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GHANA FOREST LANDSCAPE RESTORATION STRATEGY: 2016-2040

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PART I – INTRODUCTION & BACKGROUND

1.1 Introduction

The Ghana Forest Landscape Restoration Strategy (GFLRS) was originally launched as the Ghana Forest Plantation Strategy (GFPS) on 23rd November, 2016, as the strategic national blueprint to provide the overarching framework for forest landscape restoration interventions in Ghana from 2016 – 2040. The Strategy identified the challenges of past efforts to sustainably restore degraded forest and deforested lands and consequently outlined the strategic direction, actions and resources required to promote the development of productive and sustainable forest restoration interventions.

The GFLRS offers a critical pathway towards restoration of Ghana's deforested and degraded landscapes. In the 1920s, an extensive forest estate, consisting of 1.6 million hectares of forest reserves was gazetted in the High Forest Zone (Oduro *et al.*, 2012). At the time, there were large areas of forests outside these gazetted forest reserves across the country. Over the period significant portions of these forests have been lost or degraded. The key underlying causes of deforestation and forest degradation include population and economic growth and weak governance structures. High population and economic growth, have led to high domestic wood consumption and high demand for timber to satisfy the export markets. Additionally, increasing domestic and export demand for agricultural commodities such as cocoa, oil palm, cashew, and food crops has led to large scale conversion of forests to agricultural uses.

The principal drivers of deforestation and forest degradation in Ghana have been identified as follows:

- Agricultural expansion (e.g. permanent cultivation, free range cattle ranching, shifting cultivation/traditional slash and burn)
- Wildfires
- Logging and fuelwood harvesting
- Mining
- Infrastructural development (roads, settlements and other infrastructural development)

In line with global, regional and Ghana's Medium-Term National Development Policy Framework (2022 – 2025) and the Long-Term National Development Plan of Ghana (2018 - 2057), the United Nations' Sustainable Development Goals, Ghana's Nationally Determined Contributions to address Climate Change, the Paris Climate Change Agreement (2015) and consistent with Policy Objective 2 of the Ghana Forest and Wildlife Policy (2012), this

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Strategy outlines plans by the government, private sector and rural communities to restore degraded landscapes through the development of commercial forest plantations, smallholder plantations, enrichment planting of degraded forests, encourage amenity planting and to provide support for the incorporation of trees within farming systems.

The proposed interventions in the GFLRS are intended to support the development of a sustainable forest resource base that will satisfy future demand for industrial timber and enhance environmental quality. These interventions are expected to relieve the pressure on the existing natural forests, enhance connectivity between the agricultural and forest landscapes to promote biodiversity conservation, manage barriers to forest plantation investments, while providing optimum income generation opportunities for forest plantation owners, the timber industry, forest-fringe communities and the national economy. The GFLRS therefore represents a "Nature-based Solutions" approach for addressing environmental challenges underpinned by the principles of just transition in the management of forest resources.

The first seven years of implementation of the GFLRS has witnessed major investments by the public and private sectors towards meeting the forest restoration targets outlined in the GFLRS while delivering additional benefits such as job creation, enhanced food security and enhanced ecosystem services including carbon sequestration.

1.2 Achievements: 2016 – 2022

A total area of 126,521.8 ha (Public – 93,533.2 ha & Private – 32,988.6 ha) hectares of forest plantations was established during the first seven years of implementation of the Strategy (2016 – 2022). In addition, enrichment planting was undertaken over an area of 23,172.6 ha while 20,225,476 tree seedlings were distributed for planting within farms during the period of implementation of the GFPS (Table 1).

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Table 1: Areas put under Restoration and Associated Targets during first seven Years of Implementation of GFPS

Year	Forest Plantations				Enrichment Planting (ha)		Trees-on-Farm (No. of seedlings)	
	Public (ha)		Private (ha)					
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement
2016	10,000	2,473.7	15,000	4,237.0	5,000	0.0	5,000,000	1,647,592
2017	10,000	5,540.5	15,000	3,184.5	5,000	4,488.9	5,000,000	4,169,475
2018	10,000	14,749.4	15,000	4,856.5	5,000	4,724.6	5,000,000	3,417,098
2019	15,000	19,038.7	10,000	5,965.5	5,000	4,563.1	5,000,000	2,261,247
2020	15,000	14,252.1	10,000	4,919.3	5,000	3,115.6	5,000,000	5,010,261
2021	15,000	14,294.2	10,000	4,200.5	5,000	5,145.5	5,000,000	2,252,877
2022	15,000	23,184.6	10,000	5,625.3	5,000	1,134.9	5,000,000	1,466,926
Total	**90,000**	**93,533.2**	**85,000**	**32,988.6**	**35,000**	**23,172.6**	**30,000,000**	**20,225,476**

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The key achievements of the four supporting Strategic Objectives for the period 2016 – 2022 are outlined in Table 2:

Table 2: Key Achievements for the First Seven Years of Implementation of GFLRS (2016 - 2022)

Objective	Key Achievements
Objective 2: Promote investments in the establishment and management of small, medium and large-scale forest plantations	- 80 private entities (companies/ individuals) allocated 301 degraded compartments to undertake forest plantation development under Public Private Participation model; - Forest Plantation Investor Forum inaugurated in 2017 to enhance private sector investment in forest plantation development through advocacy to influence policy, legal and administrative reforms in the plantations sub-sector; - Forest Plantation Extension manual published.
Objective 3: To create employment opportunities and sustainable livelihoods in rural communities through forest plantation development.	- A total of 448,985 jobs created; - A total of 312,006.5m^3 of food crops (cereals, tubers, legumes and vegetables) produced from MTS sites;
Objective 4: To increase investments in research and development, extension, training and capacity building for forest plantation development, timber utilization and marketing.	- Model plantations covering a total area of 550.5 hectares established under the Forest Investment Programme (FIP); - A total area of 534.14 hectares (FC – 519.14 ha and FORIG – 15 ha) of Seed Orchards established using high quality seeds from Provenances in Costa Rica and Tanzania under FIP; - Cold Facility Established at National Tree Seed Centre for storage of seeds under FIP; - Piloting of the incorporation of shade-tolerant crops in MTS sites under the NWO-WOTRO project - Streamlining and enhancing efficiency of regulatory processes governing harvesting operations by Private Commercial Forest Plantation Developers under the FAO Chain of Custody Project - Hosting of 4th World Teak Conference in Ghana in 2022
Objective 5: To improve governance in the regulation and management of forest plantations	- Disbursement of revenue due stakeholders from harvesting of forest plantation timber; - Signing of Social Responsibility Agreements with local communities, as pre-requisite for issuance of entry permits for harvesting of planted trees on-reserve; - Registration and validation of planted trees off-reserve.

Key Projects Implemented from 2016 to 2022

a. The Modified Taungya System (MTS): 2002 – 2022

The MTS involves the establishment of forest plantations in degraded forest reserves by the Forest Services Division (FSD) in partnership with farmers from forest fringe communities. A distinctive feature of MTS is the defined roles and benefit sharing agreements between the Government, farmers, land owners and local communities. The farmers provide labour for planting activities while the FSD supervises and provides the required logistics including

tree seedlings. The farmers are permitted to cultivate their food crops alongside the planted trees on the same piece of land for a period of three (3) years. The farmers, in addition to the food crops, have a 40% share in the Standing Tree Value (STV) of the planted trees. The Government has a 40% share while the landowner and community have a 15% and 5% share respectively. The MTS accounted for 44,217.2 ha of forest plantations established from 2017 to 2022.

b. Youth in Afforestation/Reforestation Project (YAP): 2018 -2022

The Youth in Afforestation/Reforestation Project (YAP) is a government-funded landscape restoration intervention that involves the engagement of predominantly young people as beneficiaries to undertake rehabilitation of degraded and deforested landscapes nationwide and also support forest protection and management measures. Implementation of the project commenced in April 2018 with an initial engagement of about 50,000 beneficiaries. However, there has been a reduction in the number of beneficiaries over the period as a result of resignations. The activities undertaken by the YAP beneficiaries include amenity planting, watershed planting, woodlot establishment, Taungya, establishment of seed orchards, direct planting, enrichment planting, nurturing of seedlings and maintenance of existing plantations. From 2018 to 2022, YAP beneficiaries contributed to the establishment of **31,327.9 ha** of forest plantations, enrichment planting covering an area of **14,113.1 ha** and also supported farmers to incorporate trees within **132,302.3 ha** of agricultural lands.

c. Forest Investment Programme (FIP): 2015 - 2024

Implementation of the Forest Investment Programme (FIP) commenced in 2015 as a targeted intervention under the Strategic Climate Fund (SCF). FIP-financed activities in Ghana were aimed at tackling the drivers of deforestation and forest degradation, promoting agroforestry practices, and rehabilitating degraded forests, while enhancing livelihoods and conserving biodiversity. Key activities undertaken under FIP include the establishment of model plantations and seed orchards, enrichment planting within poorly stocked forest reserves, planting up of external forest reserve and internal (admitted farm) boundaries, establishment of small-medium size plantations off-reserve, development of woodlots, rehabilitation of degraded watersheds, rehabilitation of degraded sacred groves, incorporation of trees within farming systems, reclamation of mined-out sites and

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disbursement of concessionary loans to private forest plantation developers. FIP was implemented in the Western, Western North, Bono, Bono East, and Ahafo Regions. FIP activities were implemented under two (2) projects namely:

i. Enhancing Natural Forest and Agroforestry Landscape (ENFAL) project was implemented by the Forestry Commission and other agencies through the World Bank. The Project's Additional Finance ended in June 2024.

ii. Engaging Local Communities in REDD+ (ELCIR+) project was implemented by the Forestry Commission and other agencies through the African Development Bank (AfDB). The ELCIR+ project ended in 2020. A total area of **8,456.7 ha** of forest plantations was developed (including **4,333.3 ha** established under the MTS); enrichment planting was undertaken over a total area of **7,531.8 ha** and under trees-on-farm intervention, seedlings were supplied to farmers to plant a total area of **132,298 ha** of agricultural lands.

d. Forestry Commission/ Timber Industry Plantation Development Fund Plantations: 2010 - 2022

Under this component, forest plantations are established with funding from a third (i.e. 0.5%) of the 1.5% export levy paid by exporters of timber products. The forest plantations have been established in the Esen Epam & Pra-Anum Forest Reserves (Eastern Region), Afram Headwaters, Asenanyo River, Mankrang River & Opro River Forest Reserves (Ashanti Region) and Pamu-Berekum Forest Reserve (Bono Region). Under this initiative, an area of **2,159 ha** of forest plantations was established from 2016 - 2022. The Forestry Research Institute of Ghana (FORIG) has been engaged by the FC/Timber Industry Plantation Development Fund Committee to establish and manage these plantations.

e. Green Ghana Day Initiative (2021 to date)

I. Green Ghana Day is a presidential initiative introduced in 2021 as part of the government's strategy to restore degraded lands and encourage the citizenry to actively partake in tree planting initiatives for its manifold benefits. During Green Ghana Day, tree seedlings are distributed freely to the general public for planting to meet a set ambitious national target. The Green Ghana Day initiative seeks to achieve the following objectives:

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a. Create enhanced national awareness on the necessity for collective action towards restoration of degraded landscapes in the country;
b. Inculcate the values of planting and nurturing trees and its associated benefits in the youth;
c. Mitigate climate change;
d. Enhance livelihoods for rural communities through their engagement in the production of tree seedlings; and
e. Beautify our communities and environment.

A total of 41,860,861 tree seedlings of various species (forest trees, ornamentals, shade and fruit trees) were planted across the country from 2021 to 2023.

Commencing 2024, it is proposed that a total of 10 million tree seedlings will be distributed for planting during Green Ghana Day per year to support attainment of the set targets under the GFLRS. The seedlings will be planted as follows:

a. 3 million tree seedlings for planting within farms;'
b. 2 million tree seedlings for amenity planting
c. 5 million tree seedlings to be distributed for planting within degraded forest reserve sites to meet the public sector GFLRS target.

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f. Ghana Shea Landscape Emission Reductions Program (GSLERP): 2022 –

An area of **941.6 ha** was established under the Ghana Shea Landscape Emission Reductions Programme (GSLERP) being implemented in the five (5) northern savannah regions of Ghana in 2022.

g. Ghana Landscape Restoration and Small-Scale Mining Project (GLRSSMP): 2022 – 2027

The Ghana Landscape Restoration and Small-Scale Mining Project is a 6-year programme being implemented in Twenty-six (26) political districts in the rural areas of northern savannah, transition and high forest zones. The core objective of the GLRSSMP is to strengthen integrated landscape management, formalization of artisanal small-scale mining and increase benefits to communities in the targeted degraded savannah and cocoa forest areas. A total area of **130.9 ha** of forest plantations was reported established under the project in 2022. Additionally, **187.8 ha** of enrichment planting has been undertaken under the project in 2022.

h. Public-Private Participation Model (Benefit Sharing Category 1): 2002 –

The approach involves the allocation of degraded forest reserve lands by the Forestry Commission to private entities for commercial forest plantation development upon approval of their reforestation plans. The investor is required to sign a Land Lease Agreement and a Benefit Sharing Agreement with FC and the landowner. The Forestry Commission undertakes monitoring of the operations of the private entities to ensure compliance with the terms and conditions of the Agreements and the approved Reforestation Plans. Under this arrangement, the private investor earns 90% of the Standing Tree Value (STV) of the plantation whereas the remaining 10% is shared as follows - FC (2%), Landowner (6%) and Local Community (2%). In addition, the investor pays an annual ground rent of the Ghana Cedi equivalent of $2 per hectare for the total allocated area over the lease period. An area of **6,109.2 ha** of forest plantations was reported established from 2017 - 2022 under this approach.

i. Public-Private Participation Model (Benefit Sharing Category 2): 2002 –

This category also involves the release of degraded forest reserve lands to private entities. However, the FC has responsibility for additional activities including: survey and demarcation; pillaring; registration of Land Lease and Benefit Sharing Agreements; community fire education; and provision of support towards fire-fighting. Similar to the Benefit Sharing Category 1 approach, FC also undertakes monitoring of the plantation development operations. The private investor is entitled to 80% of the STV of the plantation whereas the FC receives 12%, the Landowner (6%) and Local Community (2%). The

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investor pays ground rent at a rate of the Ghana Cedi equivalent of $2 per hectare per year. In addition, the investor pays an annual fee of the Ghana Cedi equivalent of $2 per hectare as Facilitation Fee and a one-off payment of the Ghana Cedi equivalent of $7 per hectare to the landowner as "Drink Money". An area of **19,885.5 ha** was developed using the PPP approach from 2017 to 2022.

j. Tain II Landscape Restoration Programme: 2019 - 2021

The Tain II Landscape Restoration Programme was implemented by Form Ghana Limited in collaboration with FC and Berekum, Nsoatre and Seikwa Traditional Councils; and Berekum Municipal Assembly and Sunyani West District Assembly. The programme targeted the promotion of restoration of natural forests and increased productivity of agricultural land to improve the livelihood of the communities surrounding the Tain II Forest Reserve. The programme also sought to protect and restore degraded lands within the Tain II Landscape. As at the end of 2021, a total area of **1,244.4 ha** of degraded forest reserve and off-reserve lands had been restored using indigenous species under the project. In addition, tree seedlings were provided for planting by farmers in farmlands covering an area of **1,071.4 ha** within the project area.

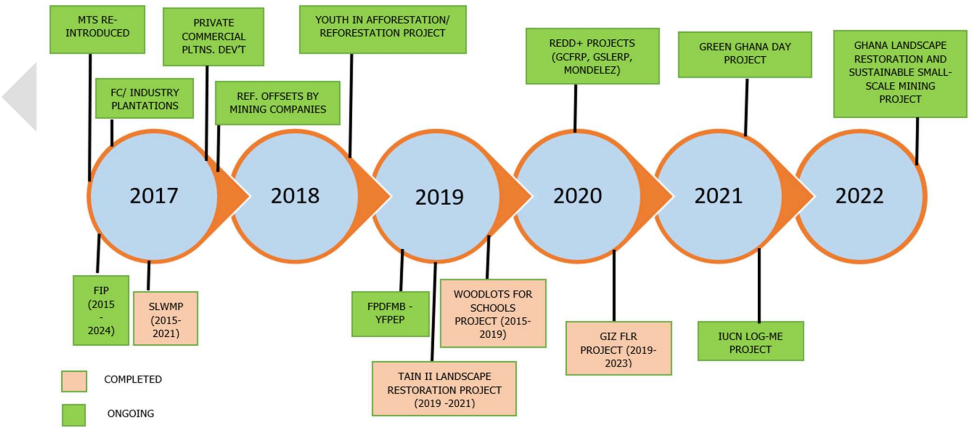

Figure 1: Major ongoing and completed forest restoration projects in Ghana (2017-2022)

1.3 Framework for Review of the Strategy

The Monitoring and Evaluation framework for the GFPS prescribed the revision of the Strategy every five years to monitor progress and adapt the Strategy to changing conditions and priorities thus ensuring that the Strategy stays on course to achieve the overarching goal. The Strategy further proposed that a multi-stakeholder advisory body to be known as the Forest Plantation Technical Steering Committee (FPTSC) be formed to guide the implementation of the Strategy by providing oversight responsibility in the implementation of the Strategy, monitor the achievements of the objectives and facilitate periodic review of the Strategy.

The FPTSC was inaugurated on 28th April, 2023 and tasked to lead the maiden review of the GFPS. The first review therefore commenced after seven (7) years of implementation of the GFPS.

During revision of the Strategy document, it was generally acknowledged by the FPTSC and various stakeholders consulted that most of the strategic elements and pillars are still relevant for attainment of the vision of the GFLRS.

1.4 The Revised Title of the Strategy Document

One of the major decisions taken during the review of the GFPS was to revise the title of the document to the '**Ghana Forest Landscape Restoration Strategy**' (GFLRS). Forest Landscape Restoration is defined by the IUCN as 'the ongoing process of regaining ecological functionality and enhancing human well-being across deforested and degraded forest landscapes'. It is a Nature-based intervention that goes beyond just tree planting.

Although the original title of the document (Ghana Forest Plantation Strategy) was defined to incorporate all the major restoration interventions undertaken in the country, it was generally acknowledged by stakeholders during the review process that the original title was restrictive and could be interpreted as focused solely on the establishment and maintenance of forest plantations. The adoption of the new title is therefore intended to better reflect the main forest landscape restoration interventions being undertaken in-country which includes forest plantations development, enrichment planting, assisted natural regeneration, farm forestry/ trees-on-farm and amenity planting.

The revised title also seeks to put in proper perspective the multiple benefits and opportunities associated with national efforts towards regaining the functionality of degraded and deforested landscapes. These efforts directly contribute to creating resilient landscapes to enhance Ghana's economic, ecological and agricultural productivity through job creation, improved community livelihoods, sustainable supply of timber, carbon sequestration to combat climate change, enhanced ecological functionality of forests,

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watershed protection, improved soil fertility, enhanced food crop production, amongst other critical developmental aspirations of the country.

1.5 Background

The Strategy aligns with various global, regional, national and sector-specific policies, strategies, processes and instruments, as detailed below.

1.5.1 Global Policy Framework on Forest Landscape Restoration

United Nations Conference on Environment and Development (UNCED)

The United Nations Conference on Environment and Development (UNCED) Earth Summit held in Rio de Janeiro in 1992, and subsequent international fora, have recognized the significance of forest plantations in supporting sustainable forest management as reflected in the Forest Principles, Chapter 11 of Agenda 21 that states:

"The role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted. Their contribution to the maintenance of ecological processes, to off-setting pressure on primary/old growth forests, and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced"

United Nations Decade on Biodiversity

The United Nations General Assembly at its 65th Session (December 20, 2010) declared the period 2011 – 2020 to be "the United Nations Decade on Biodiversity" (Resolution 65/161). "The Decade of Biodiversity" was proposed by the Government of Japan during the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity in Nagoya, in October, 2010. The United Nations Decade on Biodiversity served to support and promote implementation of the objectives of the Strategic Plan for Biodiversity for the period 2011 – 2020.

The Bonn Challenge

In September 2011, world leaders met in Bonn, Germany to launch the largest global initiative on the restoration of degraded landscapes. It is an implementation platform for several global commitments and aims at the restoration of 150 million hectares of degraded forests and deforested lands by 2020, and 350 million hectares by 2030.

According to the Global Partnership on Forest and Landscape Restoration, the Bonn Challenge is leading to real progress on the ground and assessments of restoration opportunity are ongoing in numerous countries leading to restoration pledges being

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incorporated into national plans and strategies. In 2016, Ghana pledged to restore 2 million hectares of deforested and degraded lands as its national commitment to the Bonn Challenge.

Rio + 20

At the United Nations Conference on Sustainable Development organized in Rio de Janeiro from 20th – 22nd June, 2012 (Rio + 20), the world re-affirmed its commitment to among others, fully implement the Rio Declaration, Agenda 21, the programme for further implementation of Agenda 21 and to support green economy policies in the context of sustainable development and poverty eradication.

The New York Declaration on Forests

The New York Declaration on forests (NYD) is a voluntary and non-legally binding political declaration by both developed and developing nations to halve the rate of natural forest loss by 2020, and strive to end it by 2030. This declaration was made at the UN's Climate Summit held in New York in 2014.

The NYD calls for the restoration of at least 350 million hectares of degraded forests and cropland which will bring significant climate benefits and also take the pressure off the natural forests.

UN Sustainable Development Goals (SDGs)

Following the expiration of the Millennium Development Goals (MDGs) in 2015, member states of the UN, at the Sustainable Development Summit dubbed "2030 Agenda for Sustainable Development" on 25th September 2015, adopted 17 SDGs and 169 targets aimed at ending poverty, fighting inequality and injustice, and tackling climate change by 2030.

Goal#6.6 by 2020, protect and restore water-related ecosystems, including mountains, **forests**, wetlands, rivers, aquifers and lakes

Goal#15 looks broadly at the protection, restoration and promotion of sustainable use of terrestrial ecosystems, sustainable management of forests, combating desertification, halting and reversal of land degradation and halting of biodiversity loss. Target #2 of Goal#15 advocates for the sustainable management of all types of forests and particularly supports substantial increase in afforestation and reforestation globally by year 2020.

Goal#15a aims to:

"Mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems."

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The targeted activities under the GFLRS plays an integral role in Ghana's efforts to mitigate climate change and also strengthen resilience and adaptive capacity to climate-related hazards which are key targets under **Goal #13** of the SDGs.

Goal #13 seeks to:

"Take urgent action to combat climate change and its impacts."

The GFLRS also contributes to the attainment of several other SDGs, including SDGs 1(No Poverty), 2 (Zero Hunger), 3 (Good Health and Well-Being), 5 (Gender Equality), 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy), 8 (Decent Work and Economic Growth), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), 17 (Partnership for the Goals).

Paris Climate Agreement

On 12th December 2015, during COP 21, 195 UN member countries adopted the first-ever, universal, legally binding, global Climate Agreement, requiring member states to embark on ambitious pathways towards a clean economy and avert the undesirable effects of climate change. In accordance with this Agreement, Ghana submitted its updated and enhanced Nationally Determined Contribution (NDC) to the UNFCCC. Ghana's NDC outlines government's conditional and unconditional measures to contribute to the global fight towards addressing climate change.

The United Nations Strategic Plan for Forest 2030

This plan provides a global framework for action at all levels to sustainably manage all types of forests and trees outside forests, and to halt deforestation and forest degradation. This historic agreement on the Strategic Plan was forged at a special session of the United Nations Forum on Forests in January, 2017, and subsequently adopted by the United Nations General Assembly in April, 2017.

The Global Forest Goal 1 under this plan seeks to 'Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation and contribute to the global effort of addressing climate change'.

The United Nations Decade on Ecosystem Restoration (2021 – 2030)

The United Nations General Assembly declared 2021 – 2030 as the Decade on Ecosystem Restoration on March 1, 2019. In its resolution, the United Nations General Assembly recalled the United Nations Environment Assembly's Resolution calling for the conservation and restoration of all ecosystems. The Primary aim of the UN Declaration is to prevent, halt and reverse the degradation of ecosystems worldwide. The benefits accruing from the UN

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Decade on Ecosystem Restoration also play an important role in achieving the objectives of the 2030 Agenda for sustainable development and its associated UN Decade of Action.

Forest Certification

Forest certification aims at achieving sustainable forest management. There are greater market access opportunities for products from forest plantations that are certified for compliance with social, economic and environmental standards. In addition, there is an international market for young established forest plantations as going concerns if they are certified.

One of the recent emerging prospects is the forest related carbon finance and its synergies with forest certification. It is expected that a new carbon element will be included in the scope of forest certification guidelines in the future that may open up opportunities for financing forest management operations.

1.5.2 Regional Policy Framework on Forest Landscape Restoration

ECOWAS Forest Convergence Plan

In 2013, ECOWAS, with the support of FAO and other partners, developed the 'Convergence Plan for the Sustainable Management and Use of Forest Ecosystems in West Africa'. The Forest Convergence Plan aims to mobilise political, institutional, technical and financial support to address transboundary forest issues.

Africa Union's Agenda 2063: The Africa We Want

Agenda 2063 is Africa's blueprint and master plan for transforming Africa into the global powerhouse of the future. It is the continent's strategic framework that aims to deliver on its goal for inclusive and sustainable development and is a concrete manifestation of the pan-African drive for unity, self-determination, freedom, progress and collective prosperity pursued under Pan-Africanism and African Renaissance. It was adopted on 31st January, 2015 at the 24th Ordinary Assembly of the Heads of State and Governments of the African Union in Addis Ababa.

The AU Agenda 2063, among others, outlined the need for African Countries to act with a sense of urgency on climate change and the environment through initiatives such as sustainable forest management programmes (Theme 72f).

African Forest Landscape Restoration Initiative - AFR100

This is a country-led effort to restore 100 Million ha of deforested and degraded lands in Africa by 2030. This initiative, launched formally on 6th December, 2015 at COP 21 in Paris, will support the Bonn Challenge, the New York Declaration on Forests, and the African Resilient Landscapes Initiative (ARLI) - an initiative to promote integrated landscape management with the goal of adapting to and mitigating climate change.

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Regreening Africa Project

Regreening Africa is an EU-funded project which seeks to restore ecosystems in eight (8) countries in Africa and improve the resilience of 500,000 households across Sub-Saharan Africa. Implementation of the Project commenced in 2017. By 2023, Regreening Africa aims to improve livelihoods, food security, and resilience to climate change of smallholder farmers by restoring ecosystem services, particularly through agroforestry.

1.5.3 National Legal and Policy Framework

Ghana's Medium-Term National Development Policy Framework (2022 – 2025) and the Long-Term National Development Plan of Ghana (2018 – 2057) recognize the need to accelerate the implementation of GFPS, now revised and known as GFLRS to ensure restoration of degraded areas within and outside forest reserves.

As a result of the importance the Government of Ghana (GoG) attaches to forest plantation development, a number of strategies, policies and legislations have been introduced, in addition to funding a number of studies and projects since the mid-1990s, to provide direction and impetus for the development of forest plantations in Ghana.

These include the following:

Policies and Legislations

II. **Control and Prevention of Bushfires Act, 1990 (PNDC Law 229).**
(An ACT to prohibit the starting of bushfires and to provide for related matters. It repealed the Bush Fire Law, 1983 (P.N.D.C.L. 46)

III. **Ghana Investment Promotion Centre Act, 1994 (Act 478).**
(An ACT to encourage, promote and facilitate investments into the country. It's also to initiate and support measures that will enhance the investment climate in Ghana)

IV. **Ghana Investment Promotion Centre Act, 2013 (Act 865).**

V. **Land Act, 2020 (Act 1036)**
(*An Act to revise, harmonise and consolidate the laws on land to ensure sustainable land administration and management, effective and efficient land tenure and to provide for related matters*)

VI. **Forest Plantation Development Fund (FPDF) Act, 2000 (Act 583).**
(Provides financial assistance for the development of forest plantations; provides funds for research and technical advice).

VII. **Forest Plantation Development Fund (Amendment) Act, 2002 (Act 623).**
(Sections (iii), (iv) and (v) support public and private investment in forest plantation development).

VIII. **Forest Protection (Amendment) Act, 2002 (Act 624).**
(An ACT to amend the Forest Protection Decree 1974 (NRCD 243) to provide for higher penalties for offences therein and to provide for related purposes).

IX. **The Timber Resources Management (Amendment) Act, 2002 (Act 617).**

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(Excludes private forest plantations from being allocated by government under a Timber Utilization Contract (TUC), in addition to the provision of fiscal and other incentives and benefits to investors in the forestry sector).

X. **Internal Revenue Act, 2000 (Act 592) and its Amendments.**
(Provides tax rebates, capital allowances, and such other benefits to investors)

XI. **Renewable Energy Act, 2011 (Act 832)**
(An Act to provide for the development, management, utilization, sustainability and adequate supply of renewable energy for generation of heat and power and for related matters)

XII. **National Land Policy, 1999.**
(Provides the framework and direction for dealing with land ownership, security of tenure, land use and development, and environmental conservation on a sustainable basis)

XIII. **National Wildfire Management Policy, 2006.**
(Promotes effective and efficient management of wildfires for the sustainable management of natural resources and maintenance of environmental quality to improve on the socio-economic well-being of the citizenry)

XIV. **Ghana Forest and Wildlife Policy, 2012**
(Policy Objective 2: advocates the development and implementation of a National Forest Plantation Strategy, with realistic annual targets based on best practices and updated forest plantation information for both the savannah and forest areas)

XV. **National Climate Change Policy, 2012 (CDM, REDD+)**
(*Provides a clearly defined strategic direction for dealing with the challenges of climate change within the current socio-economic context of Ghana, presenting the opportunities and benefits of a green economy*)

Plans/Strategies/Projects

XVI. Forestry Development Master Plan (2016 – 2036)

XVII. Ghana: Biodiversity Conservation Strategy. MEST, 1998

XVIII. Natural Resource Management Programme (NRMP I) Phase I, the World Bank, 1999–2003.The High Forest Development Component *inter alia* established a Forest Plantations Development Centre (FPDC) to promote and encourage private forest plantation development

XIX. Strategic National Energy Plan (2006 – 2020) (Energy Commission, 2006)

XX. Mapping Forest Landscape Restoration Potential in Ghana (IUCN, 2013)

XXI. Ghana Shared Growth and Development Agenda (GSGDA) II, Costing Framework (2014 – 2017).

XXII. Ghana's Intended Nationally Determined Contribution (GH-INDC) to address Climate Change, 2015.

XXIII. Ghana REDD+ Strategy (2016 – 2035).

XXIV. National Biodiversity Strategy and Action Plan, 2016.

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XXV. Ghana Bamboo and Rattan Development Strategic Plan, 2020 – 2024.

Green Ghana Day Initiative (2021 – Date). ***Studies***

XXVI. Private Sector Forestry Plantations Development Project. Preparation Report. FAO Investment Centre, 1998

XXVII. Forest Plantations Support Project. Feasibility Study. Pat Hardcastle, OFI, 1998

XXVIII. Plantations Investment Feasibility and Promotion Study: Final Plantations Donor Proposal – Consultancy under the NRMP (Coillte, 2002)

1.5.4 Historical Perspectives – Forest Restoration in Ghana

1.5.4.1 Enrichment Planting

Attempts at increasing the stocking of high value indigenous timber species within forest reserves in Ghana dates back to 1946. Such efforts included enrichment planting to improve the stocking of the poorly stocked Wet Evergreen forest reserves as well as to sustain the supply of the then "desirable" species; *Khaya spp.*, *Entandrophragma*, *Lovoa* and *Heritiera*. The success of the interventions was limited due largely to inadequate budgetary allocation and knowledge of the silvicultural requirements of the planted tree species (Nolan & Ghartey, 1992).

1.5.4.2 Forest Plantation Initiatives

(a) Past Species Trials

The interest in tree planting in Ghana dates back to the 1920s. The general policy at the time was to plant mainly indigenous species in the High Forest Zone (HFZ). The few exotic species that were planted in the HFZ were introduced mainly for fuelwood near large population centres and to fuel boilers for electricity generation or for mining use. The exotic species included *Eucalyptus torelliana* and *Eucalyptus tereticornis* (FAO, 2002).

In the Savannah Zone (SZ), however, a large number of exotic species were tried from 1951 to supply timber, poles and fuel wood. Species that showed promise included *Azadirachta indica, Senna siamea*, *Cedrela mexicana*, *Dalbergia sissoo*, *Gmelina arborea*, and *Tectona grandis.* Records show that Cedrela was introduced from the Caribbean in 1898 and Teak from Burma (Odoom, 1998). Kadambi (1972), reported that *Tectona grandis* trials in Ghana date back to 1905 under the German administration in the Volta Region.

Between 1927 and 1990, over 150 tree species were assessed in research trials in various ecological zones in the country. Out of these, about 30 species (20%) are indigenous (Foli et al., 1997).

(b) Public Forest Plantations

A major forest plantation development effort under the erstwhile Forestry Department (FD), now the Forest Services Division (FSD) of the Forestry Commission, was undertaken from

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1963 to 1987 mostly in the degraded parts of the forest reserves due to easy access to land in these areas. They were undertaken mainly through the Taungya system.

Existing government forest plantations established prior to the implementation of the National Forest Plantations Development Programme in 2002 cover an area of 19,378.26 ha in the High Forest Zone. Over 70% of these plantations consist of *Tectona grandis* (Teak). Other species established include *Cedrela odorata* (Cedrela), *Terminalia* spp. (Ofram and Emire), *Gmelina arborea* (Gmelina), *Senna siamea* (Cassia), *Eucalyptus spp*, *Heritiera utilis* (Nyankom), *Aucoumea klaineana* (Aucoumea), *Nauclea diderrichii* (Kusia), *Khaya ivorensis* (Mahogany), *Triplochiton scleroxylon* (Wawa) and *Mansonia altissima* (Oprono).

Forest plantations in Northern Ghana (Upper East, Upper West and Northern Regions) are estimated to cover 2,553 ha and were primarily established for fuel wood production and environmental protection. Tree species planted include Teak, Gmelina, Anogeissus and Eucalyptus.

(c) Private Sector Plantations

Forest plantations developed by the private sector prior to the year 2002, cover an estimated area of 44,198 ha (FAO, 2002) and are made up of:

- 35,000 ha by individuals and tree grower associations (mainly teak);
- 4,000 ha of *Gmelina arborea* by Subri Industrial Plantations Limited (SIPL);
- 5,178 ha of teak by British-American Tobacco (3,096 ha), Ashanti Goldfield Company Ltd. (100 ha), Global Green (1,315 ha) and Dupaul Wood Treatment Limited (667 ha).

(d) Past Experiences with Forest Plantation Management

The management of forest plantations in the past has not been consistent with best practice. Site-species matching was not observed in some cases by both the Forestry Department (FD) and private efforts (FAO, 2002). In many cases, no tending and replanting of failed areas was undertaken. Provenance trials and tree improvement were virtually absent. Poor genetic planting materials of unknown provenances were used in many cases (FAO, 2002). The provision of extension services to the private sector was minimal and limited to only a few areas.

Funding of public plantations has been very erratic and inadequate. Tending of established plantations was therefore undertaken based on the availability of funds. Thinning was generally delayed until commercial tree sizes were attained. Fire outbreaks are recurrent especially in forest plantations in the Savannah and Dry Semi-Deciduous Forest Zones due to budgetary constraints and ineffective fire management regimes.

1.5.5 National Forest Plantation Development Programme (NFPDP, 2002-2015)

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The National Forest Plantation Development Programme (NFPDP) was launched in September 2001, to accelerate the rate of establishment of forest plantations. Key objectives of the programme comprise the following: restoring the forest cover of degraded forest lands; generating employment as a means to reducing rural poverty; addressing the future wood deficit situation and enhancing food production through the adoption of the modified taungya system. Field implementation however, commenced in 2002. An estimated 127,825 ha of forest plantations was established nationwide under the NFPDP by both public and private sector, mainly within degraded forest reserves from 2002 to 2015 as summarized in Table 2 and with details in Appendix 1.

Table 2: Plantation Establishment Achievements under the NFPDP (2002-2015)

YEAR	PUBLIC SECTOR (ha)	PRIVATE SECTOR (ha)	TOTAL (ha)
2002	9,823.80	1,609.00	11,432.80
2003	5,724.20	1,609.00	7,333.20
2004	11,444.40	1,609.00	13,053.40
2005	6,922.60	1,609.00	8,531.60
2006	7,412.70	1,609.00	9,021.70
2007	6,394.60	1,609.00	8,003.60
2008	3,342.40	5,373.80	8,716.20
2009	2,945.90	2,586.90	5,532.80
2010	14,115.50	2,512.70	16,628.20
2011	6,990.30	3,240.30	10,230.60
2012	5,949.60	2,613.00	8,562.60
2013	4,601.30	2,399.30	7,000.60
2014	4,608.50	3,674.50	8,283.00
2015	1,587.80	3,906.90	5,494.70
TOTAL	**91,863.6**	**35,961.4**	**127,825**

In the Strategy document, originally published in 2016, the achievement under NFPDP was stated as 190,449.92. However, following field verification in 2017, the area established during the period (2002 – 2015) was estimated as 127,825 ha. The major reasons that accounted for the significant difference in the reported figures is attributable to inadequate maintenance, wildfires and droughts which impacted on the survival of the planted seedlings.

The following paragraphs provide a brief description of the major forest plantation development interventions undertaken under the NFPDP:

1.5.5.1 The Modified Taungya System (MTS) 2002 – date

The MTS involves the establishment of forest plantations by the Forestry Commission (FC) in partnership with farmers in forest fringe communities.

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The MTS was re-introduced in 2017 and plays a key role in achieving set targets under the Ghana Forest Landscape Restoration Strategy.

1.5.5.2 Community Forestry Management Project (CFMP): 2005 – 2009

The CFMP was funded with a loan from the African Development Bank (AfDB) and adopted the MTS model for the establishment of forest plantations.

It was implemented within degraded forest reserves in the Bono (Sunyani Forest District), Ashanti (Offinso Forest District) and Eastern Region (Begoro and Akim Oda Forest Districts).

1.5.5.3 Government Plantation Development Project (GPDP) 2004 – 2009

The Government Plantations Development Project (GPDP) utilized hired labour and contract supervisors to establish forest plantations. Plantation workers were hired and paid a monthly allowance to establish and maintain the plantations while plantation supervisors were engaged on contract basis to supervise and offer technical direction at the site level.

The FC exercised general oversight and monitored field activities to ensure compliance with quality standards for plantation establishment. This Strategy was funded through the Highly Indebted Poor Countries (HIPC) benefits. Under the scheme, plantations developed are owned by government and the respective landowners who are entitled to royalty payments.

1.5.5.4 Private Commercial Plantation Developers On-Reserve: 2002 to Date

The Private Commercial Plantation Developers On-reserve component involves the release of degraded forest reserve lands by the FC to private entities after vetting and endorsing their reforestation/ business plans; and signing of Land Lease/Benefit Sharing Agreements (LL/BSAs). The private investor earns 90% of the total proceeds from the plantation while the FC, Landowner and Community earn 2%, 6% and 2% respectively. The investor additionally pays ground rent of the Ghana Cedi equivalent of $2/ha/year throughout the life of the investment.

1.5.5.5 Public Private Participation (PPP): 2013 to Date

This arrangement is similar to the Private Developers on-reserve but with the FC taking up costs of survey and demarcation, registration of agreements and fire education within fringe communities, in addition to jointly developing project documents and assisting in fire suppression as part of its contribution to the project. Within the partnership, the investor is entitled to 80% of the plantation proceeds and benefits with the Forestry Commission, Landowners and Forest fringe communities entitled to the remaining 20%. The investor also pays ground rent of the Ghana Cedis equivalent of $2/ha/year to the landowner together with a facilitation fee of $2/ha/year for the customary and conflict resolution role expected of the traditional authorities. A 50-year Land Lease Agreement together with a Benefit Sharing Agreement are executed and registered at the Lands Commission.

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1.5.5.6 Model Plantation component: 2007 – 2009

In 2007 the Model Plantation component, a purely research-based scheme was introduced to offer the FSD plantation managers the opportunity to undertake mixed species trials and experiment with various planting designs and tree spacing. Tree spacing so far tried include 3m x 3m, 3m x 2m and 2.5m x 2.5m. Mixed exotic-indigenous species planting designs implemented include MS 3-12, MS 4-8, and MS 3-6-12.

1.5.5.7 Expanded Plantation Program (EPP) 2010 - 2012

Under the EPP, forest plantations were established on private lands located outside forest reserves in addition to degraded forest reserve lands. The EPP ensured that most of the Metropolitan/Municipal/District Assemblies without degraded forest reserves also benefited from the job opportunities being created through the NFPDP.

Private companies were contracted to undertake the establishment and maintenance of plantations and the supply of tree seedlings. Messrs. Zoil Services Ltd. and Ecotech Services Ltd. undertook the establishment and maintenance whilst Messrs. African Foresters Brigade Ltd. supplied the tree seedlings. The Forestry Commission played a monitoring and reporting role under this program. After the expiration of the contracts in 2013, the successfully established plantations were handed over to the Forestry Commission. The on-reserve plantations are owned by government and the respective landowners who are entitled to royalty payments. Government is currently negotiating the benefit sharing arrangements with private landowners off-reserve since the original benefit sharing proposal (GoG - 66.67% and Landowner - 33.33%) was not accepted.

1.5.5.8 FC/Timber Industry Plantation Development Fund Plantations 2010 to date

The Forestry Commission – Timber Industry Plantation Development Fund Committee (FC/Timber Industry Fund Committee) contracted the Forestry Research Institute of Ghana (FORIG) to establish Best Practice commercial forest plantations of fast growing indigenous and exotic timber species with funding from the FC/Timber Industry Fund for the Government of Ghana. In addition, FORIG has been contracted to carry out Paulownia species trials.

Components of the programme and funding sources are tabulated in Table 3:

Table 3: NFPDP components and funding sources

PROGRAMME COMPONENT	FUNDING SOURCES
Modified Taungya System (MTS)	GoG, FC and Forest Plantations Development Fund Management Board (FPDFMB),
Community Forestry Management Project (CFMP)	AfDB / GoG

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Government Plantation Development Project (GPDP)	GoG (HIPC)
Public – Private Participation (Benefit Sharing Category 1 & 2))	Private Funds, FC, FPDFMB
Model Plantations	GoG / NREG
Expanded Plantation Program	GoG, EDAIF, FPDFMB, FC
FC / Timber Industry Plantations	Timber Export Levy

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PART II – SWOT ANALYSIS, GOAL & STRATEGIC OBJECTIVES

2.1 SWOT ANALYSIS

The Strategic Planning methodology used was built around the SWOT Strategic Planning Framework. This methodology ensured that relevant issues relating to the forest plantation industry were examined. Contextual analysis identified a number of critical challenges that define the framework of Ghana Forest Landscape Restoration Strategy.

An analysis of the current strengths, weaknesses, opportunities and potential threats confronting forest landscape restoration interventions in Ghana is summarized in Table 4.

Table 4: SWOT Analysis – Forest Landscape Restoration, Ghana

STRENGTHS	**WEAKNESSES**
• Availability of labour for landscape restoration • Availability of skill mix and experience within the sector. • Favourable international and national policy frameworks for landscape restoration • Over two decades of well-documented success stories of investors • Availability of lands with suitable soils and climatic conditions • Availability of quality germplasm of priority forest plantation tree species. • Established domestic and export market for plantation timber • Presence of Forestry Commission structures across the country • National Tree Seed Centre for long and short-term storage of seeds. • Biotechnology Facilities (Tissue Culture and Molecular Biology Laboratories) for production of genetically improved planting materials/ germplasm	• Data/ knowledge gaps in management of plantations (social, economic and ecological) • Inadequate plantation infrastructure (e.g. rides, observation towers etc.) • Low productivity of existing plantations. • Low application of Geo-Information Technology in monitoring forest restoration interventions. • Low capacity of timber processing industry in the utilization of small diameter plantation logs • Inadequate extension services. • Lack of sustainable financing framework for plantation development. • Weak enforcement of performance standards. • Ineffective institutional framework for forest landscape restoration. • Absence of a legal framework for regulating forest plantation development, benefits sharing, financing etc. • Inadequate staffing and logistics (vehicles, motorbikes, GPS, UAVs, etc.) for field operations • Weak cross-sectoral collaboration • Weak law enforcement capabilities. • Inadequate knowledge and skills of operational staff in forest plantation establishment • Weak capacities to prepare convincing proposals • Poor access to information on existing and emerging funding sources • Limited knowledge of programmatic and operational rules of funding agencies to allow access to their funding. • Non-existence of structured markets for trading of forest plantation stands
OPPORTUNITIES	**THREATS**
• Availability of genetically improved planting material in other countries. • Available international best practices in forest plantation management. • Political will to create green jobs	• Inadequate investment in R&D. • Low timber prices (naturally occurring/ planted) discourage investment in private forest plantations • Multiplicity of interests and rights in land ownership off-reserve. • Lack of sustainable financing.

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• Increasing demand for industrial timber and other wood products. • Increasing demand from niche markets for certified wood products. • Availability of Carbon and PES investments and markets • About 35% of Ghana's land area is currently under active agricultural cultivation which offers opportunities for agro-forestry. • Availability of competitive credit rates on the international markets. • High possibility for the promulgation of Forest Plantation Act to provide the legal framework for forest plantation development. • Community interest and support for landscape restoration • International commitment to reverse forest cover loss through reforestation, afforestation and other landscape restoration interventions. • Growing advocacy, public concern and interest in environmental issues	• High cost of capital and short-term credits of financial institutions. • Illegal farming within forest reserves. • Free-range cattle grazing coupled with wildfires. • Pests and diseases. • Mining activities (i.e. legal and illegal mining of minerals, sand winning etc.). • Illegal timber and wood products extraction. • Climate change impacts. • Poor market development. • Increasing and unregulated use of agrochemicals. • Pervasive poverty and high youth unemployment within forest fringe communities. • Unsustainable land use practices (fueled by high population growth, expansive agricultural practices and rising prices of commodities such as, cocoa, rubber, cashew, oil palm) • Cumbersome land acquisition processes off-reserve. • Increasing tendency to convert forests to other competing land uses (rubber, cashew, oil palm, etc.)

2.2 GOAL AND STRATEGIC OBJECTIVES

2.2.1 GOAL

The goal of this Strategy is to achieve sustainable supply of goods and services through the restoration of deforested and degraded forest landscapes to deliver a range of economic, social and environmental benefits.

2.2.2 STRATEGIC OBJECTIVES

Five strategic objectives crucial for success will be the focus of the Strategy. Arising out of the SWOT Analysis are five key challenges that underpinned the Strategic Objectives.

i. High rates of deforestation and forest degradation;
ii. Lack of sustainable financing and investment frameworks for Forest Landscape Restoration (FLR);
iii. High level of unemployment and inadequate livelihood options in fringe communities;
iv. Weak capacities and support systems for FLR; and
v. Ineffective governance framework and weak enforcement capabilities for FLR

They form the key levers for change and proposed actions must reflect them. The under-listed strategic objectives will be pursued to achieve the goal:

Strategic Objective 1: To provide a sustainable supply of timber and non-timber forest products, and environmental services through:

I. Establishment and management of 500,000 hectares of forest plantations. The annual target of 20,000 hectares will be achieved through the establishment

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of 12,500 hectares per year through public interventions and 7,500 hectares per year by the private sector.

II. Enrichment Planting and Assisted Natural Regeneration (ANR) of 100,000 hectares through the application of best practice principles by year 2040.

III. Provision of support for incorporation of trees within 3.75 million hectares of agricultural landscapes by year 2040 (Trees-on-farm/ Farm Forestry);

IV. Distribution of 50,000,000 tree seedlings (average of 2 million per year) for planting within urban areas (amenity planting)

V. Maintenance and rehabilitation of an estimated 200,000 hectares of existing plantations through the application of best practice principles.

Strategic Objective 2: To promote investments and mobilise financial resources from all sources for the implementation of forest landscape restoration interventions.

Strategic Objective 3: To create employment opportunities and sustainable livelihoods in rural communities through forest landscape restoration.

Strategic Objective 4: To enhance the capacity of the Forestry Commission and collaborating stakeholders to undertake forest landscape restoration.

Strategic Objective 5: To strengthen law enforcement and governance in the regulation and management of forest landscape restoration interventions.

2.3 RISK ASSESSMENT AND MITIGATION MEASURES

Based on the SWOT Analysis, key risk factors to plantation investments have also been identified and analyzed. In addition, a menu of mitigation measures has been proposed to address these risks depending on prevailing circumstances and available capacity (Appendix 2).

2.4 DETERMINATION OF STRATEGIC TARGETS FOR FOREST PLANTATION DEVELOPMENT

2.4.1 Projected Demand for Forest Plantation Products

The Timber Industry

The Timber Industry currently relies mainly on a dwindling supply of large hardwood logs from the natural forest which can only sustain an annual allowable cut (AAC) of 1 million cubic meters (AAC administratively reviewed upward to 2 million cubic meters since 2003)

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compared to the industry installed capacity of about 2 million cubic meters (from 3.7 million cubic meters in 1996).

Historically, the timber industry in Ghana has been involved in mainly primary and secondary processing of large diameter logs using band saws, rip saws and frame saws. However, due to the dwindling supply of such large diameter logs from the natural forest a significant number of these mills have folded up and the supply of logs in the long term from short rotation timber plantations will necessitate retooling as most of the timber processing mills in Ghana are not equipped to process small-diameter plantation logs.

In order to compete effectively in both local and international markets, there is an unquestionable need for the industry to adopt more modern technological competencies to move into value added processing. A viable value-added strategy for the timber industry should combine market intelligence, clearly defined market targets, product development and the application of appropriate technology to produce products that meet key market criteria – quality, specifications, price, assured supply and packaging (TIDD, 2011).

Woodfuel

It is estimated that about 85% of the population - mainly in the rural areas - depend on woodfuel (charcoal, firewood etc.) for cooking. About 90% of the woodfuels are obtained directly from the natural forest and the savannah woodlands (Energy Commission of Ghana, 2006). Fuelwood (biomass) is mainly consumed as charcoal (45%), firewood (52%), and others (saw dust, saw mill residue, etc.) (3%). Generally, woodfuel consumption in the country has been declining since 2000. The average national per capital consumption of biomass in the country as of 2021 was 0.11 TOE (0.208[1] tonne or 0.291[2] m^3 Round Wood Equivalent) (Energy Commission of Ghana, 2022). Based on the per capita consumption, a population growth rate of 2.0% and population size of 30.8 million, the national annual consumption or demand of woodfuel is estimated at 10,973,593 m^3 (RWE) (7,838,281 tonne).

Model/Experimental/Trial Forest Plantation

Small scale plantations such as model plantations and those for the purposes of experimentation, research and trial are essential to assess the feasibility, growth characteristics and suitability of tree species. It is estimated that 100 ha of such plantations will be established annually till 2040.

[1] 1 tonne Biomass= 0.53 TOE (Tonne of Oil Equivalent) based on weighted average for fuelwood, charcoal and sawdust

[2] 1 tonne=1.4m^3 of Round Wood Equivalent (RWE)

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Poles

Historically, thinnings from the FC Teak plantations have been the main source of raw material for the wood pole treatment plants in Ghana. However, over the past 16 years majority of the supplies have come from private teak plantations. The current demand, however, exceeds the supply and some of the pole treatment plants in the country have been importing softwood poles to supplement the local supplies. It is estimated that about 100,000 wooden poles per year would be required for the national electrification programme for the next 30 years (Odoom, 1998). We project that this demand will remain constant throughout the Strategy period, therefore using an average pole volume of 0.2 m^3, this will amount to 20,000 m^3 per year. The projected demand will be met mainly through commercial thinnings from Teak and Eucalyptus timber plantations.

Bamboo and Rattan

Bamboo and Rattan resources in Ghana constitute the two largest non-timber forest products that have been identified to be suitable substitutes to timber. Currently, rattan is extensively used in the furniture and handicraft industry while bamboo is mainly used for construction. The rattan processing industry is a source of livelihood for a significant number of artisans. However, the industry is threatened by decline in stock and availability of rattan. It is projected that 25,000 ha of bamboo and rattan plantations would be required to augment the supplies from natural stands over the next 25 years (Table 4).

Environmental Uses

A total area of 450 ha will be planted annually for environmental purposes. This is equivalent to 3% of the annual planting target for the timber industry requirements of 14,800 ha (domestic and export). This is expected to be composed of watershed plantings, green firebreaks, slope stabilization plantings, biodiversity offsets etc.

Carbon-based restoration initiatives

Forest Landscape Restoration interventions using Reducing Emissions from Deforestation and Forest Degradation (REDD) and Afforestation Reforestation and Revegetation (ARR) are Nature-based Solutions that ensure the sustainable supply of forest goods and services including carbon payments from emission reductions. Forest carbon-based restoration investments using REDD and ARR projects yield different return profiles. REDD projects utilise and protect existing natural assets in a country. The investment required is generally lower and credits can often be generated in significant quantities in a short term. This is because simple interventions can reduce the threat to the standing forest almost immediately. ARR projects, on the other hand, require significant investment to rebuild natural assets in a country over long-time periods. Nature-based forest landscape restoration projects provide the most cost-effective approach towards carbon sequestration and provide ancillary ecosystem benefits such as protection of biodiversity and

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water provision. The Climate Change Directorate (CCD) of FC will provide support in the achievement of these targets.

Restoration of mangroves

Restoration of mangroves is particularly considered due to the important role they play in the ecosystem and livelihood of coastal communities. Mangroves, as good nursery grounds, provide a safe hiding place for fingerlings, shrimps, crabs and many important young sea animals to grow, away from many predators. The estimated area of mangroves declined from 8,000 ha in 2019 to 6,800 ha in 2021 (MLNR 2023)[i] with mean annual loss per area estimated to be 600 ha. The annual restoration target is therefore set to 800 ha to help compensate for previous losses. The Wildlife Division (WD) will provide support in the restoration of mangroves.

Mined-out Area Rehabilitation

Mining, particularly illegal mining, negatively impacts on Ghana's forests. Total deforested/ degraded areas attributed to illegal gold mining as at 2021 was estimated to be 4,726.20 ha within forest reserves. It is projected that an estimated area of 100 ha will be impacted by illegal mining per annum (from 2022) mainly through small-scale illegal mining. At the end of 2040 it is projected that about 6,626.20 ha of forest areas will be degraded. Annual area to be rehabilitated in forest reserves within the 19-year period is therefore approximately 350.0 hectares.

Table 5: Projected Planting Requirements for Identified Plantation End Uses

End-Use	**Est. Annual Demand** (m^3 RWE)	**Supply from Existing Forests** (m^3 RWE)	**Balance (to be met from Plantations)** (m^3 RWE)	**Total Plantation Area Req'd**[4] (ha)	**Annual Planting rate** (Rotation = 25 years) (ha)
Timber Industry (mostly export + some local)[1]	2,000,000	800,000	1,200,000	120,000	4,800
Domestic Timber Market (mostly chainsawn lumber)	2,500,000[2]	0	2,500,000	250,000	10,000
Energy (Wood Fuel / Biomass)	10,973,593	10,035,351[3]	938,242	62,549	2,500
Model Plantation/ Experimental/Trials				2,500	100
Bamboo & Rattan				25,000	1,000
Environmental uses (watersheds, green firebreaks, biodiversity offsets etc.)				11,250	450

Mined-out Area Rehabilitation				8,750	350
Restoration of Mangroves				20,000	800
Total	**22,375,000**	**16,155,000**	**6,220,000**	**500,000**	**20,000**

[1]Sawmill, bush mill, veneer & plymill, excluding chainsaw [2]Marfo 2010 [3]91.45% assumed from natural forests/savannah woodlands (includes logging and sawmill waste) [4]MAIs (m^3/ha/yr): 15 for energy plantations; 10 for timber plantations

2.5 CLASSIFICATION OF FOREST RESERVES IN THE HIGH FOREST ZONE

The forest reserves in the high forest zone were classified according to the status of the growing stock through the 1986-94 forest inventory. Table 6 indicates that approximately 32% of the area within forest reserves were degraded and need both rehabilitation (122,000 ha) and reforestation (conversion of 397,000 ha to forest plantations) to enhance their productive capacity (FDMP, 2016)[3].

Table 6: Area of Forest Reserves in the High Forest Zone

Forest Management Category	Area (ha)	Percentage
Timber Production Area	762,400	47.0%
Permanent Protection Area	352,500	22.0%
Convalescence Area	122,000	7.0%
Conversion Area	397,000	24.0%
Total Reserve Area	**1,633,900**	**100.0%**

Enrichment planting interventions will focus on Convalescence Areas and understocked Timber Production Areas.

By the end of 2011, the FSD had piloted enrichment planting covering an estimated area of 850 ha in 5 Forest Districts in the High Forest Zone. The knowledge and experience acquired during the pilot phase is being applied to targeted enrichment planting areas.

2.6 POTENTIAL AREAS FOR PLANTATION EXPANSION

A review (February - March, 2012) by the FSD of potential areas suitable for plantation development within forest reserves in the high forest zone indicated an estimated total area of 175,000 ha. An estimated 300,000 ha of potential sites, representing 70% of total forest reserve area in the Northern Savannah, was projected.

In addition, under the Forest Preservation Programme (Pasco, 2013), an estimated total area of 5.2 million hectares of cropland (both cropped and farm fallows) and 8.2 million

[3] Re-calculated total area and percentages

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hectares of grassland (including shrublands) were identified off-reserve, as at 2010. It is anticipated that these off-reserve shrublands and farm fallows will constitute potential lands suitable for plantation development nation-wide.

It is projected that 75% of the cropland area (i.e. approximately 4 million ha) across the high forest, transition and Savannah zones will be targeted for trees-on-farms/farm boundary planting/climate smart agriculture by 2040. The expectation is that about 20% of the fallow and shrubland area (i.e. 2.68 million ha) could be sourced for forest plantation development.

A summary of potential sites (on and off-reserve) for forest plantation expansion is presented in Table 7.

Table 7: Summary of potential lands for forest plantation establishment

LOCATION	**AREA (ha)**
On-reserve (High-forest Zone)	175,000
On-reserve (Savannah)	300,000
Off-reserve	2,680,000
TOTAL	**3,155,000**

Figure 1 highlights the potential of various parts of the country for commercial forest plantation expansion. Extensive surveys (ground-based and remote sensing), data collection, and consultation with land owners and other key stakeholders would be undertaken to confirm status, suitability and availability of these potential areas both on and off-reserve. However, the lemon green and light green portions on the map indicate areas within the country where the planned targets under the Strategy are expected to be concentrated.

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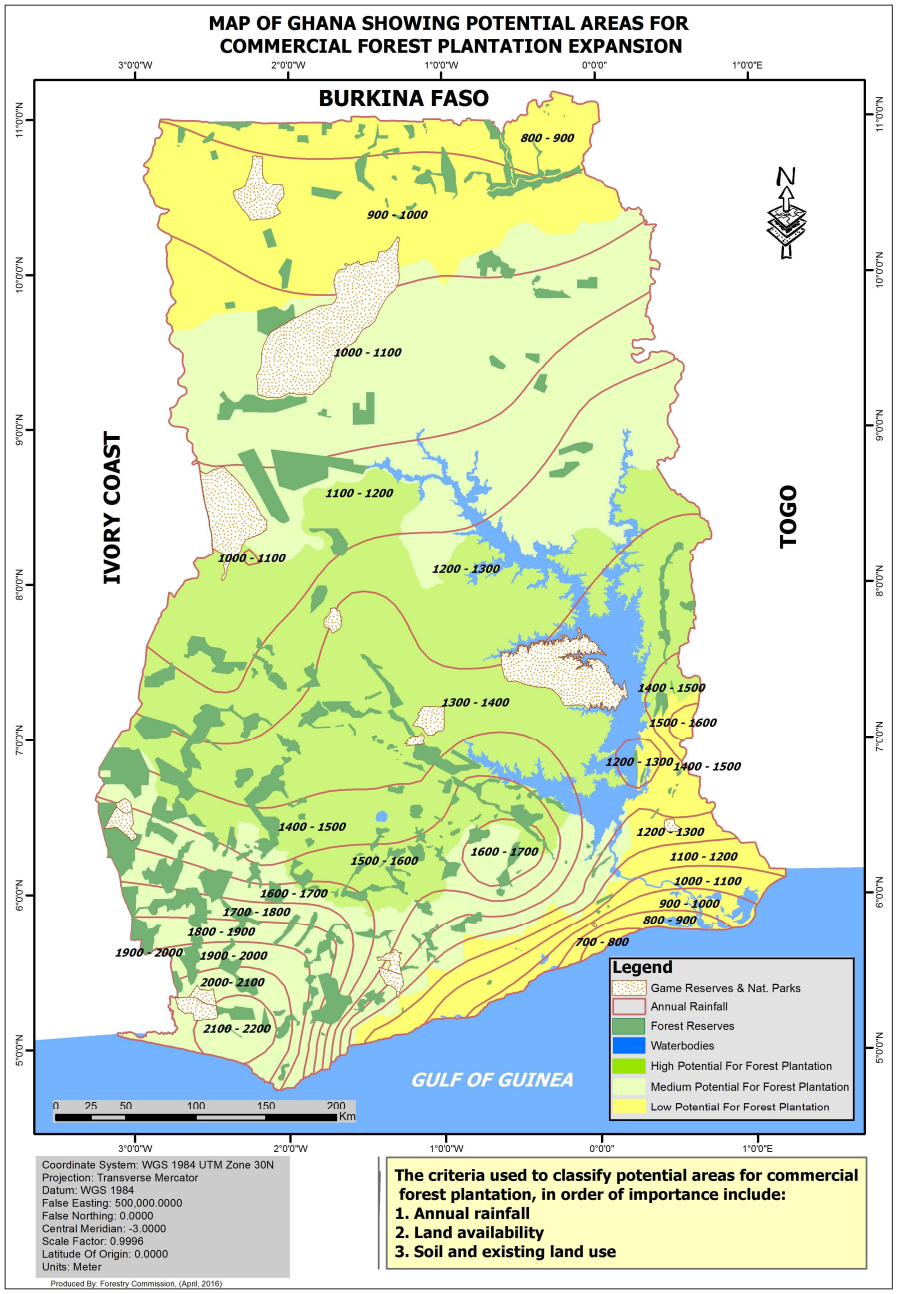
Figure 2: Map showing Potential Areas for Commercial Forest Plantation Development



2.7 SPECIES SELECTION

Species selected for promotion under commercial forest plantation were based on the following factors:

i. Past local forest plantation experiences and knowledge about the silvicultural characteristics of the species
ii. Timber industry preference and market trends
iii. End use of the forest plantation products

The recommended species for planting in the various vegetation zones of Ghana, in addition to timber production, include tree species targeted at renewable energy, pulp and paper and environmental services as shown in Appendix 3. The choice of planting stock must however be based on suitability to the site conditions and management objectives.

Twenty (20) tree species will be prioritized under the Strategy while 16 others will be planted under various plantation trials (Table 7). Apart from planting the indigenous tree species within commercial forest plantations, they will also be incorporated within farming systems, especially Emire, Ofram and Mahogany, and used solely for enrichment planting interventions. It is expected that the exotic species will be primarily planted in commercial forest plantations.

Table 7: Priority species for commercial forest plantations and trials

Usage	**Priority Species**
Timber	
Indigenous	Emire, Ofram, Wawa, Kusia, Ceiba, African Mahogany, Nyankom, Mansonia, Black Hyedua, Kokrodua
Exotic	Teak, Cedrela, Eucalyptus spp. (including hybrids), Bamboo, Gmelina, Pinus spp. (including hybrids)
Energy	
Exotic	Cassia, Eucalyptus, Neem, Acacia, Bamboo, Millettia thonningii,
Species Trial	
	Swietenia macrophylla (Mahogany), *Aucoumea klaineana* (Aucoumea), *Shorea spp.* (Light and Dark Red Meranti), *Dalbergia sisso*, *Dalbergia retusa* (Rosewood), *Azadirachta excelsa* (Sentang), *Pterocarpus erinaceous* (African Rosewood), *Paulownia spp* (Paulownia)., (*Eremospatha spp.* (Rattan/Mfea), *Laccosperma spp.* (Eyie), *Calamus spp.* (Demere)), Red mangrove (*Rhizophora spp.*), *Avicennia germinans* (Black mangrove), *Laguncularia racemosa* (White mangrove), Bamboo spp.

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PART III – IMPLEMENTATION PLAN

3.1 STRATEGIC OBJECTIVES AND ACTION PLANS

The strategic objectives, their associated thematic actions, responsible agencies and the expected outcomes are outlined below:

3.1.1 Strategic Objective 1: Provide a sustainable supply of timber and non-timber forest products, and environmental services

Forest Plantations

Forest plantations are long-term investments that are expected to yield returns greater than or equal to returns on land under alternative uses (e.g. oil palm, cocoa, citrus, etc.). Plantation development requires accessibility to land without disputes and the application of best practice to attain high growth rates for the selected species. The application of best practice principles will ensure the maintenance of a balance of environmental, social and economic considerations and the minimization of economic and ecological risks (pests, diseases, forest fires etc.).

Enrichment Planting

This is an intervention aimed at restoring the productivity and functionality of a degraded forest. It is undertaken where there are insufficient numbers of economically valuable trees in the natural stand. It accelerates the recovery of degraded forest with respect to its stocking, functions and resilience.

Under this Strategy, convalescence areas within forest reserves would be targeted.

Assisted Natural Regeneration

Assisted Natural Regeneration describes the management actions taken to enhance the natural processes of forest restoration focusing on encouraging the natural establishment and subsequent growth of indigenous forest trees whilst preventing any factors that might harm them e.g. competing weeds, fires, grazing and wood harvesting.

Trees-on-Farms

The purpose of the Trees-on-Farms (ToF) intervention is to optimize the productivity and sustainability of small holder farming systems by developing appropriate agroforestry technologies that allow farmers to produce food, fodder, fruit trees, building materials in their farms without resorting to new lands. It enhances connectivity between the agricultural and forest landscapes and improves biodiversity conservation.

This intervention will provide technical support in the protection of agro-forestry systems from pests and diseases that affect the tree component and facilitate uptake of Conservation

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Agriculture (Climate Smart Agriculture) by smallholder farmers. An estimated 5 million seedlings of suitable tree species will be provided annually to farmers for incorporation into their farming systems and boundary planting. Data on planted and nurtured trees within the farming systems will be captured in a national tree database.

Amenity Planting

Amenity planting denotes planting of trees within public spaces (urban parks, on the sides/ median of roads, public open spaces etc.) for environmental, social and aesthetic purposes. Amenity planting is not undertaken for a commercial purpose but seeks to enhance the attractiveness of public spaces, provide shelter in open areas, moderate local climate, improve air quality, limit noise pollution, among other non-commercial functions.

Under this intervention, an average of 2 million tree seedlings will be provided annually for planting within urban settings and other public open spaces. A number of ongoing initiatives will support the attainment of the target under Amenity Planting. One of these initiatives is the Green Street Project being implemented by the Ministry of Lands and Natural Resources, the Ministry of Local Government with support from the Department of Parks and Gardens. The project seeks to plant trees in the median and avenues of roads in major cities in Ghana. It is envisaged that the Green Ghana Day initiative will also serve as an important pathway for supply of seedlings under this intervention.

Key thematic actions to be implemented under this strategic objective are detailed in Table 9 below:

Table 9: Key thematic actions, actors and expected outcomes of Strategic Objective 1

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
1.1 Improve access to suitable land for forest plantation development	**FC, Lands Commission,** MLNR, Traditional Council/ NHC, Landowners, Private Forest Plantation Developers	Access to accurate information on land banks with clearly defined and legally secured tenure. The land should have suitable soil, accessibility, topography etc.

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Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
1.2 Establish and manage planted forests and undertake amenity planting	**FC, Private Sector,** FORIG, MLNR, Department of Parks & Gardens, MoFA, COCOBOD, Energy Commission, Farmers, Nursery Operators, Fringe Communities, Minerals Commission, Mining Companies, Water Resources Commission, VRA, MMDAs, EPA, Research/ Academia etc.	Sustainable supply of forest goods (timber & NTFPs) from planted forests (plantations, enrichment planting, trees-on-farm) that meets domestic demand and supports exports. Sustainable supply of ecosystem services through planted forests with a Natural Capital Accounting System and PES scheme fully operational.
1.3 Create access to improved planting materials for forest landscape restoration	**FORIG/ FC,** MLNR, MOFA, Private Sector, Research/ Academia, GAEC, Fringe Communities	Improved growth, yield and resilience of planted forests
1.4 Develop and operationalise management standards to guide forest landscape restoration	**FC,** FORIG, Universities, Private Forest Plantation Developers, Industry Players, Fringe Communities, Civil Society Organisations, Media, EPA, MLNR, GNFS etc.	Socio-economic and environmental best practices on forest landscape restoration developed
1.5 Strengthen institutional capacity for supervision and monitoring of forest landscape restoration.	**FC,** MLNR, MoF, PSC, Parliament, CSOs/ NGOs, NDPC, EPA	Strengthened capacity of key actors to effectively supervise and monitor forest landscape restoration activities for timely achievement of objectives.

Details of targeted actions, performance indicators and timelines for this Strategic Objective are presented in Appendix 4.

3.1.2 Strategic Objective 2: Promote investments and mobilise financial resources from all sources for the implementation of forest landscape restoration interventions

Current Government Incentives and Benefits

Forest plantations have long gestation periods and the related investments have long payback periods and high risks that make them generally unattractive to financial institutions. The economic viability of commercial forest plantations depend primarily on secure, long-term access (i.e. transparent Land Lease and Benefit Sharing Regimes) to suitable lands and access to suitably packaged long-term financing.

The Government of Ghana (GoG) has introduced some general incentives and benefits to attract investments in commercial forest plantation development as follows:

Forest Plantation Development Fund (FPDF) Act, 2000, Act 583.
(Provides financial assistance to the private sector for the development of forest plantations; provides funds for research and technical advice).

Forest Plantation Development Fund (Amendment) Act, 2002, Act 623.
(Parent act amended to provide financial assistance to both public and private plantation developers).

The Timber Resources Management (Amendment) Act, 2002, Act 617.
(Excludes private forest plantations from being allocated by government under a Timber Utilization Contract (TUC), in addition to the provision of fiscal and other incentives and benefits to investors in the forestry sector).

Internal Revenue (Amendment) Act, 2006, Act 710.
(Amended section 97(3a) of the Internal Revenue Act, 2001 (Act 592) by substituting 15 years with 20 years. It also amends section 131(2) of Act 592).

Additionally, the Forestry Commission leases/allocates land in degraded forest reserves to the private sector (including community groups) and the public sector, for commercial forest plantation development. This comprises the Modified Taungya System implemented with forest fringe communities (small to medium scale), Private Commercial Developers on-reserve (medium scale and large) and Public Private Participation on-reserve (large scale).

The growth of private investment (foreign and local) in commercial private plantation development since the year 2000 has been modest but steady with 149,008 ha allocated to 306 companies and individuals with over 48,048 ha reported to have been established at the end of 2015 within forest reserves.

Incentives for Large-scale Plantation Developers

In addition to the general requirements of plantation developers, large-scale plantation developers additionally require reliable data on available land, climate, soil characteristics, topography, drainage and availability of skilled and unskilled labour with respect to proposed reforestation areas. Accurate information and assistance is also required on the processes

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and procedures required to secure land leases and to process applications for tax exemptions and incentives.

Required Incentives for Small and Medium-scale Plantation Developers

Small to medium-scale plantation developers require innovative financing mechanisms such as reforestation levies and taxes, REDD+ Carbon Credits, Payments for Ecosystem Services (PES) and environmental offsets (i.e. carbon offsets, biodiversity offsets, reforestation offsets) from which grants, concessionary loans and performance-based payments may be sourced for the establishment and maintenance of their forest plantations. They in addition require extension services and well-developed markets for their products at fair prices.

Funding Sources

- ***Forest Plantation Development Fund (FPDF)***

This provides a key source of public funding for both private and public forest plantation development in Ghana. The Fund Board mainly disburses loans and grants to private and public entities undertaking forest plantation development. This funding source, which is derived mainly from levies imposed on air-dried lumber of selected timber species (Timber Export Levy), is woefully inadequate and has been dwindling over time.

The amount of funds available under the Forest Plantation Development Fund would be improved by the expansion of the coverage of the levy to include all key timber species exported as air-dried lumber.

- ***Forestry Commission/ Timber Industry Fund***

In 2008 the FC and the Timber Industry reached an agreement to set aside 0.5% out of the 1.5% Export Levy for the establishment and management of commercial forest plantations to provide industrial timber to the timber industry. Since then, the FC has retained 1% while the 0.5% is paid into an escrow account and managed by the FC/Timber Industry Fund Management Committee for the establishment and management of public forest plantations in degraded forest reserves.

Consistent with good governance principles in the management of public funds, it is expected that the Export Levy, the Fund and the Committee that manages it would be regulated by an appropriate legislation.

- ***Charcoal Conveyance Fees***

In December 2015, a conveyance fee for transportation of charcoal was introduced to provide alternative sources of funds for plantation development (especially woodlots) and maintenance and also provide reliable data on wood fuels for planning and management purposes.

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The proceeds from the conveyance fees have been used to set up tree nurseries in twenty four (24) forest districts for production of tree seedlings for the development of woodlots for charcoal production and amenity planting.

- ***Other Potential Sources of Funding***

Additionally, a broad-based Reforestation Levy should be imposed on all industries whose operations negatively impact the environment. Funds realized from this levy would be allocated as grants to public and private entities/landowners undertaking reforestation projects and for research. Targeted industries include: transport, mining, oil and gas, power/energy production, cement, telecommunications, construction, textile, logging and timber processing, etc. Other potential source of funding for implementation will be the Global Forest Financing Facilitation Network (GFFFN), Green Climate Fund (GCF), Global Environment Facility (GEF) and Timber Industry Management Organisation (TIMO), among others.

- ***Proposed Actions for Investment Promotion***

This strategic objective, seeks among others to identify and pursue all sources of financing mechanisms, including innovative financing mechanisms, for forest plantation investments in Ghana, together with advocacy for appropriate legislation to among others promote investments in forest plantations (Table 10).

Table 10: Key Thematic Actions, Actors and Expected Outcomes for Strategic Objective 2

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
2.1 Develop sustainable financing mechanisms for forest landscape restoration.	**MLNR, FC, MoF,** FORIG, DPs, Private Forest Plantation Developers, Forest-dependent Industry, Ghana Water Company, WRC, Energy Commission, EPA, VRA, BPA, NGOs, CSOs, MMDAs, Financial Institutions, Oil & Gas Industry, Mining Industry	Readily accessible financing options for investment in forest landscape restoration activities.
2.2 Implement tax and levies regimes that support landscape restoration	**MLNR, FC, MoF,** MoTI, GRA, MESTI,	A robust sectoral tax and levy regime that promotes investments in forest landscape restoration measures
2.3 Promote private investment in	**FC, MLNR,** Forest Plantation Investors,	Demonstrable attractive returns on investment by

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
commercial forest plantation development	Ministry of Trade, MoF, Ghana Stock Exchange, FPIF, Tree Growers Association, GIPC, GFZA, AfTCA	private forest plantation investors
2.4 Facilitate the establishment of a dedicated structured market for the trading of commercial forest plantation stands.	**FC,** MLNR, MoTI, MoF, Security & Exchange Commission, Ghana Stock Exchange, AfTCA	Ready and thriving market for trading of forest plantation stands

Details of targeted actions, performance indicators and timelines for this Strategic Objective are presented in Appendix 4.

3.1.3 Strategic Objective 3: create employment opportunities and sustainable livelihoods in rural communities through forest landscape restoration

This strategic objective seeks to offer various socio-economic benefits to the key stakeholders that will be involved in the implementation of the Strategy, especially the local communities.

These benefits include skills development and the creation of direct jobs such as: operating commercial tree nurseries; plantation establishment (e.g. site preparation, pegging and planting); maintenance (e.g. weeding, pruning, thinning, fire protection); participation in out-grower schemes; growing of shade-loving non-timber forest products (NTFPs) under plantations after canopy closure; Bee-keeping and cultivation of food crops under Taungya schemes as well as timber harvesting and processing.

In terms of employment generation, it is estimated that one person's labour[4] would be employed for a whole year in order to establish one hectare of forest plantation. Therefore, for the 500,000 ha of forest plantations to be established under the Strategy a total of 500,000 full time jobs will be created over the 25-year period. An estimated 900,000 persons (1person/2ha) will be required to undertake maintenance of the stands aged 2 to 5 years over the 25-year period. For stands aged 6 to 25 years, an estimated 840,000 persons (1person/5ha) will be engaged over the period of the Strategy. Therefore, a total of 2,240,000 jobs will be created over the 25-year period.

[4]The one-year employment is estimated to be 250 man days per annum

Over the period an estimated 667 million seedlings will be required for establishing the 500,000 ha of forest plantations, an estimated 12 million seedlings for the 100,000 ha (approximately 800 compartments i.e. 40 compartments / year over 20 years) enrichment planting of poorly stocked forest reserves, an estimated 125 million seedlings for the trees-on-farm component and 50 million tree seedlings for amenity planting making a total of 854 million tree seedlings over the Strategy period. Based on a seedling production standard of 10,000 seedlings/person/year, an estimated 85,400 full time jobs will be created over the 25-year period from tree seedling production or an average of 3,416 full time jobs per year.

Details of targeted actions and timelines for this Strategic Objective are presented in Appendix 4.

Tables 11 - 13 summarize the potential jobs to be created over the 25-year period through plantation establishment and maintenance (detailed analysis in Appendix 5).

Table 11: Summary of potential jobs to be created from new plantation over the 25-year period

COUPE/YEAR	ACTIVITY	WORK RATE	AVERAGE NUMBER OF JOBS CREATED / YR	NUMBER OF JOBS CREATED / 25YRS
1	Establishment	1 person / Ha	20,000	500,000
2 – 5	Maintenance	1 person / 2Ha	36,000	900,000
6 – 25	Maintenance	1 person / 5ha	33,600	840,000
Subtotal	**Establishment and Maintenance**			**2,240,000**
1 – 25	Seedling Production	10,000 seedlings/person/yr.	3,416	85,400
Total			**93,016**	**2,325,400**

Table 12: Summary of potential jobs to be created from existing plantations (2002- 2015) of an estimated area of 150,000 ha over the 25-year period

COUPE/YEAR	ACTIVITY	WORK RATE	JOB CREATED/25YRS
1	Establishment	1 person / Ha	0
2 – 5	Maintenance	1 person / 2Ha	20,000
6 – 25	Maintenance	1 person / 5ha	30,000
1 – 2	Seedling Production (est. 3 million seedlings for beating-up and rehabilitation)	10,000 seedlings/ person/yr.	300
Total			**50,300**

Table 13: Summary of potential jobs to be created from enrichment planting over the 25-year period

COUPE/YEAR	ACTIVITY	WORK RATE	JOB CREATED/25YRS
1	Establishment	25 persons/ Compartment (1 person / 5 ha)	20,000
2 – 10	Maintenance	10 persons / Compartment	72,000

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		(1 person / 12.5 ha)	
Total			**92,000**

The total number of jobs to be created under forest plantation establishment, maintenance, enrichment planting and seedlings production is estimated at 2,467,700 over the 25-year period of the Strategy. Additional jobs will be created through the maintenance of the existing 65,925 ha of forest plantations established prior to 2002. There will be conscious efforts to create an environment that fosters gender equity in accessing job opportunities.

There will be a multiplier effect from the direct jobs created. Such indirect jobs are expected to emanate from the development of the plantations as well as logging and harvesting and further processing of the harvested plantation timber. The indirect jobs are expected to accrue from food crop farming, and the development of enterprises such as: local restaurants; service contractors; petty trading; furniture and joinery, charcoal production, charcoal briquettes making, carving, auto mechanics, transport, general construction, etc. This may result in twice the number of jobs created directly from the development of the forest plantations (i.e. approximately 6 million jobs) which would improve local economies.

Key actions under this strategic objective are as follows:

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
3.1 Build capacity of fringe communities to support forest landscape restoration and facilitate rural enterprise development	**FC, Private Sector**, MMDAs, CSOs/ NGOs, Fringe Communities, Consultants, Financial Institutions, Business Sector Advocacy Challenge Fund (BUSAC), Ghana Enterprises Agency, GNFS	Fringe communities engaged in diverse sustainable livelihoods initiatives and rural enterprises set up through landscape restoration activities.
3.2 Facilitate infrastructure development within forest fringe communities (SRA etc.)	**MMDAs, FC, Private Sector,** Traditional Council, OASL, MLGRD, MLNR, GES, GHS, Private Sector,	Improved community infrastructure through implementation of CSR in forest landscape restoration programmes
3.3 Recruit direct labour from forest fringe communities to undertake forest landscape restoration	**FC**, GNFS, Fringe Communities, MDA, Private Sector	Sustainable green job creation initiatives instituted to facilitate Forest landscape restoration

Details of targeted actions, performance indicators and timelines for this Strategic Objective are presented in Appendix 4.

3.1.4 Strategic Objective 4: enhance the capacity of the Forestry Commission and collaborating stakeholders to undertake forest landscape restoration

Key thematic actions to be implemented under this strategic objective are detailed in Table 15 below:

Table 15: Thematic Actions, Key Actors and Expected Outcomes for Strategic Objective 4

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
4.1 Undertake research to support forest landscape restoration	**FORIG, FC**, Research/ Academia, MLNR, Private Developers, Private Sector, DPs,	Improved forest landscape restoration practices underpinned by research and development (R & D).
4.2 Undertake extension services for actors involved in forest landscape restoration	**FC,** FORIG, MoFA, Private Sector, Universities	Best practices and methodologies adopted in forest landscape restoration
4.3 Build capacity of key stakeholders in forest landscape restoration	**FC,** FORIG, Ghana Armed Forces, MLNR, Ghana Police Service, Office of the Attorney General and Ministry of Justice &Attorney General Department, GTMO, FAWAG, FOPTELA, Aid to Artisans, Private Sector, Research and Academia, Local Communities, MoFA, CSOs, NGOs	Well-informed and adequately resourced stakeholders providing support for and/ or implementing forest landscape restoration interventions.
4.4 Build capacity of key stakeholders in the promotion and marketing of carbon and other ecosystem	**FC, Private Sector**, EPA, FORIG, MLNR, CSOs, Water Resources Commission	Enhanced capacity of key stakeholders towards revenue generation from trading of carbon and other ecosystem services

	services from planted forests		
4.5	Strengthen the capacity of the timber industry in processing and marketing of forest plantation timber	**FC, Private Sector**, FOPTELA, FIAG, GTMO, FAWAG	Enhanced timber processing and marketing leading to improved revenue streams from value added wood products
4.6	Mainstream forest education into the national school curriculum as a new self-standing subject	**FC, GES,** Ministry of Education, etc.	Enhanced human capital development right from the early childhood development stage

The Timber Industry Development Division (TIDD) will provide support in the achievement of Strategic Objective 4. Details of targeted actions, performance indicators and timelines for this Strategic Objective are presented in Appendix 4.

3.1.5 Strategic Objective 5: strengthen law enforcement and governance in the regulation and management of forest landscape restoration interventions

3.1.5.1 GOOD GOVERNANCE PILLARS

In the promotion of the development of forest plantations, the following pillars with regards to good governance in forest plantation will be pursued:

- Assurance of clear land and tree tenure
- Assurance of consistent and clear enabling Government policies, laws and regulations to sustain investor confidence
- Prompt and efficient law enforcement and conflict resolution – especially with regards to land ownership and lease disputes
- Promotion of multi-stakeholder dialogue approach as a platform for decision-making and the provision of feedback from the stakeholders.
- Distribution of benefits on an equitable basis to all relevant stakeholders
- Transparency and Regular Disclosure of information through agreed channels to stakeholders at community, district and national levels
- Conflict management mechanisms

- Gender mainstreaming and promotion of gender equality and equity
- Strengthen the Rapid Response Unit and secure the support of security agencies to address encroachment and illegal activities within the landscape, eg. illegal mining, free range cattle grazing and invasion, etc.

3.1.5.2 INSTITUTIONAL STRUCTURES FOR THE STRATEGY'S IMPLEMENTATION

The Forestry Commission Act, 1999 (Act 571) mandates the Forestry Commission (FC), among others, to undertake and support the development of forest plantations for the restoration of degraded areas (on and off–reserves), the increased production of industrial timber and the expansion of the country's protected forest cover nationwide.

Currently, the FC's plantation development effort is coordinated by the Plantations Department (PD) of the Forest Services Division (FSD). The PD coordinates the execution of the FC's mandate through the FSD district and regional management across the country with the Resource Management Support Centre (RMSC) of the FC, based in Kumasi, providing management support principally in the form of standard setting and monitoring.

In view of the growing importance of forest plantations and the greater responsibility expected of the FC to effectively coordinate the planned actions and manage the expectations of the many stakeholders, especially the private sector investors, it is recommended that the current structure be reviewed accordingly and commensurate authority and resources provided to ensure effective delivery of planned outputs under this Strategy.

The FC fulfills its mandate in collaboration with a number of institutions and stakeholders including MLNR, FPDFB, MoF, EPA, Landowners and forest fringe communities, Private Plantation Developers, Media, Timber Industry, Civil Society Organizations, Research and Academic Institutions, Lands Commission and GNFS. The collaborating institutions and their expected roles are summarized in Table 11.

Table 11: Roles of supporting institutions/stakeholders

Institution/Stakeholder	**Roles**
Ministry of Lands and Natural Resources (MLNR)	Policy formulation and monitoring
Forest Plantation Development Fund Management Board (FPDFMB)	Provide funds for agreed plantation initiatives Provide funds for research and technical support
Parliamentary Select Committee on Lands and Forestry	Legislation and monitoring of strategy implementation
Forest Plantation Technical Steering Committee (FPTSC)	Oversight, monitoring the achievement of set objectives and facilitate periodic reviews

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Ministry of Finance (MoF)	Legislate for and regulate any tax incentives for forest plantations and will implement these through the Ghana Revenue Authority. Additionally, MoF releases GoG funds for financing public forest plantations
Metropolitan, Municipal & District Assemblies (MMDAs)	Support in infrastructural development; promote investments and ensure law and order; conflict management and institute bye-laws to protect forest plantation investments.
Environmental Protection Agency (EPA)	Evaluate and monitor environmental standards and approve EIA/ESIA for large-scale development.
Traditional Authority / Landowners	Provide land. Conflict management. Community mobilisation
Forest fringe communities	Support FC in the prevention of illegal activities and wildfires from destroying plantation areas, partner FC in the development of forest plantations. Form the bulk of labour for plantation development by both public and private investors.
Private Forest Plantation Developers	Development of commercial forest plantations.
Timber Industry	Advise on species selection relative to industry needs.
Ministry of Food and Agriculture (MoFA)	Collaborate on trees-on-farm component and extension training and support
Lands Commission	Identify land banks for off-reserve areas Register Leases for commercial forest plantation development
Tree Grower Associations & Farmer Groups	Facilitate extension services to members. Information dissemination within groups. Lobby key stakeholders
Ghana Investment Promotion Centre (GIPC)	Encourage, promote and facilitate investments into the country. Initiate and support measures that will enhance the investment climate in Ghana.
Research and Academic Institutions	Research, professional and technical education
Institution/Stakeholder	**Roles**
Ghana National Fire Service (GNFS)	Review fire management plans Fire education and sensitization Training of fire volunteers in fire detection and suppression Fire fighting
The Media	Information dissemination and public education and sensitization
Judiciary Service	Adjudication of forest related offences
Ghana Police Service & Ghana Armed Forces	Law enforcement, prosecution of forest offenders
Civil Society Organizations (CSOs)	Monitoring, public interest and rights advocacy, information dissemination and awareness creation
National Disaster Management Organization (NADMO)	Assist in disaster management, particularly fires and flood

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National Commission for Civic Education (NCCE)	Engage especially at the district level for education and conflict resolution/ management.
Department of Parks & Gardens	Provide support for amenity planting

It is proposed that a multi-stakeholder advisory body to be known as the Forest Plantation Technical Steering Committee (FPTSC), be formed to guide the implementation of this forest plantation Strategy. Key thematic actions to be implemented under this strategic objective are detailed below:

Thematic Action	Key Actors (Lead Institution in Bold)	Expected Outcomes
5.1 Enact Forest Plantations Act	**MLNR, Parliament of Ghana**, **FC,** FORIG, Private Plantation Developers, MLNR	A conducive legal regime that promotes forest plantation investment
5.2 Strengthen law enforcement	**FC,** MLNR, Ghana Police Service, Office of the Attorney General and Ministry of Justice, Judiciary Service, Local Communities	Incidence of illegal activities in the forest areas significantly reduced
5.3 Strengthen governance in the implementation of forest landscape restoration interventions	FC/Consultants, MLNR, Civil Society Organisations, CBOs, GIF, Land Owners, Private Plantation Developers, FORIG, Research/ Academia, FPTSC, MLGRD, GTA, GTMO, FAWAG, NHC, Local Communities	Transparency, accountability, social inclusion and gender equity promoted in forest landscape restoration
5.4 Enhance social inclusion and gender mainstreaming in forest landscape restoration	**FC,** Ministry of Gender, Children and Social Protection, CSOs/ NGOs/ CBOs	Enhanced participation of vulnerable groups, women and youth in forest landscape restoration
5.5 Develop and implement a robust regulatory framework for forest landscape restoration	**FC,** MLNR; Civil Society, GIF, Private Sector (i.e. GTMO, GTA, etc.), NHC, FPTSC	Well-defined strategic vision (roles, responsibilities and models for forest landscape restoration in place).

Details of targeted actions, performance indicators and timelines for this Strategic Objective are presented in Appendix 4.

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PART IV – FINANCE

4.1 BUDGET AND FUNDING SOURCES

The total cost of implementing the Strategy over the 25-year period (2016 – 2040) is **US$ 3,674,524,800** (Appendix 6). Table 12 highlights the summary costs and expected funding sources.

Funding for the Strategy will be sourced from government (public) and private sector. Government funding is expected to come from direct budget support, levies (eg. a 5 percent carbon levy on petroleum products could yield an estimated US$145million/yr *[based on an estimated average annual crude oil consumption of 24 million barrels from 2010 to 2013 and current weighted average fuel price of US$0.76/litre]*), pension funds (e.g. SSNIT) and contributions from development partners (DPs). Support from DPs would be in the form of loans, grants and direct budgetary support. Private sector funds are expected to be sourced from debt and/or equity financing and grants.

Public Private Partnership options for the establishment of new plantations, coppice management and maintenance of existing ones will be pursued to attract private sector investments for plantation development.

Other sources of funding will include revenue from issuance of conveyance certificates for woodfuel and private forest plantation timber.

Generally, the Government of Ghana and its agencies and development partners, apart from directly funding limited establishment and maintenance of public forest plantations, will mainly fund activities aimed at facilitating the creation of an enabling environment for investment in forest plantation development.

These will include promulgation of legislations, policies and establishment of institutional structures that promote investment in forest plantations; creation of land banks; genetic tree improvement and subsequent provenance testing and establishment of seed stands; Licensing of tree nurseries and plantation development contractors; capacity building within key agencies charged with supporting forest plantation development; research; etc. Private sector investments will mainly target the actual implementation of forest plantation projects.

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Table 12: Budget Summary (2016 – 2040)

COST ITEM	BUDGET (US$)	FUNDING SOURCE(S)
STRATEGIC OBJECTIVE 1: Establishment and management of planted forests	3,641,998,800	GoG / DPs Private Sector
STRATEGIC OBJECTIVE 2: Investment Promotion	1,590,000	GoG / DPs
STRATEGIC OBJECTIVE 3: Employment creation and livelihoods	8,380,000	GoG / DPs Private Sector (47%)
STRATEGIC OBJECTIVE 4: Research and development, training and capacity building, extension	11,820,000	GoG / DPs
STRATEGIC OBJECTIVE 5: Governance	10,736,000	GoG / DPs
TOTAL	**3,674,524,800**	GoG / DPs Private Sector

4.2 EXPECTED YIELD AND INCOME

In terms of yield, the extra 540,000 ha of plantation would supply an estimated 71.28 million cubic meters of round wood (standing tree volume) over the 25-year period. This translates to an estimated average of 2.85 million cubic meters of round wood annually over the 25 years [Mean Annual Increment (MAI) of 10m^3/ha/yr, 25-year rotation] (Appendix 7). The 2.85 million cubic meters of wood at an estimated average timber price of US$80 per cubic meter would provide average timber revenue of US$288 million annually.

The 200,000 ha of existing forest plantation would be expected to supply an average of 1.41 million cubic meters of round wood annually over the 25-year period of the Strategy (MAI of 6m^3/ha/yr, 25-year rotation). At an estimated average timber price of US$80 per cubic meter, this would provide average timber revenue of US$113 million annually.

Between Strategy years 1-2 (2016 – 2017) an average of approximately US$15 million is expected to be generated annually from thinnings of the existing plantations. An average of US$150 million is expected to be generated annually between Strategy years 3 – 9 (2018 -2024) from further thinnings and harvesting of saw logs from the existing plantations and an average of US$520 million annually between Strategy years 10-25 (2025 – 2040) mainly from harvesting of poles, fuel wood and saw logs from existing and new plantations.

Poorly stocked stands within forest reserves would be enriched at an average of 100 stems per hectare. Assuming 50% of these stems survive and reach maturity then these would

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supply an average of 250 m^3 of round wood per hectare by year 40 (Mean round wood volume of 5 m^3 per tree; MAI of 6.25m^3/ha/yr 40-year rotation). Using an estimated average timber price of US$60 per cubic meter, the targeted 100,000 ha would provide total timber revenue of US$1.5 billion at the end of the 40-year rotation (or average annual revenue of US$37.5 million).

Additionally, significant income is expected from carbon offset schemes (i.e Compliance Carbon Markets, Voluntary Carbon Markets, etc.), REDD+ (e.g. performance-based payments for emission reduction) and payment for other ecosystem services.

Significant environmental and socio-economic benefits such as environmental enhancement and conservation, livelihood support through job creation and promotion of economic activities within local communities, and the envisaged expansion in the timber and affiliated industries across the country would be realized as a result of implementing the Strategy.

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PART V – MONITORING, EVALUATION AND REPORTING

5.1 MONITORING & EVALUATION

Progress monitoring will be undertaken by the Executive Director, FSD. Annual reports will be prepared indicating progress towards the achievement of the set milestones. The reports will be submitted to the Chief Executive of the Forestry Commission who will make copies available to the FC Board, FPTSC, Parliamentary Select Committee on Lands and Forestry, MLNR, Civil Society and other relevant bodies or institutions. The operational and progress reports will provide information on input deliveries, assess whether strategy activities are proceeding according to plan and determine the efficiency and effectiveness of the strategy implementation. The detailed M&E framework is shown in Appendix 4.

To enhance the process of monitoring and evaluation, RMSC will provide standards and monitoring support while the Corporate Planning, Monitoring & Evaluation (CPME) will provide support in the reporting of Strategy targets. Additionally, a robust ICT platform will be developed to host all the data captured, processed and reported under the 25-year Ghana FLR Strategy. The proposed Management System and Knowledge Transfer Platform is estimated to cost US$300,000. Capacity building and training will be conducted for all users of the ICT management system across the country.

The Strategy will be reviewed every 5 years from the date of commencement of implementation to monitor progress, draw intermediate conclusions which would orient any necessary revision and adapt the Strategy to changing conditions and priorities thus ensuring that the Strategy stays on course to achieve the overarching goal. The 5-yearly reviews constitute the in-term evaluation. A summative evaluation will be carried out by an independent party at the end of year 25 to determine the effectiveness of the Strategy and how well the it served its intended purpose. Lessons learnt will inform the development of a new Strategy.

The process of developing a new Strategy should commence at least 2 years prior to the termination of this Strategy.

5.2 INDICATORS FOR MONITORING

The plan will be subjected to regular and objective reviews to determine its effectiveness and establish its impact. Although the future may hold developments that have not been anticipated, the detailed internal and external analyses undertaken stand us in good stead to manage the future.

Monitoring of the Strategy's indicators will be undertaken by the Executive Director, FSD with support from the FPTSC. The performance indicators to be used in monitoring the implementation of the Strategy will include:

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- number and types of forest plantation investors processed and approved;
- number of parcels and extent of lands in degraded forest reserve and OFR that are leased to investors;
- number of males and females who attended and completed the various training courses organized under the Strategy (e.g. short-term, refresher, formal etc.)
- number of male and female trainees who have established themselves with skills acquired and are excelling 3 years after the training.
- extent of lands in hectares planted annually by each category of investor;
- number of seedlings supplied for forest landscape restoration interventions;
- number of genetically improved seedlings produced and delivered to tree growers
- extent of existing plantations in hectares that have been rehabilitated
- extent of enrichment plantings undertaken in hectares
- number of jobs created
- the disbursement of the available funds for implementing the Strategy
- size (value) of investments in for FLR
- number of investments in FLR
- tracking of progress made in achieving the GFLRS targets.

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GLOSSARY

Best practice
A technique or a methodology that, through experience and research, has proven to reliably lead to a desired result. A commitment to using best practice in any field is a commitment to using all knowledge and technology at one's disposal to endure success.

Commercial forest plantation
Commercial forest plantation is a forest plantation established purposely for producing timber and other forest produce as a business enterprise or for sale to a business enterprise. It has been categorized into small (4 ha - 100 ha), medium (101 ha – 1,000 ha) and large (1,000+ ha) scales.

Convalescence Area
It is a degraded (Basal Area between 5 - 12m^2/ha; forest condition score of 3 and 4) production area within the forest reserve that has been temporarily taken from production for a period of 40 years to enable it recover.

Conversion Area
Is a heavily degraded production area (Basal Area less than 5m^2/ha; forest condition score of 5 and 6) which has no regeneration of indigenous tree species and may be available for reforestation.

Deforestation
The conversion of forest to other land use or the permanent reduction of the tree canopy cover, height and land area below the minimum thresholds for a "forest" (see forest definition).

Enrichment planting
It is the introduction of high value economic tree species into a poorly stocked natural forest to sustain the supply of desirable species. Usually, striplings of height 1m are planted at 5m within rows, 2m wide and separated at 20m apart.

Forest
A piece of land with a minimum area of 1 hectare, with a minimum tree crown cover of 15%, or with existing tree species having the potential of attaining at least 15% crown cover, with trees which have the potential or have reached a minimum height of 5.0 meters at maturity in situ.

Forest Degradation
It is defined as changes within the forest, usually caused by anthropogenic and environmental factors, that negatively affect the structure or function of the stand or site,

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thereby reducing its capacity to supply products and/or services [i.e. timber, NTFPs, carbon storage, watershed protection, biodiversity conservation etc.]

Forest Landscape Restoration
Forest Landscape Restoration (FLR) is a process that aims to regain ecological integrity and enhance human wellbeing in deforested or degraded forest landscapes.

It involves people coming together to restore the function and productivity of degraded forest lands - through a variety of place-based interventions, including new tree plantings, managed natural regeneration, or improved land management.

Forest plantation
Forest Plantation is a planted forest established by seeding or planting, that by origin possess features of uniformity, shape and often intensity of management, which readily distinguish them as artificial. Usually, they are established on degraded lands with the same species and have the same age and a regular spacing.

Free range cattle ranching
A system of animal husbandry in which the livestock, especially cattle are left to graze or roam freely without any form of confinement either by a ranch or barbed wire. Example is the activities of Fulani herdsmen in some parts of Ghana that result in the destruction of farms and property.

Grassland
A grassland is a plant community, in which the structural dominants are grasses. It can also be seen as land covered with grasses and other herbaceous species. Woody plants may be present, but if so, they do not cover more than 10% of the ground. There are many different types of grassland designated by ecozone, topography, climate, soil conditions etc.

Planted Forest
Forest predominantly composed of trees established through planting and/or deliberate seeding. It includes forest plantations, enrichment plantings, tree-on-farms etc.

Reforestation
Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.

Small-holder forest plantations
These are forest plantations covering an area less than 4 ha (10 acres).

Sustainable forest management (SFM)
It is the process of managing forests to achieve one or more clearly defined objectives of management with regard to the production of a continuous flow of desired forest products

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and services, without undue reduction of its inherent values and future productivity and without undue undesirable effect on the physical and social environment.

Taungya

Taungya farming is a system of raising forest plantation along with the cultivation of short rotation crops in which the clearing of the site, planting and tending of the trees are done wholly or in part by the farmers in exchange for the privilege of growing their annual crops on forest reserve lands. Taungya farming ensures more land availability to landless farmers, increased food crop production, increased income to farmers, increased production of exotic and indigenous forest species (Ojo, 2014)

Trees-on-farm

Planting and nurturing of naturally occurring forest trees within farming systems. In recent times this practice has been accepted as a form of Climate-Smart Agriculture.

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APPENDICES

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