** Institutions related to mangrove management in Costa Rica




Source: IUCN Environmental Law Centre

of the maritime terrestrial zone, are within its competence.[96]

Within MINAE's structure, the National System of Conservation Areas (SINAC) is a decentralized body and the competent institution for protecting, supervising, and managing wetlands, including mangroves, using an ecosystem approach, as well as deciding on whether they qualify as being of national or international importance.[97] SINAC is the competent body for administering the Natural Heritage of the State, and developing management plans for wetland protected areas in consultation with INCOPESCA.[98]

Projects related to mangroves have been carried out in the country, thus facilitating financial resources for the implementation of action areas on conservation and sustainable use; but "a sustained institutional response over time has not accompanied these initiatives, as mangroves were not an institutional priority in SINAC, until recent years."[99]

Both MINAE and SINAC have limited resources for the effective fulfillment of their objectives and functions.[100] Against this background and in order to give greater support to the wetlands agenda within SINAC, the Wetlands National Programme was established.[101] This programme seeks the conservation and management of wetlands, as well as promotion of intergovernmental coordination with the public and private sectors, including NGOs.[102] Currently, this programme has one

96 Defensoría de los Habitantes. Expediente No. 019-03-95, Oficio CV-0102-96 of 11 January 1996.

97 *Ley de Biodiversidad* of 23 April 1998. Article 22, 7(h).

98 *Ley Forestal* of 10 February 1996. Article 13; *Ley de Pesca y Acuicultura* of 1 March 2005. Article 9, 13.

99 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

100 Camacho Navarro, A. et al. (2017). *Estado de los humedales: nuevos desafíos para su gestión*. Informe estado de la nación en desarrollo humano sostenible 2017. Pg. 9.

101 *Decreto Ejecutivo* No. 36427-MINAET of 25 January 2011 *crea el Programa Nacional de Humedales*; Comisión Centroamericana de Ambiente y Desarrollo (2002). *Política centroamericana para la conservación y uso racional de los humedales*. San José, Costa Rica. Pg. 16

102 Comisión Centroamericana de Ambiente y Desarrollo (2002). *Política centroamericana para la conservación y uso racional de los humedales*. San José, Costa Rica. Pg. 16

assigned Coordinator in SINAC central office, and one focal point for coordination within each of the 11 Conservation Areas, each containing mangroves. So far, at least 150 SINAC officers in the conservation areas have been trained on mangrove and wetland-related topics.[103]

During 2018, various projects delivered critical products to improve conservation and management action areas regarding mangrove ecosystems. Currently, the National Wetlands Programme of SINAC has as its main priorities the dissemination of the National Wetlands Inventory (as well as the frequent update of its contents), and the restoration of wetlands and mangroves in the country.[104]

Three supplementary institutional branches in MINAE's structure have oversight over mangrove conservation: the Marine and Coastal Directorate; the vice-ministry of Waters, Coasts, Wetlands, and Oceans; and the Environmental Administrative Tribunal. The latter has jurisdiction in complaints about violations of the national environmental legislation.[105] This tribunal can carry out on-site visits; impose fines and administrative sanctions; and apply interim protection measures according to the *in dubio pro natura* or precautionary principle.[106] **The tribunal has opened several administrative processes related to mangroves and wetlands and imposed a series of measures against different stakeholders due to legal transgressions such as the burning of mangroves, the construction of drainage, land use change, and the expansion of crops** (see Section 4.4.4).[107] This administrative jurisdiction, when used effectively, has proven to be a useful instrument in the implementation of environmental regulations related to mangrove ecosystems. Nevertheless, further coordination is needed between the tribunal and the National Wetlands Programme of SINAC, specifically in relation to on-site visits and the identification and evaluation of wetland and mangrove ecosystems, as these technical competences are assigned to SINAC.[108]

The municipalities are another key actor. As indicated in the previous section, mangroves are considered to be part of a public area within the territorial maritime zone. The respective municipality should regulate and enforce measures to conserve or prevent damage to the maritime zone and its natural resources.[109] Nevertheless, not all the municipalities with coastal areas in Costa Rica have approved their respective planning instruments known as Coastal Regulatory Plans; or in some cases these plans were developed without including wetlands or mangrove areas. This weakness in territorial planning in coastal areas causes challenges for the effective conservation and management of mangroves.[110] The National Wetlands Inventory must be considered in the development of planning instruments by the different public institutions, including municipalities.[111]

Other institutions have specific competences related to mangroves as part of the public areas within the territorial maritime zone. The Ministry of Public Works and Transportation, the Costa Rican Tourism Institute, the National Institute of Housing and Urban Development, and the respective municipalities are involved in the approval processes for developing infrastructure in these public areas. If construction is envisioned to be located in mangroves, the Ministry of

103 *Decreto Ejecutivo* No. 35803-MINAET of 7 January 2010 *criterios técnicos para la identificación, clasificación y conservación de humedales*. Article 9; Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018, 17 December 2018.

104 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018; Interview with Haydée Rodríguez Romero, Viceminister of Oceans, Ministry of Environment and Energy, 21 January 2019.

105 *Ley Orgánica del Ambiente* of 4 October 1995. Article 111.

106 *Ibid*. Article 98, 99, 108.

107 Tribunal Ambiental Administrativo (2012). *Península de Osa continúa ardiendo. Informe de Barrida Ambiental Febrero-Marzo 2012*; *See also* Rojas, P. (26 August 2014). *Tribunal Ambiental denuncia pérdida de 400 hectáreas del Manglar de Puntarenas, casos irán a Fiscalía*. http://www.crhoy.com/archivo/tribunal-ambiental-denuncia-perdida-de-400-hectareas-del-manglar-de-puntarenas-casos-iran-a-fiscalia/ [Accessed 5 April 2019].

108 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018; *Decreto Ejecutivo* No. 35803-MINAET of 7 January 2010 *Criterios técnicos para la identificación, clasificación y conservación de humedales*. Article 8.

109 *Ley sobre la Zona Marítimo Terrestre y su Reglamento* of 16 December 1977. Article 17.

110 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

111 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018.
For example, the Municipality of Talamanca has included the layers the information on wetlands and mangroves in its coastal planning instrument. Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 16 October 2019.


Agriculture and Livestock has the competence to provide technical criteria for the ecological conditions of these ecosystems.[112]

Given the variety of institutions with competences related to wetlands and mangroves, integrated management of these ecosystems within competent institutional structures is critical.

### 4.3.2 Institutional challenges

**The first and most relevant challenge for the competent institutions is a lack of financial and human resources to effectively implement legal provisions.** Additionally, fragmentation amongst agencies and actors hinders effective coordination and cooperation.

The Comptroller General of the Republic of Costa Rica (CGR) presented a report in 2011, in which a series of weaknesses in relation to wetland and mangrove conservation and management were identified.[113] Some of the outstanding issues included: the loss of vegetation coverage and water pollution at specific Ramsar sites; weaknesses in management plans; deficient data in the institutional geographical information system; a lack of guidelines or standardized procedures at Ramsar sites to support the work of the conservation areas; and weak control and surveillance of wetlands.[114] This report included binding provisions for MINAE and SINAC to improve the conditions in the wetlands and mangroves in the country.[115]

In compliance with these mandates, SINAC developed the project Conservation, Sustainable Use of Biodiversity and Maintenance of Ecosystem Services of Protected Wetlands of International Importance, also referred to as the Wetlands Project.[116] Funds provided by the Global Environmental Facility, and implemented with the support of the UNDP, set the financial background of this national project.

The project involves different stakeholders and has developed important products such as the first assessment of ecosystem services from Ramsar

112 *Ley sobre la Zona Marítimo Terrestre y su Reglamento* of 16 December 1977. Article 22.

113 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

114 Comptroller General of the Republic of Costa Rica. Report No. DFOE-AE- IF-13-2011 of 30 November 2011. Pg. 4, 12, 17, 18, 19.

115 *Ibid.* Pp. 21-24.

116 Camacho Navarro, A. et al. *supra* note 100.

sites in Costa Rica; the National Wetlands Policy; updated input from wetlands in the cadastral registry (e.g. cartography, orthophotos, cadastral maps); and an updated National Wetlands Inventory.[117] All of these are essential elements in decision-making processes, delimitations of Ramsar sites and the improvement of management and conservation measures for these valuable ecosystems.[118]

## 4.4 Behavioural level: Strong commitments from a range of stakeholders

The environmental agenda in Costa Rica has been evolving for a few decades, and society has acknowledged its relevance in the country's development. The legal and institutional frameworks have played a key role in the correlations between different stakeholders, critical ecosystems, and biodiversity. Even though Costa Rica has a relatively good legal framework for mangroves and wetlands, its weak implementation has influenced the patterns of behaviour of different stakeholders and has resulted in either positive or challenging circumstances for the mangrove ecosystems.

### 4.4.1 Coastal communities

Various worldwide examples have shown that the incorporation of local communities into mangrove management actions has helped with the long-term protection of these ecosystems.[119] In Costa Rica, coastal communities are dependent on the natural resources from mangroves, mainly molluscs, and rely heavily on the fisheries that are directly linked to the health of mangroves.[120] These communities have only a general understanding about the legislation that applies to mangroves and the subsequent prohibitions.[121] Education on environmental management and protection is a key element to be addressed with local communities. Government authorities and other stakeholders could play a proactive role in providing legal and technical information to improve the communities' relationships with these ecosystems.

Communities have different levels of involvement with mangroves in the country. Some communities have played an active role in the conservation of wetlands and mangroves, paying attention to the multiple goods and services that they provide. **In locations affected by water scarcity in Costa Rica, communities have realized the need to conserve mangroves to ensure the provision of water and other ecosystem services.** Likewise, communities affected by extreme weather events have acknowledged the great importance of mangroves in mitigating the impact of storms.[122] Other communities, such as San Buenaventura in Puntarenas, have advanced in supporting SINAC with their delimitation of mangrove areas, as well as supporting surveillance and filing complaints about irregular activities that might be taking place in the mangroves.[123]

Some communities have been proactive in mangrove restoration initiatives. CoopeMujeres, a women's cooperative in Cuajiniquil (North Pacific of Costa Rica) has been working on a mangrove reforestation project. Members of the Islita community in Puntarenas participate in mangrove nursery projects and mangrove restoration, in association with the Neotropica Foundation. Another initiative in the conservation and reforestation of mangroves takes place in Isla Venado, a community on the Gulf of Nicoya, through the creation of nurseries and the subsequent reforestation of mangrove areas.[124]

117 *Ibid.* Pg. 5, 10, 19.

118 *Ibid.* Pg. 10.

119 Rotich, B. et al. (2016). *Where land meets the sea: a global review of the governance and tenure dimensions of coastal mangrove forests*. CIFOR, USAID Tenure and Global Climate Change Program: Bogor, Indonesia and Washington, DC. Pg. 22.

120 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018; Blue Solutions (2015). *Blue solutions from Latin America and the Wider Caribbean*. GIZ/GRID-Arendal/IUCN/UNEP/BMUB. Pg. 48.

121 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

122 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

123 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

124 National Wetlands Programme official Facebook account. Videos of community members involved in mangrove restoration initiatives and projects. https://www.facebook.com/programanacionalhumedales/ [Accessed 6 April 2019].

Other communities have played a more passive role. **Even though people are aware of the legal restrictions on the minimum sizes of molluscs, they still collect undersize individuals in mangroves.**[125] A way forward to reduce this dependence on natural resources is the creation of production alternatives and jobs for this sector of the population, consequently reducing the pressure on mangroves.[126] Inter-institutional coordination should be strengthened to generate comprehensive strategies and production networks.[127]

An additional element to be considered in relation to coastal communities is an expanding phenomenon in Latin America, where mangroves are being used by drug traffickers to hide and transport drugs because protected areas in general are remote areas with low oversight by police.[128] This problem affects communities living in poverty, who may be in danger given the proximity of their homes to mangroves, or who may even be tempted to engage in illicit activities. Apart from the ecological damage due to the deforestation of mangroves associated with trafficking activities, this situation transcends the environmental sector and has direct implications for the national security system.

Lastly, local communities are involved in institutional processes relating to mangrove protected areas, including consultation on the development of management plans and participation in their implementation, seen as a joint responsibility of the competent authorities and local communities.[129] Initiatives from communal groups have evolved into specific projects linked to local economies, but always respecting the regulatory framework applicable to activities allowed in the National Natural Heritage.[130]

### 4.4.2 Multi-stakeholder partnerships: SINAC, NGOs and Academia

NGOs have supported SINAC and local communities through collaboration and cooperation in conservation projects.[131] This responds in part to the challenges that the government faces in relation to financial and human resources for effectively managing mangroves. There is no specific financial fund in SINAC to provide the necessary resources for the effective management, monitoring, and surveillance of mangroves.[132] Therefore, it has become critical to strengthen the coordination of conservation actions with local stakeholders and NGOs.[133]

Conservation International (CI) together with SINAC have convened different communities to discuss local initiatives on mangrove restoration. For example, a regional workshop saw the participation of communities and governmental organizations from Costa Rica, Panama, and Ecuador, with a focus on common challenges and best practices with regard to the restoration of mangroves.[134] Worth highlighting are some of the key findings of this workshop, including: a)

---

125 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 10; Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

126 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

127 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

128 *Ibid.*; *See also* Solano, C.H. (21 June 2017). *Estudio sobre penetración del narco en zonas protegidas detecta vulnerabilidad en Osa.* https://www.nacion.com/sucesos/seguridad/estudio-sobre-penetracion-del-narco-en-zonas-protegidas-detecta-vulnerabilidad-en-osa/37ZXPSWLYBB7FPWZL35OBRHQV4/story/ [Accessed 6 April 2019]; La Nacion (16 July 2012). *Narcos usan manglar de parque nacional para esconder droga.* https://www.nacion.com/sucesos/narcos-usan-manglar-de-parque-nacional-para-esconder-droga/2LVW4G4PFBFCDDUCFXEG7LREUM/story/ [Accessed 6 April 2019].

129 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Herramientas para mejorar la gestión en Sitios Ramsar de Costa Rica y otros ecosistemas de humedal.* Reporte 2014-2018 del Proyecto Humedales. SINAC/PNUD/GEF. 112pp. Pg. 42.

130 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

131 SINAC has also carried out mangrove restoration activities in protected areas, for example, in the Cipanci National Wildlife Refuge, where abandoned shrimp farms are under restoration by facilitating and improving the flow of water in the mangrove areas, as well as mangrove reforestation with plants from nurseries. MINAE–SINAC–CONAGEBIO–FONAFIFO (2018). *Resumen del Sexto Informe Nacional de Costa Rica ante el Convenio de Diversidad Biológica*. Sexto Informe Nacional para el CDB (6NR-LAC), Costa Rica. Pg. 19.

132 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

133 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

134 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 5.

the relevance of having a baseline on the state of mangroves for subsequent analysis on the loss of coverage; b) improvement of information dissemination in local initiatives working on mangrove restoration; c) the inclusion of mangroves as a topic to be studied in the education system; d) the need for standardizing a methodology for the active management and restoration of mangroves; and e) the need for guidelines or a protocol for the restoration of mangroves.[135]

CI has also worked on other actions related to mangroves in Costa Rica; for example, the development of a 'carbon budget' from the mangroves of the Gulf of Nicoya, as well as the elaboration of an economic valuation of ecosystem services of the mangroves in that area.[136]

Another example of an NGO supporting SINAC and coastal communities in mangrove conservation took place in Golfo Dulce, where the Neotropica Foundation promoted different actions, such as training on sustainable management techniques; the development of local nurseries and the planting of seedlings; and the establishment of a monitoring committee to coordinate with SINAC.[138] Currently, the Neotropica Foundation is developing a project entitled "Improve the mitigation and adaptation to climate change of coastal wetlands in Costa Rica and Benin through the restoration of mangroves and its sustainable management." The project focuses on three mangrove areas in Costa Rica, namely: Cuajiniquil (7 ha), the Estuarine Wetland of Puntarenas (24 ha) and the Térraba-Sierpe National Wetland (25 ha).[139] The project encompasses four action areas: a) implementing a restoration pilot programme; b) developing communal conservation strategies in the wetlands; c) strengthening institutional capabilities; and d) transferring experience and south-south cooperation with Benin.[140] More specifically, in the Térraba Sierpe National

## Cooperation for restoration on Chira Island

On Chira Island in the Gulf of Nicoya, a group of women and fishermen are developing ecotourism activities with cooperation and technical support from NGOs. Conservation International (CI), has worked with women from the local communities of Palito and Montero for approximately five years. A major action area is the restoration of mangrove forests. Active restoration encompasses the building of mangrove nurseries, from which 8000 mangroves have been replanted. Additionally, a natural restoration process has taken place on an abandoned shrimp farm where the mangrove is growing back thanks to the area not being used for other production activities. Monitoring these restoration actions is part of the work done with these communities. The cooperation between CI and the communities has also resulted in development of cleaning strategies in mangroves, micro-entrepreneurship training in sustainable use, as well as livelihood diversification and monitoring of four bivalve species sizes, among other activities that have positively impacted ecotourism and, at the same time, the ecological quality of the mangroves on the island.[137]

135 *Ibid.* Pg. 32.

136 Interview with Marco Quesada Alpízar, director of Conservation International Costa Rica, 20 December 2018.

137 Interview with Marco Quesada Alpízar, director of Conservation International Costa Rica, 20 December 2018; SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 29; Blue Solutions (2015). *Blue solutions from Latin America and the Wider Caribbean*. GIZ/GRID-Arendal/IUCN/UNEP/BMUB.

138 Neotropica Foundation. *Restauración, conservación y manejo sostenible de manglares de Costa Rica y Benín frente al cambio climático*. https://www.neotropica.org/proyectos [Accessed 6 April 2019].

139 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 12; *See also* MINAE–SINAC–CONAGEBIO–FONAFIFO (2018). *Resumen del Sexto Informe Nacional de Costa Rica ante el Convenio de Diversidad Biológica*. Sexto Informe Nacional para el CDB (6NR-LAC), Costa Rica. Pg. 22.

140 *Ibid.* Pg. 13.

Wetland, the Association of Piangüeros and Marine Resources of Ajuntaderas (APREMAA), along with the collaboration of the Neotropica Foundation and Conservation Osa, have nurseries for the subsequent restoration of mangrove areas.[141]

Another public institution, INCOPESCA, has supported a number of community-based projects. For example, the Asociación de Marinos Artesanales de San Luis, "a communal group that works on mangrove and beach cleaning, has worked jointly with INCOPESCA on the restoration of mangrove areas close to their community, as well as on environmental education, and construction of nurseries, among other activities."[142] Likewise, the Grupo Ambiental de Islita, a local group developing a restoration project with INCOPESCA and the Neotropica Foundation, has worked on building a nursery, collecting mangrove plants, and restoring selected mangrove areas, among other activities. Interestingly, this project has been carried out mainly by women.[143]

Collaboration between SINAC and universities is key to developing research activities, and positively impacts mangrove and wetland management.[144] An example of this was identified within the National Wetlands Project, where the collaborative work between SINAC and the International Center of Economic Policy and Sustainable Development in the National University (CINPE-UNA) included the economic valuation of ecosystem services at seven Ramsar sites. These kinds of products are key in decision-making processes on projects that could affect mangrove ecosystems, and duly demonstrate the value of the ecosystem services mangroves provide.[145] Additionally, SINAC, through the National Wetlands Programme, has been coordinating with the Biology School of the National University on developing a National Mangrove Monitoring Protocol, to be formalized in 2019.[146]

The National University has worked with seventeen mangrove-related initiatives, of which ten are under development and four are consolidated initiatives. Five different methodologies have been identified to restore mangroves, including direct planting, building nurseries, replanting, improving marine water flow and natural regeneration.[147] Of these experiences, some good practice elements identified by the professionals involved in the projects are: "a) historic baseline; b) quantification of the area to be restored; c) prioritization of the area to be restored; d) institutional policy for the restoration of mangroves; e) establishment of restoration indicators; f) monitoring programme."[148] Mangrove-related initiatives with successful outcomes have shown four aspects in common: institutional participation, financial support, technical support and active community participation.[149]

In this regard, a National Protocol for Mangrove Restoration is under development within the National Wetlands Programme, and diverse restoration methodologies are being tested in mangrove pilot plots with different conditions (e.g. Terraba Sierpe, Cuajiniquil and Puntarenas Wetland). These include methodologies related to the restoration of mangrove's hydrological flow, taking into consideration techniques and lessons learned from similar experiences in Mexico.[150]

### 4.4.3 Productive sectors: agriculture, urbanization, and tourism

In recent years, a lack of awareness about the importance of mangroves has relegated them to

141 *Ibid.* Pg. 17.

142 *Ibid.* Pg. 20.

143 *Ibid.* Pg. 21.

144 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

145 Interview with Marco Quesada Alpízar, Director of Conservation International Costa Rica, 9 February 2018.

146 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018.

147 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 24.

148 *Ibid.* Pg. 24.

149 *Ibid.* Pg. 35.

150 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 16 October 2019.


a low priority for action.[151] Different stakeholders have engaged in extensive agriculture (e.g. pineapple, sugar cane, rice); livestock farming; urbanization; and tourism.[152] They have taken advantage of the weak implementation of legal provisions, increasing pressure on mangrove areas and negatively impacting these ecosystems.[153]

In Chacarita, Puntarenas, an upsurge in urban development and the expansion of the agriculture frontier is resulting in land use change causing the loss of wetland and mangrove areas.[154] Similarly, in the Estero de Puntarenas, the convergence of economic interests, communities living in poverty, pollution, and natural phenomena, in addition to sedimentation processes, has negatively impacted mangroves in the area.[155] **Although institutional efforts have been made to provide information on the legal restrictions that apply to mangrove areas, frequent advocacy work is needed, as actors from the production sectors are constantly changing.**[156]

With regard to tourism in particular, there have been various cases where the development of tourist infrastructure in fragile coastal ecosystems has led to the loss of wetland and mangrove coverage, as developers are interested in recovering their financial investment and generating short-term profits.[157]

However, advances in addressing the production sector through procedures at the prevention stage have been achieved. For example, in the EIA process, the National Environmental Technical Secretariat (SETENA) should consider the updated National Wetlands Inventory in ensuring

151 Interview with Maricela Rodriguez Porras, Chief Legal Advisor of the Viceministry of Oceans, 31 January 2018. The opinions expressed are in her personal capacity. Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

152 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018; Interview with Juan Manuel Herrera Zeledón, Wetlands Project, 9 January 2018; Interview with Erick Ross Salazar, Coordinator of Science Department in MarViva Foundation, 26 January 2018; Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018; Interview with Rocío Córdoba, Vicepresident IUCN-CEM, 24 January 2018; *See also* BIOMARCC-SINAC-GIZ (2014). *Payments for ecosystem services of mangroves: A case study of the Savegre Delta, Costa Rica*. San José, Costa Rica. 73pp. Pg. 9; Proyecto Humedales de SINAC-PNUD-GEF (2018). *Inventario Nacional de Humedales*. SINAC/PNUD/GEF. 172pp. Pg. 44.

153 Interview with Erick Ross Salazar, Coordinator of Science Department in the MarViva Foundation, 26 January 2018.

154 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

155 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 21.

156 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 29 January 2018.

157 Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

environmental feasibility meets SINAC's criteria. In addition, direct consultations of the National Wetlands Programme by other public institutions are becoming more frequent. The Ministry of Transport consults in relation to projects to expand roads located near wetlands and mangroves, and the Water and Sewage Institute of Costa Rica (AyA) coordinates with the National Wetlands Programme in relation to aqueduct restoration projects.[158] A recent project led by the Costa Rican Foreign Trade Promoter (PROCOMER) seeks to require wetlands criteria to be taken into consideration for EIAs, environmental feasibility studies and other required procedures for companies that invest in Costa Rica.[159]

Furthermore, some stakeholders value the relevance of mangrove ecosystems for their commercial activities. This is the case for the sport fishing industry, which recognizes that wetlands and mangroves provide shelter and breeding grounds for numerous commercial and non-commercial fish species, and has acknowledged that protecting these ecosystems and their biodiversity will positively impact their businesses and the flow of tourist investment in coastal communities.[160]

Likewise, ecotourism operators that have been "growing" with the guidance of and in coordination with SINAC are aware that the conservation of mangroves and other coastal ecosystems leads to increased revenues in their commercial activities, as in 2016, approximately 2.141.084 visitors were engaged in tourism related to protected areas in Costa Rica.[161]

### 4.4.4 Environmental justice

The Resolutions of the Constitutional Chamber of the Supreme Court of Justice have made considerable progress in identifying and developing the relevant elements of the legal concept of wetlands and have also operationalized many aspects of its legal framework, building more comprehensive provisions that apply to mangroves in Costa Rica. An example mentioned above is that wetland ecosystems, including mangroves, are of public interest, whether or not they have been declared protected areas, and are covered by legal protection.

The powers of the Environmental Administrative tribunal to impose fines and administrative sanctions, as well as apply interim protection measures, could be influencing the behaviour of actors from different sectors. Complaints to this Tribunal about activities impacting wetlands and mangroves have varied over the years, from an all-time high number of 45 cases (2011); to fewer in the following years: 20 (2012); 22 (2013); 9 (2014); 5 (2016); and 17 (2017).[162] The challenge is to bolster the tribunal for the effective accomplishment of its functions.

Finally, other judicial bodies play an active role in the protection of wetlands and mangroves. An example related to addressing the pressure of urbanization near wetland ecosystems was the imposition of a precautionary measure by the Criminal Court of Puntarenas to a condominium development company. The Criminal Court ordered this company to remove materials from a landfill and demolish a perimeter wall which was affecting a wetland located in Playa Hermosa, Garabito.[163]

### 4.4.5 Financial incentives

Since 1996, Costa Rica has been developing a nationalized payment for ecosystem services (PES), a major conservation tool funded by fuel

158 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018.

159 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 16 October 2019.

160 FAO (2007). *The world's mangroves 1980-2005*. FAO Forestry Paper 153. Rome. Pg. 33; Interview with Marcos Solano Martínez, Coastal and Marine Directorate, Viceministry of Oceans, 7 February 2018.

161 *Ibid*.; SINAC (2017). *Informe Anual Estadísticas SEMEC 2016: SINAC en Números*. Comp. B Pavlotzky. San José, Costa Rica. 70pp. Pg. 61.

162 Cabrera Medaglia, J. (2017). *Informe estado de la nación en desarrollo humano sostenible 2017*. Pg. 48, 42, 39, 52, 67, 59.

163 González, K.P. (18 April 2018). *Juzgado Penal ordena a empresa remover obras que dañan humedal en Garabito*. https://www.elmundo.cr/juzgado-penal-ordena-a-empresa-remover-obras-que-danan-humedal-en-garabito/?fbclid=IwAR3WqGlSxQT1noj5pZG9X3NX6_L_LbRbshpmeSCrkC_S-qq8p62Oqziy12w [Accessed 7 April 2019].

taxes, car stamp duties, and energy fees.[164] In the early 1990s, this programme was perceived as an experimental instrument to reverse the high-speed deforestation taking place in the country. Since then, nearly one million hectares of forest have been conserved by payments for protection, reforestation, sustainable management and regeneration.[165]

This kind of incentive was first conceived exclusively for the forestry sector, where the possibility of making payments to private individuals for the conservation of forests and their environmental services was contemplated. Consequently, a private property element is needed within this scheme.

However, **in the specific case of mangroves, PES does not apply, since these lands are considered to be in the public domain and part of the National Natural Heritage. Ecosystem services provided by mangroves, such as shoreline stabilization, are of a public nature and there are no markets for them, or there is limited potential to manage them in traditional markets.** There are also difficulties in estimating the monetary value of the non-commercialized services provided by mangroves. Therefore, the land use of mangroves for commercial purposes predominates in cost-benefit analysis.[166]

In this context, the Coastal and Marine Biodiversity Project in Costa Rica, the Capacity Development, and Adaptation to Climate Change Project (BIOMARCC-SINAC-GIZ) analysed the feasibility of payments for mangrove ecosystem services in the Manuel Antonio National Park, on the Savegre Delta.[167] The Project studied the possibility of implementing PES in a buffer zone in the surrounding mangrove areas, financed through voluntary payments to a trust fund.[168] This project concluded that further research should be done to investigate the profitability of mangrove conservation PES, and suggested that policy makers should promote more mangrove ecosystem services, such as carbon sequestration and scenic beauty/tourism.[169]

Given this scenario, a way forward for a feasible PES scheme for mangroves could be the improvement of the legal framework to incorporate the possibility of the State trading carbon certificates based on the National Natural Heritage, which is public in nature. Under this mechanism, the beneficiaries could be the communities, which could develop project proposals to conserve the mangroves and use their natural resources in a sustainable manner.[170] The broadening of the scope for ecosystem service payments could be the next step in achieving a more integral incentive mechanism.

There is a legislative proposal for the creation of a National Fund to incentivize the conservation of marine and coastal ecosystem services (FONASEMAR).[171] This legal initiative seeks the creation of a broader fund that could manage incentives to conserve and rationally use coastal and marine resources, where the beneficiaries could be local community organizations, NGOs, municipalities, universities, government bodies, and research centres, among others. Another recent legal initiative, the legislative proposal to solve plastic waste pollution, explores the creation of a Blue Fund financed by a tax on plastics, as well as complementary resources from international cooperation and donations, among other sources. The financial resources of this fund would aim to support a variety of objectives, including coastal

---

164 Porras, I. et al. (2013). *Learning from 20 years of Payments for Ecosystem Services in Costa Rica*. London International Institute for Environment and Development, London. Pg. 1; Watts, J. (25 October 2010). *Costa Rica recognized for biodiversity protection*. https://www.theguardian.com/environment/2010/oct/25/costa-rica-biodiversity [Accessed 7 April 2019].

165 Porras, I. et al. (2013) *supra* notre 162.

166 Hernández-Blanco, M. et al. (2018). *Valoración económica de los servicios ecosistémicos provistos por los manglares del Golfo de Nicoya*. Conservación Internacional, San José, Costa Rica. Pg. 18.

167 BIOMARCC-SINAC-GIZ (2014). *Payments for ecosystem services of mangroves: A case study of the Savegre Delta, Costa Rica*. San José, Costa Rica.

168 *Ibid.* Pg. vii.

169 *Ibid.* Pg. 79, viii.

170 Interview with Francisco Pizarro Bustos, independent consultant expert in mangroves, 30 January 2018.

171 *Proyecto de ley. Ley de creación del fondo nacional para incentivar la conservación de los servicios ecosistémicos del mar y de los recursos marino y costeros (FONASEMAR). Expediente* No. 20.531.

community projects for the reduction of plastic waste pollution, which could have a positive impact on mangrove areas.[172]

Within a broader scheme, the Regulation for the Management and Recognition of Ecosystem Services sets the provisions for the establishment of economic and non-economic mechanisms for the conservation and sustainable use of biodiversity.[173] It includes, for example, trust funds, payments for ecosystem services, conservation credits, taxes, donations, debt swaps, partnerships for development between different stakeholders, technical assistance for community management and incentives.[174] The financial resources generated could be administered via a special fund created by Law or by the Environmental Bank Foundation (FUNBAM).[175] These mechanisms apply to private property and to the Natural National Heritage, including protected marine and coastal areas, and therefore mangroves.[176] SINAC has been asked to provide financial and technical support for community projects on biodiversity management and conservation.[177]

SINAC has developed a blue carbon national inventory that takes into account carbon sequestration in mangroves. The National Wetlands Programme in coordination with the National Directorate of Climate Change seeks to further develop a Blue Carbon National Strategy with the aim of achieving specific action areas included in the National Wetlands Policy.[178] This Directorate is currently developing an updated version of the National Carbon Market to generate a Compensation Mechanism adapted to the new international context and the NDC of Costa Rica, under the framework of the Paris Agreement.[179]

Another blue carbon pilot project has been developed in the mangroves on the Gulf of Nicoya by the Tropical Agriculture and Higher Education Center (CATIE) in collaboration with CI. The project has addressed elements such as carbon inventories, vulnerability assessments, geospatial modeling, calculation of emissions, and valuation of ecosystem services, among others.[180] The restoration of mangrove areas while avoiding deforestation is a key element of this project.[181]

SINAC has started a pilot project to develop carbon certificates linked to the restoration of mangroves. The development of methodologies for successful mangrove restoration has been addressed in at least 20 community-based projects with different partnership models, including public institutions such as SINAC and INCOPESCA, as well as NGOs and academia.[182] However, a formal mechanism should be created where financial incentives are developed at a national level, making appropriate diagnoses and modifying legislation such as the Forestry Law, to incorporate the country into a formal and recognized carbon market.[183] Some key elements identified as successful 'ingredients' within blue carbon initiatives are the "strengthening of capacities and knowledge; strengthening of political models; carbon inventories and historic emissions; valuation of ecosystem services; and the promotion of good practices."[184] In this regard, SINAC is developing a Blue Carbon Strategy, in accordance with the National Wetlands Policy action areas.

With regard to other financial mechanisms, the Wetlands Project has developed three proposals for the improvement of existing financial instruments in Costa Rica, with the goal of

172 *Proyecto de ley. Ley para solucionar la contaminación de residuos plásticos. Expediente* No. 21.159.

173 *Decreto Ejecutivo* No. 41124-MINAE of 4 April 2018 *Reglamento para la Gestión y Reconocimiento de Servicios Ecosistémicos*. Article 7.

174 *Ibid*. Article 6.

175 *Ibid*. Article 12.

176 *Ibid*. Article 2.

177 *Ibid*. Article 10, 11.

178 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018.

179 National Directorate of Climate Change (2019). *Compensation Mechanism of Costa Rica*. https://cambioclimatico.go.cr/metas/finanzas-climaticas/mecanismo-de-compensacion-de-costa-rica/ [Accessed 29 May 2019].

180 Blue Solutions (2015). *Blue solutions from Latin America and the Wider Caribbean*. GIZ/GRID-Arendal/IUCN/UNEP/BMUB. Pg. 38.

181 Interview with Marco Quesada Alpízar, Director of Conservation International Costa Rica, 20 December 2018.

182 *Ibid*.

183 *Ley Forestal* of 10 February 1996. Article 22, 46, 69.

184 SINAC y Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica. 23-25 October. Pg. 9.


increasing the availability of financial resources to manage Ramsar sites. [185] These instruments are: a) Water Utilization Levy, b) National Parks stamp, and c) Environmental Discharge Levy. The Water Utilization Levy is a tax applied to any person, public or private, that has water by means of a concession. There are 8 types of uses in which the canon applies: human consumption; industrial; commercial, agroindustrial; tourist; agriculture; aquaculture and hydraulic power.[186] The stamp applies to the emission of passports; municipal patents; registration documents of vehicles; to bars, restaurants, casinos and any place where alcoholic beverages are sold or consumed. The resources collected by concept of the stamps will be designated for the protected areas of the respective Conservation Area, and for the development and implementation of sustainable strategies.[187] The Environmental Discharge Levy is inspired by the "polluters pays" principle. Any person, public or private, that uses the environmental service of water bodies for the transport and elimination of liquid waste originating from punctual discharges, must pay a fee for this activity.[188]

In this context, a joint strategy was developed between SINAC, FONAFIFO and the Water Directorate to increase revenues from the Water Use Tax and to improve investments in the watersheds.[189] In order to improve the transfer and application of financial resources from the National Parks stamp, two guidelines were developed by the Wetlands Project.[190] Currently, these initiatives are in different phases of execution, as some require legal reforms or new institutional strategies.

185 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Herramientas para mejorar la gestión en Sitios Ramsar de Costa Rica y otros ecosistemas de humedal.* Reporte 2014-2018 del Proyecto Humedales. SINAC/PNUD/GEF. 112pp. Pp. 83-89.

186 MINAE. *Canon de aprovechamiento de agua*. http://www.da.go.cr/canon-de-aprovechamiento-de-aguas/ [Accessed 29 May 2019].

187 *Ley de Biodiversidad* of 27 May 1998. Article 43.

188 MINAE. *Water discharge canon*. http://www.da.go.cr/canon-ambiental-por-vertidos/ [Accessed 29 May 2019].

189 Proyecto Humedales de SINAC-PNUD-GEF (2016). *Estrategia conjunta – SINAC, FONAFIFO y Dirección de Agua - para aumentar los ingresos provenientes del Canon de Aprovechamiento de Agua y mejorar las inversiones en las cuencas hidrográficas que generan los recursos*. SINAC/PNUD/GEF.

190 *Ibid.*

## 4.5 Outcome level: After decades of degradation, a glimpse of hope

Despite Costa Rica having a relatively appropriate legal framework for mangroves, for some years it was not fully or effectively implemented. This is evidenced by the loss of national coverage of mangrove forests, which decreased from the beginning of the 1990s when mangrove cover equalled 51,350 ha to 2014, when only 37,420 ha remained.[191] Experts estimate that the declining trend continues to date, worsened due to the effects of sea level rise, sedimentation and desiccation.[192] However, it should be pointed out that with regard to the mangroves on the Gulf of Nicoya, the legal framework already in place allowed the deforestation caused by conversion to shrimp farms to slow between 1956 and 1985, and then the extent of mangrove coverage to stabilize.[193]

The deterioration of important mangrove habitats in Costa Rica has a negative impact on biodiversity and the provision of ecosystem services, and has accelerated in some cases the growth of invasive species such as typha, bramble, ñanga, and the pleco fish.[194] Threats from intensive agricultural practices have led to the expansion of planted areas, affecting biodiversity both due to the discharge of agrochemicals and the subsequent erosion in mangroves, and due to land use change.[195] The latter has impacted mangrove and wetland areas all over the country. For example, in the Térraba-Sierpe National Wetland, a Ramsar site which includes mangroves, 1,310 ha of wetland ecosystems were replaced by livestock, rice and African palm between 2008 and 2016.[196] Another example took place at the Palo Verde Ramsar site, where 70% of the superficial waters (water mirrors) and natural drainage were covered by invasive species in 2011. Three years later, the ecological functions of the wetland fish and avifauna were completely lost. Fortunately, in 2015, the Wetlands Project started an ecosystem rehabilitation initiative, led by the SINAC Tempisque Conservation Area, and supported by the Costa Rica Forever Association, seeking the restoration of the wetlands and mangroves in the area.[197] A third example is the Caño Negro Wetland, which has also suffered a loss of mangrove and wetland coverage due to the expansion of pastures. The degradation of this ecosystem occurred after Caño Negro was declared a National Wildlife Refuge in 1984.[198]

Until a few years ago, the country had been making sporadic and isolated efforts to identify and delimit wetlands, and no follow up mechanisms were put in place to ensure that this technical input was incorporated into territorial planning instruments and, therefore, they became just consultation documents with no effective impact.[199]

The country has also achieved positive outcomes, one of these being the technical products delivered by the National Wetlands Project. Other projects are also being conducted by SINAC, NGOs, and academia, with a view to strengthening and informing decision-making processes. One of the most relevant results is the updated National Inventory of Wetlands, technical input that should be used to improve the conservation and management of wetland ecosystems, as well as to develop cooperation and

191 Ministerio de Ambiente, Energía y Telecomunicaciones (2015). *Política nacional de biodiversidad 2015-2030 Costa Rica*. UNDP, San José, Costa Rica, 72pp. Pg. 17.

192 MINAE–SINAC–CONAGEBIO–FONAFIFO (2018). *Resumen del Sexto Informe Nacional de Costa Rica ante el Convenio de Diversidad Biológica*. Sexto Informe Nacional para el CDB (6NR-LAC), Costa Rica. Pg. 15.

193 Cifuentes, M. et al. (2015). *Los manglares del Golfo de Nicoya, Costa Rica Dinámica de uso del suelo y potencial de mitigación*. Centro Agronómico Tropical de Investigación y Enseñanza-Conservación Internacional. Turrialba-Costa Rica.

194 FAO (2007). *The world's mangroves 1980-2005*. FAO Forestry Paper 153. Rome. Pg. 34; Ministerio de Ambiente, Energía y Telecomunicaciones (2015). *Política nacional de biodiversidad 2015-2030 Costa Rica*. UNDP, San José, Costa Rica, 72pp. Pg. 19; Camacho Navarro, A. et al. *supra* note 100. Pg. 7; Proyecto Humedales de SINAC-PNUD-GEF (2018). *Inventario Nacional de Humedales*. SINAC/PNUD/GEF. 172pp. Pg. 46.

195 Ministerio de Ambiente, Energía y Telecomunicaciones (2015). *Política nacional de biodiversidad 2015-2030 Costa Rica*. UNDP, San José, Costa Rica, 72pp. Pg. 78; *See also* Corrales, L. (2017). *Cambio climático: Impactos y desafíos para Costa Ri*ca. Informe Estado de la Nación en Desarrollo Humano Sostenible. Pg. 21.

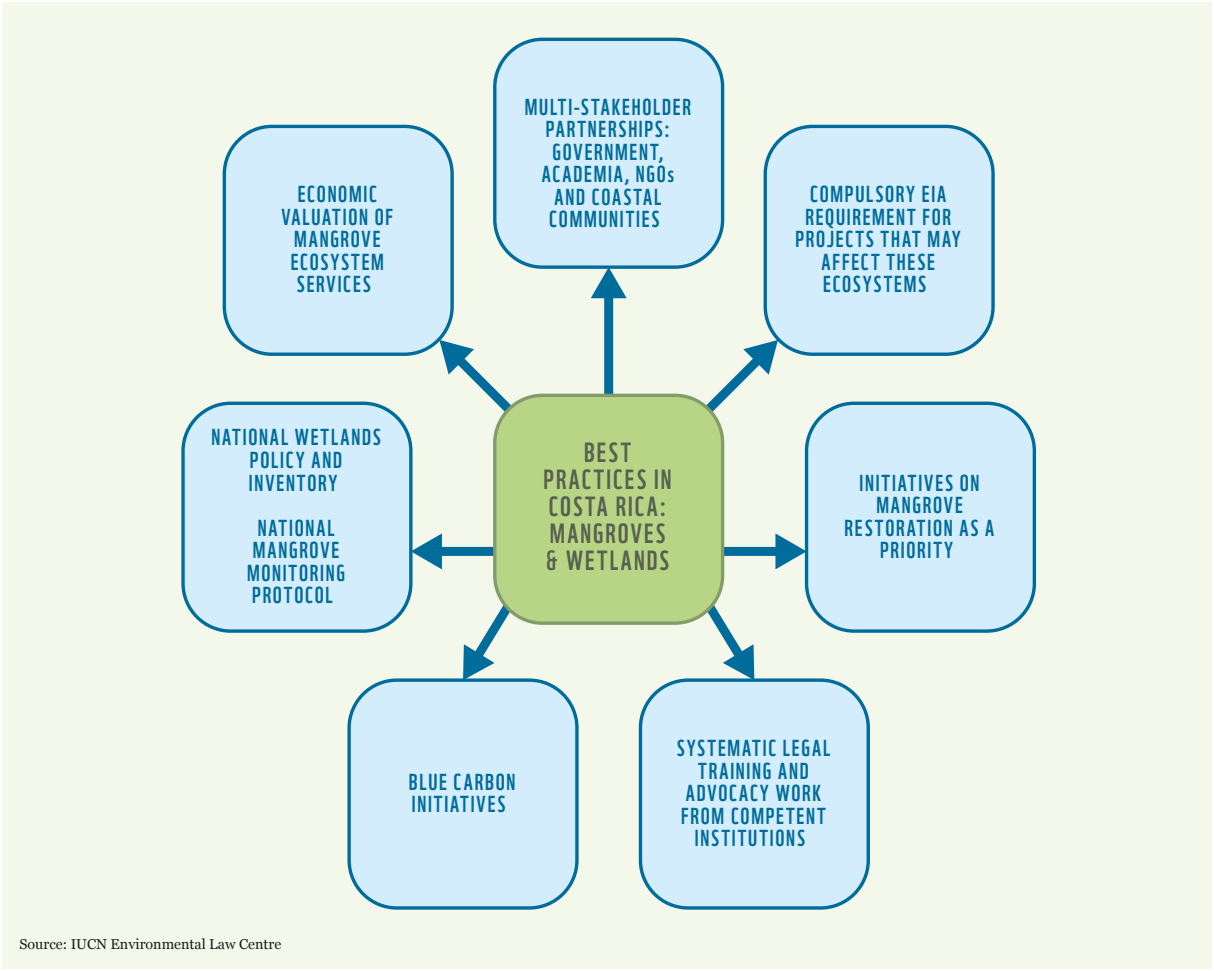
196 Camacho Navarro, A. et al. *supra* note 100. Pg. 8.

197 *Ibid.* Pp. 16-17.

198 Comptroller General of the Republic of Costa Rica. Report No. DFOE-AE- IF-13-2011 of 30 November 2011. Pg. 5.

199 Camacho Navarro, A. et al. *supra* note 100. Pg. 18.

**Figure 8:** Best practices for mangrove and wetland management in C osta Rica




Source: IUCN Environmental Law Centre

a network of experts.[200] This tool should be used by all State institutions, and in this regard the National Wetlands Programme has delivered the Inventory's explanatory document to a group of public institutions whose competence is related to wetlands and mangroves. Emerging data on these ecosystems is included in the National Wetlands Registry, and information on mangroves is registered as national natural heritage in the National Property Registry and certified by the National Geographic Institute. Emerging data on these ecosystems is included in the National Wetlands Registry, and information on mangroves is registered as national natural heritage in the National Property Registry and certified by the National Geographic Institute.[201]

According to an update from the Wetlands Inventory, 49% of wetlands are in a protected area management category, with total or partial restriction of activities. Therefore, **51% of wetlands are outside protected areas, and even though the legal framework prohibits drainage or land use change, these ecosystems are at risk due to the State's weak monitoring activities.**[202] The exact number of mangroves outside of protected areas is not known but one estimate put it at over 30,000 ha.[203]

The National Wetlands Project has delivered a variety of products, namely: the National Wetlands Policy 2017-2030; the delimitation of Ramsar sites; the creation of capabilities for the delimitation of the National Natural Heritage;

200 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Inventario Nacional de Humedales*. SINAC/PNUD/GEF. 172pp. Pg. 8, 11.

201 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 16 October 2019.

202 *Ibid*. Pg. 40.

203 Programa Estado de la Nación en Desarrollo Humano Sostenible (2015). *Informe Estado de la Nación 2015/PEN 2015*. San José, Costa Rica.

a practical guide for the characterization and delimitation of hydromorphic soils associated with wetland ecosystems; a protocol for monitoring mangroves and the standardization of data.[204] It has developed technical studies for the incorporation of approximately 35,402 ha of wetland ecosystems as Ramsar sites and tools for biodiversity management in wetland ecosystems.[205] To improve social participation in the management of wetlands, the Wetlands Project has implemented Local Management Plans for nine Ramsar sites and created materials for environmental education to raise awareness about the importance of wetlands and mangroves.[206] The project has trained a significant number of officials from SINAC Conservation Areas on legal issues related to wetlands.[207]

Similarly, the National Wetlands Programme has carried out different types of training related to wetlands with officials from other government institutions such as the Ministry of Public Works and Transportation (MOPT), the National Road Council (CONAVI), and the Institute of Rural Development (INDER) on basic concepts, national commitments within the framework of the Ramsar Convention, regulations, and public policy guidelines, thus linking the Ministries' various functions that strengthen the conservation and wise use of wetlands throughout Costa Rica's national territory.[208]

To complement these outcomes, an economic valuation of the ecosystem services that derive specifically from mangroves was developed by CI.[209] This study was the first of its kind to be done in Costa Rica, as it specifically addressed mangroves using a three-level methodology, including: a) the traditional transfer of benefits, b) the transfer of benefits modified by experts and c) primary studies on the Gulf of Nicoya. This study demonstrated that mangroves are critical for climate change mitigation and adaptation strategies, and, at the same time, they provide a variety of services that have a positive impact on the local communities that depend on them.[210] Remarkably, this study calculated that **the total average value of ecosystem services derived from mangrove forests on the Gulf of Nicoya is USD 408 million per year**.[211] This economic information could guide decision makers, as it reveals the greater value of mangrove ecosystems for communities and the benefits of consolidating conservation strategies in these areas.[212]

A regional strategy for the conservation and management of mangroves on the Gulf of Nicoya has been developed. This strategy has the objective of strengthening policies, programmes and local efforts for the protection, restoration, and sustainable use of mangroves on the Gulf of Nicoya, while contributing to the well-being of the local communities that depend on these ecosystems.[213] Some of its action areas encompass: a) improving the ecological integrity of the mangrove areas on the Gulf of Nicoya; b) strengthening the participation of coastal communities and competent institutions; c) exchanging information, generating knowledge, and exchanging good practices, among others.[214]

Finally, the Vice-Ministry of Waters, Coasts, Wetlands, and Oceans, the administrative

204 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Herramientas para mejorar la gestión en Sitios Ramsar de Costa Rica y otros ecosistemas de humedal.* Reporte 2014-2018 del Proyecto Humedales. SINAC/PNUD/GEF. 112 pp. Pg. 13-32; Ministerio de Ambiente y Energía (2017). *Guía práctica para la caracterización y delimitación de suelos hidromór cos asociados a los ecosistemas de humedal.* GEF/MINAE/UNDP, San José, Costa Rica; Camacho Navarro, A. et al. *supra* note 100. Pg. 12.

205 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Herramientas para mejorar la gestión en Sitios Ramsar de Costa Rica y otros ecosistemas de humedal.* Reporte 2014-2018 del Proyecto Humedales. SINAC/PNUD/GEF 112pp. Pp. 26, 44-59; Camacho Navarro, A. et al. *supra* note 100. Pg. 11.

206 *Ibid.* Pg. 35.

207 Camacho Navarro, A. et al. *supra* note 100. Pg. 14.

208 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 17 December 2018.

209 Hernández-Blanco, M. et al. *supra* note 164. Pg. 22.

210 *Ibid.* Pg. 49.

211 *Ibid.* Pg. 11, 43.

212 *Ibid.* Pg. 21.

213 SINAC (2019). *Estrategia Regional para el manejo y conservación de los manglares en el Golfo de Nicoya –Costa Rica 2019-2030.* San José, Costa Rica. Pg. 4.

214 *Ibid.* Pg. 27, 28, 29.

authority of Costa Rica to Ramsar, started the official communication with the Ramsar Secretariat for the expansion of wetland areas that include mangroves, specifically in the Northeast Caribbean and Térraba Sierpe; as well as the approval to declare Ostional Wildlife Refuge as a Ramsar site.[215]

## 4.6 Conclusions and recommendations

Costa Rica has various provisions to protect and sustainably use wetland and mangrove ecosystems. There is a strong link between the existence of a protected area regime and the conservation of wetland and mangrove ecosystems.[216] However, in the interviews conducted as part of this study, experts have denoted that there is a relatively solid legal framework, but some of the provisions should be improved to give clearer guidelines on the limits and intensity of the activities that could be developed in mangroves.

Despite the long-standing environmental legal framework in Costa Rica, extensive areas of mangroves and wetlands have been lost or degraded. A direct link can be made between the deterioration of several of these ecosystems and the weak implementation of legal provisions in recent years, as well as the low prioritization of mangroves in conservation strategies within the institutional framework. However, during 2018, different projects and multi-stakeholder partnerships provided a number of products, including legal, technical, and economic tools, which are critical for the improvement of conservation and management strategies related to mangroves and wetlands. Nevertheless, there is a need for specific provisions on mangrove conservation to protect the ecosystem services they provide in terms of carbon sequestration, and coastal protection, and highlight the way these actions could contribute to Costa Rica's NDC, within the Paris Agreement framework.

Mangrove ecosystems interact on multiple levels with various production sectors, including agriculture, aquaculture, urbanization, and tourism, as well as with coastal communities. There have been different levels of impact from these activities throughout the country, increasing pressure on mangroves. Improved planning instruments that incorporate identified mangrove and wetland areas, strict implementation of legal prohibitions by the competent authorities and promotion of good environmental practices from these sectors could ensure the long-term conservation of these valuable habitats.

The Wetlands Project initiatives carried out by different NGOs and academia, as well as multiple efforts to restore mangroves by SINAC, INCOPESCA, and local community groups, have delivered valuable products and capacity building actions, supporting SINAC in targeted actions within the wetland and mangrove agenda. However, standardized guidelines and methodologies are still needed.[217]

In summary, it should be emphasized that while the country has advanced from almost indifference into a more dynamic and technical role, Costa Rica still has significant work to do in consolidating the effective implementation of its national regulations and bringing financial sustainability to mangrove conservation. A sustained effort in time and ambition from competent institutions and stakeholders is critical to ensure the long-term protection of these ecosystems.

### Recommendations

1. Internalize the obligations from the Ramsar Convention and its Resolutions in national legislation, seeking to maximize the benfits from the mechanisms specified in the Convention, such as advisory visits, working with experts and exchange of information.
2. Strengthen the multidisciplinary and holistic management of wetlands and mangroves

215 Interview with Jacklyn Rivera Wong, Coordinator of the National Wetlands Programme, 16 October 2019.

216 Proyecto Humedales de SINAC-PNUD-GEF (2018). *Herramientas para mejorar la gestión en Sitios Ramsar de Costa Rica y otros ecosistemas de humedal.* Reporte 2014-2018 del Proyecto Humedales. SINAC/PNUD/GEF. 112pp. Pg 32.

217 SINAC and Conservación Internacional (2018). *Memoria de Taller Intercambio nacional sobre iniciativas locales de rehabilitación de manglar*. Puntarenas, Costa Rica, 23-25 October. Pg. 35.

within competent institutional structures, raising awareness on the importance of conservation and sustainable use, and prioritizing effective management by competent institutions.

3. Internalize obligations from the Paris Agreement and improve coordination between the National Wetlands Programme and the Climate Change Directorate, both within the Environmental Ministry framework, to advance the consideration of mangrove carbon sequestration in NDCs.
4. Improve institutional and intersectoral coordination mechanisms and effective cooperation between different stakeholders (private sector, NGOs, academia, community-based organizations) with a view to generating comprehensive conservation strategies, supporting local communities, and reducing pressure on mangrove ecosystems.
5. Empower the National Environmental Technical Secretary, as a key actor in addressing the production sector through procedures at a prevention stage (EIA processes). Enhanced controls considering the updated National Wetlands Register can lead to the effective accomplishment of environmental standards included in the environmental feasibility license for specific projects.
6. Empower the Environmental Administrative Tribunal as a useful mechanism in the enforcement of environmental regulations related to mangrove ecosystems, taking advantage of effective tools such as the application of interim protection measures according to the precautionary principle.
7. Improve the Coastal Regulatory Plans by the Municipalities to ensure that mangroves and wetlands are clearly identified, and apply stricter controls on production activities or infrastructure development. The updated National Wetlands Inventory is a critical part of these planning processes.
8. Continuously update the National Wetlands Registry, including critical information on the location and extent of wetlands and their characteristics, contributing also to the establishment of a baseline on the state of mangroves for the subsequent analysis on loss of coverage.
9. Empower coastal communities by improving dissemination of information and lessons learned from local initiatives working on mangrove restoration.
10. Establish and implement protocols on mangrove restoration to standardize data collection, criteria, methologies and monitoring activities.
11. Provide training on good environmental practices and legal issues for government agencies, the production sector, local communities, municipalities, and prosecutors and judges. The Ministry of Environment and the Environmental Prosecutor's Office are key actors in leading these capacity building efforts.
12. Develop financial mechanisms to expand the scope of the current PES system. Promote and support legal initiatives, such as the proposed National Fund to incentivize the conservation of marine and coastal ecosystem services (FONASEMAR) and the proposal to solve plastic waste pollution, which would strengthen conservation strategies through a broader range of incentives.
13. Raise awareness with a wider national audience through communication campaigns on the critical role and benefits provided by mangrove ecosystems within the environmental, risk management (climate change), social and economic agendas.

5

# KENYA
## A LEADER IN COMPREHENSIVENESS BATTLING INEFFECTIVENESS

**By Robert Kibugi**

Mangrove forests in Kenya cover over 60,000 ha across five coastal counties. They perform a range of provisioning, regulatory, supporting, and cultural functions. Mangroves are governed by various treaties to which Kenya is party, and some national legislation, the primary instruments being the Forestry Conservation and Management Act and the Wildlife Conservation and Management Act. These two laws govern mangroves either as public forests or Marine Protected Areas (MPAs), with institutional authority granted to the Kenya Forest Service (KFS) and the Kenya Wildlife Service (KWS), respectively. Under Kenyan law, management planning is the main legal tool for determining the scope and spatial spread of various activities within a public forest or MPA. There are other laws and institutions whose mandates impact mangrove management, such as fisheries, physical planning (which applies outside public forests and MPAs), water (regulating effluent discharge and pollution of mangroves), and climate change (governing the mainstreaming of adaptation and mitigation actions into mangrove governance). The Environment Management and Coordination Act (EMCA) regulates compliance with environmental standards in Kenya and provides for mandatory environmental impact assessments (EIAs) for many activities to be undertaken in mangroves, as well as annual Environmental Audits to ensure compliance with the terms of EIA licences.

It is clear that there is need to improve structures for coordination between key public institutions such as the KFS, the KWS, and the county governments. Community initiatives are critical to mangrove governance, and the forestry law provides for the creation of Community Forest Associations. These, however, have had mixed levels of success, suggesting a need for more integration between community-level institutions, counties, and national government institutions with a mandate over mangroves. The health of mangroves continues to face risks from pollution, changing land usage, illegal harvesting, and climate change. There is need for the legal system to consolidate sectoral efforts to ensure a harmonized approach of implementation and interventions that sustains the conservation of mangroves.

# KEY FACTS

## POPULATION: ≈ 50 million

## MANGROVE COVERAGE: ≈ 61,271 ha

## KEY INSTITUTIONS:

Kenya Forest Service

Kenya Wildlife Service

Kenya Marine and Fisheries Research Institute (Research)

Kenya Forestry Research Institute (Research)

Community Forest Associations

County governments


- Ramsar sites containing mangroves
- UNESCO world heritage sites containing mangroves

## MAIN THREATS:

OVERHARVESTING

POLLUTION

SEDIMENTATION

DIVERSION OF FRESH WATER

## MAIN USES:

CONSTRUCTION POLES

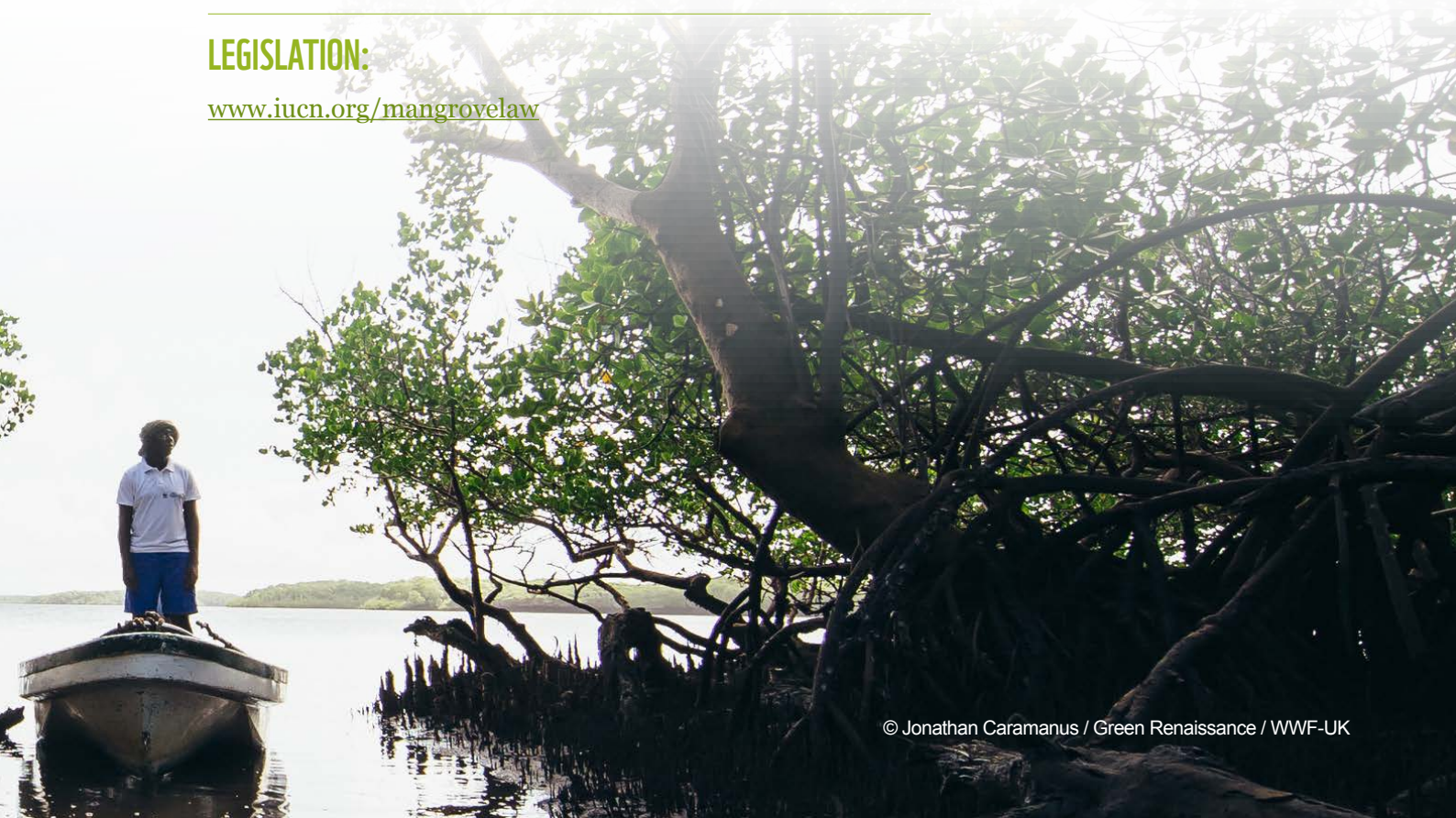
CHARCOAL/ FIREWOOD

AQUACULTURE

ECOTOURISM

## LEGISLATION:

www.iucn.org/mangrovelaw



# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **BMU** | Beach Management Unit |
| **CBD** | Convention on Biological Diversity |
| **CBO** | Community Based Organisation |
| **CFA** | Community Forests Association |
| **CIDP** | County Integrated Development Plan |
| **EDP** | Effluent Discharge Permit |
| **EIA** | Environmental Impact Assessment |
| **EMCA** | Environment Management and Coordination Act |
| **KBDCA** | Kiunga-Boni-Dodori Conservation Area |
| **KCDB** | Kenya Coastal Development Programme |
| **KEFRI** | Kenya Forestry Research Institute |
| **KFS** | Kenya Forest Service |
| **KMFRI** | Kenya Marine and Fisheries Research Institute |
| **KMNR** | Kiunga Marine National Reserve |
| **KNCHR** | Kenya National Commission on Human Rights |
| **KWS** | Kenya Wildlife Service |
| **LAPSSET** | Lamu Port-South Sudan-Ethiopia-Transport Corridor |
| **ME&F** | Ministry of Environment and Forestry |
| **MOKICFA** | Mombasa Kilindini Community Forest Association |
| **NBSAP** | National Biodiversity Strategy and Action Plan |
| **NCCAP** | National Climate Change Action Plan |
| **NDC** | Nationally Determined Contribution |
| **NEMA** | National Environment Management Authority |
| **NET** | National Environment Tribunal |
| **NLC** | National Land Commission |
| **SEA** | Strategic Environmental Assessment |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **WRA** | Water Resources Authority |

## 5.1 Introduction: A traditional balance disrupted by infrastructure, climate change and over-exploitation

Mangrove forests in Kenya can be found in five coastal counties: Lamu, Tana River, Kilifi, Mombasa, and Kwale. Based on estimates by the Kenya Forest Service (KFS), the total mangrove area in Kenya is about 61,271 ha, with 61% of the mangroves situated in the county of Lamu, 14% in each of the counties of Kwale and Kilifi each; 6% in Mombasa; and 5% in Tana River.[1]

Mangroves perform a range of provisioning, regulatory, supporting, and cultural functions. They provide diverse wood and non-wood forest products; including building poles, firewood, local medicines, and fishery resources. They ensure shoreline protection and act as carbon sinks which sequester more carbon than any productive terrestrial forest. They also provide support services, such as habitat or soil formation by providing breeding grounds for fish and refuge areas for juvenile fish. Finally, they represent the close relationship between local communities and the environment, which has sustained an ecosystem balance and traditional livelihoods.[2] Mangrove ecosystems continue to face threats which result in degradation in addition to the risks from the impact of climate change, such as increased flooding that could submerge mangroves unless they can migrate to new areas inland.[3] However, most areas where mangroves could migrate to have already been occupied by human settlement and infrastructure. The death of mangroves due to climate change is occurring along the coast such as in Gazi Bay, Mwache creek, Ngomeni, the Tana River delta, and Dodori creek.[4] Mangroves have become over-exploited for wood products and converted to salt-panning, agriculture, and other land uses.

Mangrove ecosystems in the coastal region continue to be converted into hotels, beaches, and mariculture; they are exploited for poles, fuel wood, and charcoal; and polluted from oil spillages, siltation, and coastal erosion.[5] Infrastructure development for the new Lamu Port is also a threat to mangrove ecosystems, because mangrove formations will be removed and converted into the Port's infrastructure.[6] The impact of the Lamu Port on mangroves was the subject of a 2018 High Court decision (see Section 5.4.4).

## 5.2 Instrumental level: Many management tools on a solid constitutional basis

### 5.2.1 Mangrove-related International Conventions and Treaties

The Ramsar Convention was ratified by Kenya in 1990. In 2012, Kenya designated the Tana River Delta covering a total area of 163,600 ha as a Ramsar site due to its unique and diverse range of coastal wetlands that include mangroves.[7] Kenya has also taken action on the governance of wetlands, through provisions of the Environmental Management and Coordination Act (EMCA).[8]

Kenya has also ratified the Convention on Biological Diversity (CBD) and submitted its first National Biodiversity Strategy and Action Plan (NBSAP) in March 2000.[9] This NBSAP highlighted major problems, including the discharge of high volumes of pollutants into aquatic systems, and the unsustainable use of aquatic and wetland resources such as fisheries, mangroves, papyrus, and coral reefs. Kenya's Fifth National Report

1 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 8.

2 *Ibid*. Pp. 26-27.

3 Ministry of Environment and Natural Resources (2016). *National Forest Programme of Kenya*. Nairobi, Kenya. Pg. 48.

4 *Ibid*.

5 Ministry of Forestry and Wildlife (2013). *Analysis of drivers and underlying causes of forest cover change in the various forest types of Kenya*. Nairobi, Kenya. Pp. 103-104.

6 *Ibid*. Pg. 94.

7 Ramsar 2019. *Sites Information Service*. https://rsis.ramsar.org/ris/2082 [Downloaded 9 April 2019].

8 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000.

9 Ministry of Environment and Natural Resources (2000). *National Biodiversity Strategy and Action Plan*. Pg. 4.

to the Conference of Parties to CBD reported on the country's achievements in the 2020 Aichi Biodiversity Targets, especially Aichi Targets 5, 10, and 11, which are closely linked to mangrove governance. Among these achievements, Kenya highlighted the designation of the Tana River Delta Ramsar site; the implementation of the Kenya Coastal Development programme (KCDP) with the objective of promoting the environmentally sustainable management of Kenya's coastal and marine resources by strengthening the capacity of existing government agencies and coastal communities; the implementation of an Integrated Coastal Zone Management (ICZM) Policy; and the expansion of the protected areas system. **Goals for the year 2020 in the Fifth National Report are to increase forest cover to 10%, restore/rehabilitate 20% of degraded and fragmented habitats, reduce the rate of loss of natural forest to nearly zero, minimize anthropogenic pressures on coastal and marine resources by 50%, and increase conservation and protected areas of terrestrial and inland water, and of coastal and marine ecosystems, by 17%.**[10]

Kenya is also party to the Nairobi Convention, which requires States to take appropriate measures to conserve biological diversity and protect and preserve rare or fragile ecosystems, as well as rare, endangered, or threatened species of fauna and flora and their habitats in the Convention area. This includes establishing protected areas, such as parks and reserves, and regulating or prohibiting any activity that is likely to have an adverse effect on the species, ecosystems, or biological processes that these areas have been designated to protect. Kenya has domesticated this provision through the Wildlife Conservation and Management Act. The Nairobi Convention work programme for the period 2018-2022 was adopted in 2018. It recognizes the need to enhance the governance of coastal and marine environments, and has prioritized various activities, including the ecosystem-based management approach, which is designed to contribute to a shift towards comprehensive marine and coastal management that seeks to reduce or prevent degradation of the coastal and marine environment, and strengthen the functioning and resilience of marine ecosystems.[11] The aim is to tackle the interactive and cumulative impact of human activities on ecosystems, including transboundary regional impacts, and to identify a blue economy pathway using natural blue capital. Kenya's National Mangrove Ecosystem Management Plan for the 2017-2027 period, is an illustration of an ecosystem-based marine and coastal management approach. This plan recognizes the role of the Nairobi Convention in the management of mangrove systems, noting that "the activities postulated in this management plan for mangroves in Kenya are aligned to conform to the Convention."[12]

The 2015 Paris Agreement on Climate Change entered into force for Kenya in 2017.[13] In 2015, Kenya submitted its Nationally Determined Contribution (NDC) in line with the national sustainable development agenda. The NDC covers the six mitigation areas of the United Nations Framework Convention on Climate Change (UNFCCC), including forestry, and this NDC is implemented as part of the National Climate Change Action Plan, which is the main legal tool for mainstreaming climate change actions across sectors in Kenya under the Climate Change Act.[14] Analysis undertaken by the government in 2017 as a basis for NDC implementation in the forest sector observes that mangroves can protect coastal areas against storms and waves, which are projected to become even more intense with climate change and climate-induced sea-level rises.[15]

The Revised African Convention on the Conservation of Nature and Natural Resources

10 Kenya (2015). *Fifth National Report to the Conference of Parties to the Convention on Biological Diversity*. Section 7.1.

11 Proposed work programme for the period 2018–2022 for the implementation of the Nairobi Convention (adopted 30-31 August 2018, UNEP/EAF/CP.9/2/Rev.1.). Section 34.

12 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 22.

13 Depositary Notification (3 January 2017, C.N.979.2016.TREATIES-XXVII.7.d).

14 Kenya's first Intended Nationally Determined Contribution (submitted 28 December 2016). UNFCCC. Section 1; Climate Change Act of 6 May 2016.

15 Government of Kenya (2017). *Nationally Determined Contribution (NDC) Sector Analysis Report: The Evidence Base for Updating Kenya's National Climate Change Action Plan*. Ministry of Environment and Natural Resources, Nairobi, Kenya. Pg. 47.

(Revised African Convention) was adopted in July 2003 and entered into force in July 2016. The objectives of the Convention include enhancing environmental protection and fostering the conservation and sustainable use of natural resources.[16] The 2017-2027 Mangrove Ecosystem Management Plan lists this Convention as one of the international treaties that may impact mangrove ecosystems governance in Kenya.[17] Although the relevant or applicable treaty provisions are not specified in the Mangrove Ecosystem Management Plan, the Convention requires the Parties to "take all necessary measures for the protection, conservation, sustainable use and rehabilitation of vegetation cover taking into account the social and economic needs of the peoples concerned, the importance of the vegetation cover for the maintenance of the water balance of an area, the productivity of soils and the habitat requirements of species."[18]

Additionally, the Parties are required to act in a consultative manner where ecosystems such as wetlands are transboundary.[19] Kenya has not yet ratified the 2003 Revised Convention, even though the country appended its signature in 2003 and it is unclear why the country is yet to ratify this treaty when it is identified in the National Mangrove Ecosystem management Plan as a treaty whose provisions may impact mangrove governance. Nonetheless, the 1968 Algiers Convention continues to apply to Kenya until the country ratifies the 2003 Revised Convention.

Kenya ratified the World Heritage Convention in 1991. The National Museums and Heritage Act requires both natural and cultural heritage, defining natural heritage to include "precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science, conservation or natural beauty."[20] This definition is consistent with the objective of the World Heritage Convention, which is to protect heritage of outstanding universal value. In December 2010, Kenya nominated the Tana Delta and Forests Complex, which includes the Boni-Dodori mangroves ecosystem, for consideration under the Convention, and it has been published on the tentative list.[21]

The Forest Conservation and Management Act provides that its provisions shall be carried out in accordance with any treaties, conventions, and international agreements, as provided for under the Constitution.[22] It further empowers the Cabinet Secretary to make regulations and to give directions to ensure compliance with international instruments, conventions, and agreements ratified by Kenya.[23] Similar provisions are set out by the Wildlife Conservation and Management Act, which empowers the Cabinet Secretary to make regulations and give directions in order to facilitate compliance with any ratified treaty.[24] At the time of writing, there is no evidence of any regulations having been made for either of the two statutes using these provisions to domestically apply treaties ratified by Kenya through subsidiary legislation.

### 5.2.2 Constitutional Provisions

#### 5.2.2.1 Foundational and human rights provisions relevant to mangrove ecosystems

The Constitution sets out sustainable development as one of the national values and principles of governance, which must be applied by public officers and all other persons when applying the Constitution, making or applying any law, or

16 African Convention on the Conservation of Nature and Natural Resources (Maputo, 11 July 2003). Article 3(1), 3(2).

17 Kenya (2017). *National Mangrove Ecosystem Management Pla*n. Kenya Forest Service, Nairobi, Kenya. Pg. 24.

18 African Convention on the Conservation of Nature and Natural Resources (Maputo, 11 July 2003). Article 8(1).

19 *Ibid.* Article 7(3).

20 National Museuems and Heritage Act of 23 August 2006. Section 2.

21 UNESCO World Heritage Center 1992-2019. *The Tana Delta and Forests Complex*. https://whc.unesco.org/en/tentativelists/5514/ [Accessed 9 June 2019].

22 Forest Conservation and Management Act of 31 August 2016. Section 73(1).

23 *Ibid.* Section 73(2).

24 Wildlife Conservation and Management Act of 24 December 2013. Section 109.

making public policy decisions.[25] These values and principles include public participation and sustainable development, and are linked to other constitutional provisions. The Constitution places a duty on every person (natural and legal) in Kenya to cooperate with each other, and with the State, in order to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.[26] This means that in governance of critical ecosystems, such as mangroves, ecologically sustainable development must be the point of reference.

**The Constitution guarantees every person in Kenya the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures, ensuring sustainable exploitation, use, management, and conservation of the environment and natural resources, as well as working to achieve and maintain tree coverage of at least 10% of Kenya's land area.**[27] This provision is instrumental to mangrove governance, in terms of actions for reforestation and rehabilitation in the sense that a foundational obligation to increase forest tree coverage has been set through the Constitution, and is referenced by the National Mangroves Ecosystem Management Plan.[28]

Public participation in every form (public consultation, public representation in decision making, access to courts, access to justice, public awareness, among others) is protected by the Constitution.[29] Therefore, the Kenyan constitutional approach is very consistent with the principle 10 of the Rio Declaration.[30]

Additional obligations on the State, towards fulfilment of the human right to a healthy environment include establishing systems of EIA, as well as environmental auditing and monitoring. This provides a constitutional basis in Kenya for EIAs, environmental audits, and application of the precautionary principle, which are all critical in the governance of sensitive mangrove ecosystems. These obligations should be read together with the binding national values and principles of governance, which could form the basis of legal action if any public action in the form of implementation of the Constitution, making or implementing any law or public policy is deemed to be in violation of the principle of sustainable development.[31]

#### 5.2.2.2 Constitutional status of mangrove ecosystems

The Constitution bases the legal status of mangrove ecosystems on land, which in Kenya is categorized as public land, community land, and private land.[32] All land between the high and low water marks technically fits into the category of public land, encompassing mangrove ecosystems.[33]

This category of public land is vested in, and held by the national government in trust for the people of Kenya.[34] It is administered by the National Land Commission (NLC), which was established by the Constitution for this purpose.[35] The legal effect of these provisions is that **since all mangroves are public land, community or private land tenure rights over mangroves do not arise in Kenya. However, user rights, such as through community participation, have an impact on mangrove governance.**

25 Constitution of Kenya, 2010. Article 10.

26 *Ibid.* Article 69(2).

27 *Ibid.* Article 42, 69(1).

28 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 18.

29 Constitution of Kenya, 2010. Article 10.

30 The Rio Declaration on Environment and Development (Rio de Janeiro, 12 August 1992). Principle 10.

31 See for instance, *Communications Commission of Kenya & 5 others v. Royal Media Services Limited & 5 others* [2014] eKLR. Paragraph 381; *Independent Electoral and Boundaries Commission (IEBC) v. National Super Alliance (NASA) Kenya & 6 others* [2017] eKLR (CA). Paragraph 80-81; Constitution of Kenya, 2010. Article 10.

32 Constitution of Kenya, 2010. Article 62, 63, 64.

33 *Ibid.* Article 62(1).

34 *Ibid.* Article 62(3).

35 *Ibid.* Article 67(2)(a); *See also* National Land Commission Act of 27 April 2012.

## 5.2.3 Sectoral legislation

### 5.2.3.1 Forestry law and public forests

The Forest Conservation and Management Act is the primary piece of legislation governing the management and conservation of all forests in Kenya.[36] The scope of forests includes public forests, community forests, and private forests.[37] Following the Constitution, public forests are defined to include forests on land between the high and low water marks.[38] In practice, where there is no forest on public land between the high and low water marks, that public land may be used for a public beach, another public use, or another permitted development activity.

Therefore, all mangrove areas, except where they are in a marine national park or reserve, are classified as public forests. **In law, all public forests are protected areas, but in practice the protected area status of mangrove ecosystems relates mainly to the restriction of uses, such as cutting or development, rather than traditional limitations on entry, as occurs in many terrestrial forests.**

### 5.2.3.2 Wildlife law and Marine Protected Areas

The Wildlife Conservation and Management Act directly governs the management of some mangrove ecosystems when they fall within MPAs, such as marine national parks. A MPA is defined as any park or reserve covering an area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, and historical and cultural features, which has been reserved by law, and includes any dry land found within the boundary.[39] In Lamu County, the Kiunga Marine National Reserve (KMNR) has a mangrove forest area of approximately 7,628 ha, which is equivalent to 20.4% of the total mangrove coverage in the county.[40] Since the KMNR enjoys protection as an MPA, mangrove exploitation is restricted to traditional uses only.[41] In Kwale County, the mangroves of Sii Island, covering 119 ha, fall within the Kisite-Mpunguti MPA and are managed as an MPA under KWS, and as a public forest under KFS.[42] These mangroves have clearly benefited from this protection, as they are considered "one of the most pristine mangroves on the south coast."[43]

Mangrove ecosystems are sensitive to pollution, and the Wildlife Conservation and Management Act makes it a criminal offence for any person to discharge any pollutant into a designated wildlife area, including an MPA.[44] In addition to a fine and a term of imprisonment, a convicted person may also be required to pay the full cost of cleaning up the polluted wildlife habitat and ecosystem, and of removing the pollution; as well as cleaning up the polluted habitats and ecosystems and removing the effects of pollution.[45]

### 5.2.3.3 Land law and ecologically sensitive lands

One of the principles stipulated by both the Constitution and the Land Act is the "sound conservation and protection of ecologically sensitive areas," which is a concern of importance to mangrove ecosystems.[46] The Land Act addresses this by mandating the National Land Commission (NLC) to take appropriate action to maintain public land that has endangered

36 Forest Conservation and Management Act of 31 August 2016. Section 7.
37 *Ibid.* Section 30.
38 *Ibid.* Section 30(2).
39 Wildlife Conservation and Management Act of 24 December 2013. Section 2.
40 Kenya (2017). *National Mangrove Ecosystem Management Plan.* Kenya Forest Service, Nairobi, Kenya. Pg. 35.
41 *Ibid.* Pg. 35.
42 *Ibid.* Pg. 57.
43 *Ibid.* Pg. 57.
44 *Ibid.* Section 89.
45 *Ibid.* Section 89(2).
46 Constitution of Kenya, 2010. Article 60. Land Act of 27 April 2012. Section 4.


endemic species of flora and fauna, critical habitats, or protected areas.[47] In doing so, NLC is required to identify ecologically sensitive areas that are on public lands, such as mangrove forests, to take any justified action in those areas, and to act to prevent environmental degradation and climate change. By interpretation, these ecologically sensitive lands include mangrove ecosystems. While this function is given to NLC, it is required to consult the respective bodies dealing with conservation.

### 5.2.3.4 Water law and pollutant discharge regulation

The Constitution classifies water resources as public, comprising all rivers, lakes, and other water bodies.[48] An important aspect of water resource management that impacts mangrove ecosystems is the mandate of the Water Act and Water Resources Authority (WRA) concerning controlling the pollution of mangrove ecosystems that may result from the discharge of waste water in the form of domestic or industrial effluent. The 1999 Water Policy noted that pollution of surface and ground water resources had become a major problem due to human activities, and land use practices that had been carried out in total disregard of the need to conserve the water resources.[49] The policy proposed that to avoid pollution of water resources, strict stream effluent discharge standards should be developed.[50] To implement this, the policy provided that effluent discharge would not be allowed unless prior authority had been sought from the relevant authorized government agency.[51] The Water Resources Management Rules prohibit the discharge of pollutants into any water resource unless the discharge of this waste has been

47 Land Act of 27 April 2012. Section 11.

48 Constitution of Kenya, 2010. Article 62(1)(i).

49 Ministry of Water Resources (1999). *Sessional paper No. 1 of 1999 on national policy on water resources management policy and development*. Nairobi, Kenya. Section 2.6.1.

50 *Ibid.* Section 2.6.2.

51 *Ibid.* Section 2.6.4.

treated to permissible standards, as specified by WRA and approved by Effluent Discharge Permits (EDPs).[52] In addition, **the Water Act makes it a criminal offence for any person to discharge any effluent or industrial waste into or near a water resource in such a manner as causes, or is likely to cause pollution of the water resources.**[53] However, the Mangrove Ecosystem Management Plan does not set out actions or programmes to confront the challenge of enforcing effluent discharge standards, even though it identifies the discharge of domestic waste as putting pressure on contiguous coastal ecosystems such as mangroves.[54]

### 5.2.3.5 Wetland-related law and wetland licence requirements

The Environmental Management and Coordination Act (EMCA) governs various aspects relevant to mangrove ecosystem conservation and management. This includes protection of wetlands through the requirement for an EIA licence prior to any person undertaking activities specified by law, including excavation, introduction of species, or drainage of a wetland.[55]

The Cabinet Secretary responsible for the environment may declare a wetland a protected area in order to protect that wetland from environmental degradation. This protection status limits the land use activities that can be carried out in the protected wetland area.[56] Additional details are provided by the Environmental Management and Coordination (wetland, river bank, lakeshore, and seashore management) Regulations.[57] The management of wetlands, whose definition includes mangroves, is augmented by the National Wetlands Conservation and Management Policy.[58] The Cabinet Secretary responsible for the environment is likely to be different from the one with powers under the fisheries or wildlife legislation, since they enjoy different authority arising from separate laws. **There is no requirement for coordination when making these decisions.**

### 5.2.3.6 Climate change law and the National Climate Change Action Plan

The role of mangroves as carbon sinks and, therefore, how they integrate with Kenya's climate change governance framework has become apparent. The carbon stocks in Kenyan mangroves are estimated to range from 500 to 1000 tC ha; which is ten times higher than the terrestrial forests in the country.[59]

Kenya has adopted mainstreaming as its overarching regulatory (legal, institutional, and policy) implementation approach. The Climate Change Act defines mainstreaming as the integration of climate change actions into decision making and the implementation of functions by the sector ministries, State corporations, and county governments.[60] Mainstreaming here focuses on the implementation of actions consistent with the nationally adopted low carbon climate resilient development pathway, which prioritizes adaptation actions. According to the National Climate Change Policy, the adoption of mainstreaming is necessary to equip various coordinating and sectoral agencies of the Kenyan national and county governments with the tools to effectively respond to the complex challenges of climate change. This requires explicitly linking climate change actions to core planning processes through cross-sectoral policy integration. This mainstreaming also operates vertically by requiring every sector and level of government to

52 The Water Resources Management Rules of 2007. Section 82.

53 The Water Act of 13 September 2016. Section 143.

54 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 33.

55 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 42(1).

56 *Ibid*. Section 42(2).

57 Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations of 2009.

58 Ministry of Environment, Water and Natural Resources (2014). Sessional Paper No.12 of 2014 on National Wetlands Conservation and Management Policy.

59 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 28.

60 The Climate Change Act of 6 May 2016. Section 2.

implement climate change responses in their core functions.[61]

The Climate Change Act requires the mandatory preparation of a National Climate Change Action Plan (NCCAP) every five years, through which Kenya prioritizes climate change actions that every sector of the economy should integrate into their plans and activities in order to respond to climate change.[62] Kenya has just completed implementing the five-year NCCAP for the 2013-2017 period; the 2018-2022 draft NCCAP, which recognizes that rising sea levels could submerge mangrove forests, is awaiting approval.[63] Strategic Objective 2 of this draft NCCAP focuses on enhancing the resilience of the blue economy, with a key action being improving the resilience of coastal communities through the rehabilitation and restoration of mangrove forests; and conserving at least 15% of coastal and marine areas, especially areas of importance for biodiversity and ecosystem services.[64] One of the Strategic Objectives of the draft NCCAP is to increase forest/tree cover to 10% of total national land area (in line with the constitutional requirement); and rehabilitate degraded lands.[65] This will be implemented through the expansion and protection of mangrove forest cover (for coastal adaptation and blue carbon sequestration), including implementing the National Mangrove Ecosystem Management Plan.[66]

### 5.2.3.7 Fisheries law, aquaculture and Beach Management Units

The Fisheries Management and Development Act prohibits and makes it an offence for anyone to pollute Kenyan fisheries waters through the introduction of any substance that may have properties that are toxic or hazardous to fish or the marine environment.[67] This fisheries law provides for the prior undertaking of Fisheries Impact Assessments (FIAs) for any activity other than fishing which is likely to have an adverse impact on fish and their habitats (including mangrove areas). The National Environment Management Authority (NEMA) must prepare a report regarding the likely impact of the proposed activity on fishery resources, including their habitats.[68]

The government must develop a National Aquaculture Development Plan which includes requirements or standards for water quality, aquaculture waste, and EIAs.[69] The management and disposal of aquaculture waste is regulated, and it is an offence for anyone to dispose of this waste other than in the manner prescribed by the licence. Where this has happened, the law empowers NEMA to prescribe restorative measures to be implemented by the offending person.[70]

In order to ensure structured community participation in fisheries management, Beach Management Units (BMUs) were established.[71] They are defined as an organization of fishers, fish traders, boat owners, fish processors, and other beach stakeholders who traditionally depend on fishery activities for their livelihoods.[72] The language of this legislation focuses on the role of fishermen in the management of fisheries, but the National Oceans and Fisheries Policy only indicates that the government will promote the role of BMUs.[73] Although this law does not directly link BMUs with mangrove management, this should be rectified, since fishermen engage in

61 Ministry of Environment and Natural Resources (2016). *Sessional Paper No. 3 of 2016 on National Climate Change Framework Policy*. Nairobi, Kenya. Section 5.1.3.

62 The Climate Change Act of 6 May 2016. Section 13(3).

63 Ministry of Environment and Forestry (2018). *National Climate Change Action Plan (Kenya): 2018-2022*. Nairobi, Kenya. Pg. 15.

64 *Ibid.* Pg. 49.

65 *Ibid.* Pg. 52.

66 *Ibid.* Pg. 53.

67 Fisheries Management and Development Act of 3 September 2016. Section 49.

68 *Ibid.* Section 48.

69 *Ibid.* Section 62.

70 *Ibid.* Section 68.

71 *Ibid.* Section 37.

72 *Ibid.* Section 2.

73 Ministry of Fisheries Development (2008). *National Oceans and Fisheries Policy*. Nairobi, Kenya. Pg. 9.


fishing activities within mangrove areas. Indeed, the National Mangrove Ecosystem Management Plan, reporting on the Vanga area of Kwale on the south coast, noted that fish production was ranked highest among the benefits provided by mangroves.[74]

### 5.2.3.8 Physical planning law and integrated coastal zone management

The Physical Planning Act regulates the land use planning in Kenya outside protected areas, such as forests and national parks, whose planning is governed separately under forestry and wildlife legislation through management plans. Under this Act, terrestrial planning involves the development of regional physical development plans and local physical development plans for rural and urban areas for the purpose of guiding the suitable use of land for various purposes.[75] This is a function shared by the National Director of Physical Planning and county governments.

**This legal framework which governs all physical planning in Kenya has not put in place mechanisms or requirements for the physical planning process to coordinate with the management planning of mangrove areas.** This points to the absence of ICZM, a challenge that is acknowledged by Kenya's ICZM Policy, which committed the government to take action to ensure mainstreaming of the management of coastal forests and mangroves into land use planning.[76] However, this problem persists and in 2017 the National Land Use Policy indicated that the government would take action to identify and map out critical river deltas, coral reefs, and mangroves; to ensure the formulation and implementation of an integrated coastal land use plan; and to put in place legal measures for the sound spatial planning of marine resources

74 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 58.

75 The Physical Planning Act of 24 October 1996. Section 16, 24.

76 Ministry of Environment, Water and Natural Resources (2014). *Sessional Paper No.13 of 2014 on Integrated Coastal Zone Management*. Section 4.3.1.

that are fully integrated with the terrestrial planning system.[77]

#### 5.2.3.9 Environmental permitting and licensing

In Kenya, there are requirements for an SEA, an EIA, and environmental audits. An SEA is mandatory for all policies, plans, and programmes that are a) prepared by a public authority at a national, county, or local level, or through a legislative procedure in Parliament; and b) determined by NEMA as likely to have a significantly adverse impact on the environment.[78] The SEA is required to take into account the effect of implementing alternatives.[79] In this context, the 2017-2027 National Mangrove Ecosystem Management Plan falls within the scope of requiring an SEA, but it is yet to be subjected to one. The Environmental (Impact Assessment and Audit) Regulations provide the procedure for undertaking a SEA, with additional details set out in the national SEA guidelines developed by NEMA.[80]

In addition to the SEA, there is a requirement for a mandatory EIA to be undertaken for any activities listed in the Second Schedule of EMCA, which includes, among other activities, any project likely to affect wetlands.[81] The gist of the rule concerning an EIA, which is relevant to mangrove ecosystems, is that no other type of licence can legally be issued for activities listed in EMCA, until an EIA licence has been issued by NEMA. EMCA requires every holder of an EIA licence to undertake an annual environmental self-audit of their activities, and NEMA may carry out a control audit to check on compliance with an EIA licence, or upon petition by a member of the public.[82]

There is a link between issuing development approvals and EIA licensing. The issuing of development permission is the mandate of county governments. Under the terms of EMCA, no other licence, including development permit should be issued if an EIA licence has not been granted – for any development permits falling within the Second Schedule of EMCA. However, the Physical Planning Act uses permissive language stating that a county may require an EIA prior to issuing a development permit only if the County is of the opinion that the activity will have a harmful impact on the environment.[83] This provision is in contrast to EMCA, which lists all the activities that require mandatory EIA studies.[84] In addition, EMCA contains provisions asserting its superiority in application on matters concerning the environment, in case of a conflict with other laws.[85] Thus, the point of reference for a county considering a development application concerning mangroves should be whether the activity falls within this list, therefore requiring an EIA licence.

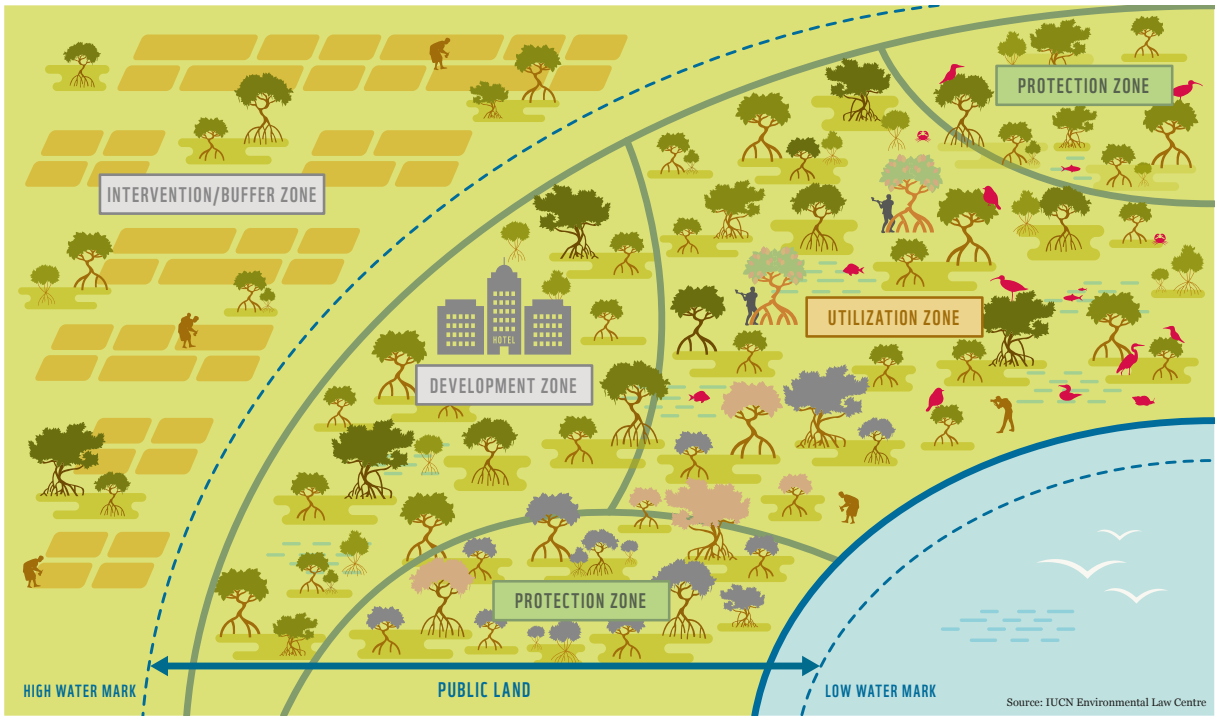
### 5.2.4 Management plans

#### 5.2.4.1 Forest management planning and the National Mangrove Ecosystem Management Plan

The management of public forests requires preparation of a management plan. The law requires every public forest to be managed in accordance with a management plan, prepared by KFS in a manner that includes public participation and community involvement.[86] In practice, a management plan for a mangrove forest should be prepared in consultation with various stakeholders such as the local Community Forest Association, together with the general public.

77 Ministry of Lands and Physical Planning (2017). *Sessional Paper No. 1 of 2017 on National Land Use Policy*. Nairobi, Kenya. Pg. 51.
78 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 57A.
79 Environmental (Impact Assessment and Audit) Regulations of 2003. Section 42(2).
80 *Ibid.* Section 42-43; *See also* NEMA (2013). *National Guidelines for Strategic Environmental Assessment in Kenya*.
81 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 58.
82 Environmental (Impact Assessment and Audit) Regulations of 2003. Section 4, 33, 39.
83 The Physical Planning Act of 24 October 1996. Section 36.
84 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Second Schedule.
85 Environmental (Impact Assessment and Audit) Regulations of 2003. Section 148.
86 Forest Conservation and Management Act of 31 August 2016. Section 47(2), 4(b).

**Figure 9:** Mangrove zonation in the National Mangrove Ecosystem Management Plan




For instance, the 2015-2019 Mombasa Mangrove Forest Management Plan was prepared by KFS in conjunction with the Mombasa Kilindini Community Forest Association (MOKICFA).[87]

**In 2017, KFS adopted the National Mangrove Ecosystem Management Plan, developed in cooperation with the Kenya Marine and Fisheries Research Institute (KEMFRI), the Kenya Wildlife Service (KWF), the Coast Development Authority and the Kenya Forestry Research Institute (KEFRI).** The overall goal of the management plan is "to enhance mangrove ecosystem integrity and its contribution to the economy of Kenya through sustainable management and rational use".[88] The objectives of the mangrove management plan include sustainable use and management of mangroves, promotion of community participation, strengthening of institutional capacities, and promotion of recreational activities as well as research and education.[89]

As a forest planning tool, the Mangrove Ecosystem Management Plan applies the concept of zonation, which is a tool for effective forest management. It has categorized mangrove forest areas in Kenya into four broad zones: protection, usage, development, and intervention/buffer zones. The protection zone encompasses existing protected forests, sites known for bird watching and any other unique features, marine breeding habitats and fragile ecosystems. Mangroves situated in this zone must be protected and enriched. The usage zone contains mangroves that are easily accessible and that can be used for the extraction of material or recreational activities. Degraded mangrove areas can be included in both protection and usage zones with the ultimate objective of protecting and enriching the forests. In the development zone, infrastructure development is allowed on the condition that it has a minimal negative impact on the ecosystem. Finally, in the intervention/buffer zone, which extends up to three km from the forest boundary, on-farm tree planting and income-generating activities are promoted.[90] The plan implies that the listed management options are the only permitted activities for each zone.

The Mangrove Ecosystem Management Plan also

87 Kenya Forest Service. *Mombasa Mangrove Forest Participatory Management Plan, 2015-2019.*

88 Kenya (2017). *National Mangrove Ecosystem Management Plan.* Kenya Forest Service, Nairobi, Kenya. Pg. 62.

89 *Ibid.* Pg. 62.

90 *Ibid.* Pg. 64.

sets out a number of programmes. The Mangrove Forest Conservation and Usage Programme is meant to correct management challenges, such as lack of management plans, over-exploitation of wood products, conversion of mangrove forest areas to other land uses, pollution and sedimentation. Activities include mapping out mangrove areas with unique species diversity and those prone to coastal erosion. This is in addition to carrying out routine policing patrols, establishing mangrove surveillance outposts, establishing joint training of KFS and KWS rangers and training community scouts.[91] The training of community scouts to support enforcement is an important avenue to enhance community engagement. This is because the scouts can also be responsible for increasing public participation, for instance through creating awareness of mangrove conservation.

The Fisheries Development and Management Programme is intended to achieve the conservation of mangroves as habitat and breeding grounds for fisheries and other fauna. The proposed activities include mapping key mangrove fish breeding grounds and integrated aquaculture including community-based enterprises and development of mariculture guidelines. Other activities include operationalization of fisheries co-management plans and enhancing the capacity of Beach Management Units (BMUs) in the management of fisheries. These activities are to be undertaken by the State Department responsible for fisheries, the Kenya Marine and Fisheries Institute and local communities through BMUs.[92]

The Community Programme is intended to improve community capacity to effectively participate in the conservation of mangroves, while enhancing ecological integrity and livelihoods. The planned activities include the formation of additional Community Forests Associations (CFAs) and training CFAs on governance and PES, including carbon trading; mapping out target farmers for farm forestry and promoting on-farm tree farming to relieve pressure on mangroves; building community capacity on the legal framework and translation of legal and policy briefs into Swahili; and integration of the socio-cultural value of mangroves into the forest policy.[93] The latter is important because some of the mangroves include sacred and culturally significant sites, such as *Mijikenda* shrines commonly referred to as *Kayas*. For instance, the Mombasa Mangrove forest includes the *Kaya Bombo,* which has both cultural and historical value.[94] Under the National Museums and Heritage Act, natural and cultural heritage are protected by the National Museums of Kenya, although where they fall inside a public forest, KFS also plays a management role.[95] In contrast, the nomination of the Tana Delta and Forest Complex for recognition as a natural heritage of universal value under the World Heritage Convention, discussed earlier, was undertaken by KWS.

There are also programmes for tourism development, together with research and education. In all the programmes, the key implementing agencies are identified (as specified above), and an indicative budget is provided for the entire ten-year implementation period. Further, the means of verifying outcomes are provided for each outcome.

The National Mangrove Ecosystem Management Plan does not replace or preclude site management plans for mangrove forests. However, at the time of writing, the available data from KFS show that the management plans prepared for various mangrove forests in 2013 and 2015 were valid for four years. These forests include Gogoni-Gazi and Vajiki (in Kwale County, expired in 2017); the Kilifi Mangrove forest; and the Mombasa mangrove forests, both expiring in 2019. This reflects a high level of compliance in preparation of management plans in 2013-2015, but also that these plans have not been renewed to stay compliant with the forestry legislation.

91 *Ibid.* Pp. 65-68.
92 *Ibid.* Pp. 69-70.
93 *Ibid.* Pp. 71-76.
94 Kenya Forest Service. *Mombasa Mangrove Forest Participatory Management Plan, 2015-2019*. Pg. 51.
95 National Museums and Heritage Act of 23 August 2006. Section 4(c).

## Kiunga-Boni-Dodori Conservation Area Management Plan

KWS has prepared the 2013-2023 Kiunga-Boni-Dodori Conservation Area Management Plan (KBDCA), which is relevant here because its geographical scope includes the Kiunga Marine National Reserve. The KBDCA management plan is based on five zones: High Use Zones, Low Use Zones, Wilderness Zones, Restricted Use Zones, and Influence Zones. The Restricted Use Zones, where most mangrove ecosystems are located, are classified as no-take areas, where the extraction of natural resources is not allowed in order to protect and conserve biologically significant species. According to the management plan, these zones include fish breeding, turtle nesting, dugong foraging and bird breeding sites as well as the intertidal zone of 600 metres from the high tide mark in KMNR, as well as mangrove forests within KMNR and the Dodori National Reserve.[101]

### 5.2.4.2 Management planning of Marine Protected Areas

MPAs, which incorporate mangrove ecosystems in certain circumstances, must have a zoning system that caters for multiple use of marine resources, including extraction and non-extraction zones, protection of key habitat, areas that may be used by local vessels for passage, fisheries no take areas and zones that allow other specified activities.[96]

The Wildlife Conservation and Management Act requires that a management plan should be developed in a consultative manner with neighbouring communities and used for the management of every MPA.[97] The management plan is the principal planning tool for a MPA, and under the law, no development activities should be approved in the absence of an approved management plan.[98] For this reason, it is an offence to contravene or fraudulently alter an approved management plan.[99] As part of each management plan, KWS must include a report detailing the participation of neighbouring communities in the preparation of the plan.[100]

In order for each management plan to be deemed completely lawful, it must be published in the Kenya Gazette, the official publication of the Kenyan Government, and used to notify the public of any formal/official government action. Where the publication of an action or document in the Kenya Gazette is a lawful requirement, as in this case, failure to publish denies that document full legal status. Many management plans have not been published in this manner, which means they have no legal status.[102] It is unclear why these management plans have not been published as required. Nonetheless under Kenyan law, there is legal room for any person (individuals, civil society organizations, etc.) to take legal action to require compliance with the law by KWS. This includes a right to access relevant information from KWS under the Access to Information Act.[103] In addition, the validity of a management plan can be challenged at the National Environment Tribunal.[104] Finally, any person can file a constitutional petition at the High Court where their right to a clean and healthy environment is threatened by a non-compliant management plan.[105]

96 Wildlife Conservation and Management Act of 24 December 2013. Section 32(2).
97 *Ibid.* Section 44.
98 *Ibid.* Fifth Schedule.
99 *Ibid.* Section 88.
100 *Ibid.* Fifth Schedule (part 2, section 1).
101 Kenya Wildlife Service (2013). *Kiunga-Boni-Dodori Conservation Area Management Plan (KBDCA), 2013-2023*. Pg. 13, 19.
102 Kenya. *The National Wildlife Conservation Status Report 2015-2017*. Pg. xii, 119.
103 Access to Information Act of 31 August 2016. Section 4.
104 Wildlife Conservation and Management Act of 24 December 2013. Section 117(2).
105 Constitution of Kenya, 2010. Article 22, 70.

A problem arises from the fact that management planning for mangrove ecosystems can occur either under the wildlife law, or the forests law, depending on whether the mangroves are classified as MPAs, or public forests. There are no provisions allowing for management plans made under one law to have authority over another law; that is, a public forest management plan is not authorized to apply over a MPA. This means that, in practice there is need for administrative coordination to ensure that for contiguous areas, planning for one site does not result in deleterious impacts for another. In addition, there is need to ensure that terrestrial planning (including development permitting and compliance), over which county governments have authority under the Physical Planning Act, is coordinated with management planning to avoid deleterious outcomes due to incompatible land-based activities adversely affecting mangrove ecosystems.[106]

### 5.2.5 The role of communities in the conservation of mangroves

Forest management planning is integral to the participation of communities in the management of public forests. Community participation, as part of participatory forestry management in Kenya, is permitted by the Forest Conservation and Management Act, which provides that a forest community may register a Community Forest Association (CFA), and submit an application to KFS to be permitted to take part in the management of a public forest.[107] Once a CFA has been approved by KFS, they conclude a Community Forest Management Agreement. The CFA obligations, modified for each context, are derived from standard statutory obligations. These include CFA obligations to protect, conserve, and manage the forest, or part of the forest, in accordance with an approved management agreement entered into with KFS and the provisions of the management plan; or to assist KFS in enforcement through the prevention of illegal harvesting.[108]

As an illustration on the workings of management planning and community participation, KFS together with Mombasa Kilindini Community Forest Association (MOKICFA) have developed a Management Plan for the Mombasa Mangrove Forest.[109] In line with the National Mangrove Ecosystem Management Plan, this plan for the Mombasa mangrove forest has adopted a zonation approach. The Mombasa management plan provides a more detailed zonation scheme by clearly delimitating the zones according to the activities allowed. For instance, the ecotourism zone is dedicated to the development of ecotourism facilities and the rehabilitation zone is dedicated to rehabilitation activities, mainly through the participatory forest management programme. In this context, local communities actively participate in the replantation of mangroves. The management zones provide guidance with specific objectives and activities to be implemented in the forests.[110] For instance, the characteristics of the forests, based on altitude and salinity, impact the zoning approach such that high-tide areas are targeted for rehabilitation, while activities in low-tide areas have minimal human activity to ensure they are restricted to protective management and biodiversity conservation. According to the management plan, the zonation also takes into account different areas of cultural significance for the local Mijikenda communities, since the forest has several shrines and one Kaya, a Mijikenda sacred forest/place of prayer.[111]

**Depending on the characteristics of each mangrove forest area, the community can obtain user rights over the mangrove forest ecosystem, under the management agreement with KFS.** These user rights are derived from those approved under the Forest Conservation and Management Act, including

106 The Physical Planning Act of 24 October 1996. Section 16(1).

107 Forest Conservation and Management Act of 31 August 2016. Section 48.

108 *Ibid.* Section 49(1).

109 Kenya Forest Service. *Mombasa Mangrove Forest Participatory Management Plan, 2015-2019.*

110 *Ibid.* Pg. 55.

111 *Ibid.* Pg. 51.

harvesting fuel wood; collecting forest produce; ecotourism and recreational activities.[112]

Although the country has enacted a Community Land Act, this does not apply to mangroves because, falling into the category of public land they are outside the scope of community land.[113] In essence, therefore, there are no property rights to own mangrove forests in Kenya for individuals or communities, except for user rights that permit participation in the management of mangrove ecosystems, such as within the scope of the Forest Conservation and Management Act.

## 5.3 Institutional level: A challenge of coordination across sectors and levels

### 5.3.1 National institutions responsible for mangrove conservation and management

All public land in Kenya is vested in and held by the national government in trust for the people of Kenya and administered by the National Land Commission (NLC).[114] While NLC maintains oversight, the responsibility for managing mangroves is bestowed on several public agencies primarily responsible for protected area management, either as public forests or national parks or reserves. First, the Kenya Forest Service (KFS) has the primary mandate to conserve, protect, and manage all public forests, including forests on land between the high and low water marks.[115] In certain instances, a mangrove forest may fall under the management authority of the Kenya Wildlife Service (KWS), where the mangrove forest is part of a protected area, such as a marine park, since the mandate of KWS includes the conservation and management of national parks, wildlife conservation areas, and sanctuaries under its jurisdiction, including MPAs.[116]

#### 5.3.1.1 Ministry-level institutions with policy-making functions

Based on the current Executive Order issued by the President, the institutional mandates on mangrove governance commence with the Ministry of Environment and Forestry (ME&F), which is responsible for, among other functions, the development of forest policy and the conservation and protection of wetlands.[117] This Ministry is responsible for the supervision of institutions with a mandate over mangroves: KFS; the National Environment Management Authority (NEMA); the National Environment Tribunal (NET); and the Kenya Forestry Research Institute (KEFRI). The Ministry of Tourism and Wildlife also has a mandate over mangroves, as it is assigned the function of the oversight of marine parks, to be managed by KWS.[118] Both these Ministries, through the respective Cabinet Secretaries with policy-making roles, as ordinarily defined in the Executive Order issued by the President to organize the national government, but also based on the two legislative frameworks that give Cabinet Secretaries powers and functions of a policy nature, such as the development of strategies, including the wildlife strategy described below.[119] Thus, in terms of mangrove governance, they exercise policy and oversight functions for the respective agencies, in this case KWS and KFS.

112 Forest Conservation and Management Act of 31 August 2016. Section 49(2).
113 Constitution of Kenya, 2010. Article 63; Community Land Act of 31 August 2016.
114 Constitution of Kenya, 2010. Article 62(3), 67; *See also* National Land Commission Act of 27 April 2012.
115 Forest Conservation and Management Act of 31 August 2016. Section 7, 8, 30(2).
116 Wildlife Conservation and Management Act of 24 December 2013. Section 6,7(a), 32(2).
117 Executive Order No. 1 of 2018 on the Organization of the Government of the Republic of Kenya. Pp. 57-58.
118 *Ibid.* Pg. 56.
119 *Ibid.* Pp. 55-59.

### 5.3.1.2 The management of mangroves as forests

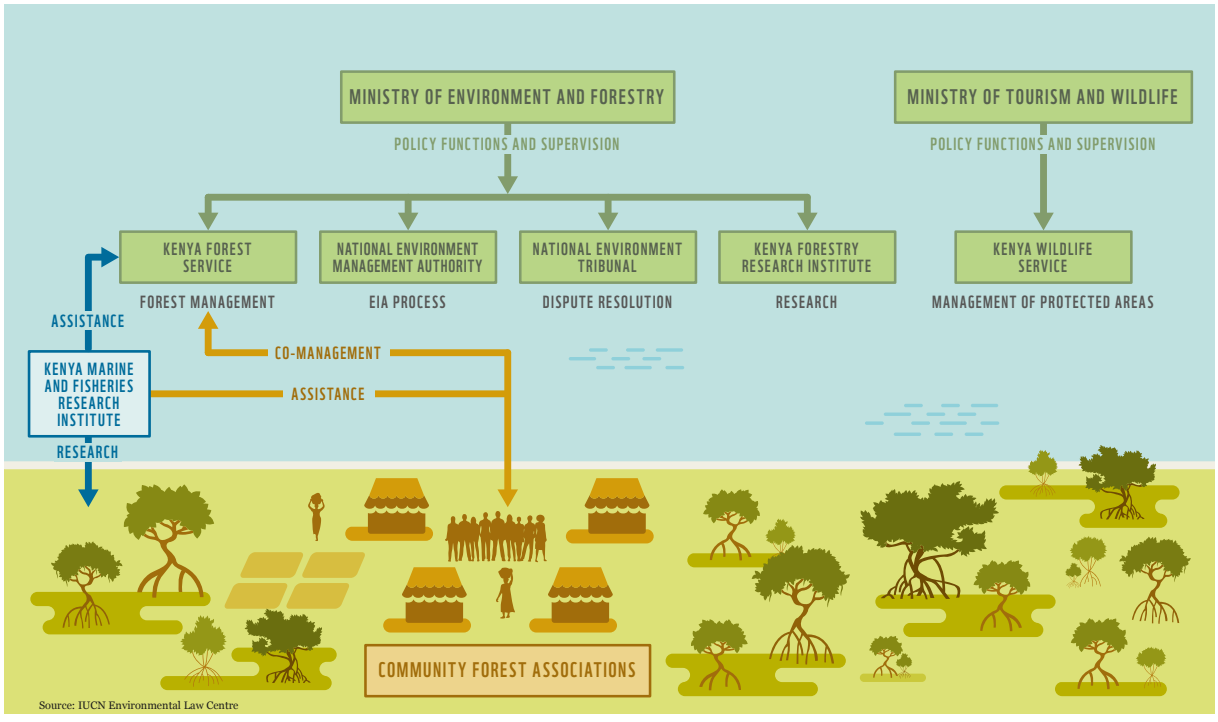
KFS has the mandate to conserve, protect, and manage all public forests, including mangroves.[120] The mandate of KFS over mangroves includes approving usage as well as management planning and facilitating community participation through CFAs (see Sections 5.2.4, 5.2.5).[121] The KFS Strategic Plan for the 2017-2022 Period prioritizes the "conservation and management of mangrove forests" as one of the priority projects in the Forestry Sector.[122] However, the implementation matrix, which specifies the forestry activities to be undertaken during the 2017-2022 period by KFS and which includes an indicative budget, is rather generic, referring only to forestry and not to mangroves. It has a note indicating that a more detailed implementation plan will be prepared at a later date.[123]

### 5.3.1.3 The management of mangroves in marine parks

KWS enjoys a wide mandate under the Wildlife Conservation and Management Act, which includes the conservation and management of national parks and other wildlife conservation areas; undertaking enforcement activities; and conducting all research activities on wildlife conservation and management.[124]

The Cabinet Secretary responsible for matters relating to wildlife has the power to establish MPAs.[125] However, the Fisheries Management and Development Act empowers another Cabinet Secretary, responsible for fisheries, to declare any area in Kenya's fishery waters to be a MPA.[126] There is no coordination between these two roles, and the provisions concerning marine-protected areas in fishery law remain fairly general, leaving the details to be provided for in subsidiary legislation. This provision means that it is possible that areas of mangrove ecosystems could be

**Figure 10:** Institutional framework for mangrove management in Kenya




120 Forest Conservation and Management Act of 31 August 2016. Section 7, 8.

121 Kenya Forest Service. *Mombasa Mangrove Forest Participatory Management Plan, 2015-2019.*

122 Kenya Forest Service. *Strategic Plan 2017-2022.* Pg. 11.

123 *Ibid.* Pp. 35-40.

124 Wildlife Conservation and Management Act of 24 December 2013. Section 6, 7.

125 *Ibid.* Section 31(1)(b).

126 Fisheries Management and Development Act of 3 September 2016. Section 47.

declared MPAs under multiple legislation, which could adversely impact effective conservation and management by creating confusion and jurisdictional overlap.

The Wildlife Conservation and Management Act requires the Cabinet Secretary responsible for wildlife to develop a National Wildlife Conservation and Management Strategy every five years, which will prescribe the principles, objectives, standards, indicators, procedures, and incentives for the management and conservation of wildlife resources.[127] The National Wildlife Strategy 2030 sets out the goals, strategies, and activities relevant to the management of mangrove ecosystems by KWS. This includes maintaining and improving habitat and ecosystem integrity to reduce biodiversity loss, to protect ecosystem function, to enhance connectivity, and to increase resilience.[128] This is to be implemented through various strategies, including protecting, rehabilitating, and restoring the connectivity of wildlife habitats, including forest, savanna, freshwater, marine, and mountain ecosystems to increase the resilience of key habitats and ecosystems.[129] However, these actions do not specifically refer to mangrove ecosystems in terms of marine ecosystems, in the context of the mandate of KWS on MPAs.

The Cabinet Secretary is required by the Wildlife Conservation and Management Act to biannually develop a National Wildlife Conservation Status Report to the National Assembly.[130] In addition, the management plan process includes the production of an annual compliance report and a five-year third-party management report.[131] No compliance reports have been provided for the marine parks for up to three years. This demonstrates the weak rule of law and the ineffectiveness of both KWS as the responsible institution and the Cabinet Secretary for wildlife as the supervising institution for KWS under the Wildlife Conservation and Management Act.

#### 5.3.1.4 The National Environment Management Authority

The mandate of NEMA, with respect to mangroves includes a number of key NEMA functions set out by the EMCA. The Authority has the responsibility for undertaking SEAs and EIAs for activities that fall within the scope of the Second Schedule of the EMCA. Further, this mandate includes NEMA receiving and assessing environmental audit reports from any person undertaking activities for which an EIA licence has been issued, which includes activities in mangrove ecosystems. Environmental Audits (EAs) are a mechanism for tracking compliance with the licence conditions for an EIA. NEMA is authorized to undertake control audits to confirm compliance with an EIA licence, or where it is petitioned by a member of the public.[132]

In addition, NEMA has the role of protecting wetlands, and due to the statutory definition of wetlands, this includes mangrove ecosystems.[133] This means that in terms of authority concerning mangrove ecosystems, there could be an overlap between NEMA, KFS, and KWS. However, the structure of the EMCA is helpful, since it essentially creates KFS and KWS as the lead agencies. In this context, by virtue of the respective forestry and wildlife legislation, both **KFS and KWS are lead agencies when it concerns mangrove ecosystems, and NEMA has powers under the EMCA to direct either KFS or KWS to perform their duties, if they are not performing them sufficiently.** If either lead agency fails to follow such directions, NEMA is authorized to take over and perform those duties or mandates, and recover the cost from the lead agency

127 Wildlife Conservation and Management Act of 24 December 2013. Section 5.
128 Ministry of Tourism and Wildlife (2018). *National Wildlife Strategy 2030*. Pg. 53.
129 *Ibid*. Pg. 57.
130 Wildlife Conservation and Management Act of 24 December 2013. Section 49(4).
131 *Ibid*. Fifth Schedule (Part I)(clause 3).
132 Environmental (Impact Assessment and Audit) Regulations of 2003. Section 31-41.
133 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 2.

concerned.[134] If any lead agency fails to comply with orders given within these powers by NEMA, then it is an offence under the EMCA, punishable by imprisonment for a term of no less than one year, but not exceeding four years, or a fine of no less than two million shillings (US $20,000), or both a fine and a term of imprisonment.[135] EMCA provides that every director or officer of the agency who had knowledge of the commission of the offence and who did not exercise due diligence, efficiency and economy to ensure compliance with this Act, is personally liable for the offence.[136] This means that in theory, officers of a lead agencies could face custodial sentences or fines for non-compliance with orders issued by NEMA. The fines are payable to the Kenyan judiciary upon conviction and sentencing, but there is no provision in the law for these fines to go towards mangrove conservation.

NEMA has previously exercised these supervisory powers with respect to terrestrial forests; in 2010, when it issued instructions to KFS to secure State forests and stop further degradation and illegal human activities. KFS had, as allowed according to forestry legislation, allowed adjacent communities to exercise their user rights for grazing by paying a monthly fee, but after the notice from NEMA, declined to renew these user rights, without much notice given to the users. This action resulted in the affected communities filing an appeal at the National Environment Tribunal (NET), where NET declined to order the Forest Service to allow communities to resume grazing, but ordered KFS to confirm to the communities whether this step was permanent or temporary.[137]

#### 5.3.1.5 The contributions of the Kenya Marine and Fisheries Institute (KMFRI) and the Kenya Forestry Research Institute (KEFRI)

The Kenya Marine and Fisheries Research Institute (KMFRI) is a national research institution, established by the Science, Technology and Innovation Act, with a mandate to undertake research in marine and freshwater fisheries, aquaculture, environmental, and ecological studies.[138] It is also responsible for disseminating this scientific information, monitoring water quality and pollution in fresh and marine water environments and conducting socio-economic research on aspects relevant to fisheries, the environment, and other aquatic resources. KMFRI does not possess a governance role over mangroves similar to KFS, KWS, or NEMA, but has a mandate to undertake research on mangrove ecosystems, which can impact governance. In this sense, KMFRI has established a research station at Gazi village in Kwale County, where scientific and socio-economic research is undertaken on mangrove governance. It conducts scientific research on various aspects of mangroves, such as the contribution of mangroves to climate change mitigation (blue carbon). It also engages in the management of natural and planted mangrove forests. Finally, it supervises community engagement in mangrove management through the Gazi and Makongeni CFA.[139] Members of the CFA from Gazi are involved in mangrove conservation, protection (through community scouts), and livelihood activities, such as the mangrove boardwalk at Gazi (where visitors can walk through the mangroves after paying a fee), and aquaculture activities.[140]

The above activities are merely illustrative of KMFRI's research input, which should be streamlined with the work of institutions with

134 *Ibid.* Section 12(1).

135 *Ibid.* Section 12(2), 144.

136 *Ibid.* Section 145(1).

137 *National Alliance of Community Forest Associations (NACOFA) v. NEMA & Kenya Forest Service* (Tribunal Appeal No. NET 62 of 2010).

138 Science, Technology and Innovation Act of 1 October 2014. Section 53 as read together with the Fourth Schedule. This law repealed the Science and Technology Act of 1 July 1977 which originally established KMFRI, through section 12 and the Fourth Schedule. Under section 12(2) of this 1977 law, the Minister responsible issued Legal Notice No. 7 of 1979 to specifically spell out the functions and mandates of KMFRI.

139 Interview with James Kairo, Lillian Mwihaki, and Anne Kamau, KMFRI, 18-21 December 2018.

140 Interview with James Kairo, Lillian Mwihaki, and Anne Kamau, KMFRI and community members, 18-21 December 2018. The identity of community members interviewed will be kept anonymous.

a governance role over mangroves. Due to the fact that mangroves are public forests, KMFRI and KFS are already collaborating in community participation through the CFAs, since KFS is the licensing institution for the CFAs. KMFRI also played a major role in the development of the 2017-2027 National Mangroves Ecosystem Management Plan.

Another research institute, the Kenya Forestry Research Institute (KEFRI) established under the same legal provisions as KMFRI, also undertakes forestry research, including on mangroves. KEFRI has unique recognition under the Forest Conservation and Management Act as having the overall mandate to develop research and development programmes to provide information and technologies for the sustainable development of forestry and associated natural resources. KEFRI also has the mandate to advise the Cabinet Secretary responsible for forestry on a scientific basis for the Minister to declare any tree species or family of tree species to be protected throughout the entire country or in specific areas. In the 2018-2022 Strategic Plan, KEFRI sets out activities that, although they do not directly refer to mangroves, are relevant to them.[141] These include research on forest valuation and PES; community forest management; forest extension services; forest rehabilitation and restoration of natural forests; and climate change adaptation and mitigation, among other areas of research. KEFRI is, therefore, well placed to provide complementary research on mangrove conservation, similar to KMFRI, for uptake by KFS, KWS, communities, counties, and other stakeholders.[142]

#### 5.3.1.6 The Water Resources Authority

The national government has mandated the Water Resources Authority (WRA) to regulate and manage water resources in Kenya.[143] For this to work, WRA has been given the authority to issue Effluent Discharge Permits (EDPs) and to ensure there is compliance with water quality standards that are outlined in these rules. WRA is required to undertake water quality monitoring, with a specific mandate to inspect and sample any sources of water pollution.[144] This is in addition to maintaining a water quality database, which should be made available during normal working hours to any person after the payment of a prescribed fee.[145] WRA has the mandate to formulate and enforce standards, procedures, and regulations for the management and use of water resources. The mandate of WRA is to regulate the discharge of domestic and industrial effluent into the ocean, which is important for preventing the pollution of mangroves, as such pollution is detrimental to their health, and can undermine conservation efforts by other stakeholders.

#### 5.3.1.7 The National Environment Tribunal

NET was established by the EMCA as a quasi-judiciary tribunal, with powers to hear and determine appeals by any person aggrieved by decisions made by the EMCA.[146] NET has similar powers to settle disputes under both the Forest Conservation and Management Act, and the Wildlife Conservation and Management Act.[147] Appeals against NET's decisions are heard at the Environment and Land Court established by the Constitution and activated by the Environment and Land Court Act.[148]

141 Kenya Forestry Research Institute (2018). *Strategic Plan 2018-2022*.

142 *Ibid*. Pp. 26-28.

143 The Water Act of 13 September 2016. Section 12.

144 The Water Resources Management Rules of 2007. Section 81, 82.

145 *Ibid*. Section 13(1), 13(2).

146 Environmental Management and Co-ordination Act (EMCA) (Chapter 387) of 6 January 2000. Section 125, 126, 127.

147 Wildlife Conservation and Management Act of 24 December 2013. Section 26(2); Forest Conservation and Management Act of 7 September 2016. Section 70(2).

148 Constitution of Kenya, 2010. Article 162(2)(b); Environment and Land Court Act of 30 August 2011.

### 5.3.2 Mangrove management at a county level

Since all mangrove forests are classified as public forests managed by KFS, the five coastal counties (Mombasa, Kwale, Kilifi, Lamu, and Tana River) which contain mangroves are important stakeholders in ensuring policies and actions on land use do not undermine the governance of mangroves.

Each county government has to prepare a County Integrated Development Plan (CIDP) to guide the county on a five-yearly basis.[149] Thus, the CIDPs for the 2013-2017 period comprised a valuable tool to assess county attitudes and priorities concerning mangroves. Most of the CIDPs do not contain specific actions on mangroves. However, the first CIDP from the Tana River County specifically stated that 450 ha of degraded mangroves should have been restored by June 2018, and the mangrove coverage in the Kipini Location Garsen Constituency should have increased from 2665 ha to 3000 ha by June 2015.[150] In addition, the first CIDP from the Lamu County that addressed mangroves stated the need to regulate the harvesting of mangroves and to raise awareness among the communities.[151] However, these plans did not specify how the actions would be coordinated between the counties and KFS.

The counties are now applying their second CIDPs. Mombasa County's second CIDP recognizes plans to establish a county carbon credit programme, but no details have been provided on the elements of this programme.[152] Additionally, Kilifi's second CIDP states that the county will plant mangroves to rehabilitate a portion of the EEZ.[153]

These CIDPs presented plans that were made by counties regarding mangrove activities and did not assess whether these actions were actually undertaken. A key notable trend is that the CIDPs did not fully address the institutional arrangements for mangrove governance – and most proceeded as though the counties had full legal authority in every aspect of governance, with the exception of Mombasa County, which recognized that it was KFS which had the legal authority to manage mangroves, as public forests.

## 5.4 Behavioural level: A mixed menu of positive and negative from various actors

### 5.4.1 The role of coastal communities in mangrove conservation and management

Some mangrove areas, such as Chale Island in Kwale County, have been set aside by communities as sacred sites (Kaya forests), where tree extraction is forbidden by customary law.[154] The communities around Gazi Bay are collaborating with KMFRI on the Mikoko Pamoja project. This project promotes community action to conserve mangroves, and payments for ecosystem services to the community through carbon finance for carbon sequestration by the mangrove forests.[155] It involves community members from Gazi Bay – Gazi and Makongeni villages, who are also members of the Gazi-Makongeni CFA, and are supported by the KMFRI Gazi village research station in the community's engagement actions. Community members are actively involved, especially the women groups that operate the Board Walk cultural activities and the successful aquaculture projects in Makongeni. The aquaculture project in Gazi village failed because of the theft of fish, as the ponds are located at a distance from the village residences.

149 County Governments Act of 24 July 2012. Section 108(1).

150 County Government of Tana River. *First County Integrated Development Plan, 2013-2017*. Pp. 123-124.

151 County Government of Lamu. *First County Integrated Development Plan, 2013-2017*. Pp. 136-137.

152 *Ibid*. Pg. 95.

153 County Government of Kilifi. *Second County Integrated Development Plan, 2018-2022*. Pg. 160.

154 Kenya (2017). *National Mangrove Ecosystem Management Plan*. Kenya Forest Service, Nairobi, Kenya. Pg. 29

155 The information in this section is based on discussions with community members from Gazi and Makongeni villages during a focus group discuss at the KMFRI Gazi Village Research substation; and interviews with James Kairo, Lillian Mwihaki, and Anne Kamau during meetings at the KMFRI Gazi Village Research Substation, and during field trips to the project site, 20-21 December 2018, that also involved community members.


Extensive garbage disposal by neighbouring Gazi village settlements into the mangrove ecosystems indicates a lack of awareness about conservation or an absence of voluntary compliance, in spite of notices in Swahili warning people against dumping garbage. The management of solid waste is a function of county governments, in terms of the Constitution, and there is need to harmonize how counties plan for, and manage waste disposal, in order to avoid deleterious impacts on mangroves.[156] In addition, there is need to harmonize physical planning and development planning, as well as compliance to ensure incompatible activities are not authorized, or occur illegally in close proximity to mangroves. For instance, in Gazi village, there was notable encroachment by villagers into the mangrove ecosystem to build homes; in certain instances within the tidal area, or right on the boundary of the mangrove forest. This adversely impacts the health of the ecosystem.

With regard to the economic activities developed by the Mikoko Pamoja programme, the visible results are mixed. The boardwalk shows signs of significant wear and tear, but there are also signs of young people and women's groups busy preparing music and cultural shows for visitors. Revenue from the boardwalk was reported to have fallen, as it was dilapidated and therefore not attractive to visitors. Visible results from the aquaculture ponds were mixed; some ponds collapsed after the fish were stolen, while others were successful, such as the one operated by the Baraka Conservation Group in Makongeni village to rear milkfish and prawns. The success of these community-based economic activities is important to the health of mangroves, as they provide alternative income-generating activities.

During a workshop to enhance legal capacity mangrove management in Kenya, held in Ukunda on 18-20 February 2019, the role of communities was a major concern.[157] Participating community members indicated a need for public institutions

156 Constitution of Kenya, 2010. Fourth Schedule (part II), section 2(g).

157 Save Our Mangroves Now! (2019). *Workshop to enhance legal capacity for mangroves management in Kenya, Diani Beach, 18-19 February 2019*. Pp. 5-12.

(KFS, KWS) to invest in capacity building, and an enhanced collaborative working relationship with communities, including the development of management plans. It was proposed that coastal communities could benefit from learning from each other through networks between various communities involved in mangroves. Additionally, the participating community members recommended that a participatory mechanism for developing benefit sharing arrangements, such as mangrove harvesting plans, was needed.

### 5.4.2 Salt production operations and questions of environmental justice

The attitudes and conduct of the various actors involved in salt production, and their impact on mangrove ecosystems, have come under review in Kenya. In 2006, the Kenya National Commission on Human Rights (KNCHR) undertook a public inquiry into salt manufacturing in Magarini in Kilifi County. The report found that salt manufacturing impacted mangroves including through clearing mangroves for the construction of salt-harvesting ponds, and construction of dykes restricting water flow and resulting in high salinity causing the death of mangroves. **The report advised that the clearing of mangroves should stop and a set-back line from the mangrove forests to the salt ponds should be established. All salt ponds within the area should be decommissioned and rehabilitated, and all the dykes restricting the water flow should be removed.**[158] A 2017 follow-up inquiry by the KNCHR, this time with the Kenya Association of Manufacturers reported that most of the salt companies had reforestation programs underway in the salt belt; that those who were cutting mangroves were being fined; and that the dykes which had been restricting the free flow of water into the sea had been removed.[159] The 2017 report recommended that reforestation should continue with community participation, under the supervision of NEMA and KFS.[160]

One of the salt companies that was the subject of the 2006 report, Krystalline Salt, is a member of the United Nations Global Compact (UNGC), a forum where companies report on their compliance with sustainability principles. In its 2018 report to the UNGC, Krystalline Salt reported having "implemented brine treatment systems to ensure any waste water produced during manufacturing is properly recycled back into the refinery and not released into the natural environment," and further, participating "in planting and conservation of mangrove trees which are habitat for many marine animals."[161] However, during the same period, the Malindi Rights Forum, a human rights lobby group, wrote to NEMA, protesting that the company was in violation of various terms of its EIA licence.[162] This is consistent with a study published in 2013 on the environmental and social impact of salt mining in Magarini in Kilifi County, which found that there was poor implementation of the EIA and EA requirements, also noting that although the salt companies had prepared annual environmental audit reports, there were no useful metrics for measuring the environmental and social performances of these salt companies. In addition, it was reported that institutions such as the Magarini Environment Committee and community-based environmental organizations had failed to have an impact on the supervision and management of environmental issues due to a lack of capacity.[163]

Natural Justice, a civil society organization, is involved in environmental justice initiatives in Kilifi County, and looks at challenges arising

158 Kenya National Commission on Human Rights (2006). *Report of a Public Inquiry into Allegations of Human Rights Violations in Magarini, Malindi*. Pp. 144-146.

159 Kenya National Commission on Human Rights (2018). *The Malindi Public Inquiry Audit Report: An Audit of the 2006 KNCHR Public Inquiry on Salt Harvesting in Magarini, Malindi*.

160 *Ibid*. Pg. 79.

161 Krystalline Salt (2018). *Communication of Progress to the United Nations Global Compact, October 2017-September 2018*. Pg. 41.

162 Letter to the Director General, NEMA (25 September 2017). "Non Compliance with Licence Conditions 2.7 and 3.12 (Concerning Buffer Zones) of Licence NEMA/EIA/SR/495 and Request for Urgent Remedial Action".

163 Ocholla, G.O., Bunyasi, M.M. et al. (2013). Environmental Issues and Socio-economic Problems Emanating from Salt Mining in Kenya; A Case Study of Magarini District. *International Journal of Humanities and Social Science* 3(3):213-223. Pg. 219.

from activities by salt companies. [164] They assist community members in organizing community responses in seeking government intervention and corporate accountability. These include making Access to Information requests to government agencies such as NEMA for EIA reports, licences, and Environmental Audit reports.[165] They have been successful in many instances in securing the documents they sought.

Under this programme, Natural Justice has initiated a community-led environmental audit to ascertain the extent of non-compliance and its impact. Under development for the last two years, the audit report is nearly complete covering the following salt companies: Krystalline Gongoni, Krystalline Marereni, Ken Salt, KEMU Salt, Kurawa Salt, and Malindi Salt. The CELOs provide detailed comments to NEMA on EIA study reports for proposed new or additional salt production activities. Preliminary findings indicate salt production activities are resulting in the loss of livelihoods for bee keepers and fishermen as well as damage to biodiversity. Blockage, constriction and diversion of rivers results in the loss of fishing sites and flooding, while disposal of brine into river systems affects fishery resources in mangroves. Underground seepage from poorly constructed dykes, wetland destruction and blocked access routes and dust due to an absence of buffer zones contribute to a loss in crop production.[166]

### 5.4.3 The decision of the High Court of Kenya on community participation and treatment of mangroves

In April 2018, the High Court rendered a decision in *Mohammed Baadi v Attorney General* that defined the legal threshold of public participation in environmental decision making, addressed the legality of SEAs and EIAs and specifically mentioned mangroves.[167] The petition in *Mohammed Baadi* concerned the design and implementation of the Lamu Port-South Sudan-Ethiopia-Transport Corridor (LAPSSET) Project, a transport and infrastructure project in Kenya, which when complete will be the country's second transport corridor. The LAPSSET Project involves multiple components: a 32-berth port at Manda Bay in Lamu; an inter-regional standard gauge railway from Lamu to Juba and Addis Ababa; a road network and oil pipelines from South Sudan and Ethiopia; an oil refinery at Bargoni; three international airports and three resort cities, namely; Lamu, Isiolo, and Lake Turkana shores. The petitioners argued that the LAPSSET Project was designed and implemented in violation of the Constitution and statutory law, and that the project will have far reaching consequences for the marine ecosystem of the Lamu region in terms of the destruction of the mangrove forests, the discharge of industrial effluent into the environment, and the effects on fish species and marine life. The petitioners further claimed that public participation had been insufficient.[168]

Based on the court's evaluation of the EIA report, it was clear that there would be a loss of up to 2.4 ha of mangroves to pave the way for the construction of the first three berths of the proposed Lamu Port. The project's proponent proposed to replant mangroves to cover at least two times the area to be altered or damaged.[169] But the court noted that there was no evidence of replanted mangrove forests to replace the ones already lost.[170]

Nonetheless, on the question concerning the loss of mangroves, the court declined to fault the Cabinet Secretary for Infrastructure and the Kenya Ports Authority, "for electing to pay out monies for the replanting of mangrove trees to KFS."[171] According to the court, while there may

164 Interview with Natural Justice, December 2018 - February 2019.
165 *Ibid.*; Access to Information Act of 21 September 2016. Section 4.
166 Interview with Natural Justice, December 2018 - February 2019.
167 *Mohamed Ali Baadi and others v Attorney General & 11 others* [2018] eKLR (HC).
168 *Ibid.* Para. 1, 2, 3, 20.
169 *Ibid.* Para. 283(a).
170 *Ibid.* Para. 288, 289.
171 *Ibid.* Para. 189(c).

have been a more institutionally effective way to ensure the replanting of these mangroves, it would have been improper for the court to second guess the Kenya Ports Authority's decision to comply with the EIA licence through payments to KFS to replant mangroves at a different location.[172]

With regard to the question of public participation during EIA procedures, the court in *Mohammed Baadi* was invited by the petitioners to set a legal standard for when there was adequate public participation. The court determined that the applicable standard is the reasonableness standard and this must include compliance with prescribed statutory provisions on public participation.[173] According to the court, this standard requires full rather than substantial compliance with the law.[174] Based on this, the judges concluded that the respondents had not demonstrated that they complied with the stipulated statutory provisions for public participation, and remanded the EIA to NEMA for review.[175]

The reason for this decision, to return the EIA for review and re-approval by NEMA was, according to the court, because the respondents had not fully complied with the stipulated statutory provisions for public participation and, as a consequence, in terms of the law, the court determined there had been inadequate public participation.

## 5.5 Outcome level: Exploitation and infrastructure development undermine local sustainable managment

A Task Force appointed by the Cabinet Secretary for Environment and Forestry in 2018 reported that between 1985 and 2009, the country lost about 20% of its mangrove coverage, corresponding to nearly 450 ha of mangrove area per year. Of remaining mangroves, at least 40% are degraded. The Task Force found that mangrove forests in Kenya are negatively affected by unsustainable exploitation, tourism development and large-scale infrastructure, and KFS licensing and harvesting recommendation procedures which created a loophole for overexploitation. Mombasa County, an urban area, lost more than 80% of its mangroves in the last 10 years. Moreover, the Lamu Port-South Sudan-Ethiopia-Transport (LAPSSET) Project represents a big threat for mangroves in Lamu, which are currently sustainably managed by communities.[176] Consequently, the Task Force recommended that the Ministry of Environment and Forestry develop regulations on mangrove harvesting.[177] In addition to a harvesting plan, any improvement in the health of mangroves in Kenya will be affected by a number of critical governance decisions.

In the context of the blue economy, Kenya is making efforts that will improve the health of mangroves, as well as other coastal ecosystems. The country hosted a Sustainable Blue Economy Conference in November 2018. The meeting highlighted the challenges of rapidly decreasing fish habitats, such as mangroves, and the need to restore these habitats. As an outcome of the meeting, participants agreed to prioritize the restoration of "coral reefs and mangroves, in order to reduce climate disasters along coastlines and to improve resilience of the ecosystems."[178]

The integration of mangroves into the national agenda is important, including the explicit indication in the draft 2018-2022 NCCAP of a commitment to implement the National Mangroves Ecosystem Management Plan.[179] Coordinated management planning between KFS, KWS, and the counties will contribute to

172 *Ibid.* Para. 189(c).

173 *Ibid.* Para. 234.

174 *Ibid.* Para. 234.

175 *Ibid.* Para. D(iii).

176 Taskforce to inquire into Forest Resources Management and Logging Activities in Kenya (2018). *A Report on Forest Resources Management and Logging Activities in Kenya: Findings and Recommendations*. Pg. 39.

177 *Ibid.* Pg. 44.

178 SBEC Technical Documentation Review Committee (2018). *Report on the Global Sustainable Blue Economy Conference 26-28 November 2018, Nairobi Kenya*. Pg. 13, 15, 17.

179 Ministry of Environment and Forestry (2018). *Draft National Climate Change Action Plan (2018-2022)* (version 3). Pg. 44.


harmonized mangrove conservation objectives. Ultimately, there is a need to balance private and public development interests, represented *inter alia* by salt production operations and the LAPSSET project with interests of local communities in sustainable management to maintain their livelihoods, and ensuring these interests are aligned with the needs of the mangrove ecosystem.

## 5.6 Conclusions and recommendations

Kenya has a comprehensive legal framework governing the management and conservation of mangroves. The country is bound by various treaty obligations. The Constitution sets a firm basis for conservation, with the human right to a healthy environment, constitutional foundations for environmental assessments and audits, and an obligation on the State to eliminate harmful environmental practices. There are provisions for community participation in mangrove conservation under forestry law; and a mandatory requirement for management planning under both forestry and wildlife legislation. It is evident that management planning is not fully compliant with the law, yet these management plans form the basis for action by institutions such as KFS and KWS as well as local communities. The 2017-2027 Mangrove Ecosystem Management Plan is a positive step. However, it falls within the statutory meaning of plans requiring a mandatory SEA under the EMCA. This should be undertaken in order to fully comprehend the cumulative impact that the implementation of this Mangrove Ecosystem Management Plan will have. In addition, there is a need for the law to be modified, to require explicit coordination in land use planning, such that a management plan made by KFS or KWS will not be legally valid unless it is fully, and in a participatory manner, harmonized with the physical development plans made by the counties for lands outside and abutting mangrove ecosystems. The converse should be true for physical development plans. The authority of Cabinet Secretaries to designate MPAs and similar mangrove ecosystems, should be explicitly coordinated.

From the CIDPs for the four coastal counties that have mangrove forests, there is evidence that the counties recognize the fragile nature of mangrove ecosystems, as well as their high value. Nonetheless, institutional arrangements for the implementation of the actions proposed by the counties to enhance mangrove protection are unclear, particularly with regard to the role of KFS, although KFS has the primary mandate. Only Mombasa County has explicitly noted that KFS is responsible for the management of mangroves, but even in this case, in the 2018-2022 CIDP, the county proposes to establish collaborative relationships with CBOs, with no reference to the role of KFS. There is a direct governance nexus between county governments, the local community (governed by counties; who use mangroves), and KFS, which is responsible for mangrove management in Kenya. The governance arrangements for mangrove management should address the missing link.

## Recommendations

1. Use the provisions of forestry and wildlife conservation legislation that allow for implementing provisions of ratified treaties through subsidiary legislation. This would allow Kenya to directly implement provisions of the Nairobi Convention, CBD, or other treaties that enhance the health of mangroves.
2. The National Land Commission should identify mangrove ecosystems as ecologically sensitive areas (s. 11, Land Act) and work together with KFS, KWS, the counties, communities, and research organizations (KEFRI, KMFRI) to implement scientifically sound interventions to prevent environmental degradation and climate change.
3. Develop a compliance plan to prevent the pollution of mangroves from waste water disposal in the form of domestic or industrial effluent, as regulated under the Water Act but not fully addressed in the Mangrove Ecosystem Management Plan.
4. Implement Kenya's NDC and NCCAP while moving forward with the national blue economy development agenda. Climate change interventions for adaptation and mitigation provide an opportunity for Kenya, as mangroves serve as carbon sinks and community activities provide adaptation interventions. The legal framework for this is fully in place.
5. Enhance the legal role of Beach Management Units in mangrove conservation, not just fishery management, since fisheries and mangroves are mutually dependent.
6. Bridge the gap between terrestrial physical planning and management planning for mangroves in law and practice, in order to ensure harmony in activities that are permitted inside mangroves and on contiguous land.
7. Subject the National Mangrove Ecosystem Management Plan to a Strategic Environmental Assessment, as required under section 57A of the EMCA, to determine the cumulative environmental impact of the plan's implementation.
8. Ensure that management planning for mangroves within public forests or MPAs is undertaken in a fully integrated manner, including consultations with communities, stakeholders, and different public agencies. Enhance consultations between the responsible agencies (KFS, KWS) and the counties concerning terrestrial physical planning to ensure harmonious planning outcomes that protect the health of mangroves.
9. Ensure full compliance with legal requirements for management planning, such as developing new plans to replace expiring ones, and publication in the Gazette where required by law.
10. In the case of MPAs, ensure compliance with the legal requirement for annual compliance reports and third-party management reports in the fifth year of implementing a management plan.
11. Recognizing the critical role of communities in the protection and conservation of mangroves, clarify benefit sharing and access, such as through the development of sustainable harvesting plans. Enhance the inclusion of communities during management planning processes in a constructive manner.
12. Harmonize the powers given to different Cabinet Secretaries under different laws which overlap and could result in negative

outcomes, such as the powers given to the Cabinet Secretary responsible for fisheries and the Cabinet Secretary for wildlife (under different laws) to establish marine-protected areas.

13. Clearly define the role of the counties in the management of mangroves, recognizing that the counties are responsible for mandates that could harm mangroves if implemented poorly, such as waste management, physical planning, and development control.
14. Explicitly feature mangrove ecosystems in forestry and wildlife conservation law in Kenya, where they are currently referred to only indirectly with respect to their locations between high and low water marks. The threats facing mangroves, their value, and conservation needs should be explicitly addressed through legal and policy provisions, and institutional mandates.

© Julika Tribukait / WWF

6

# MADAGASCAR
## MOVING TOWARDS INTEGRATED MANAGEMENT AND GOVERNANCE

**By Lalaina N. Rakotoson, Tahiana Andriaharimalala and Saholy Rambinintsaotra**

Madagascar's mangrove coverage is among the most important in the southwest Indian Ocean region, but recent studies show that threats to mangrove resources are growing due to changes in commercial and social behaviours.

An integrated approach in the policy and legal systems is needed to protect mangrove resources effectively. Local communities, represented by *Fokonolona*, are involved in the management of mangroves, mainly within Locally Managed Marine Areas (LMMAs). *Fokonolona*, the grassroots community, is a group of interacting people sharing the same territory and working towards preservation of common goods, including cultural identity and natural resources. They are responsible for the governance and sustainable management of their natural and cultural environment through the grassroots' collective agreement, *Dina*. All extractive activities are prohibited in mangrove areas, excepted according to customary use rights.

Mangroves are under the jurisdiction of the Ministry in charge of forests and the environment, but multiple institutional actors are involved and integration is needed. Entities such as the National Office for Climate Change Coordination, the National Committee for the Integrated Coastal Zone Management, and the National Committee for Integrated Management of Mangroves are intended to support this integration. However, inefficiency remains an issue because of the lack of coordination and the lack of technical and financial assistance to accompany the protection of mangroves.

Environmental NGOs strongly influence the political processes. Because of a lack of power, local communities are experiencing serious problems. The lack of transparency and accountability, related to corruption at all levels, are important obstacles.

# KEY FACTS

## POPULATION: ≈ 26 million

## MANGROVE COVERAGE: ≈ 236,402 ha

## KEY INSTITUTIONS:

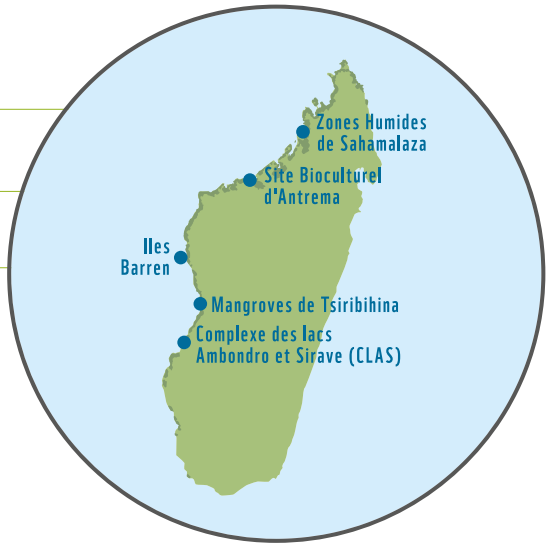
Ministry of Fisheries and Marine Resources

Ministry of Environment and Sustainable Development

Ministry of Land Planning

National Committee for Integrated Mangrove Management

National Committee for the Integrated Management of Coastal Zones




● Ramsar sites containing mangroves

## MAIN THREATS:

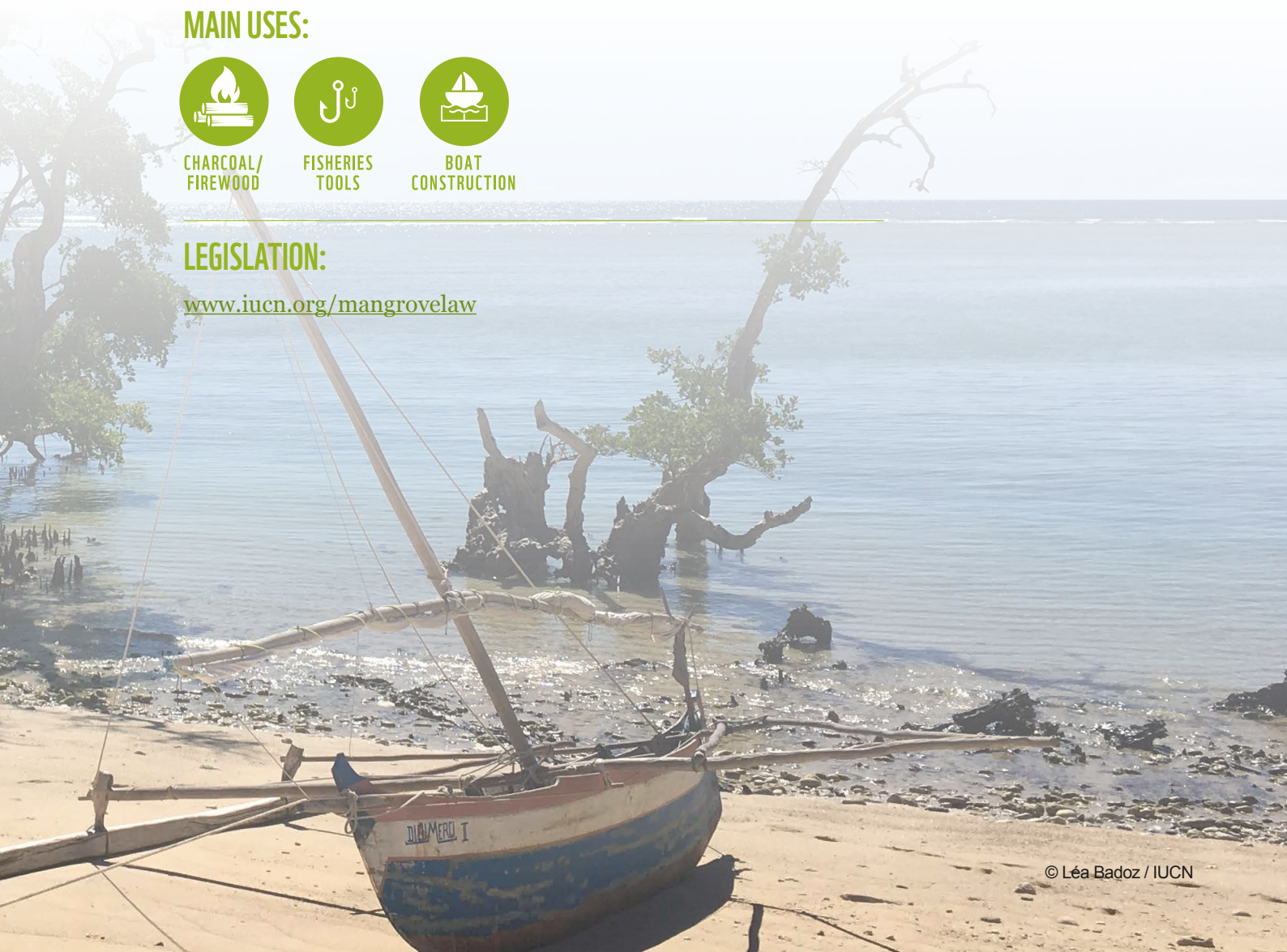
SEDIMENTATION · OVERHARVESTING · URBANIZATION · AGRICULTURE (FRUIT TREES) · COASTAL EROSION · CLIMATE CHANGE

## MAIN USES:

CHARCOAL/ FIREWOOD · FISHERIES TOOLS · BOAT CONSTRUCTION

## LEGISLATION:

www.iucn.org/mangrovelaw




© Léa Badoz / IUCN

# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **BNCCCREDD+** | National Office for Climate Change Coordination, Carbon and REDD+ |
| **CBD** | Convention on Biological Diversity |
| **CIME** | Inter-Ministerial Environment Committee |
| **CNGIM** | National Committee for Integrated Mangrove Management |
| **CNGIZC** | National Committee for Integrated Coastal and Marine Area Management |
| **CTD** | Decentralized Territorial Community |
| **COAP** | Protected Areas Law |
| **COBA** | Base Community |
| **CSR** | Corporate Social Responsibility |
| **DREEF** | Regional Department of the Environment, Ecology and Forests |
| **DPPE** | Direction of Development of the Ecological Partnership |
| **EIA** | Environmental Impact Assessment |
| **GELOSE** | Renewable Natural Resources Local Management Law |
| **LMMA** | Locally Managed Marine Area |
| **MAEP** | Ministry of Agriculture, Livestock and Fisheries |
| **MECIE** | Decree on The Compatibility of Investments with the Environment |
| **MEDD** | Ministry of Environment and Sustainable Development |
| **NAPA** | National Adaptation Programme of Action |
| **NPA** | New Protected Area |
| **ONE** | National Office for the Environment |
| **PGEP** | Project Environmental Management Plan |
| **SAPM** | Protected Areas Network |
| **WAVES** | Wealth Accounting and the Valuation of Ecosystem Services |

## 6.1 Introduction: Vital ecosystem services imperiled by overexploitation and natural disaster

Mangroves are located mainly on the west coast of Madagascar along the Mozambique Channel, especially in the Maintirano and Soalala Regions, and in the Bombetoka, Mahajamba, and Mahavavy Bays.[1] A few small mangrove areas are situated in the north-east of the country, between Mananara and Antsiranana.[2] In 2018, the mangrove coverage in Madagascar was estimated at 236,402 ha.[3]

Mangroves play an important role in the conservation of the country's biological diversity and economic development. Mangrove ecosystems in Madagascar provide habitats for an abundance of wildlife. For several species, mangroves are a permanent home; others use mangroves on a temporary or seasonal basis, such as migratory birds, or live in mangroves only during the juvenile or nursery stages of their lives.[4] Mangroves are closely linked with other complex, species-rich ecosystems, such as seagrass beds and coral reefs.[5] They provide significant primary production and have a cultural value for coastal populations.[6]

People have always had a close association with mangroves, which provide them with considerable services. However, for various reasons, mangrove degradation is becoming increasingly worrying. In recent decades, diverse and uncontrolled exploitation has been accentuated by demographic pressure, increasing poverty, overexploitation of natural resources, and other phenomena.[7] Mangrove ecosystems are also weakened by natural disasters that regularly hit the coast of Madagascar, such as cyclones, droughts, and strong sedimentation following the erosion of watersheds.[8] Anthropic pressure from the harvesting of fuel wood (firewood and charcoal) also contributes to the decline.[9] By 2005, an estimated 35% of Madagascar's mangroves had disappeared due to agriculture.[10] Mangrove areas have also suffered a decrease in biological diversity, due to over-harvesting of the most valuable tree species.

## 6.2 Instrumental level: Legal pluralism and local governance at the centre of a sprawling legal framework

### 6.2.1 International conventions and national frameworks

Madagascar ratified UNESCO World Heritage Convention and the Ramsar Convention respectively, in 1983 and 1999. Existing protected areas were designated as Ramsar sites, including the Antrema Biocultural Site on the north-western coast of Madagascar, the wetlands in Sahamalaza, which cover some 10,000 ha of mangroves, and the mangroves of the Tsiribihina Delta on the west coast of Madagascar, which are used by the beekeepers of Antanandahy.[11] In addition, three mangrove-rich marine sites are registered as UNESCO Biosphere Reserves and legally protected at the national level: the Mananara North Biosphere Reserve, the Kirindy Mite

1 Roger, E. et al. (2012). *Vulnérabilité des mangroves de la côte Ouest de Madagascar au changement climatique: cas des écosystèmes des mangroves de Belo sur Tsiribihina et de Masoarivo*. Fondation Mac Artur, Norad, WWF, Antananarivo. 30pp.

2 Blackham, G.V. and Avent, T. (2018). *Guide National pour la Gestion Durable des Zones Humides, Madagascar*. Wildfowl & Wetlands Trust.

3 Shapiro, A. et al. (2019). *Les mangroves de Madagascar: superficies, condition et évolution 2000-2018*. WWF Germany, Berlin, and WWF Madagascar, Antananarivo. 39 pp.

4 Bosire, J.O. et al. (Eds.) (2016). *Mangroves of the Western Indian Ocean: Status and Management*. WIOMSA, Zanzibar Town. 161pp.

5 Semesi, A.K. and Howell, K. (1985). *The mangroves of the eastern African region*. UNEP, Kenya. 45pp.

6 Noel, J. et al. (2011). "Les mutations spatiales des mangroves du Nord-Ouest de Madagascar", in Bart, F. *Natures tropicales: enjeux actuels et perspectives*. Presses universitaires de Bordeaux, Pessac. Collection Espaces Tropicaux 20:357-350.

7 Rakotomavo, A. and Fromard, F. (2010). Dynamics of mangrove forests in the Mangoky River delta, Madagascar, under the influence of natural and human factors. *Forest Ecology and Management* 259(6):1161-1169.

8 Roger, E. et al. *supra* note 1.

9 Bertrand, A. (1992). *Approvisionnement en combustible ligneux d'Antananarivo et Mahajanga. Synthèse des travaux réalisés: perspectives d'évolution des filières d'approvisionnement et proposition pour la planification des actions publiques*. CIRAD-Forêt, Montpellier. 97pp.

10 Giri, C. and Mulhausen, J. (2008). Mangrove Forest Distributions and Dynamics in Madagascar (1975–2005). *Sensors* 8(4):2104-2117.

11 Ramsar 2019. *Sites Information Service*. https://rsis.ramsar.org/ris-search/mangroves?f%5B0%5D=regionCountry_en_ss%3AAfrica&f%5B1%5D=regionCountry_en_ss%3AMadagascar [Downloaded 28 April 2019].

National Park in Belo sur Mer, and the Sahalaza Radama Island National Park.[12] These sites are also protected by the Code of Protected Areas, which contains provisions on the marine environment and coastline management.[13]

Madagascar ratified the Convention on Biological Diversity (CBD) in 1995. As part of the national implementation of this Convention, objective 14 of Madagascar's National Biodiversity Strategy and Action Plans states that the restoration of mangroves is a priority for the country through the establishment of Marine Protected Areas (MPAs).[14] In this context, it promotes equitable access to environmental services, especially for women and local communities. Strategies are also planned to safeguard these ecosystems and services through restoration activities for the well-being of local populations.[15]

The provisions of the Malagasy Constitution remain weak with regards to the protection of the environment.[16] There are some positive developments, such as the recognition in the preamble of the need to rationally use and manage natural resources.[17] Likewise, this fundamental law enshrines the distribution of environmental competences between the State and decentralized authorities, and recognizes *Fokonolona*, the grassroots community, as the basis for development and socio-cultural and environmental cohesion.[18] Therefore, all development processes start from a local level. However, the principles for a healthy environment, in particular, the precaution, prevention, and polluter pays principles, which particularly affect mangroves, remain absent from the Constitution.

The main overarching environmental legal instrument in Madagascar is the Malagasy Environment Charter, which sets out the fundamental rules and principles for the management of the environment, including its valuation.[19] This charter was developed in 1990, and reaffirms that all legislation, policies, plans, programs and sectoral projects must take into account the integrated management of marine and coastal areas.[20] It states that **all legal and policy tools in Madagascar must take into account the need to combat the destruction, exploitation, and illegal commercialization of biodiversity and land and fisheries resources**.[21] The Charter provides that the implementation of environmental good governance should be ensured jointly by all environmental actors through their main actions, including the improvement and strengthening of the role of environmental governance in the management of marine and coastal areas.[22] In 2015, the Malagasy Environmental Charter was amended to integrate climate change and integrated coastal zone and marine management.[23] The revised Charter commits to equitable benefit sharing related to environmental services in general and the carbon market in particular.[24]

The National Environmental Policy for Sustainable Development aims for the development of sustainable funding streams through instruments including a payment mechanism for ecosystem services and competitive carbon market tools.[25] The

12 *Décret* No. 89-216 of 25 July *1989 instituant la «réserve de la biosphère à Mananara-Nord*; *Décret* No. 97-1453 of 18 December 1997 *portant création du Complexe du parc national n°11 de Kirindy/Mite, sis dans le Fivondronampokontany de Morondava, Faritany de Toliara*; *Décret* No. 2007-247 of 19 March 2007 *portant création du Parc National de « Sahamalaza/Iles Radama » sis dans les Districts d'Analalava et d'Ambanja.*

13 *Loi* No. 2015- 005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 1, 19, 25, 55, 81.

14 *Décret* No. 2016-128 of 23 February 2016 *portant adoption de la Stratégie et Plans d'Action Nationaux pour la Biodiversité de Madagascar de 2015-2025.*

15 *Ibid.*

16 Randrianandrasana, I. (2016). La protection Constitutionnelle de l'environnement à Madagascar. *Revue Juridique de l'Environnement* 41:122-139.

17 Madagascar's Constitution of 2010. Preamble.

18 *Ibid.* Article 141, 149, 152.

19 *Loi* No. 2015-003 of 20 January 2015 *portant Charte de l'Environnement Malagasy actualisée.*

20 *Ibid.* Exposé des motifs.

21 *Ibid.* Preamble.

22 *Ibid.* Article 20.

23 *Ibid.* Preamble.

24 *Ibid.* Preamble.

25 *Décret* No. 2015-1308 of 22 September 2015 *fixant la Politique Nationale de l'Environnement pour le Développement Durable.*

Blue Economy is in line with the general policy of the State and is aligned with the orientations of the National Development Program, which sets the trajectories for sustainable and inclusive growth, poverty reduction, and job creation on a sectoral level.[26] As mangrove ecosystems have a specific role to play in protecting coastal zones from natural hazards, Madagascar has included their management in the NAPA.[27]

### 6.2.2 Sectoral laws and implementation instruments

#### 6.2.2.1 Forestry

In Madagascar, the Forestry Law and the Decree regulating the timber operations were the first legal instruments to address the use of mangroves.[28] All logging operations (cutting, processing, and marketing of forest products) are subject to authorization by the Ministry in charge of forestry and its decentralized bodies, as well as the Decentralized Territorial Communities (CTDs).[29] The latter commit to take all necessary measures to ensure the compliance of timber operations with the management plan.[30]

#### 6.2.2.2 Protected areas

Protected areas are defined as an areas whose components have a particular value – biological, natural, aesthetic, morphological, historical, archaeological, or cultural – requiring, in the general interest, preservation against any effect of natural degradation, and against any artificial intervention likely to alter their appearance, composition, and evolution.[31] Their purposes are conservation, research, development of the natural and cultural heritage, education and recreation of citizens, promotion of ecotourism, and contribution to sustainable economic and social development.[32]

**Mangroves are defined as sensitive areas by the law.**[33] A sensitive area is one that has a specific value and is vulnerable to human activities and natural phenomena likely to degrade or even destroy the area.[34] All development projects and activities that may affect these sites must be submitted to an environmental impact study.[35] Moreover, they cannot be subject to a change of assignment unless authorized by the competent Ministry after receiving a favourable opinion from the CNGIZC.[36]

At IUCN's fifth World Parks Congress the Durban action plan and the Durban accord were adopted with the aim of improving management of protected areas by involving local communities.[37] During this congress, Madagascar launched the "Durban vision" initiative with the objective to triple the surface of protected areas.[38] The Malagasy Government has taken the initiative as an opportunity to recast the former Protected Areas Law (COAP Law), which was limited and could have undermined the increase in coverage of protected areas.

---

26 *Décret* No. 2017-936 of 11 October 2017 *portant création du Cadre National de la mise en place de l'Economie Bleue à Madagascar*; Ministère de l'Environnement, de l'Écologie et des Forêts (2016). *Programme environnemental pour le développement durable*.

27 Ministère de l'Environnement, des Eaux et Forêts (2006). *Programme d'Action National d'Adaptation au Changement Climatique*. Pg. 33.

28 [28] *Loi* No. 97-017 of 8 August 1997 *portant révision de la législation forestière*; *Décret* No. 98-782 of 16 September 1998 *relatif au régime de l'exploitation forestière*.

29 *Loi* No. 97-017 of 8 August 1997 *portant révision de la législation forestière*. Article 29.

30 *Décret* No. 98-782 of 16 September 1998 *relatif au régime de l'exploitation forestière*. Article 6, 8.

31 *Loi* No. 2015- 005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 1.

32 *Ibid*. Article 11.

33 *Arrêté interministériel* No. 4355/97 of 13 May 1997 *portant définition et délimitation des zones sensibles*. Article 3.

34 *Ibid*. Article 2.

35 *Décret* No. 2004-167 of 3 February 2004 *modifiant certaines dispositions du décret n° 99-954 du 15 décembre 1999 relatif à la mise en comptabilité des investissements avec l'environnement (MECIE)*. Article 4.

36 *Décret* No. 2010-137 of 23 March 2010 *portant réglementation de la gestion intégrée des zones côtières et marines de Madagascar*. Article 14.

37 IUCN (2003). *The Durban Action Plan*. 5th IUCN World Parks Congress, Durban, South Africa; IUCN (2003). *The Durban Accord*. 5th IUCN World Parks Congress, Durban, South Africa.

38 Virah-Sawmy, M. et al. (2014). "The Durban Vision in practice: experiences in participatory governance of Madagascar's new protected areas", in Scales, I.R. (Ed.). (2014). *Conservation and Environmental Management in Madagascar*. Routledge, London.


Compared to the old COAP law, the new law is an improvement, and incorporates types of governance that reflects national practice and international discussions.[39] It defines protection categories with clear descriptions of their limitations on access and use, and creates new categories of protected areas with specific management objectives, such as the Natural Monument, the Protected Harmonious Landscape, and the Natural Resources Reserve.

The law also provides for an increase in coverage of MPAs.[40]

Two new MPAs include mangrove ecosystems: Akivonjy and Ankarea.[41] Apart from the conservation of biodiversity and ecosystem services, one of the special aspects of these two protected areas is the collaborative management between site managers and local communities, and the obligation to involve local communities in the design and implementation of management plans (*see* Section 6.2.4.2).[42]

### 6.2.2.3 Fisheries

Under the Fisheries Law, any aquaculture operation has to obtain a permit or an environmental authorization.[43] This requires an assessment of the impact of the aquaculture development on the mangroves. The previous version of the Fisheries Law provided that the establishment of aquaculture must under no circumstances result in the destruction of more than 10% of mangroves within the area of exploitation and this is punished with a fine of USD 10,000 to 20,000 per ha destroyed and/or imprisonment of 6 to 12 months.[44] However, the Fisheries Law was amended in 2018 and the article providing for the sanctions was removed, making the prohibition unenforceable.[45]

The Fisheries Law also provides for the governance of local communities over fisheries and aquatic ecosystems through the transfer of management and surveillance authority.[46] However, this text remains unclear with regard to the local management of mangroves. The Executive Order implementing the relevant Fisheries Law provisions provides a framework for Locally Managed Marine Areas (LMMAs)

39 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 6.

40 *Ibid.* Exposé des motifs.

41 *Décret* No. 2015-722 of 23 July 2015 *portant création de l'aire protégée dénommée "Akivonjy" district Ambanja, Région Diana*; *Décret* No. 2015-721 of 23 July 2015 *portant création de l'aire protégée dénommée « Ankarea » District Ambilobe, Région Diana*.

42 *Ibid.* Article 4, 7.

43 *Loi* No. 2015-053 of 16 december 2015 *portant Code de la pêche et de l'aquaculture*. Article 111.

44 *Ibid.* Article 112, 139.

45 *Loi* No. 2018-026 *portant refonte de certaines dispositions de la loi sur le Code de la Pêche et de l'Aquaculture*. Exposé des motifs.

46 *Loi* No. 2015-053 of 16 december 2015 *portant Code de la pêche et de l'aquaculture*. Article 14, 15.

with specific obligations relating to mangroves (see Section 6.2.4.3).[47]

### 6.2.2.4 Land use planning

Mangroves can be areas of conflict between ecological, social and economic interest. Madagascar has recently adopted a Law on the Orientation of Territorial Development, which aims to promote a balanced distribution of the population and activities throughout the national territory and to ensure the coherence of public activities, decentralized territorial authorities, the private sector, NGOs and Civil Society Organisations (CSOs), and the *Fokonolona* in the context of economic and social development.[48] With regard to the sustainable management of mangroves, the law provides that the State and local authorities must ensure conservation of natural sites and territories used for recreation and maintain the forest in its various functions when adopting land use planning tools (national, regional, municipal land use planning, urban planning; local land use plan, etc.).[49]

### 6.2.2.5 Water resources management

Mangroves are often threatened by various factors, including water pollution from industrial activities, particularly pollutant discharge along the coastline. In this context, measures have been taken that require compliance with discharge limits for any industrial flows, waste water or liquid effluents into the environment.[50] If an artisanal or industrial activity causes water pollution requiring precautionary measures, the ministry in charge of industry and the ministry in charge of the environment are empowered to order the temporary cessation of the polluting activity or, depending on the gravity and extent of the damage, to order the suspension of the activities of the company.[51]

### 6.2.2.6 Agriculture

The Agriculture Policy adopted in 2015 calls for the development of sustainable agriculture, based on elements that can affect mangroves, such as the non-exclusion of the vulnerable and the promotion of women empowerement, especially with regards to access to land. [52] The Policy takes into account best practices to limit natural resource degradation and soil erosion, and building resilience to climate change and natural disasters. It encourages the reduction of the use of chemicals and the rational management of natural resources, especially water resources.[53] The National Agricultural Investment Plan aims to restore 5000 ha of mangroves by 2020 and 10,000 ha by 2025 through a development and management plan coordinated with all stakeholders. [54]

## 6.2.3 Mangroves and land tenure

**Mangroves in Madagascar are located in the coastal zone and on the shoreline which are part of the natural public domain.**[55] In 2005, Malagasy land and property legislation was subject to an important revision which included the decentralization of land management, the reversal of the presumption of public land ownership for the presumption of private land ownership, and the formalization of unwritten land tenure rights.[56] This new law recognizes user rights as a form of property.

47 *Arrêté ministériel* No. 29211/2017 of 9 March 2018 *fixant les modalités de transfert de gestion des ressources halieutiques et ecosystèmes aquatiques*.

48 *Loi* No. 2015-051 of 3 February 2016 *portant Orientation de l'Aménagement du Territoire*. Exposé des motifs, article 3, 13.

49 *Ibid*. Article 6.

50 *Loi* No. 99-021 of 19 August 1999 *sur la politique de gestion et de contrôle des pollutions industrielles*. Article 26.

51 *Ibid*. Article 96.

52 Ministère de l'Agriculture (2015). *Lettre de Politique de l'Agriculture*. Section 3.5.

53 *Ibid*.

54 Ministère de l'agriculture (2015). *Programme sectoriel Agriculture Elevage Pêche: Plan National d'investissement Agricole*. Section 3.1.2.

55 *Loi* No. 2008-013 of 23 July 2008 *relative au domaine public*. Article 3.

56 *Loi* No. 2006-031 of 24 November 2006 *fixant le régime juridique de la propriété foncière privée non titrée*.

For this purpose, a land certificate recognizing property rights is issued to users of traditionally occupied land following a local recognition procedure.[57] However, as a result of their status as part of the public domain, mangroves cannot be privately owned through such a land certificate. As a consequence, local communities' rights over mangroves are restricted to management transfer through the Renewable Natural Resources Local Management Law (GELOSE Law) (see Section 6.2.4.4). However, the initiative in this respect remains limited, as between 1996 and 2004 only 3% of the 1,250 management transfer contracts concerned mangroves.[58]

## 6.2.4 Local management of natural resources

### 6.2.4.1 Introduction to Dina and Fokonolona

Before 1894, the island of Madagascar was governed by a monarchy. The social and political structure of the pre-colonial era facilitated the village council system, known as Fokonolism, a concept developed both in the highlands and coastal kingdoms, through which village chiefs and other local notables were able to promulgate regulations and enforce local control measures in areas such as public works and security. The *Fokonolona* or "people of the village" are responsible for organizing and enforcing order in a village, including the settlement of disputes and the organization of volunteers for public works, such as roads, irrigation, and tax collection.[59] The *Fokonolona* can be defined as "a group of interacting people sharing the same territory and ensuring the preservation of the common good (cultural identity and natural resources)."[60] They are responsible for the governance and sustainable management of their natural and cultural environment through grassroots collective agreements (*Dina*).[61]

The French eventually established control over the entire island in 1894. With colonization came the extraterritorial application of the French legal system in Madagascar, with the official recognition of *Fokonolona* in 1902.[62]

The *Fokonolona* must be differentiated from the Base Community (COBA), defined as any voluntary group of individuals united by the same interests and common rules, comprising, depending on the case, the inhabitants of a hamlet, a village, or a group of villages.[63] COBAs are legally established by the GELOSE Law and are entrusted with management transfers (see Section 6.2.4.4), unlike the *Fokonolona* that is not a legally established association.

The *Dina*, as a grassroots collective agreement, is a social code incorporating certain provisions on enforcement and punishment.[64] It governs interactions in rural areas and applies to all community members including executive members of the local governing group. **Those who break the *Dina* receive a punishment, the *Vonodina*, which consists of pecuniary or in-kind reparations for the victim and the *Fokonolona*, as provided for in the *Dina*.**[65]

This social code has been integrated into formal policy such as the GELOSE Law and the Protected Areas Law but in the form of internal regulation that is enforceable only to the COBA in charge of the management transfer.[66] The *Dina,* under GELOSE Law, is different from the *Dina* that was established by the *Fokonolona* which ensures the governance

57 *Ibid.* Article 11.

58 Lohanivo, A. (2013). *Évaluation quantitative de la mise en oeuvre de la loi GELOSE : recensement des TG dans 13 régions de Madagascar*. Communication au colloque « Rôle et place des transferts de gestion des ressources naturelles renouvelables dans les politiques forestières actuelles à Madagascar ». France.

59 Brown, M. (2016). *A History of Madagascar*. Markus Wiener Publisher.

60 Vogel, A. et al. (2017). *Gouvernance partagée des aires protégées à Madagascar - Quel contenu donner à la cogestion?*. Éditions du Gret.

61 *Ibid.*

62 *Décret* of 9 March 1902 *portant organisation de l'Administration indigène de l'Imerina*.

63 *Loi* No. 96-025 of 30 September 1996 *relative à la gestion locale des ressources naturelles renouvelables*. Article 3.

64 *Loi* No. 2001-004 of 25 October 2001 *portant réglementation générale des Dina en matière de sécurité publique*. Article 1.

65 *Ibid.* Article 3.

66 *Loi* No. 96-025 of 30 September 1996 *relative à la gestion locale des ressources naturelles renouvelables*. Article 49; *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 42.

authority of the whole grassroots community without exclusion. The implementation of the *Dina* has been challenged on the basis of undermining grassroots community governance authority. Some issues are raised because of the confusion between the *Fokontany*, the local administration at a village level, and the *Fokonolona*, each having their own interpretation of the *Dina*.[67] In some areas, different social codes can conflict with one another.[68]

### 6.2.4.2 Protected area management by local communities

The new COAP Law provides for shared governance or co-management in protected areas.[69] The law provides for a community management agreement that defines local communities' economic activities (sustainable alternative income-generating activities, ecotourism activities), and cultural activities, and establishes communities' role in the management of the protected areas (user rights, traditional rules for protected area management, surveillance activities).[70] This model for protected areas was developed in Madagascar using a community-driven, science-based approach and recognizes the important role played by local communities living in and around protected areas in the management and sustainable use of natural resources.[71] However, only the manager of the protected areas has legal standing in court in the event of a legal violation within the protected areas.[72] This situation prevents local communities and CSOs from bringing lawsuits to contest mangrove forest logging within these protected areas.

However, in the legislation implementing the COAP Law, this shared governance seems to be unclear. For example, in the MPA of Ankarea (a site rich in mangroves), shared governance is provided for under COAP, but the text establishing the PA remains silent on the modalities of participation of local communities. Allocation of responsibilities between police officers and local communities in the event of an infraction found during a surveillance mission is not specified. In this case, the MPA management plan must specify the role of the local community and their financial share, including in the context of surveillance activities.[73]

The new Ankivonjy protected area, described in figure 11, shows the role of the COBA in the creation and management of MPAs in general, and mangroves in particular.[74] The local "Ankivonjy" Association was created by the members of the COBA, which subsequently obtained, jointly with the NGO WCS-Madagascar, the right to manage protected areas. The mangroves included in the protected area are managed through the *Dina*, and approved by the Ankivonjy Association, under the control of 24 Monitoring and Surveillance Committees. The management framework consists of three instruments: (i) the MPA Development and Management Plan; (ii) the MPA Creation Decree and (iii) the approved *Dina*. The COBA has been closely involved in the development of this management framework and is primarily responsible for the implementation of the legally approved *Dina*.

### 6.2.4.3 Locally Managed Marine Areas

LMMAs are also a way of managing marine resources locally in Madagascar, including some mangroves. LMMAs are coastal areas partly or entirely managed by local entities.[75] They offer

67 Andriamalala, G. and Gardner C.J. (2010). L'utilisation du Dina comme outil de gouvernance des ressources naturelles : leçons tirées de Velondriake, sud-ouest de Madagascar. *Tropical Conservation Science* 3:447-472.

68 IUCN and Blue Ventures (2016). *National Blue Carbon Policy Assessment. Madagascar*. IUCN, Blue Ventures. 28pp.

69 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 1.

70 *Ibid*. Article 49.

71 Vogel, A. et al. *supra* note 60.

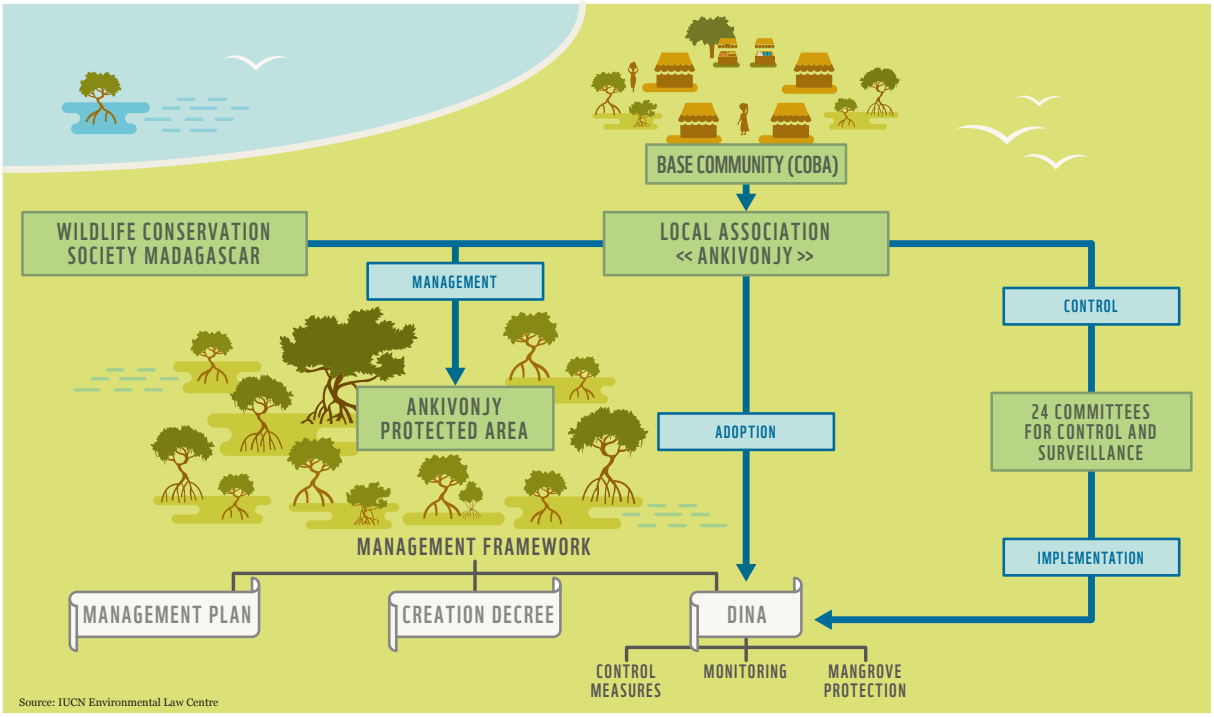
72 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 60.

73 *Ibid*. Article 7.

74 Bezafy, A. (2017). "Gestion de mangrove au niveau de l'Aire Marine Protégée (AMP) Ankivonjy", in *Résumés communications orales et affichées*. Colloque régional francophone "Les mangroves des îles de l'Océan Indien occidental : dynamiques, pressions, gestions", 18-20 September 2017, Mahajanga, Madagascar.

75 Govan, H. et al. (2008). *Locally- Managed Marines Areas: A guide for practitioners*. The Locally-Managed Marine Area Network.

**Figure 11:** The management framework of the Ankivonjy protected area




these communities the opportunity to cooperate with partners such as NGOs.[76] In Madagascar, LMMAs are grouped in the MIHARI network, which currently includes 150 communities, integrated in 64 associations spread along the coast of Madagascar.[77]

The Executive Order establishing LMMAs specifies that **management authority can only be transferred to legally established associations or groups of local fishermen recognized or approved by the Ministry in charge of fisheries, but the criteria used to recognize or approve such groups are not specified.**[78] The structure and operating requirements of the groups that may be entrusted with the management of fisheries resources and aquatic ecosystems are also absent.

The transfer period is limited to two years, after which it can be renewed or not, at the discretion of the Ministry in charge of fisheries.[79] During this time, the group may use the area for PES, carbon sequestration projects or ecotourism, and must carry out systematic mangrove planting among other management activities.[80]

This system excludes local communities that are not legally established, including *Fokonolona* or grassroot communities. It may also result in exclusion of women, who can engage in income-generating activities such as seaweed farming, and migrants who practice the sustainable exploitation of fisheries resources and do not undermine fisheries governance. When a group of stakeholders is not allowed to participate in mangrove conservation, they do not have access to the benefits arising from such conservation, such as PES and benefits related to the carbon trade.

### 6.2.4.4 Co-management and management transfer

In 1996, Madagascar enacted the GELOSE Law. The GELOSE Law allows the transfer of management authority over defined natural

76 Govan, H. (2010). Concrétiser le potentiel offert par les aires marines placées sous gestion locale dans le Pacifique Sud. *Ressources marines et traditions, Bulletin d'information de la CPS* 25:16-25.

77 MIHARI. *Base de données*. https://mihari-network.org/fr/base-de-donnees/public-dashboard/ [Accessed 29 April 2019].

78 *Arrêté ministériel* No. 29211/2017 of 9 March 2018 *fixant les modalités de transfert de gestion des ressources halieutiques et ecosystèmes aquatiques*.

79 *Ibid.* Article 7.

80 *Ibid.* Article 8.

resources from the State to local communities. This law sets up a system of co-management of these resources between the central authorities, municipalities, and local communities, which share the rights and responsibilities through various institutional arrangements. [81]

The COBAs adjacent to mangrove ecosystems are the legal delegates responsible for the sustainable management of these ecosystems. The GELOSE Law entrusts COBAs with the sustainable conservation of resources through a management delegation contract, with the responsibility of managing access to and conservation, exploitation, and enhancement of resources subject to the management transfer.[82] However, **in practice, the effectiveness of customary law and institutions is limited by the ambiguity of regulations, which reduces the willingness of local stakeholders to invest in sustainable mangrove management.**[83] This includes, among other things, the opacity of the procedures for granting benefits to the COBAs.[84] The GELOSE Law provides for these benefits, which are essentially of a legislative and economic nature, with a view to improving the valuation and sustainable management of resources.[85] However, to date, the implementation of a fiscal and legislative policy to implement these benefits has been lacking. Forest legislation allocates bonuses to enforcement officers on the basis of reports of violations, and in proportion to the fines recovered, but the legal texts remain silent on the prerogatives granted to the COBAs in their missions of controlling and monitoring sustainable resource use.[86] It is important to specify that the GELOSE Law back in 1996 was drafted with the aim to integrate the *Fokonolona*. However, during the lawmaking process, the definition of *Fokonolona* was changed to something that functions more like an NGO (the COBA), misrepresenting the nature of the *Fokonolona*.[87]

### 6.2.5 Prohibited, restricted and regulated activities

#### 6.2.5.1 Illegal activities in wetlands and mangroves

The prohibition of certain activities in mangroves has been established through different legal instruments, including the decree relating to activities in sensitive areas.[88] The definition of "sensitive areas" in this decree differs from the one cited earlier (see Section 6.2.2.2). In this decree, mangroves are not explicitly mentioned but are included if they are situated in one of the listed areas, which include defended areas; protected areas and their buffer zones; and forest stations that do not yet have a management plan.[89] Any activity for the extraction of wood resources is prohibited in these areas. Licences for the exploitation or extraction of wood products after the publication of the decree forbidding these activities in these sensitive areas must be withdrawn, on pain of criminal sanctions.[90] This creates confusion, as criminal sanctions do not normally have a retroactive effect and there is an argument that therefore the permits that were issued before the publication of the decree are not subject to criminal sanctions. In addition, there has been no zoning of the areas where wood products can be extracted with a licence.

81 *Loi* No. 96-025 of 30 September 1996 *relative à la gestion locale des ressources naturelles renouvelables* (GELOSE Law).

82 *Ibid.* Article 43.

83 Aubert, S. et al. (2015). Les communautés de base, partenaires privilégiés de l'administration forestière à Madagascar: le droit en question. *Revue Juridique de l'Océan Indien* 20:227-248; *See also* Montagne, P. and Ramamonjisoa, B. (2006). Politiques forestières à Madagascar entre répression et autonomie des acteurs. Économie rurale 294-295(4):9-26.

84 *Ibid.*

85 *Loi* No. 96-025 of 30 September 1996 *relative à la gestion locale des ressources naturelles renouvelables.* Article 5.

86 *Loi* No. 97-017 of 8 August 1997 *portant révision de la législation forestière*. Article 36.

87 *Loi* No. 96-025 of 30 September 1996 *relative à la gestion locale des ressources naturelles renouvelables*. Article 3; Statement by Alfred Rakotonjanahary, former General Director of the Office for the Environment.

88 *Arrêté* No. 12704/2000 of 20 November 2000 *relatif à l'arrêt de toute activité extractive de ressources ligneuses dans les zones sensibles.*

89 *Ibid.* Article 1, 2.

90 *Ibid.* Article 3.


The exploitation of mangrove wood is prohibited nation-wide.[91] This is problematic, because any activities related to cutting, exploiting, and transforming mangroves are prohibited, while other laws still in force, such as the GELOSE Law, transfer the management of natural resources, including mangroves, to local communities. **The strict prohibition of cutting, transporting, and selling mangroves conflicts with the rights of exploitation and sustainable management of mangroves recognized by the GELOSE Law.**

### 6.2.5.2 Environmental Impact Assessment Requirements

Environmental impact assessment (EIA) is enshrined in the Decree on the Compatibility of Investments with the Environment (MECIE), which provides that all new or modified developments located in sensitive areas, including mangrove areas, must be subject either to an EIA (in some cases an environmental permit issued following a favourable EIA), or to the issuance of a Project Environmental Management Plan (PGEP), detailing the environmental mitigation and management strategies of the project concerned.[92] The assessment must take into account every aspect of the environment as they emerge from the survey and public consultation.[93] However, it should be noted that the effectiveness of the monitoring and evaluation of these obligations is uncertain due to the lack of financial resources and scientific capacity of the National Office on the Environment and the Minister in charge of the environment that are needed to assess, comment on, and monitor environmental impact studies.[94]

---

91 *Arrêté* No. 32100/2014 of 24 October *2014 portant interdiction d'exploitation des bois de mangroves au niveau du territoire national*; In June 2019, another *arrêté* was being drafted removing the prohibition for sites subject to management transfer: *projet d'arrêté interministériel fixant à titre transitoire les modalités de gestion de l'écosystème de mangroves au niveau du territoire national.*

92 *Décret* No. 2004-167 of 3 February 2004 *modifiant certaines dispositions du décret n° 99-954 du 15 décembre 1999 relatif à la mise en comptabilité des investissements avec l'environnement (MECIE)*. Article 4, 7.

93 *Arrêté* No. 6830/2001 of 28 June 2001 *fixant les modalités et les procédures de participation du public à l'évaluation environnementale.*

94 Carret, J.C. et al. (2010). *L'environnement à Madagascar: un atout à préserver, des enjeux à maîtriser*. World Bank, Madagascar Policy Notes, Washington DC.

Madagascar's laws are silent on the possibility of a public review of previous decisions relating to the environment, when previously unconsidered environmental impacts have become apparent.

### 6.2.6 Procedural rights

The COAP Law mandates that the government should follow the practice of taking into account public opinion on decisions relating to protected areas.[95] However, only a few laws provide an opportunity for the public to participate in the implementation of rules, plans, and policies relating to the environment.[96]

There are some positive signs that public participation is increasing in Madagascar. In terms of actual practice, it appears that, at least in some cases, the relevant government authorities have responded to public comments on EIAs and made them available to the public.[97] However, the opportunity for public participation in the environmental assessment is not backed by clear procedural requirements. The decree gives investigators the power to consult the local communities concerned and to transcribe their comments into the register, but there is no obligation to do so.[98] Sole discretion is granted to developers for the production of a response brief based on the results of public participation.[99] **These options create the opportunity to override the opinions of the consulted stakeholders and to ignore their legally recognized right to participation.**[100]

### 6.2.7 Sanctions and penalties

The Environment Charter explicitly enshrines the "polluter pays" principle and, therefore, mandates any person (individual or legal entity) to pay reparations for any damage they have caused and to restore the damaged environment where appropriate.[101]

Under the Fisheries Law, anyone who cuts down, collects, transports, or sells mangrove wood without authorization must pay between 10,000 USD and 20,000 USD per ha of mangrove area destroyed and/or face imprisonment of 6 to 12 months.[102] Under the previous law, anyone who violated the 10% share rule for mangrove destruction for aquaculture production faced the same punishment, though this has now been amended.[103] However, a right of use can be legally recognized for adjacent communities.[104] To date, specific legal text is lacking, but the Fisheries Law provides that the exercise of customary use rights is free and open to all within the areas reserved for this purpose.[105] These rights commonly refer to the rights of grassroots communities to take wood and medicinal plants, graze livestock in the forests, etc.

The procedure for the punishment of infringements of forestry legislation, hunting, fishing, and nature protection, was set in 1960.[106] The purpose of this ordinance was to strengthen the Forestry Administration's powers over these activities and to standardize the procedural rules to be followed with regards to the recognition and prosecution of offences.[107] A recent decree details the procedure applicable to criminal transactions with regards to environmental offences and

95 *Loi* No. 2015- 005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Preamble (2).

96 *Arrêté* No. 6830/2001 of 28 June 2001 *fixant les modalités et les procédures de participation du public à l'évaluation environnementale*.

97 Such as the Rio Tinto/ QMM project. *See* République de Madagascar (2005). *Revue des études environnementales et sociales de QMM*.

98 *Arrêté* No. 6830/2001 of 28 June 2001 *fixant les modalités et les procédures de participation du public à l'évaluation environnementale*. Article 25, 27.

99 *Ibid*. Article 44.

100 FAO (2015). *Feuille de route pour la mise en œuvre des recommandations sur l'amélioration du cadre juridique du processus REDD+ à Madagascar*.

101 *Loi* No. 2015-003 of 20 January 2015 *portant Charte de l'Environnement Malagasy actualisée*. Article 9, 10.

102 *Loi* No. 2015-053 of 16 December 2015 *portant Code de la pêche et de l'aquaculture*. Article 84.

103 *Ibid*. Article 139.

104 *Ibid*. Article 82.

105 *Ibid*. Article 49.

106 *Ordonnance* No. 60-128 of 3 October 1960 *fixant la procédure applicable à la répression des infractions à la législation forestière, de la chasse, de la pêche et de la protection de la nature*.

107 *Ibid*. Article 7, 8.

provides that judicial police officers may impose fines directly in lieu of public prosecution with the sole authorization of the Ministry.[108] In principle, this order makes the procedures faster. However, **there is no obligation for prosecutors to check that the transactional fines given by police officers are consistent with the legal framework**. This examination, provided for by the Constitution and the Criminal Code, allows judges to control the conditions of compliance with the laws and regulations in force.[109] This absence of control over the procedures and the opacity of the amounts of the transactional fines proposed by judicial police officers leaves a door open for corruption and is contrary to the separation of powers between the legislature, the executive and the judiciary.[110]

In view of the lack of qualified personnel, the judicial police officers in charge of the environment who observe offences on the ground can request assistance from police forces such as the national police or the army.[111] Similarly, for problems of enforcement of the *Dina*, the competent administration may request the police to enforce the *Vonodina*, pecuniary or in-kind reparations for the benefit of the victim and members of the *Fokonolona* that adopted the *Dina*.[112]

## 6.3 Institutional level: An inadequate sectoral approach that fails to incorporate local authorities

### 6.3.1 A fragmented approach

The Ministry of Environment and Sustainable Development (MEDD) is in charge of the protection of Malagasy biodiversity, including mangroves, as mangroves are considered forest and subject to the forest regime.[113] The Ministry of Agriculture, Livestock and Fisheries (MAEP) also has responsibility for protecting mangroves, as critical marine habitats.[114] It has the power to establish fishing reserves for areas with a high concentration of mangroves, coral reefs, or coastal forests; or areas with high productivity that are rich in endemic and/or threatened protected species.[115]

MAEP should coordinate with MEDD for mangrove management, because the Fisheries Law does not specify the role of MEDD in the protection and management of this ecosystem. The Fisheries Law mandates MAEP to transfer fisheries management authority to local communities.[116] However, in the texts establishing fisheries reserves, MAEP is primarily responsible, and sometimes solely responsible.[117] MAEP and MEDD should establish their respective responsibilities in mangrove management, particularly in the context of fishing reserves and the transfer of management authority over fisheries and marine ecosystems.

---

108 See also *Décret* No. 2017-566 of 11 July 2017 *fixant les missions de contrôle et d'inspection des techniciens de l'environnement ainsi que les modalités de transaction*. Article 36.

109 Madagascar's Constitution of 2010. Article 110; *Code de procédure pénale* of 20 September 1962. Article 159, 132.

110 Rambinintsaotra, S. (2015). *Transaction pénale : justice négociée ou mode efficace de règlement de différend en matière environnementale?*. Annales Droit Nouvelles Séries- Antananarivo.

111 *Décret* No. 2017-566 of 11 July 2017 *fixant les missions de contrôle et d'inspection des techniciens de l'environnement ainsi que les modalités de transaction*. Article 8.

112 *Loi* No. 2001-004 of 25 October 2001 *portant réglementation générale des Dina en matière de sécurité publique*. Article 12.

113 *Loi* No. 97-017 of 8 August 1997 *portant révision de la législation forestière*. Article 2.

114 *Loi* No. 2015-053 of 16 December 2015 *portant Code de la pêche et de l'aquaculture*. Article 9(g).

115 *Décret* No. 2016-1352 of 28 November 2016 *portant organisation des activités de préservation des ressources halieutiques et écosystèmes aquatiques*. Article 28-30.

116 *Loi* No. 2015-053 of 16 December 2015 *portant Code de la pêche et de l'aquaculture*. Article 15.

117 *Arrêté ministériel* No. 22 211/2017 of 28 November 2017 *fixant les modalités de transfert de gestion des ressources halieutiques et écosystèmes aquatiques*. Article 5, 6, 7, 10.

In addition, the National Office for the Environment (ONE) is responsible for preventing environmental risks in public and private investments. To this end, it must ensure that economic activities do not harm the environment.[118] ONE has authority over EIA processes and issuance of environmental permits for aquaculture projects.[119]

The National REDD+ Coordination Office and the Climate Change National Office recently merged to become the National Office for Climate Change, Carbon and Reduction of Emisions due to deforestation and Forest Degradation (BNCCCREDD+).[120] It is attached to MEDD and responsible for handling all activities related to reducing emissions from deforestation and forest degradation in Madagascar and coordinating the REDD+ mechanism at a national and regional level.[121] BNCCCREDD+ is mainly responsible for administering the funds generated by the sale of carbon. It also carries out on-site monitoring of the funds managed by carbon credit beneficiaries, including local communities.[122]

At a regional level, the Regional Department of the Environment, Ecology and Forests (DREEF) can deliver authorization to communities and permits for operators for use of mangroves, according to a specific regulation in the National Forest Policy. It is also in charge of controlling the proper implementation by COBAs of the management transfer agreements.[123]

### 6.3.2 Coordination mechanisms

Given the multiplicity of stakeholders and organizations related to mangroves, which can easily conflict, the process of institutional integration has been recognized as essential.[124] The sectors concerned may include, *inter alia*, the ministries responsible for the environment, fisheries, forestry, spatial planning, and extractive resources. In addition, the concerns and interests of decentralized local authorities, the private sector and the local communities concerned must also be taken into account. Insufficient coordination between these different actors can lead to overlapping responsibilities. Thus, a traditional institutional mechanism with vertical and compartmentalized administrative structures is powerless to regulate mangroves' complex structure. In this respect, an institutional integration mechanism can make it possible to balance, to the fullest extent, the needs of all the administrators in the mangrove zone, vertically (between central and local institutions), horizontally (between institutions at the same level), spatially (between neighbouring administrative territories), and temporally (the objectives and priorities set at a certain time must be harmonized and monitored by all the stakeholders at the same time).[125] Such a mechanism attempts to address several environmental and development problems through the intervention of an authority that has an overview of the conflicts encountered.[126] This institutional integration is based on consultation and collegiality, and must give priority to common objectives.[127]

---

118 *Décret* No. 2008-600 of 23 June 2008 *modifiant et complétant certaines dispositions du décret n° 95-607 du 10 septembre 1995 portant refonte du décret n° 95-312 du 25 avril 1995 portant création et organisation de l'Office National pour l'Environnement*. Article 4.

119 *Décret* No. 99-954 of 15 December 1999 *modifié par le décret n° 2004-167 du 03 février 2004 relatif à la mise en compatibilité des investissements avec l'environnement*. Article 6.

120 *Décret* No 2019-138 of 20 February 2019 *fixant les attributions du Ministre de l'Environnement, et du Développement Durable ainsi que l'organisation générale de son Ministère*. Article 10-11.

121 *Arrêté* No. 8090/2014 of 3 February 2014 *portant création du Bureau National de Coordination REDD+(BNC-REDD)*; *Arrêté* No. 01/18 of 16 January 2018 *relatif à la création, à l'organisation et au fonctionnement de la plateforme régionale REDD+ dans la Région de Sofia*.

122 *Décret* No. 2018-500 of 30 May 2018 *portant adoption de la Stratégie Nationale REDD+ à Madagascar*; *Décret* No. 2017-1083 of 21 November 2017 *fixant la modalité de gestion su compte de commerce intitulé credit carbone REDD +*. Article 7, 15.

123 *See also* Rivière, M. (2017). *Les (dé)connexions du développement: ethno-géographie systémique de l'aide au développement et à la conservation forestière à Amindrabe, Madagascar*. Géographie. Université Michel de Montaigne - Bordeaux III.

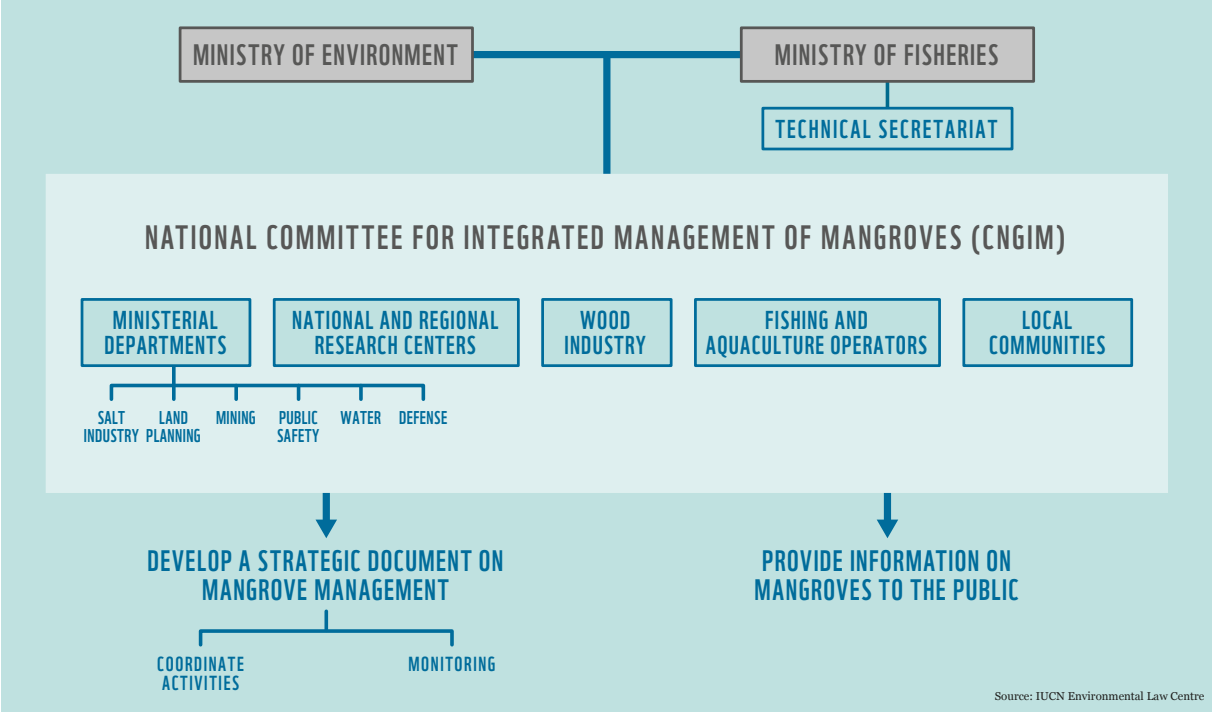
124 Calme, P. (2003). *La Démocratie en Miettes. Pour une révolution de la gouvernance*. Charles Léopold Mayer/Descartes & Cie. Paris. 331pp.

125 Prieur, M. and Ghezali, M. (2000). *Législations nationales relatives à l'aménagement et à la gestion des zones côtières en Méditerranée et propositions de lignes directrices*. CAR/PAP, Split. Pg. 13.

126 Borrini-Feyerabend et al. (2000). *Co-management of Natural Resources: Organising, Negotiating and Learning-by-Doing*. GTZ and IUCN; Kasparek Verlag, Heidelberg (Germany).

127 Borrini-Feyerabend et al. (2009). *Partager le pouvoir : Cogestion des ressources naturelles et gouvernance partagée de par le monde*. IIED et UICN/ CEESP/ TGER, Cenesta, Téhéran.

**Figure 12:** The framework of the National Committee for the Integrated Management of Mangroves




In 2015, a National Committee for Integrated Mangrove Management (CNGIM) was established to coordinate the integrated management of mangrove areas.[128] It is hosted by MAEP and is co-chaired by MEDD and MAEP. Its objective is to ensure the sustainable management of mangroves in mangrove areas, and to review and monitor all aspects related to this management.[129] In this regard, it is responsible for preparing a strategic document on mangrove management, coordinating the various activities defined by the strategic document, and monitoring the coherence of the implementation of this strategic document at different levels of governance. It is composed of representatives of the following sectors concerned with the sustainable management of mangroves: various ministerial departments (environment, land use planning, fisheries resources, oil and mining, public safety, etc.); the platform of Technical and Financial Partners and international organizations; representatives from various institutions and research organizations; fisheries and aquaculture operators; wood and salt industry operators; and local communities.[130] However, this decree remains unclear on the position of local authorities in the sustainable management of mangroves, even though the legal framework enshrines their role in environmental conservation and in particular their competence to identify environmental needs, to assess the value of natural resources, to prevent and combat deforestation, and to develop regional spatial planning schemes.[131]

The National Committee for Integrated Coastal and Marine Area Management (CNGIZC), established in 2010, is also involved in institutional coordination in mangrove management.[132] The main tasks of this Committee are to promote and coordinate the actions of the various authorities responsible for coastal and marine areas, to ensure the consistent monitoring of the implementation of the Action Plan at the various levels of governance, and to ensure the evaluation of planning, development, risk prevention, partnership organization, and structuring of

128 *Décret* No. 2015-629 of 7 April 2015 *portant création d'une Commission Nationale de Gestion Intégrée des Mangroves*.

129 *Ibid.* Article 2.

130 *Ibid.* Article 3.

131 *Loi Organique* No. 2014-018 of 12 September 2014 *régissant les compétences, les modalités d'organisation et de fonctionnement des Collectivités Territoriales Décentralisées, ainsi que celles de la gestion de leurs propres affaires*. Article 27, 28.

132 Décret No. 2010-137 of 23 March 2010 *portant réglementation de la gestion intégrée des zones côtières et marines de Madagascar*.

territorial governance.[133] It also has a technical support structure called the "Thematic Group," present at both national and regional levels.

However, the provisions of the ICZM Decree are not clear on the mechanisms for cooperation and coordination between the local authorities themselves, and between local authorities and the various ministerial departments that influence the planning and management of coastal ecosystems and resources. In addition, the "vertical" coordination, based on consultation between these institutions at every level, and the allocation of responsibilities to local authorities, remains weak. This uncertainty particularly affects the intervention of local structures, such as traditional leaders and local populations, particularly when it comes to subsidiarity.[134] Yet, they have much more to share for human well-being, for the protection of the environment, and for future generations.[135]

The Inter-Ministerial Environment Committee (CIME) is a coordination structure made up of Ministers under the authority of the Prime Minister.[136] It is responsible for integrating the environmental dimension into sectoral policies, strategies, plans, and programmes, and for assisting the Head of Government in the main orientations and implementation of the environmental policy.[137] CIME works on mediation issues and looks to ensure that the policies and strategies adopted within each ministry include an environmental or sustainability dimension.[138] In addition, CIME constitutes an important structure in mangrove conservation, as it is responsible for inter-ministerial coordination and guarantees the involvement of all institutions and local authorities in a unique and sustainable environmental management framework.[139]

To ensure coordination of institutions and decisions with regards to spatial planning, an inter-ministerial committee on spatial planning was created. This Commission is responsible, in particular, for coordinating sectoral actions relating to spatial planning at central level.[140] Provincial, regional and communal land use planning committees assist the respective local authorities in spatial planning actions and ensuring the animation and permanent synergy of the actions they carry out.[141]

Finally, the country established several inter-ministerial committees dealing with climate change. The National Committee on Climate Change in Madagascar is created within MEDD and constitutes a structure for consultation and dialogue, sharing information and experience on climate change.[142] The Steering Committee of the Adaptation of Coastal Zone Management to Climate Change Project, the Multidisciplinary Steering Committee for the National Framework for Climate Services and the Steering Committee for the Preparation of the Strategic Programme for Climate Resilience also attempt to address mainstream climate change across agencies.[143] This plurality of platforms that deal with climate change issues creates challenges for coordination of action and sharing of responsibilities.

These platforms are for the most part placed under the authority of MEDD, but it is not clear

---

133 *Arrêté* No. 22473/2012 of 21 August 2012 *fixant l'organisation et le fonctionnement du Comité National de Gestion Intégrée des Zones Côtières*. Article 3.

134 *Décret* No. 2010-137 of 23 March 2010 *portant réglementation de la gestion intégrée des zones côtières et marines de Madagascar*. Article 33-36.

135 Borrini-Feyerabend, G. et al. *supra* note 127.

136 *Décret* No. 2017-1106 of 28 November 2017 *portant modification du D*écret n° 823-97 du 12 Juin 1997portant création, organisation et fonctionnement du Comité Interministériel de l'Environnement (CIME).

137 *Ibid*. Article 2.

138 Soritra, ONF-International and REDD-TC (2014). *Forest Carbon Partnership Facility Readiness Preparation Proposal (R-PP): Madagascar*.

139 *Décret* No. 2017-1106 of 28 November 2017 *portant modification du D*écret n° 823-97 du 12 Juin 1997portant création, organisation et fonctionnement du Comité Interministériel de l'Environnement (CIME). Article 2.

140 *Loi* No. 2015-051 of 3 February 2016 *portant Orientation de l'Aménagement du Territoire*. Article 16.

141 *Ibid*. Article 12, 19, 20.

142 *Décret* No. 2014-1588 of 7 October 2014 *portant création du Comité national sur le Changement Climatique à Madagascar*. Article 5, 6, 7.

143 *Arrêté* No. 30408/2015 of 30 September 2015 *portant création du Comité de Pilotage du Projet d'Adaptation de la Gestion de la Zone Côtière au Changement Climatique en tenant Compte des Ecosystèmes et des Moyens de Subsistance*; *Décret* No. 2015-1548 of 17 November 2015 *portant création et organisation du Comité Pluridisciplinaire de Pilotage du Cadre National pour les Services Climatologiques*; *Arrêté* No. 13216/2016 of 17 June 2016 *portant Création et Attributions d'un Comité de Pilotage de Préparation du Programme Stratégique pour la Résilience Climatique*.

that MEDD has the authority to lead on such a cross-cutting issue, or the capacity to create the high level of inter-institutional coordination necessary to ensure coherence in decision-making and avoid the risk of overlapping competences or gaps. This requires engaging not only State actors and elected officials but also individuals, the scientific community and other public and private actors from different sectors and disciplines.

### 6.3.3 Conflicts of interest and lack of cooperation

In Madagascar, the different institutions involved in mangrove governance have a relatively decisive impact, driving either the protection or degradation of mangroves. Conflicts of interests between the government departments related to fisheries, forestry, energy, and tourism contribute to the degradation of coastal areas, including mangroves. The lack of effective management due to competing interests between the various institutions raises problems associated with institutional cooperation in the management of natural resources. As mangroves are under the jurisdiction of each of these departments, they are treated differently and sometimes in a contradictory way.

Despite the fact that there are several competent public servants, there is a lack of cooperation and coordination between ministerial bodies at every level.[144] At national, regional, and local levels, the institutions responsible for managing mangroves are sometimes, but not always, effective. The institutions that are most effective in mangrove management are authorities at the local and community levels, operating through the application of *Dina*, which defines the customary rules integrated into management plans.[145] There is insufficient support for these authorities, and a lack of collaboration between national, regional, local and traditional authorities.

## 6.4 Behavioural level: Growing awareness and positive initiatives obstructed by corruption and politics

Individuals, entrepreneurs, NGOs and the Government benefit from Madagascar's mangroves, which provide livelihoods and economic value. The Malagasy legal framework of mangrove conservation and management, including instruments and institutions, has been elaborated to govern these multi-level and multi-sectoral interests.

A large number of public and private organizations, in particular environmental NGOs, are involved through programmes and projects in the implementation, monitoring and evaluation of activities carried out within mangrove ecosystems. These actors are involved in carbon sequestration, biodiversity conservation, socio-economic functions, other environmental services, wood exploitation for construction and commercial use or forest monitoring.

### 6.4.1 Mismanagement of protected areas leading to mangrove logging

The new categories of protected areas instituted under the COAP Law to reinforce the Protected Areas Network allow for the sustainable use of natural resources by local communities and encourage co-management in line with the "Durban vision" (see Section 6.2.2.2).[146] Though justified by a desire to equitably distribute the benefits generated by natural resources, contribute to economic and social development for future generations, and maintain ecological services and the sustainable use of natural resources for poverty reduction, in practice protected areas have conflicts of interest.[147] Restrictions on access to mangrove wood, shrimp and crab interferes with traditional uses and market needs, compromising the effectiveness of mangrove legislation. The legal

144 Gabrié, C. et al. (2015), *Étude sur la gouvernance et la gestion des trois nouvelles aires protégées d'intervention du projet Hafafi*. Gret, WCS et Fanamby. 227pp.

145 Vogel, A. et al. *supra* note 60.

146 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 1; Virah-Sawmy, M. et al. (2014). "The Durban Vision in practice: experiences in participatory governance of Madagascar's new protected areas", in Scales, I.R. (Ed.). (2014). *Conservation and Environmental Management in Madagascar*. Routledge, London.

147 *Loi* No. 2015-005 of 26 February 2015, Article 5, Annex.

framework is weakened by a lack of technical and financial assistance to accompany the decisions concerning the protection of the new protected areas.

The management of the mangrove forests in the Bombetoka-Belemboka Protected Area illustrates the pressures on protected areas. The mangrove forests in this protected area are threatened by selective cutting, illegal exploitation, clearing, the transformation of marshes into rice or agricultural zones, the harvesting of the eggs and chicks of aquatic birds, and hunting and trapping waterfowl.[148] In addition, in the Region of Boeny, slaked lime producers use thousands of tonnes of mangrove wood from the protected area, compromising fisheries, wild silkworm breeding, beekeeping, and ecotourism.

Despite the legal provisions of the COAP Law, protected areas, particularly MPAs, are not effectively managed.[149] MPAs are often located in very remote and difficult to access areas, composed of many scattered villages and hamlets. The economy of these areas, mainly subsistence, is based on fishing.[150] Efforts have certainly been made to promote joint management of MPAs between MEDD, local communities, and other stakeholders.[151] However, the respective responsibilities of these entities in the management of MPAs are not clearly defined in the legal texts.[152] In addition, the educational level of the local populations is very low, and as a result, their management skills and leadership remain very weak.[153]

New initiatives on ICZM have undertaken significant studies on mangroves' ecological functions in protecting economic and social infrastructure against climate change.[154] For instance, the mangroves of Bombetoka Bay protected the rice lands in Marovoay from cyclones, but rice farmers are not aware of this specific function of mangroves and aim to transform these mangrove islands into rice farms.[155] **The economic value of mangrove ecosystems is still underestimated and leads to a loss of value and productivity in some economic sectors, such as fisheries, beekeeping, and silk worm farming.**[156]

### 6.4.2 Private sector engagement

Despite its dependence on mangrove ecosystems, the private sector is not yet really involved in mangrove management. Indeed, it is considered to be responsible for the threats to mangroves (e.g., the lime industry, which is a charcoal customer in the Bombetoka Protected Area; or the shrimp industry in Atsimo Andrefana).[157] But, the private sector can be a potential contributor in the form of financial support through partnership development and a commitment PES. Unfortunately, these kinds of commitments are not being actively promoted at the moment. The PES policy and implementation are still under development and awareness campaigns are not well addressed.

Some private initiatives have emerged at the discretion of international trends in Corporate Social Responsibilities and labelling. For instance, UNIMA (a business group working in the fisheries and aquaculture sector), COPEFRITO (a fishing and fish product harvesting company in south-west Madagascar), and SOMAQUA (a Malagasy aquaculture company that previously worked in the Morondava Region) have conducted mangrove restoration and community-based development activities. UNIMA produced the world's first Label Rouge shrimp and the shrimps produced by OSO

148 FAO (2005). *Évaluation des ressources forestieres mondiales 2005, etude thematique sur les mangroves, Madagascar, profil national.*

149 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 39-44.

150 Gabrié, C. et al. *supra* note 144.

151 *Loi* No. 2015-005 of 26 February 2015 *portant refonte du Code de Gestion des Aires Protégées*. Article 6, 49.

152 *Décret* No. 2015-722 of 23 July 2015 *portant création de l'aire protégée dénommée "Akivonjy" district Ambanja, Région Diana*. Article 5.

153 Gabrié, C. et al. *supra* note 144.

154 Conservation Internatioal Madagascar. *Adaptation au Changement Climatique pour la Conservation à Madagascar : Recherches et recommandations pour la planification de la conservation marine et pour la restauration des forêts naturelles*.

155 Ministry of Environment and Forests (2014). *Fifth National Report to the Convention on Biological Diversity: Madagascar*. UNEP. Pp. 49-50.

156 Rapport du colloque régional francophone "les mangroves des îles de l'Océan Indien occidental : dynamiques, pressions, gestions". 2017.

157 Scales, I. et al. (2018). Rural livelihoods and mangrove degradation in south-west Madagascar: lime production as an emerging threat. *Oryx* 52(4):641-645.

are certified with the "agriculture biologique" label.[158] Both of these labels denote sustainable aquaculture practices that minimize the impact on the environment, including mangroves. These companies' efforts led to the restoration of 118 ha of mangroves.[159] UNIMA, the most important Malagasy shrimp exporter, contributed to the plantation of 650,000 mangroves in order to minimize its impact on the environment.[160] Local fishermen who acknowledge the importance of mangroves also participate in restoration activities.[161]

For MEDD, Corporate Social Responsibility (CSR) is an important element in the achievement of SDGs 8 and 12 within the framework of the Public-Private Partnership. In this context, the promotion of CSR and the Green Economy is among the priorities of the ministerial department in charge of ecology. A Directorate in charge of the Sustainable Financing Mechanism and PES was established to ensure the involvement of the private sector in environmental actions.[163] However, the intervention of the administration as a facilitator, coordinator, and partner in the implementation of the incentives is required.[164] Guidelines in the national reference document will also be published. The purpose of these steps is to put in place a positive incentive for companies recognized as deserving through a CSR Label, considering environmental and social best practices. The terms and criteria for awarding this label will be defined in a participatory manner within the CSR Platform.[165]

The mission of the Directorate of Development of the Ecological Partnership (DPPE) is to promote the involvement of the private sector and civil society in the implementation of the State's ecological policy and to establish mechanisms for the development of PES, taking into account the Wealth Accounting and the Valuation of Ecosystem Services program, which was initiated to value the natural wealth of Madagascar in the National Account.[166] Its objective is to provide a decision-making tool that takes environmental services and natural capital into account in macroeconomic, sectoral, and regional strategies.

## Sustainable wild silk production in mangroves in Madagascar

The wild silk of Madagascar is a rare and much sought-after fabric. Mangroves in Mahajanga Region are the natural habitat of *Borocera madagascariensis*, an endemic species of silkworm. The harvesting and wild silk process and value chain have produced additional income for Boanamary artisans since the middle of the twentieth century. The global textile demand for natural products and quality is still increasing. In this way, a textile expert has developed a wild silk value chain in partnership with an association that promotes female entrepreneurship (*Femmes Entrepreneurs et Environnement de Mahajanga*). This initiative has contributed to improving participants' standard of living and ensuring the essential needs of their families (health, education, food) are met.[162]

158 UNIMA. http://www.unima.com/ [Accessed 29 April 2019].

159 WWF (2017). *Un élevage de crevettes responsable pour satisfaire la demande européenne.*

160 UNIMA 2019. *Environment protection.* http://www.unima.com/page_enviro.php?lg=en [Accessed 9 June 2019].

161 Fillon, L. (13 May 2018). *In Madagascar, fishermen plant mangroves for the future.* https://phys.org/news/2018-05-madagascar-fishermen-mangroves-future.html [Accessed 9 June 2019].

162 Femmes entrepreneurs et environnement de Mahajanga. http://www.femmesenvironnementmahajanga.com/ [Accessed 29 April 2019].

163 *Décret* No. 2019-138 of 20 February 2019 *fixant les attributions du Ministre de l'Environnement et du Développement Durable ainsi que l'Organisation Générale de son Ministère.*

164 *Ibid.* Article 22.

165 Ministère de l'Environnement et du Développement Durable. *La RSE (Responsabilité Sociétale de l'Entreprise) et le Développement Durable.* http://www.ecologie.gov.mg/salon-de-la-rse-et-developpement-durable/ [Accessed 16 May 2019].

166 *Arrêté* No. 9260/2012 of 14 May 2012 *portant constitution d'un Comité National de Pilotage (CNP) chargé de la mise en oeuvre du «Partenariat Mondial pour la comptabilisation du Patrimoine et la Valorisation des Services d'Ecosystème (WAVES)».*


### 6.4.3 The influence of environmental NGOs

Environment NGOs support protected area managers and communities through technical and financial support, in order to secure the achievement of CBD and the Ramsar Convention in mangrove management and their implementation at a regional and local level. Recently, the protection of mangroves has become a priority for various governmental and non-governmental institutions, such as Blue Ventures.[167] These initiatives contribute significantly to the restoration and reforestation of mangroves in several regions by bringing specific technical skills to forest management in the areas of determining long term sustainable harvest quotas, nursery and plantation techniques and methods of evaluating mangrove health.[168] In 2017, WWF contributed to the plantation of 80,000 mangrove trees in the country.[169]

Environmental NGOs such as WWF bring a crucial support to local communities. This is well illustrated when communities engage in local management of natural resources. Setting up management arrangements is a complex procedure requiring a lot of paperwork, and reporting obligations create additional bureaucracy. While local communities often have significant knowledge and capacity for decision-making in relation to mangroves, due to high rates of illiteracy, they need assistance provided by NGOs to successfully complete the process and meet ongoing administrative requirements.[170]

### 6.4.4 Positive involvement of local communities

The lack of effective participation by local communities remains a challenge. The empowerment of people living near mangroves through capacity building and awareness raising initiatives are vital, because in many cases, local people are the ones who carry out illegal logging and exploitation of the mangroves.

167 Jones, T. et al. (2016). Madagascar's Mangroves: Quantifying Nation-Wide and Ecosystem Specific Dynamics, and Detailed Contemporary Mapping of Distinct Ecosystems. *Remote Sensing* 8(2):106.

168 Interview with Jen Hacking, Blue Ventures Madagascar, 27 April 2017.

169 WWF Madagascar (2017). *Rapport Annuel 2017*. Antananarivo, Madagascar.

170 Interview with Dannick Randriamanantena, WWF Madagascar, 2018.

Through programs and projects with Technical and Financial Partners, MEDD has put in place various plans to promote community participation. NGOs and many associations are actively participating. But this participation generally remains one-off or mainly of economic interest. Communities are aware of current projects and media campaigns, but miss out on the benefits, due to a lack of ownership and information. In other cases, conflicts have broken out between members of the communities who want to benefit from the trainings and exchange visits.[171]

Fishing families in coastal areas are still living in poverty. These difficulties are more likely to worsen with the current economic difficulties. This could lead to the vulnerability of communities in terms of resources and, thus, to the resurgence of pressure on natural resources. As climate change is threatening their livelihoods, some fishermen have changed their activities. For instance, some fishermen are given beekeeping training by the NGO Saragna, and develop this activity to generate income.[172] The beekeepers are active in mangrove conservation, as mangroves are the basis of this activity.

The transfer of management of natural resources to communities is provided for by several laws in force.[173] Nevertheless, the mechanisms enabling them to effectively exercise their rights and benefits are limited by the lack of financial and technical resources, the lack of information and the opacity of certain legal and regulatory provisions. For instance, the possibilities for COBAs to tax forest products from the land they manage must be in accordance with the procedures laid down by a decree of the Ministry in charge of forests. However, to date, this decree is not available. In addition, only judicial police officers are authorized to record infringements, and the powers of the COBAs are limited to the functions of guardian of the seized products.[174] These situations create a general shared state of weariness and discouragement.[175] For COBAs to be able to fulfil their role as collaborators in mangrove management, it is essential to consider a more equitable redistribution of income related to the development of forest products and to better control forest activities on the field. According to statutory law, COBAs have recourse to civil authorities and law enforcement officials.[176] However, to make this work in practice, there is a need to include supportive provisions that would allow this type of recoruse in the *Dina* itself.[177]

Local communities and even local and regional authorities cannot do anything to enforce the existing laws and regulations to fight the overexploitation of mangroves. This is illustrated by the case of Attoumany Alily, a member of a base community set up to combat the illegal exploitation of mangroves in the rural locality of Ambanja, in the northern region of the country. He died as a result of an attack by a charcoal merchant against members of the community who were on patrol. The case was brought to court but without any favourable outcome.[178]

### 6.4.5 Political influence and corruption

According to Transparency International's Corruption Perceptions Index, in 2018, Madagascar ranked 152 out of 180 countries and is in the red zone of countries where corruption presents a major obstacle to sustainable

171 Vogel, A. et al. *supra* note 60.

172 WWF Madagascar (6 September 2017). *Quality honey for the resilience of mangroves and communities*. http://www.wwf.mg/en/news.cfm?uNewsID=310430 [Accessed 29 April 2019].

173 *Loi* No. 96-025 of 30 September 1996 *relative au transfert de gestion locale des ressources naturelles renouvelables*; *Loi* No. 2015-003 of 20 January 2015 *portant Charte de l'Environnement Malagasy actualisée*; *Loi* No. 2015-053 of February 2016 *portant Code de la pêche et de l'aquaculture*; *Loi* No. 2015-005 of 26 february 2015 *portant refonte du Code de Gestion des Aires Protégées*.

174 *Décret* No. 2001-122 of 14 February 2001 *fixant les conditions de mise en œuvre de la gestion contractualisée des forêts de l'Etat*. Article 31.

175 Aubert, S. et al. (2015). *Les communautés de base, partenaires privilégiés de l'administration forestière à Madagascar : le droit en question*. Pg. 15.

176 *Loi* No. 2005-018 of 17 October 2005 *sur le commerce internationale des espèces de faune et de flore sauvages*. Article 38: "Les autorités civiles et les représentants de la force publique prêtent aide et assistance aux agents habilités à la recherche des infractions dans l'exercice de leurs fonctions toutes les fois qu'ils en sont requis"; 39: "Les agents des forces de l'ordre qui refusent d'obtempérer à toute réquisition écrite des agents dans l'exercice de leurs fonctions, sont passibles des peines prévues à l'article 234 du Code Pénal".

177 This possibility is provided for in *Ordonnance* No. 62-041 of 19 September 1962 *Dispositions générales de droit privé*. Article 7.

178 Les Nouvelles (9 February 2018). *Conservation des mangroves: le « prix du courage »* décerné à Attoumany Alily. https://www.newsmada.com/2018/02/09/conservation-des-mangroves-le-prix-du-courage-citoyen-decerne-a-attoumany-alily/ [Accessed 1 April 2019].

development.[179] Passive corruption of persons exercising a public function and active corruption of private operators, influence peddling, conflict of interest, unlawful enrichment of a person holding a public authority or holding an elected office and failure to declare assets are punishable by law. However, there is a lack of political will to enforce laws and regulations and impunity is often found for the "big shots" protected by the authorities.[180]

The implementation of laws relating to mangroves can be weakened by influence of decision makers, especially politicians.[181] Political instability after the 2009 political crisis and the transition period that followed led to a freeze of environmental policies and a withdrawal of many international donors, with strong impacts on environmental protection.[182]

There is a lack of interest on the part of the judiciary in matters relating to forest crime. As a result, prosecutors often favour rapid investigations against harvesters and transporters but rarely against the person giving the orders.[183] The lack of transparency and accountability means that community members in coastal areas sometimes remain passive facing the transgressions by fishermen and charcoal producers.[184] Moreover, the conservation of mangroves seems not to be a priority compared to other natural resources.

### 6.4.6 Difficult implementation of financial incentives for mangrove conservation

Mangrove reforestation is included in the National Adaptation Action Plan, but no specific targets are provided.[185] A vulnerability and resilience assessment has been started with the collaboration of experts and PA managers at a regional and national level. Knowledge sharing and awareness campaigns on mangroves' importance in the fight against climate change are expected to enhance conservation and management.

The Tahiry Honko initiative was set up to frame a PES mechanism with a long-term perspective. Communities participate in mangrove reforestation and protection and sell carbon credits to benefit the ten villages of the region of the Bay of Assassins.[186] Mangrove restoration and protection is conducted through different initiatives aiming at developing alternative livelihoods, such as beekeeping.[187] While benefits from the project are shared by the whole community, and used to build infrastructure and subsidize school fees, the challenge of illegal harvesting of mangroves for sale by some individuals still exists due to poverty and lack of alternatives to earn money.[188]

According to the National REDD+ Strategy, an estimated 178,028 ha of mangrove is likely to be used to generate carbon credits.[189] The BNCCCREDD+ is responsible for leading and coordinating all activities related to the REDD+ process in Madagascar; it controls expenses and ensures that activities and studies meet

179 Transparency International (2018). *Corruption Perceptions Index 2018*.

180 Consortium international de lutte contre la criminalité liée aux espèces sauvages. *Rapport - Mission d'évaluation concernant la criminalité liée aux espèces sauvages et aux forêts, effectuée à madagascar du 5 avril au 9 mai 2016*. ONUDC.

181 Mananjean, N. (2017). *Droits et obligations des usagers des ressources naturelles de la NAP Bombetoka*. Communication, Colloque Régional Francophone : Les mangroves des îles de l'Océan Indien occidental: dynamiques, pressions, gestions, Mahajanga, Madagascar.

182 Interview with Norotiana Mananjean, former Manager of the Bombetoka Mangroves Protected Areas, 11 June 2019.

183 *Ibid.*

184 *Ibid.*

185 Ministère de l'Environnement, des Eaux et Forêts (2006). *Programme d'Action National d'Adaptation au Changement Climatique.*

186 Blue Ventures (2014). *Tahiry Honko: Community Mangrove Carbon Project, Southwest Madagascar*. Project Idea Note; Blue Ventures (28 September 2017). *Replanting mangrove forest in the Bay of Assassins*. https://blog.blueventures.org/en/replanting-mangrove-forest-bay-assassins/ [Accessed 9 July 2019].

187 Razananony, C. (15 November 2018). *Bees are friendly insects: launching beekeeping in southwest Madagascar*. https://blog.blueventures.org/en/bees-are-friendly-insects-launching-beekeeping-in-southwest-madagascar/ [Accessed 10 June 2019].

188 Interview with Jen Hacking from Blue Ventures Madagascar, 27 April 2017.

189 Ministère de l'Environnement, de l'Ecologie et des Forêts (2018). *Stratégie Nationale REDD+ Madagascar*; *Décret* No. 2018-500 of 30 May 2018 *portant Stratégie Nationale REDD+ à Madagascar*.

recognized standards.[190] To this aim, a trade account entitled "Crédit Carbone Redd+" was opened within the national treasury in order to track transactions relating to the carbon units issued.[191] The distribution of the income should be as follows: 35% of revenues are allocated to local communities within the project area to support forest resource management, conservation activities and community development initiatives; 7.5% are allocated to communities outside the project; 7.5% are allocated to municipalities involved in the project; 25% are allocated to the BNCCCREDD+; 20% are transferred to the Deputy Forest Manager and 5% to the Commercial Representative to cover costs related to the marketing, sale, and registration of the project.[192] However, this is not properly implemented due to complex financial and administrative procedures both at the level of the national treasury and in the management of funds by the beneficiary local communities.

## 6.5 Outcome level: Degradation despite efforts by civil society and local communities

Madagascar contains 2% of the world's mangroves.[193] However, studies indicate threats to these ecosystems. WWF reports that mangroves coverage from 310,452 ha in 1995 to 236,402 ha in 2018. In the district of Mahajanga, 40% of the mangroves are degraded.[194]

The Bay of Assassins, 180 km north of Toliara, in the south-west of Madagascar, includes 1300 ha of mangroves.[195] In this zone, mangroves are harvested for the construction of houses and for use as fuel in kilns for the production of lime.[196] The increased use of lime is a consequence of the increased income of certain households as a result of the connection of the Bay of Assassins villages with octopus, seaweed, and sea cucumber global product chains.[197] This practice is expanding outside the Bay, thus increasing the threat of mangrove destruction.

Another recent massive exploitation of mangroves can be observed in Mariarano, Mahajanga area, dating back to the 2000s. **A total of 4,997 m³ round wood equivalent of mangroves are exploited each year in Mariarano, of which 92.45% are sold at the Mahajanga market.**[198] Population growth is increasing the high demand for wood fuel and increasing the pressure on natural forests, such as mangroves.

Fishing activities that have developed rapidly in recent years in Madagascar are further destroying these mangroves. Species of commercial value such as penaeid shrimp (*Penaeus indicus* and *P. monodon*), fish, and mangrove crabs (*Scylla serrata*) are being overexploited.[199] Since the arrival of operators from Asia about ten years ago, the price of crabs has climbed, so that harvesting has become a priority for fishermen. The mangrove areas have been visited far too often and without observing the opening dates of fishing season and the crabs' legal sizes. Many

190 *Décret* No. 2019-138 of 20 February 2019 *fixant les attributions du Ministre de l'Environnement, et du Développement Durable ainsi que l'organisation générale de son Ministère*. Article 11.

191 *Décret* No. 2017-1083 of 21 November 2017 *fixant la modalité de gestion du Compte de Commerce intitulé « Crédit Carbone REDD+ »*. Article 1, 3.

192 *Ibid.* Article 7.

193 Jones, T.G. et al. (2016). "The Mangroves of Ambanja and Ambaro Bays, Northwest Madagascar: Historical Dynamics, Current Status and Deforestation Mitigation Strategy", in Diop, S., Scheren, P. and Ferdinand Machiwa, J. (Eds.). *Estuaries: A Lifeline of Ecosystem Services in the Western Indian Ocean. Estuaries of the World*. Springer, Cham.

194 Shapiro, A. et al. (2019). *Les mangroves de Madagascar: superficies, condition et évolution 2000-2018*. WWF Germany, Berlin, and WWF Madagascar, Antananarivo. 39 pp.

195 Scales, I. et al. *supra* note 157.

196 *Ibid.*

197 *Ibid.*

198 Rabefarihy, A.T. (2012). *Identification et Modélisation des facteurs Socioéconomiques de déforestation et de dégradation forestière à Madagascar : Application à la recherche de mesures incitatives adéquates dans le cadre de la mise en place de Redd+*. Thèse de Doctorat en Sciences Agronomiques, Option Eaux et Forêts. Université d'Antananarivo, Ecole supérieure des sciences agronomiques, Département des eaux et forets. 155pp.; Programme d'Appui à la Gestion de l'Environnement (PAGE) (2014). *Vers une modernisation de la filière bois-énergie: Série de fiches thématiques sur l'approche et les enseignements (lessons learnt) de l'expérience réalisée*.

199 Rasolofo, V. and Roger, E. (2012). "Fonction, valeurs et problèmes majeurs pour la mise en œuvre d'une gestion durable des mangroves Malgaches", in Jeannoda, Roger (Eds.). *Ny honko*. University of Antananarivo, Antananarivo. Pp. 232-246.

tons of mangrove crabs are exploited annually throughout the country.[200]

In Madagascar, the involvement of local communities for mangrove conservation is bearing fruit. In the Manambolo Delta, local communities are managing 8000 ha of mangroves in a sustainable way, thus ensuring the health of the ecosystem. Similarly, they participated in the reforestation of 150 ha.[201] In 2008, 54,800 ha of mangroves were managed by local communities through management transfers.[202] This practice has been further developed by ensuring the sustainable management of mangroves in the country.

Actions for the restoration of mangroves have been initiated by both the public authorities and NGOs. Despite such efforts, mangrove expansion and preservation in some areas do not compensate for their degradation in others, and Madagascar continues to lose its mangroves.[203] Climate change is also adding to the threats by causing coastal erosion and the disappearance of mangroves.[204]

## 6.6 Conclusions and recommendations

Observations show that in terms of the decentralization of power, the roles and responsibilities of central and local authorities are confused and poorly understood, which in most cases handicaps the good management of natural resources, the engine of the country's development.

Actual legal instruments and institutions have to tackle new approaches to better affect government officials, regulated entities, communities, civil society, and other stakeholders connected to mangroves. Considering the ecosystem services that mangroves deliver, and determining users' needs and behaviours, are necessary for defining the instruments, institutions and tools to harmonize the use of mangroves with conservation.

In order to secure the support of tax payers and stakeholders, legal instruments and institutions should be elaborated in a consultative and participatory manner. This initiative should be developed through knowledge sharing and awareness campaigns. Technical capacity building may be needed to improve the decision-making capacity of stakeholders.

Citizen participation depends on access to information information. It is on the basis of information that public participation can be exercised. For the community to take ownership of the project, it needs information that is understandable, useful and accessible to them. Global education and environmental education complement this information.

There have been efforts to produce legal texts, but their implementation is not felt at the community level. Notable advances have been made, but there are imperfections. The legislative frameworks are not very explicit in terms of producing, sharing, and managing environmental information and the involvement of all stakeholders in the management and governance of natural resources and mangroves.

To achieve the sustainable conservation of mangroves, close coordination is needed at every level between the authorities concerned with mangroves and other coastal ecosystems and resources. In this respect, horizontal coordination between the ministerial departments interested and concerned by this ecosystem and between the field administrations that share maritime and land competences is necessary. It is not necessary to merge services, but mainly to decompartmentale them and organise appropriate coordination on a permanent basis.

200 Randrianarifidy, R. (6 August 2018). *Exportation de crabes: 6 018 tonnes en 2017*. http://www.tresorpublic.mg/?p=33582 [Accessed 31 March 2019].

201 WWF (15 June 2018). *A Madagascar, la mangrove renait*. https://www.wwf.fr/vous-informer/effet-panda/madagascar-la-mangrove-renait [Accessed 29 April 2019].

202 Ministry of Environment and Forest (2008). *Fourth National Report to the Convention on Biological Diversity: Madagascar*. UNEP.

203 Ministry of Environment and Forests (2014). *Fifth National Report to the Convention on Biological Diversity: Madagascar*. UNEP.

204 RFI Afrique (1 May 2017). *L'inquiétant état des mangroves, in Madagascar*. http://www.rfi.fr/afrique/20170501-madagascar-mangroves-danger-changement-climatique [Accessed 28 April 2019].


With regard to vertical coordination, decentralization and close collaboration between authorities and actors of different hierarchies (national, regional, local including private sectors, traditional authorities and elders) that influence mangrove planning and management are important. Decentralization should not be interpreted as a resignation of the State. State authorities must grant freedom to local authorities for problems whose solution is within their reach. Only when the dimensions of the problem exceed local capacity should local authorities intervene as guarantors of legality, justice, equity and security.

In view of the existence of a number of intersectoral and institutional coordination committees related to sustainable mangrove management (CNGIM, CNGIZC), the Inter-ministerial Commitee and the Regional Land Use Planning Committees should harmonize and coordinate their actions with these existing structures. Joint actions such as the pooling of monitoring and management resources, while ensuring the implementation of an integrated action plan, should also be undertaken where appropriate. Inter-ministerial coordination may be more effective if facilitated by a structure attached to the Prime Minister's Office that could establish its political leadership role, such as the Steering Committee for the Preparation of the Strategic Programme for Climate Resilience, which could act as a supra-ministerial structure to facilitate the role of coherence and coordination of the actions of the various stakeholders. As such, the conflict of authority and responsibility could be reduced, and the interface role in defining strategies and priorities for climate change would be easier and more obvious.

There is no specific law to govern the conservation of mangroves. Historically, the management of mangrove ecosystems has been incorporated into the body of environmental legislation in the broadest sense of the term. This hampers the effective management of mangroves in the face of various human and natural pressures.

## Recommendations

1. Build capacity and awareness among stakeholders to improve decision making.
2. Undertake multi-stakeholder consultations for the elaboration and revision of mangrove-related legal instruments using a bottom-up approach.
3. Define stakeholders' obligations and rights (government, private sector, communities,

scientists) in order to enhance the accountability of the legal framework.

4. Improve coordination and involvement of different ministries in the management of mangroves.
5. Revise legal frameworks to strengthen procedural rights, in particular the right to access to information; the right to participate in decision making related to mangrove governance; and the right to have access to justice when the above rights are not respected.
6. Fundamental texts or supreme texts such as the Constitution, international conventions and/or treaties should be translated into different ordinary norms (laws, decrees, orders, etc.) and into national policies and/or plans and national environmental programs.
7. Develop further findings on the role of mangroves and their vulnerability against climate change, and build an awareness campaign in this regard.
8. Develop a harmonized national strategy on mangroves.
9. Ensure that the law on industrial pollution control takes into account the particular impacts of these activities on mangroves
10. 10. Provide incentives and protection to grassroots communities in their mangrove control and monitoring mission
11. Provide education to local authorities to promote their leadership capacity in mangrove management
12. Lead communities gradually towards greater management autonomy because their skills are often very insufficient


© Léa Badoz / IUCN

7

# MOZAMBIQUE
## A DOG WITH TWO MASTERS: FRAGMENTED AND INEFFECTIVE MANAGEMENT

**By Manuel Castiano**

Mangroves are located in coastal areas, deltas, and estuaries, in Mozambique with several major rivers they 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 Degradation 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.

# KEY FACTS

## POPULATION: ≈ 29 million

## MANGROVE COVERAGE: ≈ 337,000 ha

## KEY INSTITUTIONS:

Ministry of Sea, Inland Waters and Fisheries (MIMAIP)

Ministry of Land, Environment and Rural Development (MITADER)

Ministry of Energy and Mineral Resources (MIREME)

National Institute for Disaster Management (INGC)

Ministry of Public Infra-Structures and Housing (MOPHRH)

Ministry of Agriculture and Food Security (MASA)


● Ramsar sites containing mangroves

## MAIN THREATS:

OVERHARVESTING

INFRASTRUCTURE DEVELOPMENT

AGRICULTURE (FRUIT TREES)

MINING

AQUACULTURE

SEDIMENTATION

POLLUTION

SALT EXPLOITATION

COASTAL EROSION

## MAIN USES:

BOAT CONSTRUCTION

FENCES CONSTRUCTION

INFRASTRUCTURE CONSTRUCTION

CONSTRUCTION POLES

CHARCOAL/ FIREWOOD

## LEGISLATION:

www.iucn.org/mangrovelaw

# CONTENTS

# 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 |

## 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.[1] In the late 1990s and early 2000s, Mozambique's mangroves covered almost 400,000 ha.[2] Mozambique then had the second largest mangrove forest in Africa, and the largest in East Africa.[3] In the period since, Mozambique has lost around 60,000 ha down to an estimated 337,000 ha in 2015.[4]

The continuous degradation of mangrove areas, is mainly attributed to commercial exploration and lack of institutional capacity.[5] 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.[6]

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.[7] 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.[8] 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).[9]

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.[10]

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.[11] Around 60% of Mozambican people live in large cities in coastal areas, particularly Maputo, Beira, Quelimane, and Pemba.[12] 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.[13] Mangroves play an important role in mitigating these disasters but are also severely affected by these events.

---

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

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

3 *Ibid*.

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

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

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

7 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].

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

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

10 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].

11 *Ibid*.

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

13 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.[14]

As a result of ratifying the Ramsar Convention, Mozambique declared two Ramsar sites, Niassa Lake (2011) and the Zambezi Delta (2004).[15] 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.[16]

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.[17]

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.[18]

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.[19] 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.[20] 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 (waste, electricity, and energy).[21] The Regulation for REDD+ creates a framework for investment and imposes mandatory and timely consultations for communities, different social groups, CSOs, and

14 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.

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

16 *Ibid.*

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

18 *Ibid.* Target 12.

19 *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.*

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

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


the private sector involved in REDD + activities (see Section 7.4.5).[22]

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.[23] 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.[24]

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.[25] The Constitution establishes the State's role in relation to the environment, including the promotion of initiatives ensuring ecological equilibrium,

22 *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).

23 *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*.

24 *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)*.

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

conservation and preservation of the environment to improve the quality of life.[26]

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.[27]

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.[28] Through the Constitution, the State reaffirms its ownership over all natural resources.[29] 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.[30] The Constitution also underlines the rules for its interpretation in line with international laws and embraces different 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.[31] **Community-based natural resource management is one of the elements of legal pluralism enshrined in the Constitution.**[32] Subsequently, the State recognized the crucial role of traditional authorities in community forest management.[33]

### 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.[34] 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.[35] However, the scope of this Policy is limited to declared conservation areas (national parks and national reserves), either terrestrial or marine.[36] Other applicable measures are not enough to mitigate the threats to mangroves located outside conservation areas.

---

26 *Ibid.* Article 117.
27 *Ibid.* Article 98.
28 *Ibid.* Article 117(2)(d).
29 *Ibid.* Article 98(1).
30 *Ibid.* Article 98, 102.
31 *Ibid.* Article 110, 117.
32 *Ibid.* Article 4.
33 *Ibid.* Article 118; *Decreto* No. 12/2002 of 6 June 2002 *Regulamento da Lei de Florestas e Fauna Bravia*. Article 8.
34 *Resolução* No. 5/95 of 3 August 1995 *aprova a Política Nacional do Ambiente*. Section 3.6.2.
35 *Resolução* No. 63/2009 of 2 November 2009 *aprova a Política de Conservação e Estratégia de Sua Implementação*. Section 4.2.2.
36 *Ibid.* Section 2.1.

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.[37] 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.[38] The Forest and Wildlife Policy refers to mangroves as reproduction areas for crustaceans and other marine species.[39] However, the revised Fisheries Law and Maritime Fisheries Regulation did not consider these areas.[40]

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.[41]

The Reforestation Strategy aims at conserving and restoring degraded mangrove areas with a reforestation target of 2,000 ha by 2029.[42] 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.[43] 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.[44] 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.[45] Most political instruments mention mangroves indirectly by mentioning "forest," "natural resources," "ecosystem," "coastal habitat," and "biodiversity," all of which would include mangroves.[46] 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**

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

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

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

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

41 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.

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

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

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

45 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.

46 *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*.

**for reforestation.**[47] 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.[48] Similarly, the Erosion Action Plan does not consider mangrove degradation as a cause of erosion and natural disasters.[49] 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.[50]

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.

### 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.[51] State ownership over natural resources was also taken up in several sectoral laws.[52]

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.[53] 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.[54]

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.**[55] These rights are recognized by the law and established by Municipalities using customary laws.[56] 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.[57] There are challenges in the implementation of this intent as public participation can only be secured if communities are granted substantial rights to information.

---

47 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*.

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

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

50 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].

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

52 *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.

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

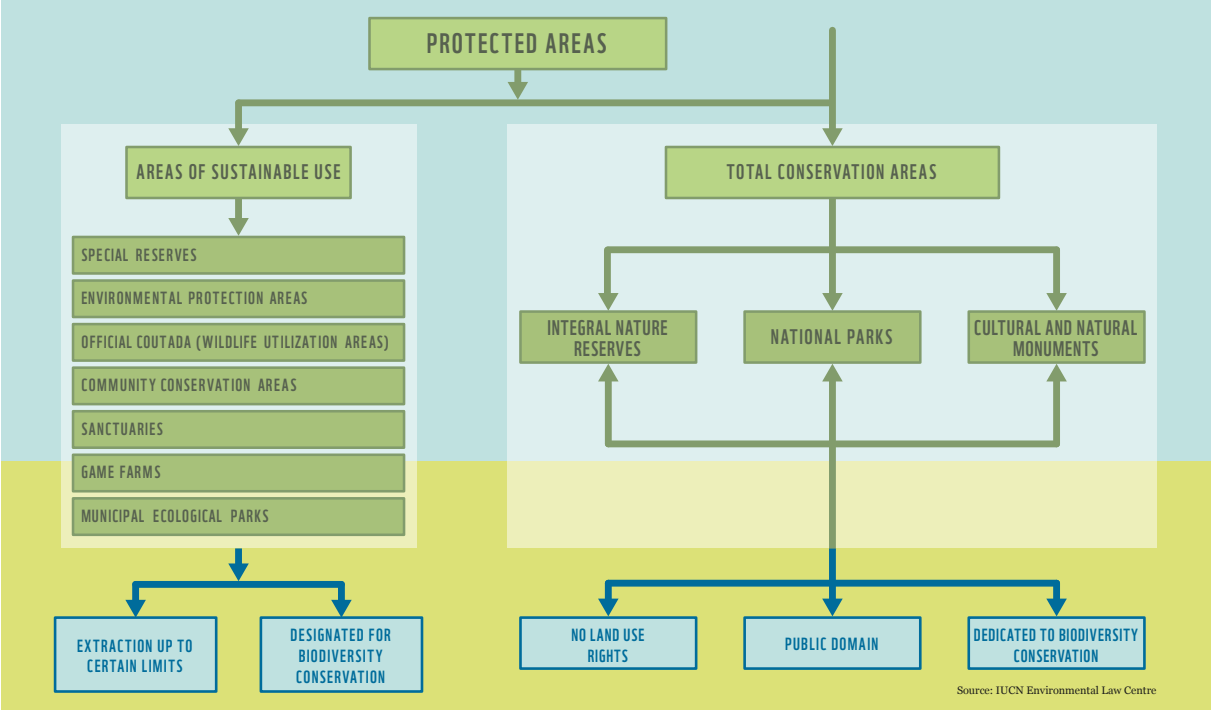
54 *Ibid.* Article 110(1).

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

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

57 *Lei* No. 20/97 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.

**Figure 13:** Protected areas framework in Mozambique




## 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.[58] In addition, the Land Law establishes partial protection zones and total protection zones.[59] Prior to adoption of the Conservation Law in 2014, the Forest Law and the Environmental Law also established different types of protected areas.[60] The Conservation Law explicitly revokes these provisions.[61] 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 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.[62] 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.[63]

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

58 *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.

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

60 *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).

61 *Ibid*. Article 64.

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

63 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.

conservation areas, sanctuaries, wild farms and municipal ecological parks.[64]

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.[65]

### 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.[66] 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.[67] 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.[68] In areas of sustainable use, the extraction of resources is allowed up to certain levels, respecting the sustainable limits set by management plans.[69]

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.[70] There is an exemption for activities developed for scientific reasons or for management purposes.[71] 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.[72] This provision has been explicitly revoked by the Conservation Law, so any authorization that may have occurred under the Forest Law has now become illegal.[73]

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.[74] 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.**[75] The question is: whose interests prevail in case of the

64 *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.

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

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

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

68 *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.

69 *Ibid.* Article 13(5).

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

71 *Ibid.* Article 16(2).

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

73 *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.

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

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

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.[76] The situation has changed, as the Conservation Law and its regulation prohibit the exercise of such activities in conservation areas.[77] The Conservation Law explicitly revokes conflicting provisions in the Forest Law "as well as other legal provisions which contradict the present law."[78] 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 practice, the government has granted mining concessions along almost the entire coastline regardless of the status of conservation areas.[79]

### 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.[80] Local communities are permitted to do so by law both within and outside conservation areas.[81] 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.[82]

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.[83] The extraction of timber and non-timber forest products within conservation areas is subject to registration with the management authority.[84] 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.[85]

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.[86] 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.[87] However, communities are allowed to harvest forest resources at any time of the year, and are not bound by the closed season.[88]

Protected area management plans can specifically allow community use, provided that it does not

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

77 *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).

78 *Ibid*. Article 64.

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

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

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

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

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

84 *Ibid.*

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

86 *Ibid.*

87 *Ibid*. Article 8.

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

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.**[89]

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.[90]

## 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.[91] **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.**[92] 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.[93] 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.[94] 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.[95]

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).[96] 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

89 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.

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

91 *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.

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

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

94 *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).

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

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

protected areas and with low forest potential.[97] 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.[98] 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.[99]

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 20% of forest revenue to the local communities where the forest resources were extracted.[100]

Forest products are classified as timber and non-timber, and mangroves can be put into the timber category.[101] Some mangrove species *(Avicennia sp*, *Barringtonia recemosa*, *Bruguiera gymnorhiza*, *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.[102] These species can be harvested, as they are considered wood productive species, but they cannot be used for firewood or charcoal.[103] 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.[104] 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.[105] 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.[106]

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.[107] 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

97 *Ibid.* Article 5.

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

99 *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).

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

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

102 *Ibid.* Article 11, Annex I.

103 *Ibid.* Article 24.

104 *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).

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

106 *Ibid.* Article 1.

107 *Ibid.* Article 2.

ha.[108] The validity of the authorization depends on submitting the management plan for the area within six months.[109] 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. [110] 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.[111]

When mining, oil, and gas activities occur on land, a specific permit should be requested along with the DUAT.[112] 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.[113] 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.[114] 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.[115]

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.[116] 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.[117]

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.[118] If mangroves are cut down,

---

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

109 *Ibid*. Article 27(4).

110 *Ibid*. Article 11, 12.

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

112 *Ibid*. Article 20.

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

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

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

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

117 *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).

118 *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).

the operators have to compensate by planting an area corresponding to the area cleared.[119]

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.[120] 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.[121]

### 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).[122] Mozambique has adopted a sound legal and institutional framework for the implementation of EIA.[123] 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).[124] The Ministry of Land, Environment and Rural Development (MITADER) is in charge of approving terms of reference for EIAs, reviewing completed EIAs, and auditing.[125] 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.[126]

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.[127] 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.[128]

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.[129] 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.[130]

It is particularly important to note that the development of mining activities is also subject to EIAs, although it involves following specific

---

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

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

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

122 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.

123 *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*.

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

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

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

127 *Ibid*. Article 8.

128 *Ibid*. Article 13, 15.

129 *Ibid*. Article 25.

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


regulations.[131] Within this framework, mining activities are classified into three levels, the second and third ones using mechanical technologies.[132]

**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.[133]

### 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 borders.[134] This makes the country vulnerable in cases of floods and droughts, and subject to significant pollution.[135] 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.**[136]

The freshwater legal framework emphasizes the need to ensure that the use of water is carried out without prejudice to the minimum flow and

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

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

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

134 *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).*

135 *Ibid.*

136 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).

ecological flow and respect, as far as possible, the natural regime of deposits and water courses.[137] 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.[138]

### 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.[139]

**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.**[140] 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.[141]

## 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, but there are grey zones, especially where there may be overlapping interests.[142]

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 the Ministry of Land, Environment and Rural Development (MITADER) was given the responsibility for managing land-use rights and environmental licensing for those who want to develop any activity, and for

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

138 *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)*.

139 *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.

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

141 *Ibid.*

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

**Figure 14:** Institutions in charge of mangroves and their respective roles in Mozambique

| 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 EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION; THE SUSTAINABLE USE OF FOREST RESOURCES AS WELL AS THE REDUCTION OF | 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

Source: IUCN Environmental Law Centre

conserving and monitoring the sustainable use of forest species and non-timber forest products in total and partially protected areas.[143] 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.[144] 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.[145] **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.[146] It has authority for concessions contracts and other activities which demand the use of the sea.[147]

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

143 *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.

144 *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*.

145 *Ibid*. Article 11.

146 *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.

147 *Ibid*. Article 2.

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.[148] 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.[149] 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 14). 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.[150] 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.[151] The founding decree provides that CONDES will meet twice a year and be chaired by the Prime Minister.[152] 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).[153]

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, harmonize, monitor, and evaluate the implementation of the mangrove strategy.[154]

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

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

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

151 *Ibid*. Article 2.

152 *Ibid*. Article 8.

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

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

### 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.[155] 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.[156] 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.[157] 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.[158]

The government has also established a collaborative mechanism between local government and community authorities on issues related to the environment and land use.[159] 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.[160] 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.[161]

## 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.[162]

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.[163] In urban areas, mangroves are mostly threatened by deforestation for infrastructure construction and pollution from solid and chemical waste.[164]

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 mangroves in the Costa do Sol neighbourhood, after the builders were advised to stop.[165] 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

155 *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.

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

157 *Ibid*. Article 20.

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

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

160 *Ibid*. Article 5.

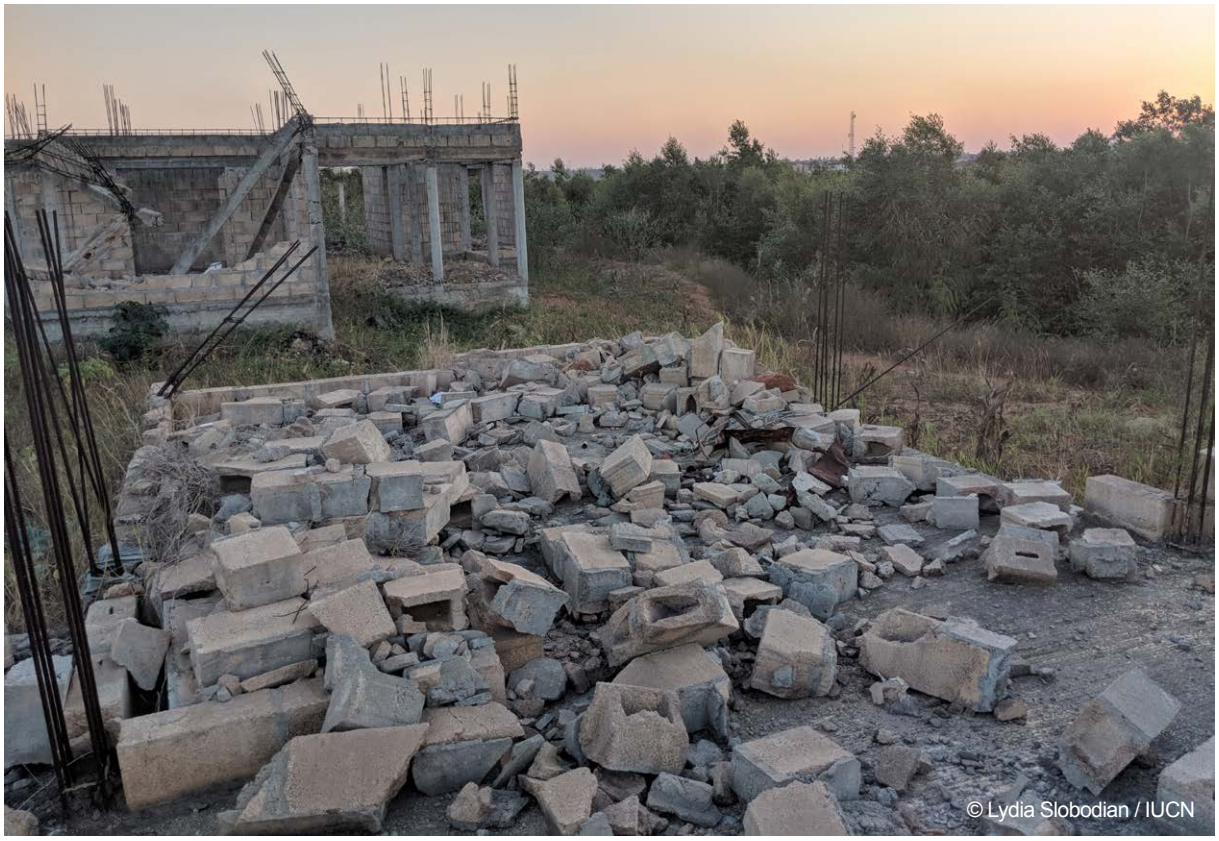
161 *Ibid*. Article 7.

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

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

164 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.

165 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].




houses and supermarkets along the coastline in Maputo City.[166]

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.[167] 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.[168]

**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.**[169]

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.[170] 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

166 *Ibid.*

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

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

169 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].

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

consumption or for commercial purposes.[171] 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.[172] 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 developmen

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 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.[176]

### 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.[177] However, the specific Order which will define under which terms and conditions the sworn inspectors and community agents will exercise their enforcement

## 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.[173] 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.[174] 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.[175] 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.

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

172 *Ibid.*

173 *Ibid.*

174 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].

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

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

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

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.[178]

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.[179]

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.[180]

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.[181]

### 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.[182] The combined efforts of CSOs in mangrove restoration are bearing fruit, as mangroves have already been replanted in several coastal areas.[183]

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

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

179 *Ibid.*.

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

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

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

183 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.

mangrove planting plans and results at the second forum in August 2018.[184] 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.[185] 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 damaged 1,176,000 houses, of which 638,700 were destroyed.[186] Investment in mangrove management and restoration programs has been identified as a means to avoid greater social and economic losses.[187]

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.[188]

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.[189] 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).[190] 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.[191]

The NDC action plan describes two mangrove REDD+ projects with a focus on adaptation, implemented in Inhambane and Cabo Delgado (Quirimbas National Park) Provinces.[192] 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

184 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).

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

186 *Ibid.*

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

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

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

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

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

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

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.[193] The ensuing peace created living conditions that were conducive to economic development, especially along the coast.[194] 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.[195] Though Mozambique has recognized the situation of ongoing depletion 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.[196]

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.[197]

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.[198] 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.[199] 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

193 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.

194 *Ibid.*

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

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

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

198 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.

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


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.[200] 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 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.[201] 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.

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

201 Chevallier, R. *supra* note 80.

## 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.

8

# PAKISTAN

## COLLATERAL VICTIMS OF MISMANAGEMENT IN THE INDUS DELTA

**By Saima Khawaja**
**Assisted by Anieka Yasin**

Pakistan has mangrove forest coverage of around 150,000 ha, which has been steadily increasing over the last 30 years; the Forest Department, IUCN, and WWF have played a leading role in the protection and rehabilitation of mangroves along with the involvement of local communities. However, the growth of mangroves in Pakistan is facing serious threats including climate change, salt-water intrusion, a shortage of fresh water due to upstream dam construction and agriculture, pollution, and urbanization.

Pakistan has no comprehensive laws for the protection of mangroves or wetlands, although there are numerous policies and Acts which provide for the protection of mangroves and which control and monitor their threats. Due to weak institutions, the implementation of these policies and Acts has become difficult. As a result, violators have become powerful, with limited or no accountability. For the future protection of mangroves, it is important to draft a comprehensive law, strengthen institutions, and continue to involve environmental organizations and local communities.

# KEY FACTS

## POPULATION: ≈ 204 million

## MANGROVE COVERAGE: ≈ 150,000 ha

## KEY INSTITUTIONS:

Ministry of Climate Change

Karachi Port Trust

Port Qasim Authority

Environment Agency/ Tribunal

Forest Department

Local Government

Sindh Irrigation and Drainage Authority

Balochistan Irrigation and Drainage Authority

Sindh Board of Revenue


● Ramsar sites containing mangroves

## MAIN THREATS:

SALT WATER INTRUSION

REDUCED SILT AND NUTRIENT FLOWS

POLLUTION

AGRICULTURE (FRUIT TREES)

OIL SPILLS

URBANIZATION

CLIMATE CHANGE

## MAIN USES:

BOAT CONSTRUCTION

CHARCOAL/ FIREWOOD

ANIMAL GRAZING

## LEGISLATION:

www.iucn.org/mangrovelaw

# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **AWB** | Area Water Board |
| **BAP** | Biodiversity Action Plan |
| **BEPA** | Balochistan Environmental Protection Agency |
| **BIDA** | Balochistan Irrigation and Drainage Authority |
| **CBD** | Convention on Biological Diversity |
| **CCP** | Climate Change Policy |
| **EIA** | Environmental Impact Assessment |
| **FO** | Farmer's Organization |
| **IRSA** | Indus River System Authority |
| **IEE** | Initial Environment Examination |
| **KMC** | Karachi Metropolitan Corporation |
| **KPT** | Karachi Port Trust |
| **MFF** | Mangroves for the Future |
| **NDC** | Nationally Determined Contribution |
| **PFF** | Pakistan Fisherfolk Forum |
| **PNBSAP** | Pakistan National Biodiversity Strategy and Action Plan |
| **PQA** | Port Qasim Authority |
| **PFC** | Provincial Finance Commission |
| **SEPA** | Sindh Environmental Protection Agency |
| **SIDA** | Sindh Irrigation and Drainage Authority |
| **UNFCCC** | United Nations Framework Convention on Climate Change |

## 8.1 Introduction: From wasteland to plantations

Pakistan is the sixth-most populated country in the world with more than 210 million people with a heavy dependence on agriculture and natural resources, especially water. It is a country with a diverse landscape ranging from a long coastline to deserts, plains, forests and plateaus to one of the highest mountains in the world. It lies in the temperate zone, and the climate varies from tropical to temperate, with arid conditions in the coastal south with some rainfall in the monsoon season, while there is abundant rainfall in some northern areas and the Punjab. Pakistan's coastline extends over 1,050 km, with 250 km in Sindh province and 800 km in Balochistan.[1] The mangrove forests are primarily found in the Indus Delta and Sindh province, with a small amount of coverage in Balochistan.

The mangrove forest area was historically considered wasteland and under the control of the Board of Revenue, which is in charge of the administration of the land. It was only in 1958 that the Board of Revenue transferred 345,000 ha of mangroves to the Forest Department to manage and safeguard the existing forest on this land.[2] It was then for the first time considered forest and not wasteland.

The area under mangrove cover varies hugely according to several reports and official records, and it is difficult to trace historic scientific information. Based more on assumptions and less on data, the Forest Department claims that the coastline in Sindh province once had thick mangrove forest cover, which stretched from Karachi to Rann of Kuch, and into Balochistan. According to the website of the Sindh Forest Department, the mangrove forest area measures 600,000 ha.[3] However, estimates for mangrove forest area coverage vary, with some as low as 85,000 ha.[4] The Chief Conservator of Mangroves and Rangelands expressed the opinion that the different estimations of mangrove coverage were due to inaccurate measuring, as no proper scientific instruments were used. For instance, algae were measured as mangroves and parts of Indian Territory were also measured as being in Pakistan.[5] The entire Indus Delta extends over 600,000 ha with 17 major channels and numerous small creeks, but no actual forest cover.[6] According to the Chief Conservator, the last survey, carried out in 2008, provided a more accurate picture. The survey indicated mangrove coverage of 107,000 ha in the Indus Delta. However, since then the mangrove coverage has reportedly increased to 150,000 ha.[7]

Most mangroves are located in remote, sparsely populated areas and the mangrove-dependent coastal population totals around 210,000 people, 90% of whom reside in fishing towns and villages.[8] This situation is changing rapidly due to fast-growing urban centres.

According to the Pakistan National Biodiversity Strategy and Action Plan (PNBSAP), "Indus Delta provides habitat and breeding grounds for a large variety of fish, crabs, shrimp, and mollusk species, sustains fisheries."[9] However, the PNBSAP has also indicated that "mangrove ecosystems in the country are being degraded due to the combination of salt-water intrusion up to 30 km inland and reduced silt and nutrient flows due to upstream dam construction and agriculture."[10] The Action Plan also identifies the discharge of

1 Wildlife of Pakistan. *Section 5: Coastline*. http://www.wildlifeofpakistan.com/IntroductiontoPakistan/coastlineofPakistan.htm [Accessed 21 December 2018].

2 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

3 Official Website of Forest Department, Government of Sindh. *Mangroves*. https://sindhforests.gov.pk/page-mangroves [Accessed 21 December 2018].

4 Beresnev, N. et al. (2016). *Mangrove-related policy and institutional frameworks in Pakistan, Thailand and Vietnam*. FAO and IUCN, Gland, Switzerland.

5 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

6 Memon, N. (2014). Climate Change and Environmental Concerns in Indus Delta. https://www.slideserve.com/verity/climate-change-and-environmental-concerns-in-indus-delta [Accessed 21 December 2018].

7 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

8 Beresnev, N. et al. *supra* note 4.

9 Pakistan (2015). *Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals 2017-2030*. Section 4.7.

10 *Ibid.*

municipal and industrial waste, agricultural run-off, and oil spills at ports as major threats to the marine ecosystem.[11] For example, it is estimated that around 472 million gallons of sewage are released into the sea on a daily basis, which has been disturbing the marine environment.[12] All of these threats, as well as urbanization and climate change, are affecting the growth and health of the mangroves.

Earlier records show that Pakistan had eight different varieties of mangrove species, but due to a lack of fresh water, the intrusion of sea water and the other above-mentioned causes, only four varieties remain: *Avicennia marina* (predominant), *Rhizophora mucronata*, *Aegiceras corniculatum*, and *Ceriops tagal*.[13] Over the last two decades, rehabilitation and replantation have been planned and undertaken, with three Guinness World Records in 2009, 2013, and 2018 when, respectively, 541,176, 847,275, and 1,129,294 trees were planted within 24 hours.[14] Thanks to these plantation programmes, the mangrove coverage is increasing.[15]

## 8.2 Instrumental level: A plethora of laws but an absence of cohesion

### 8.2.1 International and constitutional laws

Pakistan has ratified every significant environmental convention related to mangroves, and has prepared fairly good policies and strategies at a federal level in the light of these conventions. However, there are no comprehensive laws on wetlands addressing the protection of mangroves. Under the Constitution of Pakistan, the federal government is empowered to sign and ratify international conventions and treaties, and to make policies. However, following the 18th Amendment of the Constitution, the power to make laws on "environmental pollution and ecology" has become a provincial subject since it omitted the entry on the relevant schedule which previously empowered both the federal and provincial governments to make laws on this subject matter. Therefore, it has now become the exclusive power of the provinces.[16]

Pakistan has ratified the Ramsar Convention, the Convention on Biological Diversity (CBD) and United Nations Framework Convention on Climate Change (UNFCCC). Wetlands in Pakistan comprise 9.7% of the total land area (78,000 ha) with more than 225 nationally significant wetlands, out of which 19 have been recognized as Ramsar sites.[17] Out of the 19 declared Ramsar sites, three are mangrove wetlands of global significance: the Indus Delta in Sindh province; Miani Hor and the Jiwani Coastal Wetlands in Balochistan.[18] The Ramsar Convention has helped to raise awareness and the regular reporting and meeting of its standing committee has encouraged Pakistan to protect its Ramsar sites to a certain degree and to identify new sites.[19] The international conventions have been able to raise awareness to formulate policies, and the committees formed in reference to these conventions provide regular reports for compiling data, which previously were nonexistent.

Despite mangroves being recognized as an important ecosystem, Pakistan does not have an overarching law specifically dealing with mangroves. There are certain laws that regulate mangroves, discussed below. It is important

11 *Ibid.*

12 *Ibid.*

13 Official Website of Forest Department, Government of Sindh. *Mangroves.* https://sindhforests.gov.pk/page-mangroves [Accessed 21 December 2018].

14 Khan, N. (20 April 2018). *Marathon mangrove planting sets a new world record for Pakistan.* http://www.arabnews.com/node/1288406/offbeat [Accessed 16 March 2019].

15 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

16 Constitution (Eighteenth Amendment) Act of 19 April 2010; The Constitution of Pakistan of 12 April 1973. Fourth schedule (concurrent legislative list) (No. 24).

17 Pakistan Paedia. *Wetlands of Pakistan.* http://pakistanpaedia.com/land/geo_8.html [Accessed 31 December 2018].

18 Ministry of Environment (2009). *Pakistan National Wetlands Policy.* Section 1.6.

19 Ramsar (13 May 2004). *Pakistan Designates three new designates three new Ramsar sites.* https://www.ramsar.org/news/pakistan-designates-three-new-ramsar-sites [Accessed 31 December 2018].

to start with the supreme law of the country, the Constitution of Pakistan, which does not provide for any direct right or duty towards the environment; however, the right to life guaranteed by the Constitution has been continuously expanded and enlarged by judicial interventions to include a right to a healthy and clean environment and the protection of natural resources as a public trust. The *Shehla Zia* case interpreted the right to life in a way that includes "…. clean atmosphere and unpolluted environment."[20] Subsequently, in 2005, the *Nestle* case, relying on Principle 2 of the Stockholm Declaration (1972), further expanded the right to life to include protection of natural resources as a public trust, stating "…natural ecosystems, must be safeguarded for the benefit of present and future generations."[21] This case is especially important, as the natural resource being discussed was fresh water. More recently, **in the *Asghar Leghari* case, the right to life was further expanded to include two new concepts, climate justice and water justice, as fundamental rights**.[22] The court directed the government to implement its Climate Change Policy and the framework for the implementation of Climate Change Policy (Climate Framework), as the non-implementation of the Climate Framework was affecting the fundamental rights of citizens.

## 8.2.2 Conservation and Management of Wetlands, Forest, and Biodiversity

### 8.2.2.1 Wetlands policy

Mangroves have a unique ecosystem, as they are considered both a type of forest and a type of wetland. The Pakistan National Wetlands Policy 2009 (Wetlands Policy) is the most significant central policy for the conservation and management of mangrove forests, and recognizes the importance of wetlands including mangroves globally and nationally for preserving biodiversity. The Wetlands Policy identifies a lack of legislation as being one of the main causes of the poor quality of wetlands.[23] It points out various reasons for deforestation in mangrove areas, including a lack of fresh water inflow, grazing of animals (camels and cows), over-use and illegal use of national resources, and an increasing population.[24]

It also provides recommendations, the most pertinent for mangroves being: creating and implementing a regulatory framework for wetlands; better coordination between agencies and sectors; capacity building for better management of wetlands including mangroves; education and awareness about the significance of mangroves and their wise use; promotion of mangrove research, education, and data management; and securing finances for the sustainable management of mangroves.[25] **It has been almost a decade since the Wetlands Policy was passed, but no progress has been made in drafting a law in furtherance of the Policy**, even though one of its main recommendations was to create a regulatory framework.

### 8.2.2.2 Forest laws

Equally important for the conservation and management of mangroves is the National Forest Policy. The Forest Policy includes coastal mangroves as one of the main types of forest.[26] It focuses on the need for the promotion of forestation and controlling deforestation. It also recommends, *inter alia*: formulating long-term plans and programs for forestation; integration of forestry with development policies and programs in various economic sectors such as water, energy, agriculture, tourism, and communication through mandatory environmental impact assessments (EIAs) for sectoral development programs;

20 *Shehla Zia v. WAPDA* (1994) SC 693. Constitution Petition.
21 *Sindh Institute of Urology and Transplantation etc. v. Nestle MilkPak Limited* (2005) CLC 424.
22 *Asghar Leghari v. Federation of Pakistan* (2018) Lahore 364. Constitution Petition.
23 Ministry of Environment (2009). *Pakistan National Wetlands Policy*. Annex 2.
24 *Ibid.*
25 *Ibid.*
26 Ministry of Climate Change (2015). *National Forest Policy, 2015*. Section 3.


allocation of funds by the provinces for the protection and expansion of forests; establishment of ecological corridors and identification of new protected areas for the cohesion of fragmented ecosystems; establishment of agencies for the wise use of wetlands including Ramsar sites; and wise use of floods for riverine and coastal forestry.[27]

In order to control deforestation, the Forest Policy suggests implementing REDD+ in accordance with international agreements; paying ecosystem services to private parties; purchasing communal or private forests, or the rights therein, which forests will then be declared protected; coordination between the various departments such as forestry, wildlife and fisheries; seeking international funding opportunities through effective and meaningful participation at meetings and international conventions, and then using these funds for forest protection and development; and upgrading out-dated forest management policies and laws.[28] Furthermore, the Forest Policy provides for allocating funds for its implementation to be reflected in the five-year plan/mid-term development framework, and for its provincial forestation programs.

Although the Forest Policy is an overarching framework for forestation and controlling deforestation, it is still skeletal and lacks important aspects. It does not provide any data on forest areas, their classifications, or the nature of the financial and ecological factors involved in their management and use. These data are crucial for a realistic assessment of the reality on the ground and for framing a workable policy instrument. The Forest Policy is general in nature and deals with "forests" as a whole without specifying their needs or distinguishing between the various types of forests, and hence fails to recommend measures that are unique to different forest ecosystems. However, the present federal government has a keen interest in afforestation and has an opportunity to look into improving the Forest Policy.[29]

Both provinces with mangrove forests have adopted the Forest Act, 1927, a pre-independence, colonial law, which deals with a certain level of mangrove protection. This Act was enacted to fulfil the economic requirements of the State and not for the conservation of nature.[30] It does not allow the general population to access these valuable resources.[31] Moreover, it continues to be used

27 *Ibid.*

28 *Ibid.* Annex 1.

29 Anon. (6 October 2018). *The govt's top priority is the 10 Billion Tree Tsunami Project.* https://dailytimes.com.pk/306736/the-govts-top-priority-is-the-10-billion-tree-tsunami-project/ [Accessed 21 December 2018].

30 The Forest Act of 21 September 1927. Preamble.

31 *Ibid.* Section 3.

without any meaningful amendments. Mangrove forests are only included in the definition of forests by implication, hence the Forest Act automatically applies to mangroves.

The Forest Act provides that forests may be declared reserved or protected forests. Reserved forests have the strictest protection and local communities are completely excluded from any kind of activity, though the government may allow right of passage, water, and grazing rights.[32] In protected forests the community rights continue, and the government can make rules to regulate their rights. The rules can regulate: cutting, sawing, converting, and removing trees and timber; the collection, manufacture and removal of forest produce; clearing and breaking up of land for cultivation or other purposes; cutting grass; and pasturing cattle in these forests.[33] Hunting, shooting, poisoning water, and setting traps or snares in protected forests is prohibited. The rules can also provide for granting licences to the inhabitants of towns or villages in the vicinity of protected forests in order to take trees or other forest produce for their own use. There are also licences for felling trees and timber for the purposes of trade.[34] Within protected forests the provincial government is entitled to declare any tree or class of trees to be reserved, and so the provisions for reserved forests will apply.[35] The Forest Act provides for penalties and imprisonment for violating these provisions.[36] However, as stated above, these provisions have not been sufficiently revised and the penalties fail to work as a deterrent.

**The Government of Sindh declared mangroves to be protected forests in 2010, which includes all of the mangrove forests in Sindh.**[37] In Balochistan, however, the mangroves have neither been declared reserved nor protected forests. Hence, they continue to be a vulnerable ecosystem without any special protection, even though they have been declared Ramsar sites.

### 8.2.2.3 Biodiversity policy

Pakistan approved the Pakistan National Biodiversity Strategy and Action Plan, 2017-2030 (PNBSAP) as part of its commitment to CBD.[38] Pakistan was among the 150 countries that signed CBD at the 1992 Rio Earth Summit, and ratified it in 1994. The Biodiversity Action Plan (BAP) of Pakistan was approved by the Pakistan Environment Protection Council in 2000 as the main instrument for implementing the Convention at a national level, with the objectives of mainstreaming the protection of biodiversity in the country's policies and planning to implement the 2010 Biodiversity Targets.[39] The BAP included 182 targets, 31 to be undertaken within a year, 81 within five years, and 25 within ten years. The PNBSAP reviewed the progress of the BAP in 2015, finding that 137 actions proposed in the Plan had to some extent been carried out, although implementation had been weak.[40]

The PNBSAP categorizes forests into five classes, conifers, scrub, riverine, mangroves and plantations, in order to differentiate their needs and requirements.[41] Although mangroves play a useful ecological role, their economic value is not well recognized. The PNBSAP itself quotes Global 200 Eco-regions (represented in Pakistan), which marks the Indus Delta's conservation status as critically endangered.[42]

The PNBSAP has highlighted various conservation initiatives for mangroves and wetlands that are

32 *Ibid.* Section 11.

33 *Ibid.* Section 32.

34 *Ibid.* Section 32.

35 *Ibid.* Section 30.

36 *Ibid.* Section 33.

37 Notification No. F&W(SOII)5(18)/2008 of 2 November 2010.

38 Pakistan (2015). *Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals 2017-2030.*

39 Pakistan Environmental Protection Council (1999). *Biodiversity Action Plan.*

40 Pakistan (2015). *Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals 2017-2030.* Executive Summary.

41 *Ibid.* Section 9.1.

42 *Ibid.* Section 11.1.

presently up and running. However, there is a need to scale up efforts to prevent loss of biodiversity and to consider the livelihoods of poor and marginalized populations. One of the action plans was to prepare Management Plans for mangrove forests based on an ecosystem approach, to be implemented by 2018, as well as a pilot project that will be launched to restore at least 7,000 ha of degraded mangrove ecosystems jointly with the local communities using sustainable use principles and the equitable sharing of benefits.[43] Protected areas covering at least 10% of marine areas of biodiversity significance are to be established and managed effectively for conservation and sustainable use.[44] However, the management plan which was to be implemented by 2018 has not yet been finalized.

### 8.2.2.4 Wildlife laws

In the 1970s, every province in Pakistan enacted wildlife laws after the ratification of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) for the meaningful adoption of this international convention. Wildlife protection laws in every province provide for wildlife sanctuaries and national parks; the concept is similar to the Forest Act, where certain areas are declared protected and regulated accordingly.[45] A wildlife sanctuary primarily sets aside an area for undisturbed breeding grounds and for protecting wildlife.[46] In these areas, no exploitation of forests, no residence, no cultivation or damage to vegetation, no hunting, no introducing exotic species, animals, plants or pollution, and no fishing or lotus collection for commercial purposes is allowed.

Provincial governments can also declare some areas for their protection and preservation as national parks.[47] National parks prohibit certain activities, including felling, tapping, burning or in any way damaging or destroying, taking, collecting or removing any plants or trees. Until now, no mangrove forests have been declared a national park or wildlife sanctuary, even though it has been recognized that mangroves are rich in biodiversity. These laws, alongside the Forest Act, provide a useful tool that could be used for the protection and conservation of biodiversity in the mangrove forests. In particular, three mangrove sites, i.e. the Indus Delta, Miani Hor and Jiwani, as Ramsar sites with numerous species of birds and fish which require protection, would meet the criteria for protection under these laws.

### 8.2.2.5 Fisheries laws

The Fisheries Laws in Sindh and Balochistan provide for fishing subject to a licence granted by a competent authority.[48] These laws prohibit fishing in certain areas and for certain times. The Sindh Fisheries law provides for declaring certain public waters to be fish sanctuary where no fishing may be carried out without a special permit.[49] The law also prohibits discharge of untreated effluence or waste from any factory or sewerage in any waters.[50] Moreover, the use of poison, lime or noxious material in any waters with the intention of catching or destroying fish is prohibited.[51] The Balochistan Sea Fisheries Ordinance also has a similar provisions.[52] The law provides that the Government of Balochistan may prohibit fishing in certain areas for certain times and impose conditions.[53] For the protection

43 Pakistan (2015). *Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals 2017-2030*. Section 11.3.

44 *Ibid.*

45 Sindh Wildlife Protection Ordinance of 13 April 1972; The Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act of 28 March 2014.

46 Sindh Wildlife Protection Ordinance of 13 April 1972. Section 15; The Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act of 28 March 2014. Section 36.

47 Sindh Wildlife Protection Ordinance of 13 April 1972. Section 15; The Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act of 28 March 2014. Section 35.

48 Sindh Fisheries Ordinance of 24 January 1980. Section 3; Balochistan Sea Fisheries Ordinance of 6 July 1971. Section 3.

49 Sindh Fisheries Ordinance of 24 January 1980. Section 6.

50 *Ibid.* Section 8.

51 *Ibid.* Section 7.

52 Balochistan Sea Fisheries Ordinance of 6 July 1971. Section 5.

53 *Ibid.* Section 6.

of fish, the Government of Balochistan may also prohibit a licencee from fishing within three miles of the coastline of Sonmiani and Jiwani along with few others, except with special permission of the fisheries officer.[54] In 2017, Balochistan declared "Safe Dori" within Miani Hor as a prohibited area for fishing. This is a big step towards conserving threatened fish resources and towards Miani Hor, a significant mangrove area and Ramsar site, being declared as protected area.[55]

### 8.2.3 Safeguarding against major threats: freshwater availability, climate change, urbanization and unsustainable development

#### 8.2.3.1 Water laws

One of the most serious threats to the existence of mangroves is the availability of fresh water. Water availability and distribution have historically been an area of concern. In 1991, an agreement to share the waters of the Indus River was reached between four provinces in the country in the form of the Water Apportionment Accord.[56] The Water Accord is based on both the existing and future water needs of the four provinces. The agreement for the first time also discussed minimum discharges into the sea below Kotri, in order to control sea water intrusion. Sindh tried to negotiate for 10 million acre-feet of minimum discharge, but due to several conflicting studies that stated different levels were required to control the sea water intrusion, the provinces deferred the decision regarding the exact quantities that could be discharged into the sea.

At a provincial level in Sindh and Balochistan, water authorities were set up to deal with water management in these provinces. The Sindh Water Management Ordinance 2002 (Sindh Water Management) provides for the distribution and delivery of irrigation water, the removal of drainage water, and the management of floodwaters. For these purposes, the Sindh Irrigation and Drainage Authority (SIDA), a regulatory authority, was set up.[57] In Balochistan, in a similar way, the Balochistan Irrigation and Drainage Authority Act 1997 created the Balochistan Irrigation and Drainage Authority (BIDA), which is responsible for irrigation, drainage, and flood control systems.[58]

Pakistan recently approved the long awaited National Water Policy 2018, which identifies Pakistan as a country that will soon be "water scarce".[59] This Policy is a national framework within which provinces can develop master plans for the sustainable development and management of water resources. The Water Policy aims through its objectives to enhance the availability, reliability, and quality of fresh water resources to meet critical municipal, agricultural, energy, security and environmental needs.[60] Certain measures provided by the Water Policy are significant for mangroves. It provides for the protection of wetlands and RAMSAR sites for the preservation of wildlife, flora, and fauna; the stoppage of further sea water intrusion into Sindh (upstream from the coastline); the sustainability of the coastal environment and mangrove growth; for climate change impact assessment and adaptation; for sustainable water resource development and management; for the preservation of the Delta area by regularly providing sufficient supplies; and for the effective implementation of the 1991 Water Apportionment Accord in letter and in spirit.[61]

Several strategic initiatives have also been identified that will be taken at a federal and provincial level, including: promotion of water efficiency and conservation at all levels; measures to ensure environmental sustainability; priority

54 Balochistan Sea Fisheries Rules of 12 July 1971. Section 9.

55 Anon. (28 January 2017). *Fishing in Safe Dori banned*. https://www.dawn.com/news/1311242 [Accessed 28 May 2019].

56 Water Apportionment Accord of 21 March 1991.

57 Sindh Water Management Ordinance of 26 October 2002. Section 3.

58 Balochistan Irrigation and Drainage Authority Act of 19 July 1997. Section 3(1).

59 Ministry of Water Resources (2018). *National Water Policy*. Preamble.

60 *Ibid*. Section 2.3.

61 *Ibid*. Section 2.23, 2.24, 2.27, 2.31, 2.33.

water use for livestock, fisheries, wildlife, the environment, river systems, wetlands, and forestry; and the adoption of a National Wetlands Management Plan to conserve and protect wetlands and Ramsar sites and to ensure the security and safety of endangered habitats.[62] The Policy also looks into economic and financial sustainability for water users, and provides that water for environmental and ecological use will be free of cost.[63]

### 8.2.3.2 Climate change policy

Climate change is another grave threat to mangroves; Pakistan is one of the most vulnerable countries to climate change.[64] Its 2012 Climate Change Policy (CCP) notes that Pakistan's forest cover, including mangroves, is decreasing.[65] It states that the increased intrusion of saline water into the Indus Delta is adversely affecting mangroves and fish species therein.[66] Projected sea level rise and increased cyclonic activity due to high sea surface temperatures will also adversely affect the coastal areas and the mangroves there.[67] The CCP also predicts water-sharing issues between upper and lower rivers with a decreasing availability of water.[68]

The CCP suggests climate change adaptation measures for various natural resources and ecosystems. The Framework for Implementation of the CCP was drafted to provide a detailed framework for a better understanding and implementation of these measures.[69] It includes priority measures to be accomplished within two years starting from 2014, short-term measures to be accomplished within five years and long-term measures to be completed by the year 2030.

The Framework addresses sea-water intrusion by allocating the requisite water flow downstream to the Kotri barrage and into the sea, necessitates the enactment of laws for efficient water resource management as a priority.[70] Both the CCP and the Framework also note that expanding the protected areas network in the country, especially in vulnerable eco-systems in coastal and marine areas, would protect mangroves.[71] Further, the CCP suggests establishing the blue carbon sequestration capacity of mangroves, sea grasses, and tidal marshes, and working towards their restoration.[72]

**The CCP and the Framework recognize the importance of protecting and regenerating mangroves in order to provide a natural barrier to control sand and soil erosion, and to minimize the disastrous impact of cyclones and tsunamis.**[73] The CCP, like the PNBSAP, suggests that it is a priority to set up an appropriate effective management authority to manage wetlands and Ramsar sites.[74] However, most of the priorities and short-term measures have not been fully implemented; their implementation is lagging behind due to financial constraints and the lack of a proper monitoring authority.

Furthermore, Pakistan's first Nationally Determined Contribution (NDC) only refers to wetlands as being promising areas for carbon sequestration and does not set up an action framework in this regard.[75] In addition, Pakistan did not develop any policy instrument on carbon

62 *Ibid.* Section 3.7.3, 3.7.4, 4, 6, 6.4.

63 *Ibid.* Section 25.2.

64 Ministry of Climate Change (2012). *National Climate Change Policy*. Section 3; Climate Change Division (2013).

65 *Ibid.* Section 4.4.

66 *Ibid.* Section 3.

67 *Ibid.*

68 *Ibid.*

69 Climate Change Division (2013). Framework for Implementation of Climate Change Policy (2014-2030).

70 *Ibid.* Section 4.

71 Ministry of Climate Change (2012). *National Climate Change Policy*. Section 4.5, 4.6; Climate Change Division (2013). *Framework for Implementation of Climate Change Policy (2014-2030)*. Section 7, 10.

72 Ministry of Climate Change (2012). *National Climate Change Policy*. Section 4.4, 5.7.

73 *Ibid.* Section 4.6; Climate Change Division (2013). *Framework for Implementation of Climate Change Policy (2014-2030)*. Section 7.

74 Climate Change Division (2013). *Framework for Implementation of Climate Change Policy (2014-2030)*. Section 10.

75 Pakistan's first Intended Nationally Determined Contribution (submitted 10 November 2016). UNFCCC.

sequestration that could highlight the value of the mangrove ecosystem in climate change mitigation.

### 8.2.3.3 Environmental Impact Assessment processes

Pollution and urbanization are also serious issues for mangrove habitats and there is a growing need to regulate these threats. Sindh and Balochistan have enacted environmental laws which to a large extent are quite similar and were developed from an earlier federal law which is now restricted to the federal capital after the 18th Amendment of the 2010 Constitution.[76] The laws in both provinces deal with the protection, conservation, rehabilitation, and improvement of the environment, the prevention and control of pollution and the promotion of sustainable development.

Both Environmental Acts provide for an EIA as a mandatory requirement to be undertaken prior to any activity that adversely affects the environment.[77] For the sake of legal clarity, both environmental authorities have prepared a list of projects which compulsorily require an EIA, such as hydroelectric power generation of over 50 megawatts, mining, dams, various specified industries, and reservoirs with a storage volume of 50 million cubic metres etc. If any project is set up in or around a mangrove area, and adversely affects the environment, it will require the approval of the Environmental Agency.[78] The Sindh provincial agency can by notification also declare an area to be environmentally sensitive, although to date no mangrove areas have been declared as such.[79] Both Acts impose a right to a public hearing and the obligation of public participation before any approval of the EIA.[80]

A serious issue with regard to EIA approval is that **if the Agency does not approve or reject an EIA within four months, it will be deemed approved.** Hence, any delay by the Agency may make the whole process meaningless. Even though a federal environmental act was passed in Pakistan in 1997, and the subsequent provincial acts were inspired by that act, they are still skeleton laws; the environmental acts fail to provide an organizational structure (see Section 8.3). The environmental acts also lack detailed rules and regulations; there is a need to revisit the penalty structure and to provide equally good incentives for meaningful implementation.

The laws in various sectors have been framed to a certain extent to provide protection for mangroves, as detailed above. However, proper designation and implementation have not yet taken place, such as the declaration of protected areas, of national parks, and sanctuaries, or a decision on how much water can be discharged into the sea. There has been no proper implementation of the Water Accord, or development of effective rules and regulations under the environmental laws.

## 8.3 Institutional level: A decentralized framework that lacks capacity

In evaluating the management and control of mangroves, it is meaningful to look at all the players in control of the delta area, at both the provincial and federal level. Principally, the Board of Revenue is the custodian of all provincial land until it is transferred to another department.[81] The Board of Revenue is entrusted with carrying out the business of provincial governments, including land use, the removal of encroachment by public property and wastelands.[82] The Sindh Board of Revenue presently controls a total of 260,000 ha

76 The Pakistan Environmental Protection Act of 3 December 1997; Balochistan Environmental Protection Act of 15 January 2013; Sindh Environmental Protection Act of 20 March 2014.

77 Sindh Environmental Protection Act of 20 March 2014. Section 17(1); Balochistan Environmental Protection Act of 15 January 2013. Section 15(1).

78 Sindh Environmental Protection Act of 20 March 2014. Section 17. Balochistan Environmental Protection Act of 15 January 2013. Section 15.

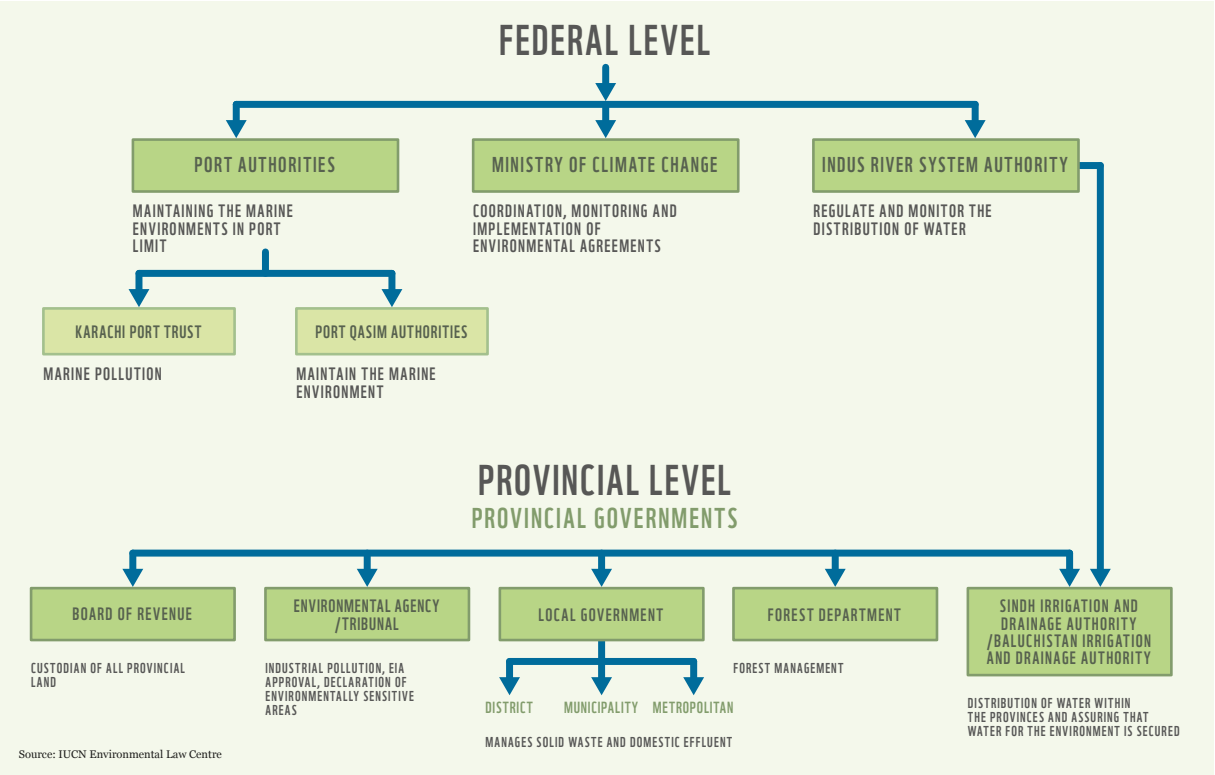
79 Sindh Environmental Protection Agency Notification No. EPA/TECH/739/2014 on EIA Regulations. Section 23.

80 Sindh Environmental Protection Act of 20 March 2014. Section 17(3), 31; Balochistan Environmental Protection Act of 15 January 2013. Section 15(3).

81 For Sindh, the Sindh Board of Revenue and for Balochistan, the Balochistan Board of Revenue.

82 Sindh Government Rules of Business of 20 November 1986. Schedule II; Balochistan Government Rules of Business of 17 December 2012. Schedule I(2).

**Figure 15:** Institutional framework for mangrove management in Pakistan




out of 600,000 ha of the Indus Delta area.[83] The Board of Revenue transferred 345,000 ha to the Forest Department in 1958 to be allocated as exclusively forestland; in 1973 another 64,000 ha were transferred to the Port Qasim Authority (PQA).[84] Hence, the Forest Department, the Board of Revenue, the Defense Housing Society, and the Port Authorities currently share the management and control of the Indus Delta.

### 8.3.1 Federal level institutions

At a national level, the most important institution is the Ministry of Climate Change, the focal ministry for coordinating, monitoring, and implementing environmental agreements with other countries, international agencies, and forums, and for formulating national policies, plans, strategies and programmes with regard to forestry, wildlife, biodiversity, and desertification. The Ministry has been effective at keeping its international commitments, in formulating policies, and in sending timely reports. In 2014 the Ministry of Climate Change, in collaboration with IUCN, enhanced the capacity of coastal communities to ensure the sustainable use of fisheries and mangrove resources, by providing training and regular workshops for the local communities.[85]

One hopeful step the recent federal government has taken is that it has pledged to plant ten billion trees in the next five years.[86] "It was always in my mind that we needed to regenerate our forests because there was a massive destruction of our forests by the timber mafia, one of the most powerful mafias," stated the incoming Prime Minister as he pledged to plant ten billion trees.[87]

The present federal government has a keen interest in the conservation and protection of the environment, and it is hoped that the Ministry will be more active in different environment programs internationally. An advisor to the Prime Minister

83 Official Website of Forest Department, Government of Sindh. *Mangroves*. https://sindhforests.gov.pk/page-mangroves [Accessed 21 December 2018].

84 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

85 Ministry of Climate Change (2015). *Achievements of the Ministry of Climate Change*.

86 Anon. *supra* note 29.

87 Gul, A. (6 August 2018). *Pakistan's Incoming Government to Plant "10 Billion Trees"*. https://www.voanews.com/a/pakistan-incoming-government-to-plant-10-billion-trees-/4516212.html [Accessed 29 December 2018].

on climate change is the Global Vice-President of the IUCN Global Council.[88]

The two federal port trust authorities in Sindh which have mangrove forests under their control are the Karachi Port Trust (KPT) and PQA. KPT was established in 1886 to manage the port's affairs, while the government defines the port's limits.[89] The Karachi Port area had thick mangrove forests, but as mangroves were not considered to be forests until 1958 and there was no protection for them, over the next century most were lost and now only a small area is left. The harbour extends over 62 sq. km. and has to deal with various kinds of pollution from inland, untreated industrial, and municipal waste, as well as other serious pollutants, such as oil spills and other pollutants from ships and boats. Its Marine Pollution Department is involved in the regular monitoring of harbour cleaning, inspecting boats, oil spill response, environmental auditing of companies handling oil and chemicals, and water quality monitoring. Around 1000 ha of mangrove forest still exists within the jurisdiction of the KPT, and the Marine Pollution Department is in charge of the protection and preservation of these mangrove forests and is also working towards their rehabilitation.[90]

PQA was allocated 380,000 acres (154,655 ha) of land to establish the port, which included 64,000 ha of the Indus Delta area.[91] According to the Director General (Technical) of PQA, more than 60,000 acres (24,300 ha) of mangrove forest currently exist within the port area.[92] The Authority is allowed to prepare master plans and phased master programmes, and to develop the port area after approval by the Pakistani government.[93] These schemes can relate, inter alia, to land use, zoning, land reservation, and environmental control, and the prevention of pollution.[94] The Act also requires that the Authority is responsible for maintaining the marine environment within the port's limits in order to ensure that the sea, land, and air are free from pollution.[95] To combat environmental pollution, every project proponent is required to file an Initial Environment Examination (IEE) or an EIA with the Authority, and to obtain its approval before construction or the commencement of operations.[96] As the Sindh Environmental Protection Agency has the same powers as stated above, it is the Environmental Agency that gives any final approval and not the Port Authority, as the provisions of the Sindh Environmental Protection Act 2014 override the provisions of earlier laws.[97]

**The Port Authorities, unlike other agencies and institutions, have sufficient funds and manpower to monitor their jurisdiction, but the protection of mangroves is not their primary objective.** Running the port lucratively and successfully is their main goal and a lot of the time this will conflict with protecting the mangroves. According to Rafiul Haq, an ecologist, "Mangroves that come under the control of PQA and KPT are the most vulnerable."[98] The Marine Pollution Department of the KPT has generally been effective at controlling pollution in the port, although a large area of mangroves was cleared when the Mai Kolachi underpass was constructed.[99] More recently, the Marine Pollution Department has started a project to make a wetland park which would provide protection for the mangroves and ecology, and control pollution in the area, but

88 IUCN (8 February 2017). *The IUCN Global Council elects former Minister of State for Environment Malik Amin Aslam Khan as its Vice President*. https://www.iucn.org/news/pakistan/201702/iucn-global-council-elects-former-minister-state-environment-malik-amin-aslam-khan-its-vice-president [Accessed 17 January 2019].

89 Karachi Port Trust Act of 1886. Preamble(3).

90 Karachi Port Trust. *Marine Pollution*. http://kpt.gov.pk/pages/Default.aspx?id=112#page-heading [Accessed 22 December 2018].

91 Interview with Shabir Anwar Kazi, Director General (Technical), Port Qasim Authority, 5 October 2018.

92 *Ibid.*

93 Port Qasim Authority Act of 29 June 1973. Section 10.

94 *Ibid.* Section 11(2)(a), 11(2)(6).

95 *Ibid.* Section 71B.

96 *Ibid.* Section 71C.

97 Sindh Environmental Protection Act of 20 March 2014. Section 35.

98 Anon. *Losing Sanctuary - Unless steps are taken to conserve mangroves, climate change will wreak havoc on Pakistan's coastline*. http://labs.tribune.com.pk/losing-sanctuary- [Accessed 24 December 2018].

99 Anon. (2 December 2017). *Then and now: How the mangroves at Mai Kolachi have shrunk in size over the years*. https://www.samaa.tv/news/2017/12/then-and-now-massive-chunk-of-land-reclaimed-at-mai-kolachi-since-2001/ [Accessed 21 January 2019].

there is no mention of these parks in the Karachi Port Trust Act.[100] The Director General Technical at the PQA stated that efforts are made to keep the ports clean of oil spills, and to conserve the mangroves as they have an environmental remit.[101] Despite both ports having funds and manpower, the mangroves will remain vulnerable until the approach of the Port Authorities moves towards sustainable development.

The Indus River System Authority (IRSA) was established to regulate and monitor the distribution of water between provinces.[102] Fresh water flow into the Delta is vital for the survival of the mangroves, as stated above, and the IRSA is the Federal Institution that ensures this flow into the Delta. The IRSA is responsible for implementing the Water Accord, which has remained unchanged for the last quarter of a century. It is difficult for the IRSA to function efficiently, as the Accord lacks clarity in its objective, which mainly consists of supplementary documents. Lack of precise goals and clarity in its objectives makes it hard for IRSA to implement a number of thematic issues, relating to environmental flows, urban water, and water quality. The water balance accounting in the Indus Basin lacks accuracy and a large volume of water is unaccounted for.[103] The IRSA has become unable to guarantee the amount of water going into the Delta, as to date the provinces affected by the Accord have not been able to decide the minimum amount to be discharged, due to a lack of correct and reliable data regarding the availability of water.

### 8.3.2 Provincial level institutions

At the provincial level in both Sindh and Balochistan, the main implementing bodies are the Sindh Environmental Protection Agency (SEPA) and the Balochistan Environmental Protection Agency (BEPA). On paper, these institutions have significant powers and multiple functions, including preparing environment quality standards, reviewing and approving EIAs, and subsequently monitoring projects to control environmental pollution; one imagines a vibrant and effervescent body with immense resources. Unfortunately, on the ground, BEPA has remained largely ineffective over the three decades since its creation. Both Environmental Agencies lack an effective organizational structure; as the laws in both provinces only provide for the Director General and fail to provide a detailed organizational structure along with its functions and powers.[104] The entire responsibility falls on the Provincial Governments to appoint officers as and when it thinks the Environmental Agencies require them.[105] Unfortunately, the Governments have shown no interest in empowering the environmental agencies in any of the provinces, and so they have remained ineffective. Hence, implementation becomes not only challenging but literally impossible due to a skeleton structure and a lack of funds and political will. As 80% of the budget is spent on salaries, no resources are available for monitoring and enforcement.[106] There has been felling and cutting of mangrove forests, and untreated water from industries has been going into the sea for years, but no action has been taken against the violators.[107] Last year, an EIA was approved by SEPA for the Liquefied Natural Gas project which involved cutting more than 800 mangrove trees without a "no objection certificate"

100 Karachi Port Trust. *Ongoing Project (3) - Wetland Park Including Sewage Treatment Plant & Chandi Park*. http://kpt.gov.pk/pages/Default.aspx?id=143#page-heading [Accessed 22 December 2018].

101 Interview with Shabir Anwar Kazi, Director General (Technical), Port Qasim Authority, 5 October 2018.

102 The Indus River System Authority Act of 10 December 1992. Preamble.

103 Anwar, A.A. and Bhatti, M.T. (2018). Pakistan's Water Apportionment Accord of 1991: 25 years and Beyond. *Journal of Water Resources Planning and Management* 144(1).

104 Sindh Environmental Protection Act of 20 March 2014. Section 5(4); Balochistan Environmental Protection Act of 15 January 2013. Section 8(2).

105 Sindh Environmental Protection Act of 20 March 2014. Section 5(3); Balochistan Environmental Protection Act of 15 January 2013. Section 8(3).

106 Interview with Waris Ali Gabol, Deputy Director (Technical), Sindh Environmental Protection Agency, 2 October 2018.

107 Mumtaz, H. (27 February 2017). *Poisoned Ocean*. https://www.dawn.com/news/1317166 [Accessed 17 January 2019].


from the Forest Department.[108] Furthermore, the Environmental Tribunals, which were constituted under the Environmental Protection Acts and have appellate and criminal jurisdictions, have not been effective for a number of reasons; they have been dysfunctional for long periods of time due to a lack of chairperson or members; their procedures are time consuming; their penalties do not pose any major threat to large-scale polluters; and most evidence submitted is defective and thus rejected.[109] However, as mentioned earlier, the Constitutional Courts, High Courts, and Supreme Court have taken up serious environmental cases under "right to life" which is a fundamental right under the Constitution (Section 8.2.1).

Alongside the Environmental Agencies, which are responsible for handling industrial pollution, the Local Governments (Metropolitan Corporation, Municipal Corporation and District Corporation at various levels) are responsible for the management of solid waste and domestic effluent.[110] **To date, for a population of more than 14 million people in the city of Karachi, there are no functional wastewater treatment plants.** Hence, all of the waste ends up in the sea, thus seriously affecting the health of the mangroves.[111]

The Local Government laws are still fairly new and there are gaps in the laws and procedures, and in their implementation. Both the Sindh and Balochistan Local Government Laws have been promulgated to establish political institutions. The Sindh Local Government is restricted to mostly basic municipal services. However, neither the Local Government Laws nor the Constitution of Pakistan mandates immediate re-elections for Local Governments within a stipulated period in case they complete their terms or dissolve early, which makes them dysfunctional. Further, the powers of the Karachi Metropolitan Corporation (KMC) under the Sindh Local Government Act are limited given its status as the largest Local Government body in Sindh.[112] Some key Local Government functions do not fall under the authority of the KMC, such as health, environment and overall development. The Provincial Finance Commission (PFC) is provided under the Local Government Acts to allocate funds to the Local Governments efficiently and equitably, although these commissions are not fully functional due to

108 Ilyas, F. (7 May 2017). *SEPA violating law: forest dept.* https://epaper.dawn.com/DetailImage.php?StoryImage=05_07_2017_118_008 [Accessed 22 December 2018].

109 Sindh Environmental Protection Act of 20 March 2014. Section 25, 26; Balochistan Environmental Protection Act of 15 January 2013. Section 28, 29; Interview with Waris Ali Gabol, Deputy Director (Technical), Sindh Environmental Protection Agency, 2 October 2018.

110 Sindh Local Government Act of 16 September 2013; Balochistan Local Government Act of 13 May 2010. Schedule II(Part II).

111 Anon. (23 November 2018). *Endangered mangroves.* https://www.dawn.com/news/1447157 [Accessed 22 December 2018].

112 Sindh Local Government Act of 16 September 2013. Section 17(4).

delayed elections. Further, there is still ambiguity and overlap of financial powers between the different tiers of the Local Governments.[113]

Equally imperative is the Forest Department, which has been managing the mangroves for the last 50 years. Over the last two decades, it has been actively involved in the rehabilitation and conservation of mangroves, and the last decade has seen some positive initiatives and results. Sindh declared mangroves protected forest and subsequently, in 2017, the Sindh Forest Department for the first time appointed a Chief Conservator of mangroves and rangelands for the exclusive management of mangroves. Mangrove forest falls within two divisions of Sindh province. Each division has 40 to 50 forest officers, which are not sufficient for monitoring, protection, and rehabilitation.[114] In addition, the Forest Department lacks the ability to police the area and needs better coordination with other departments; over the years it has coordinated with and received the support of the Navy for surveillance and policing, which has helped prevent the felling and cutting of trees. However, on a positive note, the Sindh Forest Department recently presented a proposal for the improvement of mangrove ecosystems in the Indus Delta. The regeneration, restoration, and protection of riverine forests over 100,000 acres has also been proposed.[115] According to the Chief Conservator of mangroves and rangelands, the Sindh Forest Department has rehabilitated more than 100,000 ha of mangroves in the last 25 years.[116] With support of verious conservation and armed organizations such as WWF, IUCN, Pak Navy etc.

At a provincial level, the Sindh Irrigation and Drainage Authority (SIDA) and the Balochistan Irrigation and Drainage Authority (BIDA) are responsible for the distribution of water within the provinces and assuring that water is secured for the environment. SIDA is responsible for guaranteeing a minimum discharge below the Kotri Barrage to prevent sea water intrusions. SIDA also looks into the tasks and functions of integrated water management, and conducts studies to minimize any adverse environmental effects from its policies and operations.[117] An important task for SIDA is to receive irrigation water from the barrages within the province and/or from inter-provincial canals, and to deliver the same water to various bodies and users, such as Area Water Boards (AWBs), Farmers' Organizations (FOs), industries or wetlands, and other agricultural users in agreed quantities, while at the same time guaranteeing a minimum discharge below the Kotri Barrage to prevent sea water intrusion. This arrangement is to be made subject to provisions agreed with IRSA.[118]

BIDA's general duties are subject to the provisions of the Indus Water Treaty 1960 and the Water Apportionment Accord 1991: to receive irrigation supplies from barrages within the province and/or from the inter-provincial/link canals, and to deliver the same water in agreed quantities to various Area Water Boards in the province. It should also have control of all the rivers, canals, drains, streams, hill torrents, springs, and underground water resources within the province.[119] BIDA is also responsible for making and implementing policies and regulations to improve and preserve the water resources on an environmentally sustainable basis.[120] BIDA should also be responsible for the optimal use of water resources in the Province on an equitable and efficient basis with proper planning, design and construction, as well as improved irrigation, drainage, storage reservoirs and flood control systems.[121]

Both SIDA and BIDA lack the funds, training and ability to efficiently control water flows. SIDA

113 Murtaza, N. and Rid, S.A. (2017). *Undermining Local Governance: A Review of the Sindh Local Government System, 2013*.

114 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

115 Kunbhar, Z. (1 October 2018). *Sindh to plant 2bn saplings*. https://dailytimes.com.pk/304791/sindh-to-plant-2bn-saplings/ [Accessed 21 December 2018].

116 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

117 Sindh Water Management Ordinance of 26 October 2002. Section 67, 68(1)(a), 70, 10.

118 *Ibid.* Section 11(1)(c), 11(1)(j).

119 Balochistan Irrigation and Drainage Authority Act of 19 July 1997. Section 3, 8(a)(1),13.

120 *Ibid.* Section 8 (b)(1).

121 *Ibid.* Section 8(c)(2).

would only be able to guarantee a minimum discharge if it received the accurate data which is missing. Furthermore, both the authorities have delegated their work to the AWB and FOs; however, their powers overlap and the law lacks clarity for proper implementation.[122]

Across the board, institutional structures are under-staffed and lack training and proper qualifications. In addition, most institutions have critical financial constraints that prevent them from implementing the law in letter and in spirit.

## 8.4 Behavioural level: Restoration attempts undermined by a strong mafia and destructive behaviours

### 8.4.1 Coastal communities

Coastal communities in Pakistan include fishermen communities, migrants, and people who graze and browse camel. All three communities have a distinct relationship with the mangroves. The fishermen communities have been there for generations and have a special relationship with the mangroves; they understand their dependency on the mangroves, as they realize that they are the first barrier against cyclones or tsunamis. During the 1999 cyclone, more than 6,000 people lost their lives and had it not been for the mangroves many more would have died.[123] Furthermore, the community is now well aware of the financial value of the mangroves, as they are the breeding grounds of numerous species which support their livelihoods. They have over the years planted trees along with the Forest Department and NGOs, and have also looked after the well-being of the forests. According to fishermen, the Forest Department is making efforts at planting, but the implementation of the prohibition on cutting trees is very weak. The fishermen believe the decrease of freshwater has caused land erosion and significantly affected the mangroves' growth and the overall health of the Delta.[124]

There is no accurate documentation about the numbers of migrants to the coastal areas who are dependent on the mangroves. It is believed that there is a large population of migrants from Afghanistan, Bangladesh, and from affected areas in Pakistan. Over the decades, the coastal areas have attracted many migrants, and as there are no proper facilities available, these people rely on mangrove trees for fuel, thus severely affecting the mangroves.[125]

The fishermen communities have identified them as a serious threat to the mangroves, as they cut mangroves indiscriminately; they do not collect

### Involving local communities in Sindh Province

Sindh Government has taken up the challenge of working with local communities to plant two billion trees in various ecosystems, such as riverine, mangroves, scrub, and rangelands. It recommends establishing a new mangrove block of 250,000 acres in mudflats in the Indus Delta. For better implementation and sustainability of the mangroves, a watch and ward system has been proposed that involves local communities for the protection and restocking of old mangrove stands over 200,000 acres. Previously the local communities were only involved in plantations; now they are trained to look after and monitor the mangroves along with the Forest Department.[126]

122 Sindh Water Management Ordinance of 26 October 2002. Section 28, 29, 40.

123 Interview with the Rehri Goth community of fishermen, 4 October 2018.

124 *Ibid.*

125 Interview with Fayaz Rasool, Manager, Karachi Port Trust, 3 October 2018.

126 Kunbhar, Z. (1 October 2018). *Sindh to plant 2bn saplings*. https://dailytimes.com.pk/304791/sindh-to-plant-2bn-saplings/ [Accessed 21 December 2018]; Daily Times (6 October 2018). *The govt's top priority is the 10 Billion Tree Tsunami Project*. https://dailytimes.com.pk/306736/the-govts-top-priority-is-the-10-billion-tree-tsunami-project/ [Accessed 21 December 2018].


dead wood or small branches, but take whole trees. The trees are also sold directly in the market as raw material for furniture making.[127] Camel browsing and grazing has also been flagged as a threat by the Forest Department and the fishermen communities; the nomads who own camels have little or no knowledge of the laws on the protection of mangroves. Camels damage both new plantations and even fully-grown trees; a non-traditional approach would be to put up temporary ecological fencing to address this issue.[128] It is estimated that there is a population of at least 16,000 camels in the mangrove areas grazing and tramping, which, according to an expert, are a threat to the growth of the trees, and cause a serious depletion of fresh water.[129]

### 8.4.2 Fishermen groups

In 2011, hundreds of fishermen held a protest against the illegal cutting of mangroves by government officials. Protestors indicated that around 27 acres of mangrove-covered land at Kakapir had been cleared.[130] Activists from the Pakistan Fisherfolk Forum (PFF) staged a rally on Mauripur Road against the removal of mangroves from the city's coastal areas and demanded action against all those involved in this destructive activity, carrying banners with slogans against certain influential people from the area who, they believed, were covering for the culprits.[131]

Subsequently, Abdul Ghani and Haji Abu Bakar, two fishermen and representatives of the PFF, filed a public interest litigation at the Sindh High Court to secure the ecology and rights of fishermen, a case on the degradation or felling of mangroves.[132] The petition requested that the clearing of mangroves be stopped, as it was affecting the habitat of the area, including fish and other species. An interim order was given to restrain people from cutting more mangroves; it instructed an area police officer to ensure compliance with the order and to maintain vigilance regarding the activities of any person engaged in cutting mangroves. A commission was constituted to inquire into the matter and

127 Interview with the Rehri Goth community of fishermen, 4 October 2018.
128 Interview with Dr. Babar Khan, WWF, 1 October 2018.
129 Interview with Tahir Quershi, IUCN, 5 October 2018.
130 Anon. *supra* note 99.
131 *Ibid.*
132 *Ibid.*

submit a report. However, both petitioners were allegedly brutally murdered by a group of land mafia who were engaged in destroying mangrove forest, as they were at the forefront of the PFF campaign to stop them.[133] **Due to the deaths of the petitioners the case was dismissed for non-prosecution, and no other petition has been filed since.**

### 8.4.3 Non-governmental organizations

In Pakistan, the most positive impact on mangroves has come from the IUCN initiative Mangroves for the Future (MFF) and the WWF programme Indus for All, along with support from other international agencies. Both environmental organizations have been working at every level, from their research and data collection, to raise awareness among local communities, about plantation and protection. IUCN and the WWF in collaboration with the Forest Department have undertaken many plantation expeditions and have also involved communities in these plantations and in subsequently looking after the saplings. Indus for All and MFF, have laid the foundations for the conservation and sustainable use of wetland biodiversity in the country. However, there is a need to scale up efforts to prevent loss of biodiversity and to consider the livelihoods of poor and marginalized populations.

IUCN was established in Pakistan in 1985 and since 1990 it has been actively working in the mangrove area. Pakistan has been a member of MFF since 2010. MFF has brought the relevant stakeholders on board, and which could work towards much needed "integrated coastal management."[134] IUCN has conducted numerous restoration and rehabilitation projects in the Port Qasim area with different partners. For instance, a major project with Engro consists of the rehabilitation of 50 ha which were removed to set up a project and which were to be replaced by 500 ha over two years.[135] The Sui Southern Gas Company, also in collaboration with IUCN, planned to plant around 11,000 mangrove trees.[136] In May 2018, the Pakistani Navy along with IUCN and MFF undertook to plant two million trees along the coastlines of Sindh and Balochistan.[137]

WWF, like IUCN, has a keen interest in protecting and rehabilitating mangroves; it plans to plant 14,000 ha of mangrove forest, out of which 3000 ha are planned to be multiple varieties for better biodiversity. A recent WWF campaign was the *Rung Do* tree plantation project, through which many companies have pledged to plant mangroves by next year (200,000 trees by the Pakistan Telecommunication Company Limited and 180,000 by Careem).[138] WWF has been working with local communities, including raising awareness and the rehabilitation of trees. WWF is also working on finding better green energy solutions such as providing gas using bio-energy; developing eco-fencing for camels; and introducing beehives to mangrove areas to try to make the local communities realize the need to protect the forest. The Forest Department and WWF recently mapped out new areas for mangrove plantations over the next five years.[139]

## 8.5 Outcome level: Conservation efforts countered by industry and urbanization

While mangrove coverage is decreasing globally, it is increasing in Pakistan. A 2012 survey and a GPS maps analysis from 2017 both showed an

133 *Ibid.*

134 Mangroves For the Future. *Pakistan*. https://www.mangrovesforthefuture.org/countries/members/pakistan/ [Accessed 31 December 2018].

135 IUCN. *Mangroves Ecosystem in Port Qasim Area*. https://www.iucn.org/asia/countries/pakistan/mangroves-ecosystem-port-qasim-area [Accessed 22 December 2018].

136 IUCN. *Restoration and rehabilitation of mangroves ecosystem along the coasts of Pakistan*. https://www.iucn.org/asia/countries/pakistan/restoration-and-rehabilitation-mangroves-ecosystem-along-coasts-pakistan [Accessed 22 December 2018].

137 IUCN (8 May 2018). *IUCN and MFF stand with Pakistan navy in massive mangrove restoration campaign*. https://www.iucn.org/news/pakistan/201805/iucn-and-mff-stand-pakistan-navy-massive-mangrove-restoration-campaign-0 [Accessed 22 December 2018].

138 Anon. *PTCL & WWF pledge to plant 200,000 mangrove trees in Balochistan*. https://propakistani.pk/2018/09/19/ptcl-wwf-pledge-to-plant-200000-mangrove-trees-in-balochistan/ [Accessed 22 December 2018]; Anon. (12 October 2018). *WWF-Pakistan and Careem initiate large scale mangrove plantation drive*. https://www.thenews.com.pk/latest/380041-wwf-pakistan-and-careem-initiate-large-scale mangrove-plantation-drive [Accessed 22 December 2018].

139 Interview with Dr. Babar Khan, WWF, 1 October 2018.


increase in mangrove cover.[140] Now a survey of the area is conducted yearly using GPS maps by SUPARCO and the Planning and Development Department.[141] Within the last 30 years, the Sindh Forest Department has rehabilitated over 100,000 ha of mangroves, the stock hold area has doubled and the mangrove forest coverage area has increased to 150,000 ha. Since 2008, there has been a continual plantation of 8000-10000 ha each year.[142]

Population and urbanization remain growing risks for mangroves. Pakistan has the sixth largest population in the world and Karachi is the most populated city in the country, which puts enormous stress on all resources including land and water. Mangrove forests are being cleared to develop industrial areas under the ports' jurisdiction or for other so-called "development projects." For example, mangroves are being cut to make faster routes to the ports as in the case of the Mai Kolachi bypass, built in 2002, cuts through a lush mangrove forest in China Creek.[143] The Defense Housing Society has 14 km of coastline under its control, and there is a constant struggle between the need to develop it with massive infrastructure and to preserve the ecosystem in order to maintain a balance.

Lack of fresh water is another serious threat; fresh water availability has declined from 5260 cubic meters in 1951 to 908 cubic metres in 2017 due to a drastic increase in the population.[144] With the exception of flooding, the availability of fresh water below the Kotri Barrage is at a bare minimum.[145] Furthermore, untreated sewage and

140 Abbas, S. et al. (2013). An assessment of status and distribution of mangrove forest cover in Pakistan. *Journal of Biodiversity and Environmental Sciences* 3(6):64-78; WWF (2017). *Landcover map of Indus Delta*; Interview with Dr. Babar Khan, WWF, 1 October 2018.

141 Interview with Riaz Ahmed Wagan, Chief Conservator of mangroves and rangelands, 1 October 2018.

142 *Ibid.*

143 Omar, M. (7 June 2016). *The Coast is clear: The vanishing mangrove forest of Karachi.* https://herald.dawn.com/news/1153410 [Accessed 22 December 2018].

144 Anon. (7 October 2017). *Per capita water availability declines to 908 cubic meter.* https://nation.com.pk/07-Oct-2017/per-capita-water-availability-declines-to-908-cubic-meter [Accessed 11 March 2019].

145 *Ibid.*

unchecked industrial waste are making their way to the coast and damaging the mangroves there. The land mafia is illegally clearing mangroves and catering for the fast-growing urbanization. Existing institutions have failed to control these challenges, which, with an increasing population, will continue to put more pressure on the ecosystem, which no amount of planting can solve.

## 8.6 Conclusions and recommendations

Pakistan has passed various laws which deal with mangroves directly or indirectly, but conservation and sustainable use depends on the strength and structure of the institutions which implement these laws. Some laws, which are quite archaic, at times function more effectively than the more recent ones, i.e. the Forest Act is more effective than the Environment Acts. Environmental institutions have not been strengthened and the law remains ineffective.

There is a general lack of awareness about mangrove protection. Other environmental issues have been regularly brought before courts in the public interest by concerned citizens and local NGOs, but, except for one case that unfortunately could not be concluded as mentioned above, there has been no mangrove-related litigation. However, the Forest Department along with the support of IUCN and the WWF, has increased the mangrove coverage by regular planting and ongoing management of these areas along with the support of the local communities.

### Recommendations

1. As suggested by the Wetlands Policy, develop specific legislation on wetlands for both Balochistan and Sindh provinces, with duly empowered regulatory authorities and appropriate financial resources.
2. Strengthen Environmental Protection Agencies, Environment Tribunals, and Local Government Authorities by allocating funding and by enhancing the quality and quantity of adequate human resources to deal with every aspect of pollution and unsustainable development.
3. Review the Water Accord and amend it by stipulating a mandatory minimum amount of fresh water discharge to the sea, and empower institutions to implement it.
4. Amend the laws relating to fisheries and forests for Sindh and Balochistan provinces in order to better address protection and conservation of mangroves.
5. Declare mangrove forests national parks or wildlife sanctuaries in order to conserve rare and endangered plant and animal species. Declare all mangroves as MPAs. Declare mangroves in Balochistan as protected/ reserved forests under the forest law of the province.
6. Ensure the effective cooperation of all stakeholders in the government sector, NGOs, local communities, and the private sector. There must be more community involvement and ownership in protecting and using mangroves (this could be done effectively by amending the Forest Act).
7. Initiate awareness campaigns at all levels for the government authorities, the private sector, communities and the general public to be conducted by the Forest Department and environmental NGOs.
8. Prepare management plans for mangroves with the involvement of the Sindh Forest Department, PQA, SEPA and KPT along with experts from environmental NGOs and communities, integrating traditional ecological knowledge with conventional scientific information.
9. At a planning level, train multi-disciplinary teams of experts/planners to properly integrate all the ecological/environmental and socio-economic components of alternative schemes for mangrove development.
10. Build capacity of the relevant government departments, NGOs, and local communities.
11. Implement adaptation actions for coastal and marine ecosystems as laid down by the framework for climate change policy.


© MFF / LUAWMS

9

# TANZANIA
## OPPORTUNITIES THREATENED BY POLITICAL INTERESTS

**By Rahima O. Njaidi**

Mangrove management in Tanzania has been facing a lot of challenges caused by the overexploitation of resources for commercial and subsistence uses. The ongoing deterioration of these important ecosystems can be attributed to a lack of specific policies or legislation on mangroves. A failure to revive the 1991 Mangrove Management Plan has put these resources at great risk of extinction. Institutional challenges such as limited staff and financial resources, have made it difficult for forest officers to carry out their duties. Monitoring mangroves has become nearly impossible. Tanzania is party to various international and regional instruments, and has national legislation in place that could be used to fulfil these commitments, but effective implementation of these laws and policies is lacking. Local communities are important stakeholders in natural resource management and have the potential to contribute significantly to mangrove conservation. The introduction of Joint Forest Management to mangrove areas is one way to make this happen.

# KEY FACTS

## POPULATION: ≈ 45 million

## MANGROVE COVERAGE: ≈ 158,100 ha

## KEY INSTITUTIONS:

The Forest and Beekeeping Division (FBD)

Tanzania Forest Service (TFS)

Local Government Authorities (LGAs)

Village Natural Resources Committee

## MAIN THREATS:

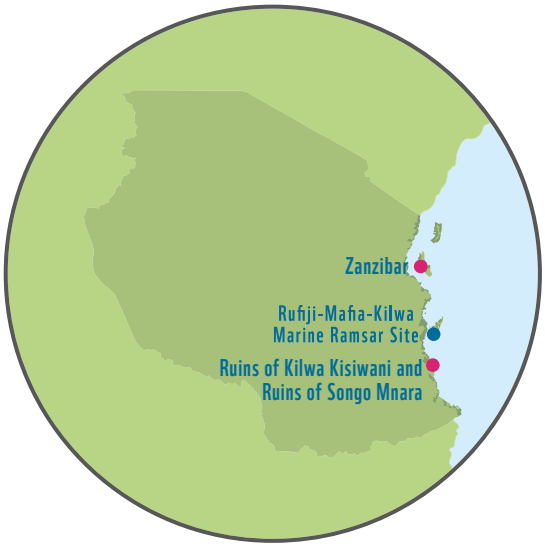
- AGRICULTURE (RICE)
- SALT EXPLOITATION
- OVERHARVESTING
- UNSUSTAINABLE FISHING PRACTICES

## MAIN USES:

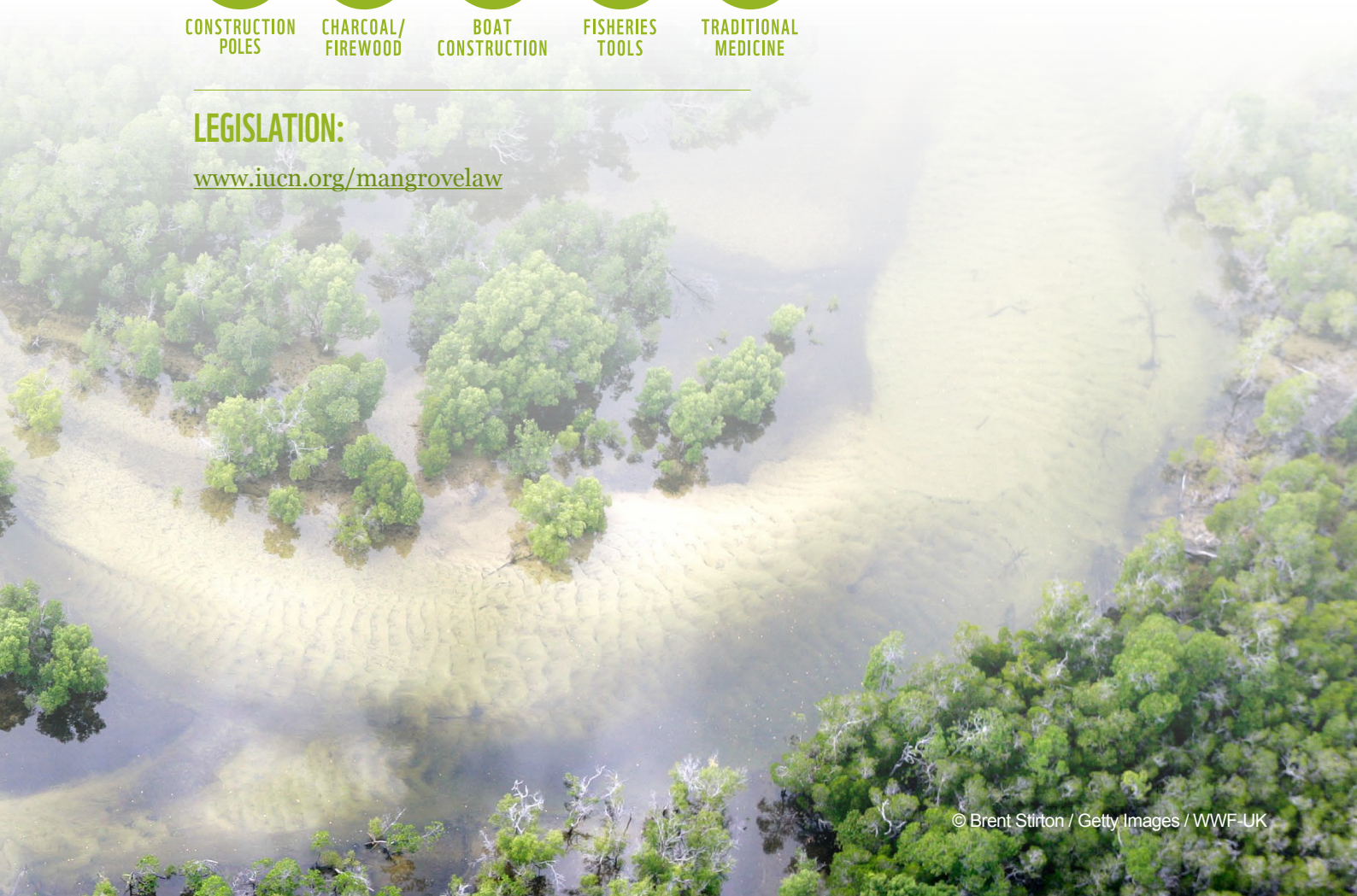
- CONSTRUCTION POLES
- CHARCOAL/ FIREWOOD
- BOAT CONSTRUCTION
- FISHERIES TOOLS
- TRADITIONAL MEDICINE

## LEGISLATION:

www.iucn.org/mangrovelaw




- Ramsar sites containing mangroves
- UNESCO world heritage sites containing mangroves



# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **BMU** | Beach Management Unit |
| **CBD** | Convention on Biological Diversity |
| **CBFM** | Community Based Forest Management |
| **DC** | District Council |
| **DFO** | District Forestry Officer |
| **DoE** | Division of Environment |
| **EAMCP** | East Africa Mangrove Carbon Project |
| **EIA** | Environmental Impact Assessment |
| **FBD** | Forest and Beekeeping Division |
| **ICM** | National Integrated Coastal Environment Management Strategy |
| **IWWG** | Informal Wetlands Working Group |
| **JFM** | Joint Forest Management |
| **LGA** | Local Government Authorities |
| **MACEMP** | Marine and Coastal Environment Management Project |
| **MNRT** | Ministry of Natural Resources and Tourism |
| **MRTC** | Mangrove Research and Training Center |
| **NBSAP** | National Biodiversity Strategy and Action Plan |
| **NDC** | Nationally Determined Contribution |
| **NEMC** | National Environmental Management Council |
| **NFP** | National Forest Programme |
| **NLUPC** | National Land Use Planning Commission |
| **PFM** | Participatory Forest Management |
| **TAFIRI** | Tanzania Fisheries Research Institute |
| **TAFORI** | Tanzania Forest Research Institute |
| **TFS** | Tanzania Forest Service Agency |
| **TP** | Transit permit |
| **VA** | Village Assembly |
| **VC** | Village Council |
| **VNRC** | Village Natural Resources Committees |
| **VPO** | Vice President's Office |
| **WPA** | Wildlife Protected Areas |

## 9.1 Introduction: A colonial legacy of exclusion and exploitation

Tanzania's mangroves are found along the coastline. With over 50,000 ha of mangrove forest, the Rufiji delta is the largest mangrove areas in the East African region.[1] It is part of the larger Rufiji-Mafia-Kilwa Ramsar site, and is **an important habitat for wildlife, such as migratory wetland birds, sea turtles,** dugongs, Nile crocodiles, hippopotamus, and Sykes' monkeys.[2] There are other mangroves areas in Tanga, Kilwa, and the estuaries of the Ruvu, Wami, Pangani, and Ruvuma rivers.[3] Over the years, mangroves have been overexploited for both commercial and subsistence use. In 1990, Tanzania's mangrove areas coverd almost 110,000 ha.[4] Satellite images from 1999 and 2000 showed that the total mangrove area had fallen to 80,900 ha, but conflicting reports claimed mangroves still covered over 108,000 ha.[5] In 2015, the Ministry of Natural Resources and Tourism (MNRT) estimated the total mangrove area in Tanzania at 158,100 ha, or approximately 0.3% of the total forest area in the country.[6]

Mangrove management can trace its history to the colonial era, when the first mangrove forest reserve was created in 1890.[7] Acknowledging the economic importance of mangroves, in 1898 the German colonialists established a mangrove management ordinance. This legislation enabled export of mangrove poles to Arabia and Persian Gulf.[8] In 1920 mangroves reserves were further expanded, and some were gazetted.[9] Since then, mangroves have been strictly protected and the government has restricted access. This mangrove protection policy continues today, and the people who live in these areas and who depend on these resources for their livelihoods are excluded from using these resources.[10] The local communities living around mangrove areas depend on these resources for several products such as building poles, firewood, charcoal, and traditional medicines.[11] Restricting communities from accessing and using mangroves has not helped protect these resources. There have been increased incidences of illegal harvesting of mangrove products by both locals and outsiders.[12]

Although Tanzania does not have a specific policy or legislation on the management, conservation, and sustainable use of its mangroves, mangroves have been allowed the required attention and protection through various legal instruments. There are numerous provisions in the natural resources management legislation and policies that address important matters related to the conservation and management of mangroves. Challenges in implementing this legislation undermine the effective management and protection of mangrove ecosystems.

In Tanzania, land degradation, loss of wildlife habitat and biodiversity, deforestation, and deterioration of aquatic resources have been recognized as problems.[13] Forests are being cleared for many reasons, including expansion for agriculture and settlements and illegal harvesting of wood for commercial uses and subsistence. Mangrove areas, especially in the Rufiji Delta, are threatened by the expansion of rice farms. It is estimated that almost 1,700 ha of mangroves

---

1 Mshale, B. et al. (2017). *Governing Mangroves; Unique Challenges for Managing Tanzania's Coastal Forests*: CIFOR and USAID Tenure and Global Climate Change Program, Bogor, Indonesia and Washington, DC. 62pp.; Mwalyosi, R.B. (2002). *Management of the Rufiji - Delta as a Wetland*. Institute of Resources Assessment, University of Dar-es-Salaam.

2 WWF. *East African mangroves*. https://www.worldwildlife.org/ecoregions/at1402 [Accessed 3 February 2019].

3 Mangora, M.M. (2011). Poverty and Institutional management stand-off: A Restoration and Conservation Dilema for Mangrove Forests of Tanzania. *Wetlands Ecology and Management* 19(6):533-543.

4 Mshale, B. et al. *supra* note 1.

5 *Ibid.*

6 Ministry of Natural Resources and Tourism (2015). *National Forest Resources Monitoring and Assessment of Tanzania Mainland.*

7 Mshale, B. et al. *supra* note 1.

8 Adams, M.E. (1992). *Participatory Management of Tanzania's Mangroves.*

9 *Ibid.*

10 *Ibid.*

11 Wang, Y. et al. (2003). Remote Sensing of Mangrove Change along the Tanzania Coast. *Marine Geodesy* 26(1-2):35-48.

12 Mshale, B. et al. *supra* note 1.

13 Vice President's Office (1997). *National Environmental Policy*. Dar es Salaam, Tanzania. Chapter 2.

have been lost due to rice farming.[14] Farming is considered an important economic activity by the local communities, and increasing population results in ongoing expansion of agriculture into mangrove areas.[15] In Dar-es-Salaam, the increasing population and growing city has meant the construction of houses and tourist hotels in mangrove areas.

## 9.2 Instrumental level: Sectoral laws and co-management opportunities

Sources of law in Tanzania include the Constitution, Statutes (Acts of Parliament), Case law, received laws, Customary and Islamic law as well as international law (treaties and conventions). However, Customary laws do not apply to mangroves because of their protected status. Customary rights to mangroves in village land will technically be revoked.[16]

Law making authority is vested in different bodies. Legislative power is provided for by the Constitution. The Parliament is vested with powers to make laws.[17] The laws enacted by the Parliament are called Principle legislations or Acts of Parliament. The Principal legislation confers powers to other agencies or bodies such as Ministers or District Authorities to make delegated/subsidiary legislations. These delegated legislations include bylaws. The District Council and Village Council have the power to make subsidiary legislations (bylaws).[18] The bylaws developed by the Village Council are submitted to the District Authority for approval.[19]

Tanzania does not have a comprehensive policy or law on the management, conservation, and use of its mangroves. However, there are numerous provisions in natural resources management legislation and policies that address mangrove conservation and management.

### 9.2.1 International conventions

To ensure the protection of its natural resources, including mangroves, Tanzania has signed and ratified a number of international instruments. The Ramsar Convention is one of the most critical international instruments for mangrove conservation in Tanzania.[20] The Convention imposes obligations on Parties to ensure the conservation and wise use of wetlands.[21] Prior to ratifying the Convention, Tanzania had already begun making an effort to conserve its wetlands. For example, in 1991, the National Wetlands Conservation Management Program was introduced by the National Environmental Management Council (NEMC) and an Informal Wetlands Working Group (IWWG) comprising representatives from key sectors in both government and non-government institutions was formed.[22] Following ratification of the Ramsar Convention, Tanzania designated four wetland sites as sites of international importance.[23] One of these sites is the Rufiji-Mafia-Kilwa Marine Ramsar site, designated in 2004, a large part of which is composed of mangrove forests.[24] The Ramsar Convention requires Parties to "formulate and implement their planning so as to promote the conservation of the wetlands included in the list."[25] To do so, the government of Tanzania, with the support of the Belgian Embassy, promoted community-based sustainable environmental

14 Taylor, M. et al. (2003). *Mangroves of East Africa*. UNEP World Conservation Monitoring Center.

15 Interview with anonymous Forest Officer, Rufiji, 19 September 2018

16 Mshale, B. et al. *supra* note 1.

17 The Constitution of the United Republic of Tanzania of 1977. Article 64(1).

18 The Local Government (District Authorities) Act of 28 June 1982. Section 148, 163.

19 *Ibid.* Section 164(2).

20 Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 2 February 1971).

21 *Ibid.* Article 3.

22 Majamba, H. (2004). *Implementing the Ramsar Convention in Tanzania: Salient features of Legislation and Policies for the Management and Conservation of Wetlands*.

23 Ramsar (26 May 2012). *The Annotated Ramsar List: United Republic of Tanzania*. http://archive.ramsar.org/cda/en/ramsar-documents-list-anno-tanzania/main/ramsar/1-31-218%5E15888_4000_0 [Accessed 2 April 2019].

24 Ramsar 2019. *Sites Information Service*. https://rsis.ramsar.org/ris/1443 [Downloaded 2 April 2019].

25 Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 2 February 1971). Article 3.


management of the coastal areas in the Rufiji and Kilwa districts (Rufiji-Mafia-Kilwa Ramsar site).[26]

Tanzania has also been party to the Convention on Biological Diversity (CBD) since 1996. To fulfill its obligations under the Convention, Tanzania formulated the first National Biodiversity Strategy and Action Plan (NBSAP) in 2001.[27] In 2015, the 2001 NBSAP was reviewed and the NBSAP 2015-2020 was developed to address the Aichi targets.[28] To meet these targets, Tanzania has put 40% of its total land area into wildlife and forest protected areas and developed General Management Plans for its protected areas, including forests.[29] One of the priority actions identified in the NBSAP 2015-2020 is strengthening the framework for the restoration and conservation of mangroves and coral reefs to preserve the essential ecosystem services they provide.[30] This follows the development in 2012 of the National Climate Change Strategy, which recognizes the importance of mangroves for shoreline stabilization.[31] As a result, the Climate Change Strategy has stipulated specific strategic statements on wetlands and forests, and strategic objectives.[32]

Tanzania is also party to specific multilateral regional conventions. Among them, the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (the Nairobi Convention) focuses on building the capacity of various parties to protect and manage their coastal and marine environments.[33] In 2010, the Nairobi Convention was amended to incorporate other emerging issues, such as climate change and coastal zone management.[34] To fulfill its international obligations under the Nairobi Convention, in 1997, Tanzania developed the National Integrated Coastal Environment Management Strategy (ICM). The ICM brings together different sectors to promote the management of coastal resources, including mangroves, and to contribute to the improvement

26 Ministry of Natural Resources and Tourism, Ministry of Foreign Affairs (2003). *Sustainable Wetlands Management (2004 - 2009)*.

27 Vice President's Office (2001). *National Biodiversity Strategy and Action Plan*.

28 Vice President's Office: division of environment (2015). *National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020*.

29 *Ibid*. Section 3.5.1, 3.8.

30 *Ibid*. Table 7-1(target 14.2).

31 Vice President's Office: division of environment (2012). *National Climate Change Strategy*. Section 2.1.4.

32 *Ibid*.

33 Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi, 21 June 1985).

34 Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (Nairobi, 31 March 2010).

## Mangroves and Cultural Heritage in the Ruins of Kilwa Kisiwani

The Ruins of Kilwa Kisiwani and Ruins of Songo Mnara was added to the World Heritage List in 1981.[41] This cultural heritage site is located in Kilwa District of the Lindi Region, which hosts the Selous Game Reserve, where mangrove forests inhabited by hippos and crocodiles can be found.[42] In Kilwa Kisiwani, the Gereza monument contains boulders that act as wave breakers, while mangroves protect the southern part of the fort from waves.[43] Songo Mnara have small mosques with walls adjacent to a mangrove patch. There is also a structure inside the mangroves surrounded by water.[44]

of the wellbeing of coastal communities.[35] The Rufiji Environment Management Project and Mangrove Management Project were established as a result of this strategy.[36]

In 2018, the Tanzania Parliament endorsed the 2015 Paris Agreement. Tanzania submitted its Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 covering a period until 2030.[37] The NDC is in line with the National Climate Change Strategy, and focuses on nine priority sectors, including forests, water resources and coastal, marine environment and fisheries.[38] Under the forests sector, Tanzania intends to enhance forest governance and protection of forest resources as well as enhancing sustainable forest management.[39] Other strategies having close links to mangroves are strengthening management of coastal resources, implementing mangrove restoration programs, promoting conservation and management of fisheries resources and improving water resources management practices.[40]

Tanzania ratified the World Heritage Convention in 1977, and to date Tanzania has designated seven sites as World Heritage sites, including one cultural site containing mangroves (Box 7).

### 9.2.2 Constitutional provisions

The Constitution of the United Republic of Tanzania, as the main law of the land, provides for the duty of every citizen to protect the country's natural resources.[45] Although there is no specific mention of mangroves in this article, the Constitution sets out the constitutional protection of all natural resources in the country, which would include mangroves. Moreover, the Constitution requires the government to ensure that "activities are conducted in such a way that the national wealth and heritage are harnessed, preserved, and applied toward the common good."[46] This provision can logically be extended to cover the environment and mangroves specifically, since mangroves are national forest reserves.[47]

---

35 Vice President's Office (2003). *National Integrated Coastal Environment Management Strategy*.

36 *Ibid.* Section 2.3.

37 Tanzania's first Intended Nationally Determined Contribution (submitted 18 May 2018). UNFCCC.

38 Tanzania's first Intended Nationally Determined Contribution (submitted 18 May 2018). UNFCCC.

39 *Ibid.*

40 *Ibid.*

41 UNESCO World Heritage Centre 1992-2019. *Ruins of Kilwa Kisiwani and Ruins of Songo Mnara*. https://whc.unesco.org/en/list/144 [Accessed 2 June 2019].

42 Kuboja, B.N. (2013). *Policies and legal frameworks for Marine Protected Areas governance in Tanzania mainland: their potential and limitations for achieving conservation and livelihood goals*. United Nations-Nippon Foundation of Japan Fellowship Programme.

43 Abungu, G. (2004). *World Heritage List: Reactive monitoring mission to Kilwa Kisiwani and Songo Mnara in the Republic of Tanzania, East Africa*. Report of the ICOMOS Mission.

44 *Ibid.*

45 The Constitution of the United Republic of Tanzania of 1977. Article 27(1).

46 *Ibid.* Article 9(c).

47 Mshale, B. et al. *supra* note 1.

## 9.2.3 Sectoral legislation

### 9.2.3.1 Protection and management of mangroves

Mangrove protection is enhanced through the prohibition of activities which are considered dangerous to their survival. All mangroves are considered sensitive resources in reserved land, which grants them special considerations and protections (see Sections 9.2.3.3, 9.2.3.6).[48]

Harvesting mangroves for commercial purposes (for both local markets and exports) requires a harvesting licence from the District Forestry Officer (DFO).[49] The District Forest Manager will issue a transit permit (TP).[50] This is crucial for mangrove conservation, since it reduces the illegal use of mangrove resources. Communities living adjacent to a forest reserve who want to harvest mangroves for subsistence use only, are required to get a harvesting licence from the DFO, who will issue the licence after receiving an application from the village government.[51] To acquire a harvesting licence, an applicant is required to fill in a specified form, and attach an application letter and the minutes of the Village Council (VC) where the harvesting will take place.[52] Priority will be given to applicants with modern harvesting technologies; the area to be harvested should be indicated in the district harvesting plan; and issuing the harvesting licence will be based on the past experience of the applicant.[53] The applicant will then be required to report to the villages adjacent to the forest that will be harvested and present his/her licence; the VC together with the DFO will supervise the harvesting to make sure that the required species and numbers of trees are harvested, as indicated in the licence.[54]

In response to the rapid degradation and deforestation of mangroves, the National Mangrove Management Plan was developed in 1991, the first ever in Africa.[55] The Mangrove Plan aimed to regulate and monitor the production and use of mangrove forests.[56] The Plan highlighted the need for coordination amongst various users of the mangrove ecosystem.[57] Two immediate threats identified by the National Mangrove Management Plan were the conversion of mangrove areas into other land uses such as salt preparation and rice farming.[58] A small team of forest officers were assigned the role of regulating and monitoring mangrove use.[59] The plan divided mangroves into four management zones: protection zone, production zone, zone for degraded area and recovery and zone for areas that will be set aside of development.[60] It promoted participation of local communities in mangrove management. The plan paved the way for several mangrove projects in Rufiji such as Rufiji Environmental Management Project, the Tanzania Mangroves Protection Association and the Rufiji Beekeeping Project.[61] **However, the Management Plan was not implemented because of a lack of funding, inadequate technical resources, and the absence of an enabling institutional framework.**[62]

48 Mangroves are considered sensitive areas under The Forest Act, Section 2. The Land Act, Section 6(1) classifies all sensitive areas as reserved land.

49 Jamhuri ya Muungano wa Tanzania, Wizara ya Maliasili na Utalii (2017). *Mwongozo wa Uvunaji Endelevu na Biashara ya Mazao ya Misitu yanayovunwa katika miditu ya asili, Idara ya Misitu na Nyuki*. Pg. 9.

50 *Ibid*. Pg. 10.

51 *Ibid*. Pg. 9.

52 *Ibid*. Pg. 8.

53 *Ibid*. Pg. 8.

54 *Ibid*. Pg. 9.

55 Forest and Beekeeping Division, Catchment Forest Project. (1991). *Management plan for the mangrove ecosystem of mainland Tanzania*. Dar es Salaam, Tanzania.

56 Mshale, B. et al. *supra* note 1.

57 Forest and Beekeeping Division, Catchment Forest Project. (1991). *Management plan for the mangrove ecosystem of mainland Tanzania*. Dar es Salaam, Tanzania.

58 *Ibid*.

59 *Ibid*.; Mshale, B. et al. *supra* note 1.

60 Forest and Beekeeping Division, Catchment Forest Project. (1991). *Management plan for the mangrove ecosystem of mainland Tanzania*. Dar es Salaam, Tanzania.

61 Mshale, B. et al. *supra* note 1.

62 *Ibid*.

### 9.2.3.2 Forest management

In Tanzania, mangroves are considered to be forests. To curb the ongoing environmental degradation and deforestation, including in mangrove forests, the National Forest Programme 2001-2010 (NFP) was developed by MNRT as a tool to facilitate the implementation of the National Forest Policy.[63] The NFP identifies mangroves as crucial biodiversity areas.[64] Under the first programme of the NFP, Forest Resources Conservation and Management, the participation of local communities and other stakeholders is strongly encouraged in all forests, including mangrove forests, to ensure that these resources are used sustainably.[65] The second programme focuses on building the capacity of the responsible institutions in forest management. Since research is important to ensure the effective management of forests, this program also addresses improving the research capacity of the relevant institutions. [66] Under the third programme, the NFP focuses on developing laws, guidelines, rules, and regulations for the management of every type of forest in the country, mangroves included.[67] The fourth program focuses on promoting private sector engagement in forest management.[68]

Mangroves are commonly referred to as forest reserves based on their status as reserved land, but they are not currently listed as forest reserves under the Forest Act, an inconsistency which foresters are working to resolve.[69] Some activities cannot be undertaken in a forest reserve without an existing right or permit. These activities include cutting trees, removing sand or soil, burning and destroying vegetation, cultivation, hunting, and fishing.[70] The penalties for those who break the law are a fine of not less than 30,000 shillings and not exceeding one million shillings, or imprisonment for a term not exceeding two years, or both a fine and imprisonment.[71]

### 9.2.3.3 Land use planning

Tanzania has embarked on efforts to promote and ensure a secure land tenure system and protect forests and biodiversity areas.[72] This includes restricting certain activities from being undertaken in these areas. In Tanzania, there are three categories of land, namely; general land, village land, and reserved land.[73] Mangroves fall into the last category (reserved land) because of their importance and the high risk they face from human activities.[74] Mangroves are also designated as hazardous land, meaning land which is likely to contribute to environmental degradation or destruction if development activities occur.[75] Mangroves being declared as hazardous land, means development activities are prohibited.

In Tanzania, land use planning is considered an important tool to improve natural resource conservation. It is mainly an agreement between stakeholders on the best use of resources in a particular area.[76] Village land use plans guide the implementation of policies for proper land use and the management of natural resources.[77] Every planning authority has the power to reserve and maintain any land planned for open spaces, parks, wetlands, urban forests, and green belts in accordance with the approved plan.[78] To ensure the protection and proper management of forests, the

63 Ministry of Natural Resources and Tourism, Forest and Beekeeping Division (2001). *National Forest Programme in Tanzania 2001-2010*.
64 *Ibid.* Table 3.2.
65 *Ibid.* Section 7.4.
66 *Ibid.* Section 7.5.4.5.
67 *Ibid.* Section 7.6.
68 *Ibid.* Section 7.7.
69 The Forest Act of 4 June 2002. Section 2; The Land Act of 15 May 1999. Section 6(1).
70 The Forest Act of 4 June 2002. Section 26.
71 *Ibid.* Section 84.
72 Ministry of Lands and Human Settlements Development (1997). *National Land Policy*. Section 4.2.9, 4.2.10(i).
73 The Land Act of 15 May 1999. Section 1(4).
74 *Ibid.* Section 6(1).
75 *Ibid.* Section 7(1)(a).
76 National Land Use Planning Commission (1998). *Guidelines for Participatory Village Land Use Management in Tanzania*.
77 Ministry of Lands and Human Settlements Development (1997). *National Land Policy*.
78 The Land Use Planning Act of 22 June 2007. Section 46(e).

village land use planning authority has power to reserve village land resources, including forests.[79] All land use plans should have provisions dealing with, among others, the protection of sensitive areas and coastal ecosystems, and the creation of buffer zones for the protection of forest reserves.[80] In collaboration with the National Environmental Management Council (NEMC), the village land use planning authority can set criteria for environmental protection and the sustainable use of its natural resources.[81]

### 9.2.3.4 Wildlife and wetlands conservation

There are large tracts of mangroves in the coastal wetlands. The Rufiji Delta has the largest estuarine mangrove forests on the entire East African coast.[82] There is a strong will on the part of the government to ensure that wetlands are managed and conserved. To ensure the effective protection and management of wetlands as wildlife habitats, the Wildlife Conservation Act provides for the development of regulations, and guidelines on the establishment of the sustainable management of wetland reserves and wetland areas.[83] These regulations and guidelines have not yet been established but wetlands can still be designated as reserves. Such wetland reserves are categorized as core protected areas.[84]

**Activities such as grazing livestock is totally prohibited in wetland reserves.**[85] Hunting, burning, capturing, killing, wounding or molesting any animal or fish in any wetland reserve are likewise prohibited without the written permission of the Director of Wildlife.[86] It is illegal to use any pitfall or net for capturing animals or to cultivate crops in any wetland reserve.[87]

A number of sites containing mangroves are designated as wildilfe protected areas, which include national parks and game reserves.[88] Mangroves are found in the Saadani National Park, and the Rufiji Delta and its mangroves are a wetland reserve.[89]

### 9.2.3.5 Marine parks and reserves

Some mangroves are classified as marine reserves, such as the mangroves in Bagamoyo, the Mnazi Bay-Ruvuma estuary marine park, and the mangroves in Kilwa and the Rufiji.[90] Marine parks and reserves may be designated for the purpose of protecting, conserving and restoring the species and genetic diversity of the living and non-living marine resources in marine and coastal areas.[91] An area can also be designated a marine park or reserve to promote sustainability and the recovery of areas and resources that have been overexploited, as well to ensure resource users benefit from the operations in the protected areas.[92] Activities such as engaging in aquaculture, salt making, fishing, hunting, agriculture, mining or collecting or removing aquatic flora and vegetation or sand is restricted in marine parks or reserves.[93] Regulations may require the payment of a fee in order to be issued with an entry permit.[94] This restriction aims to ensure these areas are protected and managed in an effective manner. However,

79 *Ibid.* Section 22(3)(e).
80 *Ibid.* Section 28(1)(b).
81 *Ibid.* Section 23(c).
82 United Nations Development Programme. (2012). *Rufiji Environment Management Project.* Equator Initiative Case Study Series. New York, NY.
83 Wildlife Conservation Act of 12 March 2009. Section 16(3).
84 *Ibid.* Section 3.
85 *Ibid.* Section 18(2).
86 *Ibid.* Section 19(1).
87 *Ibid.* Section 20.
88 *Ibid.* Section 3.
89 United Nations Development Programme (2012). *Rufiji Environment Management Project.* Equator Initiative Case Study Series. New York, NY.
90 Marine Conservation Institute 2019. *Atlas of Marine Protection.* http://www.mpatlas.org/region/country/TZA/ [Accessed 5 April 2019].
91 The Marine Parks and Reserves Act of 17 January 1995. Section 10(a).
92 *Ibid.* Section 10(c), 10(d).
93 *Ibid.* Section 22(1).
94 *Ibid.* Section 18(5).


local residents may be allowed access pursuant to the management plan of the particular area.[95]

### 9.2.3.6 Environmental Impact Assessment

Environmental impact assessment (EIA) is mandatory in Tanzania for projects affecting the environment. Any activity out of character with its surroundings or causing major changes in land use is subject to an EIA.[96] Mangroves are considered sensitive forest areas, in which any forest-related activity requires an EIA.[97] Covered activities requiring an EIA include, *inter alia*, commercial logging, agriculture or aquaculture on an area exceeding five ha, mining and construction of roads, buildings, dams, power stations or telecommunication installations.[98]

Every planning authority has the power to require all land users to submit an environmental impact statement before any development can commence in a planning zone.[99] Agricultural projects, which many proponents prefer to undertake in wetlands because of water availability, are also subject to an EIA.[100] It is mandatory to undertake an EIA in marine parks or reserves prior to commencing development, such as the construction of roads and bridges.[101]

### 9.2.3.7 Water resources management

All water resources in Mainland Tanzania are public and vested in the President as the trustee for and on behalf of citizens.[102] **Every citizen has a duty to safeguard and protect water resources** and provide information regarding any activity that threatens the quality of water resources.[103] For any proposed development in a water resource area, an EIA is mandatory.[104]

95 *Ibid.* Section 18(3).
96 The Environmental Management Act of 14 July 2004. Section 81(1), third schedule.
97 *Ibid.;* The Forest Act of 4 June 2002. Sections 2, 18(1), 18(2).
98 *Ibid.*
99 The Land Use Planning Act of 22 June 2007. Section 46.
100 The Environmental Management Act of 14 July 2004. Section 81(1), third schedule.
101 The Marine Parks and Reserves Act of 17 January 1995. Section 13, 16.
102 Water Resources Management Act of 15 May 2009. Section 10.
103 *Ibid.* Section 7.
104 *Ibid.* Section 9.

Water sources, defined to include wetlands, are protected, conserved and controlled in ways that promote protection of biological diversity, especially aquatic ecosystems, as well as prevention and control of pollution and degradation.[105] Human activities are prohibited within sixty meters from a water source.[106] Water sources are protected from pollution, erosion or other adverse effects.[107] Land owners or occupiers are required to take reasonable measures to prevent pollution of water sources and can be liable to pay the costs for remedying the damage and reinstating the quality of water, or a fine of not less than 300,000 Tanzania Shillings and/or imprisonment for a for a term not exceeding one year.[108]

#### 9.2.3.8 Fisheries and aquaculture

In Tanzania, fisheries resources are becoming scarce, as key habitats have been altered and destroyed.[109] The National Fisheries Policy promotes conservation and sustainable management of fisheries resources.[110] The Policy sets out strategies including developing EIA guidelines to be undertaken in fisheries projects, controlling destructive fishing methods, and protecting endangered and threatened aquatic species and habitats by according them legal status as marine parks or marine reserves.[111]

To ensure fisheries resources are sustainably managed and utilized, there are restrictions applicable to fishing which promote management and conservation of wetlands/mangroves. The law prohibits engaging in fishing activities without a valid licence, obtained by applying and paying the prescribed fees to the relvant authority.[112] The Minister responsible for fisheries should impose conditions to ensure that the fishing activity is sustainable, such as restricting methods used in fishing or prohibiting use of a particular fishing gear, introducing closed periods for fishing, and stipulating minimum size and species to be captured.[113] The use of poison or dynamites is also prohibited in fishing.[114] The Fisheries Act also restricts discharge of solid, liquid or gaseous matter in any water body including an estuary.[115] The Director may declare a spawning area and no one will be allowed to disturb that area.[116] This is a potential tool for mangrove conservation, but to date no mangrove forests have been declared as spawning areas.

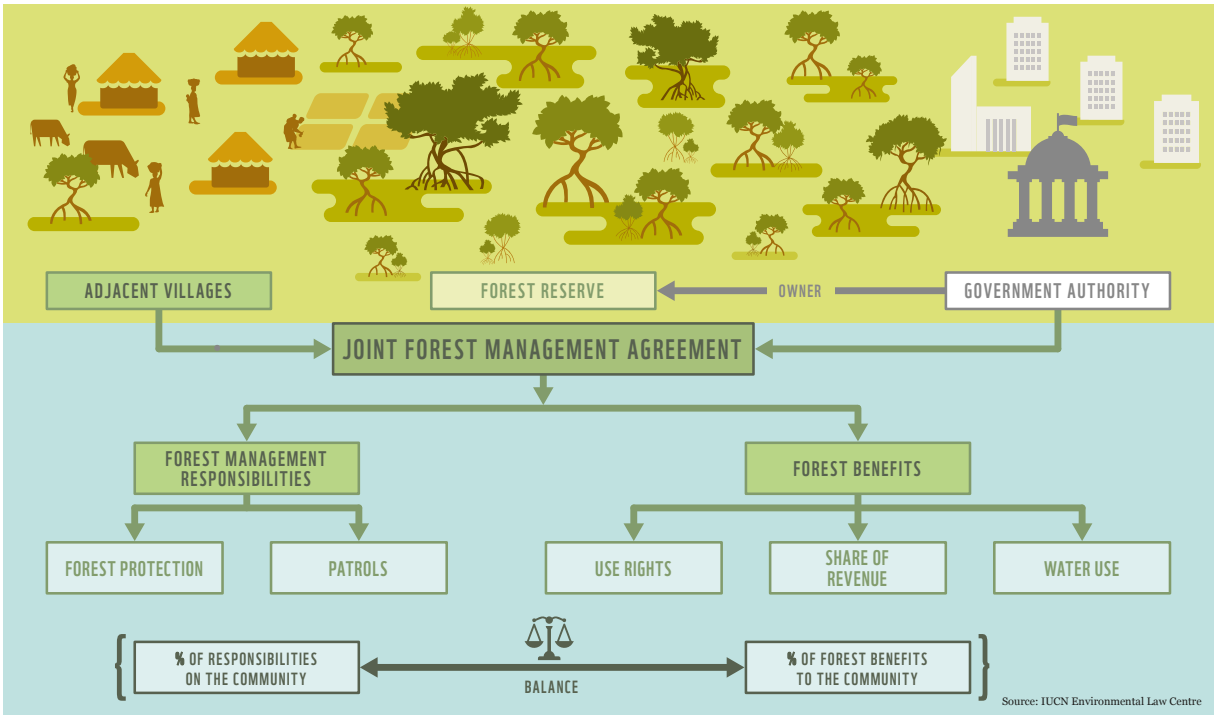
Mangrove areas are also important for aquaculture. To ensure sustainable aquaculture practices, the law requires large scale aqua farmers, prior to engaging in aquaculture practices, to seek guidance and permission from the Director, who will among other things advise the applicants on proper site selection and sustainable aquaculture practices.[117] Project proponents are required to undertake EIA before commencement of any large-scale aquaculture activity.[118] All aqua farmers must undertake their activities diligently so as not to cause pollution on other water bodies or aquatic ecosystems.[119]

### 9.2.4 The involvement of local communities in the management of mangrove forests

Community participation in mangrove management is an important approach for

105 *Ibid*. Section 3, 4(1).
106 *Ibid*. Section 34.
107 *Ibid*. Section 37.
108 *Ibid*. Section 44(2).
109 Ministry of Natural Resources and Tourism (1997). *The National Fisheries Sector Policy and Strategy Statement*.
110 *Ibid*.
111 *Ibid*.
112 The Fisheries Regulations of 28 August 2009. Section 13(1).
113 The Fisheries Act of 30 January 2004. Section 17.
114 The Fisheries Regulations of 28 August 2009. Section 48.
115 *Ibid*. Section 51.
116 *Ibid*. Section 54.
117 The Fisheries Act of 30 January 2004. Section 9.
118 *Ibid*. Section 52; The Fisheries Regulations of 28 August 2009. Section 77(4)(c).
119 The Fisheries Regulations of 2009. Section 41.

**Figure 17:** Joint Forest Management mechanism in Tanzania




ensuring natural resource governance and the sustainable use of those resources.[120] Local communities are encouraged to participate in the sustainable planning, management, use, and conservation of forest resources.[121] This has a direct bearing on mangroves, which are regarded as forests according to the law. To achieve sustainable forest management, MNRT introduced Participatory Forest Management (PFM) in the early 1990s.[122] **PFM allows for the management of forests in collaboration with local communities with the aim of improving forest management and environmental protection and, at the same time, improving the livelihoods of the local communities.** PFM consists of two main approaches, which are Community Based Forest Management (CBFM) and Joint Forest Management (JFM).[123]

CBFM is an approach that takes place on village land. According to this mechanism, local communities, through the Village Councils, have a full mandate to develop forest bylaws and forest management plans, as provided for in the Forest Act, and have total control over the use of their forest resources.[124]

JFM is undertaken on land managed by central or local government authorities. Local community participation in the management of mangroves will be enhanced by entering into joint management agreements with the relevant government authorities. This agreement will guarantee user rights and benefits.[125] Local communities can enter into partnerships/agreements with either central or local government authorities to manage a particular forest reserve.[126] For many years, JFM was not fully implemented due to a lack of benefit sharing guidelines. However, in 2007 the Guidelines on JFM Benefit-Sharing were developed and have been applied to establishing JFM forests in mangrove areas. These Guidelines detail how the benefits should be distributed

120 Mshale, B. et al. *supra* note 1.

121 The Forest Act of 4 June 2002. Preliminary provisions (Part II(3)(b)).

122 Ministry of Natural Resources and Tourism (1998). *National Forest Policy*. Dar es Salaam, Tanzania. Section 4.1.1(policy statement (3)).

123 Blomely, T. and Iddi, S. (2009). *Participatory Forest Management in Tanzania: 1993-2009; Lesson Learned and experiences to date*. Ministry of Natural Resources and Tourism, Forestry and Beekeeping Division, Dar-es-Salaam, Tanzania.

124 The Forest Act of 4 June 2002. Section 13(2).

125 Ministry of Natural Resources and Tourism (1998). *National Forest Policy*. Dar es Salaam, Tanzania. Section 4.1.1 (policy statement (3)).

126 Ministry and Natural Resources and Tourism, Forestry and Beekeeping Division (2007). *Joint Forest Management Guidelines for the establishment of Joint Management Agreements in Protection and Production Forests*.

between the various parties, local communities, and the government.[127] It is essential to balance the responsibilities and benefits to ensure the sustainability of the agreement.[128] Under JFM, local communities act as watchdogs and take on the role of informants to curb the illegal harvesting of mangrove products.[129]

Local community involvement in the development of mangrove forest management plans is also stressed.[130] The National Environmental Policy recognizes that the interventions that are likely to succeed are those based on people's own needs.[131] Public participation in designing policies, plans, strategies, and programs concerning the environment is crucial and the law provides that citizens should be informed in advance and given a platform to participate in making decisions for interventions affecting the environment.[132]

## 9.3 Institutional level : Local governance, the keystone of Tanzanian institutional framework

### 9.3.1 National level institutions

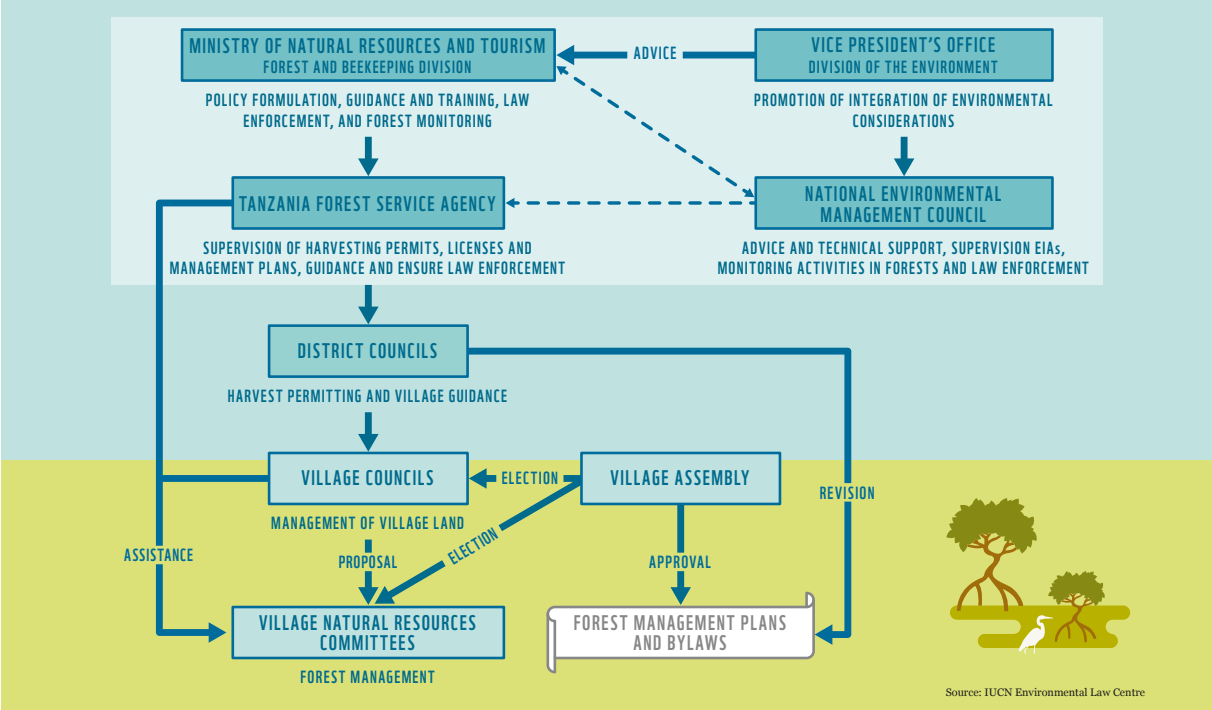
The Ministry of Natural Resources and Tourism (MNRT) is the primary institution responsible for the management of natural resources in the country. The Ministry has four divisions: Forest and Beekeeping, Wildlife, Tourism, and Antiquities. Forest management is under the mandate of the Forest and Beekeeping Division (FBD). The role of FBD, which has a bearing on mangrove management, includes policy formulation and guidance, awareness raising about forest management, providing extension services to local communities, training and building the capacity of local communities in forest management, and monitoring forest activities.[133]

All mangroves are under the management of the Tanzania Forest Service Agency (TFS), an agency under MNRT. TFS has the role of supervising harvesting permits and licences to ensure adherence to the indicated species, harvesting areas, and the specified quotas.[134] TFS has the role of law enforcement, providing extension services such as creating awareness in the local communities and other stakeholders on mangrove management and providing support and guidance for the villages in developing their forest bylaws and management plans.[135] Another role for TFS involves coordinating the development of harvesting plans and monitoring their effective management. Local communities can also seek assistance from TFS in relation to technical matters such as advice on which species they can use in the restoration of mangroves.[136]

The Division of Environment (DoE) in the Vice President's Office (VPO) is mandated to take care of all environmental matters in the country.[137] The Division promotes the integration of environmental considerations into plans, programs, projects, and policies.[138] Also housed in VPO, the National Environmental Management Council (NEMC) was established in 1983 as the leading body responsible for the protection of the environment and the sustainable use of natural resources in Tanzania. It provides advice and technical support to other entities on all matters pertaining to natural resources and environmental management.[139] NEMC oversees EIAs, undertakes

127 *Ibid.*
128 *Ibid.*
129 Mshale, B. et al. *supra* note 1.
130 The Forest Act of 4 June 2002. Section 13(1)(d).
131 Vice Presidents Office (1997). *National Environmental Policy*. Section 35.
132 The Environmental Management Act of 14 July 2004. Section 178.
133 Faini, M. (2014). *Resources Sector: Achievements, Challenges and Priorities for Financial year 2014/2015*. Ministry of Natural Resources and Tourism.
134 *Ibid.*
135 Interview with anonymous TFS Official, 19 September 2018.
136 *Ibid.*
137 The Environmental Management Act of 14 July 2004. Section 15.
138 *Ibid.* Section 15.
139 *Ibid.* Section 18(2)(j).

**Figure 18:** Institutions directly managing mangroves in Tanzania at a national, sub-national, and local level




awareness raising, and provides information for the general public on environmental matters.[140] To ensure mangroves are conserved, NEMC oversees law enforcement and undertakes periodic reviews and monitoring of activities which might impact mangrove areas.[141] They have authority to stop construction in mangrove areas and demolish buildings in mangrove areas in Dar-es-Salaam and other parts of the country where there are mangroves.[142] Permits issued by the Ministry of Land and Local Government are not recognised by NEMC within restricted areas.[143] To ensure compliance, the Minister responsible for Environment will issue general guidelines to NEMC to facilitate enforcement or order NEMC to undertake any activity if the environment is endangered of being detrimentally affected.[144]

The National Land Use Planning Commission (NLUPC) has several functions which are of great importance to mangrove management. NLUPC renders assistance to all land use planning authorities during preparation of their land use plans and monitors their implementations. The Commission is also given the mandate to design programs which will foster protection of land and enhance the quality of land.[145] The Commission consists of members from various sectors, including those from the environment, agriculture, natural resources, fisheries and water resources.[146]

There is a considerable knowledge gap amongst a range of stakeholders concerning mangroves and their ecological importance. Research is important to bridge this gap. The Tanzania Forest Research Institute (TAFORI) is a national institution under MNRT mandated to conduct and coordinate forestry research and dissemination of research results to stakeholders. TAFORI has an important role in ensuring sustainable forest management. TAFORI has several programs which are of relevance to mangrove management and conservation. The management of natural forests program aims at developing sustainable management and conservation systems for

140 *Ibid.* Section 18(2)(d), 18(2)(h).

141 Interview with anonymous NEMC Officer. 2 October 2018; Kileo, E. (2013). *Enforcement and Implementation of Environmental Laws and the Protection of Mining Areas in Tanzania: A Case Study of Mererani.*

142 *Ibid.*

143 Himberg, L. (2016). *Mangroves and Urbanisation: Systems of Mangroves in Dar-es-Salaam, Tanzania.*

144 The Environmental Management Act of 14 July 2004. Section 13(2), (3).

145 The National Land Use Planning Act of 22 June 2007. Section 7.

146 *Ibid.* Section 6(1).

natural forests including mangroves. There is a lot of data on mangroves, but these data differ from one source to another, the forest resource assessment program will help build the capacity of forest sector officials to collect, compile and disseminate reliable and accurate information about mangroves. TAFORI can also improve mangrove harvesting which will eventually reduce impact on mangroves.

The Tanzania Fisheries Research Institute (TAFIRI) is a key institution that was established for the purpose of promoting, conducting and coordinating research on fisheries resources. From 2005 to 2011, TAFIRI was involved in the Marine and Coastal Environment Management Project (MACEMP) where it was responsible for science, research and monitoring. TAFIRI was tasked to assess the near shore fish stock of the territorial waters in Tanzania. TAFIRI undertook prawn monitoring research as well as non trawlable research in mangroves.[147] TAFIRI is also responsible for aquaculture research, which is important since unsustainable aquaculture has adverse impacts on mangroves.

The Ministry of Water and Irrigation was established with the primary objective of ensuring that water resources including wetlands are developed and managed sustainably in collaboration with all key stakeholders. Roles under this Ministry include coordination of different sectors in planning on matters that may impact the water resources; development of regulations and guidelines which will take into account issues critical for mangrove/wetlands management; ensuring sustainable development of water resources.

### 9.3.2 Sub-national and local institutions

District Councils (DCs) are established under the Local Government (District Authorities) Act.[148] DCs deal with the regulatory aspects of mangrove management, such as issuing harvesting permits for mangrove forest products for both subsistence needs and commercial services.[149] In 2016/2017 Kibiti District planned to harvest 18,250 scores (units which contains around 20 poles) of mangroves but only 572 scores of mangroves were harvested. This is the equivalent to 19 harvesting permits that were issued. Each permit had an average of 30 scores.[150] Another of the DCs' roles comprises making bylaws and providing guidance for villages during bylaw formulation, and reviewing and approving these village forest bylaws and management plans developed by the Village Natural Resources Committees.[151]

At the local level, the Village Assembly (VA) is the top organ in the village and consists of all adult members of that village.[152] The VA is responsible for electing the Village Council (VC).[153] The VC has the primary role of managing the village lands.[154] It also plays the role of organizing local communities and coordinating meetings.[155] It facilitates the formation of the Village Natural Resources Committees (VNRC) which is vested with responsibility for managing the forest on behalf of the village under CBFM.[156]

The VC proposes a list of possible VNRC members to an open village assembly, whereby villagers use criteria stipulated in the guidelines to approve or reject the proposed candidates through both open discussion and open voting. The VNRC members are elected by the VA. [157] The approved VNRC then assumes power for a period of five

147 World Bank (2013). *Implementation completion and results report*. Report No. ICR2754.

148 The Local Government (District Authorities) Act of 28 June 1982. Section 5.

149 *Ibid*. Section 152.

150 Interview with Mr. Mathew, Kibiti District Forest Manager, 28 June 2019.

151 *Ibid*. Section 118(d).

152 *Ibid*. Section 55.

153 *Ibid*. Section 25, 57(1).

154 Ministry of Natural Resources and Tourism, Forest and Beekeeping Division (2007). *Community Based Forest Management Guidelines for the Establishment of Village and Forest Reserves and Community Forest Reserves*.

155 The Local Government (District Authorities) Act of 28 June 1982. Section 164(1).

156 Ministry of Natural Resources and Tourism, Forest and Beekeeping Division (2007). *supra* note 155.

157 The Forest Act of 4 June 2002. Section 39(3)(1).

years concurrently with the village government and is in charge of the development of forest management plans and bylaws. TFS and VCs will work with VNRC in developing and implementing the bylaws and forest management plans.[158] Other responsibilities of the VNRC include undertaking patrols, raising awareness to the villagers on the management plan and bylaws and ensure their effective implementation. The VA is responsible for approving the mangrove management plan and bylaws submitted by the VNRC.[159]

Fishing community groups recognized as beach management units (BMUs) work with the Government to ensure effective management, conservation and protection of fish in their respective area.[160] BMUs are established by the Government and help facilitate law enforcement, ensure beach sanitation, prepare bylaws and inspect fishing licenses.[161] BMUs operate to protect the marine and coastal resources in their respective areas.[162] A BMU includes all those involved in fishing activities such as boat owners, crew members, dealers in fishing gears and fish traders.[163] Each BMU should have a sub-committees responsible for fisheries management and environmental protection.[164] To ensure protection of mangroves, BMUs in Bagamoyo undertake education and awareness raising among the local communities, and issue permits and fines. They have introduced beekeeping activities in mangrove areas as an alternative to exploitation of mangrove areas, which also helps in reducing the ecological footprint on mangroves.[165]

### 9.3.3 Institutional challenges in managing mangroves

Continued mangrove degradation can be attributed in part to weak institutional management and failure to involve communities. Failures in management and enforcement of protection measures has resulted in mangrove loss in many parts of the country.[166] In 1987, the government issued a ban on mangrove harvesting to allow for an inventory of all mangroves in Mainland Tanzania. However, the ban did not stop people from harvesting mangrove resources illegally, and enforcement was ineffective. The ban was lifted for subsistence use a few years after it was implemented.[167]

Another institutional challenge in mangrove management is a lack of the capacity to implement management rules and regulations. The Districts have limited staff, which makes monitoring difficult, especially because of the size of the area to be covered. The government's budget for forest management is very small compared to other sectors.[168] Due to a shortage of staff and working facilities, the District staff fail to regularly undertake patrols and monitoring visits to detect illegal activities.[169] For example, **Rufiji has only three full-time forestry officers covering a vast area of mangroves of approximately 22,000 ha.** The staff use one small boat to monitor and patrol this area.[170] As a result, controlling illegal harvesting is impossible and mangrove use is rampant.

Funding has been a problem in implementing mangrove management interventions. Most forest management activities depend on donor funding.

158 The Local Government (District Authorities) Act of 28 June 1982. Section 142(c).

159 Interview with Mr. Daniel Lucas, Project Officer, Community Forest Conservation Officer, MJUMITA, 26 September 2018.

160 The Fisheries Act of 30 January 2004. Section 2.

161 Okoth, D.O. (2015). Performance of BMU in Mangrove Protection: A Case Study of Mlingotini Village in Bagamoyo District. *Journal on Coastal Zone Management*.

162 *Ibid.*

163 Luomba, J. (2013). *Role of Beach Management Units in Implementating Fisheries Policy: A Case Study of of two BMUs in Lake Victoria, Tanzania.*

164 *Ibid.*

165 Okoth, D.O. *supra* note 162.

166 Mangora, M.M. *supra* note 3.

167 *Ibid.*

168 Interview with anonymous, Forest Officer, TFS, 26 September 2018. This opinion is expressed in his/her personal capacity.

169 Mangora, M.M. *supra* note 3.

170 Mshale, B. et al. *supra* note 1.

The same applies to mangrove management and conservation projects. Receiving constant funds from donors has proven difficult, which makes it difficult to meet the intended objectives.[171] A lack of funding can hinder ongoing restoration projects. In addition, each donor has his own interests and ideas about how long their funding should continue, which is not according to the needs of the mangrove ecosystems being restored.[172]

Poor sectoral coordination relates to the various policies and actions affecting the effective management of mangroves. For example, in Rufiji, the Fisheries Department did not effectively involve forest officers when developing the tools and guidance on mangrove fisheries.[173]

Weak governance and low levels of accountability and transparency are another challenge hindering effective mangrove management. Corruption is blamed for exacerbating illegal activities in mangrove areas. Local community involvement in management and decision making concerning these resources is seen as crucial for halting corruption and improving governance.[174] Mangrove products are harvested and transported illegally via unofficial routes and permits are reportedly issued without following due process.[175]

There is a perception amongst many stakeholders that mangroves are not paid as much attention as other terrestrial forests. They argue that because of the threats mangroves are facing, the government should direct more effort towards their management and conservation, and programs should be devised to make sure mangroves are properly managed. This is evidenced by the lack of reliable data on mangrove areas in Tanzania and also the delay on the part of the government to revive the 1991 Mangrove Management Plan.[176]

Some decisions by government departments have had a huge effect on mangroves, especially in Rufiji. The influx of pastoralists into the Rufiji area is a threat to mangroves. These pastoralists originated from other parts of the country, particularly the Ihefu wetland area. They were directed by government to the Lindi and Kilwa Districts, although they went instead to Rufiji because of water availability.[177] There have been conflicts between farmers in Rufiji and the pastoralists due to a shortage of land.[178] Because of this shortage of farming land, Rufiji residents are forced to clear mangrove areas in the delta to undertake their farming activities.[179]

## 9.4 Behavioural level: Alienation and political partisanship obscure a desire for sustainability

Tanzania's policies and laws on mangrove management affect many stakeholders who behave differently towards the mangroves in the country. Excluding people from using these resources has led to many people reacting against the legal framework.[180] People use any means possible to harvest mangroves, sometimes in collaboration with forest officers.[181] There have been many incidences of illegal timber harvesting and charcoal production in mangrove areas.[182] Poor implementation of the legal framework has contributed to continued mangrove loss.

171 Interview with anonymous, Forest Officer, TFS, 26 September 2018. This opinion is expressed in his/her personal capacity.
172 *Ibid.*
173 Mshale, B. et al. *supra* note 1; Mangora, M.M. *supra* note 3.
174 Interview with anonymous members of local communities, 24 September 2018.
175 Interview with anonymous NGO staff, 28 September 2018. This opinion is expressed in his/her personal capacity.
176 *Ibid.*
177 Mshale, B. et al. *supra* note 1.
178 *Ibid.*
179 *Ibid.*
180 Interview with anonymous NGO representative, 26 September 2018.
181 *Ibid.*
182 Mshale, B. et al. *supra* note 1.

### 9.4.1 Coastal communities

It is widely acknowledged that the inclusion of local communities will help achieve sustainable forest management.[183] The same applies to mangrove management. Effectively involving local communities, and ensuring this participation is active and not passive, will help reduce the threats against mangroves and ensure their sustainability. In Tanzania, like in many other countries, local communities depend on mangrove forests for poles, timber, firewood, charcoal, and fish, for subsistence as well as economic reasons. Community members believe that there need to be comprehensive awareness-raising programs on the value of mangrove ecosystems, otherwise the unsustainable use of these resources will continue to the detriment of the local communities, especially women whose livelihoods depend on them.[184]

Local communities acknowledge the existence of legislation that applies to mangrove management and the restrictions on use. **These laws have been a cause of mangrove destruction, since communities feel alienated and do not benefit from the resources except through illegal and unsustainable use.** Community members claim that total restrictions do not work; there need to be strategies to ensure the sustainable use of mangroves. They agree that there should be controls and regulations, and that these will help reduce unsustainable use. Some communities have been at the forefront of ensuring these ecosystems are conserved.[185]

In the Rufiji Delta, local communities have been working tirelessly to raise awareness about the issues facing the Delta and their effects with regard to the mangroves. They strongly believe that the mangrove forests can be well protected if they work together to change and reverse the challenges currently existing in the Delta. Communities have complained about reduced fish catches because of the ongoing mangrove exploitation. This results in economic hardship for those local communities whose main source of income is fishing. Recently, the local communities have also been experiencing water shortages due to mangrove destruction.[186] They call upon their fellow community members to conserve the remaining mangrove forests, since they create healthy breeding sites for fish, as well as areas for rice farming, pole construction, timber, and medicinal plants. The conservation of mangrove forests will also ensure access to water for domestic and farming purposes. All these bring income to the local communities.[187]

Despite the existence of legal restrictions on the use of mangrove forests, other community members, mostly from outside, have been involved in the unsustainable harvesting of products such as timber and charcoal. Outsiders have flocked to the mangrove areas for wood resources that have been depleted where they come from. The timber and charcoal are sold to cities, such as Dar-es-Salaam, the biggest market for these products.[188] Others use dynamite for fishing or divert water to their farms and away from mangrove areas.[189] According to the local communities, the introduction of alternative sources of income by the government will be one step towards protecting these valuable resources.[190] These could be beekeeping activities and the introduction of village savings and loans associations where communities can access soft loans for their businesses.[191]

### 9.4.2 Civil society and international support

Since the introduction of PFM in Tanzania, NGOs and other international organizations have supported MNRT and local communities to manage and conserve mangrove forests. The NGOs'

183 Agbogidi, M. et al. (2007). Role of community forestry in sustainable forest management and development: a review. *ASSET Series A* 7(1):44-54.

184 Focus Group Discussion in Rufiji (composed of VNRC members, farmers, beekeepers, and other natural resources users), September 2018.

185 *Ibid.*

186 *Ibid.*

187 *Ibid.*

188 *Ibid.*

189 *Ibid.*

190 *Ibid.*

191 *Ibid.*


roles and responsibilities are detailed in the Forest Policy.[192] Projects must be implemented based upon the existing legal framework.[193] Proposed project interventions must be aligned with the existing Programmes such as the National Forest and Beekeeping Project (2001-2010), the Climate Change Strategy, or other sector programs and action plans.[194] To ensure the sustainability of the proposed interventions, NGOs provide financial resources to boost capacity of government officials from the national to the local level.[195]

A good example is a new project by Mangrove Capital Africa, a ten-year programme led by Wetlands International.[196] This programme will be implemented in the Rufiji Delta by TFS in collaboration with Wetlands International. Awareness raising about the value of mangroves is one focal area of this project so as to provide the required knowledge for better management. The Project will build the capacity of local communities and government staff to manage these resources.[197]

IUCN, with funding from the Royal Netherlands Embassy, provided technical assistance for the Rufiji District Council to implement the Rufiji Environment Management Project (REMP) during 1998-2003.[198] One of the interventions was the development of village environment management plans. This was done in consultation with local communities. The Project helped four villages to manage their mangrove resources. The Project also facilitated the development of land-use maps with the effective participation of the local communities. With these maps, the villages were then able to undertake participatory land use planning at the village level. This project fostered cooperation between local communities and local government in conserving the mangrove areas.[199]

192 Ministry of Natural Resources and Tourism (1998). *National Forest Policy*. Dar es Salaam, Tanzania. Section 5.

193 Interview with anonymous, Forest Officer, Forest and Beekeeping Division, 19 September 2018.

194 *Ibid.*

195 *Ibid.*

196 Wetlands International (11 July 2018). *Mangrove Capital Africa*. https://www.wetlands.org/casestudy/mangrove-capital-africa/ [Accessed 3 April 2019].

197 *Ibid.*

198 United Nations Development Programme (2012). *Rufiji Environment Management Project*. Equator Initiative Case Study Series. New York, NY.

199 *Ibid.*

Another project with a role in mangrove management was the Tanzania Coastal Management Partnership (TCMP). The TCMP was established in 1997 as a joint effort between the National Environment Management Council (NEMC), the University of Rhode Island and the United States Agency for International Development.[200] The goal of the TCMP was to improve and coordinate coastal resource management.[201] The TCMP worked with other stakeholders to conserve and use coastal ecosystems and resources wisely.

Mangroves are known to be important carbon sinks.[202] The East Africa Mangrove Carbon Project (EAMCP) is being carried out by the University of Dar es Salaam, TFS, and the US Forest Service in the Rufiji mangrove forest (9,200 ha).[203] This initiative intends to support capacity development and data collection in the measurement areas, as well as monitoring of carbon stocks. The EAMCP will establish a mangrove research and demonstration forest in the Rufiji Delta.[204]

An initiative by VPO through the Rufiji District Council aims to develop people's capacity to adapt to the impact of climate change, supported by UN Environment.[205] The University of Dar-es-Salaam's Institute of Marine Sciences, in partnership with the US Forest Service, has signed a memorandum of understanding with TFS to establish a Mangrove Research and Training Center (MRTC) in the Rufiji Delta.[206] All these initiatives aim to improve the mangrove conditions in the country. The information generated by these projects is intended to enable proper decision making in terms of the management and conservation of mangroves.

### 9.4.3 Politicians

In Tanzania, different political ideologies have been partly to blame for the ongoing forest destruction. Political leaders at different levels have been issuing statements during election times which threaten the survival of mangroves.[207] For example, controversial statements by politicians have facilitated the clearing of mangroves in the Rufiji Delta to pave the way for rice farming. **Some communities who follow a particular political party refuse to take part in activities relating to mangrove management if those activities are organized by a person from another political party.**[208] It was revealed that during the 2015 general election campaign, local communities were promised unrestricted access to mangrove areas to harvest and undertake any economic activity, but only if they chose that particular party.[209] Some statements allow villagers to farm inside forest reserves or undertake salt making in mangrove areas.[210] There are cases where the Ministry of Lands has issued permits for the construction of tourist hotels in mangrove areas in Bagamoyo, Dar-es-Salaam.[211] These promise and actions put pressure on mangroves and make it difficult for the TFS staff to continue protecting the mangroves.[212]

### 9.4.4 Project proponents

Individuals who want to undertake development are required to undertake an EIA. Several EIAs have been conducted since the Environmental Management Act came into force, but the awareness level of the EIA requirements among

200 Wang, Y. et al. (2003). Remote Sensing of Mangrove Change along the Tanzania Coast. *Marine Geodesy* 26(1-2):35-48.

201 *Ibid.*

202 Mangora, M.M. *supra* note 3.

203 Mshale, B. et al. *supra* note 1.

204 Mangora, M.M. *supra* note 3.

205 Mshale, B. et al. *supra* note 1.

206 *Ibid.*

207 Interview with anonymous NGO representative, 28 September 2018. This opinion is expressed in his/her personal capacity; Mshale, B. et al. *supra* note 1.

208 *Ibid.*

209 Interviews with members of local communities in Rufiji, 24 September 2018.

210 Mangora, M.M. *supra* note 3.

211 Stedman-Edwards, P. (Ed.). *Tanzania: Rufiji, Ruvu and Wami.*

212 Interview with anonymous, Forest Officer, TFS, 26 September 2018. This opinion is expressed in his/her personal capacity; Mshale, B. et al. *supra* note 1.

different decision makers is still limited.[213] Because of economic reasons, some projects, despite being assessed and proven to be harmful, have been allowed to proceed.[214] A good example is the prawn farming in Rufiji that was given approval to operate despite social protests and technical advice not to allow it.[215]

The costs of an EIA are borne by the proponent. This, however, makes it easy to default the process, since the proponent has the power to determine how the process can be carried out; hence, unsuitable projects can end up being implemented in wetland/mangrove areas and harming these resources. Although an EIA study is to be done prior to commencing a project, this is sometimes not the case. Regulations and guidelines on how an EIA should be conducted are in place, but this does not stop some projects from being implemented in wetland reserves, such as building beach hotels.[216]

## 9.5 Outcome level: A continuing story of constant decline

Tanzania has experienced implementation challenges with its existing legal frameworks, and this has facilitated mangrove destruction with a serious impact on ecosystems and communities' livelihoods. In some places, mangroves seem stable and there is an increase in mangrove cover.[217] But in other areas, the situation is quite challenging. The Bagamoyo area is one example, where the clearing of mangroves for fuel wood and charcoal production both for subsistence and for commercial purposes takes place.[218] The tourism sector is contributing to the loss of mangrove areas in Bagamoyo through the construction of beach hotels and opening beaches.[219] Investors are being given permits to clear mangrove forests to construct hotels and tourist sites.[220] The introduction of BMUs has facilitated the reduction of mangrove cutting for charcoal and firewood on the coast, unlike in areas where the BMUs cannot work due to a lack of facilities.[221]

An increased demand for timber and poles for construction is causing a serious threat to the mangroves in Kilwa. Large areas of mangroves are being cleared and poles are being transported illegally to Zanzibar.[222] A dhow full of mangrove poles was recently confiscated in Kilwa and the perpetrators were put behind bars.[223] In Lindi, mangroves are continuing to be depleted because of salt production.[224]

Despite several interventions in the Rufiji Delta, mangrove coverage there is also declining. Approximately 49,000 people live around the Delta and depend on mangroves both for subsistence and commercial purposes.[225] Local communities in Rufiji can use mangrove products without the approval of TFS, but only for subsistence. However, when it comes to commercial uses, local communities have to apply for permits as prescribed by the Forest Products Harvesting Guidelines of 2015.[226] Despite these Guidelines, there have been a number of incidents where mangrove products are exported illegally.[227] According to communities, the reason behind this is the difficulty in securing permits and other licences.[228] A recent study

213 Sosovele, H. (2013). Governance challenges in Tanzania's environmental impact assessment practice. Institute of Resources Assessment, University of Dar-es-Salaam. *African Journal of Environmental and waste management* 1(5):081-084.

214 *Ibid.*

215 Taylor, M. et al. (2003). *Mangroves of East Africa*. UNEP-WCMC Science Series No. 1.

216 Interview with anonymous, Project Coordinator, MJUMITA, 26 September 2018.

217 Okoth, D.O. *supra* note 162.

218 *Ibid.*

219 *Ibid.*

220 *Ibid.*

221 *Ibid.*

222 Interview with anonymous, Rufiji District Authority, 24 September 2018.

223 Interview with members of the local community, 25 September 2018.

224 Liingilie, S. et al. (2015). Effects of salt making on growth and stocking of mangrove forests of south western Indian Ocean coast in Tanzania. *Mediterranean Journal of Biosciences* 1(1):27-31.

225 Monga, E. et al. (2018). Mangrove cover change detection in the Rufiji Delta in Tanzania. *WIO Journal of Marine Science* 17(2):1-10.

226 Mshale, B. et al. *supra* note 1.

227 Interview with members of the local community, 25 September 2018.

228 *Ibid.*

indicated that the mangrove coverage in the Delta declined from 51,941 ha, as estimated in 1991, to 45,519 ha, as estimated in 2015.[229] Clearing mangroves for rice farming has increased over the years from 5,344 ha in 1991 to 12,642 ha in 2015.[230] Rice farming is prevalent in Rufiji because of ecological changes following the flooding of the Delta after heavy rains.[231] Other activities that continue to threaten the survival of mangroves in Rufiji include clearing mangroves for fuel wood that is used for salt production, lime burning, and fish smoking.[232] Unsustainable fishing by local communities is causing reduced fish catches. Local communities use dynamite, which destroys smaller fish.[233] Smaller fish are being caught because of the use of illegal fishing nets.

Despite numerous initiatives by the government to protect the mangroves on Mafia Island, the mangroves there have been decreasing for the past three decades. The mangrove area on Mafia Island was 3,708.36 ha in 1985 and declined to 3,187.25 ha in 2013 due to excessive shrimp farming.[234] Mangroves in areas around Dar-es-Salaam are also facing a decline. In Kunduchi, mangrove areas are being converted for salt works and settlements. In Mbweni, trampling of seedlings creates an additional threat.[235]

## 9.6 Conclusions and recommendations

Various legal instruments have a bearing on mangrove conservation in Tanzania, and various institutions from national to local level have a role in ensuring the sustainable management of this important resource. Many stakeholders are concerned about the continued deterioration of mangroves due to the non-implementation of existing laws. The absence of specific legislation on mangroves is exacerbating their destruction. Some legislation is vague or unclear about mangrove management, which makes implementation difficult. The lack of financial resources and the limited capacity of the various institutions are serious challenges to effective mangrove management. The lack of awareness about the importance of mangroves to some stakeholders makes law enforcement difficult. The restrictive nature of mangrove regulations makes the communities turn against this resource and exploit it unsustainably.

The institutions responsible for mangrove conservation are not operational to the full extent of their mandates. This was observed by a number of the interviewees, who proposed building the capacity of these institutions in terms of human and financial resources. A lack of community involvement in mangrove management and poor governance are also seen as driving the degradation of mangroves. The participation of communities in designing policies, plans, strategies, and programs concerning the environment, and mangroves specifically, is crucial; local communities should be informed in advance and given a platform to participate in making decisions about interventions in mangrove management.

To enhance mangrove forest management, it is also important for sectoral ministries to collaborate and ensure the implementation of sectoral laws and policies that impact mangroves. For example, the forest and agricultural sectors need to devise strategic plans to curb agricultural activities in mangrove reserves.

The sanctions provided by the existing laws do not prevent the same acts from being repeated and causing destruction to the mangroves. Certain stakeholders feel strongly that these sanctions need to be revised to make them more stringent.

---

229 Monga, E. et al. *supra* note 229.

230 *Ibid.*

231 Mshale, B. et al. *supra* note 1.

232 *Ibid.*

233 Interview with members of the local community, 25 September 2018.

234 Mayunga, J.S. and Uhinga, G.A. (2018). Mapping spatiotemporal distribution of mangroves in Mafia Island in Tanzania using landsat imagery. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* XLII-4/W8.

235 Mabula, M.K. et al. (2017). *Peri-urban Mangroves of Dar es Salaam-Tanzania are Highly Vulnerable to Anthropogenic Pressures*. Institute of Marine Sciences - University of Dar es Salaam.

## Recommendations

1. Carry out a comprehensive review of the mangrove land tenure system to ensure the sustainable management and use of mangroves. Studies on the coastal forests in Tanzania highlighted that forest reserves under village management are in a better condition than nationally managed reserves.
2. Undertake research, communication, and awareness raising for all stakeholders from communities to policy and decision makers. Very few stakeholders have a good understanding of mangroves despite their enormous benefits economically, ecologically and socially. Research is important to provide information on what species to focus on when restoring mangroves to avoid having an impact on the ecosystem.
3. Strengthen cross-sectoral coordination between the different ministries and agencies such as forest, marine, agriculture, water, fishing, mining, and wildlife. Sector coordination can be strengthened through undertaking joint planning, implementation, and monitoring, improving communication and information sharing, defining roles and responsibilities, and developing strategies, as well as participating in joint decision making.
4. Ensure that all of the key institutions involved in mangrove management have the capacity to undertake their roles and responsibilities. Institutions such as TFS and local governments should be helped to increase their staff levels and given financial capacity to provide extension services for the local communities, to monitor mangroves, and to guarantee law enforcement.
5. Encourage non-state actors and the private sector to engage in mangrove conservation projects. Since mangroves are national reserves, a small number of CSOs have been engaged in mangrove management and conservation projects. A large number of mangrove conservation projects are mainly implemented by government agencies and international organizations. CSOs and the private sector should design projects together with TFS/MNRT and join their efforts to implement these projects. CSOs and the private sector can provide their technical expertise for these projects.
6. Revitalize the National Mangrove Management Plan, which was developed in 1991 but never implemented. A National plan will serve as a tool to manage, facilitate, and control the management of mangroves. Tanzania can fund the implementation of this plan from the Tanzania Forest Fund and not depend on donors.
7. Extend the JFM model in Tanzania for mangrove areas. Under the JFM approach, local communities will enter into a joint management agreement with the government, and the government will retain its ownership rights because mangroves are a national forest reserve.
8. Commission a national study on the status of mangrove areas in the country. This study should provide data on the ecology and size of mangrove areas throughout the country. There is some relevant information on the Rufiji Delta because it has been researched by many institutions from inside and outside Tanzania. Information on the other mangroves areas is limited or non-existent.
9. Improving living standards in rural areas as well as agricultural practices. Governments at both a national and local level must control the increasing population. If this is achieved, people will not be tempted to cut down mangroves.
10. Ensure that mangroves are featured in the 2002 Forest Act when it is reviewed. Stipulate their role in carbon sequestration and coastal protection so that strategies can be developed for their conservation
11. Emphasize mangrove rehabilitation and plantation projects with all stakeholders as adaptation and mitigation strategies to cope with climate change.
12. Since mangroves are important habitats for fish, put in place measures through the fisheries regime to avoid conversion of mangroves to other land uses.

10

# VIETNAM

## A UNIQUE FOREST IN A HOMOGENOUS GOVERNANCE FRAMEWORK

**By Loan T.P. Nguyen**

Vietnam is facing many challenges in its efforts to achieve sustainable management and conservation of its mangroves. Whereas Vietnam has enhanced its mangrove-related jurisdiction in recent decades, there are substantial gaps in enforcing these legal instruments on the ground. To some extent, this is due to the absence of integrative planning tools that take into account the value of ecosystems and their environmental services. Another obstacle stems from the priority of economic obectives which leaves little space to enhance good environmental practices. At the local level, political, economic and social structures create a culture of noncompliance. Vietnam's overall mangrove coverage has increased in recent years, but most mangroves in the country are in fragmented, replanted monoculture patches. Almost all of Vietnam's primary mangrove forest has disappeared.

# KEY FACTS

## POPULATION: ≈ 97 million

## MANGROVE COVERAGE: ≈ 270,000 ha

## KEY INSTITUTIONS:

The Ministry of Agriculture and Rural Development

The Ministry of Natural Resources and Environment

People's Committees of all levels

Forest Management Boards


● Ramsar sites containing mangroves

## MAIN THREATS:

AQUACULTURE DEVELOPMENT

OVERHARVESTING

INFRASTRUCTURE DEVELOPMENT

URBANIZATION

POLLUTION

CLIMATE CHANGE

DIVERSION OF FRESH WATER

## MAIN USES:

FISHERIES TOOLS

AQUACULTURE

CONSTRUCTION POLES

CHARCOAL/ FIREWOOD

ECOTOURISM

## LEGISLATION:

www.iucn.org/mangrovelaw

# CONTENTS

# ABBREVIATIONS

| | |
|---|---|
| **ACB** | ASEAN Center for Biodiversity |
| **CBD** | Convention on Biological Diversity |
| **DARD** | Department of Agriculture and Rural Development |
| **DoNRE** | Department of Natural Resources and Environment |
| **EIA** | Environmental Impact Assessment |
| **FES** | Forest Environmental Services |
| **GHG** | Greenhouse gases |
| **LURC** | Land Use Rights Certificate |
| **MARD** | Ministry of Agriculture and Rural Development |
| **MoNRE** | Ministry of Natural Resources and the Environment |
| **NDC** | Nationally Determined Contribution |
| **PFES** | Payment for Forest Environmental Services |
| **PFMB** | Protection Forest Management Board |
| **SFC** | State Forest Company |
| **SFMB** | Special-use Forest Management Board |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **XTNP** | Xuan Thuy National Park |

## 10.1 Introduction: A patchwork of plantations

### 10.1.1 Environmental services provided by mangroves in Vietnam

With over 3,000 km of coastline across different climate zones, Vietnam has an impressive reservoir of maritime and coastal biodiversity. Its major coastal-marine ecosystems include river estuaries and intertidal ecosystems that are home to various kinds of mangrove forests. Nearly 100 different species of mangrove plants are found in Vietnam.[1] Mangrove ecosystems render an abundance of ecosystem services and products that are vital to society, economic development, and human wellbeing. For instance, mangroves support Vietnam's fishery and aquaculture industry, which accounts for nearly 6% of the national GDP, and contributes greatly to national food security and the dietary protein intake of Vietnam's growing population.[2] Mangroves provide multiple livelihood benefits for local people in coastal areas, particularly poorer households that directly and indirectly rely on mangrove-related ecosystems for activities such as fishing, shellfish collection, and timber extraction for construction materials and firewood. Given its long coastline and geographical position in the Asia-Pacific typhoon belt, Vietnam is increasingly exposed to climate change-related hazards.[3] Intact mangrove systems play an important role in adaptation strategies, as they can help local communities to strengthen their resilience to cope with extreme weather events and sea level rises.

### 10.1.2 The status of mangrove forests

Vietnam has 270,000 ha of mangrove forests, of which 208,000 ha are planted rather than natural forests, according to statistics from 2010.[4] The bulk of mangrove forests (more than 60% as of 2008) are in the Mekong Delta, with the rest split between the southeast region, and the coastal north including the Red River Delta.[5] In 2016, Vietnam had about 15 million ha of forest land, of which only a tiny fraction consisted of mangrove forests.[6]

### 10.1.3 Mangrove loss and conservation challenges

Mangroves were once widely distributed in the coastal areas of the Red River Delta, the Mekong Delta, and other river estuaries on Vietnam's long coastline. Over the past 60 years, mangrove forest cover has reduced substantially due to rapid degradation and deforestation. While in 1943 Vietnam had over 400,000 ha of mangrove forests, in 2015 only 270,000 ha remained.[7] **The mangroves that remain in Vietnam are highly fragmented with an average patch size of 100 ha.**[8] As the socio-economic and ecological importance of mangroves is increasingly recognized, the government has increased its conservation efforts and worked to improve legal frameworks related to mangroves. A number of national parks and conservation areas have been established to protect mangroves, such as the Xuan Thuy National Park in the Red River Delta, the Can Gio Mangrove Biosphere Reserve on the Dong Nai River estuary, the U Minh Conservation Area, and the Mui Ca Mau

1 BCA, WWF and Stockholm University (2013). *Climate change and biodiversity conservation in a changing climate for Vietnam*. Ha Noi, Vietnam. Pg. 13.

2 Garrido, A. et al. (2009). *Vietnam development report 2010: modern institutions*. Washington, DC: World Bank.

3 Bangalore, M. et al. (2018). Exposure to Floods, Climate Change, and Poverty in Vietnam. *Economics of Disasters and Climate Change* 3(1):79-99.

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

5 MARD (2008). *Summary Report Proposal on Mangrove Rehabilitation and Development: 2008-2015*. MARD, Hanoi; Hawkins, S. et al. (2010). *Roots in the Water: Legal Frameworks for Mangrove PES in Vietnam. Katoomba Group's Legal Initiative Country Study Series*. Forest Trends Washington, DC.

6 World Bank (2019). "Forest area (sq. km)". *World Development Indicators*. The World Bank Group. https://data.worldbank.org/indicator/AG.LND.FRST.K2?locations=VN [Accessed 18 March 2019].

7 Phan Nguyen Hong (2004). "Mangrove forest in Vietnam: current status and challenges", in Bhandari, B.B. et al. *Mangroves in Southeast Asia. Status, Issues and Challenges*. Ramsar Center Japan, Institute for Global Environmental Strategies (IGES), Tokyo, pp. 55-71; FAO (2015). *Global Forest Resources Assessment 2015: Desk Reference*. FAO, Rome.

8 Brunner, J. (2010). *Summary Report: Katoomba XVII Workshop Coastal Management, Mangroves, and Carbon Sequestration, June 25-27, 2010*. Xuan Thuy, Nam Dinh Province, Socialist Republic of Viet Nam. IUCN Vietnam Programme, Hanoi.

National Park. Nevertheless, despite stricter laws and advanced government efforts at protecting, conserving and restoring, the mangrove forests in Vietnam remain under acute threat.

According to the literature and a survey conducted with experts on mangroves in Vietnam, the continuous disappearance of mangroves can be attributed to a wide range of both natural causes (storms, flooding, and naturally-occurring erosion and siltation changes), and anthropogenic causes. Aquaculture is a major threat, causing the loss of two-thirds of mangroves during the period 1980-2000.[9] Nowadays, mangroves are threatened by overexploitation. In coastal areas, high population growth in conjunction with rural poverty, a lack of agricultural land and insufficient off-farm income opportunities make people dependent on mangrove forests. Degradation results from small-scale, often subsistence-oriented activities: agriculture, illegal fishing, timber harvesting, and shellfish collection.[10] Uncontrolled fishing boat traffic damages mangrove seedlings and creates water pollution, and the use of dynamite and electricity in fishing activities contributes to mangrove degradation.[11] Government-led developments, in particular large-scale projects in coastal areas, including infrastructure, industry, tourism, and residential areas, cause significant mangrove loss.[12] Degradation results indirectly from increased household and industrial waste, farming residue, and other environmental pollution. Finally, climate change adds a new dimension to mangrove degradation, as increasing temperatures and other changing climatic conditions may be fuelling ecosystem transitions and decreasing the resilience of mangrove habitats.[13]

## 10.2 Instrumental level: Mangroves embedded in the forest management framework

### 10.2.1 Mangrove conservation in international instruments ratified by Vietnam

Vietnam is party to the Convention on Biological Diversity (CBD), the Ramsar Convention, and the Cartagena Protocol on Biosafety, in cooperation with the ASEAN Center for Biodiversity (ACB). It is also party to the UN Watercourses Convention, and the United Nations Framework Convention on Climate Change (UNFCCC).

Vietnam defines its obligation to promote the sustainable use of wetlands in compliance with international commitments under the Ramsar Convention, which entered into force in Vietnam in 1989.[14] As a signatory State, Vietnam is committed to working towards the wise use of all wetlands in Vietnam and to designating suitable wetlands for the list of Wetlands of International Importance and ensuring their effective management. Vietnam currently has nine sites designated Wetlands of International Importance (Ramsar Sites), with a surface area of 120,549 ha.[15] Among these sites, three contain mangrove forests including 13,400 ha situated in the Mui Ca Mau National Park.[16]

In May 2007, the government launched a national action plan for the implementation of CBD and the Cartagena Protocol on Biosafety. One of the main tasks of this action plan is to rehabilitate and develop wetlands and marine ecosystems.[17] For this task, the current status of mangrove forests is supposed to be investigated and evaluated; plans

9 *Ibid.*

10 Hawkins, S. et al. *supra* note 5

11 *Ibid.*

12 *Ibid.*

13 Ward, R.D. et al. (2016). Impacts of climate change on mangrove ecosystems: a region by region overview. *Ecosystem Health and Sustainability* 2(4).

14 Decree 109/2003/ND-CP of 23 September 2003 on the conservation and sustainable development of submerged areas. Article 2, 4.

15 Ramsar 2019. *Sites Information Service*. https://rsis.ramsar.org/ris-search/?f[0]=regionCountry_en_ss%3AViet+Nam [Downloaded 18 March 2019].

16 *Ibid.*

17 Decision 79/2007/QD-TTg of 31 May 2007 approving the national action plan on biodiversity up to 2010 and orientations towards 2020 for implementation of the convention on biological diversity and the Cartagena Protocol on Biosafety. Article 1(II)(2)(b).

for the restoration and development of coastal mangrove forests will be adopted by 2020.[18]

Under the UN Watercourses Convention, Vietnam is committed to individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.[19] Currently, the Vietnamese Government is discussing the road map for implementing this Convention. In accordance with the Paris Agreement, Vietnam has adopted its first Nationally Determined Contribution (NDC) and committed to adopt a roadmap and method for Vietnam to participate in mitigation of global greenhouse gases (GHG), to develop a domestic carbon market and to establish other cooperation mechanisms for mitigation of GHG emissions (section 10.2.5.1).[20]

### 10.2.2 Key national strategies

The progress made by Vietnam is most evident in the strong political commitments at a policy level, but also in the practical efforts Vietnam has made in forest development, biodiversity conservation, and environmental protection in recent decades. Climate change and the conservation and sustainable use of biodiversity have increasingly gained recognition as two priority policy issues in many national strategies and other policy-relevant documents.

The National Strategy on Environmental Protection until 2020 makes strong commitments to biodiversity conservation and sustainable ecosystem management. This includes objectives such as the rehabilitation and regeneration of 50% of all degraded ecosystems until 2020, along with the prevention of further losses of wetlands, primary forests, mangroves, coral reefs, and other critical ecosystems.[21] This Strategy aims to enhance the resilience and adaptive capacity of 60% of all natural ecosystems of national and international importance, including Ramsar sites, by 2020.[22]

Biodiversity conservation is recognized in the context of green growth and responding to climate change, as affirmed under the National Strategy on Biodiversity Conservation to 2020.[23] Specific targets regarding biodiversity conservation until 2020 are indicated in the Master Plan on National Biodiversity Conservation. **Vietnam targets the expansion of conservation territories by demarcating an additional 46 protected areas with a total land size of 567,000 ha, and forming four new biodiversity corridors, bringing the total size of legally protected areas up to 9% of Vietnam's total land area, including 60,000 ha of natural mangrove forests.**[24] The plan aims to promote surveys and to boost research on ecological zoning and the evaluation of areas regarding their value for biodiversity conservation.[25]

Promoting sustainability in the country's development process has become a leitmotiv enshrined in the national Socio-economic Development Strategy for the period 2011 to 2020.[26] This is most evident in the commitment to always link socioeconomic development with environmental protection and greening the economy. In close connection, a national Green Growth Strategy was promulgated in 2012, promoting movement towards a low-carbon society and investment in natural capital.[27]

---

18 *Ibid.*

19 Convention on the Law of the Non-navigational Uses of International Watercourses (UN Watercourses Convention) (New York, 21 May 1997). Article 20-23.

20 The Paris Agreement (Paris, 12 December 2015). Article 6; Vietnam's first Intended Nationally Determined Contribution (submitted 3 November 2016). UNFCCC.

21 Decision 1216/QD-TTg of 5 September 2012 approving the strategy for protecting the national environment by 2020, and the orientation towards 2030. Annex.

22 *Ibid.*

23 Decision 1250/QD-TTg of 31 July 2013 approving the National Biodiversity Strategy to 2020, vision to 2030. Article 1(I)(1); Ministry of Natural Resources and Environment. Vietnam National Biodiversity Strategy to 2020, vision to 2030.

24 Decision 45/QD-TTg of 8 January 2014 approving the master plan on biodiversity conservation in the whole country through 2020, with orientations toward 2030. Article 1(I)(2)(b).

25 *Ibid.* Article 1(III)(3).

26 Resolution 10/NQ-CP of 24 April 2012 providing the action plan for the implementation of the socio-economic development strategy for the period 2011 to 2020. Section II.

27 Decision 1393/QĐ-TTg of 25 September 2012 approval of the National Green Growth Strategy.

Apart from the traditional approaches to biodiversity conservation, the need for the sustainable management and use of ecosystems has found its way into other strategies. In this regard, the Vietnamese government aims to protect existing coastal forests covering an area of 310,695 ha and to develop 46,058 ha. One of the main targets of the Government's Plan for protection and development of coastal forests to cope with climate change is to plant a total of 29,500 ha of mangroves across several provinces. This includes a project on afforestation of 308.17 ha. of mangrove forests in Quang Ngai, a project on protection and development of 500 ha. of coastal mangrove forests in Bac Lieu province, and a project on protection and development of 1,000 ha. of mangrove forests in Ca Mau province. [28]

### 10.2.3 Constitutional provisions

Among a large number of new issues related to the environment, such as sustainable development and climate change adaptation, biodiversity was included in the 2013 Constitution. According to this instrument, everyone has the right to live in a clean environment and has the obligation to protect the environment.[29] Any activities that cause environmental pollution, natural resource exhaustion or biodiversity depletion should be strictly punished and polluters are obligated to compensate for damages.[30] Building on this foundation, the legislation on mangrove protection has been developed and implemented through sectoral laws.

### 10.2.4 The legal basis for forest allocation and management

#### 10.2.4.1 Forest classification

As there is no specific legislation on mangrove ecosystems, the same laws and regulations apply to both terrestrial and mangrove forests. According to Vietnam's forest land classification system, natural and planted forests are classified according to the following three categories:[31]

1. Special-use forests, which account for about 15% of all forests, are strictly protected, pristine forests that are free of human disturbance and serve biodiversity conservation, ecosystem protection, and landscape conservation.[32] Special-use forests include national parks, nature conservation zones, and landscape protection areas. Timber logging and non-timber forest product extraction is strictly prohibited in special-use forests.
2. Protection forests account for around 37% of the total forested area.[33] They serve the protection of watersheds and land resources, soil health, mitigation of natural calamities, and promotion of climate regulation and other ecosystem services. Protection forests include, for example, watershed protection forests, forests protecting water resouces for communities, and wind/sand shielding protection forests. In protection forests, timber extraction is heavily restricted.
3. Production forests, comprising 48% of forest land, form the largest of the three categories.[34] Production forests are mainly used for the production and trading of timber or non-timber forest products in combination with environmental protection. They include natural production forests, planted production forests, and seeding forests.

28 Decision 120/QD-TTg of 22 January 2015 approving the project on protection and development of coastal forests to cope with climate change in 2015-2020 period. Article 1(2)(b).

29 Constitution of Vietnam of 28 November 2013. Article 43.

30 *Ibid.* Article 63(3).

31 Forestry Law of 11 November 2017. Article 5; Land Law of 29 November 2013. Article 10.

32 Luong, T.H. (2014). Forest resources and forestry in Vietnam. *Journal of Vietnamese Environment* 6(2):171-177.

33 *Ibid.*

34 *Ibid.*

Forests that satisfy the criteria for natural and planted forests, but are not subject to the criteria applied to special-use forests and protection forests, should be identified as production forests.[35] Forest classification is the basis for establishing Forest Management Units, interventions, mechanisms, and incentives for every forest type.

### 10.2.4.2 Ownership of forests

The Forestry Law affirms that the State is the representative owner of public forests, including natural forests, planted forests invested in by the State, and planted forests taken back by the state, donated or transferred to other forest owners.[36] Under this Law, forest owners are organizations, households, individuals, and communities to whom the State allocates or leases forests or land for afforestation. Forest owners are classified into seven types: 1) economic organizations; 2) households or individuals; 3) communities; 4) Protection Forest Management Boards (PFMBs) or Special-use Forest Management Boards (SFMBs); 5) People's Armed Forces; 6) science and technology vocation training institutions on forestry; and 7) foreign-invested enterprises.[37] Forest owners have the right to use the forest and enjoy the benefits arising therefrom.[38] Planted production forest ownership includes the rights to own, use and make decisions regarding plants, animals, and other property in the forest invested in by the forest owner during the allocation/lease term.[39]

### 10.2.4.3 Allocation of land use rights

In Vietnam, all land is constitutionally the property of the State, but exclusive use rights are given to individuals under a contractual arrangement with the State. The State authorizes the land use rights of land users through land assignment, land lease, and recognition of land use.[40] Land users are issued land use rights certificates (LURCs) and are entitled to products arising from investment in the land. LURCs signify the formal State recognition of a user's rights, and are necessary for secured tenure, formal land transactions, access to formal credit, and legal protection of land-use rights. LURCs can be issued to households or individuals for production forests and protection forests, if they do not exceed 30 ha.[41] Special-use forests are allocated to management organizations for management and protection purposes in line with approved plans.[42] Most mangrove forests are owned by management boards (51%) while another State entity, the Commune People's Committees hold another significant proportion (29%), and the remaining mangroves are shared between private companies (10%), and households and communities (10%).[43]

Land users have the right to use protection forests, special-use forests, and production forests that are natural forests for the stable long term.[44] For projects using more than 20 ha of protection forest land, or special-use forest land for other purposes, it is required to obtain written approval from the Prime Minister.[45] Each household or individual may not be allocated more than 30 ha of protection or production forest.[46]

Protection forests and special-use forests can be allocated to organizations, households or individuals if there is no existing protection management entity, *i.e.* a PFMB, or none is planned. This land must be used for forest protection and development activities, and cannot be used to secure a mortgage or other financial instrument.[47]

35 Decree 156/2018 /ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forestry Law. Article 4, 5, 8.

36 Forestry Law of 11 November 2017. Article 7.

37 *Ibid.* Article 8.

38 *Ibid.* Article 7.

39 *Ibid.* Article 2.

40 Constitution of Vietnam of 28 November 2013. Article 54(2).

41 Land Law of 29 November 2013. Article 129(3).

42 *Ibid.* Article 137.

43 Orchard, S.E. et al. (2015). Environmental Entitlements: Institutional Influence on Mangrove Social-Ecological Systems in Northern Vietnam. *Resources* 2015(4):903-938.

44 Land Law of 29 November 2013. Article 125(3).

45 *Ibid.* Article 58(1).

46 *Ibid.* Article 129(3).

47 Forestry Law of 11 November 2017. Article 15, 16, 17. Land Law of 29 November 2013. Article 135, 137.

**Table 5:** Allocation in terms of forest classification

| | Production forest | Protection forest | Special-use forest |
|---|---|---|---|
| **Percentage of mangroves** | 48% | 37% | 15% |
| **Activities allowed** | Commercial use allowed.<br>Silvicultural measures applied to forest development are required. | Logging restricted.<br>An approved harvesting plan is required. | Logging prohibited.<br>An approved harvesting plan imposed on projects engaged in national parks, nature reserves, and species habitat conservation zones is required. |
| | For land without forest, it is required to forest the forest land, ensuring forest coverage of 60% or more of mangrove forests for combined aquaculture production. | | |
| **Government management entity** | MARD.<br>People's Committees of all levels. | MARD.<br>PFMB.<br>People's Committees of all levels. | State Forest Companies.<br>SFMB.<br>People's Committees of all levels. |
| **Allocation to individuals/ households/ communities/ organizations** | Through LURC: up to 30 ha, excluding natural forests. | Forest protection contract. | Forest protection contract. |
| **Land use rights period** | According to the certificate, normally from 20 to 50 years | According to the contract. | According to the contract. |

Forest protection contracts require SFCs and Management Boards to provide forest protection (or sometimes planting fees) for households.[48] The contracts are usually for one-year renewable periods and the agencies pay forest protection fees to the households in exchange for the labour spent on forest protection.[49] Households, individuals, and communities who sign contracts on protection, regeneration zoning, and afforestation are not "forest owners" but "contractors" hired by the forest owners for terms lasting one or more years. This limits the long-term investment potential for REDD+ forest contractors.

The Forestry Law affirms that forest allocation, leasing, repurposing, and appropriation must ensure transparency and participation of local people, and not discriminate on the basis of religion, beliefs or gender.[50] The Law gives priority to ethnic minorities, and households, individuals and communities that have local community rules, traditional customs, culture or beliefs associated with forests.[51]

Regulations on cultural values associated with mangroves have not been identified in Vietnam. However, natural areas which have value in terms of geomorphology, geography, biological diversity and specific ecosystem are considered part of the country's cultural heritage.[52]

### 10.2.4.4 Community ownership and customary rights

Where forest land is accessed by local communities, communal ownership can provide concrete rights and help protect forest land, but there is a gap

48 Forestry Law of 11 November 2017. Article 16.
49 *Ibid.* Article 16.
50 *Ibid.* Article 14(7).
51 *Ibid.* Article 14(8).
52 Law on Cultural Heritage of 29 June 2001 (as amended in 2009). Article 28(2).

between the Civil Code and Forestry Law in relation to communal ownership. **The Civil Code does not consider communities to be legal entities for the purpose of land allocation.** This means that, unlike households and individuals, they are not eligible to receive LURCs. A community can only apply for a LURC on production forest land by forming a cooperative or an association. The Forestry Law has endorsed community forest tenure and defined the conditions under which villages can receive forest land collectively.[53]

In the pre-colonial era, "customary rules" or "custom" was known as a supplementary source of law used to fill legislative gaps. Today, customary rules are recognized by the State as a secondary source of law in Vietnam's legal system. Custom can be used where there is no relevant provision of law, but cannot contradict the terms of statutory law.[54] However, the Land Law does not recognize customary land use.

The State does not recognize the reclaiming of land which was allocated to other individuals, households, groups or villages in the process of implementing the land policy under Vietnam's previous regimes. All laws that existed in Vietnam prior to the unification of Vietnam in 1976 were rendered null and void after that date.

As the Land Law does not recognize communal ownership based on customary practices, the Civil Code cannot be used to legalize customary practices without a change in the Land Law. The Civil Code mentions that communal ownership within communities is possible, whether based on kinship, ethnicity, tribal or religious affiliation in accordance with customary practices insofar as the multiple owners contribute to the customary practices. Members of these communities are able to jointly manage, use, and dispose of property in accordance with customary practices.[55] However, to have rights under the Land Law, the communities must be established as cooperatives or associations.

While the Civil Code provides some recognition of communal ownership, the Constitution does not. Disputes over land use rights and forest ownership based on the Land Law and Forestry Law respectively can be brought before the civil courts.[56] The civil courts can apply customary practices to resolve civil cases where it is neither provided for by a law nor agreed upon by the parties, but the customary practices must not contravene the basic principles specified under the Civil Code.[57]

### 10.2.4.5 Forest management obligations

In special use forest, techniques for afforestation, for promoting natural forest regeneration and for enrichment to improve forest quality, must be applied.[58] For watersheds and bordering protection forests, it is required to establish concentrated forests, and to maintain forest structures to ensure their protection functions. Forest belts must be established in compliance with natural conditions in each area, and afforestation methods with deep-rooted tree species must be applied for wind/sand shielding protection forests.[59] For production forests, modern biotechnology, and intensive forestry techniques to improve planted forests must be applied. The Forestry Law encourages afforestating with mixed species, cultivating non-timber forest products, planting fast-growing small trees with long-term large trees, and converting from small timber forests to large ones.[60]

Forest owners that are organizations must prepare a sustainable forest management plan. Households, individuals, and communities as forest owners are not subject to this requirement. A sustainable forest management plan must include an assessment of the natural and socio-economic

53 *Ibid.* Article 4(6), 8(6), 14(8), 16.

54 Civil Code of 24 November 2015. Article 5.2: "...Customary practices may be applied in the cases where it is neither provided for by a law nor agreed upon by the parties, but they must not contravene the basic principles of the Civil Code."

55 *Ibid.* Article 211.

56 Civil Procedure Code of 25 November 2015. Article 26(9).

57 *Ibid.* Article 45(1).

58 Forestry Law of 11 November 2017. Article 46.

59 *Ibid.* Article 47.

60 *Ibid.* Article 48.

conditions; a description of the actual state of forest ecosystems, biodiversity, genetic resources, historical-cultural beliefs, and landscapes; and an identification of forest areas in degraded functional areas to be rehabilitated and conserved.[61] Allocated and leased forests can be taken back in cases where forest owners fail to carry out forest protection and development within 12 months of the allocation or lease date.[62] Natural forest ecosystems must be surveyed and assessed in compliance with the Forestry Law.[63] Organizations, households, and individuals assigned to manage or use land, forests or surface waters shall manage and use genetic resources assigned to them.[64] Projects on renovation or construction of works situated outside protected cultural areas that are likely to adversely affect the natural scenery and ecological environment of such areas must obtain a written approval document of competent authorities in charge of culture and information.[65] An example of protected cultural area that contains mangroves is the Can Gio Biosphere Reserve, an important wildlife sanctuary in Vietnam dominated by mangroves, which was recognized as a cultural site in 2004.[66]

#### 10.2.4.6 Forest utilization and harvesting

Current legislation on forestry management sets up a legal framework on forest utilization, harvesting and benefit sharing.[67] These regulations elaborate the rules for forest harvesting for each type of forest owner (organizations, households, individuals, and communities), by forest function (natural forests or plantations), and by investment source (State, forest owners, international projects). They also regulate the use of barren land for agro-forestry production in protection forests and production forests, and regulate ecotourism in forest ecosystems. Households which have had natural forests allocated to them can extract timber for themselves, but should not overuse the forest resources; the maximum volume is 10m$^3$/household/ton.[68]

Forest owners are entitled to all forest products exploited from natural protection forests and planted protection forests after fulfilling their financial obligations, such as paying for forest-environmental services (see Section 10.4.2). Furthermore, a Decree confirms the legitimate rights of contractors (i.e. households, individuals, and communities) for forest products exploited from allocated or contracted protection forests.[69] The Forest Management Boards should collect the benefits from non-forest products and share these benefits with households, individuals, and communities participating in forest protection.[70] Forest owners must meet certain requirements to be able to harvest timber from natural forests, and non-timber forest products from natural forests and planted forest, such as the requirement to obtain an approved harvesting plan.[71]

Protection forest owners, and stable contractors in the form of households, individuals, and communities are entitled to use land without forests for combined agriculture and fishery production, but are required to plant forest in assigned land areas. In the case of mangrove forests used for combined aquaculture production, they must ensure that 60% of their assigned forest area is

61 *Ibid.* Article 27.

62 *Ibid.* Article 22.

63 Biodiversiy Law of 13 November 2008. Article 34.

64 *Ibid.* Article 55.

65 Law on Cultural Heritage of 29 June 2001 (as amended in 2009). Article 36(1).

66 Directive No. 11/2011/CT-UBND of 18 March 2011 of the People's Committee of Ho Chi Minh City; *See also* Ủy Ban Nhân Dân Huyện Cần Giờ. http://www.cangio.hochiminhcity.gov.vn.

67 Decree 156/2018 /ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forestry Law. Forestry Law of 11 November 2017. Chapter VI.

68 Decision 2242/QD-TTg of 11 December 2014 approving the Scheme for strengthening the management of natural forest's timber exploitation in 2014 - 2020. Article 1(2)(g).

69 Decree 156/2018/ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forestry Law. Chapter II.

70 *Ibid.* Article 21.

71 *Ibid.* Article 28, 29.

covered in trees.[72] The same applies to production forest owners.[73]

## 10.2.5 Mangrove related legislation

### 10.2.5.1 Legal instruments ensuring mangrove protection

The Vietnamese government gives priority to the conservation of natural ecosystems that are important, specific or representative of an ecological region, the conservation of endangered species, and ensuring that access to genetic resources is strictly controlled.[74] Organizations and individuals that benefit from biodiversity exploitation and use must share benefits with concerned parties.[75] The Biodiversity Law affirms that natural ecosystems including forest, marine, and natural wetland ecosystems must be surveyed and assessed.[76]

The Vietnamese government encourages activities related to the protection, development, and use of coastal forests; including the restoration of coastal mangrove forests, forest protection, afforestation, the cultivation of non-timber forest resources, combined agricultural and forestry production, and aquaculture in coastal forest areas.[77] Organizations, households, and individuals living in coastal communes that have to protect forests or regenerate coastal forests on a contractual basis are entitled to receive fiscal support from the government at a rate of VND four million (USD 174) per hectare for a duration of five years (the average amount is VND 800,000 (USD 35/hectare/year).[78] Organizations and companies operating coastal forest ecotourism services and coastal forest environmental services are subject to Payments for Forest Environmental Services (PFES) (see Section 10.4.2).[79] Encroaching, occupying or damaging aquatic resource protection zones and marine conservation zones is forbidden.[80] Illegal operating of fishing ships and seaging vessels in strictly protected areas of marine conservation zones is subject to heavy sanctions.[81] The government has tightened the management of special-use forest zones by providing strict criteria for the determination of buffer zones.[82]

### 10.2.5.2 The prohibition or regulation of harmful activities

It is prohibited to destroy mangrove forests to serve aquaculture activities.[83] In addition, numerous instruments regulate or prohibit activities that contribute to degradation of mangrove ecosystems.

Water sources with a high value for biodiversity conservation, cultural preservation and protection, as well as natural ecosystem development, must have a secure corridor.[84] Any activities related to the construction or extension of cemeteries, waste dumping sites, toxic chemical factories, and the production or processing facilities discharging hazardous wastewater are not permitted within secure corridors for water sources.[85] Dumping waste, rubbish or toxic substances into water resources causing pollution or depletion of water sources is prohibited.[86] Furthermore, watershed protection forests and other forests are protected

72 *Ibid*. Article 25(3)(a).
73 *Ibid*. Article 30(3)(a).
74 Biodiversity Law of 2008. Article 5(1).
75 *Ibid*. Article 4(4).
76 *Ibid*. Article 34.
77 Decree 119/2016/ND-CP of 23 August 2016 on policies on sustainable management, protection and development of coastal forests to cope with climate change. Article 6(1).
78 *Ibid*. Article 4(2)(c).
79 Decree 156/2018 /ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forest Law. Article 57(4).
80 Law on Fisheries of 21 November 2017. Article 7.
81 *Ibid*. Article 7(5).
82 *Ibid*. Article 16.
83 Law on Environmental Protection of 23 June 2014. Article 71(6).
84 Law on Water Resources of 2 July 2012. Article 31.
85 *Ibid*. Article 26(2).
86 Law on Water Resources of 21 June 2012. Article 9(1).


and developed in compliance with the government's plans.[87]

The Law on Fisheries prohibits all activities related to the destruction of aquatic resources, aquatic ecosystems, reproductive areas, areas where offspring live, and the habitats of aquatic species.[88] Organizations and individuals engaged in use of aquatic resources must create migration patterns or corridors for aquatic species when constructing, changing or demolishing construction work, or when carrying out other activities affecting the migration patterns of aquatic species.[89]

Households living in wetland conservation areas must not develop or expand their residential areas; in cases of separation of households or setting up new ones, the separated or newly set up households must move out of the reserves.[90] Importing exotic animals and plants which may cause harm to the natural environment, ecosystems, and biodiversity, as well as exploiting forestry and aquatic products in all forms, are prohibited in wetland conservation areas.[91] It is prohibited to cut down or destroy mangrove forests, to carry out any activities which are likely to change natural features, to destroy or cause harm to ecological systems, or to cause pollution or degeneration in wetland areas.[92] Exploiting natural resources or building construction works in new alluvial grounds where mangrove forests are regenerating naturally are also strictly banned.[93]

Certain activities, such as discharging wastewater and exploiting groundwater, must obtain a respective permit.[94] Individuals and organizations who dump waste in the environment or have an impact on natural resources must pay environmental protection fees.[95] Any operations discharging industrial or domestic wastewater into the environment are required to pay for environmental protection.[96]

87 *Ibid.* Article 29.

88 Law on Fisheries of 21 November 2017. Article 7(1).

89 *Ibid.* Article 13(2)(b).

90 Circular 18/2004/TT-BTNMT of 23 August 2004 guiding the implementation of the Government's decree 109/2003/ND-CP of September 23, 2003 on conservation and sustainable development of wetlands. Section IV(5)(a).

91 *Ibid.* Section IV(4)(a); Section IV(4)(b).

92 Decree 109/2003/ND-CP of 23 September 2003 on the conservation and sustainable development of submerged areas. Article 7(1).

93 *Ibid.* Article 7(3).

94 Law on Irrigation of 19 June 2017. Article 44(1).

95 Law on Environmental Protection of 23 June 2014. Article 148.

96 Decree 154/2016/ND-CP of 16 November 2016 on environmental protection fee on wastewater.

### 10.2.6 Environmental protection frameworks and penalties

#### 10.2.6.1 Climate change

Vietnam's political commitments with regard to climate change increasingly recognize the importance of conserving biodiversity and protecting ecosystems for the purposes of enhancing resilience and adaptive capacity, and reducing vulnerabilities resulting from increased exposure to natural hazards and disasters. Since Vietnam gained middle income status, reducing greenhouse gas GHG emissions has become more important. **Vietnam's NDCs include mangroves among their adaptation actions for 2021-2030 through a commitment to "increase the area of protection forest in coastal areas to 380,000 ha, including 20,000 to 50,000 ha of additional mangrove planting" and to protect and improve the quality of coastal forests, including mangroves.**[97] In 2008, the government issued the National Target Programme to Respond to Climate Change in order to assess the impact of climate change and to develop adaptation and mitigation measures.[98] Climate change was also mainstreamed into the National Socio-Economic Development Strategy (2011-2020) and the Socio-Economic Development Plan (2016-2020).[99]

Climate change management agencies are responsible for providing information, organizing awareness-raising activities, and creating suitable conditions for communities to take part in coping with climate change.[100] Some of the government's activities to manage greenhouse gas (GHG) emissions are to sustainably manage forest resources; to restore and improve the forest carbon stock; to establish and develop a carbon credit market in the country and participate in international markets; to restore biodiversity; and to establish an environmental protection fund.[101] The transferral and purchase of GHG emission credits from Vietnam are regulated by the government; organizations and individuals dealing with international carbon credit buyers are required to follow government regulations.[102] Implementation at a local level is legally difficult because specific regulations on payment for carbon services in forestry are currently missing. As affirmed under the Forestry Law, Starting from 1 January 2019, facilities generating a large amount of GHG emissions are subject to Payment for Forest Environmental Services (PFES) until the regulation on payment for forest carbon sequestration and storage is adopted, which should happen by 2020.[103]

#### 10.2.6.2 Environmental Impact Assessment

Projects using land situated in natural resource conservation areas and projects likely to have an adverse impact on the environment require an environmental impact assessment (EIA).[104] Construction projects that encroach into the sea by at least 20 ha; and projects that use at least 20 ha of protection forests or special-use forests, or at least 100 ha of natural forests, are subject to an EIA report approved by the Ministry of Natural Resources and the Environment (MoNRE).[105] Owners of these projects must conduct research and collect comments from relevant stakeholders to minimise adverse impacts.[106] The consultation with the communities directly affected by these projects must be conducted in the form of community meetings organized by the project owners and the

97 Viet Nam's first Intended Nationally Determined Contribution (submitted 3 November 2016). UNFCCC. Section 3.6.

98 Decision 158/2008/QD-TTg of 2 December 2008 on approval of the National Target Programme to respond to climate change.

99 Viet Nam's Socio-Economic Development Strategy for the period of 2011-2020. Section 4.11; Resolution 142/2016/QH13 of 12 April 2016 on five-year Socio-Economic Development Plan from 2016–2020. Section II(1).

100 Law on Environmental Protection of 23 June 2014. Article 46(3).

101 *Ibid*. Article 41, 149.

102 *Ibid*. Article 41(2).

103 Forestry Law of 11 November 2017. Article 63(2); Decree 156/2018 /ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forestry Law. Article 57(5).

104 Including projects using the land of natural resource conservation, national parks, historical-cultural monuments, world heritage sites, biosphere reserves, and scenic beauty areas that have been ranked; Law on Environmental Protection of 23 June 2014. Article 18(1).

105 Decree 18/2015/ND-CP of 14 February 2015 prescribing environmental protection master plan, strategic environmental assessment, environmental impact assessment and environmental protection plan. Appendix III.

106 *Ibid*. Appendix II. Article 12(2)(4).

Peoples' Committees at a communal level wherever these projects are implemented.[107] Once the EIA report has been approved, companies are required to submit an environmental management plan based on the approved EIA to the Peoples' Committees at a communal level where the comments for the EIA report were collected.[108]

#### 10.2.6.3 Penalties and sanctions

Organizations and individuals carrying out activities likely to violate regulations on environmental protection could be subject to large fines with a maximum of VND 2 billion (USD 90,900).[109] Violations of the forest management legislation could be subject to fines and/or criminal sanctions.[110] Any activities in wildlife sanctuaries, mangrove forests or marine natural heritage sites which are not in line with the law are subject to a heavy fine ranging from VND 80-150 million (USD 3,500-7,000). Any activities that involve cutting mangroves for aquaculture are subject to fines ranging from VND 50-100 million (USD 2,200-4,400).[111]

Any person involved in discharging wastes, toxic chemicals, explosives, or flammable substances into the forests is subject to a fine ranging from VND 1,500,000 to 3,000,000 (USD 65-130) and could be forced to remove these substances from the forest.[112] Industrial producers using water resources and facilities generating a large amount of GHG emissions that fail to sign a contract with the forest owners and pay for forest ecosystem services within 3 months are subject to heavy fines up to VND 50,000,000 (US $ 2,170) and payment for the full value of ecosystem services including interest incurred.[113]

The Formosa case shows the difficulty in implementation of these laws. On 30 June 2016, it was confirmed that the coastal disaster causing a massive fish death in the central coastal area of Vietnam was caused by a Taiwanese company located in Ha Tinh province, Formosa Steel Co. Ltd. It was also confirmed that Formosa discharged a combination of chemicals, including cyanide, into the ocean. The Vietnamese Government considered filing a criminal charge and additional administrative sanctions against Formosa, which required them to improve the production technology and to thoroughly treat wastewater before discharging it into the environment.[114] Ultimately, Formosa was not charged, but offered to pay USD 500 million as compensation to ease tensions as it recognized its responsibility. However, the victims were not compensated. Hundreds of affected individuals engaged in lawsuits against Formosa, but local courts refused to admit these lawsuits.[115] While this case did not involve mangroves, it demonstrates the problems in achieving environmental justice.

### 10.2.7 Vietnam's planning system

The Vietnamese planning system distinguishes between different types of planning process and, correspondingly, different kinds of planning document. In 2017, the country's first Law on Planning was adopted. It includes the clear assignment of responsibilities and organizational setups where independent and centralized appraisal mechanisms in the form of planning committees oversee the planning process and

107 *Ibid.* Article 12(6).

108 Circular 27/2015/TT-BTNMT of 29 May 2015 on strategic environmental assessment, environmental impact assessment and environmental protection plans. Article 10(2).

109 Decree 155/2016/ND-CP of 18 November 2016 penalties for administrative violations against regulations on environmental protection.

110 Decree 157/2013/ND-CP of 11 November 2013 penalties for administrative violations against regulations on forest development and protection (as amended in 2017 by Decree 41/2017/ND-CP); Criminal Code of 27 November 2015. Article 232.

111 Decree 155/2016/ND-CP of 18 November 2016 penalties for administrative violations against regulations on environmental protection. Article 27(3)(b), 12(5)(dd).

112 Decree 35/2019/ND-CP of 25 April 2019 of the Government providing regulation on administrative sanctions in the field of forestry. Article 16(5)(g).

113 *Ibid.* Article 9.

114 Press conference organized by the Government, the Chairman of the Government Office – Mai Tien Dung. http://vietnamnet.vn/vn/thoi-su/chinh-tri/313134/formosa-lam-ca-chet-boi-thuong-500-trieu-usd.html [Accessed 9 June 2019].

115 Environment-rights.org. *The Formosa environmental disaster in Vietnam.* http://www.universal-rights.org/wp-content/uploads/2017/05/Viet-Nam.pdf [Accessed 13 June 2019].

ensure integration and consistency.[116] To allocate, deploy, and use land and other natural resources appropriately and effectively, **it is stipulated as a fundamental principle that all plans must ensure cross-sectoral, inter-regional and inter-provincial linkages**.[117]

Biodiversity conservation issues are not mentioned as a basis for land use planning or plan development. National land use planning must include the determination of land use targets for agricultural land, non-agricultural land, and unused land; including the determination of areas of land for protection forest, special-use forest, and production forest.[118] Forestry planning must ensure sustainable forest management by exploiting and using forests in line with the preservation of natural resources and in response to climate change.[119]

Planning for environmental protection involves two levels, national and provincial.[120] National planning for environmental protection must cover all issues related to biodiversity and forestry conservation, and include solutions for natural resource, marine, island, and river basin conservation.[121] Strategies and plans for the exploitation of resources from the sea, islands, nature reserves, natural heritage sites, and mangroves must be in line with environmental protection strategies and planning.[122]

Water resource planning includes planning for water resources (national section planning), integrated planning for river basins and inter-provincial water resources, and planning for the protection, exploitation, and use of international water resources.[123] It must be developed in accordance with water source survey results to ensure the comprehensiveness of surface water and groundwater, and the harmonious allocation of water use interests.[124] Issues regarding biodiversity conservation and the development of water resource planning are not mentioned in the Law on Water Resources or the amending Law 2018.

Planning for wetlands must comply with the demands of conservation and sustainable development, the obligations of the Ramsar Convention, the requirements to maintain an ecological balance and protect water sources and biodiversity, and the need to consider the economic potential and advantages of wetlands.[125] Strategies related to biodiversity conservation, environmental safety and the sustainable extraction and use of marine and island resources must be followed when planning for the protection and extraction of aquatic resources.[126]

A master plan for the exploitation and sustainable use of natural resources in coastal zones must take into account the survey data and information collected regarding mangrove forests.[127] This information must have been collected in the past five years.[128] A master plan draft must be available for public comment via the State authorities' websites and mass media for at least 30 days.[129]

---

116 Law on Planning of November 2017. A recent law provided an amendment to certain laws related to mangrove planning. Law 35/2018/QH14 of 20 November 2018 amendments to some articles concerning planning of 37 Laws.

117 *Ibid*. Article 16(1)(d).

118 Land Law of 29 November 2013. Article 38(2).

119 Forestry Law of 11 November 2017. Article 10(1)(b).

120 Law on Environmental Protection of 23 June 2014. Article 8(2).

121 *Ibid*. Article 9(1).

122 Law 35/2018/QH14 of 20 November 2018 amendments to some articles concerning planning of 37 Laws. Article 7(7).

123 *Ibid*. Article 5.

124 Law on Water Resources of 2 July 2012. Article 16(1)(c).

125 Decree 109/2003/ND-CP of 23 September 2003 on the conservation and sustainable development of submerged areas. Article 10.

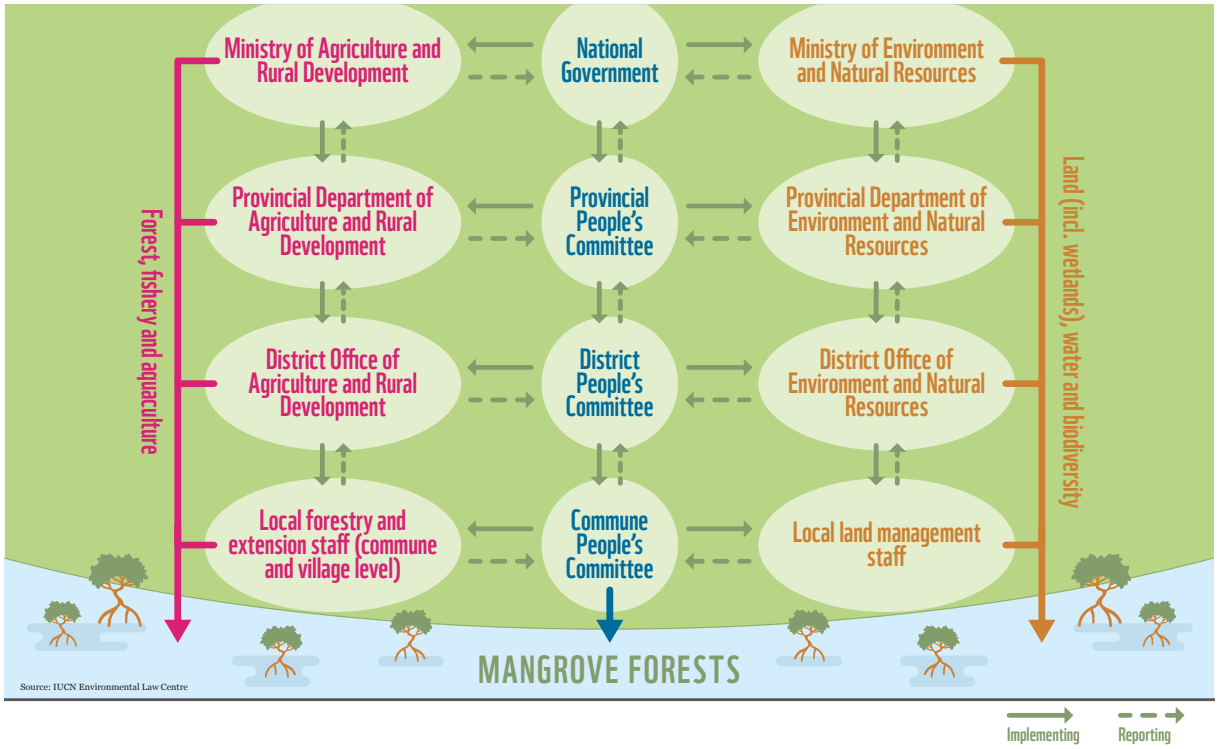
126 Law on Fisheries of 21 November 2017. Article 11(1)(c).

127 Decree 40/2016/ND-CP of 15 May 2016 guiding the implementation of a number of articles of the Law on Resources and Environment of Sea and Islands. Article 9; Circular 74/2017/TT-BTNMT of 29 December 2017 providing technical regulation on establishing of the plan for exploitation and sustainable use of natural resources in coastal zones. Annex.

128 Circular 74/2017/TT-BTNMT of 29 December 2017 providing technical regulation on establishing of the plan for exploitation and sustainable use of natural resources in coastal zones. Article 4, 5, Annex (Section II(2.2)).

129 Decree 40/2016/ND-CP of 15 May 2016 guiding the implementation of a number of articles of the Law on Resources and Environment of Sea and Islands. Article 10.

**Figure 19:** Institutional structure of mangrove management in Vietnam (simplified)




## 10.3 Institutional level: Institutions paralysed by overlapping responsibilities

### 10.3.1 State management responsibilities

A comprehensive and effective legal framework for wetlands does not exist in Vietnam, and accordingly no single government agency is in charge of managing the mangrove forests. Mangrove management is addressed indirectly through various laws and regulations relating to environmental protection, agriculture, forestry, aquaculture, biodiversity protection, and others, which come under different ministries. At a national level, the State's management authority for mangroves rests primarily with the Ministry of Agriculture and Rural Development (MARD) and the Ministry of Natural Resources and Environment (MoNRE). At a subnational level, the People's Committees, representing the executive arm of the State at a provincial, district, and commune level, are in charge within their jurisdictive boundaries. The People's Committees oversee the implementation and enforcement of the Land Law within their jurisdiction, including evaluating and approving land and forest conversion plans.[130] The District People's Committees evaluate and approve household and individual plans.[131]

Given Vietnam's centralized State system, local government arrangements follow a system of dual subordination, in which local State agencies are accountable to central government ministries (sectoral subordination) and at the same time to their provincial People's Committees (territorial subordination) (Figure 19). This system also applies to the district branch offices of MARD and MoNRE. Irrespective of the administrative level, any local State agency is thus accountable to two levels of authority. The Provincial Departments of Agriculture and Rural Development (DARDs) and the Departments of Natural Resources and Environment (DoNREs) are both subordinated to their Provincial People's Committees, but also have reporting obligations to their ministries. This situation inevitably leads to overlaps in State authority in a horizontal and vertical direction.

130 Land Law of 29 November 2013. Article 23(3); Forestry Law of 11 November 2017. Article 15(1), 18(2), 23, 102.

131 Forestry Law of 11 November 2017. Article 15(1), 23(2), 102(2).

For many decades, MARD had sole responsibility for mangrove management in Vietnam. This changed in 2002, when MoNRE was established and assigned to take over major responsibilities in land, water, and environmental management. The ongoing transition of shifting responsibilities from MARD to MoNRE entailed enormous institutional conflicts fuelled by ministerial turf wars and competition between both ministries.[132] Recent legal framework amendments, the new Water Law (2012), the new Land Law (2013) and the new Forestry Law (2017), provided a window of opportunity to clarify the roles and mandates of both ministries for the sake of more consistency in State management and policy making. Apart from minor improvements, however, these chances passed by unused, and so institutional fragmentation and conflicts continue to prevail as a feature of environmental management in Vietnam. While MoNRE is assigned the overall coordination for environmental protection, land use management, water resource management, climate change adaptation, and biodiversity conservation, MARD is in charge of agriculture, forestry, and rural water infrastructure.[133]

Land-forest interrelations are vital for mangrove management. According to the Forestry Law, MARD is responsible for anything related to forest management in Vietnam and, as such, is mandated to implement forestry planning.[134] At a subnational level, forests are managed under the auspices of the provincial DARDs and their district offices.[135] As there is no separate legal framework for mangroves, in Vietnam mangrove forests fall under MARD's jurisdiction over forests in general.

MoNRE is responsible for land use management, including in wetlands, which includes land use planning, surveying, and land use mapping, land allocation and registration, and issuing land use titles.[136] At a subnational level, these obligations are carried out by the provincial DoNREs and their district offices, in addition to advising the People's Committees on local land-related issues.[137]

This results in considerable institutional overlaps, inconsistencies, and conflicts regarding the roles of MARD and MoNRE in mangrove forests (Figure 20). **While MARD has jurisdiction over the trees in mangrove areas, MoNRE has jurisdiction over the land on which these trees are standing.** Similar inconsistencies are manifest in biodiversity conservation in mangrove habitats. While mangrove forests are managed by MARD, the biodiversity in these forests is managed by MoNRE. The fact that MARD also regulates aquaculture and fisheries, while MoNRE regulates geology, mining, and water, makes the jurisdiction issue even more complicated and requires large coordination efforts. Due to the many shared responsibilities, the Land Law, the Law on Forestry, and the Biodiversity Law each provide that MARD and MoNRE must coordinate their activities.[138] In practice, coordination and cooperation between both ministries is still weak. Although these are well-known problems, there is no clear roadmap in sight to resolve them.

Fuzzy state management arrangements also present difficulties for many other stakeholders, such as landholding entities in mangrove forests. MoNRE, for instance, is responsible for issuing appropriate and accurate land use certificates to forest-owning or forest-managing entities.[139] Doing this requires detailed and accurate data on the quality, type, and extent of any forest on the land, information that can be only obtained from MARD. If the ministries fail to coordinate, the land use certificates for forest land are incomplete and inconsistent.

A similar situation arises for planning. Integrated planning is needed at every level to conserve and restore mangrove forests. This requires involving

132 Hawkins, S. et al. *supra* note 5

133 Decree 36/2017/ND-CP of 4 April 2017 defining the functions, tasks, powers and organizational structure of the Ministry of Natural Resources and Environment. Article 1; Decree 15/2017/ND-CP of 17 February 2017 defining the functions, tasks, powers and organizational structure of the Ministry of Agriculture and Rural Development. Article 1.

134 Forestry Law of 11 November 2017. Article 101(2).

135 *Ibid*. Article 102.

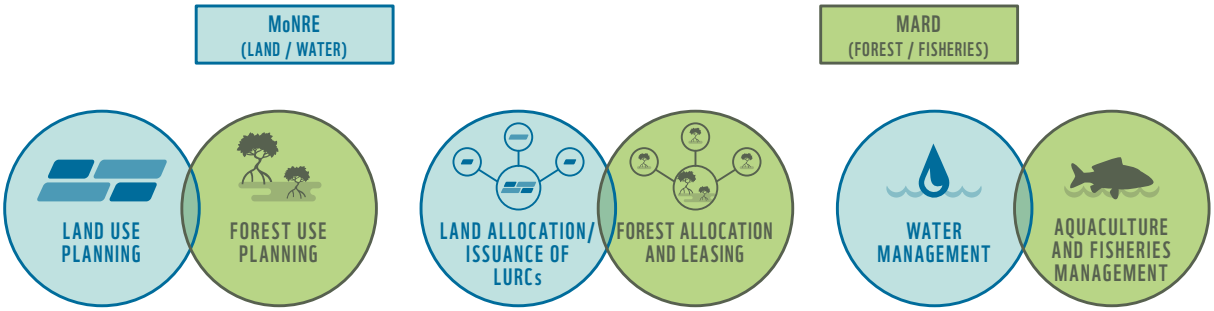
136 Land Law of 29 November 2013. Article 42(1), 33(1).

137 *Ibid*. Article 23(3), 24(2), 25, 59.

138 Land Law of 29 November 2013. Article 197(1); Forestry Law of 11 November 2017. Article 101(2)(e); Biodiversity Law of 2008. Article 10(1), 48(1), 69(3), 72(3).

139 The Land Law of 29 November 2013. Article 22(7).

**Figure 20:** Overlapping responsibilities of the line-ministries in mangrove management




Source: IUCN Environmental Law Centre

all of the relevant sectors; foremost land, water, forestry, and aquaculture, but also other sectors such as construction or tourism. However, planning remains highly fragmented without much of an integrated approach, following silo-thinking rather than cross-sectoral collaboration and exchange.[140] This inevitably creates conflicts between sectoral plans, and resolving them remains difficult as long as it is unclear which plan has priority. Aquaculture planning under DARD may be in conflict with mangrove protection objectives set by DoNRE for the same spatial territory. Inter-sectoral planning (e.g. land use planning, development planning) that duly considers environmental issues remains a major concern.[141]

Sometimes, unclear, overlapping and even conflicting state management mandates on mangroves not only paralyze mangrove governance, but create regulatory voids and vacuums where neither agency feels responsible, in particular at a local administrative level. But, even where the authority is clear, mangrove management is hampered by a lack of capacity and expertise at a local level. Reportedly, at some sites monitoring and protection teams have dissolved where the resources are scarce and donor-funded projects have lapsed.[142]

### 10.3.2 Ownership and rights in mangrove forests

Five groups have stakes in mangrove management through landholding rights: Forest Management Boards, Commune People's Committees, private companies, households and communities (see Section 10.2.4.3).[143]

More than half of Vietnam's mangrove forests come under the auspices of Forest Management Boards, which are State bodies mandated to manage protection forests and special-use forests on behalf of the State.[144] The Forest Management Boards are usually granted long-term use certificates to evidence their authority over allocated lands. They sustain their activities with funding from the State budget and are prohibited from transferring or leasing land, or using it as collateral or to secure a mortgage. The Forest Management Boards should engage with local households with the aim of forest protection based on contracts. In practice, the Forest Management Boards appear to be reluctant to contract for forest protection, as this involves sharing funds.[145] Presumably, their unwillingness to contract with local households may be due to self-serving aspirations. **A number of empirical studies have revealed informal tenure arrangements in which the staff of the Forest Management Boards informally distribute**

140 Benedikter, S. and Nguyen, L.T.P. (2018). Obsessive Planning in Transitional Vietnam: Understanding Rampant State Planning and Prospects of Reform. *Journal of Vietnamese Studies* 13(4):1-47.

141 *Ibid.*; Hawkins, S. et al. *supra* note 5.

142 Powell, N. et al. (2011). *Mangrove Restoration and Rehabilitation for Climate Change Adaptation in Vietnam*. World Resources Report, Washington DC.

143 Powell, N. et al. *supra* note 142; Hawkins, S. et al. *supra* note 5.

144 Hawkins, S. et al. *supra* note 5.

145 *Ibid.*

**forest land among themselves and their kin for private use.**[146] This situation also applies to mangrove forests.[147]

Another large share of mangrove forest land is held by People's Committees at a commune level.[148] This mainly entails large areas of forest that were not allocated to forest users, but remain under the direct management and authority of the relevant commune's People's Committee.[149] According to the Land Law, commune People's Committees represent the State in managing land within the commune, but are not proper landholders based on formal titles of land or forest.[150] Due to insufficient human, technical or financial capacity, commune authorities are unable to properly implement forest land allocation policies, or to manage the land and enforce use restrictions.[151] As a result, in these areas, mangroves often have become *de facto* open-access spaces without any proper management regime.

About 10% of all mangrove forests come under the management of private companies.[152] This number is significant because generally private companies tend to play a rather minor role as forest-holders in Vietnam, but have a strong stake in mangrove forests.

The remaining 10% of mangrove protection forests are managed by households, communities, and other stakeholders.[153] The State has to allocate protected forest to local communities that are entitled to benefits from these allocated lands. Nevertheless, as stated earlier, whereas the Civil Code provides for common ownership of land rights by communities, it does not recognize communities as legal entities. These legal inconsistencies have far-reaching consequences because communities cannot enter into economic transactions such as transferring, leasing or mortgaging use rights. This complicates the establishment of properly working market-based conservation schemes such as payment for environmental services.

### 10.3.3 Features of local mangrove governance in Vietnam

Mangroves are complex socio-ecological systems that need polycentric governance structures that allow the views and needs of multiple stakeholders to be included on different scales. Given the political continuity of its Leninist one-party rule, for the time being formal governance structures in Vietnam tend to be unicentric in nature, with the State as the dominant actor. In this State-centric governance context, executive State agencies and semi-privatized forest management entities continue to represent the most pivotal actors in top-down management. Nevertheless, over the past three decades, the institutional landscape has been subject to substantial administrative reform in tandem with decentralization policies empowering local governments and non-state actors in mangrove management.

This has improved the institutional conditions for community-based approaches to mangrove management. In 1998, the government passed the Grassroots Democracy Decree with the objective of increasing people's participation in decisions about the majority of critical socio-economic activities in their localities, according to the principle of "people know, people discuss, people do and people check."[154] In this context, MARD advised the local authorities to set up village conventions for forest protection together with local residents, and to provide timely information on important plans and activities within

146 Sowerwine, J.C. (2004). Territorialisation and the Politics of Highland Landscapes in Vietnam: Negotiating Property Relations in Policy, Meaning and Practice. *Conservation and Society* 2(1):97-136; Sikor, T. and Tran Ngoc Thanh (2007). Exclusive versus Inclusive Devolution in Forest Management. Insights from Forest Land Allocation in Vietnam's Central Highlands. *Land Use Policy* 24:644-653; Dressler, W.H. et al. (2013). How Biodiversity Conservation Policy Accelerates Agrarian Differentiation: The Account of an Upland Village in Vietnam. *Conservation and Society* 11(2):130-143.

147 *Ibid*; Orchard, S.E. et al. *supra* note 43.

148 In administrative terms, state management agencies in Vietnam are divided into four vertical levels, namely: the centre, the province, the district and the commune.

149 Hawkins, S. et al. *supra* note 5.

150 The Land Law of 29 November 2013. Article 23(3).

151 Hawkins, S. et al. *supra* note 5.

152 *Ibid.*

153 *Ibid.*

154 Decree 29/1998/ND-CP promulgating the regulation on the exercise of democracy in communes; "Dân biết, dân bàn, dân làm, dân kiểm tra".

their communities.[155] As some empirical studies revealed, enforceability in practice proved to be difficult due to the persistence of traditional power configurations and individuals' anxiety about getting involved in political affairs.[156]

With the legacy of top-down planning remaining a strong feature in Vietnam's governance system, more often than not, restoration and conservation approaches typically follow a top-down approach with little space for communities to actively engage. Such rigid conservation and control approaches for restoring and protecting mangrove areas against human encroachment often come with forced resettlements and the marginalization of those households most dependent on mangrove forests for their livelihoods.[157] In recent years, however, donors and the Vietnamese government have increasingly been recognizing the need to balance development and conservation for more effective mangrove conservation approaches that include traditional mangrove users and their livelihoods.

### 10.3.4 Financing mangrove conservation and restoration

In recognition of limited State capacity and a lack of financing in mangrove management, the national government has increasingly endorsed the involvement of (international) NGOs, development agencies, and other non-state actors in nature conservation. Since the 1990s, huge amounts of donor funds have been invested in restoring, replanting and technical support, particularly in community-based conservation projects or public-private partnership schemes, such as organic and sustainable shrimp farming, disaster risk reduction projects and ICZM programmes.[158] **Between 1991 and 2005, international donors provided funding for replanting more than 24,000 ha of mangroves across the country.**[159] The government's own investment in mangrove conservation is increasing. To implement its plan for protection and development of coastal forests to cope with climate change, the government plans on dedicating over VND 3,700 billion, or over 160 million USD, along with almost VND 1,400 billion (60 million USD) ODA and over VND 225 billion (9 million USD) from other sources.[160]

## 10.4 Behavioural level: Social capital, local politics and opportunities for co-management

### 10.4.1 Conservation and control: problems of law enforcement

#### 10.4.1.1 Biodiversity conservation in Vietnam: aspirations and the reality

The history of biodiversity conservation in Vietnam dates back as far as the 1960s, when Cuc Phuong was established as the first national park in Vietnam. At a policy level, nature conservation only gained wider momentum during the 1990s. Given the consistently high influx of technical advice and financial support from donors, legal frameworks to protect the country's biodiversity resources have been constantly enhanced.[161] Since then, Vietnam's protected area system has expanded significantly from almost nothing in the mid-1980s to over 120 natural parks and conservation territories in total, accounting for about 2.3 million ha, or 7% of Vietnam's total land area.[162]

155 Orchard, S.E. et al. *supra* note 43.

156 Zingerli, C. (2004). "Politics in Mountain Communes: Exploring Vietnamese Grassroots Democracy", in McCargo, D. (Ed.). *Rethinking Vietnam*. Routledge Curzon, London.

157 Orchard, S.E. et al. *supra* note 43; Beresnev, N. et al. (2016). *Mangrove-related policy and institutional frameworks in Pakistan, Thailand and Vietnam*. FAO and IUCN, Gland, Switzerland.

158 Orchard, S.E. et al. *supra* note 43; Beresnev, N. et al. *supra* note 157.

159 Mai Sy Tuan (December 2016). *Mangrove-related Policy and Institutional Framework in Vietnam*. Presentation given at the Workshop for "Income for Coastal Communities for Mangrove Protection", Bangkok 2016. https://businessdocbox.com/Forestry/68868655-Institutional-framework-in-vietnam.html [Accessed 21 March 2019].

160 Prime Minister's Decision 120/QD-TTg of 22 January 2015.

161 Since then, the Environmental Protection Law was amended twice in 2005 (Law 52/2005/QH11) and 2014 (Law 55/2014/QH13).

162 Carew-Reid, J. et al. (2010). *Biodiversity and Development of the Hydropower Sector: Lessons from the Vietnamese Experience – Volume I: Review of the Effects of Hydropower Development on Biodiversity in Vietnam*. ICEM – International Centre for Environmental Management, Prepared for the Critical Ecosystem Partnership Fund, Hanoi, Viet Nam.


While the protected area system is continuously expanding, the enforcement of corresponding laws and policies on the ground has remained a challenging task. Degradation and biodiversity loss continue to be acute in strictly protected areas, and mangrove forests are no exception. Poor compliance with and enforcement of mangrove conservation laws and regulations are a major obstacle to any well-designed conservation scheme. There is no simple solution to this problem. The reasons are manifold, ranging from a lack of financial resources, insufficient awareness and capacity among local communities and authorities, unclear division of authority between the environmental and agricultural sectors, different perceptions about rights and duties in mangrove areas between resources users and local authorities, and a lack of political will for enforcement at a local level.

Located in the Red River Delta, Xuan Thuy National Park (XTNP) consists of a large mangrove forest, providing a well-documented and illustrative case that manifests many of these practical challenges. The core zone of XTNP encompasses 7,000 ha surrounded by a buffer zone of 8,000 ha.[163] The XTNP became Vietnam's first internationally designated Wetland of Importance under the Ramsar Convention in 1989 and was turned into a national park in 2003. The population density is high in and around the buffer zone, and opportunities to reclaim new agricultural land have been exhausted, while off-farm livelihood opportunities are limited. It is estimated that 90% of the surrounding communities, in one way or another, are dependent on the exploitation of natural resources within the park area.[164] Violations of environmental laws and regulations are reportedly common in both the core and buffer zones, ranging from tree cutting, intensive shellfish collection, and cattle grazing to (illegal) land conversion and aquaculture.[165]

### 10.4.1.2 The socio-economic dimensions of non-compliance

A lack of awareness and the poor management capacities of local communities have often been listed as key problems. Indeed, to some extent the lack of compliance stems from the limited understanding and knowledge of resource users about their legal obligations towards environmental protection, while local authorities lack the resources

163 Zink, E. (2013). *Hot Science, High Water: Assembling Nature, Society and Environmental Policy in Contemporary Vietnam*. NiasPress, Copenhagen.

164 Hawkins, S. et al. *supra* note 5.

165 *Ibid.*

and expertise to effectively perform mangrove management. As a result, areas under their control often have turned into quasi-open access areas. Moreover, leakage between communities has been detected as a widespread phenomenon that undermines local conservation efforts. Even if a community successfully enforces the restrictions within its jurisdiction, other users encroach on mangroves in adjacent communities. Because the penalties for infractions are low, local people do not seem to be afraid of violating common regulations.

Nevertheless, putting the blame on low capacity, a lack of awareness and improper sanctions alone would be too simple to explain the weak policy and law enforcement. **Often, local inhabitants are well aware of their harmful and non-compliant behaviour, but have no choice but to keep exploiting natural resources in mangrove habitats to sustain their livelihoods.** Protection areas have been established without recognizing the tenure rights of local people who have been living in and using these forests to make a living. Low regulatory compliance also stems from differing perceptions between local people and authorities of different property regimes or, more precisely, customary and statutory property rights. Inadequate compensation and insufficient public support to help local households change to alternative income opportunities further increases tensions when households are excluded from the goods and services mangroves have traditionally provided for them.[166]

### 10.4.1.3 Socio-cultural institutions and power structures

Conservation policies do not unfold in a social vacuum, but play out in local environments characterized by specific social, political, and economic structures. In Vietnam, law and policy enforcement underlies traditional moral values and the pervasive influence of powerful social institutions and informal arrangements that shape everyday life.[167] At a commune level, people live in relatively cut-off village communities with close social relations. State officials are embedded in a social environment that includes strict moral commitments to the lives of their fellows, and to community welfare in general. Local officials tend to follow their sympathies with the community and individuals, rather than rigorously enforcing what the law actually tells them to do.[168] Poor resource users are rarely punished by local authorities because financially punitive measures would seriously endanger their livelihoods. **Where alternative income opportunities are limited and people are bound to each other by multiple personal relations, rangers and other conservation staff turn a blind eye to violations instead of strictly enforcing what is written in the laws and regulations.**

Law enforcement is seriously undermined when local political elites and their fellows pursue self-serving interests. In Vietnam, local power structures and political economies, where social networks and patronage systems are the most striking features, shape the daily practice of nature conservation. Mangrove conservation is no exception.[169] The aquaculture boom provides a vivid example.[170] Households with bureaucratic backgrounds and political connections have gained the most from the aquaculture boom. Blurred boundaries between private and public interests, as well as conflicts of interests, can have a serious impact on mangrove conservation. Where local officials and their relatives own shrimp ponds, local planning and decision making may be co-opted in favour of aquaculture extensions.[171] If the laws and sanctions cannot be properly enforced, but are overruled

166 *Ibid.*; Orchard, S.E. et al. *supra* note 43.

167 Pike, D. (2000). "Informal Politics in Vietnam", in Dittmer, L. et al. (Eds.). *Informal Politics in East Asia*. Cambridge University Press, Cambridge; Kerkvliet, B.J.T. (2003). "Authorities and the people: An analysis of state-Society relations in Vietnam", in Luong, H.V. (Ed.), *Postwar Vietnam: Dynamics of a Transforming Society*. Rowman & Littlefield, Oxford.

168 Koh, D. (2004). "Urban government: ward-level administration in Hanoi", in Kerkvliet B.J.T. and Marr, D.G. (Eds.). *Beyond Hanoi: local government in Vietnam*. Institute of Southeast Asian Studies, Singapore.

169 Dressler, W.H., Phuc Xuan To and Mahanty, S. (2013). How Biodiversity Conservation Policy Accelerates Agrarian Differentiation: The Account of an Upland Village in Vietnam. *Conservation and Society* 11(2):130-143.

170 Le Thi Van Hue and Scott, S. (2008). Coastal Livelihood Transitions: Socio-economic Consequences of Changing Mangrove Forest Management and Land Allocation in a Commune of Central Vietnam. *Geographical Research* 46(1):62-73; Orchard, S.E. et al. (2015). Impact of Aquaculture on Social Networks in the Mangrove Systems of Northern Vietnam. *Ocean and Coastal Management* 114(2015):1-10.

171 Hawkins, S. et al. *supra* note 5; Orchard, S.E. et al. *supra* note 170.

by more powerful informal institutions, making stricter laws and increasing punishments will have little impact on developments on the ground.

### 10.4.2 Payment for Forest Environmental Services (PFES)

One potential way to generate revenue and financial incentives to conserve mangroves is through Payments for Forest Environmental Services (PFES). The policy concept of PFES found fertile ground in Vietnam against the background of market reforms and international integration. There is increasing interest and readiness from the Vietnamese government to engage with PFES to raise funds for environmental protection. Initial PFES models emerged in the forestry sector, where pilot systems paved the way for establishing a larger policy framework.[172] PFES in Vietnam serves a dual purpose: preserving critical forest ecosystems and boosting rural development through income generation for rural communities.

In principle, PFES describes a voluntary transaction where a well-defined environmental service is bought by a buyer from a provider on market-based principles.[173] Vietnam's PFES models are not truly market based, but constitute a State-imposed payment scheme based on involuntary transactions and mandatory participation.[174] The State controls valuation and pricing of ecosystem services, undertakes centralized collection of revenues from buyers, and allocates revenues through State entities to the beneficiaries. Industrial producers using water resources, facilities generating a large amount of GHG emissions, and water supply companies, among others, are required to pay for forest ecosystem services.[175] So far, 351 PFES contracts have been signed nationwide, annually generating about 22.3% of the total capital investment in the forestry sector.[176] According to a new regulation, PFES can include payments to local people to conserve and restore mangroves as a natural buffer to reduce the public costs of building and maintaining dykes and seawalls. Another option is to apply PFES schemes in the context of eco-tourism, landscape conservation, and biodiversity protection in mangrove habitats.[177] Carbon sequestration through restoration and conservation, including REDD+, also qualify as PFES.[178]

Fully private mangrove PFES schemes are not feasible in Vietnam because of State ownership of the vast majority of mangrove forests. PFES could be established where local people are eligible to receive PFES revenues via forest land allocation, forest contracting or co-management arrangements. However, payments for ecosystem services have gained momentum only in the context of terrestrial forests. In mangrove forests, there is no fully operational PFES scheme in place yet, but a number of pilot activities aim to assess the potential and limitations, and to provide lessons and input on mangrove PFES.[179]

Despite the progress made with PFES for mangroves in recent years, there remain many obstacles that must be overcome, which can be summarized as follows:

- High opportunity costs from alternative land uses, such as fishing, agriculture, and aquaculture. In particular, the high returns from aquaculture create difficulties for PFES, by making it less likely that payments can be set high enough.
- Unresolved conflicting and overlapping regulations, in particular between the Land Law

172 McElwee, P. (2012). Payment for Environmental Service as Neoliberal Market-based Forest Conservation in Vietnam: Panacea or Problem? *Geoforum* 43:412-426; Decree 99/2010/ND-CP of 24 September 2010 on the policy on payment for forest environment services; Decree 156/2018 /ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forest Law.

173 Wunder, S. (2005). *Payment for Environmental Services: Some Nuts and Bolts*. CIFOR, Jakarta.

174 Suhardiman, D. et al. (2013). Payment for Ecosystem Services in Vietnam: Market-based Incentives or State Control of Resources? *Ecosystem Services* 5:94-101.

175 Decree 156/2018/ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forest Law. Article 57.

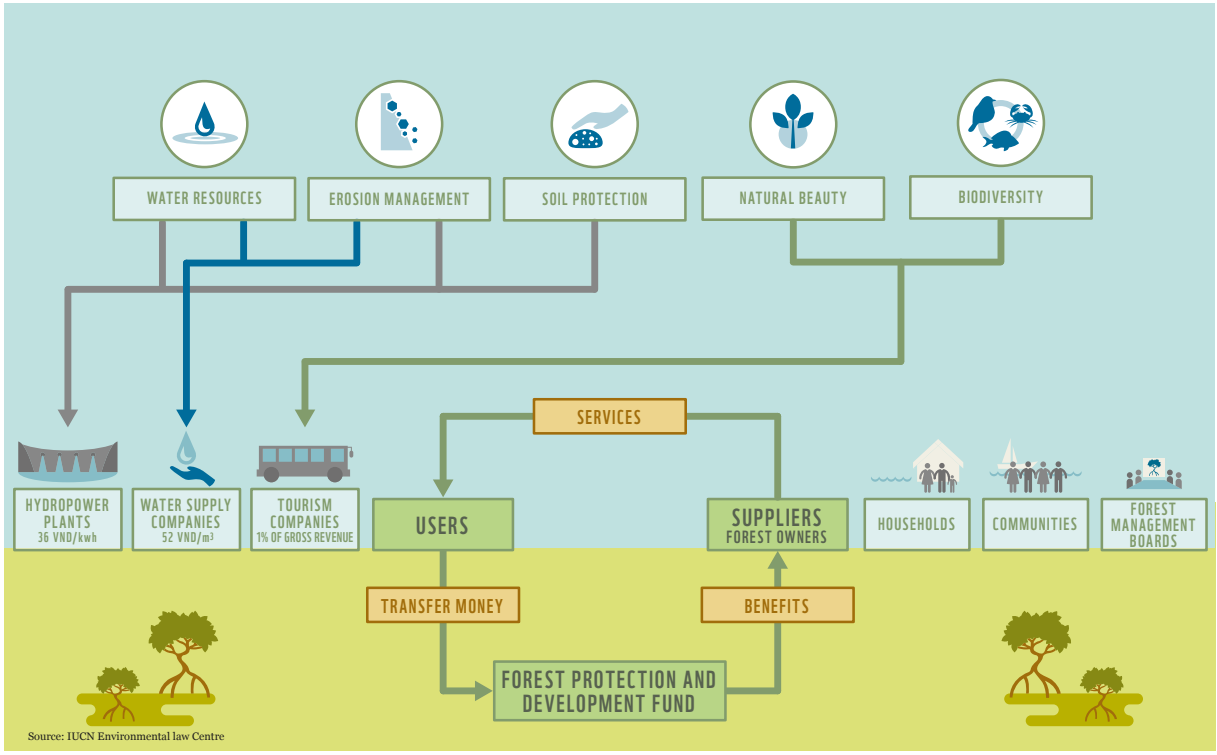
176 Announcement 395/TB-VPCP of 3 October 2014 conclusion of the Deputy Prime Minister Hoang Trung Hai at the on-line review meeting of the 3 years PFES implementation (2011-2013).

177 Decree 156/2018/ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forest Law. Article 70.

178 *Ibid*. Article 57(5).

179 Wyatt, A. *Progress with mangrove PES in Vietnam*. http://cmsdata.iucn.org/downloads/4__payment_for_ecological_services__pes__progress_in_vietnam__cf_.pdf [Accessed 21 March 2019].

**Figure 21:** PFES in Vietnam based on Decree 156/2018/ND-CP on Payment for Forest Environmental Services.




and the Forestry Law, and unclear allocation of responsibilities and insufficient coordination between MARD and MoNRE.

- Poor law enforcement and weak institutions at a local level.
- Complicated/insecure property rights and tenure arrangements.
- Lack of transparency and accountability in state-controlled PFES schemes. Irregularities in benefit distribution have raised concerns about social equity, particularly whether PFES truly fulfills its promise of generating income for rural communities and reducing poverty.[180]

### 10.4.3 Mangrove restoration/ conservation in the light of REDD+

According to estimates, more than half of the Vietnam's greenhouse gas emissions stem from land use conversion, and forest degradation in particular.[181] Making reference to these figures and Vietnam's progress in forestry reforms, donors and NGOs consider Vietnam to be a major pioneer in Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+). In 2009, the UN-REDD Programme nominated Vietnam for its REDD+ readiness programme.[182] Since then, funding for REDD+ activities has steadily increased. Further support is being provided by the World Bank's Forest Carbon Partnership Facility and the Norwegian International Climate and Forest Initiative. Activities include capacity building for state officials, the development of technical guidelines, and the involvement of local communities in compliance with Free, Prior and Informed Consent (FPIC) principles. Support was provided to draft provincial REDD+ action programmes and to develop a Benefit Distribution System. In 2015, REDD+ was explicitly listed as part of Vietnam's NDC proposal.[183]

As for PFES in general, REDD+ activities in Vietnam so far have mainly focused on terrestrial forests in mountainous regions. The provincial

180 Phuc Xuan To et al. (2012). The Prospects for Payment for Ecosystem Services in Vietnam: A Look at three Payment Schemes. *Human Ecology* 40:237-249; Dressler, W.H. et al. (2013). How Biodiversity Conservation Policy Accelerates Agrarian Differentiation: The Account of an Upland Village in Vietnam. *Conservation and Society* 11(2):130-14; Orchard, S.E. et al. *supra* note 43.

181 Nguyen Thai Hoa et al. (2014). Climate Change Mitigation Strategies in Agriculture, Forestry and other Land Use Sectors in Vietnam. *Mitigation and Adaptation Strategies for Global Change* 19(1):15-32.

182 Pham, T.T. et al. (2014). The REDD+ policy arena in Vietnam: participation of policy actors. *Ecology and Society* 19(2):22.

183 Vietnam's first Intended Nationally Determined Contribution (submitted 3 November 2016). UNFCCC. Section 2.5(6).

REDD Action Plans 2015-2020 were developed for six provinces, of which only one includes a significant number of mangrove forests, Ca Mau in the Mekong Delta.[184] It was also in Ca Mau Province, where, as part of the REDD II Programme, the Nhung Mien Protection Forest Management Board developed a Site REDD+ Implementation Plan in consultation with local stakeholders in Nhung Mien.[185] The plan aims to address mangrove degradation from aquaculture encroachment, which is considered one of the main drivers of mangrove loss. The UN-REDD Provincial Programme Management Unit of Ca Mau signed a REDD+ Implementation Agreement with the PFMB in November 2015 to empower local people to adopt integrated mangrove aquaculture management models, including certified organic shrimp farming, as well as enhancing forest monitoring and strengthening law enforcement. The Nhung Mien PFMB has already contracted over 10,000 ha of forest land (80% of the total area) to about 2,700 households on 20-year terms.[186]

While in Vietnam REDD+ pilot activities and policy framework development have made progress in recent years, the way REDD+ plays out in the Vietnamese institutional context has not been without its concerns. In Vietnam, the REDD+ policy community emerged as a fully State-centric and donor-driven network, where NGOs and local communities are consulted, but little power is given to them when it comes to decision-making.[187] As criticized in a number of empirical studies, the practical application of FPIC principles is difficult under the current governance regime. Rather than actively engaged and empowered, local communities find themselves patronized by a consortium of local authorities, national consultants, and donors.[188] The bulk of funds have been spent on ensuring compatibility with checklists and technical guidelines to match the formal requirements, while omitting urgently needed discussions about the practice of land tenure, community control over forests, and other politically sensitive issues.[189] Benefit distribution is another issue of concern. While donors and NGOs advocate for the establishment of an independent and multi-stakeholder REDD+ fund, the government insists on integration into the State budget system.[190]

### 10.4.4 Co-management in mangrove forests

Co-management refers to management approaches where the responsibility for natural resources is shared between State entities and resources users. Both the community and the government are involved during the decision-making, implementation, and enforcement processes. Co-management principles have been adopted in Vietnam's legal framework in recent years.[191] Co-management occurs on State lands, which includes about 80% of all mangrove forest land in Vietnam.[192] Against this background, co-management appears to be a potentially promising policy tool to strengthen inclusive and participatory mangrove management, bringing together conservation goals with livelihood promotion.

In recent years, donors, conservation agencies and NGOs, together with government agencies, have intensified their efforts in co-management. Larger integrated coastal management programmes are presently being carried out by

184 Decision 744/QD-UBND of 27 April 2016 approving the REDD+ action plan for Ca Mau province in the period of 2016-2020.

185 UN-REDD Asia Pacific (3 August 2016). *Implementing REDD+ in Ca Mau Province, Viet Nam*. http://www.un-redd.org/single-post/2016/08/03/Implementing-REDD-in-Ca-Mau-Province-Viet-Nam [Accessed 21 March 2019].

186 *Ibid*.

187 Pham, T.T. et al. (2012). *The context of REDD+ in Vietnam: Drivers, agents and institutions*. Occasional Paper 75. CIFOR, Bogor, Indonesia.

188 Lang, C. (2011). *"Do you Want your Forest to be Conserved?" Free, Prior and Informed Consent in Vietnam*. http://www.redd-monitor.org/2011/04/13/do-you-want-your-forest-to-be-conserved-free-prior-and-informed-consent-in-vietnam/ [Accessed 18 December 2018]; McElwee, P. (2014). "From Conservation and Development to Climate: Anthropological Engagements with REDD+ in Vietnam", in Barnes, J. and Dove, M. (Eds.). *Climate Cultures: Anthropological Perspectives on Climate Change*. Yale University Press, New Haven.

189 *Ibid*.

190 Pham, T.T. et al. *supra* note 187.

191 Decision 186/2006/QD-TTg of 14 August 2006 on forest management (amended by Decision 34/2011/QD-TTg); Decision 17/2015/QD-TTg of 9 June 2015 on protective forest management; Decision 49/2016/QD-TTg of 1 November 2016 on production forest management; Decree 156/2018/ND-CP of 16 November 2018 detailing the implementation of a number of articles of the Forestry Law.

192 Hawkins, S. et al. *supra* note 5.

MARD, GIZ, and AusAid in the Mekong Delta, and smaller pilot initiatives are run by NGOs in different localities.[193] There have been attempts to link private businesses, households, and local State agencies for sustainable mangrove management through integrated organic shrimp farming. In these schemes, households that are allocated land are entitled to the economic use of certain areas, and must protect areas zoned as protection or special-use forest. For instance, in Kien Giang Province in the Mekong Delta, the provincial government has adopted a policy based on which Protection Management Boards enter into long-term contracts with households to protect and use the forest at a ratio of 70:30 in favour of conservation.[194] Co-management can be effective in the long-run, but only if inclusiveness and stakeholder involvement are ensured. Otherwise, co-management is likely to contribute to exclusion and marginalization, and may even lead to conflict.

## 10.5 Outcome level: growth in quantity but a decline in quality

Vietnam has made significant progress towards the development of mangrove-related jurisdiction since the 1990s, and the same applies to policies. Nevertheless, legal inconsistencies, unclear institutional arrangements and weak law enforcement have remained unresolved issues that are having a negative impact on the biophysical state of mangrove ecosystems.

Two trends have been the most striking over the past three decades. First, according to statistics and reports, there is a positive trend that total mangrove areas have gradually re-expanded over the past 20 years. Following a historical low point of 156,000 ha in 1999, total mangrove area has been constantly increasing, now accounting for more than 270,000 ha.[195] This success is owed mainly to restoration and afforestation programmes, many of which were sponsored by international donors, but partly also by the national government. The gradual improvements to mangrove-related legislation, a clear policy shift towards conservation, the adoption of ICZM models and, not least, growing public awareness about the vital role mangroves play in coastal protection, community development, the local fishery sector and tourism development, were vital preconditions for this success story. Most recently, with climate change dominating the public discourse in Vietnam, mangroves have been re-discovered as a cost-effective and sustainable means of adaptation and disaster risk reduction. Moreover, the potential use of mangroves for carbon sequestration in national and international mitigation initiatives paves the way for further forestation and restoration pathways, such as PFES and REDD+.

Second, despite these successes, the biophysical quality and intact nature of many mangrove ecosystems have been declining rapidly. Apart from a number of national parks and strictly protected areas, Vietnam's primary mangrove forests have virtually vanished.[196] Even in legally protected territories, one can observe degraded, lost, and declining biodiversity, which endangers ecosystem integrity and proper functioning. **The bulk of what constitutes Vietnam's mangrove stock is replanted forest, often in monoculture plantations with much less biodiversity than what is found in primary forests.**[197] One of the reasons for this is that mangrove restoration and rehabilitation policies are principally conceived as development actions that aim to meet objectives such as socio-economic development, disaster risk mitigation, and coastal protection.

193 GIZ. *Integrated Coastal Management Programme*. https://www.giz.de/en/worldwide/18661.html [Accessed 23 February 2017].

194 Hawkins, S. et al. *supra* note 5; Beresnev, N. et al. *supra* note 157.

195 Mai Trong Nhuan et al. (2015). "Changes in Impacts of Climate Extremes: Human Systems and Ecosystems", in Tran Thuc et al. (Eds.). *Viet Nam Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Viet Nam Publishing House of Natural Resources and Cartography, Ha Noi.

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

197 *Ibid.*

## 10.6 Conclusions and recommendations

Mangroves in Vietnam follow the overall trend that can be observed in Vietnam's forest sector as a whole. After decades of mangrove degradation and loss, Vietnam has witnessed an increase in total mangrove areas thanks to a policy shift toward conservation, restoration, and forestation. At the same time, the quality of mangrove ecosystems and habitats has continued to decline. While Vietnam has enhanced its mangrove-related jurisdiction, there are substantial gaps in enforcing these legal instruments on the ground. Moreover, weak governance structures resulting from unclear and incomplete legal provisions, blurred tenure rights, unclear allocation of responsibilities, and poor cross-sectoral coordination are key issues that impede mangrove conservation in practice.

In the absence of integrated planning tools that take into account the value of ecosystems and their environmental services, economic objectives are given priority, leaving little room for enhancing good environmental practices. Under these conditions, it remains challenging to reconcile agriculture, aquaculture and urban planning with mangrove conservation goals.

To put the blame solely on insufficient levels of integration in planning and policy, or on low public awareness, or on a lack of technical, financial or human resources, however, would fall short, and would be even misleading. The sustainable management of mangroves takes place at a local level, where the behaviour of stakeholders is mostly driven by diverse interests, and by diverging priorities and preferences, not to mention local power structures, local political economies, and informal institutions. This partly explains the discrepancy between legal provisions and local actions, even in strictly protected areas, such as the Xuan Thuy National Park.

Since mangrove conservation requires a clear and well-designed legal framework, Vietnam is in an urgent need of improved legislation on mangrove conservation to ensure the legitimate rights and interests of communities are taken into account, and develop non-compliance mechanisms, alternative livelihood options, awareness-raising and incentives.

### Recommendations

1. Create and strengthen financial incentives such as PFES and REDD+.
2. Strengthen public private partnerships to promote private sector engagement in mangrove conservation and restoration.
3. Promote sustainable mangrove management in the context of ecosystem-based adaptation.
4. Foster community engagement and public communication programmes.
5. Ensure fair sharing of benefits from mangrove protection and restoration.
6. Improve inter-sectoral coordination in planning and policy.
7. Promote ICZM and planning approaches.
8. Promote sustainable mangrove management in the context of mitigation and adaptation/ disaster prevention.
9. Provide legal training in conjunction with raising awareness of government officials at every level.
10. Improve the livelihoods and income opportunities of local communities to make them less dependent on mangrove habitats.
11. Integrate climate change measures in respects of mitigation and adaptation/disaster prevention into national policies, strategies and planning.


© Le Duc Kim

# 11

# COMMON FINDINGS

## NOURISHING GROWTH: SUCCESS FACTORS FOR EFFECTIVE GOVERNANCE

Analysis of the case studies indicates certain success factors for effective and sustainable mangrove governance. Cross-cutting aspects include:

- clear and unambiguous legal frameworks that are based in science and take into account social and economic considerations and potential issues of compliance;
- coordinated, capable institutions with sufficient resources, clearly defined mandates and access to scientific and economic data;
- transparency and accountability at all levels, backed by strong rights related to access to information, participation and access to justice; and
- monitoring of implementation, compliance and effectiveness of legal tools, as well as ongoing monitoring of the health of mangrove ecosystems measured against an established baseline.

Specific considerations apply to different legal approaches. For example, community management arrangements require, inter alia:

- direct and immediate benefits;
- clearly defined rights and responsibilities;
- clear land tenure;
- balanced rights and responsibilities;
- community capacity and legal status, and
- involvement of all genders.

Financial incentives and market-based mechanisms, planning and EIA processes, and bans on mangrove use have different factors of success.

# CONTENTS

## 11.1 Introduction

Mangroves are valuable ecosystems, covered by principles and legal frameworks at international, national and local levels, and the subject of significant international interest, yet they continue to be depleted at a rapid rate. The case studies described in this volume demonstrate that addressing this depletion requires consideration of social, economic, ecological, and political factors in designing and implementing legal frameworks and tools. The approach must be tailored to the national and ecosystem context, and informed by understanding the main threats to mangroves, as well as the needs, interests, and capacities of stakeholders and users. Effective implementation of legal tools requires enabling conditions that support fair and transparent decision making and enforcement.

Different types of legal tools depend on different elements to be successful. Figure 22 maps a selection of legal tools that can respond to drivers of mangrove degradation, and some of the applicable factors of success for each tool. This diagram is not meant to be comprehensive. Instead, it indicates options and factors to be taken into account to ensure mangrove governance is effective. This chapter first outlines cross-cutting considerations, before engaging with specific legal tools and factors of success.

## 11.2 Cross-cutting considerations

The case studies show that challenges at the instrumental, institutional and behavioral levels can impact outcomes for mangrove ecosystems. This categorization is in a way arbitrary, as challenges that appear at the behavioral level may have their root in a problem of instrumental design, but it can be useful to organize analysis and discussion of the issues.

### 11.2.1 Instrumental level

Ambiguous, overlapping and conflicting laws are not effective. In Mozambique, the Mining Law and Land Law provide for granting of licences for commercial activities in protected areas, while the Conservation Law prohibits such activities. In practice the government continues to issue special authorization for activities in protected areas (Chapter 7). In Vietnam, unclear and conflicting regulations under the Land Law and Forestry Law contribute to institutional coordination challenges across sectors (Chapter 10). In Tanzania, lack of clarity on how different sectoral legislation applies to mangroves impedes implementation (Chapter 9).

Law should be grounded in science. Policy-makers need access to scientific and technical information in developing legal tools, and legislation must be based on science-based goals and measures. Legal frameworks should provide for ongoing scientific monitoring and review of mangrove ecosystems, and this information should be used to support development and implementation of policy. In Costa Rica, the Vice-Minister of Oceans has stated that the government is responsible for creating baselines for scientific, technical and economic information to support communities and other users, and the national inventory of wetlands is being incorporated into policy instruments relating to planning and Environmental Impact Assessments (EIAs) (Chapter 4).

Legal frameworks should be designed taking into account social, cultural, economic and political factors that will shape implementation, as well as potential issues of compliance. Where compliance is difficult or impossible – as where mangrove users depend on the resource for their livelihoods – a legal rule will be seen as illegitimate or unfair. This can be the case where an absolute ban on mangrove use does not take into account the practices and needs of local users. These are design problems, not just implementation problems, because the solution lies in revising the legal framework. In these cases, a focus on strengthening enforcement will not be effective.

While much discussion of mangrove governance focuses on protection, restoration also requires appropriate enabling conditions. Unclear tenure can block restoration or delay it for years. Regulations designed to protect mangroves, such as permitting requirements and restrictions on certain activities in mangrove ecosystems, can


create unintended obstacles to restoration. It is valuable to have standardized techniques and guidelines developed by the competent authority, particularly to inform community restoration projects. In Costa Rica, communities who have relied on trial and error in restoration initiatives have expressed a desire for better instructions on how to conduct such work (Chapter 4).

Follow-up on the implementation, compliance and effectiveness of law is a key component of governance that is often neglected. When legal effectiveness is assessed, it is often *ad hoc*. Without a baseline of comparison, this kind of assessment can provide a snapshot of what is working and what isn't, but cannot give a sense of improvements or other trends. Monitoring how laws and policies are applied and how well they work should inform development of new instruments and revision of existing regimes on a regular basis, and can support understanding of and addressing issues related to compliance.

Legal systems related to mangroves need procedural safeguards to promote accountability, transparency, participation and access to justice and support good governance. Constitutional rights related to good governance need to be fully implemented through specific national legislation. Where corruption is a factor, discretion can be limited and transparency measures should be enforced. While legal measures to promote good governance are necessary, they are not sufficient in themselves to counter a culture of corruption and mismanagement (Chapter 3).

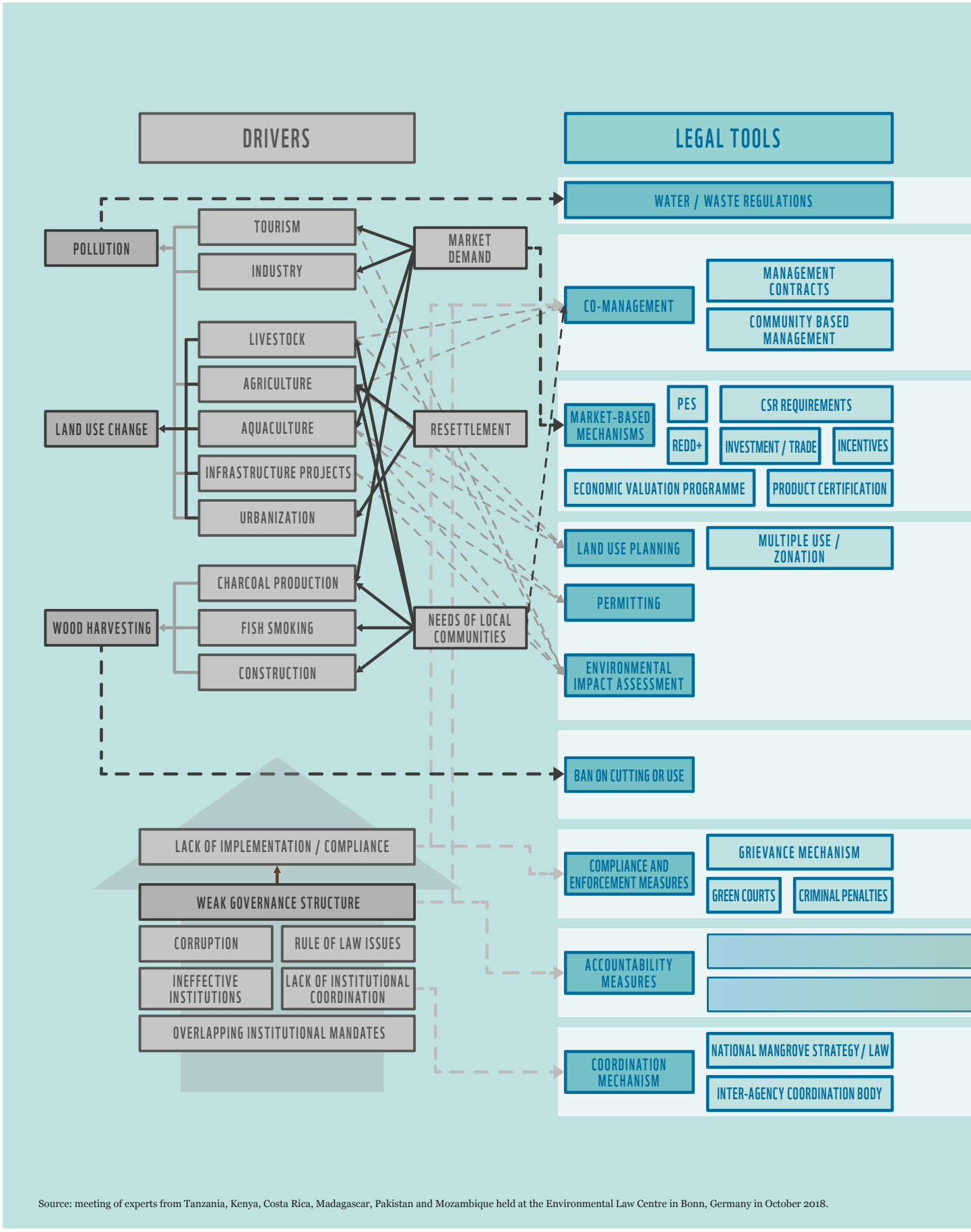
### 11.2.2 Institutional level

There are many examples of laws that exist on paper but are not well implemented in practice. Lack of resources and capacity are common barriers to implementation. Sometimes these can be alleviated through partnerships with civil society and the private sector to support government action. Government processes can be streamlined and simplified to relieve the administrative burden. However, in many cases there will still be a need for additional financial resources, which requires prioritization of mangroves in budgetary planning.

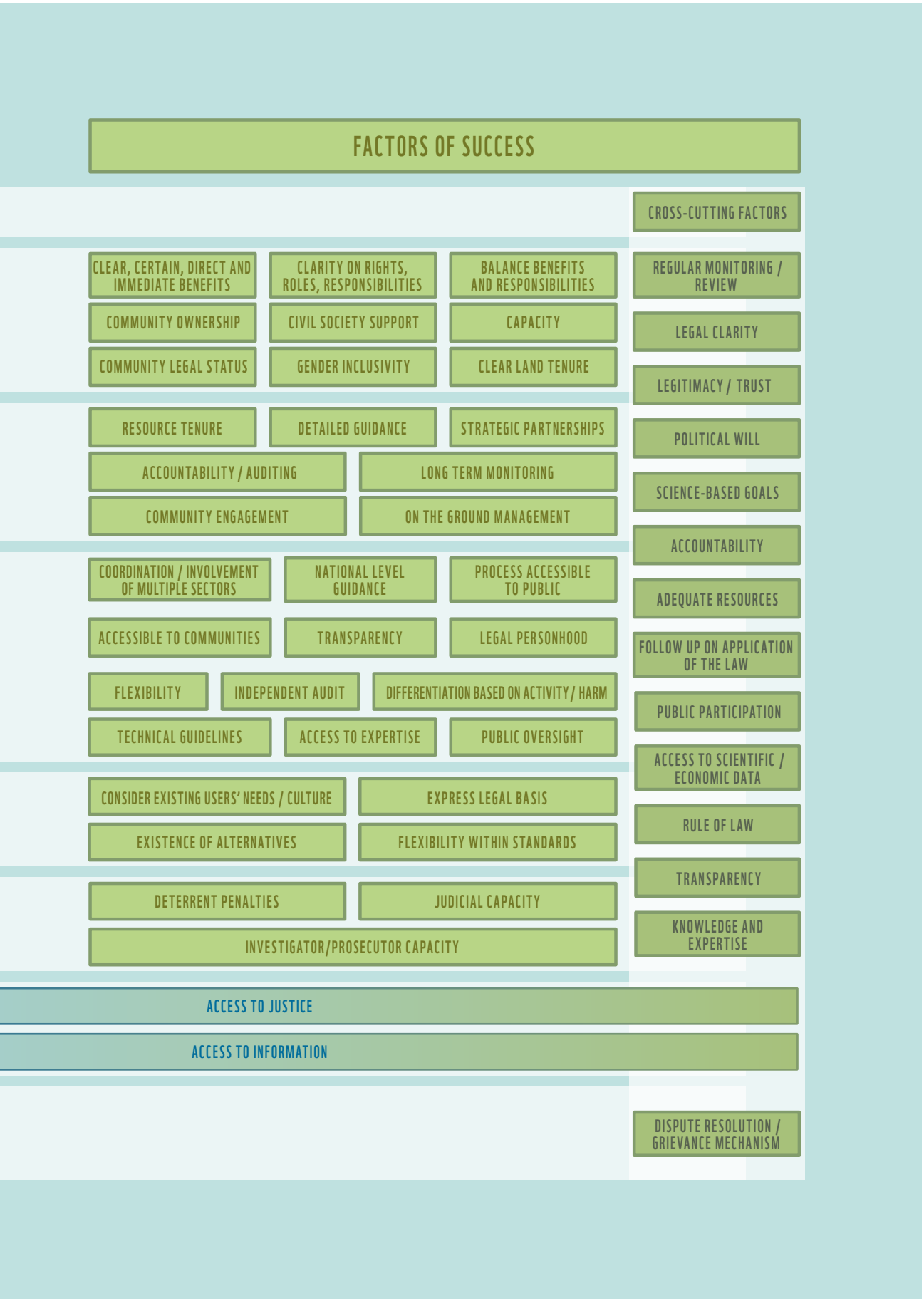
Capacity issues are also a problem in community-based governance. Communities may have significant knowledge and understanding of mangrove ecosystems, but limited bureaucratic or reporting capacity. In Madagascar, community management systems have the potential to support improved mangrove management, but the statutory frameworks are still "top-down" and fail to accurately align with community governance structures (Chapter 6). Community-based management mechanisms should consider the capacity of the communities involved, and take advantage of their strengths while not imposing burdens they are unable to handle.

Lack of coordination between sectors and levels of governance is a particular challenge in the implementation of mangrove-related legal protection. Addressing this first requires harmonization of legal rules – ensuring that different sectoral laws do not create conflicting rights or obligations. Where institutions have

**Figure 22:** Examples of legal tools and factors of success for mangrove conservation and sustainable use




Source: meeting of experts from Tanzania, Kenya, Costa Rica, Madagascar, Pakistan and Mozambique held at the Environmental Law Centre in Bonn, Germany in October 2018.


FACTORS OF SUCCESS
CROSS-CUTTING FACTORS
CLEAR, CERTAIN, DIRECT AND IMMEDIATE BENEFITS
CLARITY ON RIGHTS, ROLES, RESPONSIBILITIES
BALANCE BENEFITS AND RESPONSIBILITIES
REGULAR MONITORING / REVIEW
COMMUNITY OWNERSHIP
CIVIL SOCIETY SUPPORT
CAPACITY
LEGAL CLARITY
COMMUNITY LEGAL STATUS
GENDER INCLUSIVITY
CLEAR LAND TENURE
LEGITIMACY / TRUST
RESOURCE TENURE
DETAILED GUIDANCE
STRATEGIC PARTNERSHIPS
POLITICAL WILL
ACCOUNTABILITY / AUDITING
LONG TERM MONITORING
SCIENCE-BASED GOALS
COMMUNITY ENGAGEMENT
ON THE GROUND MANAGEMENT
ACCOUNTABILITY
COORDINATION / INVOLVEMENT OF MULTIPLE SECTORS
NATIONAL LEVEL GUIDANCE
PROCESS ACCESSIBLE TO PUBLIC
ADEQUATE RESOURCES
ACCESSIBLE TO COMMUNITIES
TRANSPARENCY
LEGAL PERSONHOOD
FOLLOW UP ON APPLICATION OF THE LAW
FLEXIBILITY
INDEPENDENT AUDIT
DIFFERENTIATION BASED ON ACTIVITY / HARM
PUBLIC PARTICIPATION
TECHNICAL GUIDELINES
ACCESS TO EXPERTISE
PUBLIC OVERSIGHT
ACCESS TO SCIENTIFIC / ECONOMIC DATA
CONSIDER EXISTING USERS' NEEDS / CULTURE
EXPRESS LEGAL BASIS
RULE OF LAW
EXISTENCE OF ALTERNATIVES
FLEXIBILITY WITHIN STANDARDS
TRANSPARENCY
DETERRENT PENALTIES
JUDICIAL CAPACITY
KNOWLEDGE AND EXPERTISE
INVESTIGATOR/PROSECUTOR CAPACITY
ACCESS TO JUSTICE
ACCESS TO INFORMATION
DISPUTE RESOLUTION / GRIEVANCE MECHANISM


fundamentally different policy goals – e.g. conservation vs. development – legal clarity is imperative to determine which priorities govern in which circumstances. A second necessity is harmonization of processes, such as planning and EIA processes, through measures for coordinating across sectors. Third is the coordination of institutions, in both law and practice. Laws can create mechanisms and channels to support or require institutional coordination, such as the National Wetlands Programme in Costa Rica or the National Committee for Integrated Management of Mangroves in Madagascar (Chapters 4, 6). However, coordination needs to be institutionalized in practice – government actors need to communicate across sectoral silos as a matter of standard procedure.

Government institutions need access to scientific and economic data to effectively implement their mandate and support conservation. This can be achieved through partnerships with academic institutions and civil society, or through dedicated government institutions. The Kenya Marine and Fisheries Research Institute, established by the Science, Technology and Innovation Act, conducts and shares scientific research on mangroves and plays a key role in developing national policy and supporting community management (Chapter 5). The Tanzania Forest Service partnered with the University of Dar es Salaam Institute of Marine Sciences to establish a Mangrove Research and Training Center in the Rufiji Delta (Chapter 9).

### 11.2.3 Behavioural level

Destruction of mangroves can be evaluated through a cost-benefit analysis, which assumes that actors involved are rational decisionmakers. Where there is a high value to be gained and the costs are relatively low, unsustainable use may continue. In these cases, decreasing the benefit of unsustainable use (e.g. through reducing demand) while increasing the costs (e.g. through regulation and legal penalties) may reduce such

use. Market mechanisms such as subsidies, Payments for ecosystem services (PES), and product certification schemes can be used to align incentives, but it is important to get the valuation right. Where mangroves are worth more as charcoal than as standing forests, degradation will be hard to avoid, even if it is illegal.

One explanation of why mangroves are being destroyed despite their high value is that those who benefit from mangrove degradation do not bear the full costs. Local communities may be affected by mangrove degradation that is caused by foreign users. Benefits may accrue to a small number of users – operators of unsustainable activities – while the costs are distributed among many. Certain costs, such as loss of carbon sinks, are distributed across the entire global community. Where this is the case, legal interventions can adjust the market, through direct regulation or incentive-based measures.

In practice, economic calculus is not the sole motivator of human behavior. Social, cultural and political aspects play a significant role. Trust and legitimacy are key factors in legal effectiveness. Local social networks can affect allocation of resources and enforcement of rules, as in the case of Vietnam (Chapter 10). Social codes and customary law can be an effective means to promote mangrove conservation, as in Madagascar where grassroots collective agreements are a key component of natural resource management (Chapter 6). To spur public engagement, Pakistan has engaged in public restoration displays, achieving three Guinness World Records for the most mangroves planted in one day, most recently in 2018 by planting over one million trees within 24 hours (Chapter 8).

Corruption is a systemic problem affecting mangrove governance, and has social and cultural as well as economic elements. Reducing discretion of decision-makers can help. This could entail providing strict and binding criteria for decision-making on permits based on an independently verified EIA. The need for flexibility in mangrove management needs to be balanced against a need to contain potential governance problems and will depend on the situation of the country.

Corruption can also be combatted by allocating decision-making authority to an appropriate level. Requiring decisions on downsizing or degazettement of protected areas to be made at the highest level or through an inter-agency and public process works where there is local or sectoral interest in undertaking activities in a certain area. Where corruption is a problem at higher levels, as in some cases relating to aquaculture and infrastructure projects, devolving decision-making to the community level is effective.

Transparency is a fundamental requirement for good governance. Legal requirements for sharing information around permitting, planning, and other management decisions can create a basis for civil society to act as watchdogs against corruption. Specialized and independent tribunals, such as environmental courts, are useful in this context. Measures to ensure the safety of mangrove advocates and defenders can be required, particularly where organized criminal groups are involved (See, e.g. Chapters 8, 4).

Some legal measures are easier to enforce than others. The more complicated a legal tool or structure, the more it may be subject to corruption or misuse. Ambiguous or overlapping laws can lead to confusion or create loopholes. Clear laws and legal certainty may be the most important characteristics of a functional legal system for mangrove conservation and sustainable use.

## 11.3 Legal tools and factors of success

Legal measures to conserve mangroves should be designed to respond to threats, which may vary depending on circumstances. Cutting of mangrove wood for charcoal production by local communities will require a different legal response than destruction of large areas for coastal infrastructure development. Threats may come from different sectors or geographically distant sources, and may be transboundary. The most appropriate response may involve not only the proximate cause of deforestation, but an underlying driver such as international demand for unsustainably sourced products. Legal tools should consider connected ecosystems and markets.

In addition to the cross-cutting considerations discussed above, specific success factors are relevant for different tools in different contexts (Figure 22). This section describes a few of such success factors to give a sense of the type of analysis to be used in identifying and implementing mangrove governance solutions. The tools themselves are described in detail in Chapter 3; this section focuses on factors of success.

### 11.3.1 Community co-management

Where drivers of degradation are related to unsustainable use by local communities, involvement of communities in management and decision-making can be an effective management solution. Co-management mechanisms, such as community-based management arrangements work best where benefits to communities are direct and immediate, rights and responsibilities are clearly defined, and land tenure is clear. Without clear benefits and rights, there is little incentive for communities to participate. In addition, benefits and responsibilities must be appropriately balanced.

Communities involved must have sufficient capacity to fulfil their responsibilities and effectively manage benefits. They also need appropriate legal status. In Kenya, communities must register a Community Forest Association and apply to KFS to participate in forest management, while in Madagascar only legally established associations of fishermen are eligible for management of locally managed marine areas (LMMAs) (Chapters 5, 6). Registration processes can be costly and time-consuming, and can require significant capacity. Often civil society support is key to effective community management.

Involvement of all genders in mangrove management is vital to effectiveness. Different genders use and rely on mangroves in different ways and have different knowledge, experience, needs and perspectives to bring to the table. Women's groups can be the backbone of community mangrove governance (*e.g.* Chapters 4, 5).

### 11.3.2 Market-based mechanisms and financial incentives

A range of market-based and financial measures can be used to create economic incentives for mangrove conservation. PES, reduction of emissions from deforestation and forest degradation (REDD+) systems, economic valuation, product certification, investment and trade regulations, corporate social responsibility (CSR) requirements and direct subsidies and incentive payments can all be means of promoting conservation and sustainable use, depending on the context.

All of these measures require a supportive legal context. In the case of PES and REDD+, it is essential to clearly define who has rights to benefit from the resource in question; *e.g.* who can sell and benefit from carbon credits and who can receive PES. In Costa Rica, the location of mangroves on public land creates obstacles for PES (Chapter 4). In Madagascar, rights to undertake income generating projects are part of management transfer arrangements in LMMAs (Chapter 6).

Market-based and financial processes often benefit from formal procedures and creation of markets through frameworks for carbon trading and/or offsetting requirements. Financial measures, and particularly those related to economic valuation and certification, depend on detailed technical guidance to ensure consistency.

Effective financial mechanisms are based on strategic partnerships and relationships of legitimacy and trust between the private sector, communities and government. The private sector can provide technical information and support for economic valuation and REDD+ certification, and must be involved in the development and design of product certification, CSR frameworks and other measures which affect them directly. Likewise, local community engagement is crucial for effective financial measures in areas in which they are involved. Where PES or other systems involve payments to communities, payments must be clear, immediate and well balanced against responsibilities or obligations. Incentives must be set at a level that is meaningful.


Application of financial mechanisms in the absence of good governance can open the door to corruption. Auditing and other accountability measures must ensure that payments and other benefits are channeled appropriately. Ultimately, the success of financial measures depends on activity on the ground. Long term monitoring should be used to ensure that payments and financial measures result in actual changes in behavior and sustainability outcomes.

### 11.3.3 Planning, permitting and Environmental Impact Assessments

Permitting and planning processes and EIA requirements can address aquaculture, infrastructure projects and other commercial activities in and around mangrove ecosystems that contribute to land use change and pollution. These processes require coordination and involvement of all relevant sectors.

Land use planning processes can be implemented at the local level but should follow consistent national level guidance that requires special consideration of mangrove ecosystems. They should be transparent and accessible to the public, and ensure meaningful participation of all stakeholders, including the private sector, civil society and local communities.

Permitting processes should be transparent. Where permitting applies to use by local communities, processes should be accessible and communities should be able to achieve the necessary legal status to get a permit. Alternatively, subsistence use by communities can be exempted from permit requirements, as is the case with subsistence fishing in Mozambique (Chapter 7).

Permits, licences and concessions for potentially destructive activities should be predicated on EIAs. The EIA process must balance flexibility with adherence to technical guidelines, depending on institutional capacity and governance quality. EIAs provided by proponents should be reviewed by an independent audit, and if approved, regular reporting on activities should also be subject to audit. In Kenya, holders of an EIA license are required to undertake yearly self-audits and can be subject to government control audits to ensure compliance (Chapter 5). EIA processes may be different based on the activity or harm, which may require different types of intervention or degree of investigation. All information should be made available to the public, and the public should

have meaningful opportunities to participate and exercise oversight over the process.

### 11.3.4 Ban on mangrove use

In some cases, an absolute prohibition on certain activities in mangrove areas may be an appropriate way to facilitate strong enforcement and minimize opportunities for disguising illegal use. The effectiveness of a ban on mangrove use depends on the needs and culture of users and the existence of alternatives. Where a ban conflicts with traditional practices or livelihood needs, it will be very difficult to implement effectively and ensure compliance. The terms of restrictions on mangrove activities should be developed through participatory processes that involve affected communities and consider their input.

Alternatives must be culturally and socially appropriate and realistic given the skills and capacities of users. Retraining can support livelihood shifts in some cases, but it is not a magic bullet. Affected communities themselves are usually in the best position to understand what types of alternative livelihoods might work best.

Where bans on certain activities are used, they should have an express and unambiguous legal basis. Some degree of flexibility—e.g. through special authorization for sustainable activities—can be useful, but flexibility should be guided by standards to ensure it is not abused. Again, the amount of discretion that can be provided to decision-makers may depend on institutional capacity and rule of law.

# 12

# RECOMMENDATIONS

## Recommendation 1. Adopt a dedicated mangrove policy or plan

Adopt a specific national level instrument to compel and coordinate action to conserve and sustainably use mangroves. Ensure that the instrument takes a holistic approach and utilizes scientific information and traditional and local knowledge. It should be developed through a participatory approach and incorporate legal safeguards concerning public participation, community-level involvement and coordination of institutional actions. It should be guided by internationally recognized environmentally principles, including, *inter alia*, the precautionary principle, the polluter pays principle, the principle of prevention of environmental harm and principles of good governance.

The policy or plan should clarify how mangroves should be treated under existing legal regimes and clarify responsibilities of institutions at all levels with regards to mangroves. Where gaps exist, the policy or plan can identify legal measures to address them. It should include specific objectives, goals, results and indicators, and identify means by which these will be achieved. It should prescribe clear mechanisms and thresholds for mainstreaming the conservation and sustainable use of mangroves in decision making by different sectors.

The preparation, adoption and operationalization of such an instrument should be developed with the highest possible national procedures and level of status conferred on official policy documents, for purposes of conferring legitimacy and authority. This could include Cabinet-level authorization as a policy, or approval by Parliament as a policy or plan with official status. An accessible, possibly simplified, explanation of the plan should be made available to ensure widespread understanding by local communities and the public.

## Recommendation 2. Fully use existing legal frameworks to conserve mangroves

### Recommendation 2.1. Implement international obligations through national regimes

Look for provisions in national laws that allow or require government action or development of subsidiary legislation to implement international obligations, and use this as an entry point for taking action to conserve mangroves. Domesticate obligations under the UNFCCC, Paris Agreement, CBD, Ramsar Convention and other relevant global or regional instruments. Include explicit mangrove targets in plans and commitments under international frameworks, such as NDCs, NAPAs, NBSAPs and national implementation plans for the SDGs.

### Recommendation 2.2. Ground mangrove conservation and sustainable use in constitutional norms

Use constitutional norms relating to sustainable development, conservation, land tenure and human rights as the foundation for mangrove governance. The right to a healthy environment as well as substantive rights related to, *inter alia*, life, health, livelihoods and property can provide legal justification for mangrove conservation and sustainable use. These rights often entail an obligation on persons and the state to conserve and protect the environment, including sensitive ecosystems such as mangroves. Procedural rights of access to information, and access to justice, backed up by constitutional requirements for transparency, accountability and public participation can support public and civil society engagement in developing legal protections, combatting degradation and guaranteeing sustainable use.

### Recommendation 2.3. Integrate mangrove conservation in sectoral legal frameworks

Take advantage of provisions of sectoral laws such as fisheries management regimes, development permitting regulations and climate change laws to promote conservation of mangrove ecosystems. Ensure mangroves are explicitly mentioned in

guidelines and targets for conservation. Give special consideration to mangroves in marine, coastal and terrestrial planning. Ensure mangroves are factored in to disaster and emergency frameworks and that pollution law takes into account the particular impact of activities on mangroves. Enforcement and compliance structures and standards should be clearly spelt out and provide institutional authority to an agency that can monitor compliance.

### Recommendation 2.4. Designate mangrove areas as protected areas

Use the designations provided under the protected areas law and other legal frameworks to protect mangrove ecosystems. Consider existing uses and user rights, conservation goals, and capacity in determining the appropriate category of protection, bearing in mind that intensive industrial uses incompatible with sustainability should not be permitted within protected areas but sustainable use within certain categories of protected area can support conservation objectives. Involve local communities in protected area designation and management processes and guard against approaches that exclude active community involvement.

## Recommendation 3. Promote inter-agency and cross-sectoral coordination

### Recommendation 3.1. Harmonize responsibilities of government agencies to avoid conflict and overlap

Clarify allocation of roles and responsibilities of different government agencies in the mangrove context, through legal or policy revision or inter-agency agreement. Ensure complementarity of actions by the different entities, avoid duplication, and establish clear lines of responsibility. Verify that each agency has legal competence to undertake its specific task. Ensure that key personnel understand their duties in relation to mangroves, as well as the duties of corresponding officials in their own institution and others. Where multiple agencies are involved in mangrove governance, designate one agency as having leadership and oversight in order to ensure that parallel decision making does not result in deleterious outcomes.

### Recommendation 3.2. Mainstream mangrove considerations across government institutions

Identify institutions with mandates that can be used to promote mangrove conservation and sustainable use (e.g., permitting and EIAs, land use planning, forestry management, waste management, finance). Integrate specific actions or considerations related to mangroves in appropriate operating procedures and agency guidelines. Raise awareness among all relevant institutional actors about how mangroves should be treated within their jurisdiction. Harmonize the functions of nationally supported research institutions to ensure research outcomes are beneficial to management practices, and managers can provide feedback to direct further or research.

### Recommendation 3.4. Create procedures for communication and information sharing, joint implementation and coordination among agencies

Develop formal or informal channels for communication and sharing of information among agencies in relation to decisions affecting mangroves. These can take the form of regular meetings or updates, or ad hoc communication triggered by particular actions (e.g. EIAs, licence or permit applications, rezoning proposals). Define specific instances where information-sharing procedures should include participation from civil society, community based organizations, private sector and research institutions.

Require and/or enable relevant institutions to undertake joint planning, decision-making, implementation and monitoring in relation to mangrove ecosystems. This may require an official change in policy, and alignment of mandates through legal reform. Ensure budget and capacity is sufficient for undertaking joint activities.

### Recommendation 3.5. Designate institutional body for coordination at national or local level

Identify or establish an institutional mechanism for coordination. This can take the form of an interministerial committee at the national


level or a cross-sectoral task force at the local level. An existing body, such as an overarching environmental management authority can be designated as responsible for coordination in relation to mangroves. The designated entity should have sufficient authority, resources and institutional participation and buy-in. Where appropriate, the coordinating or oversight body should include representatives of communities and/or civil society.

## Recommendation 4. Strengthen institutional capacity at all levels

### Recommendation 4.1. Ensure sufficient allocation of financial resources

Ensure appropriate budgetary allocation to institutions involved in mangrove conservation and management, recognizing the high value of mangrove ecosystems and the importance of their prioritization. If possible, find ways to reduce or streamline the operating costs of the mangrove governance structure. Allocate sufficient funds for equipment, human resources and technical tools to undertake, *inter alia*, inventories, economic valuation, monitoring, public engagement, capacity building and management activities.

### Recommendation 4.2. Raise awareness among government institutions and policymakers of the importance of mangrove management and sustainable use

Target policymakers and government officials with competence over areas affecting mangroves with information to build their understanding of the economic and ecological value of mangroves and the likely costs of mangrove degradation. Frequent awareness raising may be needed in institutions with high turnover.

### Recommendation 4.3. Empower local and municipal authorities

Provide sufficient legal competence, resources and capacity to local and municipal authorities to effectively carry out activities relating to mangrove management and sustainable use. Conduct an in-depth analysis of the local social and customary context of the area subject to local mangrove management transfer to identify the most relevant local structure in terms of management needs. Include community and traditional authorities who are well positioned to play a role in effective mangrove governance. Involve local authorities

with mandates indirectly related to mangrove governance such as waste management and development permitting that, if executed in an incompatible manner, can severely and adversely impact the health of mangroves. Clarify the modalities of intervention of local and municipal authorities in mangrove management and facilitate capacity development to local authorities to promote their leadership capacity.

### Recommendation 4.4. Strengthen multidisciplinary capacity within competent institutions

Evaluate technical capacity needs of institutions involved in mangrove management, considering the need for capacity across a range of fields. Ensure institutions have capable personnel with the requisite skills. If needed, provide training on a regular basis or to meet specific gaps. Encourage peer-to-peer learning across various technical streams (scientists, lawyers, governance specialists, community experts, etc.) to promote integrated development of knowledge and learning from diverse experiences. Where possible, encourage the use of online courses and webinars to reduce costs and carbon footprint.

## Recommendation 5. Monitor and promote implementation and compliance

### Recommendation 5.1. Monitor implementation and compliance through regular progress reports

Require regular progress reports from involved institutions to measure implementation of and compliance with legal frameworks on an ongoing basis. Measure implementation against an established baseline. Institutions may draw on reports by regulated entities such as licence-holders, but should ensure independent verification. Make information from reports public, and legally recognize the role of civil society and the public in reviewing and ground-truthing reports. If appropriate, incorporate incentives and penalties for agencies in implementing mangrove conservation and sustainable use.

### Recommendation 5.2. Develop a compliance plan to address non-compliance

Determine levels of non-compliance, and evaluate potential causes. Develop a compliance plan through a participatory process. Tailor compliance measures to address causes of non-compliance, considering options such as strengthened enforcement, awareness raising, and action to address economic motivations for non-compliance. Ensure penalties and incentives are set at meaningful and appropriate levels. Where non-compliance is the result of extensive systemic problems, provide legal and policy pathways for adoption of compliance assistance programmes where regulatory agencies hold the hands of mangroves management or utilization agencies or licencees to support development of compliance solutions.

## Recommendation 6. Adopt measures to ensure accountability, transparency, participation and access to justice

### Recommendation 6.1. Require Strategic Environmental Assessment (SEA) for plans or programmes potentially affecting mangroves

Subject government action potentially affecting mangroves to SEA to determine environmental impacts. This includes specific mangrove policies and plans as well as policies and plans in the mining, fisheries, forestry or other sectors with a potential impact on mangrove ecosystems. Make information from strategic environmental assessments public, and use the results to inform policy decisions. Devise mechanisms to ensure operational independence in development and approval of the strategic environmental assessment, and to compel observance with the outcomes, and recommendations.

### Recommendation 6.2. Ensure private sector accountability through Environmental Impact Assessments and information-sharing obligations

Require independent reviews of EIA reports and require developers to have insurance to cover any restoration costs in case of environmental damage. Realize the public right to access information regarding private sector activities.

### Recommendation 6.3. Ensure public consultation in development of laws and policies

Follow procedures for public consultation and ensure that public comments are taken into account in development of laws and policies. Take advantage of the information and perspectives provided during the public comment phase, which provides useful technical knowledge as well as insights into how the policy will be received and possible issues with compliance.

### Recommendation 6.4. Develop and/or strengthen environmental tribunals

Create environmental tribunals with specialized expertise to adjudicate environmental questions. Put in place legal safeguards to guarantee the independence and operational autonomy of the tribunals in receiving petitions and evidence and making decisions. Ensure that such tribunals have sufficient legal, financial and technical capacity to handle cases related to mangroves, and sufficient penalizing power to create a serious deterrent. Raise awareness of judges on the importance of mangroves and the role that the judge plays in the effectiveness of legal instruments related to their sustainable management.

### Recommendation 6.5. Protect mangrove advocates and defenders

Take measures to ensure the safety of advocates, defenders and witnesses involved in cases related to mangroves. Investigate and prosecute cases of harassment, threats or physical harm to mangrove defenders. Create processes to protect anonymity of whistleblowers and other actors whose actions put them at risk. Identify and implement protection measures for witnesses and others involved in mangrove cases.

## Recommendation 7. Collect and share scientific information

### Recommendation 7.1. Set up and keep updated a national mangrove inventory

Provide for a national inventory of mangrove resources. Establish baselines and processes for regular monitoring of mangrove health and analyze trends. Ensure information is regularly updated and available to policymakers and the public.

### Recommendation 7.2. Ensure availability of scientific information

Work with academic institutions and civil society to ensure that policymakers, government actors and the public have access to reliable and updated scientific information related to mangroves. Designate one or more agencies or non-government institutions as responsible for managing and disseminating information.

## Recommendation 8. Engage communities, the private sector and the public

### Recommendation 8.1. Create a legal basis for community co-management of mangrove areas

Set up a legal framework for involving communities in mangrove management. Ensure that benefits, rights and responsibilities of communities are clear, that incentives for community participation are meaningful, and that communities have sufficient capacity to fulfil their role. Where skills are insufficient, provide capacity building and support, and lead communities gradually towards greater management autonomy.

### Recommendation 8.2. Engage the private sector in mangrove conservation and restoration

Consider public-private partnerships on mangrove restoration and protection projects. Take advantage of private sector technical expertise and information. Provide support and guidance for private sector initiatives, ensuring that they meet appropriate standards. Good practice guidelines in

mangrove restoration can standardize the different initiatives taking place in a country.

### Recommendation 8.3. Promote meaningful public engagement in decision-making

Support public awareness raising on the value and importance of mangrove ecosystems. Provide information and resources to the public to build understanding and support for mangrove conservation and sustainable use. Ensure a transparent flow of information on processes and institutions.

## Recommendation 9. Align incentives for conservation and sustainable use

### Recommendation 9.1. Ensure clarity on land and resource rights and tenure

Address uncertainties in land and resource tenure through titling processes or other legal verification and registration of rights. Consider relationships between different rights (e.g. mining rights vs. rights to forest resources). Seek to resolve tenure conflicts through fair and speedy dispute resolution, considering alternative dispute resolution options. Clarify and secure mangrove use rights by providing an arbitration mechanism to facilitate negotiation processes and validate local land tenure regulations.

### Recommendation 9.2. Create financial incentives for mangrove conservation

Investigate appropriate methods for incentivizing mangrove conservation, such as creation of a national fund or creating frameworks for sharing benefits from conservation and restoration. Establish enabling frameworks for REDD+ and PES schemes.

## Recommendation 10. Consider indirect and underlying drivers of mangrove loss at national and transnational levels

### Recommendation 10.1. Realize rights of women and girls

Take action to fully realize rights of women and girls to support engagement and economic development, improve education, alleviate poverty and achieve sustainable mangrove use.

### Recommendation 10.2. Promote alternative livelihoods and economic models

Investigate sustainable economic models that do not rely on consumption or pollution of mangrove resources. Consider innovative mechanisms such as universal basic income that alleviate the need to engage in unsustainable activities for the purpose of creating jobs.

### Recommendation 10.3. Encourage development and use of alternative energy sources and products to reduce pressure on mangroves

Promote alternative energy sources to meet growing demand without cutting mangroves for fuel or engaging in oil and gas exploration activities that damage mangrove ecosystems. Support a shift to more sustainable construction materials and foods, particularly in urban areas that draw resources from mangroves.

### Recommendation 10.4. Evaluate and improve supply chain sustainability

Consider how imports and supply chains affect mangroves nationally and internationally. Impose measures to reduce demand for unsustainable products while increasing demand for products from sustainable operations such as certified sustainable aquaculture. Enable conscientious consumer choices through labelling requirements and awareness-raising campaigns.


© Dolvita108 / pixabay.com


SAVE OUR MANGROVES NOW!