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Mozambique Country Forest Note

October 2018

This Mozambique Country Forest Note articulates the status, vision and relevant investment and policies of the forest sector in Mozambique and presents the forest-smart approach adopted by the country of integrated landscape management. It makes the case that strategic investments in the forest and land use sectors are needed to reduce rural poverty and ensure the sustainable management of natural resources, particularly forests.

This Note is intended to serve as the basis for dialogue within the government and with development partners and other stakeholders on the sector's policy priorities and future investments—including for securing additional financing for advancing integrated landscape management.

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The World Bank

Summary

Mozambique has 34 million hectares (ha) of natural forests, covering 43% of its area.[1] The predominant forest ecosystem is the miombo, covering about two thirds of the total forest area. Other forest ecosystems include internationally recognized biodiversity hotspots, such as the coastal forests in the south, afro-montane forests in central Mozambique, and coastal dry forests in the north; and the second-largest area of mangroves in Africa.

Forests are an important contributor to the country's economy and a source of employment, income, and livelihoods in Mozambique's rural areas. The sector contributed about US$330 million to GDP in 2011 and directly employed 22,000 people (FAOSTAT, 2011). Forests provide goods and services to local communities, including food, energy, medicine, construction materials and furniture. In some rural communities, miombo woodlands contribute almost 20% of household cash income and 40% of subsistence (non-cash) income.[2]

Forests provide ecosystem services of both local and global value. These include climate regulation through carbon sequestration and storage, watershed protection through soil erosion control, water quality and quantity provision, as well as habitat for globally important species, such as Africa's iconic large mammals and unique endemic species, such as the Gorongosa Pygmy Chameleon and Vincent's Bush Squirrel. Based on the recent National Forest Inventory (NFI, 2018), the country's above- and below-ground carbon stock totals more than 5.2 billion tCO_2. This carbon store is central to the country's climate change mitigation commitments.

Although Mozambique's forests have tremendous value and unrealized potential, they are being rapidly depleted. The NFI 2018 indicates that 267,000 ha of forests were lost each year from 2003 to 2013, a historical deforestation rate of 0.79%. This led to almost 40 million tCO_2 being emitted each year, 57% of the country's total greenhouse gas emissions of 67 million tCO_2. From 2014 to 2016, around 86,000 hectares of forests were lost each year, half the rate of the previous period.

The underlying causes of deforestation and forest degradation are poverty, high population growth, and international demand for valuable timber. Rural poverty and population pressure mean alternative sources of income are limited, leading to unsustainable forest use. Conversion to small-scale agriculture is the main direct driver of deforestation, accounting for 65% of forest loss. The main drivers of degradation are extraction for biomass and the unsustainable, sometimes illegal, harvesting of timber.

Deforestation and forest degradation levy high costs on local communities, the national economy, and global community. With forest loss, local communities lose access to forest products they depend on, reducing their resilience to the impact of the climate and the water flows that forests regulate so well. National revenue is lost because of the suboptimal use of forest resources: opportunities for sustainable use (such as nature-based tourism or sustainable forest management) are reduced, while illegal activities lead to much-needed state revenue being siphoned-off. The global community faces biodiversity loss and the impact of increased GHG emissions.

The Government of Mozambique is showing an unprecedented level of commitment to reducing deforestation and forest degradation, and to improving forest governance. Mozambique's National Reducing Emissions from Deforestation and Forest Degradation + (REDD+) Strategy aims to reduce deforestation by 40% and restore 1 million ha of forests by 2030.

1 Based on the definition of forests of 30% canopy cover and a minimum 3-meter in height in an area of over 1 hectare.

2 Hedge and Bull. *Socio-economics of miombo woodland resource use: a household level study in Mozambique*. In: Managing the Miombo Woodlands of Southern Africa Policies, incentives and options for the rural poor (2011)

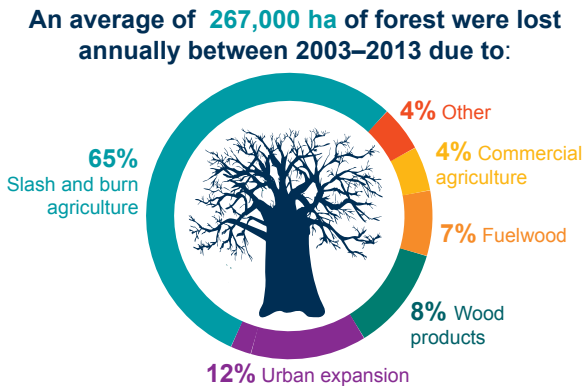

Figure 1: Deforestation drivers. Source: Winrock and Ceagre (2016).

Mozambique's Nationally Determined Contribution (NDC), submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2016, sets targets for greenhouse gas emission reductions of 23 $MtCO_2$ from 2020 to 2024, and 53 MtCO2 from 2025 to 2030.

A series of reforms are being undertaken by Mozambique in the sector, including the revision of its policy and legal frameworks, the creation of a new institution for forest law enforcement, a moratorium on new forest concessions, and a ban on log exports. These reforms aim to confront challenges faced in sector and move it towards greater sustainability.

The World Bank has given these reforms a total of over US$300 million in support since 2013 through investments, technical assistance, analytical work, and results-based payments. The Bank seeks to provide opportunities for the country's poorest citizens (the "bottom forty") through the sustainable use of forest resources, including forest and wildlife management, conservation agriculture, and nature-based tourism.

The Bank has supported the government to help it gain access to multiple sources of financing, including climate finance from the Climate Investment Funds, Global Environmental Facility, and Forest Carbon Partnership Facility (FCPF) Carbon Fund for performance-based payments. It has also found other development partners through the establishment of a Multi-Donor Trust Fund for Landscapes and Forests management.

The Government of Mozambique is using World Bank investments to support the adoption of integrated landscape management, while generating benefits for local communities. The integrated landscape approach entails working on larger geographic areas, made up of multiple land uses, and involving several stakeholders. It calls for investments and enabling policies within and beyond the forest sector. It aims to achieve livelihood diversification, sustainable forest management, and climate change mitigation. The Bank's investments include the promotion of sustainable forest and agriculture value chains, agroforestry, sustainable charcoal production, community forest concessions, community-based tourism, and commercial forest plantations. In terms of strengthening the enabling environment, the Bank supports the securing of community rights to land, reforming forest concessions, and strengthening forest governance and land use planning.

Promoting sustainable forest management in Mozambique requires significant financing, as it entails changing the land use behavior of millions of smallholders and creating incentives among national stakeholders to manage forests sustainably, as opposed to extracting the most from them in the short-term. Mozambique has developed a Forest Investment Plan that identifies how resources would be used. Further resource mobilization is needed to scale it up and replicate it in other landscapes.

This report was made possible by the contributions of many.

We would like to thank colleagues from the World Bank's Mozambique Environment and Natural Resources team, the National Forest Directorate (DINAF), the National Sustainable Development Fund (FNDS) of the Ministry of Land, Environment and Rural Development (MITADER), and the Food and Agriculture Organization (FAO) for their valuable contributions. All photos are from the World Bank and Andrea Borgarello unless stated otherwise.

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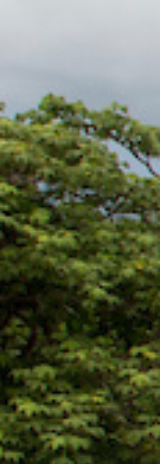
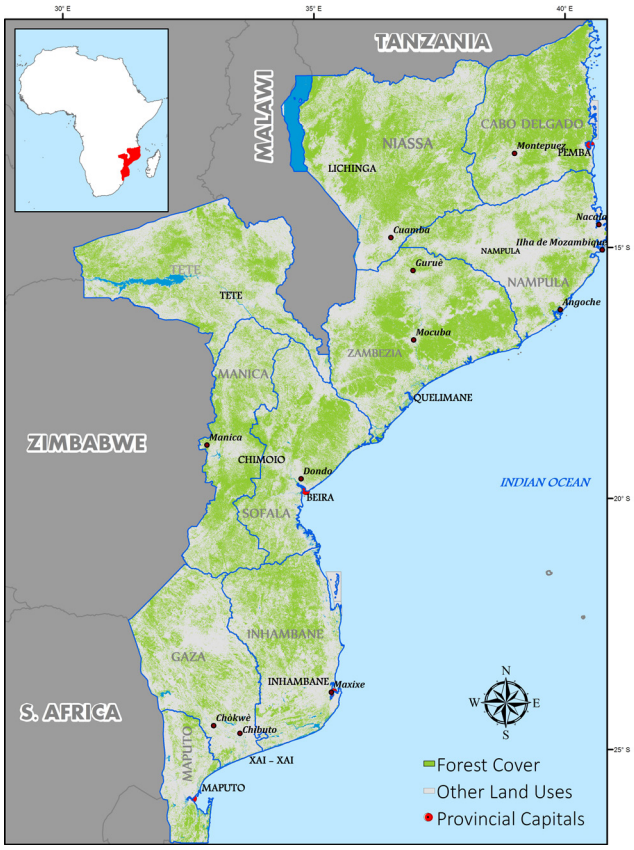


Forests in Mozambique: A Snapshot

Forest Definition: 30% canopy cover with a minimum height of 3m height, covering an area of over one ha.

The forest sector contributes greatly to Mozambique's GDP. In 2011 the sector contributed about US$330 million to Mozambique's GDP in 2011, directly employing 22,000 people, and in 2016, it represented about 13.7% of GDP.



There are two forms of commercial harvesting for natural forests: forest concessions and simple licenses. In 2017, 193 forest concessions and 624 simple licenses were issued. The average Annual Allowable Cut for precious and first-class species in 2017 was about 446,000m^3.

Mozambique's natural forests cover an area of about 34 million ha: equivalent to 43% of the country's territory, these forests store approximatly 5.2 billion tCO_2eq of carbon.

Mozambique has an estimated 300,000 ha of mangrove forests but from 2003 to 2013, about 156 ha was lost annually. Mangrove loss is caused by urban and agricultural expansion, coastal erosion, and the extraction of fisheries and wood for commercial use.

Mozambique's National REDD+ Strategy aims to reduce deforestation by 40% and restore one million ha of forests by 2030. The NDC sets targets for greenhouse gas emission reductions of 23MtCO2 from 2020 to 2024 and 53 $MtCO_2$ from 2025 to 2030. A series of reforms have been undertaken in the sector since 2015, including the revision of the policy and legal frameworks, creation of a new institution for forest law enforcement, and a ban on log exports.

Deforestation shows a declining trend. From 2003 to 2013, 267,000 ha were lost each year, at a rate of about 0.79% accounting for 57% of the country's total GHG emissions. From 2014 to 2016, 86,000 ha were lost each year, at a rate of about 0.36%.

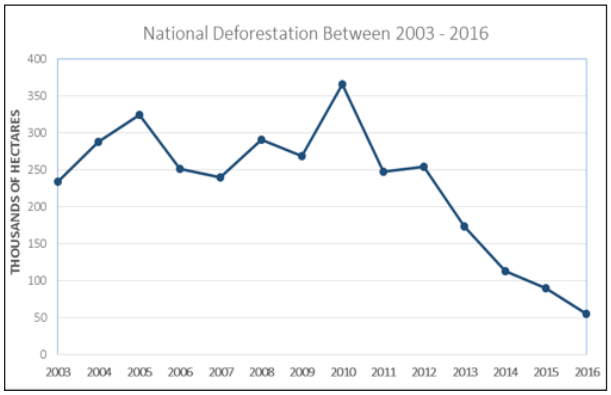


Figure 2 (above): Forest cover in Mozambique.
Source: Land Use and Land Cover, MITADER (2018)

Figure 3 (left): National deforestation between 2003-2016.
Source: MITADER (2018)

Forests: Local Communities, National Economy, and Global Environmental Services

Forests and Rural Poverty Among Local Communities

Poverty in Mozambique is concentrated in the rural areas and in the Central and Northern regions. Zambezia and Nampula, two target provinces of the government's integrated landscape management programs, experience both the highest rates of poverty (IOF-2014/2015) and high rates of forest loss (Figure 4). Poverty reduction and inclusive growth require the sustainable use of natural resources, particularly in rural areas. Forests are a key resource for rural communities, providing goods and services that meet their needs and can foster the growth of their income.

The miombo forests have the potential to improve livelihoods by providing essential food, energy, shelter and medicines for local communities.[3] Construction materials, like timber for houses, fences, and granaries and grasses for thatched roofs, can be sourced. Natural fibers provide the raw materials for necessities like baskets, ropes, clothing, nets, brooms, and mats. Non-timber products have income-generation potential. Forests also act as a safety net for populations by offering secure access to resources and services critical to their food security.

Wood and charcoal are critical for household energy needs, with biomass accounting for 80% of total energy consumption in Mozambique. Fuelwood is used in rural areas, while charcoal is utilized in peri-urban areas, supplying energy for 76% of households in Mozambique's capital of Maputo and Matola, an urban center neighboring it. Charcoal is an important source of income derived from forests. Mozambique's National Biomass Strategy (EUEI 2012) indicates that the charcoal industry generates jobs in rural areas for 136,000 to 214,000 people.

Agriculture, a major source of livelihood and a land use predominant in rural areas, is highly dependent on natural resources. About 3.9 million households cultivate an area of about 5.1 million ha (out of 36 million ha), mostly practicing subsistence agriculture on plots that average about 1.3 ha.[4]

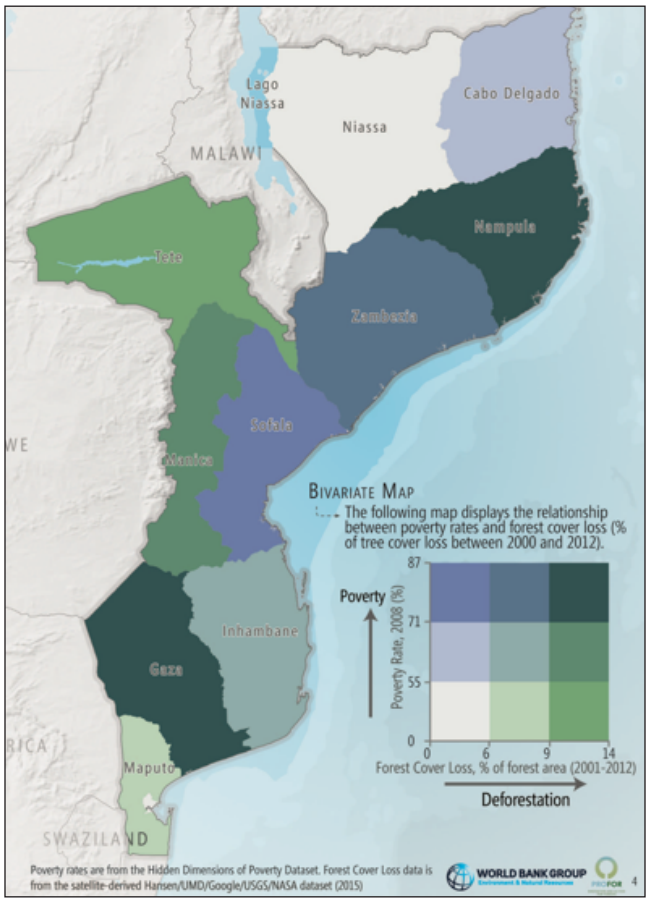


Figure 4: Bivariate map of poverty and forest cover loss. The provinces of Cabo Delgado, Zambezia, and Nampula are priorities for MITADER. The latter two experience high poverty levels and forest loss.

The most important food crops are cassava and maize, followed by sorghum and rice. Only an estimated 16% of rural households engage in cash crop production.

Agricultural value chains can form the backbone of a rural economy as they create jobs, increase rural income, strengthen food security, and facilitate better nutrition.

3 Campbell, B M et al. *Miombo Woodlands—Opportunities and Barriers to Sustainable Forest Management* in Observatory (2007)

4 IAI (2012) and Agriculture and Livestock Census (CAP) (2010)

Agricultural production benefits from a range of environmental services generated by forests, such as maintaining steady flows of water. Sustainable agricultural practices, such as conservation agriculture and agroforestry, take this interdependence into account and seek to increase agricultural productivity while strengthening the resilience of natural resources.

Non-timber forest products (NTFPs) are a resource for livelihoods of the rural poor. About 6,850 formal and 189,000 informal small and medium enterprises trade in NTFPs, such as honey, handicrafts, charcoal, and firewood.[5] NTFP trade occurs primarily in the informal sector through family- or community-based initiatives but is an important activity in the sustainable production of forest goods and income generation. There remains a wide range of products that have potential entry to commercialization. A study in Zambezia, Nampula, and Cabo Delgado found a wide range of 47 NTFPs with varying degrees of need for investment, market potential, and requirements for research and development.[6] They cover value chains for food, essential oils, cosmetics, construction, handicrafts, and hygiene products. Common examples are baobab, moringa, and bamboo.

Community-based natural resource management is a necessary strategy to promote the dual objectives of sustainable natural resource management and rural development. The majority of Mozambique's rural communities depend on natural resources for their livelihoods. The active engagement of communities in natural resources management—in forests, wildlife, and fisheries—has shown to be an efficient and effective tool in ensuring the sound management of these resources.

Strong local institutions and rules that govern the resources are needed—in particular, the recognition of the rights communities have to the resource, so that community members can benefit from the management of it. Security of resource access allows a balance of rights and obligations, tying benefits from the resource to the quality of its management. In Mozambique, community rights to land and to natural resources have been strengthened through community land delimitation.

As of 2017, a total of about 1,020 communities have been delimited, and about 500,000 individual land use licenses (*Direito de Uso e Aproveitamento da Terra*—DUATs), have been issued.[7]

Box 1: Actors in the landscape—Private sector

The private enterprises in the forest sector are predominantly small and medium businesses (each employing less than 50 people), which account for 95% of formal sector businesses and 99% of informal sector operations.[1] Forest enterprises operate across different stages of the timber value chain. There are timber producers, primary processors (sawmills), and secondary processors (such as carpentry workshops, furniture factories).

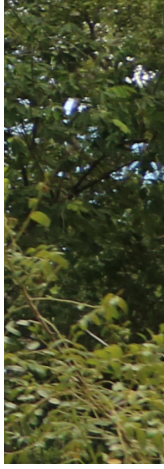
National and international forest enterprises operate in Mozambique. Obtala Limited is one large international firm operating in Zambezia province and it has a Memorandum of Understanding signed with FundInvest SA, a state-owned enterprise, for the export of timber. There are about 120 Chinese companies across the country, including concessionaires and traders. Larger national enterprises include LevasFlor and TCT Indústrias Florestais. These companies tend to have more integrated value chains, incorporate sustainability in their operations, and engage in initiatives beyond timber that involve local communities. LevasFlor is the only Forest Stewardship Council (FSC)-certified company in the country. Smaller national enterprises tend to be focused on short-term gains, with little consideration for sustainability integrated into their management. Forest operators are organized into associations at several levels, although the sector is not sufficiently consolidated for the associations to be effective, and how representative the associations are of their members is debatable. At the national level, the Mozambican Association of Timber Operators (AMOMA) engages frequently with the government.

5 Nhancale, B. et. al, *Small and medium forest enterprises in Mozambique*, IIED (2009)

6 *Assessment of Non-Timber and Non-Wood Forest Products Value Chain in the Zambezia, Nampula and Cabo Delgado Provinces, Mozambique*, PhytoTrade (2016)

7 MITADER (2018)

Forests and the National Economy: The Timber and Wildlife Industry



The Timber Industry

At the national level, forests are an important contributor to the economy, generating income and employment, as well as important raw materials to fuel Mozambique's growth and development. In 2011, the forest sector contributed about US$330 million to Mozambique's GDP and directly employed 22,000 people. In 2016, the sector contributed about 13.7% to Mozambique's GDP.

The World Bank conducted a global analysis in 2018 on the importance of various types of wealth—produced capital, human capital, and natural capital—to a country's economy.[8] In Mozambique, renewable natural capital—that is, wealth from renewable resources—forms the largest component of national wealth. This means that renewable natural resources such as forests, protected areas, and cropland are significant assets that can support further growth and wealth accumulation in the long-run, if managed sustainably now. Other sources of natural capital include non-renewable resources, such as fossil fuels and minerals.

Of the renewable natural resources possessed by Mozambique, forests are the second-largest contributor to natural capital after cropland. Figure 5 shows that natural capital from forests has over time constituted a smaller share of the total due to the higher growth of wealth from other resources, especially cropland. However, the absolute value of forest natural capital has increased over time, showing it remains a resource for the country.

Mozambique's high-quality timber is valued on international markets, but more recently has been exported mostly to the Chinese market. Exports are in the form of logs (74% of timber/wood exports 2013), followed by sawn wood (21% in wood exports), and chips and particles (remaining 4%).[9] About 90% of timber exports went to China in 2013. The export market is dominated by Chinese companies and is highly selective, focusing on: *Dalbergia melanoxylon* (local name pau preto); *Pterocarpus angolensis* (umbila); *Afzelia quanzensis* (chanfuta), and *Millettia stuhlmannii* (jambire). In the domestic market a slightly wider range of species is accepted, although preference is still given to the premium species.[10]

Chanfuta, umbila, and jambire are the most-used species, forming 85% of the wood used in domestic consumption, followed by metonha, metil, messassa, missanda, and messinge.[11] However, more than 100 species are listed as having the potential for commercial timber. The average Annual Allowable Cut (AAC) for precious and first-class species in 2017 is about 446,000m^3, based on the recently concluded National Forest Inventory.[12]

Presently two forms of commercial harvesting exist for natural forests: forest concessions and simple licenses. The number of forest operators varies annually. In 2017, 193 forest concessions and 624 simple licenses were issued.[13] Licensed concessionaires have the right to harvest and transport timber according to the AAC specified in the approved management plan. The management of timber varies considerably with respect to the area licensed to forest concessionaires. The actual productive area can range from 50% to 90% of the whole concession area. Likewise, the AAC varies substantially but is generally very low (< 0.2 m^3/ha per year), reflecting the low density of the miombo forest. Investments in assets and infrastructure vary between the two license types, with forest concessionaires usually investing more substantially

8 *The Changing Wealth of Nations 2018: Building a Sustainable Future.* https://www.worldbank.org/en/news/infographic/2018/01/30/the-changing-wealth-of-nations

9 Global Development Solutions (2016)

10 *Financial analysis of the natural forest management sector of Mozambique,* UNIQUE (2016)

11 *Assessment of harvested volume and illegal logging in Mozambican natural forest,* Faculty of Agronomy and Forest Engineering (FAEF), University of Eduardo Mondlane (2013)

12 NFI report, DINAF, 2018

13 DINAF, 2017

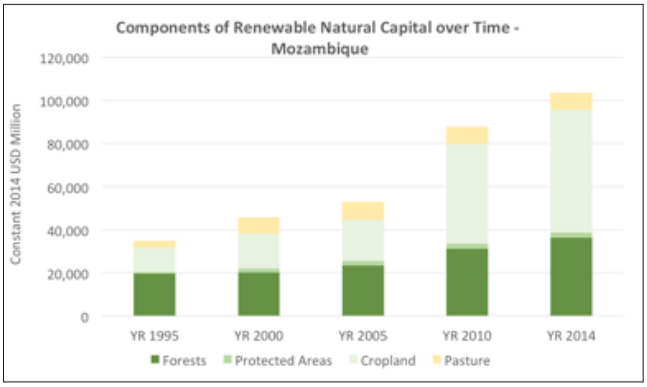
in heavy machinery to harvest and transport logs, and in the facilities required by regulation for forest concessionaires only. Mozambique has about 200 sawmills, of which 47% are complemented by artisanal carpentries.[14]

Sustainable forestry operations are not financially viable under current market conditions and because of illegality in the sector, with limited incentives for the integration of sustainability measures, such as silviculture, reforestation, or value-added processing. Unsustainable practices remain profitable, thus there is little incentive to improve the management of timber or increase the value of the resource locally. Economic analysis of the value chain of wood has confirmed there is net profit along the entire value chain, with prices varying only by product and point of sale, estimated at US$32/$m^3$ in the forest, US$44–81/$m^3$ of sawn timber for the domestic market, and US$61–115/$m^3$ of sawn timber for the export market.[15] This illustrates that it is equally profitable to sell logs to sawmills or to sell sawn timber, thus discouraging operators from doing any processing.

This profit scenario is based on the case commonly the norm that no costs are being incurred for silvicultural treatments or for other practices that could add to the sustainability of the operation.

Improving the sustainability of the sector will require interventions in three areas: strengthening the enabling environment; supporting improved management practices; and developing value chains and markets for a new range of products. Government capacity needs to be strengthened to monitor forest management standards and regulations (and ensure they are implemented), to curtail illegal logging (and any unfair competition associated with it), and to review the licensing system (including the 'chain of custody' systems).

Long-term planning should determine areas for specific uses, such as for conservation units, national forest reserves, and those available for commercial licensing. Harvesting volumes need to be licensed based on sustainable yields, and on the projections made for future stocks, which should be ascertained with the best science available. Sustainable forest management practices, which could be certified by third parties, need to be promoted, and private operators provided with incentives and technical support toward sustainability, as well as incentives for value addition.



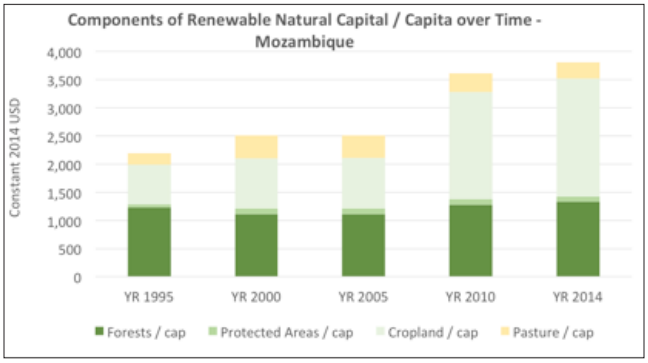


Figure 5: The value of national capital in Mozambique between 1995 and 2014

Private sector management decisions need to be based on sound data and planning, maximizing forest utilization and the integration of silvicultural practices. New, viable value chains and markets should be explored for value-added products and certified timber. Searches for a wider range of species, not currently considered marketable, could be undertaken. New markets for certified wood should also be explored. This is because investment in value addition and infrastructure can sustain or even raise their profitability despite the additional costs involved, if these are accompanied by technical know-how, access to finance, and market development. As shown in Figure 7, the current timber production system is limited in terms of the types of products and export destinations, with little investment being made in processing facilities for higher-value wood products.

In terms of utilized wood volume, charcoal is probably the most important product of Mozambique's forests. The charcoal value chain is highly important for local communities, although the charcoal business is largely informal—only about 5% of the charcoal sector is thought to be formal.[16] When license fees and the government's reforestation tax are not being paid, the net revenue for a ton of charcoal ranges from about US$5-21, depending on whether the point of sale is along a forest road or farther away in an urban center.

14 Global Development Solutions (2016)
15 UNIQUE (2016)
16 *Sustainable Charcoal Value Chain Mozambique,* Energy Engineering Solutions (2014)

By law, charcoal producers and transporters or wholesalers are required to have a license. For producers, this costs about US$1 per 70kg bag

TYPE	QUANTITY	DETAILS
Simple License	624	**Duration** 5 years **Area** <10,000 ha **Requirements** • Mozambican nationals only • Simple forest management plan **Production** • Timber: 500m³/yr • Charcoal: 1,000 bags/yr regardless of size
Forest Concession	193	**Duration** 25–50 years, renewable **Area** >10,000 ha **Requirements** • Management plan approved by the provincial governor (≤ 20,000ha) or National Forests Directorate (> 20,000) and periodically renewed • Proof of timber processing capacity (e.g. sawmill) **Production** • Timber as per Forest Management Plan (FMP) • Charcoal not allowed

Figure 6: Characteristics of simple licenses and forest concessions. Source: DINAF (2017)

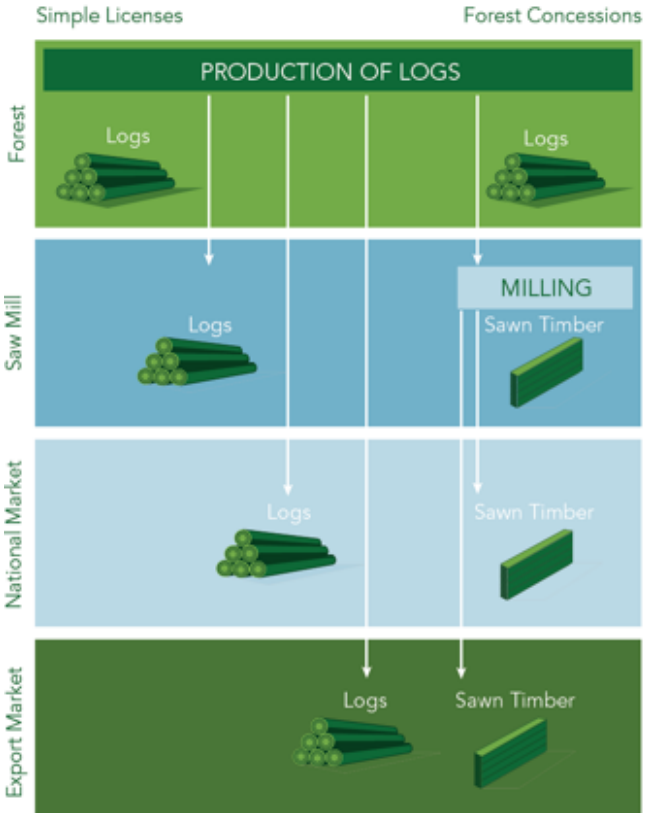


Figure 7: Current timber value chains. Source: Adapted from UNIQUE (2016)

produced, and a single producer can legally produce a maximum of 1,000 bags per year, earning them a total annual income of up to US$1,000 from charcoal. Most producers, however, do not have licenses and operate informally. Production is diffuse and decentralized, and the enforcement of even the limited number of rules in place hardly occurs. Transporters are more likely to have licenses as the movement of trucks is easier for government authorities to control, largely through checkpoints on the roads. Transporters with no license or those carrying volumes of charcoal exceeding the volumes permitted are fined about US$667 a load. Current charcoal value chains are therefore inadequately controlled and unsustainable, and a major driver of forest degradation. First-, second-, and third-class species of trees are often harvested, which the law prohibits.

National Wood Production and Consumption

The volume of wood licensed as good as doubled from 130,000 m³ in 2015 to almost 250,000 m³ in 2017.[17] These figures indicate the growing trend of timber harvesting and do not even include volumes that are illegally harvested, which are estimated at about six times the volume licensed.[18] It should be noted that the largest number of licenses are issued in the provinces of Cabo Delgado, Zambezia, Tete, and Sofala.

Domestic wood consumption is estimated at about 257,000 m³/year, an amount close to the volume licensed in 2017. Domestic timber markets are expanding, with the fast-growing construction industry and the expansion of the electricity grid the largest consumers of timber in the country. The current domestic timber supply is insufficient to cover these growing demands, making it necessary to import poles for transmission lines and construction timber. Since most timber produced is exported in logs (not poles), most processed forestry products consumed in Mozambique are imported. Domestic consumption of processed wood is composed mainly of imports from neighboring South Africa and Portugal. In 2013, Mozambique imported US$16 million in slabs, panels, plywood, and ceiling boards; US$9 million in plywood and laminates; US$8.5 million in doors and window frames; US$6 million worth of particle board; and US$5 million in boxes and pallets, especially paper, particle board, plywood, and other furniture.[19]

17 DINAF reports (2017)
18 *Avaliação das perdas de receitas devido a exploração e comércio ilegal de madeira em Moçambique no período 2003 – 2013*, WWF (2015)
19 Global Development Solutions (2016)

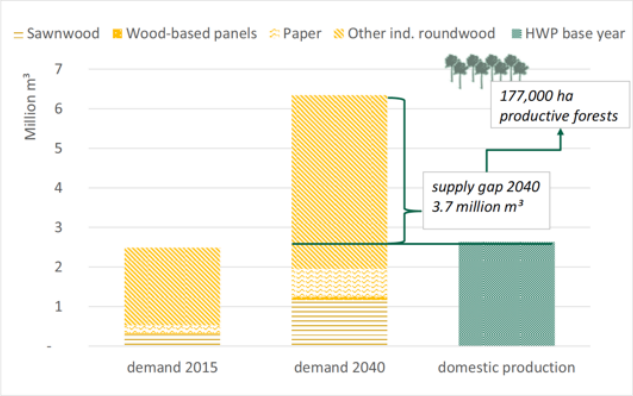


Figure 8: Expected demand for harvested wood products in 2040 and the corresponding productive forest area needed. Source: Harnessing the Potential of Productive Forests and Timber Value Chains for Climate Change Mitigation and Green Growth: Opportunities for Private Sector Engagement, UNIQUE (2016)

The supply gap for timber products continues to grow. Analyses project that Mozambique's consumption of harvested wood products (sawn wood, wood-based panels, paper and paperboard, and industrial round wood) will have grown from 2.4Mm^3 in 2014 to 6.3Mm^3 in 2040. The projected industrial round wood supply gap is 3.7Mm^3 by 2040 (Figure 8).[20] This dynamic highlights the opportunity to improve the country's production capacity, the quality of its natural forest products, and its potential for commercial plantations, which could reduce the amount of pressure currently being placed on natural forests and help meet domestic demand for timber products.

Commercial Forest Plantations

The plantation sector in Mozambique is promising and has been identified as a focal area for economic development by the government. The National Reforestation Strategy targets restoring one million ha by 2030. An estimated 3.5 million ha are considered suitable for forest plantations in the central and northern areas of the country.[21] Mozambique has adequate conditions for expanding multipurpose plantation forestry, including a growing demand for forest products and the availability of land. Increasing the country's forest plantation area from the current 60,000 ha to more than one million has by 2030 would have the potential to create 250,000 jobs and produce US$1.5 billion worth of manufactured products and exports.[22]

Mozambique is well positioned to supply the markets in neighboring countries in Southern and Eastern Africa, and has a comparative advantage accessing key markets in Asia.

Box 2: Reforestation—Multiple use

The Government of Mozambique is promoting reforestation for multiple use. The National Reforestation Strategy (2009) identifies the role of reforestation for energy, conservation, and community use. Mozambique has signed up to the African Forest Landscape Restoration Initiative (AFR100), a regional land restoration initiative, and pledged to restore 1 million ha of degraded lands. In June 2018, the Ministry of Land, Environment and Rural Development (MITADER) finalized an assessment based on the Restoration Opportunities Assessment Methodology (ROAM)[24] across the 10 districts in Nampula and Zambezia targeted by The Sustenta Project. The assessment resulted in the prioritization of about 995,019 ha in Nampula and 644,942 ha in Zambezia for restoration. The results demonstrate that about 60% of Mozambique's NDC commitment to the UNFCCC could be achieved in seven years if landscape restoration takes place across the suggested intervention areas. The analysis showed that new forest plantations offer more opportunities of employment and more carbon sequestration potential, while agroforestry and natural forest rehabilitation have high employment but medium carbon sequestration potential. MITADER is promoting forest restoration through technical assistance and the provision of inputs for emerging farmers as a condition for gaining access to matching grants for value chain development. It is also making performance-based payments for the development of sustainable plantations by small and medium growers.

However, key conditions for investment—production costs, market access, and the enabling environment—can be improved to increase the business climate and competitiveness of the sector. Production costs are affected by growth potential, land access, and labor availability. Natural, climatic conditions and geography lead to low productivity per ha of 20 to 35 m^3 per ha per year, lower than in neighboring South Africa and much lower than the highest rates achieved in Latin America. Growth rates can however be increased with proper research. An already high and still growing domestic demand for wood products provides a domestic market, but an environment must be created to enable the sector to produce at internationally comparable costs.

20 A historical, 10-year analysis of wood consumption, population growth, and industrial sector GDP resulted in correlation factors that were used for the projection of wood product consumption until the year 2040. Policy assumptions were quantified to develop a green growth scenario for consumption of wood products until 2040. Source: *Harnessing the Potential of Productive Forests and Timber Value Chains for Climate Change Mitigation and Green Growth: Opportunities for Private Sector Engagement.* UNIQUE (2016)

21 National Reforestation Strategy, MITADER (2009)

22 National Reforestation Strategy, MITADER (2009)

Box 3: Portucel and IFC

Portucel is making the largest single investment in rural areas in Mozambique. The company has a licensed area (DUAT) of about 356,000 ha, of which 246,000 ha is expected to be planted. Portucel is developing eucalyptus plantations into a mosaic landscape of forestry blocks interspersed with houses, agricultural fields, high value conservation areas, and land for other protected uses. The first-phase of investment has received about US$32.0 million in funding from IFC, including the cost of advisory services focused on their community development program that covers 6,000 households and 115 communities. The company has planted 13,200 ha so far, and faced challenges in accessing more land to expand the planted area. The company is now looking into other business models, including outgrower schemes.

Managing company–community relations is a challenge—companies have to undergo long and intense negotiations with communities in order to get a land use license and the correct procedures for doing so remain tenuous and lacking in government orientation.[23]

Investors reflect on the need for clarity concerning the rules on forest conversion, as well as on the rights of companies to access land and the process for obtaining a license or DUAT. Such risks related to land have deterred investors. Mozambique lacks skilled labor and adequate technologies. Developing a thriving, planted forests sector is a long collaborative process that will require inputs and commitment from all stakeholders: the public sector to improve the enabling environment and framework for investments; and private actors including smallholders to provide the investment.

Above: Women prepare seedlings for use in plantations in Nampula Province, northern Mozambique.

Portucel and the International Finance Corporation, which is part of the World Bank Group, are collaborating with the Government of Mozambique and World Bank through the planted forests grant scheme under the Mozambique Forest Investment Project, in particular in the design of models for technical assistance to outgrowers.

The Wildlife Industry

While the potential of the wildlife industry in Mozambique has not been fully explored, it could well benefit conservation, local communities, and the national economy. The sustainable use of wildlife through activities such as trophy hunting, game sales, and tourism could lead to the higher valuation of forests as habitat and thus incentivize their protection while generating jobs and revenue for local communities involved in the management of wildlife resources. The wildlife economy could become a significant growth area for the national economy (Figure 5 and Box 4). Mozambique has 11 hunting concessions (*coutadas)* and a number of wilderness farms, most of them managed privately or through partnership arrangements between the government, private operators, and communities. These areas could be developed into community-managed enterprises, with strong partnerships offering opportunities for multiple benefits from wildlife.

Box 4: Parks and Wildlife as Economic Engines

The potential for direct income generation for communities from wildlife in Mozambique can gain inspiration from Namibia and Zimbabwe, two countries that have seen great success in community-run wildlife management programs. In Namibia, community-owned businesses and joint ventures, particularly in tourism and hunting, have been highly profitable. The total cash income and in-kind benefits generated in community conservancies grew from less than US$90,000 in 1998 to US$10 million in 2016. In this period, community conservation contributed about US$500 million to Namibia's national income. In Zimbabwe, the CAMPFIRE program has increased direct revenue to communities since its inception in 1989. CAMPFIRE generated about US$12 million from 2009 and 2016, with communities receiving US$6.4 million, about 54% of the total.

23 Improving the Business Climate for Planted Forests in Mozambique, UNIQUE (2016)

24 More information on ROAM may be found at: https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam.

Forests and Global Ecosystem Services

Ecosystem Services

Mozambique is richly endowed with natural resources. Of its total area of 80 million ha, 36 million ha is arable land, and 34 million ha is natural forests, of which 17 million ha is categorized as productive forest. These cover a variety of forest ecosystems, including the coastal forests in southern Mozambique, afro-montane forests in central Mozambique, and coastal dry forests in northern Mozambique. Miombo woodlands represent the most extensive forest ecosystem in Mozambique, comprising about two-thirds of the country's forested land. Miombo is the dominant forest type in several central and northern provinces, including Zambezia, Nampula, and Cabo Delgado, where most of Mozambique's poor reside and rely on the woodlands for basic necessities.[25]

Forests provide significant ecosystem services of global value, including carbon sequestration and storage. Due to its unique ecology, the climate mitigation potential of miombo woodland has global significance. Dominated by species from the genera *Brachystegia, Julbernardia,* and *Isoberlinia*, miombo grows slowly due to low rates of nitrogen and phosphorus uptake (constrained mainly by soil moisture, largely from rainfall) with net primary production capped at 900–1,600 g m^2 per year. Miombo resists moisture loss and its leaves have high tannin content. This constrains use by herbivores; only large ungulates, like elephants, can process the material. Unless completely uprooted, miombo regenerates readily by coppicing from stumps and rootstock after disturbance. Given that dry season fires burn a third of the miombo landscape on average every year, this resilience is exceptional.[26] For this reason, the woodlands can act as a stable carbon sink. Miombo forests constitute important reservoirs of above- and below-ground carbon (at 227 total carbon dioxide (tCO_2)/ha[27]). The total above- and below-ground carbon stock in Mozambique is estimated at more than 5.2 billion tCO_2.[28]

Box 5: Endemic biodiversity in Mozambique's Forests—the afro-montane Mabu and Lico forests and coastal forests of Northern Mozambique

Scientific expeditions to Mt. Mabu, a montane inselberg in Northern Mozambique led to the discovery of a 7,880ha block of undisturbed rainforest of a forest type not well represented elsewhere. Ten new species (plants, mammals, reptiles, and butterflies) have been discovered, based on biological surveys done of only 20% of the forest. Hence it is expected that with further investigation more species will be found. Mt Mabu is important for rare birds and supports a variety of endemic and restricted-range species. The forests on Mt Mabu store significant forest carbon.[29] In 2018, a rainforest in a volcanic crater of Mount Lico was explored for the first time, leading to the discovery of new plant and animal species.[30] The coastal forests of Eastern Africa stretch along the Indian Ocean coastline from Somalia to Mozambique. The largest remaining extent of them are reported to be found in Mozambique and are considered by Conservation International to be a global biodiversity hotspot. This area of high diversity and endemism is being placed under increasing threat. A study conducted in Cabo Delgado in 2011 concluded that the high proportion of range-restricted species, the limited extent of the forest patches, and the increased threat to the area show these forests deserve international conservation concern.[31] A landscape or ecosystem-level conservation response is needed to conserve the full range of forest types and species.

25 The Earth Scan Forestry Library. *The Dry Forests and Woodlands of Africa*. Ed. Chidumayo, E N and D J Gumbo, London: Earth Scan Publishing (2010)

26 Scholes, M C and M O Andreae. *Biogenic and Pyrogenic Emissions from Africa and their Impact on the Global Atmosphere* in Ambio. 29(1) (2000)

27 *Study on the Zambezia Integrated Landscape Management Program*, EtcTerra (2016), figures being updated.

28 From *Linha de Referência, Monitoria, Relatório e Verificação para o REDD+ em Moçambique,* Sitoe et al. 2013, based on the 2004 national forest inventory, using IPCC Tier 1 calculations.

29 The discovery, biodiversity and conservation of Mabu forest—the largest medium-altitude rainforest in southern Africa, Bayliss et. al., Oryx, 48(2), 177–185 (2014)

30 Mozambique: the secret rainforest at the heart of an African volcano, The Guardian, 17 June 2018

31 Coastal dry forests in northern Mozambique, Timberlake et. al, Plant Ecology and Evolution 144 (2): 126–137 (2011)

This carbon store is central to the country's climate change mitigation commitments. Forests reduce the probability and effect of natural disasters, as has been documented in the Licungo (Zambezia) watershed. Hence, well-managed forests can increase local communities' resilience to climate risks.

The woodlands play an important role in regulating natural water supplies by maintaining water flow and water quality and protecting land from soil erosion. As most of Mozambique's major river basins are located or have their headwaters in forests, hydrology underpins the country's actual and potential agricultural productivity, and enhances the adaptive capacity of rural communities to climate-related stressors such as drought and floods.[5] Forests have a key role in filtering the water that enters streams, and thus play a key role in the quality and quantity of water.

Mozambique has an estimated 300,000 ha of mangroves,[32] about 28% of which occur in the Zambezi Delta, constituting the largest mangrove area in Africa and the 13th globally.[33] Mangroves boast a diversity of marine life and are vital for their role as a highly productive nursery for fish and prawns, cultivated by coastal communities for subsistence and profit.[34]About 850,000 households, or 20% of the population, rely on fisheries for some part of their income, and employment in the sector has increased by 260% since 2002, due in part to the development of processing and commercialization.

Fish is a key component of the Mozambican food basket, comprising 27% of protein consumption. Mangroves enhance neighboring ecosystems like coral reefs and seagrass beds, offering opportunities for eco-tourism. However, mangrove forests are experiencing loss: up to 2010, there was mangrove loss, but an increase in mangrove cover has been registered since 2010. Between 2003 and 2013, about 156 ha was lost annually.[35]

Mangrove loss is caused by urban and agricultural expansion into coastal areas, coastal erosion, and the extraction of fisheries and wood resources for commercial use.

The forest ecosystems are internationally recognized biodiversity hotspots and habitat for a variety of plants and animals, including birds and large terrestrial mammals, some of which are endangered and endemic to Mozambique. However, wildlife numbers of species such as elephants have declined and continue to be under threat from poaching. At the same time, as humans move into elephants' range and habitat, the risk of human–wildlife conflict increases, which further threatens their numbers.

Forests, Biodiversity and Tourism

There is a very strong nexus in Mozambique between tourism's potential, prospects for poverty alleviation, and biodiversity conservation—for which forests are key. Mozambique's travel and tourism industry is the third largest investment sector in the country, contributing to 3.2% of GDP in 2013 but expected to grow exponentially, with the country predicted to be one of the ten fastest-growing destinations for leisure travel spending between 2016–2026, and visitor arrivals to increase by 8% annually. The industry relies heavily on its rich natural resource base and, given that nature-based tourism (sometimes known as NBT) is anticipated to be one of the largest global tourism growth areas in coming decades, the sector is regarded as a key economic priority for Mozambique.

Nature-based tourism could contribute more to GDP, boosting export and tax revenues, employment opportunities for the rural population, income to communities involved in the supply chain, and indirect benefits through the spending of direct income.

32 NFI, MITADER (2018)

33 *Status and distribution of mangrove forests of the world using earth observation satellite data.* Global Ecol. Biogeogr., 20,154159. Giri et al. Giri, C., Ochieng, E.,Tieszen, L.L. (2011) and Landscape-scale extent, height, biomass, and carbon estimation of Mozambique's mangrove forests with Landsat ETM+ and shuttle radar topography mission elevation data, Journal of Geophysical Research, 113: G02S06, Fatoyimbo, T. E., M. Simard, R. A. Washington-Allen & H. H. Shugart (2008)

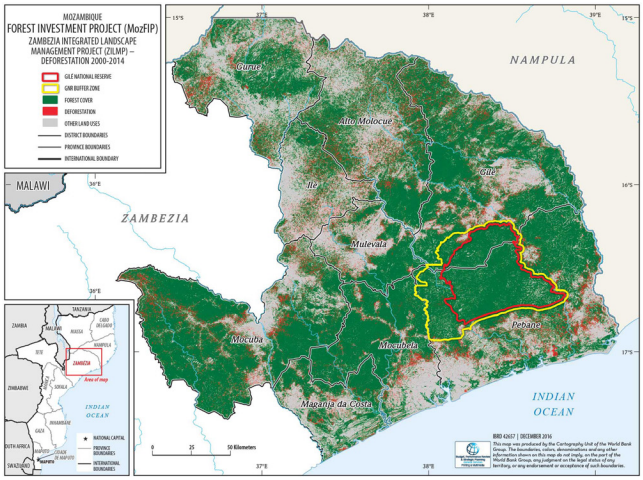
34 World Wide Fund for Nature (WWF). *East African Mangroves* in The Global 200: The most outstanding and representative areas of biodiversity (2017).

35 Historical Activity Data Analysis in Mozambique, MITADER (2018)

Mozambique is covered by a network of Conservation Areas (CAs)[36] that make up 25% of its land surface and of which forests are an essential component. Conservation Areas constitute a unique asset in terms of biodiversity, ecosystem services, and support to livelihoods of the many rural communities living in these landscapes. This network of CAs represents a clear comparative advantage for Mozambique to develop nature-based tourism, which could help the country generate sustained economic returns from its rich biodiversity and ultimately ensure the preservation of natural assets the industry depends on, while supporting the financial sustainability of the management of CAs and generating benefits for the poor.

Nature-based tourism is potentially linked to poverty alleviation, as it generates labor-intensive employment, and often contributes to gender equality due to the high proportion of women employed. It can also create new market opportunities for local producers, demand for locally produced inputs, and scope for off-farm diversification. It builds on assets linked to local communities, so that adequate compensation for protection of these natural assets serve as a safety net for some of society's poorest communities. In addition, CAs can be an effective strategy for forest protection, as in the case of Gilé National Reserve: deforestation within the Reserve was found to be lower than the area outside of the Reserve's boundary (Figures 10 and 11).

Given the mutual dependence of nature-based tourism and biodiversity, it is important that tourism-related policies and investments are formulated in ways that also lead to conservation and, as such, ensure the parallel achievement of pro-poor, environmentally sustainable goals. The World Bank is supporting this agenda through the MozBio Program[37], aimed at ensuring the sustainability and protection of Mozambique's natural resources, including its rich forests. Nature-based tourism is promoted as a means to preserve Mozambique's valuable natural assets, and a key contributor to the financial sustainability of CAs, generating economic and social returns for the country.



	Forest loss (2003-13) (ha)	Annual forest loss (ha/yr)
Gilé National Reserve	399.73	36.34
Buffer zone	6,753.68	613.97
Gilé	24,088.60	2,189.87
Alto Molocué	27,148.64	2,468.06
Mulevala	13,016.80	1,183.35
Ilé	7,885.72	716.88

Figure 10 (left): Forest map of Zambezia province, showing low deforestation in the Gilé Reserve.

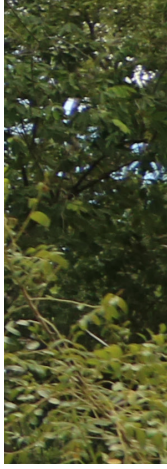
Figure 11 (above): Deforestation rates in the Reserve and surrounding districts show the contrast in and outside of the Reserve's boundaries.

Source: Historical Activity Data Analysis in Mozambique, MITADER (2017)

36 Specifically, the network of Conservation Areas consists of seven National Parks, ten National Reserves, one Environmental Protection Area, seventeen Controlled Hunting Blocks (*coutadas*), over fifty privately-run Game Farms (*fazendas de bravio*), and two Community Reserves.

37 MozBio2 is currently under implementation, with a follow-on MozBio2 project due.

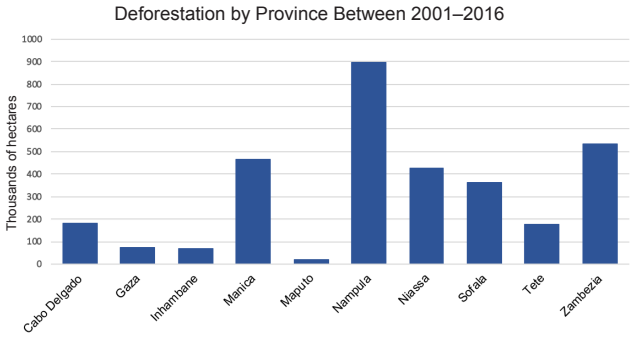
Current Challenges and Opportunities for Forests in Mozambique

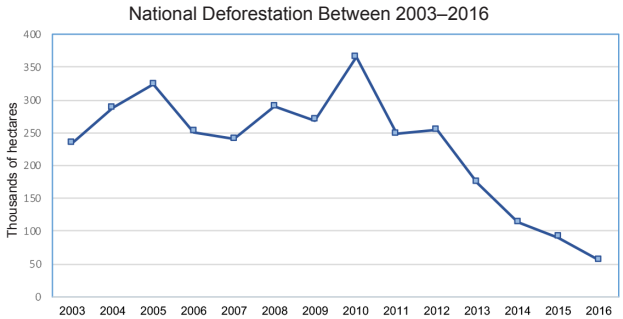


Challenges

Although Mozambique's forests have tremendous value and there is potential to maximize benefits locally and globally, they are being rapidly depleted. The country lost around 267,000 ha of forests every year from 2003 to 2013, which represents a historical deforestation rate of 0.79%.[38] This has led to around 40 million tons of greenhouse gases being emitted every year into the atmosphere, which represent 57% of Mozambique's overall emissions. From 2014 to 2016, annual loss declined to about 86,000 ha, a rate of 0.36%.[39] Trends in recent years show a decrease in deforestation.

Forests are lost because of a combination of direct and indirect drivers linked to several sectors, primarily small-scale agriculture. Forest conversion to agriculture is the dominant driver of deforestation (65% of total deforestation), led by shifting subsistence cultivation (slash-and-burn agriculture, often resulting in the uncontrolled spreading of fires), followed by urban expansion and infrastructure development (12%). As for forest degradation, the key drivers include forest extraction for biomass energy (particularly charcoal for urban use), and unsustainable timber harvests (including illegal logging) to supply both domestic and international markets.[40]





Figures 12 and 13: National deforestation in Mozambique from 2003–2016 and Deforestation by province. Source: MITADER (2018).

The indirect drivers that contribute to deforestation and forest degradation in Mozambique include insecurity over land tenure, inadequate planning for land use, and demographic pressure. Land tenure insecurity discourages investment in longer-term assets with limited to no immediate returns, including forests and other natural resources. This dynamic is made worse by demographic pressure, particularly when agriculturally based population density increases in and close to forested areas, which is happening in several areas of Mozambique.

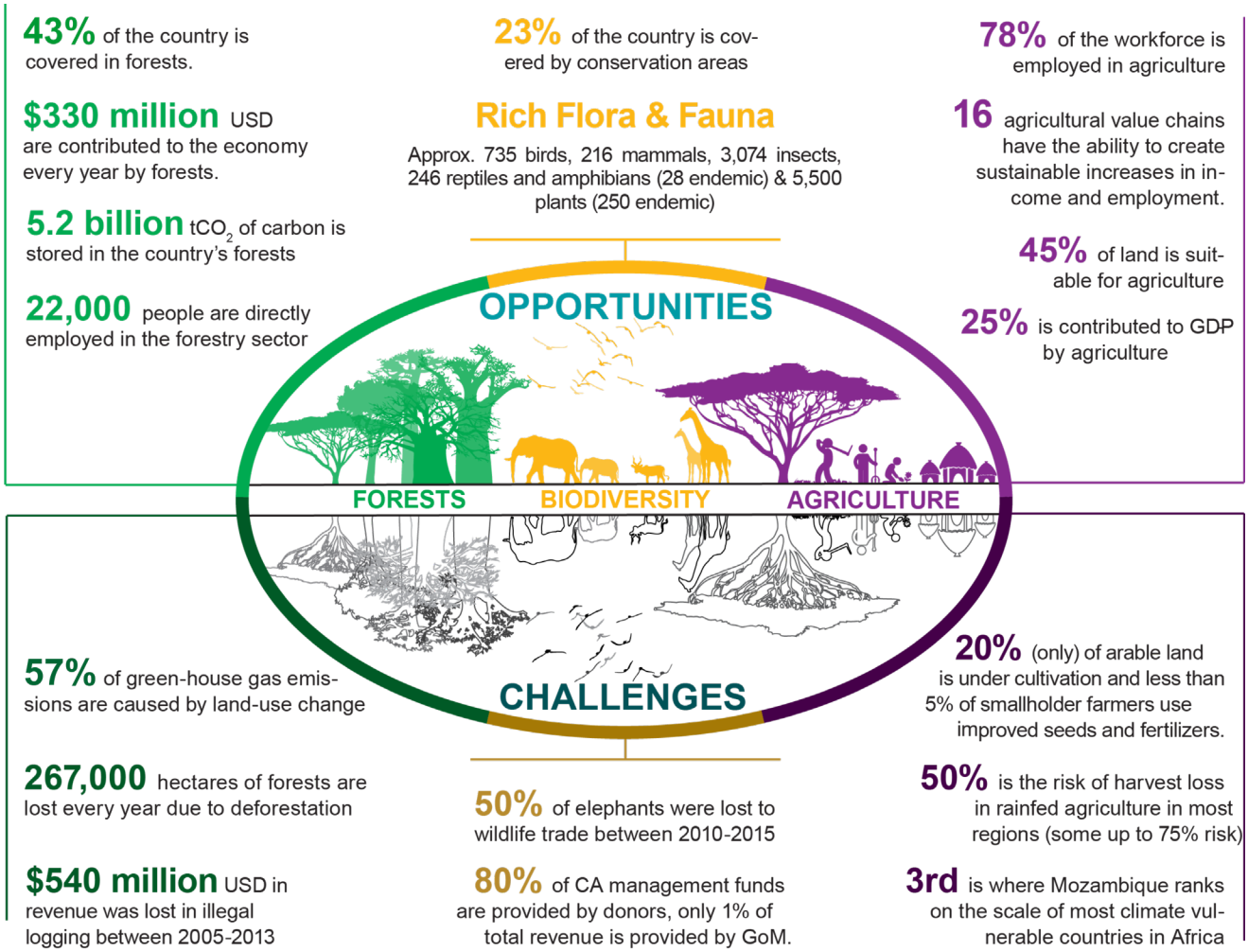
While deforestation rates have fluctuated, forest loss has occurred over time. There has been a large decrease of forest cover since 1980, when around 89%[41] of the country was covered by forest, compared to 43% today (Figure 15).

38 Data from the 2018 NFI, under validation

39 Deforestation data is based on the time period of 2003-2013 and then 2014-2016, because this is an update from the 2007 National Forest Inventory which covers the period of 1991-2002. The National REDD+ Strategy was then approved in 2015 taking into account data until 2013. The most recent deforestation data available is from 2016.

40 *Identificação e análise dos agentes e causas directas e indirectas de desmatamento e degradação florestal em Moçambique,* Winrock and CEAGRE (2016)

41 Based on the first National Forest Inventory in 1980. The definition of forests has changed over the different inventory periods, so the values are not



The Annual Allowable Cut (AAC) should provide a critical piece of information to help the Government of Mozambique make informed decisions on forest management. The decreasing AAC value over time suggests that the availability of harvestable forest resources has reduced.

The forest sector in Mozambique suffers from chronically weak governance, further fueling forest loss. A participatory forest governance assessment was conducted in 2016 in two provinces using the PROFOR-FAO tool (see Results in Figure 17). The assessment showed there was consensus among stakeholders that governance was weak, particularly around institutional capacity and the implementation of laws and regulations. Forest law enforcement is absent and forest crimes often go unpunished, permitting widespread illegality. Forest sector policies contradict those in other sectors, and measures to combat corruption are not systematically applied. Stakeholder participation in planning and decision-making in the sector is low, particularly with the inclusion of women. This has resulted in limited trust among stakeholders and limited benefit sharing with local communities. Illegal logging is widespread. Forgone tax revenues were estimated at US$540 million between 2003 and 2013 from unreported wood exports (mostly logs), mainly to Asian markets.[42] MITADER, the Ministry of Land, Environment and Rural Development, conducted a separate assessment of forest operators[43] that revealed a low level of compliance with even the minimum forest management and legal, environmental, and social standards.

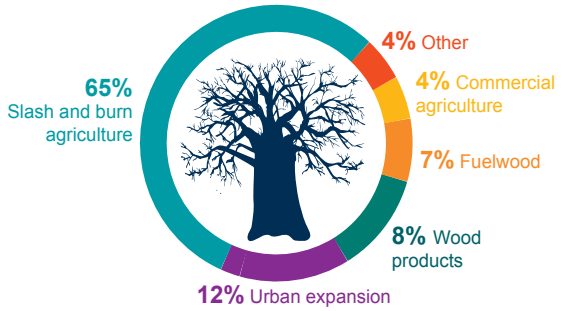
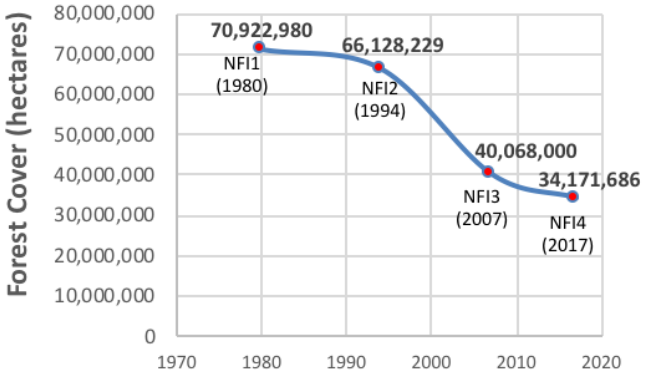


Figure 14: Key drivers of deforestation. An average of 267,000 ha of forest were lost annually between 2003-2013. Source: Winrock and Ceagre (2016).

directly comparable, but they provide a means for general comparison.

42 *Avaliação das perdas de receitas devido a exploração e comércio ilegal de madeira em Moçambique no período 2003–2013*, WWF (2015)

43 This evaluation was conducted in 2016 with involvement of the local university and civil society groups. Co-financed by the World Bank and WWF, it serves as a key indicator for the sector.



Inventory	Forest Area %	Forest Cover	AAC (m3/year)
NFI1 (1980)	70,922,980	88.6%	-
NFI2 (1994)	66,128,229	77.6%	527.866
NFI3 (2007)	40,068,000	50%	515,672
NFI4 (2017)	34,171,686	42.7%	446,728

Figures 15 and 16: Historical forest cover and forest cover percentage in Mozambique over time and the associated AAC, as determined in the National Forest Inventory. Source: NFI (1980, 1994, 2007, 2017)

Current forest management practices undermine the sustainability of the resource base. Current practices focus only on a few species and the volumes harvested of these selected species are not sustainable. The resource degrades and devaluates gradually. Investments in silviculture are virtually absent, and the efficiency of operations is low. Most businesses do not employ forest technicians and use outdated equipment and processing techniques with the exception of a few operators who are making a serious effort to improve the efficiency, recovery, and value addition of timber harvesting.

The government's capacity to enforce the law is limited. Its information management system is currently analog, but a digital system is under development that would improve the reliability of statistical data and data transparency.

Weak governance hinders effective public participation and social accountability, which leads to non-inclusive decision-making around natural resource use and the erosion of trust among stakeholders. A forest forum is being created that could increase the participation of stakeholders in forest-related issues.

Another challenge to the sustainable management of resources is the low levels of land rights' registration. The land administration agency's capacity to issue land licenses and monitor their use—and to register land occupancy—is low, a problem that is partly due to insufficient resources, both human and financial.

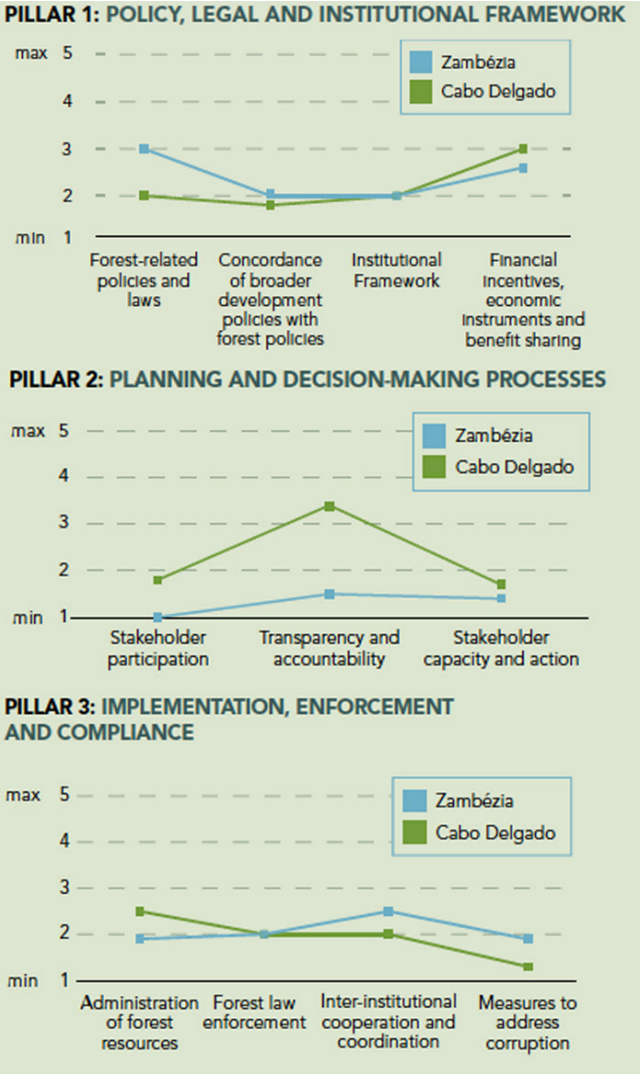


Figure 17: Results of the forest governance assessment, by Pillar of the assessment framework

Box 6: Actors in the Landscape—Government

The management of productive forests falls under the jurisdiction of two ministries—MITADER, which is responsible for the use and conservation policies of natural forest resources and wildlife in so-called productive forests, as well as for multiple use, forest conservation and carbon stock; and the Ministry of Agriculture and Food Security (MASA) responsible for the establishment, management and administration of forests planted for commercial and energy purposes. MITADER is responsible for managing forest resources for energy purposes, although the country's energy development policies and strategies are placed under the Ministry of Mineral Resources and Energy (MIREME).

Community delimitation has been delivered through financing provided by bilateral donors, but with elevated costs and limited impact (so far, a total of 950 communities have been delimited, and about 500,000 licenses or DUAT recorded). The lack of, or inadequate, decentralized registration services at district level, with poor or no coordination between relevant actors, has inhibited efforts to systematically execute the cadastre (property registry) and register land rights. Few land administration and management services in municipalities and rural areas provide effective administrative responses or are accessible to most citizens. Acquiring a DUAT is lengthy and costly, and can involve many steps over several years. There is little direct communication, formal integration, or harmonization of systems and procedures. The absence of a common methodology has led to mixed results of previous efforts, an ineffective control of the process of occupation, and the distribution of land resources by public institutions. This has contributed to an increased level of land-related conflicts and the expansion of the informal land market, which is particularly dynamic in growing urban centers.[44]

The benefits that communities can gain from forests are limited and made worse by the lack of the full recognition of their rights to natural resources. The law mandates that communities residing within licensed timber areas receive 20% of the logging taxes paid to the government by operators. About 50% of the value of fines collected from forest law enforcement should also be shared with stakeholders who participate in the enforcement effort and issuance of fines.

However, communities receive little or no benefit either because of unlicensed wood harvesting, or the cumbersome process and weak enforcement of the benefit sharing mechanism. There are 1,089 communities that receive a portion of the 20% of taxes collected from forest licenses.[45] Even when their rights are conveyed, the local communities concerned often do not have enough capacity to govern, manage, and develop their resources. Unfortunately, the general perception of benefits from resources is the sharing of revenues, rather than creating economic benefits and well-being through active engagement in management. Communities also have limited negotiating power with third parties.

The participation of local communities and community-based organizations in decisions related to resource management is weak, leading to their limited influence in resource management. This is due to a combination of institutional weaknesses, low capacity for expertise and technology, and the lack of partnerships and finance.[46]

Intersectoral collaboration and coordination can be greatly improved. Even as the landscape approach is gaining importance, there is much room for coordination amongst sectors at the policy level and in terms of initiatives on the ground. An example is the case of forest law enforcement, where coordination among the forest administration, law enforcement agency, police and customs is paramount, yet this collaboration is not effective. Another important example of collaboration needed is between MITADER and the Ministry of Transport on the integration of spatial forest data into the national database managed by the Ministry of Transport. Or the coordination between agriculture and forestry activities, as commercial agriculture development has the potential to significantly reduce forest cover.

Opportunities

The current government has created an institutional set up that places a strong emphasis on reducing rural poverty and sustainable management of natural resources. MITADER was established with a broad mandate over land, forests, rural development, climate change, environment and conservation, facilitating cross-sectoral coordination. It set up the National Sustainable Development Fund (FNDS) to mobilize and manage domestic and international financing, including climate finance, and to foster activities on rural development and sustainable natural resource management (Box 7). FNDS has provincial units, currently in Nampula, Zambezia, and Cabo Delgado. MITADER adopted the National Sustainable Development Program, aimed at improving the livelihoods of rural populations and the management of natural resources through promoting small and medium enterprises in rural areas, and in value chains linked to agriculture, forestry, and tourism. Forests are recognized as an instrument for poverty reduction under this Program.

The government's high-level priorities and the targets it has expressed in its Five-Year Plan (PQG 2015—19) recognize the importance of rural development and forests. Priority V emphasizes the sustainable and transparent management of natural resources and the environment, which includes improving land-use planning and strengthening the implementation of these land-use plans. Land tenure security is described in PQG 2015–19 as key to promoting the rights of local communities and their livelihoods and a more business-enabling environment in Mozambique.

44 Mozambique Land Administration Project (Terra Segura), World Bank Project Appraisal Document (2017)

45 DINAF annual report (2015)

46 *Community Based Natural Resource Management: Reformulating and strengthening current approaches in Mozambique,* World Bank policy brief (2016).

Box 7: FNDS and Technical Assistance through the Multi-Donor Trust Fund (MDTF) for Integrated Forest and Landscape Management

The Bank has supported the institutional capacity building of FNDS through the following areas:

1) Leadership and Project Management Coaching. ML Consultoria provided strategic guidance to FNDS on institutional organization arrangements and developed management systems for the institution.

2) Social and Environmental Risk Management. FNDS's social and environmental safeguards capacity has been strengthened. FNDS developed a common safeguards framework and tools for all their projects, to ensure efficiency and quality control, including a Grievance Redress Mechanism (GRM).

3) South–South collaboration and knowledge exchange. South–South cooperation activities aim to strengthen the capacity of FNDS and partner institutions through the exchange of experience and knowledge with other countries concerning integrated landscape and forest management.

The current government has also publicly recognized forest-related challenges and shown commitment to addressing them. MITADER has been implementing forestry sector reform since 2015 to address challenges in the forestry sector, including institutional changes and a review of the national forest policy and legal framework (Box 8). The World Bank has closely followed and supported these reforms and engaged in policy dialogue, including just-in-time technical advice on these measures. The momentum built around the forest sector reforms led the Bank to increase its support to the sector. As the largest investment in the forest sector, MozFIP is providing the financing needed to implement the reforms.

The government has also set goals for carbon emission reductions. Mozambique submitted its Nationally Determined Contribution (NDC) to the UNFCCC in 2016. The NDC targets for total reductions are 23MtCO_2 from 2020 to 2024 and 53.4 MtCO2 from 2025 to 2030.

The NDC is being updated in 2018, with the National Climate Change Adaptation and Mitigation Strategy guiding NDC implementation. In 2015, MITADER approved the National REDD+ Strategy, which aims to reduce deforestation by 40% and to restore 1 million ha of forests by 2030, equivalent to annual emission reductions of 170MtCO_2.

The creation of a National Forest Monitoring System was concluded in 2018, capable of monitoring forest cover and measuring, reporting and verifying (MRV) emission reductions annually. This included the submission of the Forest Reference Emissions Level (FREL) to the UNFCCC. The FREL is the baseline against which to assess Mozambique's performance in climate change mitigation through forests as well as the impact of policies and measures taken by the Government to achieve NDC goals.

Mozambique is currently developing a methodology to calculate emissions from forest degradation. The government is due to sign an Emission Reductions Purchase Agreement in 2018 with the FCPF Carbon Fund, a commitment to paying up to US$50 million for demonstrable and verifiable emission reductions within the Zambezia Integrated Landscape Management Program.

Having recognized systematic community land delimitation as part of a wider strategy to promote sustainable rural development, the government has been clarifying land rights. The government's Terra Segura program aims to register five million individual parcels of land and delimit four thousand communities. The World Bank is supporting this goal through the MozFIP and Sustenta projects, as well as through the MozLand project. The delimitation process comes as a packet of interventions, often involving the participatory preparation of local land use plans, Community Development Action Plans (CDAPs),[47] the creation of a Natural Resources Management Committee, as well as capacity building activities for the community.

The legal registration of land use rights is a first step towards the protection of communities and individual land rights and is seen as a fundamental criterion for engaging in Community-Based Natural Resources Management (CBNRM) initiatives, particularly if there is a trajectory towards attracting investors.

There are ways forward to increase the benefits to communities from forests, beginning with key stakeholders recognizing that CBNRM is a key element of a national rural development strategy.

The recently concluded 5th National Conference on Community-Based Natural Resources Management, financed by the Bank, initiated a national strategy and Action Plan for advancing CBNRM in the country.

47 Also known as *Agenda Comunitárias*, these action plans express the aspirations of communities (including different social groups) about their development in a predefined period and prioritize the various initiatives the communities believe are possible within their delimited area. This provides the basis on which

Box 8: Forest Sector Reforms under MITADER

- Revision of the **national forest policy, strategy, and law** (ongoing)
- **Two-year suspension** on new licenses and concessions (Decreto 40/2015)
- **Nation-wide audit** of licensed areas (forest concessions and simple licenses) (2015)
- **Moratoria** on exploration of pau ferro for five years (DM 10/2016)
- **New law on timber exports**, including **log export ban** on all native species (Law 14/2016)
- **Operação Tronco** (2016), an intelligence and enforcement operation that led to massive timber seizures (reported 150,000m^3 and estimated fines of more than US$1.4 million) that was a signal of government action to confront illegal logging.
- **Transfer of forest law enforcement mandate** to the newly-created National Agency for Environmental Control (AQUA) and the National Enforcement Service (Serviço Nacional de Fiscalização) (ongoing)
- New **export regulation of processed wood** (Decree 42/2017, following Law 14/2016), to ensure better control of the timber export business and promote greater added value to timber
- Creation of **FundInvest** (2017, published in BR 172 III Serie), an entity affiliated with the State to facilitate the export of processed timber
- **Minimum standards for sustainable management** (2018), to be translated into a legal instrument for evaluation of operators' performance to inform any suspension of licenses, with potential for a national certification standard to be developed.
- Update of the **National Forestry Inventory** (2017), which was critical input to the definition of the AAC for 2017. The NFI should be used to inform the allocation of forest licenses and potential moratoria on certain species.
- Establishment of the **Unit for Monitoring, Measurement, Reporting and Verification** of REDD + Activities (2016).
- **REDD+ Decree** approved (2018)
- Update of the **National Forest Program** (2018)
- **Exploration ban** on nkula, pau ferro, and mondzo, export ban on chanfuta, umbila and jambire (Despacho 29/3/18)
- Revitalization of the **National Forum on Forests** (2018)
- **MoU signed with China** on sustainable forest management (2018)

Recommendations moving forward should include creating a national program dedicated to CBNRM that could institutionalize long-term capacity building for communities and pursue long-term partnerships for communities to harness the market potential for forest and agriculture products. To do this, the government should endorse a coherent package of interventions with well-tested tools and approaches that can be replicated and scaled up in CBNRM initiatives nationwide.

The MozDGM project (see Box 9) will serve as a vehicle of financing through which the Action Plan and such a national program can be implemented.

The government has recognized the need for spatial planning and is developing land use plans at the national and local levels. Of note is the National Land Use Plan, which is a strategic and programmatic instrument that provides a mid- to long-term organizational vision for territorial planning and use, articulated with a socio-economic development model and strategy and which provides information, data, and scenarios for the evaluation of the country´s natural resources and infrastructure. Comprehensive spatial planning at the national level will orient land use decisions and provide a long-term development scenario.

The strategic planning at this level will first involve a diagnosis of the national territory, its natural and physical elements, climate change and human impacts (population growth and effects on land use and land degradation), and the identification of strategic options for spatial development. A dynamic modeling platform

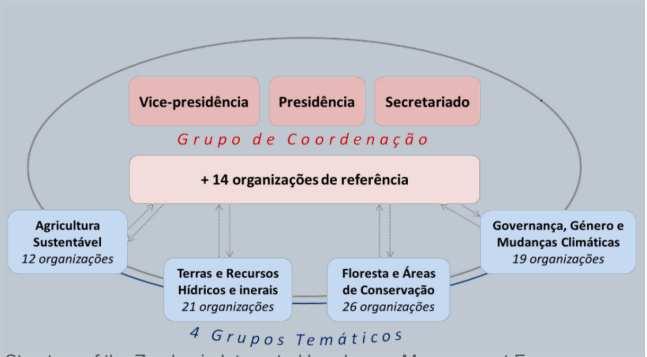
a community negotiates its interests or intentions/plans with different actors (such as NGOs and investors).

Box 9: Actors in the Landscape—Civil Society

Civil society organizations have the essential responsibility of holding the government accountable. NGOs are also the main implementers of CBNRM projects that involve working with communities. There are few civil society organizations in Mozambique with significant direct experience in forest management and governance.

The majority of these organizations are focused on community development aspects, such as on community organization and planning, and promoting activities for livelihoods and income generation—but which are often related to resource management. They are key institutions for the continued strengthening of community capacity for CBNRM. The Bank has close partnerships with many of them, such as the World Wildlife Fund for Nature (WWF) Mozambique, Iniciativa para Terras Comunitárias (iTC), Micaia Foundation, Radeza, and ORAM.

The **Multi-Stakeholder Landscape Forums** in Zambezia, Cabo Delgado, and Nampula are important spaces for dialogue and landscape-level decision-making among a diverse set of stakeholders, with a large role for civil society. The forums have structured thematic working groups to discuss technical issues of priority in the landscape.



Structure of the Zambezia Integrated Landscape Management Forum

In Zambezia, the platform led to the creation of a civil society working group that signed an MoU with Portucel to provide advisory services on social and environmental issues.

The **Mozambique Dedicated Grant Mechanism for Local Communities Project (MozDGM**) is a project within the ILM portfolio managed directly by and for communities, community-based organizations and civil society organizations. Led by WWF Mozambique and a National Steering Committee, and comprised of civil society members, MozDGM is an unprecedented opportunity focused on strengthening the capacity and participation of communities in natural resource management that can influence a national approach to capacity building.

simulating future trajectories of land use and land use change, including future levels of degradation and land use demand by population growth, is a component of the National Land Use Plan. The planning process will also allow an evaluation of interventions for sustainable management of land and natural resources, providing the government with information to make policy decisions.

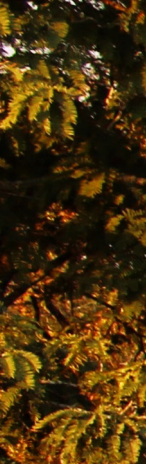
At provincial and district levels, the government is developing spatial plans such as the recently launched Special Land Use Plan for the Costa dos Elefantes area, which covers part of the Matutuine District and Inhaca Island. This Special Land Use Plan and its corresponding district urban plan will contribute to the sustainable and resilient long-term development of one the fastest growing areas of the country, where there are major urban infrastructure developments but also rich biodiversity areas—the Maputo Special Reserve and Ponta do Ouro Partial Marine Reserve—with a potential for high-end ecotourism development. This plan will allow greater protection of the mangroves on the Maputo Bay and the Licuati Forest Reserve, among the few remnants of coastal sand forests in the whole southern Africa.

At the community level, the Government of Mozambique is also promoting and financing the preparation of local land use plans through participatory, community-led processes. A clear definition of land use opportunities is an important foundation upon which communities can be empowered and informed to sustainably manage their resources and pursue economic opportunities.

Box 10: Actors in the Landscape—Academia

The forest sector counts on the support of local universities as well as national and regional research agencies. Universities that partner on Bank projects include Universidade de Eduardo Mondlane, UniZambezi in Zambezia, and UniLurio in Cabo Delgado.

Instituto de Investigação Agrária de Moçambique (IIAM) is the main research institution on agroforestry. The role of academia could be expanded to provide applied technical assistance and capacity building to other actors in the sector.



World Bank Engagement: Sustainable Rural Development through Integrated Landscape Management

To secure the contribution of forests to sustainable rural development, an integrated landscape management approach is critical. The threats to forests come from multiple sources and sectors, primarily outside of the forest sector, involving multiple actors through competing demands on the land and resources. As such, an integrated landscape approach is required, with interventions within and beyond the forest sector engaging multiple stakeholders at various levels. This approach is key to sustainable rural development in Mozambique.

A sustainable landscape will simultaneously meet local needs (for example, water availability for households) while contributing to Mozambique's national commitments and international targets, such as protecting biodiversity and reducing GHG emissions.

The World Bank's Environment and Natural Resources Management engagement in Mozambique, through the Integrated Landscape Management portfolio, adopts a programmatic landscape approach and promotes forest-smart investments. The integrated landscape approach recognizes the link between agricultural development and natural resource management, both in terms of institutional management and of implementation on the ground, so as to combine investments in a geographic area (landscape) to maximize their impact.

The central focus of engagement with the Government of Mozambique (GoM) is sustainable rural development, which captures the programmatic approach well and is an important topic for the country's national agenda. In this way, the Bank's support is integrated with the government's strategic priorities and investments are mainstreamed into its programs in line with approaches advocated in the Forest Action Plan. The portfolio can be organized into four main areas: investments, analytical work, technical assistance, and performance-based payments. Detailed information can be found in Annex 1.

The GoM and Bank have established a high-level partnership to promote rural development and the sustainable management of natural resources. The Bank's Integrated Landscape Management portfolio, in support of the government's sustainable development agenda, provides a platform for drawing together a diverse range of financing sources and continues to grow. Figure 18 demonstrates the evolution of the Bank's engagement and illustrates the blending of several sources of financing, including a robust International Development Association (IDA) allocation, along with trust funds, most of which relate to climate finance (such as the Climate Investment Funds, Forest Carbon Partnership Facility and Global Environment Fund).

The GoM has asked the Bank to lead the coordination of Development Partners around natural resources management. Key partners have affirmed and supported this role through the establishment of the Multi-Donor Trust Fund for Integrated Landscape and Forest Management, with contributions from Sweden and potential contributions from other partners.

Knowledge exchange and stakeholder engagement a core part of the Bank's Integrated Landscape Management approach.

Left: A community member takes a break in Zambézia Province, central Mozambique

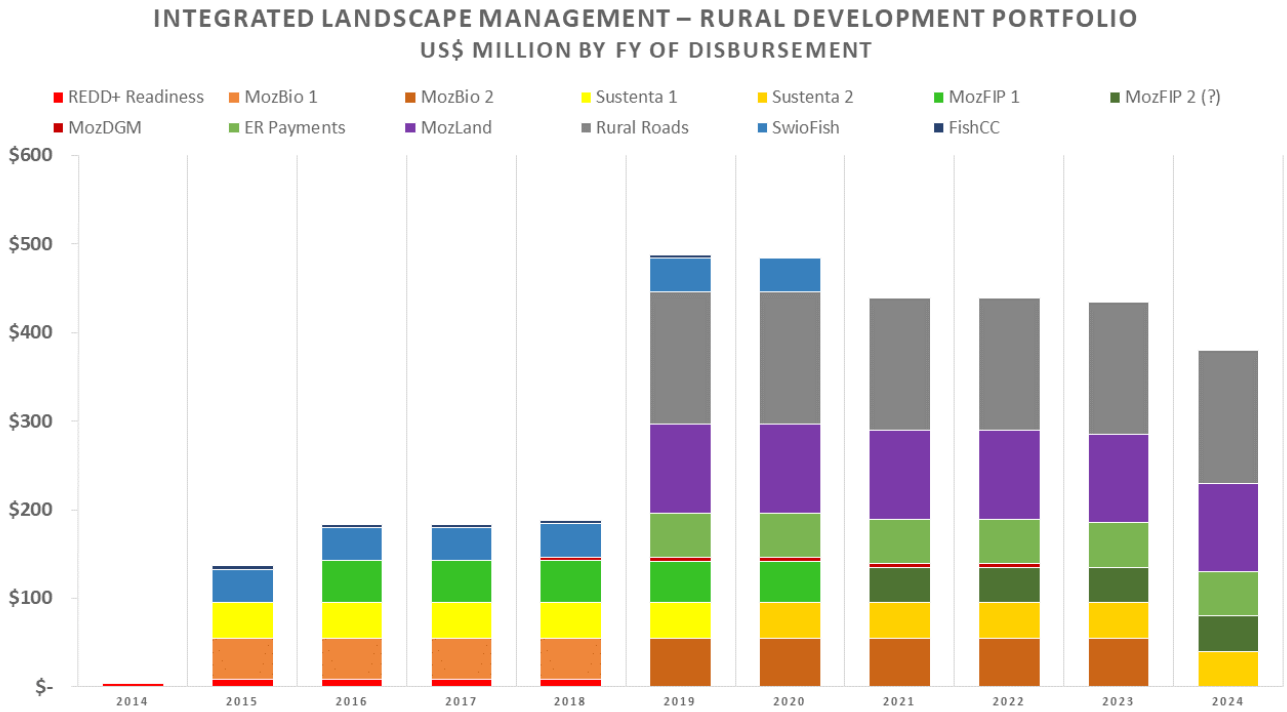


Figure 18: Evolution of financing and sources in the Bank's support to the GoM on integrated landscape and forest management

Galvanizing support from partners and other stakeholders, the Bank has been able to rally strong backing for the government's bold efforts to deal with politically sensitive issues, such as combating illegal logging.

To grow development partnerships and support for Mozambique's vision, the Bank is actively promoting South–South knowledge exchange on rural financing mechanisms (with Brazil, Mexico, South Africa and Namibia), and signed a tripartite agreement with Mozambique and Brazil to further promote programmatic exchanges on rural development and natural resource matters. Such partnerships with local, regional, and global networks should continue to be expanded to maximize learning and the sharing of experiences to enrich Mozambique's own programs.

Box 11: Emission Reduction Payments under the Zambezia Integrated Landscape Program (ZILMP)

An Emission Reductions Purchase Agreement (ERPA) will be signed between the government and the FCPF Carbon Fund in 2018 for payments of up to US$50 million for verifiable emission reductions made within the nine districts of the ZILMP. If emissions are reduced, payments will be triggered to those who contributed to generating the results in accordance with the stakeholder-approved Benefit Sharing Plan.

The plan will allocate 70% to communities, 20% to the private sector, 2% to the provincial government, 4% to the district government and 4% to Gilé National Reserve, to be reinvested in sustainable management practices and actions that will sustain emission reductions in the long term.

There are expanding opportunities for climate finance, the commitment from the FCPF Carbon Fund for performance-based payments in the Zambezia province being the first vote of confidence of demonstrable results in emission reductions (Box 11).

Mozambique is actively seeking opportunities under the Green Climate Fund, a key resource identified early in the Investment Plan. Mozambique is also one of the few countries that has implemented a climate change Development Policy Operation which achieved progress on key policy initiatives. This partnership leverages financing from the private sector, including from the IFC. Private actors are becoming a growing source of financing, increasing their investment in sustainable resource management through partnerships, both with the public sector and with communities (Box 12).

Box 12: Maximizing Finance for Development (leveraging private sector finance) with ILM support

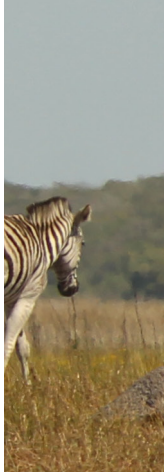
- **Strengthening commercial resource mobilization for agriculture and forestry value chains:** A matching grants scheme under the US$80 million (IDA) Sustenta project provides financing to "emerging commercial smallholders." It enabled Mozambique's National Investment Bank to establish a concessional credit line to co-finance smallholders in climate-smart agriculture and forestry.

- **Leveraging private equity and technical expertise to enable PPP in protected areas management.** Renowned multinational operators have engaged the GoM on PPP for Protected Areas management, in the Bazaruto Archipelago Park, and the Maputo Special Reserve. They have brought over US$20 million from private resources and technical expertise (including on nature-based tourism), supported by the US$46 million MozBio project.

- **Promoting community-private partnerships for natural forest management and plantation.** Through the FCPF, cashew farmers are benefiting from a cashew market information service that provides prices and market evaluations, helping them make informed business decisions. MozFIP (US$47 million) is supporting communities such as Uapé and Nipiode to create community forest concessions in partnership with forest companies to have access to market and timber processing technology and expertise. MozFIP also established a performance-based commercial plantation scheme to incentivize smallholders to engage in commercial forestry and facilitated market access and technical support from IFC-owned Portucel.

Left: Representatives from the Bank, GoM and stakeholders in Bazaruto Archipelago Park.

Recommendations and Conclusion



Policy Recommendations

The World Bank has been working closely with the Government of Mozambique to pursue priority policy actions in certain key areas, some of which are highlighted below. Many of these are already supported through the World Bank's operations, but there is room for expansion and additional support from development partners. There are also many opportunities to support forest-smart and climate-smart activities through mainstreaming these principles into other sectoral interventions.

1. **Natural forest management and forest governance**

    - Re-envision the concept of sustainable forest management—change the idea of forests as a source of timber only to an idea that includes their non-economic and non-market uses in order to capture the full value of the forests, particularly for local communities

    - Promote the multiple uses of forests and values that can be added to them, including the sustainable use of wildlife (trophy hunting, game farming), non-timber forest products, and ecosystem services to maximize their value

    - Reform the framework of forest concessions to ensure the existence of only financially and environmentally sustainable enterprises. This would require a significant reduction in the number of operating concessions and the elimination of simple licenses as they are difficult to control and easily manipulated for illegal use. Forest concessions should be allocated based on sustainable yields and future stock

    - Conduct the long-term planning and allocation of forest resources for different uses, such as for commercial use and conservation, including the establishment of permanent forest areas to maintain a permanent productive forest heritage

    - Increase transparency and access to data on the forest supply chain, including data on concessions, as well as on timber allocation, licensing, transport, processing and export, through timber tracking technology. Develop a Forest Information System using the best available technology and improve tools for monitoring deforestation and land use cover change

    - Build and invest in institutional capacity to improve resource allocation planning, concession management, and the application of forest management regulations by forest concessionaires at all levels

    - Provide incentives and technical assistance to the private sector for the adoption of sustainable forest management practices and to add value to timber products

    - Develop new, better-paying markets for forest products, including the promotion of certification for access to new markets, and research and development on new forest products

    - Enhance law enforcement with appropriate technology and tools that allow real-time alerts, improve the law enforcement agency's protocols for compliance control, develop a system for complaints and investigation of forest crimes, and improve collaboration amongst relevant institutions, such as customs and the police. Improve or introduce regional agreements for cross-border control, and train judiciary agents in the judgment and prosecution of forest crimes

    - Promote meaningful multi-stakeholder participation on decision-making through consultation platforms at all levels

2. **Biomass energy - Charcoal**

   - Increase the sustainability and efficiency of charcoal production (such as with more efficient kilns, and through better use of existing kilns)

   - Reduce dependency on wood energy by promoting alternative biomass and non-biomass sources—establish wood fuel plantations for charcoal production, accelerate and incentivize the adoption of alternative options for fuel in urban areas, such as gas, solar, and mini-hydro

   - Reduce the use of natural forests for charcoal production, and promote improved, more efficient stoves to reduce pressure on wood fuel sources

3. **Agriculture**

   - Promote climate-smart and conservation agriculture, including agroforestry systems, to encourage small farmers to invest in stable agricultural systems and move away from shifting agriculture

   - Support value-added activities in more productive and better spatially planned value chains that integrate sustainable practices and engage rural households

   - Restore degraded lands to become productive areas again

4. **Plantation forestry**

   - Create incentives for the promotion of commercial forest plantations, particularly for small-scale producers using out-grower schemes with private companies

   - Improve the enabling environment for company–community–government relations and facilitate community consultations, particularly on access to land

5. **Land use planning**

   - Develop spatial land use plans at the national and local levels aligned across their scales and based on future land use scenarios, such as degradation and urbanization

   - Support land use and resource planning at the community level and integrate Community Development Action Plans into district plans to improve local governance

   - Ensure compliance with land use regulations

6. **Secure land tenure security**

   - Secure the allocation of individual and community land rights (community land certificates and DUATs)

   - Systematize the formalization and official registration of land titles

7. **Community-Based Natural Resources Management**

   - Establish a national CBNRM Program that systematizes long-term capacity building for local communities, access to finance to develop local business, and support on natural resources management (particularly forests and wildlife)

   - Promote partnerships between communities and the private sector for the development of community businesses, and develop models for the necessary support and benefit-sharing structures for such partnerships

Resource Mobilization

To realize Mozambique's ambitious landscape management approach fully, good practices and demonstrated local successes need to be scaled up and replicated across other districts and provinces. To achieve this transformation, additional finance needs to be leveraged. Mozambique's Forest Investment Plan (2015) lays out a large-scale, phased framework and the direction for expanding investments outside and within the sector that will advance and scale up the landscape approach. The Investment Plan considers the existing allocation from the Forest Investment Program and other World Bank operations as the initial phase of the framework. Subsequent phases of financial support will expand FIP approaches and sector-related activities to other landscapes, as well as deepen and sustain existing activities and policy reforms.

The Investment Plan, coupled with the Bank's convening and technical support, led to the creation of the Multi-Donor Trust Fund for Integrated Forest and Landscape Management, which has the potential to attract other development partners. While significant resources have already been dedicated to the Investment Plan, to implement it across the entire country would require additional resources of well over US$500 million.

The phased approach is designed to demonstrate the strength of the institutional and implementation

structures to deliver concrete results in the sector, which would facilitate the leveraging of additional finance from other international instruments and donors.

The Government of Mozambique is strengthening its capacity to attract, manage, and efficiently utilize additional funds, particularly with the establishment and continued strengthening of the National Sustainable Development Fund (FNDS) (Box 7). A full range of financing sources should be pursued, beyond climate finance, to include private sector financing through partnerships with communities for sustainable enterprises (Box 12) and other innovative approaches.

The effective disbursement of funds, particularly at the local level, is a capacity that is being developed, demonstrated, and improved through the current portfolio of investment projects. Financing mechanisms, such as matching grant schemes and benefit sharing mechanisms for disbursing benefits to local communities, are for example being tested. The Benefit Sharing Plan developed under the Emission Reductions Payments Project in Zambezia is one such model (Box 11).

Conclusion

Forests in Mozambique have the potential to generate benefits to local communities through employment, revenue (timber, non-timber forest products, wildlife) and ecosystem services, to the national economy through taxes on forest products (particularly timber), and to the global community through environmental services, particularly carbon storage and biodiversity protection. Realizing this potential will take a bold medium- to long-term program of reforms, backed up by investments.

Such reforms will require continued political will and significant financing from different sources, including domestic sources (national government and the private sector), markets (timber, tourism), and from the international community (climate finance, payment for environmental services such as REDD+, and development aid). Continued resource mobilization from multiple sources is needed to ensure that these efforts can be sustained.

Below: A woman (and baby) collects water near a village in Cabo Delgado Provice, northern Mozambique.

Annex 1: World Bank Engagement

The Bank's engagement can be organized in four main areas: investments, analytical work, technical assistance and performance-based payments.

Investments

Dedicated Grant Mechanism for Local Communities (MozDGM)

Amount: $4.5M

Time Frame: 2018-2023

Objective: To strengthen the capacity of target communities and CBOs to participate in integrated landscape management.

Key Themes: CBNRM, participation of communities and CBOs in integrated landscape management

Forest Investment Project (MozFIP)

Amount: $47M (FIP: $22M, MDTF: $10M, IDA: $15M)

Time Frame: 2017-2022

Objective: To improve forest governance and promote sustainable forest and land management

Key Themes: Forest governance; integrated landscape management; sustainable forest management

Agriculture & Natural Resources Landscape Management 1 & 2 (SUSTENTA)

Amount: $40M + $40M (IDA)

Time Frame: 2016-2021, 2019-2024

Objective: To integrate rural households into sustainable agriculture forest-based value chains

Key Themes: Agricultural development; value-chains; land tenure; restoration

Conservation Areas for Biodiversity & Development 1 & 2 (MozBio)

Amount: $46.3M + $55M (IDA: $80M + GEF: $21.3M)

Time Frame: 2015-2018, 2019-2024

Objective: To improve the management of conservation areas and enhance community living conditions

Key Themes: Conservation; biodiversity; wildlife & tourism, community development

Performance-Based Payments

Zambezia Integrated Landscape Management Program (Emission Reduction Payments)

Amount: up to $50 million (contingent on results)

Time Frame: 2018-2025

Objective: The Carbon Fund of the Forest Carbon Partnership Facility (FCPF), managed by the Bank, has made a commitment of up to $50 million USD to the Zambezia province, should the province be able to reduce the emissions of greenhouse gases from deforestation. In other words, the FCPF will pay Zambezia for success in mitigating climate change by reducing the ongoing high loss of forest cover.

Technical Assistance

FCPF REDD+ Readiness Grant

Amount: $8.6 million

Time Frame: 2013-2018

Objective: To strengthen national REDD+ readiness management, and support legal and institutional framework.

Key Themes: REDD+ institutional framework; technical assistance and strategy; capacity building.

ILFM Programmatic Technical Assistance

Objective: To strengthen GoM institutional capacity in managing forests and landscapes while promoting rural development

Pillar 1: FNDS technical assistance

Pillar 2: Analytical work to strengthen forestry management and climate change adaptation

Pillar 3: Strategic outreach and partnership strengthening between the Government, civil society and academia.

Analytical Work

Agenda 2035 for Mozambique's Forest Sector

Time Frame: 2017-2018

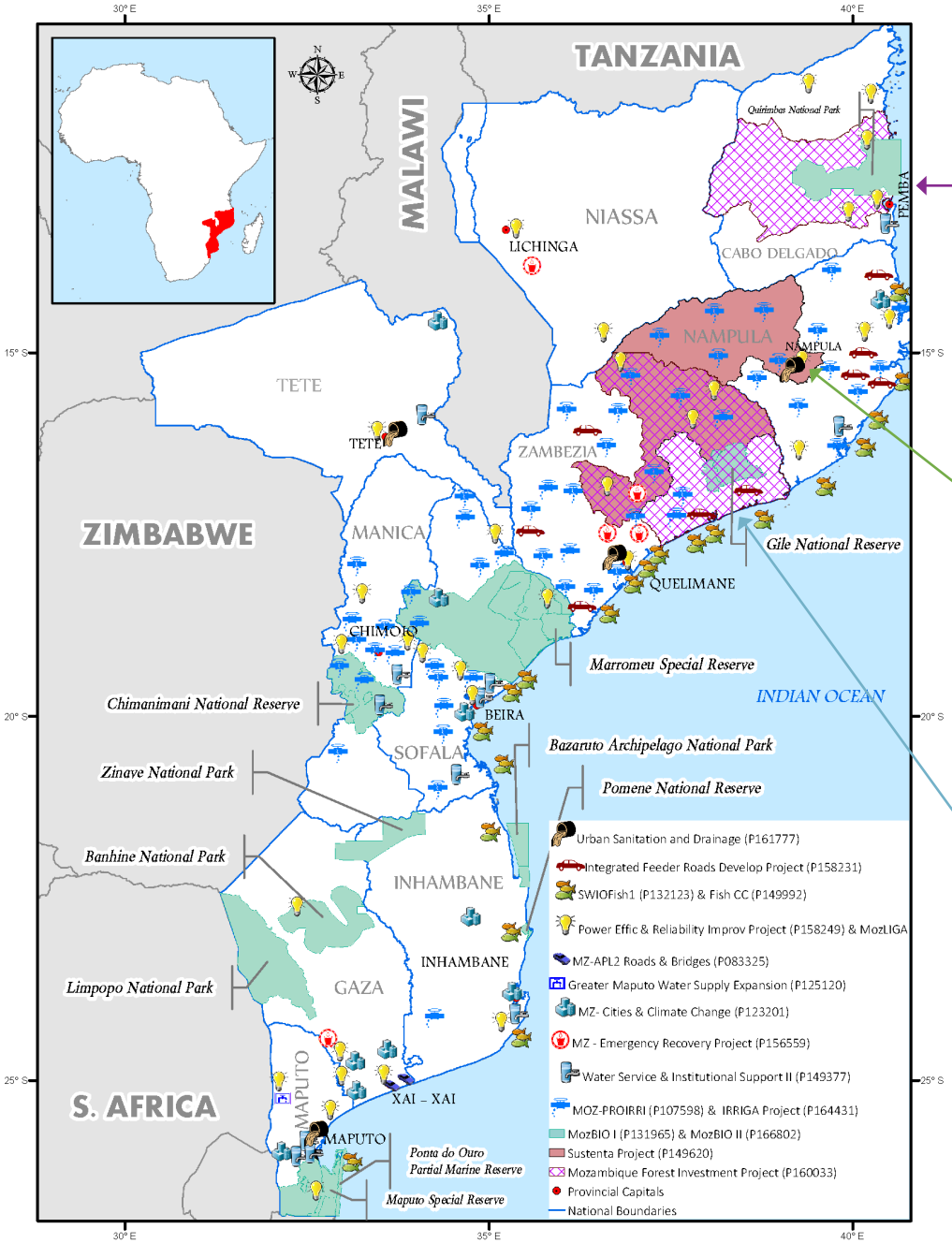
Objective: The Agenda 2035 aims to build a strategic vision for the forest sector for 2035. This will be achieved through consensus building among a range of stakeholders and technical analysis drawing upon existing knowledge and experience.

Land Use Planning for Enhanced Resilience of Landscapes (LAUREL)

Time Frame: 2017-2019

Objective: Support integrated decision making for landscape management across sectors and levels of government through improved spatial data on land degradation and developing prototype platforms for simulating, evaluating, and re-orienting land use and land use change processes.

Annex 2: Priority Landscapes in Mozambique



Cabo Delgado Landscape

Total Area: 4 million ha

Population: 611,538

Rural Population: 78.4%

Total Forest Area: 1,756 ha

Deforestation Rate: 0.32%

The Cabo Delgado Landscape hosts a variety of key terrestrial and marine biodiversity habitats, each with different geographic features. The area includes the Quirimbas National Park, which is home to 135,000 people, as well as a rich array of terrestrial and marine fauna and flora such as elephants, turtles and miombo forests. Working with civil society and community-based organizations, the ILFM Portfolio is helping communities that depend on potentially destructive practices, such as slash-and-burn agriculture and charcoal exploration, find alternative income-generating activities that decrease deforestation and forest degradation.

Nampula Landscape

Total Area: 3 million ha

Population: 926,621

Rural Population: 79%

Poverty: 49% below the poverty line

Total Forest Area: 797,000 ha

Due to its fertile soils, high altitude and multiple river heads, the Nampula Landscape has great agriculture and forestry potential. Since many rural households still use traditional and often inefficient agriculture practices, the ILFM Portfolio is helping to direct substantial private investments into sustainable agriculture and forest-based value chains.

Zambezia Landscape

Total Area: 6 million ha

Total Population: 2,286,988

Rural Population: 74%

Poverty Level: 56% below poverty line

Forest Area: 3,225 ha

Deforestation rate: 0.62%

The Zambezia Landscape hosts forests and woodlands, agricultural lands and the Gilé National Reserve, protecting several biodiversity hotspots. The ILFM portfolio is helping to mitigate key threats to the landscape by strengthening natural and planted forest management, increasing land tenure security, enhancing the sustainability and productivity of agriculture and biomass energy, and improving spatial planning. This landscape has been chosen as an Emissions Reduction Program Area under the Forest Carbon Partnership Facility's Carbon Fund.

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