



COUNTRY FOREST NOTE: ZAMBIA

TOWARDS A SUSTAINABLE WAY OF MANAGING FOREST



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Country Forest Note: Zambia

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LIST OF ABBREVIATIONS

CBNRM	Community-based natural resource management
CFN	Country Forest Note
CRB	Community Resource Boards
DNPW	Dept. of National Parks and Wildlife
EU	European Union
FAO	Food and Agricultural Organization (of United Nations)
FAP	Forest Action Plan (World Bank)
FD	Forest Department
FIP	Forest Investment Program
FMP	Forest Management Plan
GMA	Game Management Areas
GRZ	Government of the Republic of Zambia
IDA	International development assistance
ILUA	Integrated Land Use Assessment
JFM	Joint Forest Management
MLNREP	Ministry of Lands, Natural Resources and Environmental Protection
NDC	Nationally determined contributions
NDP	National Development Plan
NGO	Non-Government Organization
NFP	National Forest Policy
NWFP	Non-Wood Forest Product
PA	Protected Area
PES	Payment for Environmental Services
PPP	Public-Private Partnership
REDD+	Reducing emissions from deforestation and forest degradation
SFM	Sustainable Forest Management
WB	The World Bank
ZAFFICO	Zambia Forestry and Forest Industries Corporation

1. PURPOSE AND OBJECTIVES

This Country Forest Note (CFN) aims to foster dialogue between the World Bank, the Government of the Republic of Zambia (GRZ), and key development partners on future engagements in the forestry sector in Zambia by offering a comprehensive analysis of Zambia's forest sector while shedding light on potential long-term engagements.

In response to the Government of the Republic of Zambia's policy and development ambitions to improve the forest sector's contribution to the national economy, a number of interventions are highlighted in this CFN that could lead to transformative impacts. Of course there are many challenges along the way, starting with the need for a robust level of governance that supports long-term interventions with broad participatory foundations.

The challenges and opportunities, as well as key actions, are elaborated upon within the structure of the Forest Action Plan focus areas: (a) sustainable forest management (SFM); (b) sustainable forest value chains; and (c) cross-cutting areas (land use, climate change, and governance and institutions).

Data and information available for the forest sector in Zambia is fragmented and inconsistent. This is, in part, due to the lack of consistent monitoring in the context of widespread informality within the forest sector. This CFN partially draws upon secondary data and previous analytical work undertaken by various development partners, combined with official government data. While significant efforts were made to analyze the available data, information gaps are significant. Therefore, the information provided should be carefully interpreted in the context of data limitations.

2. KEY MESSAGES

1. **Zambia's forests cover around 61 percent of the country's land area and are crucial for Zambia's development,** as; a) crucial support for 60 percent of the population's subsistence needs and provider of 1.5 million jobs; b) provider of energy for about 80 percent of Zambians in the form of fuelwood and charcoal; c) critical resource as "the lungs" for Zambia's climate change strategy and biodiversity conservation.

2. **Zambia's high rate of deforestation of 250,000 to 300,000 ha annually is a major concern, threatening Zambia's natural capital as a major source of Zambia's Green House Gas emissions.** Sustainable forest management (SFM) is central to Zambia's nationally determined contributions (NDCs), which aim to reduce carbon emissions by up to 47 percent by 2030. The REDD+ process in Zambia is entering its investment phase and a comprehensive investment plan has been elaborated, detailing priorities in line with NDCs and National Development Plans.

3. **Zambia's latest forest policy from 2014 and the Forest Act of 2015 offer a conducive legal framework for sustainable forest management that seeks to involve communities and non-state actors.** It recognizes the country's forest as central for sustainable development, climate change mitigation and adaptation, and biodiversity conservation. The previous forest policy was outdated and highly centralized. To date, however, there has been little success in translating Zambia's widely acknowledged intrinsic forest value into forest conservation or sustainable forest use. Statutory instruments have only recently been enacted and yet to yield substantial impact.

4. **The low capacity of the Forest Department permeates the forestry and conservation sectors across all levels.** Capacities for law enforcement and monitoring are weak even in protected areas, and largely overstretched when including customary land outside Forest Reserves. Measures that support decentralization efforts and build capacity of governmental agencies while at the same time strengthening participation and ownership of forest resources by non-state actors will support efficient forest governance efforts.

5. **Creating incentives for sustainable forest management will be crucial to tap into the potential of the forest sector and create a conducive environment.**

- a. **Commercial forestry:** Most of the commercial forestry in Zambia occurs in the informal realm, largely driven by exports and domestic demand for woodfuel. Illegal and informal logging decimates the forest, threatens biodiversity, and damages associated ecosystems. It also constitutes a significant loss of formal income to the country. Removing hurdles to establishing a formal sector for forest users and establishing an enabling environment for investment are both paramount for sustainable forest management. At the same time, increased capacity for law enforcement and monitoring helps to ensure that commercial activities are sustainable and controlled. Finally, the establishment of

clear land use rights and broad access to markets are essential to attracting the private sector to the sector.

- b. **Community/Participatory forestry:** Many of Zambia's forests are located on customary land where a lack of effective governance structures lead to open access conditions. The legal rights over the forests provided by the new forest policy are expected to increase communities' control and ownership over forest resources. These instruments will be fundamental to introduce participatory forest management and benefit sharing schemes linked to timber, charcoal and Non-Wood Forest Products (NWFPs).
- c. **Conservation:** Zambia has a large protected area system, however the economic benefits have not been optimized. The ecotourism sector centered on wildlife and safari hunting is the most important formal revenue stream with potential for further development. Improved benefit sharing arrangements with communities over wildlife, while investing in tourism infrastructure, could significantly contribute to more efficient forest protection. Other promising however largely untapped revenue sources include carbon finance through REDD+ initiatives.

6. **The forest-based value chains in Zambia are characterized by small-scale operations that are low value adding with high levels of informality.** The main value adding sub-sectors in Zambia are charcoal, forest industries (mainly logs and sawwood), and non-wood forest products (NWFPs).

- a. **Charcoal:** Informal charcoal production is the forest sub-sector with the highest GDP contribution in Zambia. However charcoal contributes to the degradation of 190,000 ha of forest annually. Demand for fuelwood and charcoal will continue to grow, as substitutes are not yet available or are not affordable. The charcoal business could potentially become a sustainable income-generating sector. If Zambia introduced sustainable charcoal production systems, woodlands under long-term charcoal production cycles would continue to provide most ecosystem services that are typically provided by forests. However, initiatives addressing these issues are scarce and have only started recently.
- b. **Forest Industries:** The informality of the sector is endemic to forest industry: Many actors operate in the grey area between the legal and the illegal realm. Informality is mainly rooted in the gap between market demand and the lack of raw material from licensed sources (plantations and natural forest). The plantation resource base is not sufficient to sustain advanced forest industries in Zambia and requires expansion. The regulation and formalization of commercial operations in natural forest bears significant opportunities for sustainable forest management and value addition from the forest resource. However, weak governance and low enforcement capacities hamper the formalization process.

- c. **Non-Wood Forest Products:** Zambia's forests provide several non-wood forest products (NWFPs), such as mushrooms, fruits, edible insects, bush-meat, and honey. However, knowledge on volumes and values of commercialized NWFPs is fragmented. Honey is the only significant NWFP value chain that has been developed so far. The regulatory framework and support offered to Community Forest Management Groups may stimulate the formation of NWFP community enterprises, but best entrepreneurial practices still need development. Further, new regulations provided by the Wildlife Act of 2015 are insufficient for the development of community-based wildlife value chains (bush-meat and tourism). There is an urgent need for innovative approaches to improve on cooperative arrangements of private sector and communities.

7. **Reducing deforestation and establishing sustainable forest management at a large scale in Zambia requires raising awareness and creating innovative, cross-cutting solutions to the increased demand across all sectors.** Without a more rigorous regulatory framework for land tenure and better cross-sectoral cooperation, deforestation will continue and SFM will not be achieved. Finance must be mobilized from an array of sources and partners to GHG mitigation.

- a. **High deforestation rates are a result of high opportunity costs, particularly associated to commercial farming and mining.** Efforts to increase efficiency in crop production would have a major knock-on effect by reducing the land needed to produce food. Similarly, mining and commercial agriculture should be embedded in more sustainable planning processes to reduce their impact on forests.
- b. **The lack of secure tenure and forest use rights by the majority of the rural population contribute to ineffective resource management.** The Draft Land Policy of 2017 seeks to increase the formalization and security of customary tenure, but is facing resistance by traditional authorities, who fear this may erode community rights over common pool resources. In this context, any interventions must start with the engagement and building of trust between government officials, traditional authorities, and the private sector. A broad consensus with the communities involved will be crucial to enacting land policy.
- c. **Mitigating climate change ranks high in Zambia's development priorities.** Forests are the lungs of the nation and the center of the country's climate change strategy. However, implementation of the priorities set out by the national REDD+ strategy and the REDD+ investment plan require coordination with other sectors' development plans and further international support for funding needs to be secured.

8. **The World Bank serves as a conduit for resources from institutions, particularly the Forest Investment Program, that can reach Zambia.** Currently, the World Bank supports Zambia in the Zambia Integrated Forest Landscape Project (ZIFLP) in Eastern Province in one of the REDD+ Strategy priority areas. The ZIFLP is addressing the key challenges of the country's forest sector as identified by this country forest note. The envisaged activities to be implemented until

2022 explicitly addresses a number of ambitious components, including: a) capacity building of the Forest Department; b) the development of Forest Management Plans; c) the establishment of community forest user groups; d) a plan for sustainable charcoal production; e) addressing regulatory issues for land tenure clarification; f) boosting the support for biodiversity conservation and wildlife management; g) and the wider dissemination of Climate Smart Agriculture.

3. SUMMARY DATA BOX

Text Box 1. Key Forest Statistics

Area covered by forests

- According to 2014 remote sensing data, Zambia has approximately 46 million hectares of forests, covering about 61 percent of the country's total land area¹.
- There are 490 official Forest Reserves (FRs) covering 4.2 million ha: 184 of these are national FRs to protect and conserve water catchments; 306 are local FRs².
- Zambia has only around 59,000 hectares of timber plantations, of which 50,000 ha (85 percent) are managed by the state-owned enterprise ZAFFICO.

Deforestation

- The deforestation rate has been estimated at between 250,000 and 300,000 ha per year³.
- The main drivers of deforestation and land degradation are agricultural expansion, mining, and wood extraction for fuelwood and charcoal.

Land tenure

- The vast majority (62 percent) of Zambia's natural forests are under customary ownership and subject to complex governance arrangements, resulting in unsustainable use of forests.
- The Draft Land Policy (2017) has not yet been able to resolve the most pressing challenges.

The role of forests in sustainable development, economic growth, and job creation

- Zambia's forests provide livelihoods for 1.5 million people, about 21 percent of the total labor force of 6.5 million in 2015.
- The forest sector contributed an estimated 5.4 percent of GDP in 2015, including estimated indirect and multiplier effects of forestry⁴.
- Woodfuel and charcoal account for up to 80 percent of Zambia's energy consumption⁵.
- A handful of valuable tree species in western Zambia are sourced without licensing, mainly for export. Over 80 percent of extracted roundwood is sourced without licenses⁶.
- Zambia's forests are crucial suppliers of timber, woodfuel and NWFPs, such as honey and bushmeat⁷.
- Zambia's forests are fundamental for the growing ecotourism and safari sector.
- Forests provide a safety net for the vulnerable rural population, and a critical source of food.

Policy context for the forest sector

- Zambia's National Forest Policy (ZNFP) of 2014 and the subsequent 2015 Forest Act are milestones in the country's efforts to develop conducive policy for SFM.
- Forests are central to Zambia's nationally determined contributions (NDCs), aiming at reducing carbon emissions by up to 47 percent by 2030 if substantial international support is available.
- The REDD+ process in Zambia is entering investment phase. A new comprehensive investment plan details priorities in line with NDCs and national development plans.

Refs. ¹ ILUA II, 2016; ² MLNREP, 2015; ³ Day et al, 2015. ⁴ Data derived from various sources (Table 2). ⁵ Solomon et al, 2015. ⁶ MLNR, 2019 unpublished. ⁷ Nyawali, 2017.

4. ZAMBIA'S FOREST AND ITS CONTRIBUTION TO THE ECONOMY

4.1 Introduction

1. **Zambia is richly endowed with an abundance of natural resources, ecosystems, and rich biodiversity.** Forests and wetlands are major contributors to the national economy and the livelihoods of most people. These assets and the biodiversity they support create and maintain the ecosystems services provided (GRZ, 2015a). Figure 2 below shows the distribution of the main ecotypes, which are dominated by natural forests and woodlands.

2. **Zambia's forests could become a more significant sector for the country's development if the forests' intrinsic and social value could be captured economically.** Boosting this sector requires improved forest governance and law enforcement, clear property rights and rights over resources, and increased ownership of forest resources by the local population.

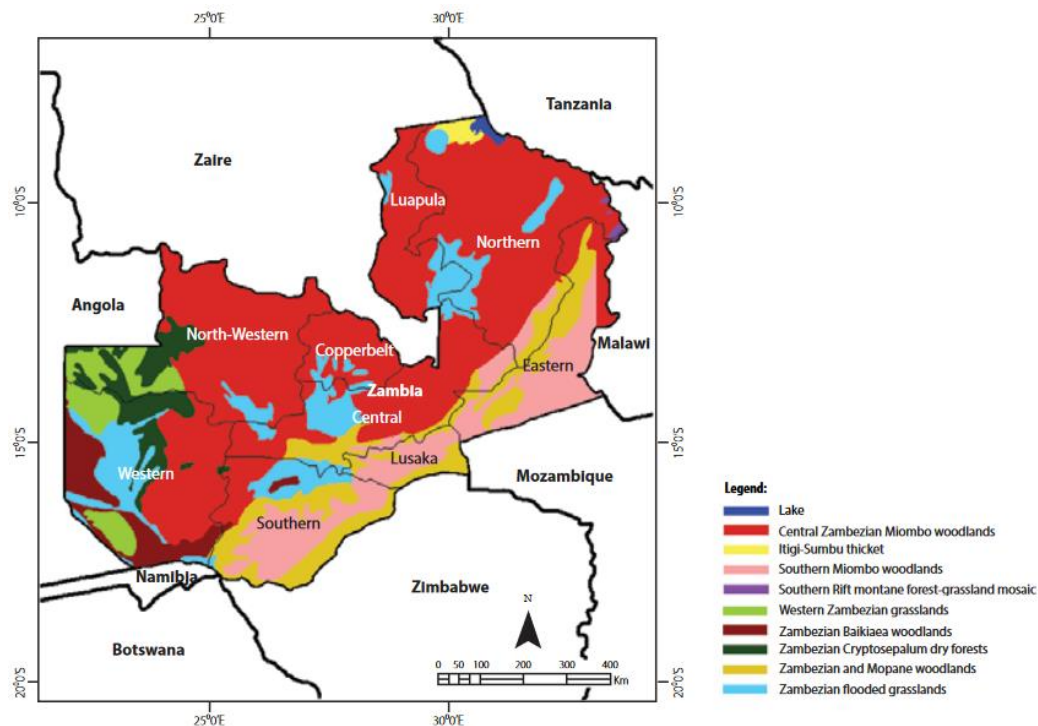


Figure 1: The main ecoregions of Zambia

Source: Day et al (2014).

Forests and Forest Cover in Zambia

3. **Miombo woodland is by far the most dominant forest type, covering around 68 percent of the total forest cover.** It provides multiple uses for many millions of people: especially the rural poor who are highly dependent on the forests. Miombo is characterized by open woodland, dominated by *Brachystegia species*, which are characterized by having hard timber (ILUA II, 2016).

4. **Miombo provides wood for construction, fuelwood (including wood for charcoal) and many Non-Wood Forest Products (NWFTs), including edible fruits and insects, honey, game, mushrooms many medicinal plants.** Livestock also depend on Miombo for grazing and browse and this becomes crucial during the late dry season when leafy foliage can be the only source of browse available to animals (see also Text Box 2).

5. **Miombo supports a low proportion of high-quality commercial timber trees, although there are exceptions such as Mukula (*Pterocarpus chrysothrix*¹)** which has recently been targeted by overseas buyers and resulted in serious over-harvesting (discussed in chapter 5.2). Miombo, however, can be very productive, even when highly degraded. This is largely because of its ability of regenerate when cut.

6. **Other major forest types in Zambia include Mopane and Kalahari (*Baikiaea*) woodlands.** Mopane woodland is in southEastern Zambia and is dominated by *Colophospermum mopane*. Mopane woodland is an important source of timber and edible caterpillars. Kalahari woodland (also known as *Baikiaea-Terminalia* woodland) occurs on the Kalahari sands of the Upper-Zambezi basin in the Western and Northwestern Provinces and is an important source of commercial timber in Zambia (Day *et al*, 2014).

7. **Deforestation is threatening Zambia's natural forests.** To date, there has been little success in translating Zambia's widely acknowledged intrinsic forest value into forest conservation or sustainable forest use. Zambia's high rate of deforestation is a major concern. The most commonly quoted figure is that 250,000-300,000 ha of forest are lost each year, which is 0.5-0.6 percent of total forest cover (Day M *et al.*, 2014). High deforestation rates are a result of high opportunity costs, particularly associated with commercial farming and mining (see chapter 5.3.1), combined with weak forest governance coupled with low capacity of state agencies and low participation in forest management by non-state actors (UNIQUE, 2016).

8. **Zambia's charcoal business is a main driver of forest degradation, affecting about 190,000 ha annually.** Zambia's extensive forests cover 80 percent of Zambians' basic energy needs. Charcoal production is widespread and subject to little control due to severe resource constraints by the FD (UNEP, 2015).

9. **Zambia has a large network of national Protected Areas (PAs) covering around 40 percent of land area with substantial potential for forest protection and sustainable forest management.** About half of this area corresponds to Game Management Areas (GMA) with 166,000 km², aimed at wildlife management. National Parks (NPs) and Forest Reserves (FRs) cover over 18 percent of the total land area (Figure 3)². The objective of local FRs are to meet community needs for forest products. National FRs, however, were formed mainly to protect and conserve

¹ Synonymous with *Pterocarpus tinctorius*.

² The 2015 Forest Act also recognizes other categories of forests – namely, Private Forests, Botanical Reserves, Community Forest Management Areas and Joint Forest Management areas.

major water catchments and their biodiversity. Out of the total area classified as FRs, 44 percent is set aside for production, 30 percent for both protection and production, and the remaining 26 percent is solely for protection (GRZ, 2014).

10. **All PAs are facing serious threats from a range of human activities – notably clearance for agriculture and settlement, mining, charcoal burning, uncontrolled fires and poaching** (MLNR, 2017). State agencies concentrate more resources in NPs and national FR protection, and therefore GMAs and local FRs are particularly vulnerable to these threats. The rate of ecosystem conversion in GMAs is 0.5 percent annually (period 1980-2010), much higher than in NPs (0.03 percent).³ In addition, over 280,000 ha of FR from Copperbelt, Southern and Eastern Provinces, were reported to have been degazetted or excised from 2005-2014, largely due to infrastructure development and mining purposes (GRZ, 2015) (MLNR, 2016a).

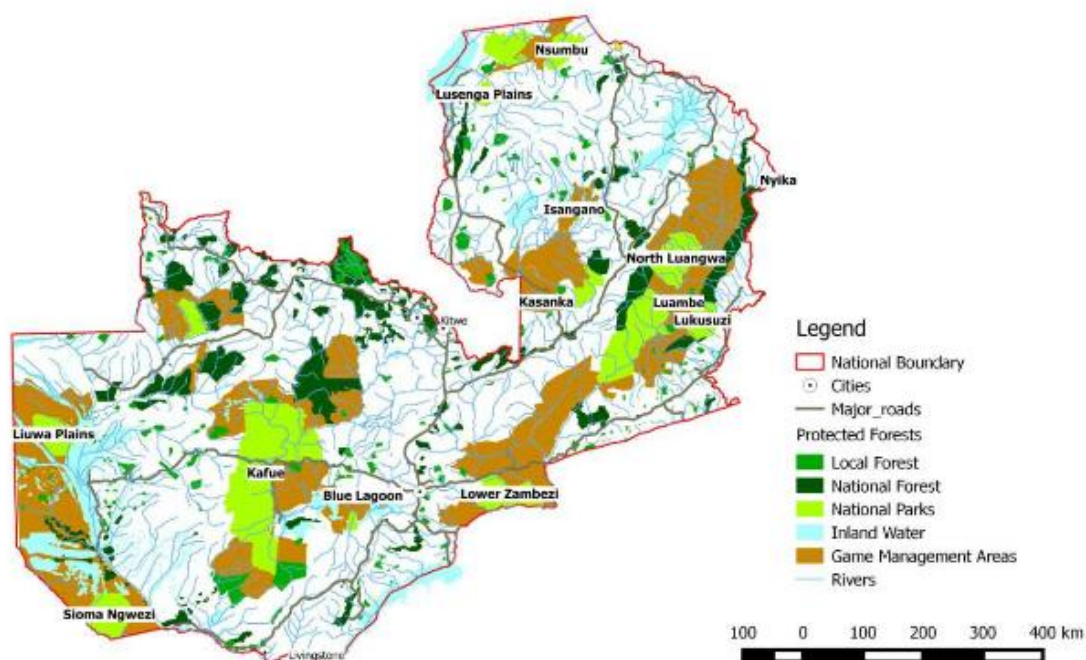


Figure 2: National Parks, Game Management Areas and Forest Reserves in Zambia

Source: GRZ, 2015

11. **The vast majority (62 percent) of Zambia’s natural forests are under customary ownership (Table 1) and subject to complex governance arrangements.** Customary tenure also includes PAs, mainly local FRs and GMAs. On customary land, traditional authorities share responsibilities for forest and wildlife resource management alongside the Forest Department and the Department of National Parks and Wildlife (DNPW).

³ In GMAs around South Luangwa NP the rate of encroachment is estimated to be 0.75 percent annually (Watson et al. (2015) in Chidakel, 2018).

Table 1: Distribution of Zambia’s forest land by tenure and jurisdiction

Tenure	Type	Jurisdiction	Area (km ²)
State	National Parks	DNPW	46,000
	National forest reserves	FD	48,000
Customary	Local forest reserves	FD & customary authorities	335,000
	Forest on open land	FD & customary authorities	
	Game Management Area	DNPW & customary authorities	
Private	Leasehold	FD	30,000
Total forest land			459,000

Source: Areas based on GRZ (2017), Kalinda et al. (2008), and MLNR (2016b).

12. **Zambia has an estimated 59,000 ha of commercial timber plantations⁴, 85 percent of which are located in the Copperbelt Province.** In 1963, the Government of Zambia began investing heavily in the establishment of forest plantations to augment timber supplies from natural forests, particularly mining timber. The plantations are dominated by exotic species such as pines (80 percent) and eucalypts (20 percent) - the main species being *Pinus kesiya*, *P. oocarpa*, *Eucalyptus grandis* and *E. cloeziana*. The pines are utilized largely for construction and furniture, the eucalypts for mining timber and transmission poles. Concerns have been raised over the poor management of these plantations, as well as the low level of replanting: a lack of funding has often been cited as the main reason for this (Day M et al., 2014) (Mackenzie, 2014).

⁴ Plantation area estimates range from 57,000 ha to 61,000 ha in published documents.

Text Box 2. Miombo

Miombo woodland is the most extensive African dryland forest formation, covering around 2.7 million km² across seven African countries – Angola, DRC, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. The soils of miombo are typically nutrient poor.

Miombo is divided roughly into wet and dry forest: dry where mean annual rainfall (MAR) is less than 1,000 mm (mostly in southern Zambia) and wet where MAR is over 1,000mm (northern Zambia). The trees are generally taller and the forest denser in the wet miombo.

Miombo is characterized by open woodland and the dominance of *Brachystegia* species, either alone or in association with *Julbernardia* and *Isoberlinia* spp. Miombo is extremely rich in plant species with an estimated 8,500 species of higher plants, of which some 54 percent are endemic. Zambia's Miombo has the highest diversity of tree species of all countries where the woodland type occurs and is the center for endemism for *Brachystegia*, with 17 species.

Most of the miombo ecosystem has been influenced by anthropogenic processes such as selective logging, shifting agriculture, forest fires and woodfuel collection. With high poverty levels and increasing populations, there is enormous pressure on miombo to meet human development needs and livelihood demands.

Fires are a characteristic feature of miombo with most mature tree species and woody plants that are fire resistant: indeed, many of the species depend on fires for their regeneration. Late, dry season fires, however, can seriously damage mature trees and also negatively affect soil quality.

Globalization is creating niche markets for miombo products: The primary one is carbon sequestration. Miombo woodlands have lower carbon storage levels per hectare than tropical forests, but because they cover such large areas, their overall contribution is very substantial. There is also interest in "green" or "fair trade" products, from honey and beeswax to Amarula, an alcoholic drink made from the fruit of the Marula tree (*Sclerocarya birrea*).

Sources: Chideumayo and Gumbo (2010), Dewees et al (2011) and Gumbo et al (2013).

Contribution of forests to livelihoods, employment and the economy

4.1.1 Contribution to Gross Domestic Product and Employment

13. **The direct contribution of forests to Zambian GDP is estimated at USD \$1.1 billion or 5.4 percent** (Table 2). This includes the formal forestry sector, wood industry, ecotourism, informal economic activities of households and the monetary value of ecosystem services. Of the total contribution, informal economic activities deliver 2.2 percent, whereas formal activities account for about 1.6 percent each. The informal sector's contribution to GDP is mainly based on informal fuelwood and charcoal production. The formal sector's GDP contribution is primarily based on ecotourism activities. The economic value of ecosystem services represents 1.64 percent of GDP. Thus, it is comparable to the contribution of formal forest based economic activities. Erosion control and retention of sedimentation is the most important forest derived ecosystem service.

14. **Total employment generation in forest based economic activities amounts to 1.5 million jobs, or 21 percent of the total Zambian labor force of 6.5 million in 2015** (World Bank, 2019). The vast majority of employment occurs in the informal economy, i.e. in rural households

engaging in logging, and in commercialization of charcoal, fuelwood and non-wood forest products. The formal forestry sector and wood industry create only around 30,000 jobs.

Table 2: Contribution of forests to GDP in 2015.

Sector	Direct value added in million US\$	Percentage to GDP 2015	Employment 2010 ⁴
Formal sector	322	1.60	30,000
Forestry and logging ¹	20	0.10	10,000-14,000
Wood industry ¹	2	0.01	
Ecotourism ²	300	1.49	16,000
Informal sector⁵	437	2.17	1,500,000
Fuelwood and charcoal ²	308	1.53	> 500,000
Non wood forest products ³	113	0.56	800,000 –
Wood manufacturing ¹	15	0.07	1,000,000
Ecosystem services	331	1.64	n/a
Erosion control and sediment retention ³	243	1.20	n/a
Pollination services ³	73	0.36	n/a
Carbon storage (damages avoided) ³	15	0.07	n/a
TOTAL	1,100	5.40	1,500,000

Sources: 1) (CSO, 2016) 2) extrapolated based on MLNR, 2018 and (CSO, 2016); 3) extrapolated based on MLNR, 2018 and ILUA data; 4) Employment data from (UNEP, 2015) for the year 2010; no updated information available. 5) The CSO national accounts data states informal household income from forestry and logging of US\$ 137 million in 2015 (=0.68 percent GDP contribution). Since this value is not capturing the full extent of informal activities, data from alternative and more comprehensive sources was used in this table, i.e. UNEP, 2015.

4.1.2 Contribution to Livelihoods

15. **Zambia's natural forests are the lifeline of rural livelihoods. They support the subsistence needs of 60 percent of the rural population.** Millions of Zambians depend on forests for woodfuel, shelter, food, pasture and fodder, medicines and household utility items (UNEP, 2015).

16. **Forest products provide income opportunities through employment and small businesses.** The forest-derived incomes vary significantly from a low percentage contribution to total household income. Studies indicate an average of 30 percent contribution of forests to rural incomes (Ngoma et al., 2017). The poorest households tend to depend on forest resources the most. (Kalaba, 2013).

17. **Forest derived rural household income is mainly based on commercial fuelwood and charcoal production and on non-wood forest products.** There are significant regional differences with regard to forest income patterns. Whereas commercial fuelwood and charcoal production is prevalent countrywide, there are centers of bushmeat commercialization in NPs and GMAs. In Northwestern Province, the most densely forested province in Zambia, a significant share of households engage in commercialization of mushrooms, caterpillars, and wild honey (Ngoma H et al , 2017).

18. **Woodfuel covers up to 80 percent of the national energy demand.** Much of the woodfuel is destined for charcoal production: charcoal demand is driven by urban centers, where around 80 percent of the population depends at least partially on charcoal for cooking (Solomon et al, 2015). For the majority of Zambians, there are few alternatives to using woodfuel, as other energy sources are well beyond their means. Charcoal production is often referred to as one of the main drivers of deforestation. However, it also contributes to forest degradation if not done sustainably.

19. **Men and women have unequal access to and use of forest resources:** Men derive their income from higher value and/or commercial products, such as charcoal, timber, and honey, while women rely more on wild fruits, tubers, mushrooms, and edible insects (USAID, 2017).

20. **Forests play an important role in food security, complementary to agriculture.** More than half of the children in Zambia are malnourished: 40 percent of children under 5 years suffer from chronic malnutrition and 15 percent from acute malnutrition (Central Statistical Office, 2014). Generally, meals in rural communities are complemented by at least one forest product in addition to the wild fruits consumed as snacks. Furthermore, fuelwood and charcoal provided by forests aid food consumption and calorific intake (Simoloka, 2016).

21. **In terms of ecosystem services, important roles of forests are erosion control, pollination, water purification and regulation and carbon storage** (Ngoma H et al , 2017). These ecosystem services bring different benefits to livelihoods, such as soil fertility, cleaner water and erosion control, among others.

Text Box 3. Economic losses due to deforestation

If deforestation continues at rates suggested by the forest reference emission level (FREL) for Zambia (GRZ, 2016), the country will experience severe losses of natural capital, and socioeconomic and environmental benefits.

In monetary terms, the suggested annual deforestation rate of 290,000 ha results in annual loss of US\$ 0.5 billion natural capital stock*. This value does not consider ecosystem services, nor potential losses in the tourism sector.

The losses associated with non-wood forest products and ecosystem services is estimated at USD \$3 million annually**.

In terms of results-based payments for REDD, the potential value for the carbon sequestered on 290,000 ha of forest is estimated at about USD \$127 million***.

** The natural capital accounts for forests in Zambia (MLNR, 2018) establishes approx. USD 1,500 value of standing timber stock per ha.*

*** Value derived from average ecosystem GDP contribution per ha as presented in Table 2 (MLNR, 2018) multiplied by envisaged annual forest loss according to the proposed FREL for Zambia.*

**** Based on results-based payments for REDD+ projects of USD 5 per tCO₂ as indicated by the Green Climate Fund (GCF) (World Bank, 2018).*

4.2 Policy and legal framework

22. **Zambia's National Forest Policy (ZNFP) of 2014 and the subsequent 2015 Forest Act are milestones in the country's efforts to develop conducive policy for SFM.** The Zambia Forest Action Plan (ZFAP, 1998-2018) guided forestry development in Zambia over a twenty-year period focusing on SFM. The Zambia National Forestry Policy of 1998 and subsequently the Forests Act No 7 of 1999 emerged out of the ZFAP objectives, however these were never implemented (ILUA II, 2016). Therefore, until 2014-2015, forestry was still largely conducted under the framework of old policies from the 1970s.

23. **Zambia's National Forest Policy of 2014 emphasis on participatory forest management is seen as a major opportunity for sustainable forest management (SFM).** This is particularly important in the context of low state capacity and a large share of forest under customary tenure. The ZNFP acknowledged that the previous Forest Policy of 1998 had failed to provide an environment conducive to SFM and that by recognizing the Forest Department (FD) as the sole actor in the sector, largely overlooked the importance of local communities. ZNFP aims at improving the forest sector's contribution to poverty reduction and to the national economy, biodiversity conservation, and combating climate change. The policy acknowledged the need to support community livelihoods through an "integrated approach" by encouraging community forest management and benefit-sharing mechanisms for SFM.

24. **The 2015 Forest Act allows clearing of forest for other land uses - the Forest Department is unable to control and monitor land use conversion.** Conversion of forest to agriculture is allowed under the Forest Act. When conducted for the benefit of local communities, it is not

subject to any license. Deforestation for agriculture and degradation due to charcoal production is related to opportunity costs vis-à-vis forest (see chapter 4.3.1 on competing land uses) uses and few income alternatives for the rural population. Deforestation for charcoal or agriculture is also a way of establishing land use rights through de facto occupation (USAID, 2017).

25. **The Forest Act 2015 described the arrangements for forming Community Forest Management Groups** and for these to sign agreements for various forest user rights for specified community forests. The 2015 Forest Act vests trees and forest produce derived from non-private property in the President. However, it foresees options for communities to obtain extensive rights over forest resources. The first regulatory instrument in this direction is the Statutory Instrument No. 11 of 2018 - The Forests (Community Forest Management) Regulations (see chapter 5.1.2 for more details).

26. **The importance of attracting private sector investment into the forest sector was also highlighted in ZNFP**, especially to establish plantations for fuelwood and timber and to develop the value chains for wood and NWFPs. The new policy framework is also in line with the decentralized institutional structure of public administration. The main implementation agency on the national level is the Ministry of Lands and Natural Resources, while local governments are responsible for registration of local forests, revenue and data collection, and other specific tasks on local level (Hägglom and Partners, 2017).

27. **Forestry plays an important role in Zambia's wider policy context.** Both the Vision 2030 set forth by the GRZ (2006), and the Seventh National Development Plan (GRZ, 2017b) emphasize development based on the sustainable management of natural resources, and the goal of creating a diversified and resilient economy, largely driven by agriculture. Furthermore, the National Policy on Climate Change (NPCC, 2017) includes the objective of reducing climate change emissions from land use change and forestry.

28. **Zambia's international commitments to mitigate climate change heavily rely on implementation of sustainable forest management and reducing deforestation.** Zambia submitted an ambitious Nationally Determined Contribution (NDC) with a pledge of reducing greenhouse gas (GHG) emissions by between 25 percent and 47 percent by 2030, depending on the availability of international support. These actions are reflected in the country's Seventh National Development Plan (7NDP, 2017-2021) (GRZ, 2017b). Zambia's mitigation targets are focused on three programs: (1) sustainable forest management (SFM), (2) sustainable agriculture, and (3) renewable energy and energy efficiency. The SFM Program involves implementing natural regeneration, afforestation/ reforestation, sustainable charcoal production and utilization practices, and generation of electricity from forest waste and residues.

29. **Zambia's REDD+ strategy prioritize sustainable forest management in participatory forest management schemes, but implementation is slow.** Zambia completed the Readiness Phase of the REDD+ process, and is now ready to proceed to the Investment Phase. The REDD+ Investment Plan for Zambia (MLNR, 2017) sets out the implementation priorities of the REDD+

National Strategy over the next five years (2018-2022) based on a multi-sectoral approach as articulated under the 7th National Development Plan (NDP) in line with the NDCs. The investment plan highlights the need to support implementation of the regulations stipulated by the Forest Act of 2015 to: a) maximize climate change mitigation impact, mainly operationalizing participatory forest management in a manner that will yield tangible carbon capture over a relatively short period of time; b) encourage large-scale implementation of sustainable forest management as one of the key means to meet the 2030 emissions reductions goals.

5. SUB-SECTOR CONTRIBUTIONS, CONSTRAINTS AND OPPORTUNITES

5.1 Focus Area 1: Sustainable Forest Management

5.1.1 Commercial Forestry: Contributions and Challenges

30. **Commercial forestry in Zambia's natural forests focuses only on a few species while the economic potential of lesser-known species remain untapped.** The country lists 19 commercial indigenous timber species. However, commercial exploitation has focused only on a handful of species under immense pressures, namely *Baikiaea plurijuga* (Zambezi teak), *Pterocarpus angolensis* (Mukwa or African teak) and *Guibourtia coleosperma* (African rosewood). Of the total estimated growing stock of timber from natural forests, around 12 percent is commercial, with 340 million m³, occurring mainly in Western Zambia.

31. **Total production volume of roundwood (industrial roundwood, charcoal, and fuelwood) was 13.2 million m³ in 2015**^{Error! Reference source not found.}. Charcoal and wood fuel production encompassed 7.6 million cubic meters⁵, industrial roundwood 3.8 million cubic meters, and poles 1.8 million cubic meters (MLNR, Unpublished Forest Accounts Data 2010 to 2015, 2019)⁶.

32. **The 2015 Forest Act details the need for Forest Management Plans (FMPs)**, which must be conducted in a participatory manner with invested communities and to be made available for public comment prior to being officially registered in GRZ's gazette. At least until 2014, FD had not implemented FMPs for any of its 490 FRs, citing lack of inventory data and a general lack of capacity (GRZ, 2015c).

33. **The availability of licensed indigenous timber is marginal. More than 80 percent of extracted roundwood and almost all woodfuel is sourced without licenses** (Figure 4). Under the Forest Act 2015, licenses are needed from FD to harvest any forest produce from any state or customary land. There are two main types of licenses - a sawmill license to operate a sawmill or other processing equipment and a concession license to cut from a specified forest. The main

⁵ All the unit measurement of products mentioned along the report were transformed into cubic meters of roundwood equivalent, to allow a comparison between them.

⁶ Note: Forest production data recorded by FAO show significant deviations (i.e. lower roundwood production figures) from MLNR data, since unlicensed production figures are not fully captured.

license types are further detailed according to intended uses (subsistence or commercial) and products (timber, charcoal, etc.). Licenses last no more than five years. In fact, licensed timber volumes are very small compared to unlicensed volumes, which is a result from lacking FMPs, weak FD capacities to approve and control licensing, and general easy access to unlicensed timber from conversion of forest to agriculture.

Table 3: Licensed and unlicensed production and export of roundwood, poles and wood-fuel 2015

Forest produce	Licensed			Unlicensed		
	Production (m ³)	Exports (m ³)	Exports (% of production)	Production (m ³)	Exports (m ³)	Exports (% of production)
Indigenous timber and poles	98,094	90,149	92%	4,660,003	2,527,921	54%
Exotic timber and poles	838,861	229,694	27%	-	-	-
Fuelwood and charcoal	223,809	26,767	12%	7,386,481	1,567,518	21%
Total	1,160,765	346,610	30%	12,046,484	4,095,440	34%

Source: MLNR (2018). *Zambia's Natural Capital Account for Forest*. MNRE, Forestry Department and MLNR, 2019 (unpublished)

34. **The Forest Department does not have the capacity to fulfill its mandate under the Forest Act of 2015 to promote sustainable forest management.** This involves controlling, managing and administering the National and Local Forests, which includes stipulating license and fee requirements for timber production. In practice, however, FD does not have the capacity to control forest production and implement its mandate. Law enforcement is restricted to road-blocks on timber transport roads and collection of conveyance fees as a condition of passage (Cerutti et al., 2018).

35. **A substantial amount of unlicensed timber originates from legal conversion of forests without subsequent formalization.** The Forest Act allows trees on state and customary land to be felled and land cleared by the local community for agricultural or other use without any license. Given annual deforestation rates of 250,000 to 300,000 ha, this partly explains the substantial volumes of unlicensed timber. If the timber is sold and mobilized, it would require corresponding licenses, but these are rarely requested by the producers and/or are rarely issued by FD. Hence, although legally harvested, the timber is entering informal value chains, with the associated problems of corruption and revenue losses.

36. **The state-owned enterprise Zambia Forest Industries Corporation (ZAFFICO) is responsible for around 85 percent (50,000 ha) of all the plantations in Zambia.** The Forest Department's Industrial Plantation Division (IPD) became the parastatal ZAFFICO in 1982, which invested in some softwood (pine) sawmills and a pole treatment plant. ZAFFICO has since

privatized its processing facilities and focused on supplying logs to a number of private companies to process: these include the Copperbelt Forestry Company (CFC); Wood Processing Industries Ltd. (WPI); PG Bisonite Ltd.; Rainlands Timber Ltd.; and Kitwe Wood and Log Industries.

37. **Zambia's plantation estate is not sufficient, contributing only 15 percent of industrial roundwood supply.** The plantation resource base of around 50,000 ha managed by the state enterprise ZAFFICO, provides timber for the local markets: i.e. the construction industry. Since 2014, under its Exotic Forest Plantation Expansion Plan, ZAFFICO has expanded from Copperbelt into Muchinga and Luapula Provinces, with a target of establishing 85,000 ha by 2020 (Sichone, 2017). ZAFFICO is trying to attract an equity investor to support the expansion of the plantation base, with little success to date (Sichone, 2017).

38. **Since 2016, ZAFFICO has changed its business strategy but not necessarily in ways that will promote increased private sector investment.** In 2016, GRZ gave the company a tea estate to manage. A Competition Commission report in 2016 noted that ZAFFICO was selling logs below market price in agreements that had been made with CFC and WRI (Kamelu and Konga, 2016). In 2017, ZAFFICO was appointed sole exporter (to China) of confiscated Mukula logs⁷. In 2018, ZAFFICO invested in a pole treatment plant, which aims to treat 140,000 transmission poles per year. More recently, it has invested in cashew nut production. GRZ announced in 2018 that ZAFFICO would be listed on the Lusaka Stock Exchange, which will make it more accountable to the public and, ideally, more efficient and less reliable on state support. The government is planning to retain 60 percent of the shares, with 5 percent offered to employees⁸.

39. **The Forest Act of 2015 aimed at promoting private and community participation in commercial tree planting, but has had limited success to date.** The Act outlined technical and financial incentives to encourage private investment in the forest sector. Technical support was expected to come from the FD and financial support from a Forest Development Fund. However, these incentives do not appear to be working, with very little private investment in the sector, especially for commercial tree planting. Estimates range from less than 2,000 ha only for private plantations in Zambia. It is likely that the environment is not attractive to investors in forestry who need secure land titles (or leases) as well as better governance in terms of managing harvesting concessions from FD and ZAFFICO.

5.1.2 Community/Participatory Forestry: Contributions and Challenges

40. **The state and traditional authorities have overlapping responsibilities on over 335,000 km² of customary forest land.** About 60 percent of this area is classified as open land, outside the PA system. The overlapping responsibilities include approving conversion of forests to agriculture, charcoal production, and timber collection. In practice, there is little presence of

⁷ Source: Zambia Daily Mail web site – www.daily-mail.co.zm/ Report from Sept. 16th 2017.

⁸ Source: The Lusaka Times' web site – www.lusakatimes.com/ Report from Feb. 15th 2019.

state authorities and low coordination between traditional authorities and the Forest Department. The Forest Act of 2015 recognizes the rights of communities to use non-timber forest products and fuel wood from forest on customary land. Resource use for subsistence purposes is unregulated, while hunting, commercial charcoal and timber production are subject to license. Nevertheless, encroachment, informal charcoal production and mining are common.

41. **There is a large consensus that instruments to increase community ownership of forests are key to promote SFM.** Statutory Instrument No. 11 of 2018 outlines processes for community forest management and community forest registration, whereby a formal CFM Group may apply to manage open areas, Local Forests or GMAs, provided the areas have no harvesting concessions or sawmill licenses. For the first time, communities can access forest products suitable for harvesting, conditional on an FMP. Rights are transferred to the community by the Minister and license fees are waived. The legal rights over the forests are expected to increase communities' control and ownership over forest resources. There is a need to implement these policies and provide proof of concept. In the past, models such as Joint Forest Management (JFM) and Community Based Natural Resource Management (CBNRM) introduced elements of multiple rights, but have not worked due to lack of adequate policy and legal framework (Mulolwa, 2016).

42. **The UN-REDD program supporting Zambia emphasizes that the PFM approach can succeed only if crucial issues are addressed.** Positive practices include disincentives or sanctions against destructive practices such as unsustainable charcoal production, as well as the consideration of an equitable benefit-sharing mechanism. The PFM program will also need to address the tendency to decentralize authority over forests and increase incentives for active local management of forests with coordinated actions at the national level.

43. **Due to the early stage of implementation, the impact of the 2018 Statutory Instrument No. 11 - Community Forest Management Regulations - cannot yet be measured.** To date, the instrument has not yet been implemented on a large scale, though several Community Forest Management Groups (CFMGs) have been launched. E.g. in 2018. CFMGs in three districts of Muchinga Province have signed an agreement with the Zambian government to promote communal control, use, and management of forests.

5.1.3 Conservation of Natural Forests: Contributions and Challenges

44. **There is a substantial financing gap that hinders adequate protection and management of forest areas.** The finance required is estimated to be about USD \$166 million per year. In contrast, the financial resources actually available from the state, private sector and NGOs amount to about only \$23 million USD/year, or only eight percent of the resources required to

protect PAs and forests outside of PAs⁹. There is an urgent need to mobilize financing arrangements for conservation: promising sources include revenues for tourism, bushmeat, and carbon finance through REDD+ initiatives.

45. **National Parks and Game Management Areas could bring in significant income, however their potential is largely untapped to date.** Ecotourism, which is mainly attracted by wildlife and natural forests, is estimated to generate USD \$300 million and employ 16,000 people. This revenue are concentrated in only a few areas. It has been shown that visitors travel to only five of the 20 National Parks. The remaining parks lack the necessary basic infrastructure and tourism facilities. Hunting tourism is limited to about half of Zambia's GMAs, which has enough wildlife to sustain hunting. Most of the remaining GMAs are largely depleted due to poaching.

46. **Investments in tourism and bushmeat on private wildlife estates can benefit both the investors and the communities, but further expansion is restricted by external factors.** Investments in wildlife management and utilization have shown to be profitable business models for large private land holdings in areas unsuitable for commercial agriculture or livestock management. The scaling up of private wildlife estates is limited by the area on leasehold in Zambia. Other barriers, which should be addressed, are losses from poaching, the low success of legal action against perpetrators of poaching, and the many permits needed to hunt wildlife and trade bushmeat (Lindsey et al., 2013).

47. **There is a general consensus that communities that benefit from wildlife should become active stewards of forests resources, but success stories are scarce.** The main activity promoted by the DNPW is safari hunting. The community resource board (CRB) established under the Wildlife Act of 2015 provides for community participation in the management of wildlife resources in GMAs. To date, such arrangements have proved to be challenging due to: (i) low benefits perceived by communities from safari hunting, and, (ii) lack of sustainability of CRB initiatives, as functional CRBs have been dependent on considerable external support. Experience from World Bank supported projects in Zambia has shown that CRBs are an appropriate platform for participation in decision-making processes, but successful business cases for communities have not evolved from most arrangements. Thus, innovative ideas need to be assessed for better economical participation and return of revenue for these communities.

48. **The bushmeat shared with communities by commercial hunting establishments through benefit sharing arrangements is the only legal access communities have to wildlife.** Hunting wildlife for subsistence in all Zambian land categories is only legal with a license (Wildlife Act of 2015). The hunting licenses fees for community members for subsistence are prohibitive and likely to exacerbate illegal hunting.

⁹ Forest land in NPs and GMAs is estimated to be 120,000 km². Forest land classified as production forest is 180,000 km².

49. **REDD+ initiatives are being established to finance forest conservation, but these depend on public finance to be viable.** There are four carbon projects¹⁰ running in Zambia, altogether covering about 12,000 km² of forest land, targeting around 100,000 households in the Eastern, Lusaka, and Southern provinces. The four projects are designed to engage with communities living in communal FR, and within or nearby wildlife areas (GMA). The projects invest in direct measures for the protection and sustainable management of the forest/wildlife areas, and indirect measures through community development and alternative income opportunities, including better agricultural practices. To date, the transaction and implementation costs of REDD+ projects are high and are unlikely to be offset by the income from carbon credits. As a result, successful implementation of REDD+ projects depends on public funding, especially at the initial stages before carbon revenues occur.

5.1.4 Key Actions: Focus Area 1: Sustainable Forest Management

Commercial forestry

50. The priority issue to address is to clarify the rules for timber licensing, legality and trade, and focus on their enforcement. The aim must be to create incentives for legal harvesting and to achieve sustainable forest management.
51. Given FD's limited capacity and budget, the practical way forward utilizes a decentralized and participatory approach – particularly with Joint Forest Management (JFM) agreements and CFAs - and in providing technical support (extension services) to private investors and communities.
52. Secondary or lesser-known indigenous species, that can be grown or harvested sustainably, should be promoted to timber buyers. In addition, best practices for processing and handling timber (e.g. sawing technology and techniques, drying procedures etc.) need to be introduced and adopted.
53. To address the urgent need for commercial plantations, the mandate of ZAFFICO should be reviewed: the focus should be less on expanding state-owned plantations and more on improving the business environment to attract private sector investment into the sub-sector.

Community Forestry

54. Community forestry agreements appear to be the best way forward, giving local communities legal rights and 'ownership' over forest resources, within well-defined land use

¹⁰ The Lower Zambezi REDD+ near Lusaka and COMACO Landscape Management Project in the Eastern Province are already verified and have issued carbon credits. The Musokotwane REDD+ project near Livingstone, Southern Province and the Luangwa Community Forests Project¹⁰, Eastern Province are in the process of validation and under development respectively.

rights that insure sustainable use: The process is detailed in Statutory Instrument No. 11 of 2018.

55. Identify forest areas that, due to their location (market access) and characteristics (high value for communities), are particularly attractive for traditional authorities and communities for pilot programs.
56. Promote a landscape approach that aims at integrating community forestry initiatives with other land uses, such as sustainable farming and wildlife management. REDD+ initiatives provide a good platform for clustering initiatives and applying lessons learned to functional arrangements.
57. Further, investigate how sustainable charcoal production could be fostered in community forest management areas through management plans.

Conservation

58. Seek greater involvement of communities and benefit sharing with communities in the management of protected areas and forests. This can build on the Zambian experiences with the existing Community Resource Boards involved in GMAs, community forest management groups in REDD+ and joint forest management projects, and the Simalaha Community Conservancy.
59. Identify NPs that have high potential for tourism (landscape, wildlife) but lack the necessary public infrastructure to access and explore them. Prioritize public funding for the development of parks and engage in public-private partnerships for the development and co-management of parks.
60. Increase control over poaching and address depleting wildlife stocks by establishing higher incentives for community involvement in GMAs and the buy in of traditional authorities to increase control over poaching.
61. Identify commercial sustainable projects related to tourism and bushmeat that could be embedded in existing REDD+ initiatives. Commercial initiative could benefit from the coordination and governance platform provided by REDD+, while these could increase the revenues of the project through benefit sharing agreements.

5.2 Focus area 2: Sustainable Forest Value Chains

62. **The forest-based value chains in Zambia are characterized by small-scale operations, low value adding and high levels of informality.** The main value adding sub-sectors in Zambia are charcoal, forest industries (mainly logs and sawn wood), NWFPs. The production values of these sub-sectors in 2015 were: charcoal USD \$345 million; forest industries USD \$50 million;

and NWFPs US\$ 136 million (NOTE: based on extrapolated data of Zambia's Natural Capital Account for Forest for the year 2010; high level of inaccuracy due to informal sector estimates).

The following chapters describe the most important forest based value chains, highlighting their current socio-economic contributions, challenges and opportunities.

5.2.1 Informal charcoal production: Contributions and Challenges

63. **Informal charcoal production is the major consumer of wood and the forest sub-sector with the highest GDP contribution in Zambia.** Zambia's charcoal business is estimated to produce a volume of 1.5 million tons (FAO data) at a market value of around USD 300 million (2015) (IPARI, 2016). Charcoal prices have substantially increased in recent years in real terms. Hence, the actual contribution of charcoal to the economy is even higher. Total contribution of charcoal to GDP in 2015 is estimated 1.5 percent (Table 2). However, this contribution is mainly derived informally, with around 97 percent of the charcoal coming from unlicensed sources.

64. **Charcoal production offers substantial income generating opportunities for rural households being the main economic actors supplying this value chain.** Countrywide, an estimated 16 percent of Zambian households depend on charcoal and fuelwood production as their main livelihood activity (Forest Dept., 2016). In some provinces (i.e. in Central and Western province), around 50 percent of rural households derive some share of income from fuelwood or charcoal production. On average, charcoal contributes 20 percent of all household income (Mullenga et al, 2012).

65. **Of the total charcoal produced, 35 percent is consumed by households in urban areas, 29 percent by small businesses and industries, and 14 percent is illegally exported** (MLNR, 2018). This shows the major impact industry consumers could have if they pursued sustainable supply chains.

66. **Inefficient charcoal production aggravates forest degradation and bypasses value-adding opportunities. To meet the current demand for charcoal, an estimated 190,000 ha of forest is degraded annually** (FAO, 2017). This is exacerbated by the low biomass conversion rates in the production of charcoal. The earth kilns typically used in Zambia have a biomass conversion ratio of less than 20 percent compared to more efficient kiln technologies that can achieve closer to 30 percent biomass conversion ratios. Adoption of efficient charcoal kiln technologies and cook-stoves is not taking off due to financial, technical, and bureaucratic constraints (Energy Africa, 2018).

67. **Governance of the charcoal sub-sector is generally poor, which encourages a lower level of formalization and sustainability in the sub-sector.** While Zambia imposes levies on charcoal production and trade (production and conveyance license), these are rarely enforced. Licenses can be obtained from local FD offices, but collection of levies is frequently administered by local authorities. Generally, presence of FD in rural areas to enforce charcoal production and

trade is poor due to resources constraints. Consequently, charcoal is mainly produced without any licensing or control of sustainability.

68. **Demand for fuelwood and charcoal will continue to grow as substitutes are not available (grid and off-grid electricity) or are not affordable.** The 2008 Rural Electrification Master Plan (“REMP”) sets a target of increasing access to electricity to 51 percent of households in rural areas by 2030. However, in 2017 the rural electricity access rate was only at 4.4 percent for grid power and 7.4 percent for solar power. In general, off-grid solutions, based on solar, biogas and bio-combustion, are not widely introduced.

69. **In absence of alternatives, future fuelwood and charcoal consumption can be expected to follow the population increase** and be linked to cost of kerosene and electricity (Mackenzie, 2014). With projected growing demand, there is imminent need to establish sustainable fuel wood and charcoal supply systems to avoid continuing degradation of the forest resource.

70. **The charcoal business could potentially become a sustainable income generating sector, but related initiatives have just begun.** The organization of the charcoal value-chain actors and their recognition by the government could provide an opportunity for sustainable charcoal production and enhanced contribution to the formal economy. The FAO Forest and Farm Facility is currently working on pilot cases to establish formalized charcoal producer organizations (FAO, 2017).

71. **If Zambia introduces sustainable charcoal production systems, woodlands under long-term charcoal production cycles could continue to provide most ecosystem services¹¹.** These approaches require that technical capacity and consistent land tenure arrangements are in place. However, in Zambia the status quo of unplanned production is still perceived to be the only production model. This has led Zambian policy-makers to marginalize the charcoal economy, thereby missing the opportunity to generate revenues for investment in sustainable management. This lack of acknowledgement perpetuates the informal production model and its negative impact on the forest resource base.

5.2.2 Forest industries: Contributions and Challenges

General

72. **Despite the huge forest potential of Zambia and growing domestic timber demand, forest industries are not well developed.** The country’s forest industries are characterized by low levels of added value, small-scale business and informality. GDP contribution of formal wood industry is as low as 0.01 percent; informal wood industry’s GDP contribution is slightly higher: 0.07 percent (Table 2).

¹¹ Syampungani et al. (2017); Woollen et al (2016)

73. **The official trade balance of processed wood products for Zambia shows growing deficits over recent years.** The official trade deficit for wood products in 2015 was USD \$41.4 million (Annex 3.3). Zambia relies on imports for almost all primary and secondary processed wood products segments. Only sawnwood exports shows a positive trade balance. Further, Zambia imports significant volumes of paper products (USD \$90 million in 2015).

74. **Approximately 70 percent of log national production is exported; 90 percent of these exports consist of logs harvested without valid licenses** (Annex 3.2). A substantial proportion for Zambia's exported wood is comprised of raw logs, sawnwood, and charcoal produced by the informal sector. The 2016 export value of unlicensed Mukula (*Pterocarpus chrysothrix*) to China is estimated to be more than USD \$87 million (Cerutti et al, 2018), surpassing official export values by far (see Text Box 4). In light of growing domestic demand, exports of low value-added products are draining capital from the sector, which would be *required to invest in modern* wood processing industries.

75. **Domestic demand is driven by construction, furniture, and carpentry sectors. The construction sector is consuming the lion's share of all non-fuel timber (about 40 percent of domestic consumption of logs, sawnwood and poles).** Only 20 percent of this volume is supplied from plantations, while the majority comes from natural forests (Annex 3.2).

76. **The most important value added product of Zambia's wood industry is sawn timber.** Downstream value adding of sawnwood is realized by carpenters, mainly producing furniture, doors and window frames. Large volumes of rough sawn timber are also directly consumed by the construction sector. Unlicensed roundwood is the main source of raw material for sawnwood production (Annex 3.2). Domestic production volumes of other primary processed wood products (e.g. veneer, panels) are negligible.

The following sub-sections describe the currently most important forest industry value chains in Zambia: log export value chains;, small-scale sawmilling; and other primary wood processing industries.

Log export value chain

77. **Export is a major driver of informal logging activities in Zambia's natural forests.** As emphasized earlier, the majority of Zambia's log production is harvested without valid licenses and is exported (Annex 3.2).

78. **Informal logging results from growing market opportunities and enforcement gaps in commercial licensing.** Export of logs has grown by 250 percent from 2010 to 2015 (2.3 million m³). During the same period, unlicensed roundwood production has almost doubled (2.8 million m³ in 2015). By 2015, absolute volumes of licensed log production has reached only 96,000 m³,

indicating a significant enforcement gap (see chapter 5.1.1 on forest management and licensing regulations).

79. **Exporters operate in the grey space between legality and illegality** for a number of reasons, including: (a) hurdles to fulfill legal requirements for small-scale operators or farmers; b) lack of enforcement capacity of the Forest Department; and (c) confusing and at times conflicting regulations, such as a number of short-term export bans installed by the Government (Cerutti et al., 2018).

80. **Log export bans have not been successful in avoiding illegal timber trade.** In absence of enforcement capacities to license and control timber harvesting in natural forests, the Government of Zambia installed a series of log export bans in recent years. However, enforcement and control of these bans have been poor and ultimately contributed to keeping the rosewood market underground without significantly affecting harvest and trade.

81. **The contribution of logging to the formal economy and income generation in rural areas remain below full potential.** The income of informal loggers from one m³ of naturally grown *Mukula* (*Pterocarpus chrysothrix* - see Text Box 4) in Zambia is only 0.02 percent of the export price. Traders involved in illegal trade of Mukula encourage people to source and cut the trees, which are mostly exported as logs. Informality weakens the negotiation power of producers. Revenue losses are estimated at about US\$3.2 million, and estimated bribes paid to state officials of about US\$1.7 million (Cerutti et al., 2018).

82. **The environmental impact of informal logging is not well analyzed, but its contribution to forest degradation may be substantial.** Recent estimates of unlicensed *Pterocarpus chrysothrix* production in Zambia could be as high as 110,000 cubic meters per year. As indicated by Cerutti et al (2018), abundance of the species has diminished regionally. Similar developments can be assumed for other species requested by the markets and harvested without sustainable management plans. Including the species in the CITES' Annex 2 list could help to reduce market demand by making trade illegal.

83. **Stakeholders from the private sector, academia, and NGOs agree that the only way to address illegal logging while enhancing value for forest owners is the widespread enforcement of forest management and licensing regulations stipulated by the Forest Act of 2015.** The Forestry Department should enable communities to benefit from the timber trade. Where feasible, timber production and trade should be considered as a community enterprise, as provided for under the Forests Act of 2015 and the Community Forest Management regulations Statutory Instrument 11/2018.

Text Box 4. Mukula Trade

A new value chain has developed in recent years with exports of Mukula (*Pterocarpus chrysothrix**) logs to China. The red wood is prized for making 'antique' furniture - known as 'hongmu' or red wood - for the rapidly growing elite classes in China.

Mukula occurs largely in western Zambia, where Chinese buyers have encouraged community farmers to source and cut the trees which are mostly exported as logs. These farmers are reportedly paid USD \$23 per cubic meter of timber harvested, with manufacturers paying over USD \$1,000 per cubic meter to importers.

Recent estimates of Mukula production in Zambia could be as high as 110,000 cubic meters per year. The scale of the export of Mukula is difficult to assess, however, as Zambian and Chinese official customs' data are grossly mismatched. This highlights that the business is largely informal, operating outside the legal framework and with limited government oversight.

While the trade has short-term benefits for rural livelihoods – namely, cash income - the long-term consequences include unsustainable harvesting of this slow growing species and major losses to the communities' and government's incomes.

The Zambian government's reaction has been to announce frequent bans on production, log exports and transportation of Mukula. These have led to a confusing and an often conflicting legal framework, which has played into the hands of political elites.

* *Synonymous with Pterocarpus tinctorius and Pterocarpus stolzii*.

Source: Cerutti et al (2018).

Small-scale sawmilling

84. **The most important actors in Zambia's wood processing industries are 1,100 small scale saw millers and pit sawing operations.** These actors operate on small or casual licenses according to the Forest Act. While small-scale sawmills primarily operate on plantation estates, pit saws process trees from natural forests.

85. **About 95 percent of sawn wood is produced without licenses.** Due to limited plantation resources (chapter 5.1) and difficult access to natural timber licenses, sawmills commonly source from unlicensed producers. Where the sawmillers also run forest harvesting operations (i.e. pit saws and small sawmills), they frequently exceed the licensed volumes.

86. **Informality in natural forests, sawmilling, and pit sawing results from poor access to licensing raw material in combination with poor sector governance.** Logging and pit sawing have become critical livelihood activities for villagers in forest areas. Most work with casual licenses identified for subsistence use timber. However in reality the sawnwood is sold to traders for domestic and international markets. FD lacks the capacity to provide the actors with services to formalize roundwood production through approval of management plans, and implementation and control of commercial licensing. The adverse effects are significant for a) the environment, since informal operations commonly do not follow SFM practices; and b) for the economy, since informal activities do not contribute tax revenues and decent employment.

87. **Sawmilling of plantation timber has attracted private sector investments, but increasingly poor availability of raw material restricts further development.** Small-scale softwood sawmilling gained substantial interest from entrepreneurs after ZAFFICO privatized its sawmilling plants in 2002 and issued licenses for sawmilling operations on its plantations to private sector enterprises. By 2013, almost 600 saw millers had commenced operations. However, due to poor replanting rates of ZAFFICO and reduced overall harvesting volumes, many of these sawmills are currently operating at only 50 percent of their capacity or have ceased operations.

88. **Informality and poor access to timber resources hampers investments in the sawmilling sector.** Insecurity caused by informality and unreliable access to raw material is a major obstacle that hampers sawmilling entrepreneurs from expanding and modernizing their operations. It restricts access to capital and long-term business planning.

89. **Instruments provided by the Forest Act of 2015 could help to overcome informality and raw material scarcity and promote sustainable growth of the sawmilling sub-sector, but implementation is still poor.** The Forest Act of 2015 provides clear guidance on licensing of commercial logging and sawmilling and defines the roles and responsibilities of actors. The Statutory Instrument of 11/2018 is strengthening communities' opportunities to formalize and establish enterprises to formalize logging and sawmilling activities in rural areas and enhance sustainability. Further, the Forest Act outlines incentives for registering private forests, including technical and financial support, which could stimulate private plantation establishment. However, anecdotal evidence and case studies produced in the context of the illegal rosewood export value chains suggest that to date these instruments have not been implemented accordingly.

Other forest industries

90. **Demand for wood products in Zambia will grow, offering business opportunities for domestic entrepreneurs and foreign investors.** Domestic demand for quality sawnwood and wood-based panels is projected to double to almost 1 million m³ by 2030 (Hägglom and Partners, 2017).

91. **Existing wood processing industries will not be able to meet growing demand.** There are four larger sawmills, with 20,000 m³/year maximum intake capacity (Hägglom and Partners, 2017). Their operations are primarily plantation based and operate on outdated equipment with low recovery rates. Production of wood-based panels in Zambia is very low reaching hardly 40,000 m³ per year.

92. **Efficiency and productivity of the Zambian wood industry is low compared to regional competitors.** The country lacks basic industry capacities to domestically produce wood-based panels and secondary processed wood products and supply downstream value adding in the construction and furniture sector. This indicates modernization and investment bottlenecks in the wood industry.

93. **Despite Zambia's investment friendly environment, only a few investments in wood processing industries have been realized to date.** Zambia ranks 85th in the World Bank Group "Doing Business" profile—from 87th in 2018—and 6th among Sub-Saharan African countries. Favorable factor costs and the strategic position of Zambia with access to huge markets in DRC and Tanzania have attracted the interest of potential forest industry investors, but to date no significant investments have materialized.

94. **Major barriers for investments in modern and larger wood industries are primarily rooted in poor and unreliable access to licensed raw material.** This relates to both sourcing from natural forests and from plantations. Decently sized, though still small, modern industries require reliable annual intake volumes from 20,000 m³. However access to natural forest timber is restricted by lack of licensed raw material due to resources gaps for implementing management plans and harvesting licenses (see chapter 5.1.1). The timber available from existing plantation resources is already distributed among the current market players. Additional resources would be required, such as the supply of wood-based panel and mass timber production, but investments in new plantations are missing (see chapter 5.1.1).

5.2.3 Non-Wood Forest Products: Contributions and Challenges

95. **Zambia's forests provide several non-wood forest products (NWFPs),** such as wild foods (mushrooms, fruits, edible insects, bushmeat, and honey) as well as supplying year-round fodder for livestock (GRZ, 2017). Forests are a safety net in times of shocks and stresses such as famine from bad weather or diseases that attack both crops and domesticated animals (ZNFP, 2014).

96. **There are significant regional differences in terms of NWFP contribution to household income.** In the Northwestern Province, the most densely forested area in Zambia, 75 percent of households engage in commercial enterprises with mushrooms, caterpillars, and wild honey (Ngoma et al, 2017). In contrast, the Northern Province recorded only 2 percent of households engaging in commercial NWFP activities. Studies suggest that the average contribution of NWFP commercializing to households' income may be as high as 10 percent. Poorer households are the most vulnerable and the most dependent on NWFP income.

97. **Income contribution of NWFPs strongly depends on market access.** Thus, communities in remote areas with poor infrastructure are less likely to participate in NWFP value chains. If markets are distant, producers frequently rely on intermediaries, which reduces the producers' share of the retail prices.

98. **Data concerning the volume or number of commercialized NWFPs is fragmented.** MLNR estimates the total value of commercialized NWFPs in 2015 to be about USD \$134 million. The production volume of honey and beeswax is estimated at 2,000 tons, and for legal bushmeat 800 tons, plus a substantial volume that is hunted without valid licenses.

99. **The honey sub-sector is the most advanced NWFP value chain in Zambia.** The sector directly employs 35,000 beekeepers and 6,000 honey producers, who derive 80 percent of their household income from selling honey (Nyawali, 2017). Honey producers are mainly men, with women representing only 10 percent to 20 percent of the sector. However it is important to note that most beekeepers cannot make a living off their trade, operating below economic viability. Thus the formation of producer organizations is important, in order to develop the socio-economic contributions of the sub-sector by scaling up production and increasing quality. In the past, several donor programs have tried to address these challenges (e.g. GIZ and SNV). However the results are ambiguous. While some producer organizations have succeeded in creating long-term viable businesses, others collapsed after donor support phased out.

100. **Bushmeat is another important NWFP value chain in Zambia.** The majority of legal bushmeat is supplied by private wildlife estates, followed closely by bushmeat from GMAs. Bushmeat that is shared with the communities by hunting outfitters operating in GMAs is crucial to the revenue sharing (about 25 percent), and the only way for communities to access bushmeat legally.

101. **Current regulations are not supportive for the development of community-based legal bushmeat value chains.** The use of wildlife and trade of bushmeat is regulated by the Zambia Wildlife Act, 2015. Ownership of all wildlife in Zambia is vested with the state. The act requires licensing for any type of hunting activity (commercial or subsistence) and related fees. Further, formal training and examinations are required—and come at a cost—to establish commercial hunting and bushmeat trading. In sum, the current regulations pose huge financial obstacles for the rural population to set up formal bushmeat businesses.

102. **Since legal access to bushmeat is nearly impossible for rural households, they engage in illegal activities.** Bushmeat from animals hunted and traded illegally stems largely from in and around the GMAs, NPs, and open private wildlife estates. It is locally consumed or traded to urban centers. DNPW confiscated over 20,000 kg bushmeat in 2016 and almost 12,000 kg in 2017 (DNPW, 2018). However, the amount of bushmeat consumed and traded illegally is likely to far exceed what is confiscated. Meat from animals hunted legally, but sold or traded without the necessary permits, is also considered illegal.

103. **There is an urgent need to develop NWFP business cases that benefit communities while ensuring sustainable use and management of the resource base.** The regulatory framework and support offered to Community Forest Management Groups as provided within the Statutory Instrument 11/2018 may offer possibilities to form NWFP community enterprises, but experiences and best practices still need to be developed.

5.2.4 Key Actions: Focus Area 2: Sustainable Forest Value Chains

Charcoal

104. Assess sustainable management options of Miombo forests for charcoal production and disseminate knowledge and lessons among producers and FD.
105. Assess demand side measures that consider industrial consumers of charcoal, incentivizing sustainable charcoal production systems to reduce GHG emissions. For instance, foster woodlot establishment and management for sustainable charcoal production, particularly associated to the value chains of large users that could provide financing.
106. Revise the fee structure for commercial charcoal production, and foster the association of charcoal producers.
107. Link commercial value chains to projects of sustainable Community Forest Management Groups (CFMGs) and community forest enterprises.
108. Assess the options and economic and environmental cost benefits of introducing improved charcoal kiln technologies.

Forest industries

109. Enhance the capacities of the FD and communities regarding the production of licensed timber for domestic value chains and exports. Regulatory instruments such as sawmill licensing procedures, the Statutory Instruments 11/2018, log export bans or CITEs listing of threatened species must be carefully analyzed and adjusted/implemented accordingly.
110. Analyze the requirements for private sector engagement and for attracting investment into the commercial forest sector. Reliable access to licensed raw material is seen as crucial here and this must be addressed jointly with the promotion of SFM (for both natural forests and plantations) and strengthening the capacities of FD to establish, approve, and maintain forest management plans.
111. Analyze domestic enterprises' needs for enhanced capacities to source legally, improve productivity, and deliver quality products. This requires addressing access to finance, technical assistance, and business development services.

Non-Wood Forest Products

112. Assess the lessons learned from successful honey producer organizations and unsuccessful projects and extract best practices for replicating promising approaches.
113. Assess opportunities to develop bushmeat-based business models possible under the Wildlife Act 2015. Lessons from community co-management of GMAs need to be revisited and evaluated to lower entry barriers for communities to become formal economic actors.

5.3 Cross-Cutting Challenges to SFM

5.3.1 Competing Land Uses and Impacts of Non-Forest Sectors

114. **The underlying causes of deforestation and degradation are rooted in demographic and economic contexts.** Population growth is resulting in: a) increased demand for forest products; b) a growing demand for land for food production; c) a growing demand for fossil and mineral resources (oil, sand, cement); and d) a growing demand for employment opportunities. Further, there are economic parameters that potentially inflate or deflate these demand trends, for example Zambia's focus on exports of minerals, informal cross-border trade with wood products, or per capita income growth also have impacts on deforestation and degradation (Vinya et al, 2011; UN-REDD, 2015).

115. **The population in Zambia's rural areas is predicted to grow to 14.5 million by 2035** (+4.5 million compared to 2019), while the population in urban areas is expected to be 12.4 million by 2035 (an increase of 5 million compared to 2019) (CSO, 2013). The pressures on forest resources caused by agricultural production will only be exacerbated by this unprecedented population growth.

116. **The analysis of opportunity costs of the competing land uses shows that commercial mining yields the highest annual net benefits of all, followed by intensive agriculture** (represented by soy bean cultivation). On average the annual income of household farmers per ha in Zambia is USD \$156 USD/ha¹². Still, common agricultural practices yield less income than charcoal production and artisanal mining. All aforementioned land uses result in higher annual incomes/benefits than extensive use of Miombo forest (USD \$30/ha).

117. **Despite achieving annual growth rates of more than 6 percent in agriculture, crop yields remain low by international standards and rural poverty rates remain stubbornly high-at about 80 percent.** Income inequality between rural and urban areas is spiking rapidly, while limited progress is made to improve the productivity of small-scale farms (IAPRI, 2015).

118. **Large-scale commercial agricultural expansion will increasingly meet domestic and export demand.** The government of Zambia is currently implementing the Farm Block Development Program (FBDP), which aims at attracting medium and large commercial agriculture investments. The total area stipulated for this development effort is 1 million hectares (according to the Zambia Development Authority). However some of this area are already cultivated land and may not directly deplete existing forest resources.

¹² Higher country average of small-scale agriculture compared to case study data on maize cultivation may be caused by: a) mixed income sources of households from variety of crops and livestock, and b) the area base for computing of country average only considers cultivated small-scale farming area, but does not consider area used for cattle ranging; thus per ha average is likely to be over-estimated.

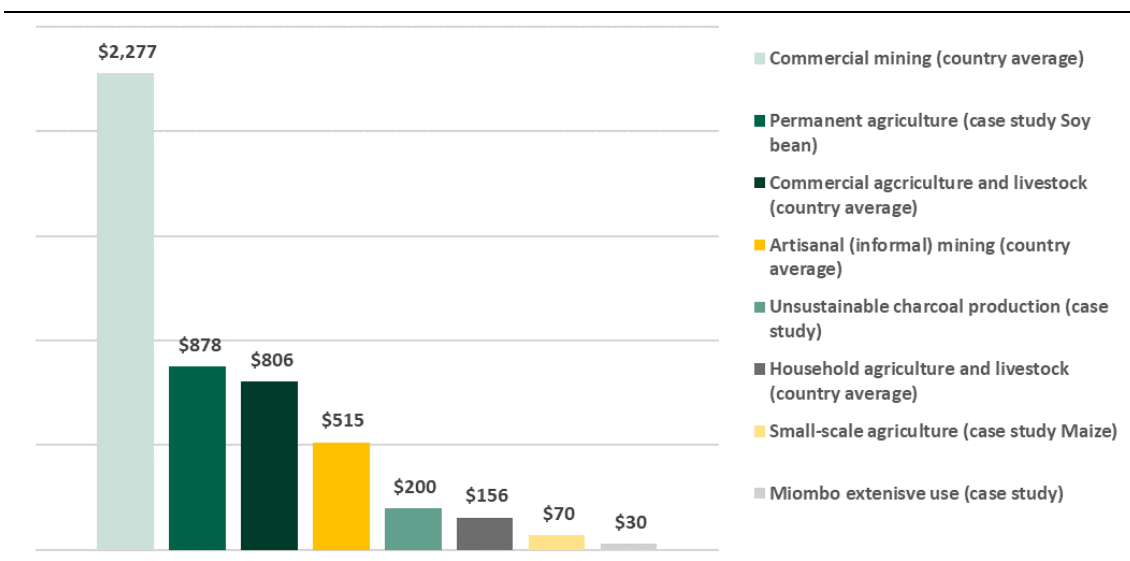


Figure 3: Comparison of annual net income per ha

Source: UNIQUE 2019 ZAFOSA (unpublished) (analysis of different data sources)

119. **The artisanal mining sector is fueled by growing demand for alternative income sources in rural areas, and growing demand for minerals and construction materials.** However overall area under this land use is still small (est. 52,000 ha). Besides the direct mining areas (open pits or underground), adjacent forest resources are typically degraded by extraction of timber, wood fuel, roads, and temporary housing construction. There are government efforts to formalize these activities, but as of 2016, only 147 official artisanal mining licenses had been issued (CSO, 2018). The growing need for employment opportunities in Zambia will further lead to expansion of artisanal mining sector – mainly informal.

120. **More than 1.1 million hectares are currently under mining concessions of registered mining enterprises (mainly mining copper, ore and coal).** Licensed mining is highly concentrated with only 77 corporations holding more than 80 percent (0.9 million ha) of the mining concessions (CSO, 2018). Artisanal mining and medium-sized mining are currently not very competitive in the formal economy (except for high-value mineral extraction). Economies of scale are the key factor for competitiveness in the formal mining sector.

121. **Given its significance in boosting the Zambian GDP, the government continues to license large-scale mining operations.** Hence, forest areas will be negatively affected by these activities. Although there are clearly defined environmental safeguards in place to reduce the environmental impact and to try to ensure rehabilitation of expired mining areas, there is evidence that compliance of large-scale corporates is weak (GRZ, 2014).

5.3.2 Contribution to GHG Mitigation

122. **Adaptation to climate change ranks high in Zambia’s development priorities since the country is particularly vulnerable and already experiencing these adverse impacts.** Climate change affects the rural poor the most, as they are largely dependent on agriculture and natural resources. Droughts and floods have increased in frequency and intensity over the past few decades and have adversely affected food and water security, water quality, energy, and livelihoods. Zambia’s mean annual temperature increased by 1.3°C between 1960 and 2003, while mean rainfall decreased by 1.9 mm/month (2.3 percent) in the same period (GRZ, 2017).

123. **Zambia’s Intended National Determined Contribution (INDC, 2015) assessment shows that, if unaddressed, climate change impacts may lead to estimated total GDP loss in the range of USD \$4,330 million to USD \$5,440 million: this is the aggregated loss over a 10-20 year planning horizon,** with the following sector GDP losses: agriculture (USD \$2,200 – 3,130 million), energy (USD \$270 – 450 million), health (USD \$460 million), and natural resources (USD \$1,400 million) (GRZ, 2017).

124. **Deforestation and forest degradation are the greatest contributors to carbon emissions.** Zambia’s INDC commits to reducing carbon dioxide-equivalent emissions by 25 percent by 2030 compared to 2010 base year emission levels. Furthermore, the country commits to achieving a higher reduction of 47 percent if substantial international support is available. This translates into a mitigation of 38,000 Gg (1Gg = 10⁹ g) CO₂eq by 2030 (assuming international support is provided). Of this amount, the largest proportion, about 29,000 Gg CO₂eq, is attributed to land use change and forestry, the sectors that are the major focus of the REDD+ National Strategy (GRZ, 2017).

125. **Climate goals are expected to be achieved through mitigation and adaptation programs, primarily in the sectors of forestry, agriculture, and energy.** The total budget for implementing both components is estimated at USD \$50 billion by the year 2030. USD \$35 billion is expected to come from external sources while USD \$15 billion will be mobilized from domestic sources.

126. **Forests are crucial to both the mitigation and adaptation components.** A Sustainable Forest Management Program is integral to the country’s Climate Response Strategy. This program has been developed based on Zambia’s development plans and supported by international climate-related initiatives such as REDD+, NAMAs and the Technology Needs Assessment.

127. **The UN-REDD Program has provided support to Zambia since 2010 through a National Program in the form of strategic policy advice and technical support.** This resulted in the endorsement of Zambia’s National REDD+ Strategy at the ministerial level of government. An approach to Measurement, Reporting and Verification (MRV) has been put in place that draws on a national forest monitoring system, and a country approach to addressing and respecting safeguards has been outlined.

128. **GRZ developed a Forest Investment Plan (FIP) to move from REDD+ readiness to implementation.** The FIP draws on national policies and plans, and seeks to address deforestation and forest degradation. Strategically, the FIP identifies two core investment priorities: (1) Conservation of high-value forest areas; (2) Promotion of resilient landscapes, sustainable agriculture, and energy; and activities for creating an enabling environment for successful implementation of the investment plan.

129. **The FIP sets forth a preliminary funding target of USD \$404.67 million over five years and requires the mobilization of multiple sources of funding (public and private, multilateral, and bilateral).** GRZ aims at attracting international funding such as the World Bank, the African Development Bank, and the Green Climate Fund, among others. To date, these funds are not secured.

130. **Zambia's institutional capacity to absorb international funding for SFM and climate change mitigation requires enhancement.** According to the World Bank (2018), poor financial management has contributed to slow uptake of resources, and internal controls are weak and result in misuse of funds. There is an urgent need to build capacity by providing support to government institutions and support the training of accountants and auditors.

5.3.3 Institutions and Governance

131. **Many actors attribute ineffective resource management to the lack of secure tenure and forest-use rights by the majority of the rural population.** Although the Lands Act of 1995 provided for the recognition of land under customary tenure managed by traditional leaders, there are no procedures or supporting statutes that protect these customary land rights. For instance, customary tenure is not registered, leaving these land holdings prone to abuse.

132. **Leasehold regulations prevent formal private sector investments in forestry.** In addition, the state administers leasehold titles within chiefdoms on land (farms, mining concessions, and other uses) that has gone through the process of conversion under the 1995 Land Act from customary tenure to leasehold tenure. Conversion of land is a one-way process; leasehold tenure does not revert to customary tenure, nor can leaseholds be cancelled due to lack of follow-through with the provisions' initial agreements (Tagliarino, 2014). This reduces chiefs' as well as investors' incentives for formalization, and anecdotal evidence suggests that an enormous number of such transfers remain informal.

133. **The Draft Land Policy of 2017 seeks to increase the formalization and security of customary tenure, but is facing resistance by traditional authorities.** Traditional leaders fear that the drafted regulations may facilitate the conversion of customary land to statutory tenure (Hall et al., 2017). In fact, the conversion of customary land to leaseholds as allowed by the Land Act of 1995 restricts local rights over community land. Private investors and individual rural dwellers,

who wish to acquire secure leaseholds may be unable to do so, as traditional leaders may oppose giving their consent. Further, a lack of transparency and participation has been reported on such land alienation decisions (Mulolwa, 2016). There is an immediate need to carefully elaborate the land policy and its enforcing instruments to resolve such constellations that disincentivize formalized land tenure.

134. **Recent land-use policies in Zambia are conducive to forest-smart interventions in other land-use sectors.** The National Agriculture Policy (NAP, 2016) recognizes the significance of climate change adaptation by promoting climate-smart agricultural practices such as conservation agriculture and agroforestry and linkages to other sectors such as forestry, energy, land use, and infrastructure development. In addition, the second National Biodiversity Strategy and Action Plan sets out overarching objectives for biodiversity conservation by 2025 and emphasizes multi-sectoral coordination (GRZ, 2015a).

5.3.4 Key Actions: Focus Area 3: Cross-Cutting Challenges to SFM

Competing land uses

135. Investments that support agricultural extension, rural infrastructure and service provision that increase agricultural productivity should be supported.
136. Support landscape level investment planning approaches that seek to increase efficiency and sustainability of agriculture and mining and strengthen protection on sites appropriate for conservation.
137. Fostering environmental and social impact assessment, increasing transparent information on safeguards and land-use rights for investors, and ensuring the engagement of civil society or government agencies to facilitate communication between investors and local people could foster sustainable land-use investments and reduce associated deforestation.

Contribution to GHG Mitigation

138. Ensure REDD+ activities are subject to reviews to continue developing working models for capturing climate finance for forest conservation.
139. Support the transition from REDD+ readiness to actual payments for emission reduction, by capturing Fund's for the FIP and channeling these resources to Joint Forest Management models, PPPs and other benefit arrangements for forest conservation.
140. Assess the capacity of national institutions to absorb the international funds pledged or requested for SFM and implementation of Climate Change mitigation activities. Developing assistance programs for accountants and auditors and designing robust financial architecture for managing and disbursing funds.

Institutions and Governance

141. Support decentralization efforts and monitoring capacity of governmental agencies while at the same time strengthening participation and ownership of forest resources by community actors and private actors.
142. Lower the barriers for legal production of forest products. In the context of the low capacity of state actors for monitoring, legality should be made as attractive as possible for producers.
143. Support all interventions aimed at the engagement and building of trust between government officials, traditional authorities, and civil society will be crucial to: a) enact a Land Policy based on broad participation that ensures secure tenure rights by the majority of the population without overriding poor rural dwellers, women, and people with HIV; b) ensure effective regional and local forest governance structures over customary territory and its resources, and; c) foster harmonized policies and clear rights over land, forests, and wildlife, and implement conflict resolution mechanisms.

6. WORLD BANK AND OTHER DEVELOPMENT PARTNERS IN ZAMBIA'S FOREST SECTOR

6.1 World Bank engagement in Zambia

144. **The World Bank has been actively engaged in supporting Zambia with sustainable landscape management during the last decade.** One of the most important and relevant pillars of World Bank support was focused on sustainable land-use management, either by supporting institutional interventions to improve resource management, by providing finance for sustainable forest management and/or climate resilient land uses, or interventions to increase the efficiency of agriculture. In 2016, the World Bank was actively involved in supporting the development of the Forest Investment Plan for Zambia's National REDD+ Strategy, aligned to the Forest Investment Program.

145. **The World Bank serves as a conduit for resources from institutions, particularly the Forest Investment Program, that can reach Zambia.** In addition, the World Bank supports Zambia in the Zambia Integrated Forest Landscape Project in Eastern Province in one of the REDD+ Strategy priority areas.

146. **The Zambia Integrated Forest Landscape Project (ZIFLP) is addressing the key challenges of the country's forest sector as identified by this country forest note.** The project has a volume of USD \$32.8 million and runs until 2022. The envisaged activities include: Capacity building of FD; supporting Management of forest reserves; supporting the development of Forest Management Plans (with FD and CFMGs); establishing community forestry enterprises; developing systems to manage data on land rights; identifying regulatory issues for sustainable private sector arrangements; supporting biodiversity conservation and wildlife management; approaches to roll-out Climate Smart Agriculture (GRZ 2017a).

147. **The World Bank Country Partnership Framework 2019-2023** indicates forthcoming WB programs focusing on landscape transformation and climate resilience and energy sector development (World Bank, 2018). In 2019, the World Bank approved One Hundred Million United States Dollars (USD 100) for the TRALARD (Transforming Landscapes for Resilience and Development) project, which will support sustainable use of natural resources for livelihoods, and help the government of Zambia respond adequately and timely to a crisis or emergency. TRALARD could provide further opportunities to implement key investments of the IP.

148. **The current World Bank portfolio shows a strong focus on energy development (i.e. electrification) with more than USD \$330 million committed lending volume in 2018.** The direct impacts of these programs on fuelwood and charcoal consumption in Zambia are yet to be evaluated. The lending program on economic diversification for rural jobs will be of high relevance (to start in 2020 with a budget of USD \$100 million). This package aims to enhance formal and decent labor in the forest sector and release the full potential of opportunities related to forest -based income generation (timber, NWFPs, touristic services and ecosystem services).

A list of World Bank and key partners' forest sector activities in Zambia is provided in Annex 2.

6.2 Other donors

149. The **Global Environmental Facility (GEF)** has been supporting Zambia in areas related to biodiversity, international waters, land degradation, chemicals, and waste, climate change mitigation, as well as cross-cutting issues such as SFM for more than 20 years. Zambia has benefited about \$58.5million from GEF grants that have leveraged almost \$283.4 in co-financing to fund 18 projects with different agencies.

150. The **African Development Bank (AfDB)** is one of the implementing agencies of the Climate Investment Fund, and has been involved in supporting Zambia with the Pilot Program on Climate Resilience (PPCR), together with the WB. AfDB is a potential source of funding for the implementation of the REDD+ Strategy. It will build on its ongoing development partnership with the government of Zambia.

151. **Bilateral institutions** that have or are currently supporting REDD+-related programs/projects in the country include FINNIDA, SIDA, NORAD, DFID, GIZ and USAID.

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ANNEX 2. WORLD BANK AND KEY PARTNERS FOREST PROJECTS IN ZAMBIA

World Bank projects						
No	Project	Approval date	Closing date	Commitment amount (US mil)	Addressing issue	Project's objective
1	ZIFL-P	May 4, 2017	Aug 31, 2022	17	Landscape management Investments issues	The objective of Integrated Forest Landscape Project for Zambia is to improve landscape management and increase environmental and economic benefits for targeted rural communities in the Eastern Province and to improve the Recipient's capacity to respond promptly and effectively to an Eligible Crisis or Emergency.
2	Zambia FIP	Aug 1, 2016	June 30, 2018	0.25	Investments issues Institutional issues	Develop an investment plan for Zambia's National REDD+ Strategy while also meeting the objectives of the Forestry Investment Program (FIP). Identifying financing opportunities for climate action/engagement; providing capacity building to key stakeholders; and through broad consultations with key stakeholders and partners. The Investment Plan will provide a roadmap for Zambia to combine and leverage global climate finance opportunities to support a long-term sequence of transformational climate investments.
3	Transforming Landscape	May 15, 2019	Dec 31, 2025	100	Forest management and protected	The development objective of the Transforming Landscapes for Resilience and Development Project for Zambia is to improve natural resource management in select districts to support sustainable livelihoods, and in the

	for Resilience project				areas Sustainable land use	event of an eligible crisis or emergency, to provide immediate and effective response to the eligible crisis or emergency.
5	Nyika Trans-Frontier Conservation Area management project (Zambia and Malawi)	Apr 21, 2011	June 30, 2017	4.82	Land use management Institutional issues Investments issues	The objective of the Sustainable Management of Nyika Transfrontier Conservation Area (TFCA) Project for Malawi, Zambia is to establish more effective transfrontier management of biodiversity in the Nyika TFCA.
6	Irrigation Development and Support Project	April 7, 2011	Nov 30, 2020	115	Land use management	The objective of the Irrigation Development and Support Project for Zambia is to increase yields per hectare and value of diverse products marketed by smallholders benefiting from investments in irrigation in selected sites served by the project.

7	Zambia CO- MACO Land- scape Man- age- ment	Apr 27, 2015	June 30, 2019	1.33	Landscape manage- ment Competing land uses	The development objective of the COMACO Landscape Project is to reduce emissions of Greenhouse Gases (GHG) through the sustainable management within 270,698 ha of land traditionally devoted to community-led agricultural and non-agricultural activities.
8	Zambia Strengthening Climate Resili- ence (PPCR Phase II)	May 9, 2013	Dec 31, 2019	36	Invest- ments is- sues	The AF is proposed in response to an endorsement letter from the Government of the Republic of Zambia dated September 20, 2017, requesting the World Bank to implement a project to mobilize private sector investments to support climate resilience projects. This AF aims to complement existing project funding to allow for an extension of the programmatic approach of the Strategic Program for Climate Resilience (SPCR) being implemented through the World Bank–led parent project to improve the livelihoods and resilience of rural communities in the Barotse Sub-basin.
9	Addi- tional Fi- nancing for Zam- bia Strengthening Climate Resili- ence	Jun 18, 2018	Dec 31, 2022	14.6		

	(PPCR Phase II)					
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Other development Partners

No	Project	Funding source	Total project cost (USD mill)	Addressing issue	Project's objective
1	GEF Project 8034: Building the Resilience of Local Communities in Zambia through the Introduction of Ecosystem-based Adaptation (EbA) into Priority Ecosystems, including Wetlands and Forest- pipeline (UNEP). <i>Approved</i>	Global Environment Facility Trust Fund & Least Developed Countries Fund	24	Land use management	The project sets ambitious targets to enhance the adaptive capacity of communities to the negative impacts of climate change through Ecosystem-based Adaptation, with interventions targeting the preservation of ecosystem services
2	GEF Project 5435: Promoting Climate Resilient Community-based Regeneration of Indigenous Forests in Zambia's Central Province- pipeline (UNDP- pipeline (UNDP). <i>Approved</i>	Global Environment Facility Trust Fund & Least Developed Countries Fund	33	Land use management	The project aims to promote climate resilient, community based regeneration of indigenous forests in Zambia's Central Province, thereby securing ecosystems goods and services and enhancing the adaptive capacity of local communities.
3	GEF project 4639: Strengthening Management Effectiveness and Generating Multiple Environmental Benefits within and around the	Global Environment Facility Trust Fund	60.2	Landscape and land use management	The objective is to ensure that the biodiversity and carbon sinks of Zambia – particularly those critical forest landscapes in selected protected areas (including core National Parks and buffer Game Management

	Greater Kafue National Park in Zambia (UNDP). <i>Approved</i>			Institutional issues	Areas) – are better protected from threats through improved management effectiveness at the institutional level; sustainable forestry management practices and integrated land use planning at the local level; and application of appropriate low-carbon, biomass-energy technologies.
6	Strengthening Climate Information and Early Warning Systems in Eastern and Southern Africa for Climate Resilient Development and Adaptation to Climate Change – Zambia (UNDP). <i>Approved</i>	Global Environment Facility Trust Fund & Least Developed Countries Fund	16.6	Institutional issues and management	This ambitious project is designed to transfer technologies for climate and environmental monitoring infrastructure and Climate information integrated into development plans and early warning systems.

Source: *The World Bank and Global Environment Facility*

ANNEX 3. STATISTICAL DATA ON FOREST USE

Annex 3.1. Physical supply table of forest resources (2015)

Forest Resource Supply	Forestry	Charcoal producers	Honey producers	Sawmills	Total Supply
Indigenous timber licensed (M3)	96,934	-	-	-	96,934
Indigenous timber unlicensed (M3)	2,813,724	-	-	-	2,813,724
Exotic timber (M3)	838,162	-	-	-	838,162
Sawn timber (M3)	-	-	-	3,815,037	3,815,037
Indigenous poles licensed (M3)	1,160	-	-	-	1,160
Indigenous poles unlicensed (M3)	1,846,279	-	-	-	1,846,279
Exotic poles (M3)	699	-	-	-	699
Processed poles (M3)	-	-	-	1,163	1,163
Charcoal licensed (M3)	-	223,061	-	-	223,061
Charcoal unlicensed (M3)	-	7,125,084	-	-	7,125,084
Firewood licensed (M3)	749	-	-	-	749
Firewood unlicensed (M3)	261,397	-	-	-	261,397
Total Wood Products (M3)	5,859,104	7,348,145	-	3,816,200	17,023,449
Liquid honey (Kg)	-	-	1,953,840	-	1,953,840
Wax (Kg)	-	-	102,834	-	102,834
Total NWFPs (Kg)	-	-	2,056,674	-	2,056,674

Source: MLNR (2018). Zambia's Natural Capital Account for Forest. MNRE, Forestry Department

Annex 3.2. Physical use table of forest resources (2015)

Forest Resource Use	Honey producers	Sawmills	Warehouses	Carpentry	Construction	Other Industry	Households	Exports	Total Use
Indigenous timber licensed (M3)	-	2,908	-	3,877	-	-	-	90,149	96,934
Indigenous timber unlicensed (M3)	-	337,647	56,274	140,686	28,137	-	-	2,250,979	2,813,724
Exotic timber (M3)	-	-	-	75,435	477,752	53,178	2,103	229,694	838,162
Sawn timber (M3)	-	-	-	572,256	1,068,210	169,245	-	2,005,326	3,815,037
Indigenous poles licensed (M3)	-	-	-	-	1,160	-	-	-	1,160
Indigenous poles unlicensed (M3)	-	-	-	-	867,751	-	701,586	276,942	1,846,279
Exotic poles (M3)	-	-	-	-	622	-	-	77	699
Processed poles (M3)	-	-	-	-	1,064	-	-	99	1,163
Charcoal licensed (M3)	-	-	-	-	-	-	196,294	26,767	223,061
Charcoal unlicensed (M3)	-	-	-	-	-	712,508	4,845,057	1,567,518	7,125,084
Firewood licensed (M3)	-	-	-	-	-	-	749	-	749
Firewood unlicensed (M3)	-	-	-	-	-	49,665	211,732	-	261,397

Forest Resource Use	Honey producers	Sawmills	Warehouses	Carpentry	Construction	Other Industry	Households	Exports	Total Use
Total Wood Products (M3)	-	340,555	56,274	792,254	2,444,698	984,597	5,957,520	6,447,551	17,023,449
Liquid honey (Kg)	-	-	-	-	-	-	1,441,934	511,906	1,953,840
Wax (Kg)	1,234	-	-	-	-	74,657	-	26,942	102,834
Total NWFPs (Kg)	1,234	-	-	-	-	74,657	1,441,934	538,849	2,056,674

Source: MLNR (2018). Zambia's Natural Capital Account for Forest. MNRE, Forestry Department

Annex 3.3. Trade balance of wood products (2015)

Wood based products	Export value US\$	Import value US\$	Balance US\$
Roundwood	864,904	10,924,784	(10,059,880)
Sawnwood	8,398,900	2,383,530	6,015,370
Veneer and plywood	17,221	2,841,611	(2,824,390)
Wood based panels (fiber and particle board)	606,956	5,337,942	(4,730,986)
Builders' joinery and carpentry of wood	66,081	3,204,174	(3,138,093)
Wood packaging	351,571	1,873,997	(1,522,426)
Fuelwood and charcoal	99,064	47,836	51,228
Wooden furniture	200,000	24,000,000	(23,800,000)
Other wood products	130,324	1,484,756	(1,354,432)
<i>Sub-total solid wood products</i>	<u>10,735,021</u>	<u>52,098,630</u>	<u>(41,363,609)</u>
Pulp of wood or other cellulosic material	56,734	412,925	(356,191)
Paper and paperboard	7,904,028	90,536,470	(82,632,442)
<i>Sub-total pulp and paper</i>	<u>7,960,762</u>	<u>90,949,395</u>	<u>(82,988,633)</u>
Total wood-based products	18,695,783	143,048,025	(124,352,242)

Source: UN Comtrade database, 2019