

National Forest Sector Development Program, Ethiopia

Volume III: Synthesis Report



*Empowered lives.
Resilient nations.*



National Forest Sector Development Program, Ethiopia

Ministry of Environment, Forest and Climate Change (MEFCC)

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Foreword

Ethiopia is highly vulnerable to the impacts of climate change, with droughts becoming more frequent and severe because of its limited potential to mitigate and adapt. Though forests play a critical role on reducing the negative consequences of climate change and contribute to environmental sustainability and the national economy, forests cover loss has continued to be a concern.

Investment in the forest sector is a strategic move to mitigate the impact of climate change and as such is a key component in Ethiopia's national growth and transformation plan. The forest sector is also a strong component of the Sustainable Development Goals (SDGs), particularly SDG 13 Climate Action and SDG 15 Life on Land.

UNDP is a strong advocate for country-led and country-owned strategies that address the underlying causes of deforestation and continues to support Ethiopia's Climate Resilient Green Economy strategy.

Our support to the country to ensure sustainable management of forests has prioritized providing technical and financial support to the Government of Ethiopia in the design and implementation of a 10 years National Forest Sector Development Program.

The National Forest Sector Development Program builds on Ethiopia's existing forest resources, attracts foreign investment and seeks to transform the sector to catalyse GDP growth, employment, promote alternative use of energy sources, environmental protection and sustainable use of forest products as opposed to unsustainable forest exploitation.

Going forward, UNDP's new strategic plan guiding its global work as well as interventions here in Ethiopia will prioritize providing solutions in six areas, namely poverty, resilience, environment, poverty, governance and gender equality. Our continued support for the development of Ethiopia's forest sector falls within our priority areas as transforming the sector will catalyse sustainable and inclusive development for the country.

Therefore, UNDP will build on its partnership with Norway and Sweden, to support the sector in key areas such as building institutional capacity, promoting science and research for sustainable use of forests, as well as helping expand the space for private sector involvement in forest conservation and development as well as environmental protection.

These three comprehensive volumes on the National Forest Sector Development Program go a long way to inform forest-related policies, interventions and activities to transform the forest sector in Ethiopia.

Ms. Ahunna Eziakonwa-Onochie

UN Resident Coordinator, UNDP Resident Representative and UN Humanitarian Coordinator

Preface

Forest resources of Ethiopia make a significant contribution to the national economy. With forestry being primarily a rural activity, the sector has enormous potential to contribute to the transformation of the rural economy. The contribution by the sector should also be seen in the value that it adds through harboring biodiversity resources and other ecosystem services such as fertile soil, water and clean air. The contribution of forestry to the quality of life in the urban population cannot be undermined. Therefore, alignment of the growth and transformation of Ethiopia to this critical sector is a requirement.

Over the last one year, the Ministry of Environment, Forest and Climate Change in collaboration with UNDP has given significant time, energy and commitment to the development of the National Forest Sector Development Program (NFSDP). This NFSDP was initiated to be used as the main guiding document for coordinating strategic policy interventions and sector-wide investments for the coming ten-year period. The NFSDP is comprised of three volumes that navigate through situation analysis; a series of transformational action programs and synthesis of investment options that together would help to achieve the forest sector's ambitious development goals in Ethiopia.

These program documents provide a timely update to the 1994 Ethiopian Forestry Action Program (EFAP) by incorporating emerging global and national change agenda. By doing so, the goal is to build on the country's considerable forest resources, attract foreign investment and leverage existing momentum to transform Ethiopia's forestry sector in a way that catalyzes GDP growth, generates employment, contributes towards self-sufficiency in forest products and enhances ecosystem services.

Through the three volumes of the NFSDP, we have been able to put required measures in place to ensure that challenges are addressed and the sector is transformed to the next level. I would like to thank the leadership and the experts involved in the process for their role in the development of this document. I would also like to express my sincere thanks to the stakeholders who have given their inputs and comments throughout the process.

The challenge going forward lies in the successful implementation of the program on the ground. The Government of Ethiopia remain committed to take bold measures in ensuring effective and successful implementation of this program. I call upon all development partners and other stakeholders to strengthen their support and commitment in transforming the forest sector in Ethiopia so that the citizens and Country benefit from the full economic and environmental potential of the sector.



Dr. Gemedo Dalle

Minister, Ministry of Environment, Forest and Climate Change



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List of Abbreviations

CRGE	Climate-Resilient Green Economy
EEFRI	Ethiopian Environment and Forest Research Institute
FDRE	Federal Democratic Republic of Ethiopia
FLR	Forest Landscape Restoration
FSR	Forest Sector Review
GHG	Greenhouse Gases
GTP	Growth and Transformation Plan
MEFCC	Ministry of Environment, Forest and Climate Change
MoANR	Ministry of Agriculture and Natural Resources
MoLF	Ministry of Livestock and Fishery
NDC	Nationally Determined Contributions
NFPA	National Forest Priority Area
NFSDP	National Forest Sector Development Program
NTFP	Non-Timber Forest Product
PA	Protected Area
PES	Payment for Environmental Services
PFM	Participatory Forest Management
PPP	Public Private Partnership
RWE	Roundwood Equivalent
SNFM	Sustainable Natural Forest Management
SNNPR	Southern Nations, Nationalities and Peoples' Region
SMFE	Small and Medium Forest Enterprises
TVET	Technical and Vocational Education and Training
USD	United States Dollar



Executive Summary

The forest sector in Ethiopia started a great green run with a dedicated Ministry in place and increasing resources available. Ethiopia's diverse forest resources, including high forests, woodlands, and trees on farms, have among the highest biodiversity in the world and provide a wealth of goods and services to ensure a green economic growth pathway while maintaining rapid infrastructure development and urbanization. The Government of Ethiopia has demonstrated a strong commitment to increase the forest cover and strengthen the forest contribution to green economic growth. The aim is to expand forest cover from 17.35 million hectares of forests or 15.7% today to 20% by 2020 and 30% by 2025. Furthermore, as stated in Ethiopia's Nationally Determined Contribution (NDC), the forest sector is expected to contribute more than 50% of the national goal to reduce emissions by 255 MtCO₂e by 2030. To achieve these targets planting and managing natural forests and woodlands for a purpose by engaging communities, government forest agencies and the private sector and sustainable management of existing forests for multiple purposes are key activities in the decades to come.

This National Forest Sector Development Program (NFSDP) was initiated by Ethiopia's Ministry of Environment, Forest and Climate Change (MEFCC) as the main guiding document for coordinating strategic policy interventions and sector-wide investments for the coming ten-year period. The goal of the country-driven NFSDP is to provide the master plan that serves as the roadmap for future forestry actions considering the mandate of National Regional States for natural resources management and other stakeholders. The NFSDP also contributes to mobilize funding and coordinate support. Given that forest sector development strongly relies on collaboration between many sectors, MEFCC will be the lead forestry institution that provides the intersectoral coordination required to successfully implement the NFSDP.

The NFSDP is comprised of a series of transformational actions that together can achieve the forest sector's ambitious development and green growth goals. The proposed actions with the most transformative potential include attracting private investment in commercial forestry and establishing industrial clusters for manufacturing timber and other industrial wood products for domestic consumption and export. This will help Ethiopia's transition to a green growth strategy that replaces energy intensive construction materials such as steel and concrete with high quality wood-based buildings and infrastructure. Further, the NFSDP aims to establish Payment for Environmental Services (PES) schemes to better valorize the forest's contribution to watershed management and carbon sequestration. This includes REDD+ and implementation of other SFM initiatives, which Ethiopia aims to implement at the national and regional level taking an integrated landscape approach to achieve results-based payment. Such innovative measures can attract significant investments in forests, including from Ethiopian citizens as the public increasingly recognizes the benefits of forests.



The NFSDP provides a timely update to the 1994 Ethiopian Forestry Action Program (EFAP) as the current NFSDP directly contributes to the transformational change agenda set by the Government of Ethiopia. The NFSDP is fully aligned with the Climate-Resilient Green Economy (CRGE) strategy because protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks, is one of the four main CRGE pillars. Building on the CRGE forestry targets, the NFSDP also provides an implementation framework for the second Growth and Transformation Plan (GTP 2) by advancing the sector towards one that is more productive and better contributes to Ethiopia's environmental sustainability and equitable socio-economic development.

Compared to the time when the EFAP document was developed, Ethiopia's economy is undergoing rapid transformation and the purchasing power of households, urban society and industry has substantially increased. With the booming manufacturing, construction and energy sector and impressive infrastructure development, green infrastructure including forest products and services also rapidly appreciate in value. As Ethiopia continues to experience rapid economic growth, the demands for timber, non-timber forest products (NTFPs) and environmental services increase, making the role of the forest sector increasingly important and relevant in achieving CRGE and GTP goals.

This Synthesis Report summarizes and combines the results from the first two volumes of the NFSDP development — Phase I: Situation Analysis (NFSDP Volume I); and Phase 2: Detailed Action Programs including Targets and Timeline (NFSDP Volume II). Further, this Synthesis Report describes the economic analysis for the selected program pillars and actions, and identifies financial mechanisms to implement the NFSDP. The economic analysis estimates total nominal investment required throughout the implementation of the NFSDP. Additionally, the cost-benefit analysis projects the expected net present value of benefits and costs per hectare and at the program level. The analysis estimates the monetary value of a number of expected benefits, including increased revenues, cost savings, carbon sequestration, and reduced soil erosion. This allows ME FCC and other stakeholders also to prioritize the different NFSDP activities.

In total, the NFSDP is expected to have a net present value of USD 30.8 billion. With a benefit-cost ratio of 3.3 — i.e. for every USD 1 invested in the NFSDP, more than USD 3 in benefits are expected to be generated. Pillars 2-5 that were assessed in the cost-benefit analysis have positive net present values and benefit-cost ratios of more than 1. Revenues and cost-savings account for the greatest proportion of benefits at USD 32.6 billion; the NFSDP is expected to create 633,141 full-time jobs; assuming a price of USD 5 per ton of CO₂, USD 8.5 billion in carbon benefits will be created; and the reduction in soil erosion will increase the value of agriculture and other sectors by USD 3.2 billion. Compared to Ethiopia's 2015 GDP of USD 61.5 billion, the annualized benefits of the NFSDP represent an additional 7%.



The main pillars, or action program areas, around which the NFSDP is built, are:

- Enabling environment and institutional development
- Sustainable forest production and value chains
- Forest environmental services
- Forests and rural livelihoods
- Urban greening and urban forests

The overall vision of the NFSDP is to build on the country's considerable forest resources, attract foreign investment (both donor and PPP) and leverage existing momentum (e.g. creation of ME FCC) to transform Ethiopia's forestry sector in a way that catalyzes GDP growth, generates employment, contributes towards self-sufficiency in forest products and enhances environmental services. Successful NFSDP implementation would result in the following key performance indicators:

- Increasing forest cover from current 15.7% to 20% by 2020 and 30% by 2025;
- Doubling contribution to GDP from 4% to 8% by 2020; and
- Achieve 50% of the national emission reduction target.

1 Introducing the National Forest Sector Development Program

The NFSDP will serve as a master plan for the enhancement of sustainable forest management in the country over the next 10 years, i.e. from 2017-2025. Secondly, the NFSDP will serve as the basis for the development of Regional Forest Sector Development Programs. Moreover, it will also serve as a guiding document for policy makers, communities, the private sector and development partners. The NFSDP will guide the sector to trigger a paradigm shift by promoting sustainable and productive forestry for green economic growth in biodiverse forest landscapes. The NFSDP was designed based on a comprehensive analysis of the status quo in Volume I, Situation Analysis. This provides the basis for the program pillars and actions detailed in Volume II, Program Pillars, Action Areas and Targets. In addition, a cost-benefit analysis was conducted to outline the investment requirements (human and financial) and prioritize action areas.

Forest sector started the great green run

The forest sector has been receiving pronounced attention from the Government of Ethiopia, given the forest sector plays a central role in realizing the country's commitment to achieving a Climate-Resilient Green Economy (CRGE). The CRGE strategy aims at building a middle-income and climate-resilient economy with a zero net increase in national greenhouse gas (GHG) emissions by 2030 over the 2010 baseline emissions. The forest sector has the potential to contribute significantly to Ethiopia's climate change mitigation ambitions, with the national REDD+¹ strategy estimated to contribute 50% of national GHG emissions reduction between 2010 and 2030.² Forests play a central role in maintaining Ethiopia's invaluable forest biodiversity³, providing critical habitat for flora and fauna and also protect agricultural biodiversity. The Forest Sector Review (2015) explains how the forest sector is a strategic component of Ethiopia's transformation towards a more prosperous and industrialized economy, given investments in forest plantations and accompanying industries support manufacturing, export diversification, import substitution, and rural development goals. With the right interventions and policy adjustments, the forest sector is instrumental for sustainable economic development, creating green jobs and enhancing the climate resilience of the agriculture based rural economy (Figure 1).

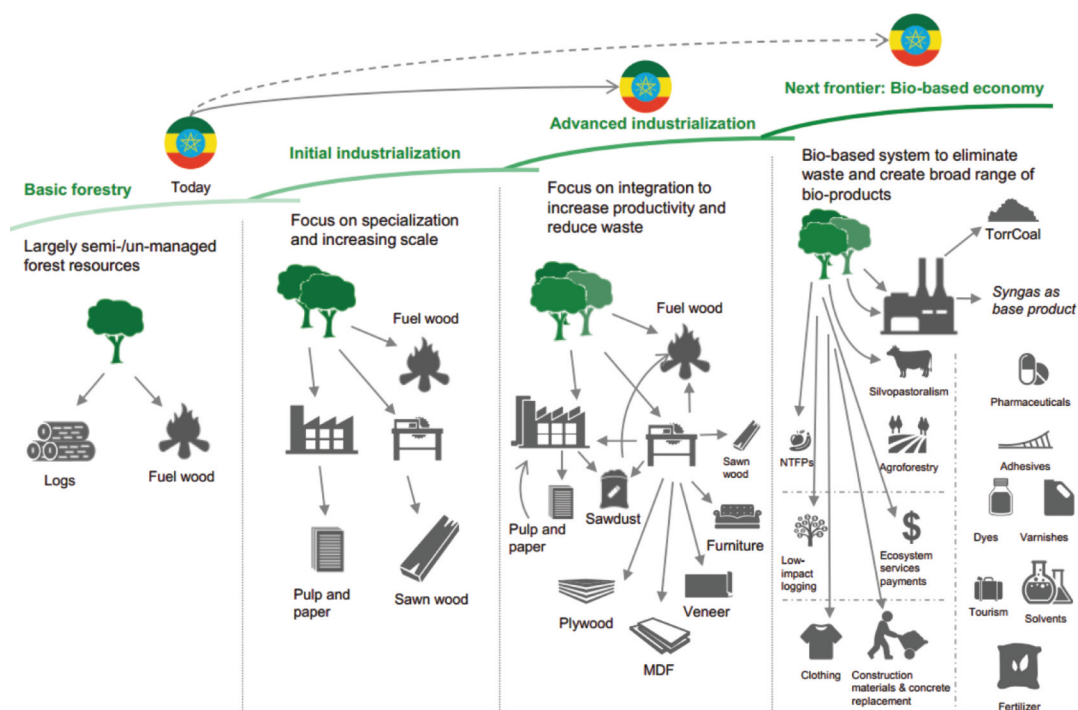
The Government of Ethiopia is committed to reversing deforestation and forest degradation to ensure national development continues in a sustainable manner. As Ethiopia continues to experience rapid economic growth, the role of the forest sector becomes increasingly important in achieving the Government's ambitious climate-resilient green growth goals. Given the right interventions and policy adjustments, the forest sector has the potential to expand its contribution to sustainable economic development, creating green jobs, supporting the bio-economy and fostering climate change resilience.

1 REDD+ stands for Reducing Emissions from Deforestation and Forest Degradation, forest conservation, sustainable forest management and forest carbon stock enhancement through afforestation and reforestation.

2 FDRE MEFC, National REDD+ Secretariat. National REDD+ Strategy (2016-2030). Final Draft, June 2016.

3 See FDRE's National Biodiversity Strategy and Action Plan 2015-2020. Ethiopia Biodiversity Institute, Addis Ababa, Ethiopia.

Figure 1: Forest sector development phases



Source: NFSDP review, 2016

A number of global and national emerging opportunities are captured in the national forest sector development planning process to increase the contribution of the sector to the country's economic development.

The goal set by the government to increase forest cover to 20% by 2020 and 30% by 2025 will be achieved through successful implementation of the NFSDP. Action programs that contribute to the increase of forest cover are indicated in Table 1. It is assumed that 50% of the implementation targets of forest landscape restoration and purposeful tree planting in the form of woodlots contribute to forest cover increase by fulfilling the forest definition criteria. The remaining areas can still serve as a source of timber, firewood, fodder and fruits which contribute to the improved livelihoods of the rural communities.



Table 1: Action programs that contribute to increased forest cover (millions of hectares)

Action Programs	Contribution to forest cover in GTP 2		Contribution to forest cover in 2025	
	Million ha	%	Million ha	%
Establishing new commercial plantations including bamboo	0.18	0.16	0.6	0.5
Afforestation/reforestation	0.9	0.81	3	2.7
Forest and Landscape Restoration	2.5	2.25	7.5	6.75
Purposeful tree planting in the form of wood-lots	1.25	1.13	5	4.5
Total	4.83	20	16.1	30

The Forest Sector Review conducted in 2015 estimated that Ethiopia needs an additional plantation estate of around 7.2 M ha (MAI of 20 m³/ha/yr, 5-year rotation) to fulfill the wood fuel supply gap. Data obtained from the Oromia Forest and Wildlife Enterprise (OFWE) shows that firewood accounts on average for 20-25% of the total harvest of plantation stands of cypress, eucalyptus and indigenous species at the age of 21-25. As plantations become older, they produce less firewood and more timber. This indicates that establishing the forest and tree resources indicated in Table 1 combined with the distribution of the energy saving cookstoves can address the existing wood fuel demand and supply gap by 2025. Additionally, sustainable management of the existing natural forests and woodlands will contribute to closing the wood fuel supply gap.

It is equally important to drive high-value forestry initiatives in order to increase the forestry sector's contribution to GDP. Converting a relatively small area of land to high-value activities can have a significant effect on GDP contribution as high-value activities can contribute thousands of dollars per hectare per year to GDP versus current average value of ~\$130/ha/year.



NFSDP Vision

The overall vision of the NFSDP is to build on the country's considerable forest resources, attract foreign investment (both donor and PPP) and leverage existing momentum (e.g. creation of ME FCC) to transform Ethiopia's forestry sector in a way that catalyzes GDP growth, generates employment, contributes towards self-sufficiency in forest products and enhances environmental services.

Successful NFSDP implementation would result in:

- **Increasing forest cover** from currently 15.7% to 20% by 2020 and 30% by 2025; and
 - **Increasing annual benefits** from improved land use by the equivalent of 8% of GDP by 2025.
- The NFSDP has a number of objectives for each of the specific pillars, namely:
- **Enabling environment and institutional development:** to strengthen the existing policy and legal framework and develop the required institutional, human and technological capacity to implement the NFSDP at all levels.
 - **Sustainable forest production and value chains:** to ensure Ethiopia is self-sufficient in industrial wood products including full substitution of import by 2040, and enhance the forest sector contribution to GDP by expanding forest sector industrialization of wood and non-wood products.
 - **Forest environmental functions:** successful implementation of REDD+ and NFSDP guarantees that the forest sector will achieve 50% of the national emissions reduction target set in the CRGE and contribute to the overall national goals of achieving carbon neutrality across the economy while ensuring biodiversity and watershed protection.
 - **Forest and rural livelihoods:** to ensure soil fertility for the sustainable intensification of food production, sustainable fuelwood and construction material supply and increase the value of trees in forest landscapes to contribute to poverty reduction, food security and sustainable development in rural areas.
 - **Urban greening:** actively recognize the central role of trees and forests in contributing to the improved living standards of the increasing urban population, including air quality.

2 NFSDP Components

The National Forest Sector Development Program (NFSDP) provides the master plan that serves as the roadmap for future forestry actions at the federal and regional level. The main pillars, or action program areas, around which the NFSDP will be built are shown in Table 2. The Table also describes the expected contributions of these pillars to Ethiopia's low-carbon and climate-resilient development pathway by indicating the theory of change for scaling up and replication, thereby leading to transformational impacts of the NFSDP. In addition, Table 2 indicates the potential contribution of the NFSDP to reaching the Sustainable Development Goals (SDGs).⁴ It also indicates which SDGs the NFSDP is most directly relevant to, keeping in mind that the NFSDP as a whole indirectly contributes to most of the SDGs.

2.1 Enabling environment and institutional development

The objective of this pillar is to strengthen the existing policy and legal framework and develop the required institutional, human and technological capacity to implement the NFSDP at all levels. The pillar includes: i) Designing and implementing the policy and legal framework; ii) Developing a cascaded institutional framework from federal to local levels; iii) Revising the GDP accounting system; iv) Developing human capacity for sustainable forest management; v) Technology development; and vi) Improving the forest information management system.

Forest policy and law enforcement

The federal legal and policy framework governing forests needs to be strengthened to provide an enabling environment that incentivizes investments in sustainable forest management and takes into account the multiple sectors affecting forests. Specifically, this pillar aims to enact the 2007 forest proclamation, which is currently under revision, and the draft forest regulations within the first year of NFSDP implementation. Directives and guidelines that create the basis for concrete action plans should then be developed within the GTP II period. Adopting these legal measures will support Ethiopia to fully mobilize the various actors that will play a key role in NFSDP implementation.

Forest sector institutional strengthening

Given different socio-economic contexts and forest resource potentials at the regional level, regions should establish the necessary institutional structures and align these with existing structures, such as state-owned forest enterprises. Recognizing that forest management relies on existing multi-stakeholder platforms at federal and regional levels to enhance intersectoral coordination, a detailed organizational structure for each regional state should be elaborated in the context of the Regional Forest Sector Development Programs that should be developed as soon as possible. At the federal level, the CRGE inter-Ministerial steering Committee is the main intersectoral platform established to guide CRGE implementation. Moreover, the Parliament standing committee, cluster platforms of

4 Transforming our world: the 2030 Agenda for Sustainable Development "United Nations Official Document".

**Table 1: Action programs that contribute to increased forest cover (millions of hectares)**

Pillar	Barriers/challenges addressed by this Pillar	Paradigm shift potential logic ⁵	Contribution to meeting SDGs
Enabling Environment	Implementation of the policy and legal framework inadequately provides enabling conditions to foster public and private investments in forests, and institutional mandates.	Capacity development and establishment of cascaded MEFCC institutional structure will improve extension service provision, thereby improving the success of NFSDP interventions; improved investment climate will attract private sector.	Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
Sustainable Forest Production and Value Chains	Growing gap between supply and demand is increasingly met through unsustainable harvesting in forest and woodlands and imports.	Parallel investments in establishing forest resources and manufacturing ensures resource intensive sectors, e.g. construction, grow in a CRGE-compatible way; PPPs and outgrower schemes result in spill-over effects of know-how, bringing productivity improvements for sector as a whole.	Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
Forest Environmental Functions	Degradation is rendering forest ecosystems less able to provide important ecosystem services such as climate mitigation and biodiversity conservation.	Integrated landscape approach as proposed in REDD+ strategy and other initiatives such as PFM will scale up demonstrated interventions that are vetted at local and national levels for their multiple benefits.	Goal 13. Take urgent action to combat climate change and its impacts.
Forest and Rural Livelihoods	Forest and land degradation is further entrenching rural poverty, with climate change exacerbating negative impacts.	Purposeful tree planting with clear benefits of tree-based restoration and improved production-market linkage will trigger adoption of various NFSDP activities in rural areas.	Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
Urban Greening and Urban Forests	Rapid urban growth does not allow cities to maintain green spaces and tree cover standards that are required for maintaining clean air and healthy living.	By giving momentum to and creating further awareness of the ongoing urban greening and urban forest initiatives, the NFSDP can secure public and private support for this pillar.	Goal 3. Ensure healthy lives and promote well-being for all at all ages.

⁵ This describes the degree to which the proposed activity can catalyze impact beyond a one-off program investment.



relevant ministries and sector platforms can be utilized in NFSDP implementation. Given the important role of non-state actors in Ethiopia's forest development to date, it will be important to ensure these organizations play a significant role in the implementation of NFSDP.

Revising the national GDP accounting system

Aggregate data on economic values and production of forest products and services are fragmented and inadequate. A number of studies suggest estimates of forestry's contribution to total GDP do not completely capture the full contribution of the forest sector to the economy. A recent study (MEFCC 2016) reports that in FY2012-13, Ethiopia's forests generated economic benefits in the form of cash and in-kind income equivalent to USD 16.7 billion (111.2 billion Ethiopian birr ETB), or 12.9% of the measured value of GDP. The current national GDP accounting system lacks indicators that capture the value of Ethiopia's forest ecosystems services. Moreover, some of the goods obtained from the forestry sector such as forest coffee are accounted for as agricultural sector. Therefore, there is a need to revitalize the existing national accounting system.

Forest safety (fire, pest and disease control)

In the absence of a well-organized, quick to act and well-equipped service that responds to emergencies in the case of forest fire and/or pest/disease outbreak, the risk in forest investment is too high, and can be a hindrance to private sector investment. Developing such a capacity at national level should therefore be part of the NFSDP. This action is relevant for commercial plantations, natural forests and woodlands and therefore, a comprehensive forest safety program must be developed at the national level that can be adopted to fit the needs of different forest landscapes.

Human capacity development

Adequately trained and skilled professional human resources are a prerequisite for successful forest sector development. The TVET and university level reformed forestry trainings will produce sufficient well-trained forest rangers and experts. In addition, public training centers should be re-initiated and strengthened in the country.

Technology development

Research is fundamental for innovating and guiding development in forestry and modernizing it. To advance forest sector development and ensure the development and uptake of forestry innovation adapted to Ethiopia's diverse contexts, the NFSDP will establish modern laboratory facilities to support research related to genetic improvements such as cloning. This includes the introduction of laboratories for modern wood and non-wood products, clonal nurseries and greenhouses, seed centers with modern facilities and seed orchards to facilitate distribution. Focus will also be placed on improving the linkage between research and extension and public private research partnerships to ensure the uptake of innovation.



2.2 Sustainable forest production and value chains

The objective of this pillar is to ensure Ethiopia is self-sufficient in industrial wood products including full substitution of imports by 2040 as well as enhance the contribution of the forest sector to GDP by expanding forest sector industrialization from wood and non-wood products. With economic growth and technological advancements, the products and benefits forests provide are refined and thereby made more valuable.

Establish new commercial plantations

The current state of knowledge indicates that Ethiopia should develop about 310,000 ha of well-managed new commercial forest plantation to satisfy its growing industrial wood demands, substitute imports and also engage in wood product exports in the decades to come. Development of the new commercial plantations calls for the involvement of various actors and diverse investment options, including the private sector, domestic and foreign institutional investors, state forest enterprises and smallholder woodlots.

Improved management of existing plantations

Ethiopia's estimated 190,000 ha of industrial forest plantations require significant investment to improve productivity and timber quality. Improved management of existing forest plantations can be achieved by applying a variety of management approaches, including through private sector engagement, either in the form of a joint venture with government forest enterprises and/or by upgrading the capacity of the enterprises. In parallel, public enterprises and government forest agencies will be developed through the NFSDP by investing new technologies to better manage forests, building staff capacity and strengthening operational efficiency.

Improved commercial management of natural high forests

Sustainable natural forest management (SNFM) is required in parallel to commercial plantation development to prevent forest degradation and conversion, and contribute to related income generation opportunities in forestry and related value chains.

NTFPs development and commercialization

Ethiopia's natural forest and woodlands hold diverse commercially important NTFPs. The most commercially attractive of the NTFPs are gum and incense, honey, forest coffee and beeswax and bamboo. There is considerable room to improve and enhance the economic importance of the NTFPs by improving their production, quality assurance and value additions. The production and utilization of the various NTFPs can be enhanced by properly surveying, mapping and understanding the resource base and their potentials for commercial utilization; improving their utilization through modernization, improving extension services, introducing production protection standards and commercialization; expanding the resource base through domestication, developing their value chains

by cultivating business association (producer and traders associations e.g. providing credit); supporting value added processing; and increasing private sector investment. Four NTFPs are targeted by the NFSDP: gum and resin, honey and beeswax, and forest coffee.

Improved management of highland and lowland bamboo resources

Ethiopia has 519,124 ha of bamboo forest, but these suffer from degradation, forest fire and unsustainable utilization practices (MoEFCC, 2016). Bamboo utilization has remained undeveloped and current bamboo value chains are used predominantly for traditional applications. Industrial uses of bamboo can be made to produce various high value products such as ply bamboo, laminated bamboo, bamboo parquets/floors, bamboo composite boards, bamboo chipboard and various other laminated bamboo wares and pulp and paper. The NFSDP strategy related to bamboo is two-fold: 1) ensure the sustainable management of existing bamboo re-sources and value chain development; 2) establish new bamboo plantations.

Forest industry cluster development

The projected increasing demand for forest products calls for the establishment of well-functioning, coordinated and competitive wood processing industries. Sawmills, wood-based panel factories, finger jointing lines, pole treating plants, logistic providers, furniture and joinery factories, pulp and paper mills and paper production plants are all needed. Adopting an industry cluster approach similar to the concept of agribusiness industry zones, clustering or regional agglomeration of industries will significantly increase efficiency, reduce wastage and overall cost of production, thus increasing competitiveness.

2.3 Forest environmental functions

The objective of this pillar is to ensure the forest sector achieves 50% of the national emissions reduction target set in the CRGE and contributes to the overall national goals of achieving carbon neutrality across the economy while ensuring biodiversity and watershed protection. As Ethiopia continues to experience rapid economic growth, the role of the forest sector becomes increasingly important in achieving the Government's ambitious Climate-Resilient Green Economy (CRGE) growth goals, which aim for Ethiopia to become a middle-income country by 2025, resilient to climate change impacts and with a zero net increase in greenhouse gas (GHG) emissions over 2010 levels.

Forest ecosystem services

Forest values related to ecosystem services, such as watershed protection and associated benefits related to energy and soil protection, ecotourism potential and biodiversity conservation, contribute significantly to the health and wealth of Ethiopia. Payments for environmental services (PES) schemes create economic value for these services that are otherwise often used freely. In addition, the NFSDP will ensure implementation of the national REDD+ strategy and other forest related strategies.



Forest biodiversity conservation and development

Ethiopia is one of the top 25 biodiversity-rich countries in the world, and forests are the major source of biodiversity and ecosystem services on which the Ethiopian economy is based. However, the Protected Areas (PAs) network in Ethiopia is neither proportionally large enough related to the country's land mass nor are the existing PAs representative of the country's ecosystems. Therefore, there is an urgent need to expand the PA network from 14% to 20% by 2025, while ensuring the proper management of these areas through registration, demarcation and legal accreditation, amongst others. Further, to better ensure the maintenance of forest biodiversity in the future, it is important to develop strategies for the sustainable use of biodiversity. To ensure ex-situ conservation, the NFSDP also proposes the establishment of seven new botanical gardens.

Forest landscape restoration program

Forest Landscape Restoration (FLR) is the integration of forest restoration activities into a landscape with multiple sustainably managed land uses that support local livelihoods. In September 2014, Ethiopia declared its support for the New York Declaration on Forests and the Bonn Challenge by pledging to restore 15 million hectares of degraded and deforested lands by 2025 (corresponding to nearly one seventh of Ethiopia's total area). The NFSDP lays out how Ethiopia can achieve its FLR objectives.

2.4 Forest and rural livelihoods

The objective of this pillar is to ensure sustainable intensification of food production by enhancing agricultural productivity, sustainable fuelwood and construction material supplies and increase the value of trees in forest landscapes to contribute to poverty reduction, food security and sustainable development in rural areas. It addresses the specific issues relating to already heavily deforested agricultural landscapes, and looks separately on how to increase the relevance and contribution of forests to community livelihoods in forested landscapes. In order for implementation to succeed, strategic harmonization and collaboration is required across many sectors from the federal to local level, including forestry, agriculture, energy, and infrastructure, to name the most important. The NFSDP has developed specific activities that will increase the forests' contribution to rural livelihoods.

Purposeful tree planting activities in the rural landscape

Although Ethiopia currently plants over four billion seedlings each year, the success rate is lower than expected. To reverse this, the trees planted must be planted purposefully so as to create enough value to incentivize rural land users to engage in proper tree management. This component addresses on-farm trees, agroforestry and woodlots primarily to supply household needs or local markets with energy, poles, building materials and tree products (fruits, nuts, fodder, etc.).



Mapping and enhancing sustainable management of village forests

Lessons learnt in both Ethiopia and from international experience emphasize the importance of community-managed forestry being built on a sustainable enterprise model that is not dependent on project-based external financing that will not be sustained. Long-term support for the establishment, strengthening and operations of community institutions will be provided to community organizations that are responsible for managing shared forest resources. Local land use planning will define what areas of forest should be maintained or converted for other uses, and clarify purpose, tree tenure, rights, beneficiaries, and management responsibilities for specific areas of forest. The overall purpose is to transform village forests and agroforestry systems into valued assets that are managed by individuals and local communities and private investors for their long-term contribution to a stable and prosperous rural economy.

Support the development of forest based community enterprises

The NFSDP will channel investments to support business identification and development, grant support, and improving access to markets. These enterprises may include honey producers, carpenters, hay producers, or service providers.

Formation and strengthening of farmer and community organization for forest sector interventions

Strong community organizations are a key factor in the success of national forestry programs, irrespective of the capacity of central government institutions. Therefore, establishing and supporting community organizations is a key component of the NFSDP.

Rural energy development

Matching the supply of sustainable wood fuel to current and growing demand requires a holistic approach that controls supplies from illegal or unsustainable sources, increases the investment in managed forest resources, and efficient conversion of wood along the value chain. Substantial reductions in overall consumption of wood fuel can be achieved by improving efficiency along the wood fuel value chain, from kilns that produce charcoal to cookstoves and ovens that use charcoal or wood. The following actions are included in the NFSDP: i) Establish market regulation or improve law enforcement to reduce the availability of unsustainable or illegal wood fuel on the market; ii) Increase the supply of sustainable wood fuel production through promoting woodlots and sustainable management of natural forests; and iii) Provide incentives for the establishment and management of woodlots.



2.5 Urban greening

The objective of this pillar is to recognize the central role of trees and forests in contributing to the improved living standard, including air quality, of the increasing urban population. Urban forests provide a number of direct and indirect benefits, including climate regulation, noise reduction, watershed protection, recreational opportunities, outdoor education, wood and fruit production and habitat resource for wildlife. The NFSDP aims to raise the attention of both policy-makers and citizens to the importance of establishing and maintaining green urban centers. Given the novelty of these measures in Ethiopia, awareness raising will be a key aspect of this program pillar.

Urban greening

As Ethiopia's cities continue to grow, it is important to develop a strategy for integrating urban green spaces and infrastructure to make these spaces accessible and enjoyable to a wide range of citizens. The Ministry of Urban Development and Housing developed an urban greenery strategy in 2014. Moreover, a National Urban green infrastructure standard was developed in 2015. Therefore, emphasis should be on operationalizing existing strategies and standards through the development of guidelines and manuals.

Urban forests

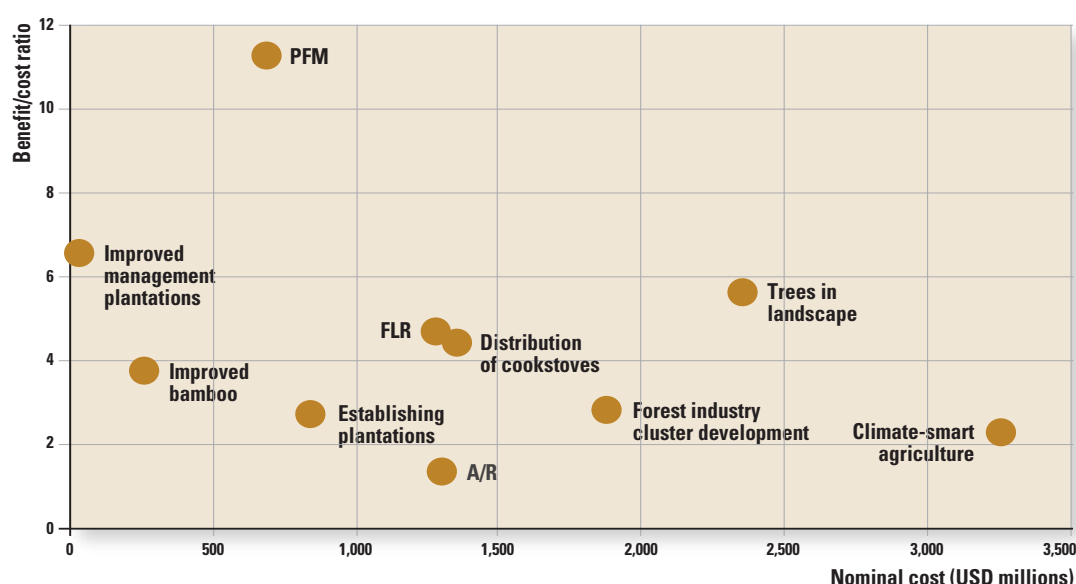
Implementation of the urban forest development within the NFSDP will be executed by developing management guidelines, establishing recreational facilities and infrastructures, and developing recreational programs. The urban population will be sensitized on the objectives of the action program. Awareness raising will also be conducted to generate continued demand for and use of urban forests. The summary of proposed action programs, targets, implementation timeline and implementing institutions are provided in Volume II.

3 Prioritization

3.1 Preliminary basis for prioritization of action programs

A benefit/cost ratio helps to compare the cost effectiveness of each activity. The NFSDP as a whole has an estimated benefit/cost ratio of 3.3. To support the prioritization of action pillars, Figure 2 compares the benefit/cost ratio of activities to total nominal costs. It is important to note that nominal costs are distributed amongst the GoE, the private sector, and smallholder labor and investment.

Figure 2: Benefit/cost ratio and nominal cost of activities⁶



All activities show a benefit/cost ratio greater than 1, meaning that they have positive returns on investment. Participatory forest management has the highest benefit/cost ratios of 11.2; improved plantation management and trees in landscape also have high cost/benefit ratios of 6.5 and 5.6. These and other activities have high benefit/cost ratios because they generate high returns with relatively low investment. Improving management of natural forests or plantations is cost-effective because small changes in management result in great productivity gains over time. Compared to activities with high per hectare costs, such as establishing commercial plantations, improved management takes advantage of an existing resource and can achieve high gains with little investment.

Different activities have different financial, environmental, and social impacts. In terms of generating financial returns along their value chain, establishing commercial plantations, climate-smart agriculture,

⁶ Afforestation/reforestation, establishing plantations and FLR are distinguished from each other in the following way: Afforestation/reforestation is assumed to take place where planting and high maintenance is recommended, which can be relatively costly. Establishing plantation refers to commercial tree planting for timber production and FLR, in comparison, also includes much less intensive and costly interventions on large areas such as area enclosures.



and purposeful tree planting create the greatest benefit per hectare. Conversely, forest and landscape restoration, establishing plantations, improved management of plantations, and afforestation/reforestation have the greatest per hectare environmental returns. Forest and landscape restoration and participatory forest management create the greatest number of total jobs, largely because they are associated with large areas of land.

Another important consideration is the ability of pillars to attract other sources of funding to leverage investments made by the Government of Ethiopia. Forest industry cluster development and establishing commercial plantations have the greatest potential to increase private sector investment. The majority of costs associated with climate-smart agriculture are associated with in-kind smallholder labor contributions.

3.2 Investment prioritization

MEFCC in coordination with the Ministry of Finance and Economic Cooperation, relevant line Ministries and development partners may prioritize certain investments and take responsibility for mobilizing private and community investments. The budget was developed top down considering the national targets already stipulated in the CRGE and GTP II, as well as other national and international fora. However, based on the upcoming regional state level NFSDP planning the top down and bottom up planning has to be aligned.

While the cost-benefit analysis is one important decision-making tool, it is limited and is not able to fully capture all costs and benefits of the proposed activities. For example, biodiversity benefits from the NFSDP are not included because they cannot be confidently quantified. Monetization of values allows different benefits to be compared, but also hides important differences between costs and benefits and to whom they accrue. Stakeholders may value different outcomes more than others, which is not captured by the benefit/cost ratio. Additionally, the analysis of activities is not done as rigorously as with an investment feasibility study and stakeholders should note the associated uncertainty. Further, the prioritization exercise does not consider the source of financing and donor interest in different priorities. It would be wise to consider which pillars are most likely to leverage private sector financing or attract donor interest.

3.3 Financing

Budget requirements are shown in Table 3. The NFSDP pillars are expected to be financed from various Ministries, existing budget allocations and programs as well as dedicated sources of new finance from donors. Public finance is required for a programmatic development of the enabling environment, including the human capacity and technology and to leverage community and private sector investments.

Public expenditure and concessional loans in sustainable forest production, value chains, forests and rural development will leverage substantial private and community investments.

Table 3: Expected NFSDP Budget and Resource Sources (USD millions)

	GoE staff time investment	Public investment	Private investment	Smallholder labor investment	Smallholder expenditure investment	Total
Pillar 1: Enabling environment	4.0	26.6	0.0	0.0	0.0	30.6
Pillar 2: Sustainable forest production	462.0	938.4	1,808.2	263.3	70.0	3,541.8
Pillar 3: Forest environmental functions	1,204.3	3,129.3	46.4	4,220.2	615.6	9,215.8
Pillar 4: Forest and rural livelihoods	372.0	911.6	0.0	760.0	808.6	2,852.2
Pillar 5: Urban greening and urban forests	2.4	16.1	0.0	0.0	0.0	18.6
Pillar 6: Implementation framework	0.2	1.3	0.0	0.0	0.0	1.5
Total	2,044.9	5,023.4	1,854.6	5,243.5	1,494.2	15,660.5

As highlighted in the economic analysis above from the total investment of more than USD 15 billion, the government and communities are expected to provide the largest portion of the financing, while traditional private sector financing will gradually increase. Moreover, given the international donor community's interest in reducing deforestation and sustainable management of forest resources, it is expected that the GoE will be able to leverage support from foreign sources. GoE investment will be financed either from budget allocations, covering the related government salaries, while expenditures are expected to be partly covered by de-velopment loans or grants from development partners. Communities will mainly provide labor investment but through community loan and saving schemes, significant financing is expected to be mobilized assuming that communities have clear benefits and investment incentives.

Forest environmental functions, in particular for the protection and sustainable use of biodiversity will require a higher ratio of continuous public investment, which is justified by the public goods protected and services generated. However, REDD+ and payments for hydrological functions should finance a substantial amount of the protection costs in the future. For urban greening and urban forests corporate social responsibility (CSR) finance can be mobilized given that the planning and maintenance is either financed by CSR or the public sector. Finally, there are a number of civil society organizations with well-established partnerships that can mobilize finance for forest sector investments.

Ethiopia also has ample experience in programmatic funding and multi-donor trust funds, e.g. related to SLMP II. There is also successful experience leveraging climate finance e.g. from the Public Program for Climate Resilience (PPCR) or the Global Environment Facility (GEF). The forest sector can benefit from the Green Climate Fund.



4 Implementation Framework

The National Forest Sector Development Program is a national program to operationalize the forest sector component of CRGE goals. High level political leadership has shown the commitment of the nation to its implementation. It is expected that the current level of political ambition for developing a green economy will continue during the NFSDP implementation period. In this vein, the successful implementation of the NFSDP requires the mobilization of all relevant stakeholders at all levels, especially engaging the numerous sectoral Ministries that will be responsible for carrying out the various NFSDP activities that are under their mandate. Currently, the CRGE inter-Ministerial Steering Committee is the main inter-sectoral platform established to guide CRGE implementation. It can serve as an entry point to guide the implementation of the NFSDP. Moreover, the parliament standing committee, cluster platforms of relevant ministries and sector platforms can be utilized in the NFSDP implementation. In addition to horizontal institutional coordination, it will be especially important to mobilize the regional institutions with the authority for developing natural resource and forest management strategies for their respective regions. These decentralized governance structures will play an important role in implementing the NFSDP action programs in a collaborative way that engages key local stakeholders. Since Ethiopia's National Regional States have the mandate to implement actions related to natural resource management, regional forest sector development programs will be designed immediately following the validation of this national strategic document.

A number of cross-cutting issues have been identified as central components to the success of NFSDP implementation. Successful implementation of the NFSDP requires adherence to principles of equity, community cohesion and mobilization. Aspects related to gender, demography, and the role of non-state actors, youth employment and skill development, integrated land use planning, climate change adaptation, rural electrification and fodder development are the main cross-cutting issues. The threats to sustainable management of forests can be properly addressed to enhance the sustainable provision of multiple goods and forest services, if and only if relevant sectors cooperate and collaborate in the implementation of the NFSDP.

Strategic communication

The successful implementation of the NFSDP requires the mobilization of all relevant stakeholders at all levels. It is important to document and publicize the implementation of the action programs through the development of progress and status reports, where the NFSDP benefits obtained are documented and publicized. These can show the contribution of the sector to national goals and international commitments. In this regard, a strategic communication plan for the forest sector development program will be developed. Further, regular media coverage will be organized to mobilize participation and inform achievements and challenges.



Monitoring, evaluation and support systems

Implementation of the NFSDP and subsequent Regional Forest Sector Development Programs will be taken up by relevant functional structures within MEFC and lead regional institutions. There is thus the need to establish or designate dedicated monitoring units at all levels to track the implementation progress, identify best practices and challenges, and provide the required backstopping. The main objective of the monitoring and support system is to monitor and evaluate the performance of the NFSDP and regional Forest Sector Development Programs' implementation at national and regional levels. Based on the findings of the monitoring and evaluation required supports will be provided to address gaps and barriers that hinder successful implementation of the designed sector action programs. Existing government monitoring and evaluation framework will be utilized to track progress and assess challenges to NFSDP implementation. The monitoring and evaluation framework will, among others, include the following salient features:

- Regular reporting of the implementation of NFSDP and Regional Forest Sector Development Programs (quarterly and annual reports);
- Monitoring will disaggregate progress by gender, wealth and age categories to allow for an analysis of the social equity of impacts;
- Conducting diagnostic studies, visits and supervision to validate reports on the ground, identify gaps and barriers and required supports at all levels;
- Identifying best practices, packaging them and scaling up;
- Organizing annual NFSDP performance review workshops with federal and regional level stakeholders to evaluate progress and give guidance on subsequent annual operational plans;
- Providing required supports that address the identified gaps and barriers based on the data generated from regular reports, studies and site visits;
- Feeding lessons learnt through the implementation process of the NFSDP into evidence and need based sector policy, legal and institutional frameworks revisions.



