National Blue Carbon Policy Assesment
Mozambique

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National Blue Carbon Policy Assessment Mozambique

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About the Blue Forests Project
The Global Environment Facility's (GEF) Blue Forests Project is a global initiative focused on harnessing the values associated with coastal marine carbon and ecosystem services to achieve improved ecosystem management and climate resilient communities. The project is implemented by the United Nations Environment Programme (UNEP) with partners worldwide. Project sites include locations in Ecuador, Kenya, Madagascar, Mozambique, Indonesia, the United Arab Emirates, Thailand, and the United States of America. The project also addresses key 'blue forests' knowledge gaps, as well as providing experience and tools to support greater global replication and application of the blue forests methodologies and approaches.

Project wesite: www.gefblueforests.org

Preface

This report traces the policy, legal, and regulatory context for coastal "blue carbon" ecosystems – namely mangroves, salt marshes, and seagrasses – in MOZAMBIQUE and is one in a series of five country reports to be undertaken as part of the UNEP/GEF Blue Forests Project. Other countries included are Ecuador, Indonesia, Madagascar and the United Arab Emirates (UAE).

The goal of the National Policy Assessments (NPAs) is to bring together the key policy, legal and regulatory frameworks and incentives which have an implication for the management of blue carbon ecosystems including items from a perspective of national development, climate change, forestry, and biodiversity, as well as marine resource management.

The report also undertakes a first order analysis of the gaps and opportunities for more comprehensive and coordinated coastal management using a variety of existing legal and financial incentive schemes. The report is accompanied by a summary document.

The NPAs are the first step in a series of consecutive documents (see Figure 1). After the completion of the five NPA reports, the aim is to extrapolate common trends and barriers, best practices and opportunities for the management of coastal carbon ecosystems across the five studies. These synchronized NPAs – for Ecuador, Indonesia, Madagascar, Mozambique, and the UAE – will serve as the basis for targeted advice on policy approaches for the Blue Forests Project's Small-Scale Interventions (SSIs) and, more broadly, for scaling up blue forest efforts at the international level. A document on lessons learned from the SSIs will be available towards the end of the Blue Forests Project in 2018.

The NPAs are one of the deliverables of the GEF-funded project Standardized Methodologies for Carbon Accounting and Ecosystem Services Valuation of Blue Forests (Blue Forests Project). Specifically, they contribute to Component 1, Development of guidance for carbon accounting and ecosystem services valuation for blue forests ecosystems (i.e. blue carbon ecosystems). The focus of Component 1 of the Blue Forests Project is the development of guidance for the implementation of methodologies and approaches for carbon accounting and ecosystem services valuation for blue forest ecosystems, specifically through project level support to the small-scale interventions. Component 1 will facilitate better management practices based on an improved understanding of carbon and other ecosystem services for blue forest ecosystems.

Overall the UNEP/GEF Blue Forests Project aims to improve and share knowledge about coastal and marine ecosystem with managers and stakeholders in selected regions on carbon sequestration, storage, possible greenhouse gas emissions as well as ecosystem services in blue forests ecosystems and on possible policy and economic instruments that may be applied to sustainable coastal habitat management.

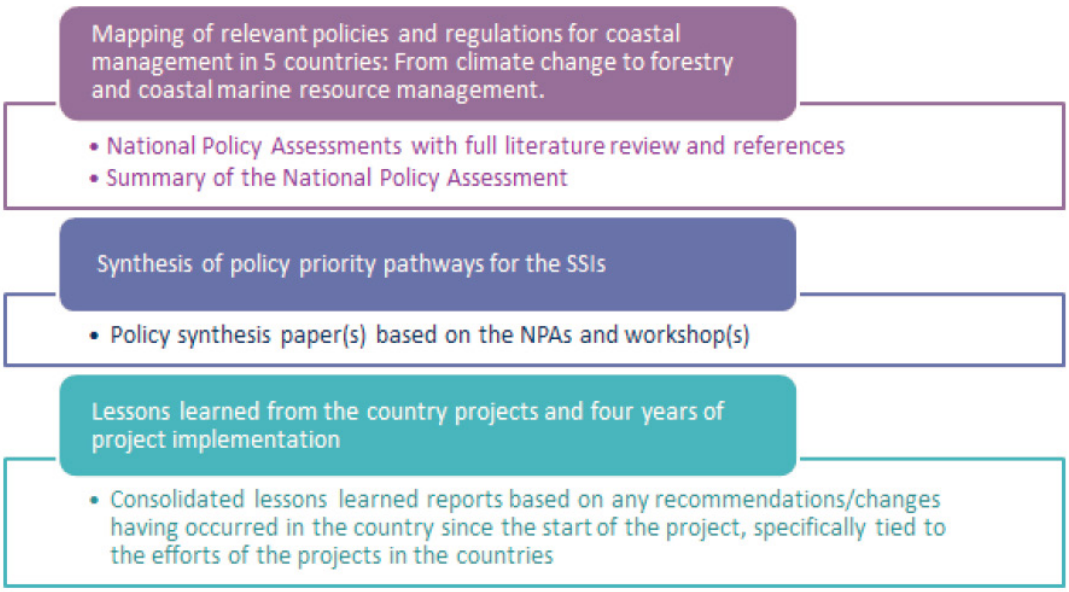

Figure 1. Overview of UNEP/ GEF Blue Forests Project related policy assessment reports and products

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Glossary

ACTS	African Centre for Technology Studies
AfDB	African Development Bank
ANAC	National Administration of Conservation Areas
BIOFUND	Foundation for the Conservation of Biodiversity (Fundação para a Conservação da Biodiversidade)
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CONDES	National Council for Sustainable Development (Conselho Nacional para o Desenvolvimento Sustentável)
ENAMMC	National Climate Change Strategy 2013-2025 (Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas, ENAMMC)
ENDE	Estratégia Nacional de Desenvolvimento
FCPF	Forest Carbon Partnership Facility
GIIMC	Inter-Institutional Group on Climate Change
ICZM	Integrated Coastal Zone Management
INDC	Intended Nationally Determined Contribution
LDC	Least Developed Country
LNG	liquefied natural gas
MICOA	Ministry for the Coordination of Environmental Affairs (no longer in existence)
MICULTUR	Minister for Culture and Tourism
MIMAIP	Ministry of Sea Inland Water and Fisheries
MITADER	Ministry of Land, Environment and Rural Development (Ministério da Terra, Ambiente e Desenvolvimento Rural)
MRV	Measurement, reporting and verification
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NBSAP	National Biodiversity Strategies and Action Plan
NEMP	National Environmental Management Programme (
NPA	National Policy Assessment
REDD	Reduction of Emissions from Deforestation and Forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
R-PP	Readiness Preparation Proposal
SSI	Small-Scale Interventions
TU	Technical Unit
UAE	United Arab Emirates
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wild Fund for Nature

1. Blue Carbon ecosystems in Mozambique

Among Mozambique's highly diverse coastal environments, the country's extensive mangrove forests and offshore seagrass meadows stand out. These ecosystems share overlapping geographies extending from land out to sea with its long belt of coral beds. They show rich interdependencies between all of them. The tidal and sedimentary conditions required for their maintenance are, however, divergent and the economic and human development pressures put on them likewise differ.

Blue carbon is the carbon stored in or released from mangroves, saltmarshes and seagrasses (blue carbon ecosystems) due to human activities and is mainly used in the climate mitigation context.

Blue carbon used in a financial or policy context refers to a suite of financial and political mechanisms and incentives which can be used to better manage, protect and restore blue carbon ecosystems.

1.1 Mangroves

Mozambique harbours the largest mangrove area in Southern Africa and ranks 13th among countries globally in terms of mangrove coverage (Giri et al. 2011). Seven mangrove tree species occur in Mozambique, namely Rhizophora mucronata, Bruguiera gymnorrhiza, Avicennia marina, Ceriops tagal, Sonneratia alba, L. racemosa and Xilocarpus granatum. While mangroves occur in many places along the coast in sheltered shorelines, bays, lagoons and river estuaries (see figure 2), they are generally more abundant in central Mozambique and scattered in the north (Shapiro et al. 2015). The Zambezi Delta contains almost 50% of Mozambique's mangroves, extending for 180 kilometres along the coast and for 50 kilometres inland. This area is one of the most extensive mangrove habitats in Africa (Chevallier, 2013).

The estimated area occupied by mangroves in Mozambique is still an issue for debate. Barbosa et al (2001) estimated that mangroves cover an area of approximately 340,000 hectares. Giri calculated a total mangrove area of 318,000 hectares (Giri et al. 2011). The Government of Mozambique considers that today's mangroves cover an area of about 350,000 hectares, relying on an inventory which dates back to 2005 (Muhate 2015). Others put the figure closer to 300,000 hectares (Fatoyinbo and Simard 2013). All agree, however, that the total mangrove area size has shrunk over the past three decades, even though the figures differ depending on the source. The Fifth National Report on the Implementation of Convention on Biological Diversity (CBD) in Mozambique notes a nationwide decrease from 408,000 ha in 1972 to 357,000 ha in 2004, with a total loss of 51,000 within 32 years (MICOA 2014b). In 2005, the FAO calculated minimal losses between 1972 and 2005 (FAO 2005), but it based this calculation on the rather uncertain assumption that by 2005, the mangrove area was at 390,000 hectares. Marzoli (2007) calculates mangrove losses of 51,000 hectares between 1972 and 2004 and an acceleration of the deforestation rate from 0.2% to 0.7%.

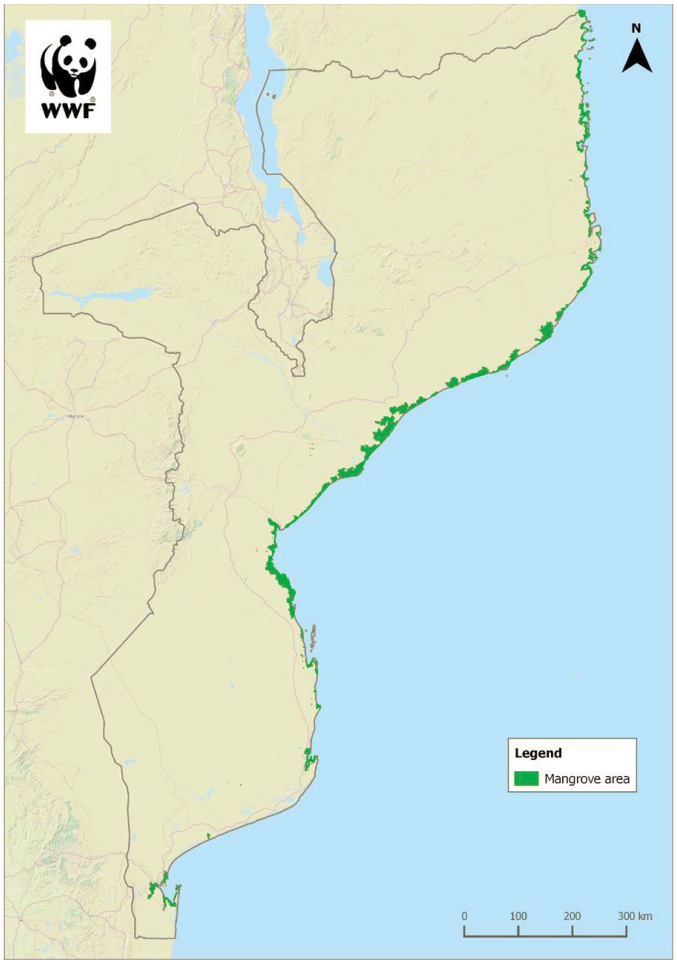

Figure 2. Mangrove distribution in Mozambique. Source: WWF.

1.2 Seagrasses

While extensive seagrass meadows occur in the Western Indian Ocean, in particular in Madagascar, Mauritius, Comoros and Seychelles, the exact extent is unknown. Mozambique is estimated to have a total of 43,900 ha of seagrass meadows, with pockets in the north and a large meadow in the south. There are 2,500 ha around Inhassoro and Bazaruto Island, 3000 ha at Macúfi-Pemba, and 4,500 ha in the southern Quirimba Archipelago. The largest seagrass beds occur at Fernão Veloso, Quirimba, and Inhaca-Ponta do Ouro. Additional inventories are needed, particularly in remote coastal areas. The to-tal known historical loss of seagrasses in Mozambique is estimated at 2,755 ha (FAO 2010).

1.3 Blue Carbon hotspots

In terms of geography, Mozambique has three main coastal areas where extensive mangrove and seagrass ecosystems are intact and, in some locations, thriving. These areas are situated at the northern, central, and southern extremes of the country's extensive coastline. In between is the largest share of coastal development, including the capital as well as smaller ports, with pockets of depleted mangroves and seining and trawling fisheries that are less dependent on seagrass environments for their livelihoods. The northern zone is located between Rovuma River at the border of Tanzania and Angoche in Nampula province. This coast is dominated by shallow, reef-forming and hermathrophic corals. It is characterized by some of the largest swaths of mangrove forests in the Western Indian Ocean, with extremely high fish diversity, intact coral reefs, and notable turtle and shark populations (Samoilys et al. 2014).

The central zone is located between Angoche in Nampula Province and Save River at the border of Sofala and Inhambane Province. Within this area is located the largest continuous mangrove area of Mozambique. The Zambezi Delta, an extensive estuary that drains a significant portion of southeast Africa. The Zambezi Delta is characterized by the important role it plays in both agriculture and the support of rich and varied wildlife, including large herds of buffalo and flocks of migrating birds, as well as supporting the Sofala bank fisheries, one of the highly productive fishing grounds in eastern Africa (Shapiro et al. 2015).

The southern zone, from Save River to Ponta do Ouro at the border to South Africa, has extensive mangrove forests in the Morrumbene estuary, Inhambane Bay and Maputo Bay, including Inhaca Island. In Inhambane province, sandy barrier islands and headlands stretch to the Tofo Peninsula. Bazaruto is characterized by its dunes and broad seagrass meadows extending far offshore, complex coral reefs, and extremely charismatic wildlife, including the last viable population of wild dugongs (Indian Ocean manatees), birds, turtles, endemic molluscs, sharks, whales, and whale sharks.

Both Quirimbas and Bazaruto are protected areas, experiencing seasonal fishing populations and small eco-tourist operations.

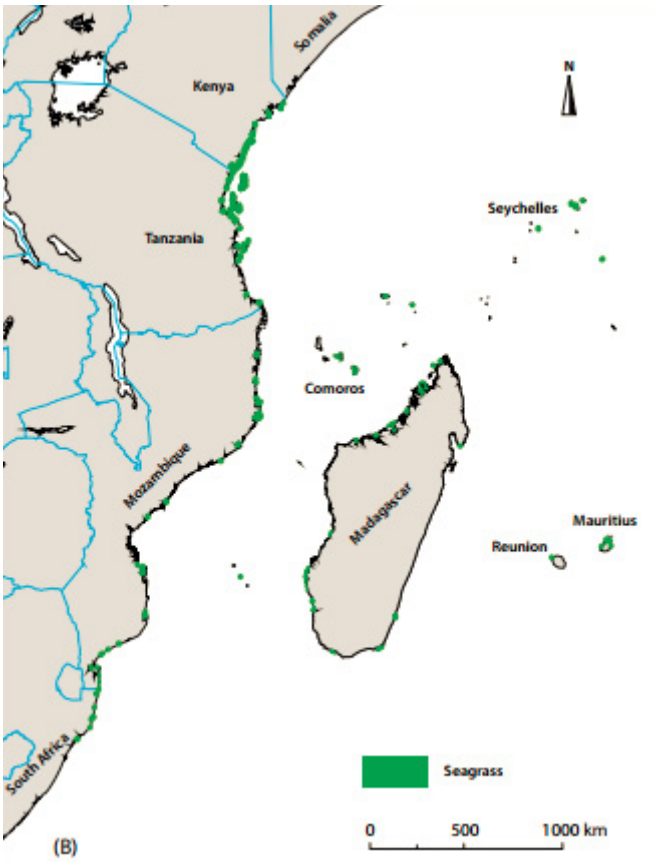

Figure 3. Map of seagrass bed distribution in the WIO region. Source http://data.unep-wcmc.org

However, northern Mozambique—i.e. Quirimbas—has potentially the third largest liquid natural gas reserves on earth, and is currently being prospected for development. Meanwhile, southern Mozambique—i.e. Bazaruto—has now come under intense net-fishing pressure as well as an increase in tourist activities far beyond their traditional "low-impact" scope.

The early destruction of mangroves was highest in Maputo and Beira (Barbosa and Bandeira, 2001). More recently, the mangrove cover has been decreasing in Sofala, Zambezia and Nampula, with the largest changes occurring in Zambezia, which has lost almost half of its mangroves (Fatoyinbo et al. 2008). Mangrove cover has lately increased in Maputo (by 600 ha) and Inhambane (by 1,300 ha), and remained stable in Cabo Delgado (Lugendo 2014).

Figure 4. Country map of Mozambique. Source: WWF.

1.4 Threats

The country's coastal resources are under pressure from both human - induced by deforestation for wood products, urban development, aquaculture, saltpans - and natural causes such as strong winds, floods and cyclones (MICOA 2006; Macamo et al. 2015). A growing population and intensifying economic usage has led to the "degradation of some fragile and important ecosystems, such as mangroves, coral reefs and seagrass beds" (MICOA 2006). Meanwhile, sea level rise threatens the entire coastline and in particular the so-called "region of rivers", i.e., the coastline between Mozambique Island and the Bazaruto Island which are considered to be at high risk. More than 50% of Mozambique's total population lives in coastal districts and large numbers of people depend on the coastal protection from mangroves and oceans resources for their subsistence and daily income (INGC 2009a).

Mozambique's mangrove forests face a range of threats typical to forests in developing countries. Agricultural (land-side) encroachment with slash-and-burn practices, urban development and infrastructure projects, and wood-cutting[1] – both legal but unmanaged, and illegal – for construction, firewood, and charcoal production, have been responsible for most of the degradation. According to estimates, 90% of rural households depend on wood resources (including fuelwood and charcoal) which account for about 80% of total energy consumed (USAID 2013).

While the details of degradation rates remain unknown, seagrass beds have been negatively affected by the dredging of channels, shipping and other coastal developments. They are under imminent threat of erosion, sedimentation and nutrient-loading pollution from onshore activities, pollution from untreated sewage discharge, destructive fishing practices such as beach seining and use of small-mesh nets, dredging, and trampling (Gove Mechisso 2011). In the Zambezi estuary, much damage both to vegetation and wildlife has resulted from the construction of the Kariba and Cahora Bassa dams upstream which have caused lower water and nutrient flows.

While overall destruction has remained low compared to other tropical countries, the risks of degradation are growing. The classic drivers are largely unabated or have become even more intense. Mozambique, a least developed country (LDC) with a population of 24 million and annual growth rate in GDP of about 7%, expects its urbanization rate along the coast to double by 2030. This will increase the pressure both on the land and sea. Oil-spills, common in East African countries and devastating for the coastal ecosystems, are likely to occur more frequently with increased shipping and clearing practices in Mozambique's ports. Furthermore, new threats to the coastal environment are looming. The government plans massive investments in mining, hydrocarbon extraction, and large-scale liquefied natural gas (LNG) logistics. Major gas finds of 180 trillion cubic feet (Reuters 2015) in Mozambique's northern Rovuma basin place Mozambique's reserves at the top of African producers and only third to stocks in Qatar and Australia (CNN 2015). The International Energy Agency projects that cumulative government revenues from gas could reach US$115 bn up to 2040 (Financial Times 2014). The Mozambican government has already begun the development of a new natural gas hub in Cabo Delgado, including large-scale LNG facilities geared towards servicing international LNG customers. Plans for eight to ten LNG trains by the mid-2020s, requiring investment more than four times the size of Mozambique's GDP, are also underway (Frühauf, 2014). Hydrocarbons aside, heavy sands (titanium) are also of interest and have been exploited at various sites in Chibuto, coastal Gaza Province, Inharrime-Jangamo area in coastal Inhambane Province and in Moma, and in coastal Nampula Proving (Gove, 2011).

Tourism is sharply on the rise (Turner 2015) with yet unclear consequences for the coastal blue habitats. The spread of development (resorts, utilities, etc.) and coastal recreational activities (boating, diving, etc.) will put more pressure on the coastal ecosystems. On the other hand, tourists come to Mozambique precisely to enjoy unspoiled nature which makes a high incentive for the government to plan sustainably and increase protection activities.

The aquaculture industry has traditionally been small, not exceeding a total of 850 ha of shrimp aquaculture ponds in mangrove areas in the country. In 2011, the white spot virus syndrome wiped out most of the shrimp aquaculture capacity. However, the government sees the sector as a priority among its efforts to become food secure and contribute to the country's socio-economic development. It wants to increase the current output by 800% by 2030 (MINAG 2014). The focus is mostly on small-scale fish farming, although it is not clear to what extent mangrove areas will be designated to host future fish ponds. The Ministry of Sea, Inland Waters and Fisheries is reported to have set aside 30,000 hectares "suitable" for commercial shrimp farming, with the suitability test apparently including the absence of risks for 'protected ecosystems'.

[1] 85% of rural energy consumption is derived from fuelwood and charcoal, consuming about 20 million cubic metres of wood a year. These are country-wide figures, but mangroves are affected across the country's coastline.

2. Blue Carbon protection in Mozambique: *Status Quo*

Protection of blue carbon ecosystems has developed in multiple areas, from national environmental plans to the implementation of a dedicated BIOFUND (see Figure 5).

Mozambique's blue carbon ecosystems are not specifically addressed by the country's Constitution of 2004. The Constitution, however, enshrines a solid protection status for the environment as a whole. Every citizen has the right to "live in a balanced environment" (Article 90 of the Constitution). The same article not only mandates the government ("with collaboration from associations for environmental protection") to adopt policies to protect the environment and to "promote the rational use of natural resources",[2] it also defines a duty for the citizen to defend the environment. The concept of environmental obligation is a recurring theme throughout the Constitution. According to Article 45 of the Constitution, every individual has the "duty" to "protect and conserve the environment" and to "defend and protect the public good and the good of the community". Article 81 of the Constitution gives citizen the right of popular action against offences of "environmental conservation".

The Constitution also defines "natural resources in the soil and the subsoil, in inland waters, in the territorial sea, on the continental shelf and in the exclusive economic zone" as "property of the State", and the maritime zone and nature conservation zones, among others, as the "public domain of the State" (Article 98). The Constitution does not further define the meaning of "natural resources". However, the emphasis on soils, subsoils and waters may suggest that above-ground vegetation (including mangroves) is not covered by the state property prerogative, yet definite guidance is not available.[3] The concept of "public domain" is also not specified, but the Constitution foresees the adoption of specific laws (Article 98 (3)) on the matter, which the legislator has put in practice through a wide range of laws and regulations, namely the Land Law, the Water Law, the Energy Law, the Forest and Wildlife Law and, more recently, the Conservation Law (Sal & Caldeira 2014).

[2] See, in this context, also Article 117 of the Constitution, which specifies that the government "within the framework ofsustainable development" shall adopt policies aimed at, among others, "preventing and controlling pollution and erosion" and "guaranteeing the rational utilization of natural resources and the safeguarding of their capacity to regenerate, ecological stability and the rights of future generations".

[3] Seagrasses, is that reading, may fall in its scope then.

2.1 Land and forests laws

The Land Law of 1997 (No. 19/1997), praised at the time as one of the most modern land laws in Africa, declares all land in Mozambique as "state property" and does not allow its transfer nor any form of sureties over land. The Law distinguishes "Total Protection Areas" and "Partial Protection Areas" within the "public domain". Total Protection Areas are those reserved for nature conservation and areas important for the national defence. Partial Protection Areas include, among others, "the strip of maritime coastline, including that around islands, bays and estuaries, which is measured from the high tide line to a mark 100 meters inland" (Article 8c), thus the majority of the country's mangroves. Article 9 of the Land Law clarifies that "no rights of land use and benefit" can be acquired in total or partial protection zones; any exceptions to the rule requires the issuance of a special license.[4]

For land outside of protection zones, Article 12 defines the different modes of "right of land use and benefit" that applies to other land, one of them benefitting "local communities", in accordance with customary norms and practices" (see Table 1). The Land Law does recognize, however, the possibility for the government to issue "special licences" for specific economic use in the areas concerned. For Partial Protection Areas, it falls into the remit of provincial governors to issue these licenses; for Total Protection Areas, the responsibility first lay with the Ministry of Agriculture and has since been transferred to the Ministry of Culture and Tourism (MICULTUR). The conditions and the process for the issuance of special licenses were to be laid down through specific implementing legislation (Article 4 Land Law Regulations, Decree No 66/98)). However, to date, no such implementing legislation has been adopted. Instead, the legislator added a layer of uncertainty by granting a competing authority state and municipal bodies (under the Urban Land Regulations (Decree No 60/2006), adopted eight years after the Land Law Regulations) to issue licenses over Partial Protection Areas. Additionally the Land Law includes a broad "free use of land" provision, giving a right to "family uses, local communities and individual persons who belong to them," as well as to "national small-scale agriculture and livestock cooperatives and associations" (Article 29). The provision does not clarify how, and to what extent, this Free-Use Right affects Total and Partial Protection Zones.

With the adoption of the Forest and Wildlife Law in 1999 (Law No 10/1999), Mozambique declared the country's forestry[5] and wildlife resources "state property" and established a governance framework for the installation and operations of nature conservation zones. These fall into three categories: national parks, national reserves, and areas of historical-cultural value. It should be noted that the Forest and Wildlife Law associates with the (total) protection regime of the Land Law.

Mozambique's Environmental Law (No. 16/2014) is the key law governing the use and management of the country's environmental resources. It generally prohibits environmental degradation and protects biodiversity. It specifically prohibits the development of Infrastructure that may have a significant environmental impact in the coastal zone and areas such as wetland areas. Projects that may cause destruction of coastal area including mangroves are subject to an environmental impact assessment (EIA).

[4] See also Article 7 of Land Raw Regulations, Decree No 66/98: "No right of land use and benefit may be acquired in partial protection zones."

[5] "Florestal vegetation" is defined inthe Law as "capable of producing wood or vegetation products, of hosting wildlige and of exercising a direct or indirect effect on the soil, the climate or the hydrological regime". Mangroves meet these requirements.

Mozambique has established seven national parks and another six national reserves. Three of them (one park, two reserves) include important mangrove areas (Quirimbas National Park, Pomene National Reserve, and Maputo National Reserve). In addition, through specific legal regimes Mozambique has given protection status to the coastal zone within, and adjacent to, the Maputo National Reserve (Ponta Do Ouro Partial Marine Reserve - which includes vast stretches of seagrass), the Lake Niassa Partial Marine Reserve, the Primeiras and Segundas Islands Environmental Protected Area, and the Sao Sebastiao Total Protection Area. The government has also given out a range of forestry and wildlife concessions which come with a number of protection obligations.

Building on the Forest and Wildlife Law, the legislator adopted the Conservation Law in June 2014 (Nr. 16/2014) stipulating governance principles for what it refers to as the "national system of conservation areas". The governance principles include an obligation for citizen participation in the management and benefits of conservation areas, the principle to establish and operate public-private partnerships, the precautionary principle, and the principle to seek international (and cross-border) cooperation. The Conservation Law introduces a new categorization – which stands aside rather than replaces the Land Law categorization – for the different conservation areas. It distinguishes 'Total Conservation Areas' as "areas of

Table 1. Protection and conservation areas in Mozambique (Legal concept)

	Land Law		Conservation Law	
	Total Protection Areas	**Partial Protection Areas**	**Total Conservation Areas**	**Sustainable Use Conservation Areas**
Targeted areas	• Specifically declated areas for nature conservation and preservation • State security and defence areas	• Water bed, territorial sea, exclusive economic zone • Continental shelf • Maritime coastline including around islands and estuaries to a mark of 100m inland (at high-tide) • Infrastructure installations	• Integrated Natural Reserves • National Parks • Cultural and natural monuments	• Special Reserves • Environmental Protection Areas • Hunting Reserves • Community conservation areas • Sanctuaries • Game farms • Municiapl ecological parks
Responsibility	• Ministry of Agriculture and Fisheries	• Provincial Governors	• ANAC • Conservation Area Management Councils	• ANAC • Conservation Area Management Councils • National, provincial, district and municipal responsibilities • To be determined by Council of Ministers
Permitted use	• "Special licenes for specific activities" (Art. 9)	• "Special licenes for specific activities" (Art. 9)	• Integrated Natural Reserves: Restricted to scientific activities and tourism • National Parks: Generally restricted to scientific activities and tourism but certain form of usage allowed in line with management plan • Cultural and natural monumets: Restricted	• Special Reserves: similar rules as for National Parks, but exceptions • Environmental Protection Areas: Controlled natural resource extraction permitted • Hunting Reserves: Controlled hunting permitted • Community Conservation Areas: Usage licenses can be given out (by local communities) • Sanctuaries: Specific usage allowed • Game farms: Controlled hunting allowed • Municipal Ecologic Parks: Lower protection status, usage allowed
Requires implementing legislation	• Creation of Total Protection Areas • Licensing regime	• Functional definition (automatic creation), but guidelines in the Land Law Regulations also point to the need for the Council of Ministers to enact Partial Protection Zones • Licensing regime not referred to	• For the creation of public-private management • For the establishment of compensation and carbon asset • For the adoption of fines	• For licensing • For the creation of public-private management • For the establishment of compensation and carbon asset management vehicles • For the adoption of fines
Implementing legislation adopted	• No	• No / N.A.	• No	• No

public domain, aiming at the preservation of ecosystems" and 'Sustainable Use Conservation areas', which are "areas of the public and private domain, intended for conservation, subject to integrated management with permission for certain levels of resource extraction provided sustainable limits in accordance with the management plans are respected".

Given the parallel system of Land Law, on the one hand, and Conservation Law, on the other hand, the Conservation Law puts in doubt the concept of Partial Protection Areas (which include the majority of blue carbon environments, see above). The second tier protection status under the Conservation Law are the Sustainable Use Conservation Areas, which include no coastal ecosystem-specific references (see comparison of protection regimes in Table 1). This is likely to increase the risk of both legal and illegal exploitation. Authorities at provincial, state and municipal levels may regard the Conservation Law as lex posterior (more recent law) or lex specialis (more specific law) to the Land Law and may freely hand out licenses over coastal areas, as long as they fall outside the Total Conservation Areas and the Sustainable Use Conservation Areas. Blue carbon environmental protection has arguably weakened with the adoption of the Conservation Law.

There are also doubts about administrative responsibilities: The law orders the conservation areas altogether to be under the control of MICOA (now MITADER); yet, MICULTUR's competence over Total Protection Areas has not been withdrawn (Sal & Caldeira 2014).

2.2 Laws on the marine environment

The Fisheries Law of 2013 (No. 22/2013) adds an activity-targeted protection regime for mangroves. It prohibits the destruction of mangroves for the purpose of installing aquaculture and permits interference with mangrove forests only for the purpose of building water pumping stations, water intake channels to fixed installations on land and to harbours, as well as for "any crop species whose natural habitat is the mangrove" (Article 63). Note that the law targets the specific threat of aquacultures alone, while leaving other destructive activities (e.g., mangrove destruction for construction or agriculture) entirely out of its focus.

The Fisheries Law aside, Mozambique passed a regulation for the prevention of pollution in coastal and marine environments (Decree 45/2006) and a regulation on amateur diving (Decree 44/2006) setting out certain conservation levels. The competence for the Mozambican State to adopt legislation to protect and preserve the marine environment goes back to the adoption of the Law of the Sea of 1996 (Nr. 4/1996). The impact of these regulatory interventions has so far been little researched.

Overall, Mozambique's legal regime on marine spatial planning and management of the national maritime space is still weak. The development of an ICZM strategy is under way. Internationally, on the other hand, the country has been building a comprehensive set of treaty commitments and policies. Mozambique ratified the United Nations Convention on the Law of the Sea (UNCLOS) on 13 March 1997 and has been a member to the International Maritime Organization (IMO) community since 1979. At the regional level, Mozambique participates in key African Union strategic policies on marine spatial planning, most notably the 2050 Africa's Integrated Maritime Strategy.

2.3 Other laws

Mozambique has a regulation on environmental inspection (Decree No. 11/2006) and on environmental impact assessment (Decree No. 42/2008) in place. The latter includes mangroves among the specifically protected ecosystems. MITADER is the responsible administrative institution. It should be noted that there are specific regulations in place for environmental investigations for petroleum and mining operations.

2.4 Sanctions

The Environmental Law of 1997 (Law No 20/1997), enshrining the "traditions and knowledge of local communities" as a guiding principle for interaction with the environment (Article 4b), bans all activities that threaten the conservation, reproduction, quality and quantity of biological resources that are endangered. It imposes an obligation to "repair" or "compensate for" any degradation caused (Article 4g) and charges the government with enforcing the law.

There are also specific regulations imposing obligations for rehabilitation and restoration (e.g. mining: Decree 26/2014). With respect to conservation areas, the Conservation Law of 2014 established the principle that public or private entities, when exploiting natural resources in a conservation area or in the buffer zone must make financial contributions to the benefit biodiversity protection in the area concerned and must offset their impact with a no-net-loss target. This "conservation mechanism" also allocates the right to the use and improvement of carbon stocks in conservation areas to its managing entity ANAC. The article foresees, however, the adoption of implementing legislation, which is still outstanding.

The Conservation Law also includes provisions on fines for various infractions and penal clauses (with sentences between 8 and 12 years) for destructive fires, the killing of protected species, and illegal fishing methods (explosives and others).

Violations against the requirement to lead and apply impact assessments will be fined with 60% of the proceeds being reserved for the country's Environment Fund.

Following recent changes to the Criminal Code, the "illegal exploitation" of forest resources is considered a crime punishable with a prison sentence and/or penalty fine (Article 352). However, exploitation to meet domestic/household needs are explicitly excluded from the scope of application.

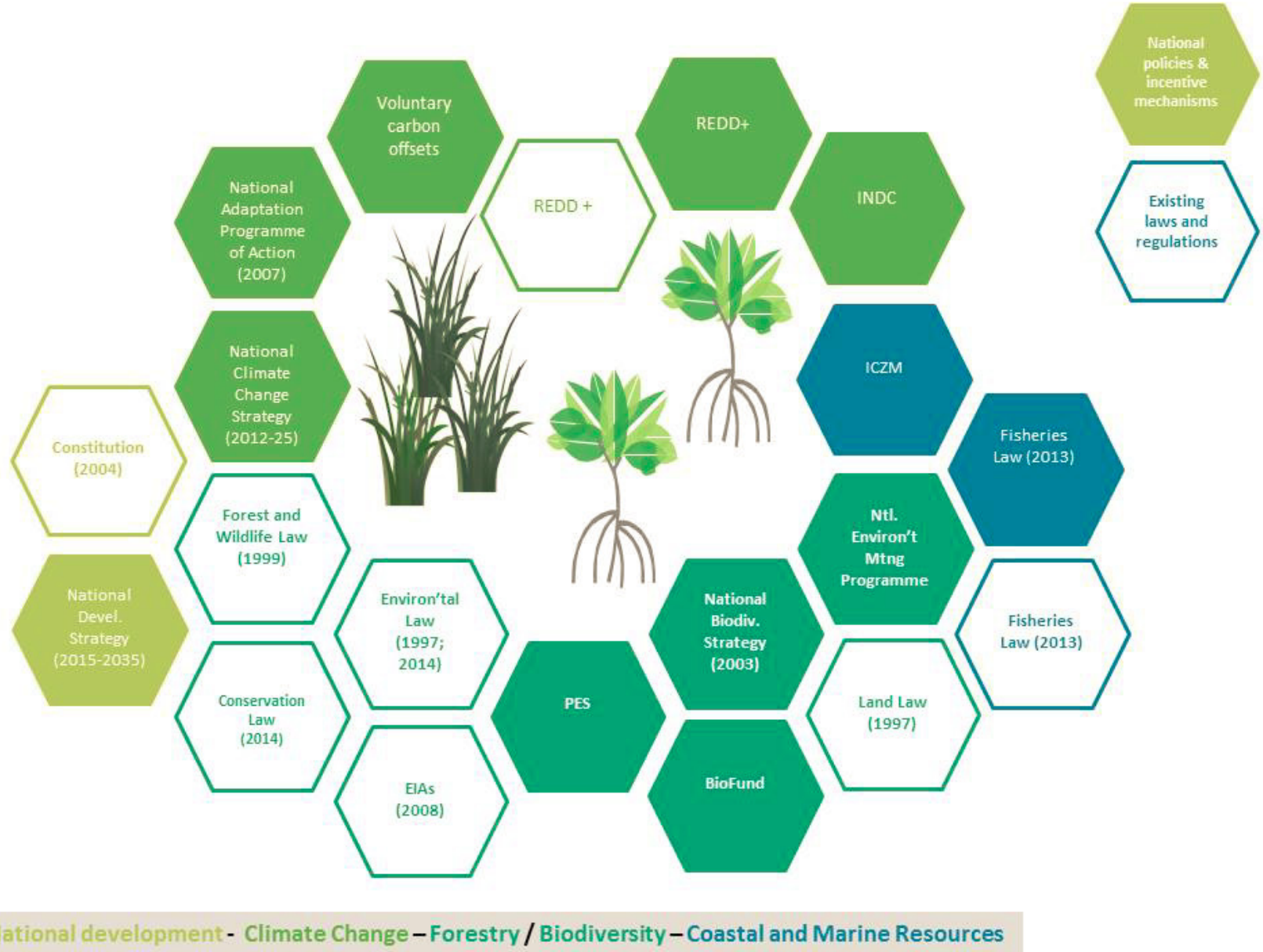

Figure 5: Existing national laws, policies and initiatives with an impact on blue carbon management.

Institutional Responsiblities

The Ministry of Land, Environment and Rural Development (MITADER), established in 2015 as a merger of the Ministry for the Coordination of Environmental Affairs (MICOA) and the Ministry of Agriculture, is the central authority for nature protection, conservation, surveillance and enforcement. However, the Ministry of Culture and Tourism (MICULTUR) has been given the mandate to administer the Total Protection Areas. As shown, the Conservation Act of 2014 nonetheless puts this exclusive allocation of responsibility in doubt. The Ministry of Fisheries is responsible for the sea-side management of the coastal environments.

Below the ministerial level, the National Administration of Conservation Areas (ANAC) was created through Decree No 11/2011 (with the organic statute being approved in 2014 only). ANAC is to assume the role of liaison and coordination with regard to all protection areas in the country (Sal & Caldeira 2014).

As a complementary institution, the government set up the Foundation for the Conservation of Biodiversity (*Fundação para a Conservação da Biodiversidade*, BIOFUND) with the specific mandate to raise funds to support the long-term management of Mozambique's conservation areas.

The Environmental Law of 1997 created the National Council for Sustainable Development (*Conselho Nacional para o Desenvolvimento Sustentável*, "CONDES")[6], a coordinating body subordinated to the Prime Minister's Office and supported through a secretariat hosted by MITADER. CONDES assumes an analytical and advisory role (Osborn at al. 2014) and has been particularly active in the preparation of the UN Conference on Sustainable Development (Rio+20) in 2012 (MICOA 2012) and recently in the preparation of Mozambique's Intended Nationally Determined Contribution (INDC) (MITADER 2015).

In 2012, as part of the adoption of the National Climate Change Adaptation and Mitigation Strategy 2013-2025 (Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas, ENAMMC), the government set up the Inter-Institutional Group on Climate Change (GIIMC).

Concerning international climate cooperation, Mozambique has set up, in 2013, a technical unit (TU) for Reducing Emissions from Deforestation and forest Degradation (REDD+), subordinate to MICOA (now MITADER). The TU-REDD+ is supported by a REDD Technical Review Committee, which includes private sector representatives.

[6] http://www.ncsds.org/index.php/sustainable-development-councils/country-profiles/86-country-profiles/profiles/178-mozambique.

3. Government initiatives

3.1 National Climate Change Plan

The key strategic document shaping Mozambique's adaptation and mitigation policy is the National Climate Change Strategy 2013-2025 (Estratégia Nacional de Adaptação e Mitigação de Mudanças Climáticas, ENAMMC), adopted in 2012 (MICOA 2012b). It builds on three pillars, (i) adaptation, disaster risk reduction and management, (ii) mitigation and low-carbon development, and (iii) cross-cutting issues (including law and institutions, as well as capacity-building). Blue carbon activities feature prominently in the Strategy. One of the adaptation priority actions aims at the "increased resilience of fish stocks" through the "regeneration of mangroves and the implementation of protection measures of algae and seagrasses, corals and other fish reproduction and feeding grounds" (MICOA 2012b, para. 4.6.1.3.2). The list of key mitigation actions includes "planning and managing of biodiversity and coastal ecosystems" through "the development of sustainable exploration programs, the regeneration and protection of mangroves, algae and seagrasses associated with the potential to capture and sequester carbon (Blue Carbon)" (MICOA 2012b, para. 4.6.2.3.3.).

The recent Intended Nationally Determined Contribution (INDC) submission confirms the status of the ENAMMC as the central climate change policy document. The Government is in the process of designing an updated "first plan of action" which is to include a (renewed) National Adaptation Plan.

The previous strategy from 2007 had noted the urgent need to "identify rehabilitation techniques for dunes and mangroves" to mitigate the effects of erosion and to focus on "adequate techniques for small, medium and long-term interventions … that include stakeholder participation" (MICOA 2007). Few concrete measures have followed, however. Similarly, the Government had proposed in its first national communication of 2006 (the second national communication is yet to be published) to build (ideally) three "coastal zone management centres" to build capacity for training, research and monitoring of the northern, the central and the southern coast (MICOA 2006). While these centres have not yet been built, an institution with a similar agenda was set up in 2003: the Sustainable Centre for Coastal Zone Management (Centro de Desenvolvimento Sustentável para as Zonas Costeiras), responsible for the promotion of studies, capacity building, technical assistances and overall management of coastal zones,[7] subordinated to MITADER.

Mozambique also adopted, in 2014, its development strategy 2015-2035 (Estratégia Nacional de Deenvolvimento, ENDE 2014). It contains a range of commitments concerning the sustainable management of the country's natural resources and the ecological tourism, but there is no specific focus on protection areas or blue carbon environments.

Finally, the Government's new 5-Year-Plan (Parliamentary Resolution 12/2015, of 14 April[8]), has "sustainable and transparent management of natural resources and the environment" as one of its five priority areas and several activities to promote sustainable development and natural resources management including strategies for climate change adaptation were included.

At implementation level, MITADER is currently developing the National Management Plan for Mangroves.

[7] Created by Decree 15/2003 of 18 February 2003.

[8] Boletim da República, I Serie - Numero 29.

3.2 National Biodiversity Plans

The National Biodiversity Strategies and Action Plan (NBSAP) was originally drafted in 1998, revised in 2002 and adopted in 2003, incorporating the 2010 global targets, indicators and national priority targets. The main goals of the NBSAP were to: fulfil the requirement of Article 6 of the CBD that appeals to countries to develop national strategies that reflect the measures defined in the Convention; identify issues that need national priority actions and immediate efforts regarding coordination; and provide a basic tool that helps Government agencies and society ensure that all Government policy plans related to biological diversity are realized, especially through coordinated relevant sectoral policies, programs and strategies. Mozambique has now revised its NBSAP 2003- 2010 and the new NBSAP was scheduled for completion in 2014 but is still pending.

Numerous steps towards achieving the 2020 Aichi Biodiversity Targets have been made by the Government of Mozambique. Mozambique has extended the area of protected areas from about 11% to 16% of its national territory. The creation of new national parks - namely, Quirimbas National Park, Limpopo National Park and Chimanimani National Park - and reserves, including coastal and marine environments, has significantly contributed to this. Over the past five years, the country has increased the number of marine protected areas with the creation of a Partial Reserve in Ilhas Primeiras and Segundas, comprising 1,040,926 hectares, and the Marine Protection Area of Maputo - Ponta de Ouro with 67,800 hectares. Some marine sanctuaries were also declared. The Small Grant Program (SGP) was established in Mozambique in October 2003 as a request by MICOA (the predecessor of MITADER) to the Global Environment Fund and began its activities in 2004. This work has supported a mangrove rehabilitation project by the community of Nhangau in Sofala Province. One of the achievements of the National Biodiversity Action plan under 'To recover and rehabilitate degraded ecosystems and, where applicable, to develop species recovery plans' is the rehabilitation of mangroves. Mangroves have been replanted in Nhangau in Sofala province, in the Estuary of Limpopo River in Gaza Province, Ii Angoche in Nampula Province, and Mecúfi in Cabo Delgado Province.

3.3 REDD+

Mozambique has been a partner country of the World Bank-sponsored Forest Carbon Partnership Facility (FCPF) since 2008. It finalized its Readiness Preparation Plan (R-PP) proposal in 2011 and the final adoption followed in 2012. This triggered the release of an initial amount of donor funding (3.6 m USD) to pay for so-called first-phase actions the preparation of a REDD+ strategy, the design of a legal and institutional framework, a system for measuring, reporting and verification (MRV), and the establishment of forest reference levels. The Government of Mozambique adopted a legal basis for REDD+ implementation in 2013 (Decreto No 70/2013). The legal act established the TU-REDD+ and mandates the body to adopt a REDD+ governance framework and implementing provisions including rules on REDD+ based emissions trading.

Recently, the Government of Mozambique secured the availability of funds for the development and implementation of REDD+ projects. The country initially planned to issue its National REDD+ Strategy prior to COP 21 in Paris (Muhate 2015) and to promptly trigger the development of two REDD+ jurisdictional pilot projects, one in Cabo Delgado Province, the other in the Zambezia Province. At the time of writing, an internal draft of the REDD+ Strategy was completed but not yet published. According to the latest REDD+ Progress Report (MITADER 2015), it is not yet apparent whether the country's REDD+ reference level will include soil-carbon and mangrove biomass.

3.4 Incentive schemes and new initiatives

Mozambique's land, environment and climate change laws incorporate few measures and mechanisms that go beyond a command-cost-and-control approach. Several bottom-up initiatives with a focus on, inter alia, mangrove protection, however, have been triggered, including community based natural resource management programs and so-called Community Councils for Fisheries (CCPs).

In an attempt to extend benefits from the use of forest and wildlife resources to local communities, the Government adopted Ministerial Order (Diploma Ministerial) No. 93/2005, which earmarks 20% of the taxes or fees raised with respect to particular areas (such as entrance and licensing fees) for communities living there. Special management committees composed of representatives of both local communities and public authorities oversee the fair distribution of funds.

New incentives have been created by REDD+ pilot projects (existing[9] or in development[10]) which aim to directly integrate local communities. On the ground action, however, has not yet started.

Whilst there is some experience of payment for ecosystem services (PES) for forest carbon on land – for example,

[9] Mozambique hosts a REDD project, which has been developed under Plan Vivo and the Climate, Community and Biodiversity Alliance (CCBA) Standard.

[10] E.g. Cabo Delgado and Zambezi.

a small-scale agro-forestry based carbon sequestration project in rural Mozambique - no active examples were found for blue carbon. Similar to the carbon stock research in Madagascar, in Mozambique, the blue carbon research is focused on mangrove ecosystems. In 2012, WWF, USAID, the US Forest Service, and Eduardo Mondlane University, in collaboration with the Government of Mozambique, initiated a pilot project in the Zambezi Delta to provide the baseline information needed for the development of REDD+ and 'blue carbon', as well as associated climate mitigation projects. The project has so far been mostly limited to assessing the carbon storage potential through quantification of the scale and nature of the carbon pool involved.11 The motivation is to provide carbon accounting tools to policy-makers so that they can better project the potential impact from political decision-making, and identify both trade-offs and compatibilities among environmental, economic, and social benefits. The institutions involved, however, also found that carbon finance, under REDD+ or blue carbon proper may become an appropriate mechanism to leverage both funding and adequate processing formats. A pre-feasibility assessment for a blue carbon project in the Zambezi Delta undertaken in June 2016 was tentatively positive.

[11] For mapping exercises, a forest structure assessment and carbon soils investigations see Shapiro et al. 2015.

3.5 Other climate finances schemes

Mozambique has modest experience with international carbon projects. Three stand-alone projects have been proposed to the Clean Development Mechanism (CDM); two of them have been registered, one has been rejected. The registered ones both have a forestry context. One of them is a cookstove project (registered in 2013), the other a reforestation project (registered in 2014). Neither of them has issued credits yet. Mozambique's participation has been hampered by a lack of awareness of CDM opportunities generally, a lack of up-front financing for pre-investment studies, and the lack of an appropriate national definition for 'forests' under CDM (UNDP 2015).

These projects aside, there is a registered cross-border CDM programme of activity ("Improved cookstoves programme for Malawi and cross-border regions of Mozambique"), but the Mozambique Government has not yet issued a letter of approval for the project. The Monitoring Report 2014/2015 mentions that implementation in Mozambique will follow "at a later stage".

Plans are under way to develop and implement additional carbon initiatives under either the CDM or within the context of Nationally Appropriate Mitigation Actions (NAMAs) in the waste and charcoal production sectors (MICOA 2014a).

New forms of finance for maximising the ability of coastal ecosystems to reduce carbon emissions. International schemes and carbon accounting tools can help to persuade policy-makers to project the potential impacts of their decisions, and identify trade-offs and compatibilities among environmental, economic, and social benefits. Blue Carbon is emerging as a new option on the palette of existing global mitigation opportunities.

3.6 ICSM/ MSP

Mozambique, South Africa and Tanzania participate in the UNEP Regional Seas Programme for Eastern Africa, and have ratified the Nairobi Convention. Under the Convention, several capacity-building exercises have taken place in the sub-region and countries are well on their way to developing and implementing national ICZM policies and programmes. In Mozambique, there has been progress towards a body with responsibility for coastal affairs. The creation of the Ministry for the Co-ordination of Environmental Affairs (MICOA) (MICOA 2012a), now MITADER, was the first major step undertaken in the direction of an integrated management strategy for natural resources. The coordination role that MITADER plays stresses the adoption of the principle of a collective, participatory and harmonised management process. Within MITADER, the department responsible for coastal area is assisted by an integrated team of professionals, the CZM Unit, with responsibilities over all the activities related to coastal area management, including studies, planning, programme management and co-ordination. As early as 1994, the Government approved a number of activities related to Integrated Coastal Zone Management (ICZM), as part of the National Environmental Management Programme (NEMP). Specifically, the NEMP included the principle that coastal management should be based on an inter-institutional co-ordination among the relevant stockholders, and it mandated the development of programmes to further regulate (i) fisheries; (ii) coastal and marine ecosystem management; (iii) coastal and marine protection; (iv) marine parks; and (v) tourism.

Early ICZM work in Mozambique included the Mecufi Coastal Zone Management Project (World Bank & SIDA 1997). Established in December 1992, it ran to September 1996 with the aim of reducing pressure on the natural resource base of the coastal zone by encouraging improved management and conservation practices. The project executing agency was MICOA (predecessor of MITADER) and its principal achievements included the creation and promotion of a Village Management Nucleus for coordinating and leading development and resource-conservation measures at the village level, establishment of a system for training village extension workers, primary-school teachers and the farming population, on resource conservation, and promotion of biological and other inexpensive resource-conservation techniques.

ICZM work in Mozambique received a boost following the December 2004 Indian Ocean Tsunami which led to the development of the Mangroves for the Future-Asia Programme. Mozambique is one of five countries that form the focus for this work. The overall objective for Mozambique was to prepare a Mangrove Restoration Strategy and Action Plan to better respond to climate and human effects through the protection, rehabilitation and wise use of mangrove ecosystems maintaining

their protective function, values and biodiversity while meeting the socio-economic development and environmental protection needs in estuarine and coastal areas. Three regional consultation workshops were held in the north, central and southern regions of the country, conducted by the Sustainable Centre for Coastal Zone Management. A wealth of valuable information was generated during the workshops, as well as concrete recommendations and guidance on how to develop the strategy. The workshops reflected on what has been done so far on mangrove management, how to fill the remaining gaps, as well as the future management of mangroves. Results and recommendations derived from the working groups and points raised at the workshops are currently being summarized to – eventually – inform the future National Mangrove Management Plan[12]. The proposed draft will ultimately be submitted to the Council of Ministers for approval.

[12] Not yet available at the time of writing.

In the course of 2014-15, the "Resilient Coasts Initiative" developed a number of concept notes to fund projects that fit with one or more of the program pillars. One was successful for funding and one other selected to develop a full proposal.

• Community-based restoration of Quelimane coastal wetlands, Mozambique: This mangrove restoration project, under the sponsorship of RAMSAR's Secretariat and being implemented by IUCN in collaboration with local partners, is focused on the recovery of degraded mangrove areas, especially those areas used for salt production and now being abandoned. The project is being piloted in an area of about 30 hectares in the Icidua neighbourhood of city of Quelimane, and is part of a total 200 ha in need of urgent attention in the city. Initial activities to conduct assessments in the project area are underway and some have been completed, namely (i) assessment and mapping of mangrove ecosystem; (ii) assessment of sources, pathways and analysis of water pollution in Rio dos Bons Sinais; and (iii) assessment of the sewage and urban wastewater filtering capacity of the peri-urban mangroves in Quelimane. Ongoing works also include the establishment of the mangrove nursery.

• Mainstreaming Nature-Based Adaptation to Climate Change in National Level Investment Plans in Mozambique-Submitted to African Development Bank (AfDB) – Clim-Dev Special Fund in collaboration with African Centre for Technology Studies (ACTS). This concept note has been selected for the second stage of development of a full proposal. The overall goal of the project is to strengthen national capacities at all levels to reduce the climate change impacts on the vulnerable populations. The project will provide innovative and effective methods, strategies and policy guidelines for nature-based solutions (NbS) to climate adaptation related to development planning and systematically integrated in the national adaptation policy. The mainstreaming of NbS in Mozambican policy, planning and investment will increase access to sustainable income opportunities and food security in rural areas. Adaptation benefits will include community coping mechanisms to climate change enhanced, communities livelihood options diversified, enhanced environmental management, and reduced socio-economic impacts of climate change risks.

4. Gaps, challenges and opportunities

The variety of threats that Mozambique's blue carbon environments are facing points to a number of complementary gaps (see Table 2). Some of these risks and gaps The Government of Mozambique may be able to respond to some of these risks and gaps but a number of interventions targeting will require international support in the form of technological assistance, know-how, and finance. The engagement of local communities through international climate instruments holds particular opportunities.

4.1 Awareness and enforcement

A major challenge is presented by a lack of awareness of the existing legal framework(s), and uneven law enforcement. Various laws, most notably the Land Law and the Conservation Law, contain incongruent concepts (e.g., on protection zones) and administrative responsibilities. As to enforcement, official numbers on fines, penalties, compensation payments or public actions against environmental violations are not published, and there are no comprehensive studies on compliance and enforcement. This finding is confirmed by in-country surveys according to which corruption and violations against the rule of law, in general, is widespread (USAID 2013). Case studies on deforestation (coastal and inland) show partially alarming degradation rates even inside conservation areas (IIED 2012). In a study of 2003, the share of clandestine timber production was set at 50-70% of the national total (90,000-140,000 m3) (Del Gatto 2003). In the case of charcoal – a major timber product – only 1-5% of the total production was registered (legal). This translates into an informal production of 8 million bags per year.

There is also, at least partially, inconclusive data on local blue carbon ecosystem changes (deforestation, degradation, rehabilitation). The most recent comprehensive forest data set reaches back a decade and it does not provide scientifically based figures for the country's mangrove vegetation. For seagrasses, only broad estimates exist. Both habitats should be consistently monitored and inventoried, and up-to-date maps should be provided which show local hotspots of degradation outside and inside protection zones. Areas in which there is a natural regrowth of mangroves may be examined for the underlying economic, social and legal effects.

Table 2. Blue carbon threats and gaps analysis Mozambique

	Threats		Gaps	
	Land-side	**Sea-side**	**Control-and-command**	**Incentives**
1.	Uncontrolled degradation	Uncontrolled degradation	• Lack of mapping • Lack of inventories and comprehensive monitor • Lack of law enforcement	N.A.
2.	Wood-cutting (legal)	Habitat-destructiong fishing (legal)	• No legal protection of mangroves (outside protection areas) • No National Management Plan • No empowerment of Local Management committees • Incomplete legal protection in Partial Protection Zones • Incomplete licensing regime • Lack of comprehensive fishing-technique red-list	• Lack of (voluntary) custodial regimes with direct benefits, based on licensing but also momentary benefits (e.g. carbon), for local communities • Project-based cookstove initiatives to reduce timber needs
3.	Wood-cutting (illegal: in conservation areas)	Unsustainable fishing (in conservation areas)	• Lack of clear allocation of responsibilites • Lack of dedicated coastal management authorities • Lack of staff and equipment at ANAC • Lack of capacity • Lack of law enforcement • Overlap of interests • Illegal logging • Demand of markets for illegal products	• Lack of (voluntary) custodial regimes with direct benefits, based on monetary benefits, including carbon) for local communities
4.	Agricultural encroachment (slash-and-burn)	Dredging of channels, shipping	• Lack of comprehensive cross-sectoral planning, smart zoning and coastal management • Lack of clear licensing • Lack of law enforcement • No engagement of local communities on management of natural resources • Lack of capacity • No access to technologies	

Table 2. Blue carbon threats and gaps analysis Mozambique

	Threats		Gaps	
	Land-side	**Sea-side**	**Control-and-command**	**Incentives**
5.	Coastal development and urbanization	Sewage discharge pollution, oil spills	• Lack of comprehensive cross-sectoral planning, smart zoning and coastal management • Lack of comprehensive safety regulations • Lack of sewage facilities • Lack of law enforcement • More opportunities/ work in coastal areas	• Housing and small-scale farming grants at (away from) blue carbon hotspots
6.	Offshore mining/ onshore facilities		• Strict regulatory regime of damage mitigaton • Creation of mandatory compensation zones • Overlapping of interests	N.A.
7.	Aquaculture		• Lack of comprehensive ban of aquaculture in mangrove zones (with clear enforcement responsibilities) • Bad practices • No access to technologies • Need of a national baseline (WWF leading this process)	• If commercial licenses are given out, limit them to special zones (outside mangroves) and reserve areas for small-scale fish farming for communities that take on mangrove custodial responsibilities
8.	Tourism		• Lack of clear competence and responsibilities over Total Protection Zones • Lack of strict blue carbon protection requirements for tourism/ resort planning outside protection areas	• Creation of a blue carbon restoration fund (through a tourism tax or related fees)

4.2 Substantial law and institutions

At the level of substantial law, while the Land Law has created an a priori sound protection regime for conservation areas and coastal environments, in particular, key implementing legislation – notably on the conditions for issuing licenses of economic use of Partial Protection Areas – is still lacking. Moreover, a more restrictive Conservation Law, causing a situation in which the de facto non-protective behaviour may increasingly be tolerated in the context of a non-effective legal regime. The status of mangroves and other blue carbon elements outside Total Protection and Total Conservation Areas, and beyond the non-implementation-ready concept of Partial Protection Areas, is only punctually addressed (notably through the Fisheries Law with respect to aquaculture) and remains otherwise ambiguous. At the level of the Land Law, the Free-Use-of-Land provision for family use and small-scale agriculture (Article 29), which does not exclude protection areas from its scope, adds to the fragility of the protection regime. A clear recognition of the legal value of coastal habitats across legislative sectors (regulatory blue carbon mainstreaming) and an absolute ban of exploitation, with no exception under Free-Use-of-Land provisions (combined with controlled firewood production areas for local communities) would be welcome. Furthermore, the Government could enact a dedicated legal framework for mangrove and seagrass rehabilitation and restoration programs, including a carbon market finance framework.

There are also institutional inconsistencies which hamper robust protection and monitoring. The overlapping responsibilities for Protection Areas of MITADER on the one hand and MIMAIP on the other are evidence of regulatory confusion and may weaken the management approach of both organizations. The competing responsibility of provincial governors, and state and municipal authorities to issue licenses for economic activities in Partial Protection Zones creates a double-risk for the affected areas and weakens enforcement capacities altogether.

Some institutions formally exist but their management and budgetary capacity, as well as their output, are not apparent. The Sustainable Development Centre for Coastal Zone Management may fill an institutional gap but its de facto contribution to coastal planning and management is not clear. It does not seem to be able to assume the coastal management functions outlined in the country's first National Adaptation Plan (NAPA) of 2007. ANAC, responsible for the country's conservation areas as a whole, suffers from low staffing – it relies on one scout per 315 km2, which is six times lower than the recommended patrol effort (World Bank 2014) – and general under-funding. The Government covers only about 1% of the total revenue requirements for conservation areas. Most funding comes from international aid organizations with unclear prospects for in-country-longevity.

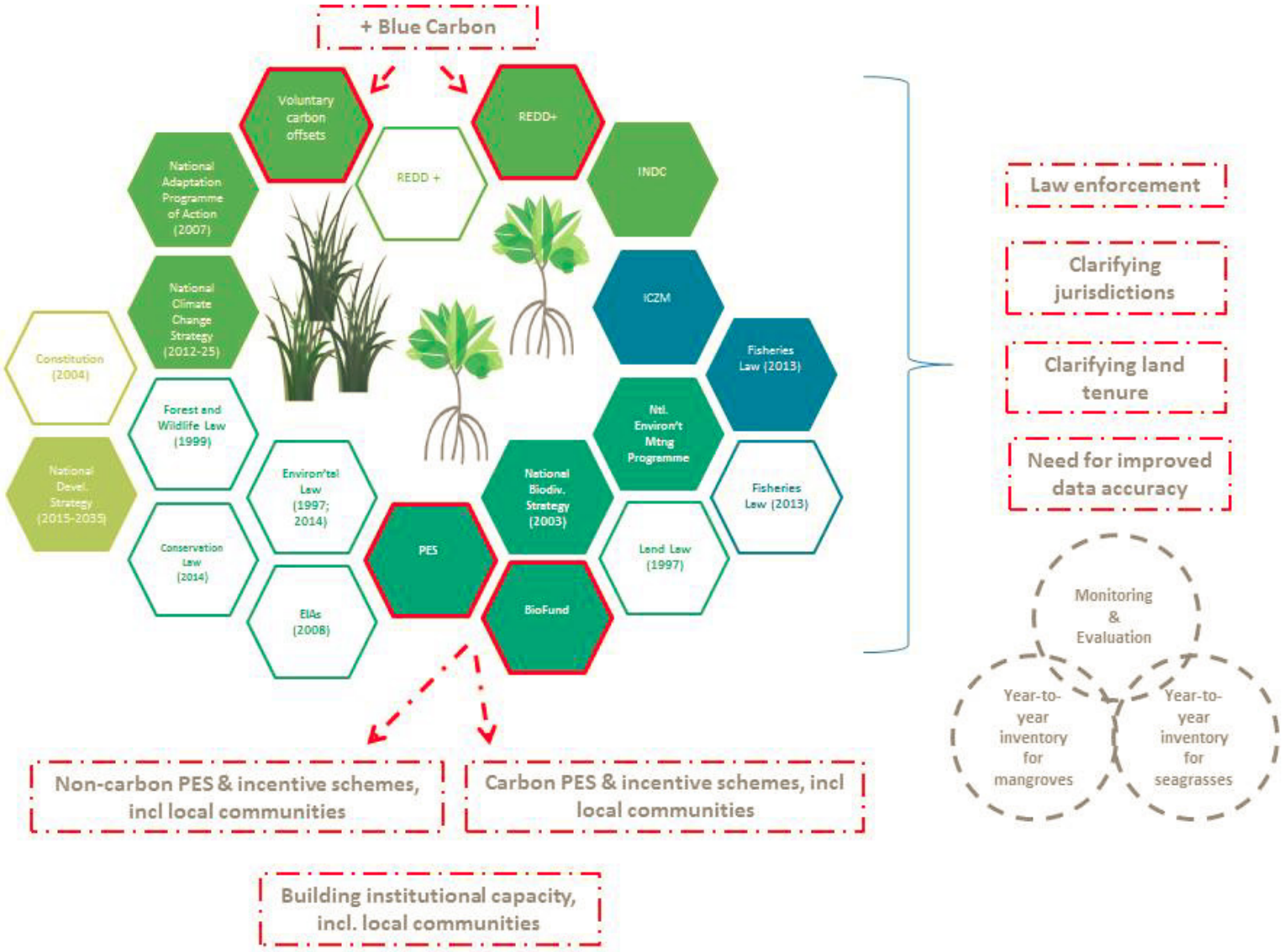

Figure 6: Overview - Main Opportunities in national laws, policies and initiatives with an impact on blue carbon ecosystem management

4.3 Policy development and incentives

At the level of comprehensive landscape-based planning, important programmatic documents have been produced (notably the NAPA of 2006 and more recently the ENAMMC of 2012 and Mozambique's INDC of 2015) and a wide array of initiatives have been triggered, namely in the context of ICZM. These programmatic approaches, however, rely on robust follow-through, which for the 2006 NAPA has not consistently been the case. The integration of fisheries and coastal land planning across government levels, in particular, and a holistic process of ecosystem-based management will be a challenge, but also a major opportunity for the years to come (Chevallier 2013). If any of the oil and mining operations envisaged by the Government enter concrete planning cycles, cross-sectoral coordination will be particularly relevant not the least to minimize damaging consequences for seagrasses, mangroves and other coastal habitats.

When compared with other blue carbon countries, there are few incentive schemes in operation. While Ecuador, for instance, engages with local communities through partnership agreements and financial subsidies ("Socio Manglar"), Mozambique has yet to explore community-based compensation schemes. The existing rules on the sharing of proceeds from taxes and fees collected from conservation areas suffer from uneven enforcement, delays and the lack of transparency (World Bank 2014). Moreover, these rules may rightfully attempt to compensate local communities for foregone income – as the economic use of conservation areas is restricted – but it is not clear whether the level of compensation is adequate to secure sustainable livelihoods. The regime also falls short of integrating local communities into the delivery of environmental services (custodial services, monitoring, sustainable harvest, etc.)

One way forward may be to actively integrate local communities in maintenance activities such as surveillance, reforestation, erosion protection, etc. inside and outside conservation areas, and to support this approach through comprehensive scientific capacity-building (mapping, inventories, methodological work, sea-level rise impact assessments, etc.), as well as work towards a clear and consistent legal framework. Community-participation could be linked to special concessions for sustainable fishing and timber sustainable harvesting rights as well as to fixed or floating (but predictable) financial benefits, funded from local sources (e.g., through a coastal conservation fund created by tourism contributions) and/or from international sources, notably through NAMA engagement.

Unregulated timber harvesting for fuelwood and charcoal production represent particular challenges to Mozambique's forests, including mangroves. Cookstove initiatives therefore pioneered in many countries by the CDM and by high-quality voluntary standards, and could be implementation across the country. One good opportunity could be to focus on mangrove coastal zones. Mozambique's status as a least developed country (LDC) will help trigger international demand (including from the carbon markets of the EU, the EU ETS as well as the Effort Sharing Framework) and finance (including from the Green Climate Fund, which has a strong African investment focus).

The Government is committed to using carbon market approaches and has made it clear that it targets blue carbon measures, in particular (ENAMMC 2012). It is piloting REDD+ / FCPF activities and it has also enacted initial regulations to allocate carbon rights. Although additional implementing legislation would be beneficial, the current framework seems to warrant the pioneering of project- or program-based blue carbon generation campaigns. The specific carbon rights situation and its place under the country's land tenure regime outside conservation areas needs to be further investigated in this context. The Government should, alongside its REDD+ engagement, actively support the spread of cookstoves projects (CDM/Gold Standard), and it should put ENMACC's blue strategy into practice and launch, through the use of public-private partnerships, dedicated carbon projects. The Verified Carbon Standard (VCS) has most recently introduced a wetlands restoration and conservation (WRC) standard, and the development of a variety of carbon methodologies is underway.

The newly created trust fund BIOFUND may prove a useful vehicle for blue carbon investment support. Its capacity and financial mechanisms are already seen as a new source to improve financial sustainability of conservation areas and an in-house mechanism to promote sustainable conservation.

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