THE GOVERNMENT OF PAPUA NEW GUINEA

AGRICULTURE, FORESTRY & OTHER LAND USE (AFOLU) MITIGATION PLAN 2022-2025

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FOREWORD

Climate change adaptation and mitigation remains a high priority for the Government of Papua New Guinea (GoPNG) as PNG is among the most vulnerable countries to tadverse impacts of climate change. PNG's Enhanced NDC 2020 focuses on reducing its greenhouse gases (GHG) emissions in two major sectors of Energy and Agricu Forestry, and Other Land Use (AFOLU). The Government of PNG (GoPNG) has shown its commitment to fulfilling its obligations under the United Nations Framework Convention on Climate Change (UNFCCC). This includes mainstreaming climate change in its development priorities, as captured in the Vision 2050, the National Development Strategic Plan 2010-2030, National Strategy for Responsible Sustainable Development (StaRS) and the Medium -Term Development Plan III. These strategies are founded on the concepts of helping to strengthen and diversify the foundations of PNG's economic growth. And at the same time taking action to increase the country's resilience to climate change and taking steps to further mitigate carbon emissions.

The most recent steps taken by the Climate Change and Development Authority (CCDA) to act on climate change have been the development of PNG's SDG 13 Climate Action Roadmap (2020), PNG Enhanced NDC (2020), PNG Revised Enhanced NDC 2020 Implementation Plan (2021-2030), PNG NDC Implementation Roadmap for AFOLU and Energy sectors (2021-2030), PNG Second Biennial Update Report with REDD+ Technical Annex (2022), and a stand-alone National Inventory Report (2022).

Climate CCDA is the national government agency established under the Climate Change Management Act (CCMA) 2015. Its role and function are to address issues and develop policies on climate change in Papua New Guinea (PNG) to contribute towards global efforts in mitigating greenhouse gas emissions. To assist the GoPNG to effectively achieve its AFOLU targets in the PNG's Enhanced NDC 2020, CCDA has developed this AFOLU Mitigation Plan (2022- 2025) through technical and funding assistance from GIZ and the Pacific Regional NDC Hub under the NDC CAEP Program, and the Food and Agriculture Organization of the United Nations (FAO) through the Global Environment Facility-Capacity Building Initiative for Transparency (GEF-CBIT) Project and the Green Climate Fund (GCF) Readiness Project.

The AFOLU Mitigation Plan (2022-2025) presents the means of implementation for the projects and activities/ actions in the PNG Enhanced NDC Implementation plan (2021-2030) for the AFOLU sector under four (4) mitigation pathways, namely; Forestry, Environment and Conservation, Lands, and Agriculture. This plan will enhance the implementation of emissions reduction activities/actions to enable PNG to achieve its mitigation targets in AFOLU sector and the sector's overall goal of net carbon sink by 2030.

The success of PNG achieving its NDC targets and overall goals relies on all key stakeholders, government line agencies and development partners. As a coordinating agency, we look forward to maintaining the good existing collaboration and working more closely with all our key partners to ensure this plan comes to fruition.

William Lakain

Acting Managing Director, Climate Change and Development Authority

Acknowledgements

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CCDA would also like to express our appreciation to the Food and Agriculture Organization of the United Nations for the financial and technical assistance provided through the Global Environmental Facility – Capacty Building Initiative for Transparency (GEF-CBIT) Project and the Green Climate Fund Readiness Project.

The CCDA on behalf of Government of PNG, GIZ and the Pacific Regional NDC Hub would like to acknowledge the valuable inputs of stakeholders engaged through the process and engagement from members of the AFOLU Sub-Technical Working Committee, relevant development partners and key stakeholders. Following are the key government stakeholders that contributed towards the development of this plan:

- PNG Forest Authority (PNGFA);
- Department of Agriculture and Livestock (DAL);
- Conservation and Environment Protection Authority (CEPA); and
- Department of Lands and Physical Planning (DLPP).

CCDA would also like to acknowledge the management and officers of MRV and National Communication Division for the leadership and coordination provided to ensuring successful delivery of this national document.

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GLOSSARY

Accuracy	Accuracy is a relative measure of the exactness of an emission or removal estimate. Estimates should be accurate in the sense that they are systematically neither over nor under true emissions or removals, so far as can be judged, and that uncertainties are reduced so far as is practicable. Appropriate methodologies conforming to guidance on *good practices* should be used to promote accuracy in inventories.
Activity data	Data on the magnitude of a human activity resulting in emissions or removals taking place during a given period of time. Data on energy use, metal production, land areas, management systems, lime and fertilizer use and waste arising are examples of activity data.
Base year	The starting year for the inventory. Currently this is typically 1990.
Biomass	(1) The total mass of living organisms in a given area or of a given species usually expressed as dry weight. (2) Organic matter consisting of or recently derived from living organisms (especially regarded as fuel) excluding peat. Includes products, by-products and waste derived from such material.
AFOLU	Agriculture, Forestry and Other Land Use
Carbon dioxide (CO_2)	A gas, which at standard temperature and pressure (STP) is 1.977 kg/m^3 in density (Science Data Book, Tennent, R.M published by Oliver & Boyd 1989)
CCDA	Climate Change and Development Authority
CEPA	Conservation and Environmental Protection Authority
CIC	Coffee Industry Corporation
Crop land	This category includes cropped land, including rice fields, and agro-forestry systems where the vegetation structure falls below the thresholds used for the Forest Land category.
Comparability	Comparability means that estimates of emissions and removals reported by countries in inventories should be comparable among countries. For this purpose, countries should use agreed methodologies and formats for estimating and reporting inventories.
Completeness	Completeness means that an inventory covers all sources and sinks and gases included in the *IPCC Guidelines* for the full geographic coverage in addition to other existing relevant source/sink categories which are specific to individual countries (and therefore may not be included in the *IPCC Guidelines*).
Consistency	Consistency means that an inventory should be internally consistent in all its elements over a period of years. An inventory is consistent if the same methodologies are used for the base year and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. An inventory using different methodologies for different years can be considered to be consistent if it has been estimated in a transparent manner taking into account the guidance in Volume 1 on good practice in time series consistency.
DAL	Department of Agriculture and Livestock
DLPP	Department of Lands and Physical Planning
DNPM	Department of National Planning and Monitoring
DPLLGA	Department of Provincial and Local Level Government Affairs
Emissions	The release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time. (UNFCCC Article 1.4)
Emission factor	A coefficient that quantifies the emissions or removals of a gas per unit activity. Emission factors are often based on a sample of measurement data, averaged to develop a representative rate of emission for a given activity level under a given set of operating conditions

Forest land	This category includes all land with woody vegetation consistent with thresholds used to define Forest Land in the national greenhouse gas inventory. It also includes systems with a vegetation structure that currently fall below, but in situ could potentially reach the threshold values used by a country to define the Forest Land category
Forest Remaining Land (FF)	Forest land not affected by land-use conversions that take place between data collection **Forest** intervals, particularly when different carbon stock estimates and different emission and removal factors are associated with lands before and after a transition (≥ 20 year time intervals used for land transitions).
FPDA	Fresh Produce Development Agency
Fuel Wood	Wood used directly as fuel
GNSS	Global navigation satellite system
Ground truth	A term used for data obtained by measurements on the ground, usually as validation for remote sensing, e.g., satellite data.
IPCC	Intergovernmental Panel on Climate Change
Land converted to Forest land (LF)	Lands converted to Forest Land from different land-uses, including Cropland, Grassland, Wetlands, Settlements, and Other land, through afforestation and reforestation, either by natural or artificial regeneration (including plantations). The emissions and removals on abandoned lands, which are regenerating to forest due to human activities, should be also estimated under this section (≥ 20 year time intervals used for land transitions).
Land cover	The type of vegetation, rock, water etc. covering the earth's surface.
LLG	Local Level Government
Land Use	The type of activity being carried out on a unit of land. Note: in Volume 4 (AFOLU), broad land-use categories are defined in Chapter 2. It is recognized that these categories are a mixture of land cover (e.g., Forest, Grassland, Wetlands) and land use (e.g., Cropland, Settlements) classes.
LULUCF	Land Use, Land Use Change and Forestry
Manure	Waste materials produced by domestic livestock which can be managed for agricultural purposes. When manure is managed in a way that involves anaerobic decomposition, significant emissions of methane can result.
Methane (CH_4)	A gas, which at standard temperature and pressure (STP) is 0.717 kg/m³ in density (Science Data Book, Tennent, R.M published by Oliver & Boyd 1989)
Model	A model is a quantitatively-based abstraction of a real-world situation which may simplify or neglect certain features to better focus on its more important elements. Example: the relationship that emissions equal an emission factor times an activity level is a simple model. The term 'model' is also often used in the sense of a computer software realization of a model abstraction.
NARI	National Agriculture Research Institute
NBPOL	New Britain Palm Oil
NEC	National Executive Council
Nitrous oxide Book, T**(N_2O)**	A gas, which at standard temperature and pressure (STP) is 1.978 kg/m³ in density (Science Data ennent, R.M published by Oliver & Boyd 1989)
NMVOC	A class of emissions which includes a wide range of specific organic chemical substances. Non-Methane Volatile Organic Compounds (NMVOCs) play a major role in the formation of ozone in the troposphere (lower atmosphere). Ozone in the troposphere is a greenhouse gas. It is also a major local and regional air pollutant, causing significant health and environmental damage. Because they contribute to ozone formation, NMVOCs are considered "precursor" greenhouse gases. NMVOCs, once oxidized in the atmosphere, produce carbon dioxide.
NRI	National Research Institute

NSLUP	National Sustainable Land Use Policy
OPIC	Oil Palm Industry Corporation
OPRA	Oil Palm Research Association
PGs	Provincial Governments
PNGFA	Papua New Guinea Forest Authority
PNGFRI	Papua New Guinea Forest Research Institute
Pool/Carbon pool	A reservoir. A component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored. Examples of carbon pools are forest biomass, wood products, soils and the atmosphere. The units are mass.
Quality Assurance	Quality Assurance (QA) activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process to verify that data quality objectives were met, ensure that the inventory represents the best possible estimate of emissions and sinks given the current state of scientific knowledge and data available, and support the effectiveness of the quality control (QC) programme.
Quality Control	Quality Control (QC) is a system of routine technical activities, to measure and control the quality of the inventory as it is being developed. The QC system is designed to: (i) Provide routine and consistent checks to ensure data integrity, correctness, and completeness; (ii) Identify and address errors and omissions; (iii) Document and archive inventory material and record all QC activities. QC activities include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardized procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting. More detailed QC activities include technical reviews of source categories, activity and emission factor data, and methods.
REDD+	Reducing emissions from deforestation, forest degradation and the role of conservation, sustain able management of forest and enhancement of forest carbon sinks
Removals	Removal of greenhouse gases and/or their precursors from the atmosphere by a sink.
Reservoir	(1) A component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored. (UNFCCC Article 1.7) (2) Water bodies regulated for human activities (energy production, irrigation, navigation, recreation etc.) where substantial changes in water area due to water level regulation may occur.
R&D	Research and Development
RS	Remote Sensing
Sink	Any process, activity or mechanism which removes a greenhouse gas, an aerosol, or a precursor of a greenhouse gas from the atmosphere. (UNFCCC Article 1.8) Notation in the final stages of reporting is the negative (-) sign.
Source	Any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere. (UNFCCC Article 1.9) Notation in the final stages of reporting is the positive (+) sign.
Sequestration	The process of storing carbon in a carbon pool.
Time series	A time series is series of values which are affected by random processes and which are observed at successive (usually equidistant) points in time.
Transparency	Transparency means that the assumptions and methodologies used for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information.
Uncertainty analysis	An uncertainty analysis of a model aims to provide quantitative measures of the uncertainty of output analysis values caused by uncertainties in the model itself and in its input values, and to examine the relative importance of these factors

EXECUTIVE SUMMARY

This Mitigation Plan 2022-2025 on Agriculture, Forestry and Other Land Use (AFOLU) identifies the means of implementation for the projects and activities/actions in the Enhanced NDC Implementation plan (2021-2030) for the AFOLU sector. The overall goal of this mitigation plan is to promote the implementation of priority actions in the AFOLU sector as listed under the PNG Revised Enhanced NDC 2020 Implementation Plan (2021-2030), and the PNG NDC Implementation Roadmap for AFOLU sector (2021-2030). This plan has a timeframe of 2022-2025 and is focus on projects and activities that will be implemented between 2022 and 2025.

The means of implementation of the mitigation activities and targets in the AFOLU sector include Funding, Capacity Building, Technology, and Research and Development, and cover four (4) mitigation pathways as listed below.

1. Forestry pathway activities/actions
   - (i) Enhanced monitoring and enforcement of timber legality standard;
   - (ii) Regulation of small-scale timber (>500m3 pa);
   - (iii) Enhanced supply of planted timber and reforestation;
   - (iv) Establishment of enhanced policy environment for forest governance; and
   - (v) Establishment of a transition package for 'old' timber concessions

2. Environment and Conservation pathway activities/actions
   - (i) Strengthen application of environmental safeguards; and
   - (ii) Enhance Protected Area (PA) development and management.

3. Lands pathway activities/actions
   - (i) Establish national sustainable land use planning framework;
   - (ii) Establish national sustainable land use planning information system; and
   - (iii) Develop spatially explicit subnational development plans.

4. Agriculture pathway activities/actions
   - (i) Strengthen agricultural planning and policy framework and its application;
   - (ii) Strengthen access to and quality of extension systems;
   - (iii) Strengthen framework for sustainable palm oil development;
   - (iv) Strengthen framework for sustainable cocoa development; and
   - (v) Strengthen framework for sustainable coffee development.

In this plan, fundamental elements of the most important component of the Plan which is the "means of implementation" are detailed in table matrices, namely, *funding sources, capacity building, enabling technolgy and enabling research and development* for effective implementation of the mitigation activities. In addition, the monitoring and reporting matrices have been included for each of the four different mitigation pathways.

The overall monitoring and evaluation of the progress of the AFOLU mitigation plan will be coordinated through the governance structure that was illustrated and described in the Revised Enhanced NDC 2020 Implementation Plan (2021-2030). The specific intervals of the reporting periods and the institutions required to report are in line with the PNG's MRV Framework of PNG's Enhanced NDC 2020.

PART 1

INTRODUCTION

SECTION 1.1

BACKGROUND – AFOLU

The Agriculture, Forestry and Other Land Use (AFOLU) sector is an essential sector in Papua New Guinea as it contains significant sources of GHG emission and sink. Over 78% of PNG's total land area of 46.2 million hectares is covered by forest with about 60% still intact. However, some of these forest areas are increasingly coming under the threat from logging, agriculture (commercial and small-scale) and mining activities.

In PNG's Enhanced NDC which was officially submitted to the United Nations Framework Convention on Climate Change on 16 December 2020, the country aims to reduce 10,000 Gg CO2 eq of the net emission from the LULUCF subsector by 2030 by 25% reduction of annual deforestation; 25% reduction of annual forest degradation; and increase of forest plantation and enhancement of ecosystem restoration.

Efforts to achieve the NDC targets are guided by existing national policies and strategies, such as the Vision 2050 Plan; National Strategy for Responsible Sustainable Development for PNG (StaRs); Medium Terms Development Plan III (MTDP III); Papua New Guinea's Sustainable Development Goal 13 Roadmap: 30 actions by 2030 (SDG 13 Roamap); the National REDD+ Strategy; National Climate Compatible Development Management Policy; PNG Revised EnhanceNDC2020 Implementation Plan (2021-2030); and PNG NDC Implementation Roadmap for AFOLU sector (2021-2030).

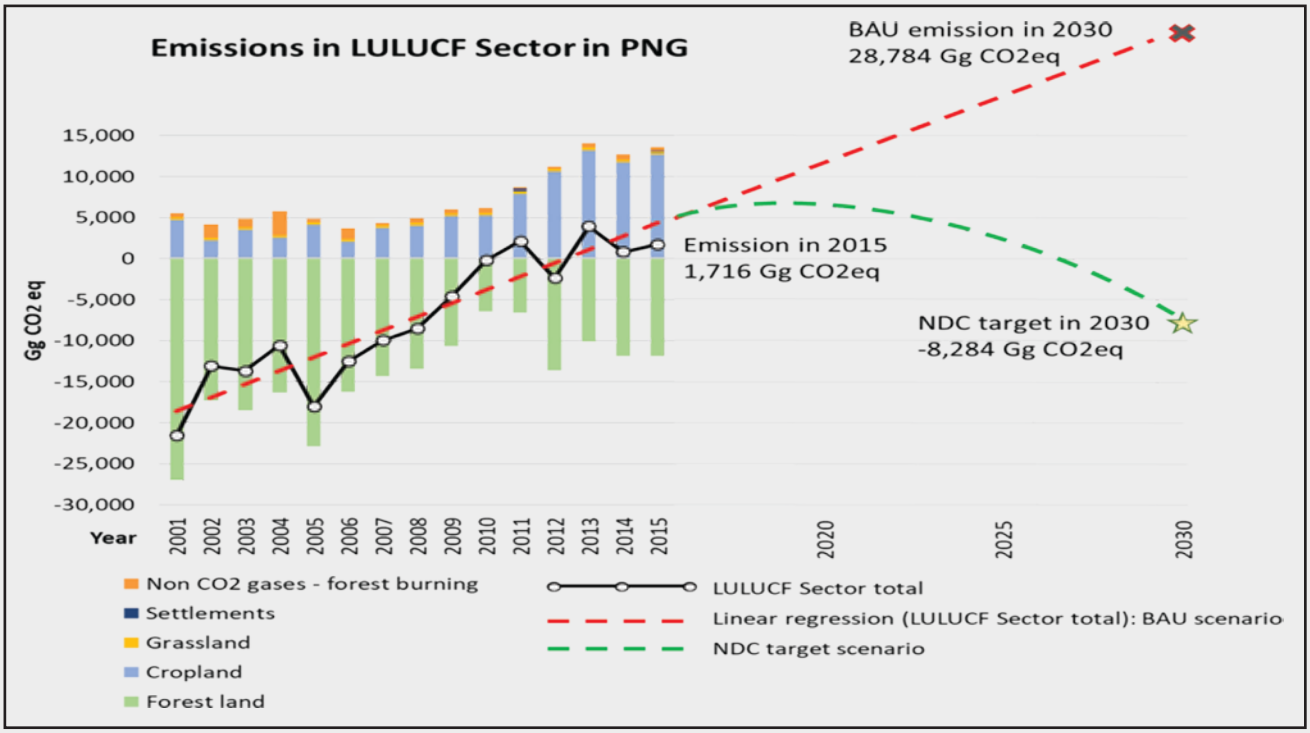

Figure 1: LULUCF GHG emission reduction target in PNG's Enhanced NDC 2020 (source: Source: PNG's Enhanced NDC 2020)

[1]PNG Forest and Land use Change in PNG (2000-2015) Report

SUB - SECTION 1.1.1 Greenhouse gases in AFOLU

The key greenhouse gases of concern are carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4). CO_2 fluxes between the atmosphere and ecosystems are primarily controlled by uptake through plant photosynthesis and releases via respiration, decomposition and combustion of organic matter. N_2O is primarily emitted from ecosytems as a by-product of nitrification and denitrification, while CH_4 is emitted through methanogenesis under anaerobic conditions in soils and manure storage, through enteric fermentation, and during incomplete combustion while burning organic matter. Other gases of interest (from combustion and from soils) are NO_x, NH_3, NMVOC and CO, because they are precursors for the formation of greenhouse gases in the atmosphere. Formation of greenhouse gases from precursor gases is considered an indirect emission. Indirect emissions are also associated with leaching or runoff of nitrogen compounds, particularly NO_3^- losses from soils, some of which can be subsequently converted to N_2O through denitrification.

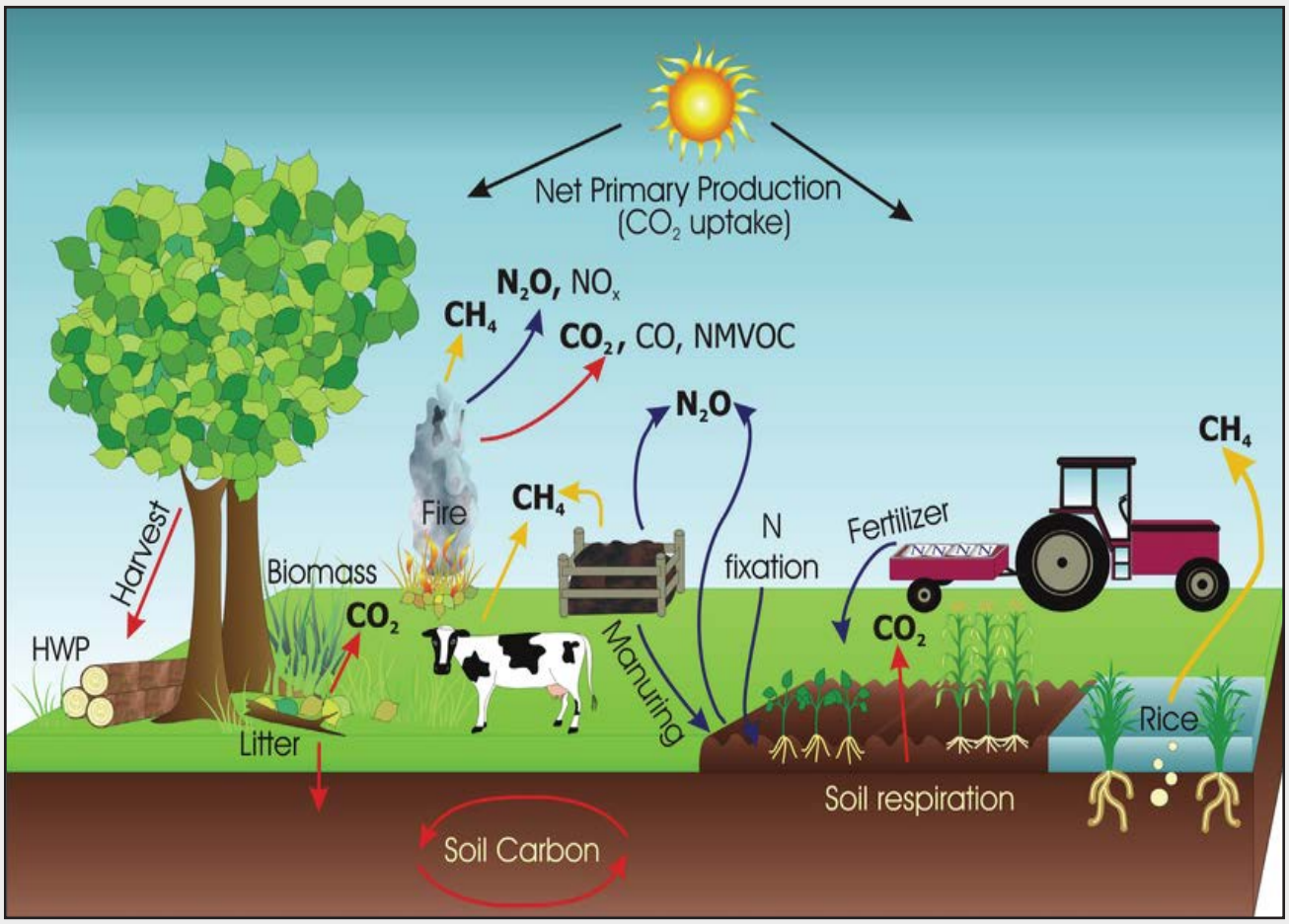

Figure 2[2]: The main greenhouse gas emission sources/removals and processes in managed ecosystems.

(Source: Volume 4: Agriculture, Forestry and Other Land Use of 2006 IPCC Guidelines for National Greenhouse Gas Inventories)

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[2]The main greenhouse gas emission sources/removals and processes in managed ecosystems. 1.2 Overview of greenhouse gas emissions and removals in the AFOLU sector, 1.2.1 Science background Vol 4_01_Ch1 Introduction AFOLU https://www.ipcc-nggip.iges.or.jp/public/2006gl/

SECTION 1.2

AFOLU SECTOR IN PAPUA NEW GUINEA - MITIGATION PLANS, ACTIONS AND TARGETS

Agriculture, Forestry and Other Land Use in Papua New Guinea is quite a complex sector in terms of documenting the impacts on emissions and/or removals of greenhouse gases due to the unpredictable nature of economic development in agriculture, land use, land use change and forestry (LULUCF) activities. Also, most of the land is customarily owned and subsistence slash and burn agriculture is the main agricultural practice for food and nutrtion requirements of more than 80% of the population in rural areas. In addition, small holder subsistence mono- cropping for cash crops such as cocoa, coconut, coffee etc. is common in the New Guinea islands region comprising 5 island provinces, and the low land New Guinea mainland provinces with majority of the coffee plantations in the highlands region.

The AFOLU sector greenhouse gas emissions reduction plan focuses on actions and targets in four (4) sectors, namely; Forestry, Environment and Conservation, Lands and Agriculture as outlined in the Revised Enhanced NDC 2020 Implementation Plan (2021-2030) and the PNG NDC Implementation Roadmap for AFOLU sector.

PNG's Enhanced Nationally Determined Contribution sets out a conditional target to reduce GHG emissions by 10,000 $GgCO_2$ per annum against 2015 levels by 2030 through actions to reduce deforestation and forest degradation and support forest planting.

The mitigation plan for the AFOLU sector will build on existing sectoral and broader government strategies, including National Climate Compatible Development Management Policy, National Forest Policy, National Reforestation Strategy, National Sustainable Land Use Policy, Protected Areas Policy, National REDD+ Strategy, PNG REDD+ Finance and Investment Prospectus, Protected Areas Finance and Investment Plan, PNG Medium-Term Develoment Plan III, and National Strategy for Responsible Sustainable Development for Papua New Guinea as outlined in the PNG NDC Implementation Roadmap for AFOLU sector (2021-2030).

SECTION 1.3

BACKGROUND AND POLICY FRAME WORK

SUB - SECTION 1.3.1 Forestry

The ecosystem services that tropical forests provide underpin climate change mitigation, food, energy, water, health and livelihood security for millions of people across the globe. Despite this, the rate of forest loss is still alarmingly high (FRA, 2010). In the PNG forestry sector, deforestation and soil disturbances during logging lead to emissions of greenhouse gases while the removal of greenhouse gases from growth and sequestration processes also take place. The disturbance of forest over the years has seen 11.9 per cent caused by large scale logging, 7.9 per cent caused by small scale temporary gardening and 0.2 per cent caused by small scale logging using portable sawmill.

PNG's total land area is about 46.1 million hectares of which about 78% forest and more than 76.3% has not been disturbed by anthropogenic activities according to land use assessment conducted by PNGFA in 2015. The forests play an important role in PNG's effort to climate change mitigation, particular in REDD+. PNG's forests are highly diverse, including 14 distinct forest types, with carbon-rich lowland tropical forest constituting over 50% of forest area (PNGFA 2019).

However, the forests are coming under increasing pressure from logging, agriculture (commercial and small-scale) and mining activities. The average annual deforestation rate between 2000 and 2010 was 0.03%, but this significanly increased to 0.08% between 2011 and 2015 with associated increased level of emissions.

The forestry actions are based on targets and actions identified within the National REDD+ Strategy, REDD+ Implementation Plan as well as actions within the SDG13 Roadmap, Enhanced NDC 2020 Implementation Plan (2021-2030), PNG NDC Implementation Roadmap for AFOLU sector (2021-2030), and key sector policies such as the National Reforestation Strategy 2020,

Based on this existing policy frameworks for action a number of key targets and actions have been identified. These elements are intended to form the basis for PNGFA's sector mitigation plan and can also support the integration of climate change planning into future planning documents including MTDP 4.

The mitigation actions/targets within the Forestry sector include;

- *Enhanced monitoring and enforcement of timber legality standard*
- *Regulation of small-scale timber (>500m3 pa)*
- *Enhanced supply of planted timber and reforestation*
- *Establishment of enhanced policy environment for forest governance*
- *Establishment of a transition package for 'old' timber concession*

SUB - SECTION 1.3.2

Environment and Conservation

Papua New Guinea is well known center for biodiversity and endemism. PNG covers less than 1 percent of the world's land mass but host six percent of the world's most biologically diverse ecosystems (Convention on Biological Diversity Fifth National Report, 2017). The flora of PNG is rich and varied, with habitats ranging from tidal swamps at sea level to alpine conditions. PNG also harbors a rich array of animals including an estimated 150,000 species of insects, 314 species of freshwater fishes, 352 species of amphibians and 335 species of reptiles, 813 species of birds, and 298 species of terrestrial mammals. Approximately a third of the species are endemic to PNG.

About three percent (3 per cent) of the country's total land area are currently under some form of protected status. There are four national parks, three provincial parks, 27 wildlife management areas and a number of sanctuaries and other conservation areas. All of the existing protected areas are on land. Coastal and marine protection has, only recently, become a priority issue. Experience to date suggests that there may be limited potential in Papua New Guinea for Government-owned "protected areas" in the style of national parks (DEC, 2009).

The environment and conservation mitigation actions focuses on a series of actions that address both enhanced application of environmental safeguards for land use change and increasing action to enhance areas under conservation.

It builds on actions identified within the National REDD+ Strategy, REDD+ Implementation Plan, the SDG13 Roadmap, Enhanced NDC 2020 Implementation Plan (2021-2030), PNG NDC Implementation Roadmap for AFOLU sector (2021-2030), the Protected Areas Policy, the Protected Areas Policy Implementation Plan (PAPIP), the Protected Areas Finance and Investment Plan, and the Protected Areas Institutional and Policy Review.

The mitigation actions/targets within the environment and conservation sector include;

- *Strengthen the application of environmental safeguards*
- *Enhance protected area development and management*

[3]PNG Forest Authority (2019) Forest and land use change in Papua New Guinea 2000-2015.105pp

SUB - SECTION 1.3.3

Lands

Settlement development or expansion is an ongoing process where new settlements are being created in nearby forested areas within and around the urban and rural areas resulting in unplanned clearing of forests and other vegetation emissions from deforestation and forest degradation.

Infrastructure development is also booming for the country and road infrastructure are penetrating some key forest areas in the economic corridor concept of development but deforestation happens to make way for the infrastrture and as people or settlers move in the rate of deforestation in the nearby forest areas increases from subsistence agriculture and other settlement activities. The current Government has a major plan to build cross border road networks within the provinces on the New Guinea mainland and in the New Guinea islands province, especially between West and East New Britain provinces.

A number of critical large tracts of Forests areas and their high biodiversity are categorized under various protection systems in the country through direct oversight of the Conservation and Environmental Protection Authority (CEPA).

The lands mitigation actions are based on actions identified within the National REDD+ Strategy, REDD+ Impletation Plan, SDG13 Roadmap, Enhanced NDC 2020 Implementation Plan (2021-2030), and PNG NDC Implementtion Roadmap for AFOLU sector (2021-2030). It also builds on recent policy developments in the draft National Sustaiable Land Use Policy and actions under the Land Mobilization Program.

The approach is based on the intervention logic that rapid land use change has been able to proceed partially due to the lack of subnational land use plans (LUPs) to help guide land use decision making. As result, a minority of individuals often makes land use decisions, and wider communities are excluded from the process. Enhancing engagement with and the establishment of a framework of sustainable land use planning will help engage more stakeholders in decisions on how land is used, ensure better understanding and protection of areas that are needed for long-term sustainable outcomes, and reduce poorly designed high impact projects.

The mitigation actions/targets within the lands sector include;

- *Establish national sustainable land use planning framework*
- *Establish national sustainable land use planning information system*
- *Develop spatially explicit subnational development plans*

SUB - SECTION 1.3.4 Agriculture

Apart from the limited commercial agriculture operations of palm oil by two major players, the majority of the land is subjected to subsistence agriculture activities, and is not the focus of this work due mainly to the lack of complete sets of data and non-availability of time series activity data and the decline in livestock activities in the last decade or so. The subsistence slash and burn practices releases greenhouse gases of carbon dioxide (CO_2) in burning of biomass and also nitrous oxide (N_2O) in tilling of the soil.

The agriculture pathway action matrix is based on actions identified within the National REDD+ Strategy, REDD+ Implementation Plan, SDG13 Roadmap Enhanced NDC 2020 Implementation Plan (2021-2030), and PNG NDC Implementation Roadmap for AFOLU sector (2021-2030). It also seeks to align with upcoming developments in agricultural policy, strategy and legislation.

Conversion of agriculture represents the principal driver of emissions from forest loss, representing over 85% as in PNG's FRL reporting, split across family (55%) and commercial (30%) agriculture in 2015.

The intervention logic for engaging with family agriculture is based on the very low productivity, diversity and commercialization levels in many family production systems. Interventions are therefore targeted at improving agricultural methods through enhanced access to, and quality of, agricultural extension services increase the productivity and resilience of family farming systems per hectare. As well as helping to address losses in soil nutrents and productivity, these improvements will help reduce pressure for expanding production areas or using expansive rotational systems. The approach, which is primarily targeted around rapidly growing small and medium settlement areas, is linked to additional land use planning and zoning support to ensure that agriculture areas are well situated and that improved income per hectare does not result in rapidly increasing production areas.

The intervention logic for engaging with commercial agriculture is that securing enhanced access to high- value and sustainably focused markets will enable PNG to secure long-term market access and higher prices, enhance levels of sustainability in the production system, and increase resilience to environmental shocks. Targets are focused on the coffee, cocoa and oil palm sectors due to their dominance in terms of communities engaged, levels of export and potential future impacts on land use change.

The production systems and levels of market access and investment in the oil palm sector are different from those in the coffee and cocoa sectors. PNG's oil palm production is primarily sustainable, with access to high-value markets. This approach should be further strengthened and integrated into national policies, strategies and regtions, even with expansion of production. Production in the coffee and cocoa sectors, on the other hand, is based on low-impact processes that are vulnerable to environmental shocks, have limited access to high-value markets and are vulnerable to both rapid efforts towards unsustainable expansion and conversion to other crops. As such, interventions are targeted at supporting enhanced access to high-value markets through a combination of policy support and enhanced extension services.

The mitigation actions/targets within the agriculture sector include;

- *Strengthen the agricultural planning and policy framework and its application*
- *Strengthen access to and quality of extension systems*
- *Strengthen the framework for sustainable palm oil development*
- *Strengthen the framework for sustainable cocoa development*
- *Strengthen the framework for sustainable coffee development*

PART
2

OBJECTIVE OF THE AFOLU MITIGATION PLAN

Objective of the AFOLU mitigation plan

The objective of this AFOLU Mitigation Plan 2022-2025 is to promote the effective implementation of emissions reduction activities/actions to enable PNG to achieve its mitigation targets in Agriculture, Forestry and Other Land Use sector by outlining the means of implementation including research and development. The mitigation activities/actions in this mitigation plan are aligned to the PNG's Enhanced NDC 2020 , the PNG Revised Enhanced NDC 2020 Implementation Plan (2021-2030), and the PNG NDC Implementation Roadmap for AFOLU sector to support the overall strategy to decarbonize economic growth in AFOLU sector and to provide long term sustainable development outcomes.

PART 3

STATUS OF EMISSION IN THE AFOLU SECTOR

SECTION 3.1

Estimation of GHG emissions in the AFOLU sector

According to the recent PNG's Second Biennial Update Report to UNFCCC (May 2022) ,GHG emissions from the agriculture sector amounted to 935 kt CO2 eq in 2017 which is about 9 % of the country's overall net emission in that year (excluding LULUCF). Total GHG emissions increased by 203 kt CO2 eq (28 %) in 2017 when compared with year 2000. The highest emitting category in 2017 was direct N_2O emissions from managed soils (3.C.4) which contributed about 57 % of the total sector emissions. After this is the enteric fermentation (3.A.1) category which contributed 18 %, followed by manure management (3.A.2) with 17 % and indirect N_2O emissions from managed soils (3.C.5) with about 7 %. The least emitting category in the agriculture sector is indirect N_2O emissions from manure management (3.C.6).

The LULUCF sector in the country is the biggest sector among all sectors. Historically, this sector acted as a sink. However, over time, the sector has evolved into a smaller sink due to a decrease in forest lands because of increased logging and agriculture activities. In the years 2011, 2013, 2014 and 2015 the LULUCF sector was a net source.

Then in 2016 and 2017 the LULUCF sector became a net sink due to decrease in logging and agriculture activities. The net emissions from the LULUCF sector amounted to -12,724.94 kt CO2 eq in 2017 compared to -20,488.12 kt CO2 eq in 2000 which is a total decrease of removals amounting to −7, 763.18 kt CO2 eq.

Most of the emissions in the LULUCF sector in the country occurred when forest changed to degraded and deforested. The annual area of forest degradation (primary forest becoming degraded forest) increased more than two-fold from 2001 (87,618 ha) to 2011 years Area of deforetion also significantly increased during the reporting period. Average annual area of deforestation between 2011 and 2015 (30,667 ha) was more than three times higher than the average between 2001 and 2005. Logging was the major driver of forest degradation responsible for up to 90% of the degradation occurred during the reporting period.

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[4]http://www4.unfccc.int/sites/ndcstanging/PublishedDocumenPapua%20New%20Guinea%20Second/PNG%20Second%20NCD.pdf

[5]http://www.ccda.gov.pg/data-and-documents

[6]http://www.ccda.gov.pg/data-and-documents

Almost the entire (99.3%) cause of deforestation was due to land use conversion from forest land to cropland. Subsistence agriculture is the most significant (69.8%) driver of deforestation followed by oil palm plantation development (24.4%). For 2016 and 2017 there was a slow down on logging activities or forest degradation (forest land converted to other land use) due to policy interventions and the cancellation of Special Agriculture Business Leases (SABL).

PNG's Greenhouse Gas emissions were estimated based on the methodology in:

- *The Intergovernmental Panel on Climate Change (IPCC) 2006 Guidelines for National Greenhouse Gas Inventories*
- *The IPCC 2019 Refinement of the 2006 IPCC*

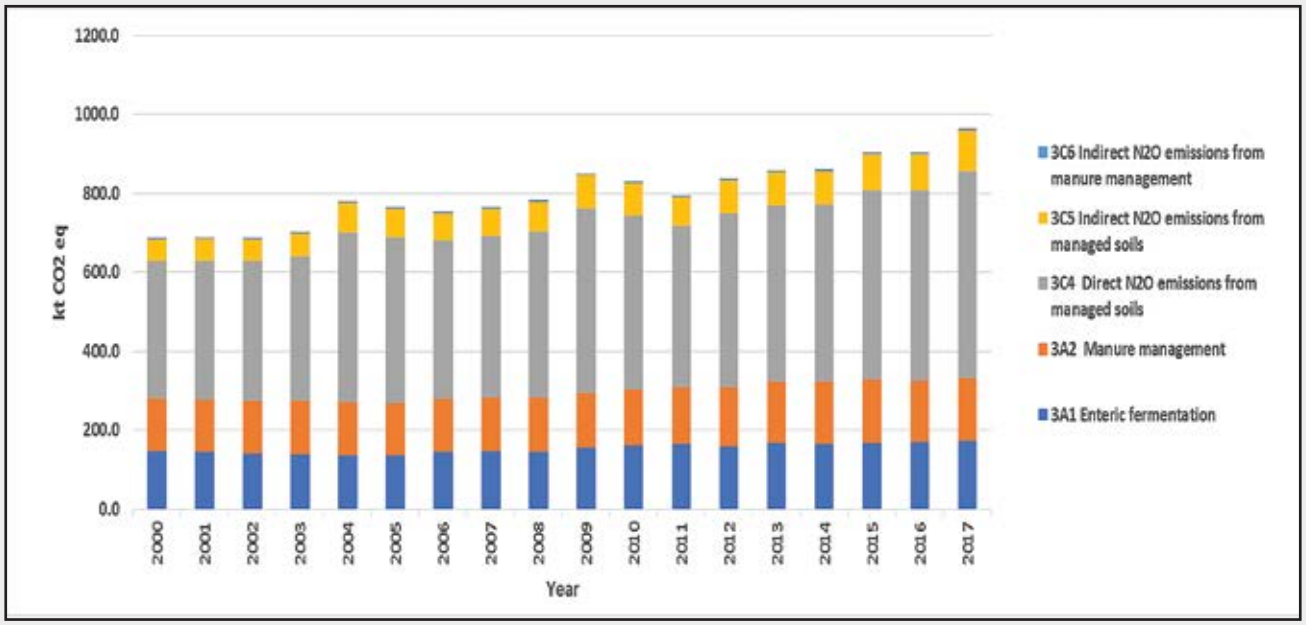

Figure 3: Agriculture sector emissions of PNG

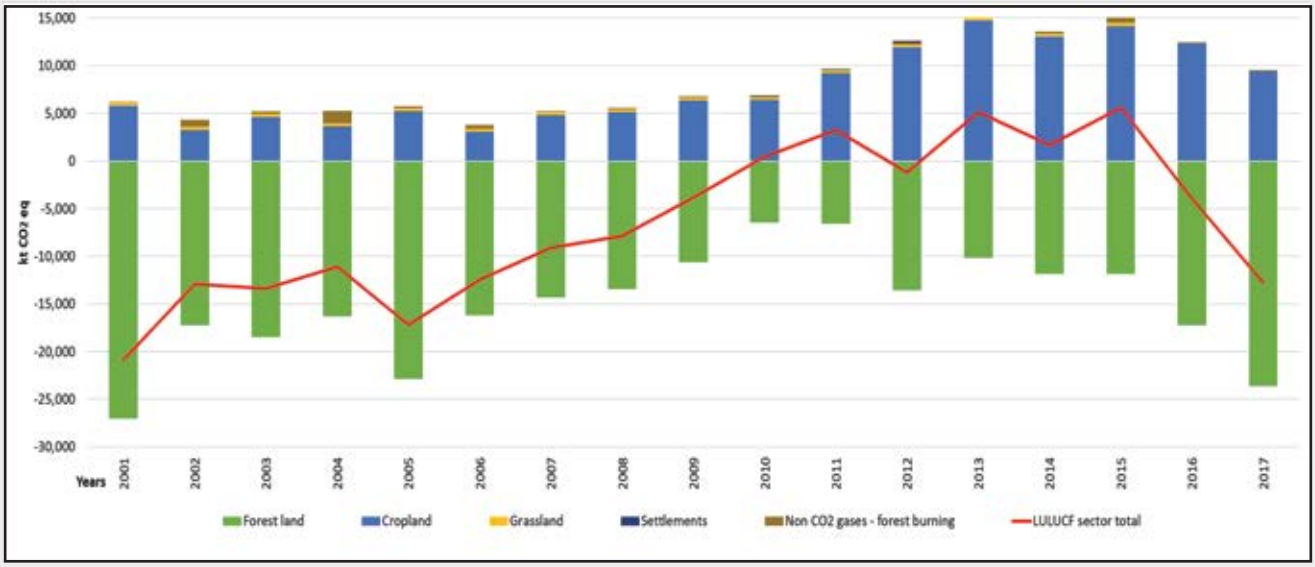

Figure 4: LULUCF sector emissions of PNG

PART 4

AGRICULTURE, FORESTRY and OTHER LAND USE (AFOLU) MITIGATION ACTIVITIES

Agriculture, Forestry and Other Land Use (AFOLU) Mitigation Activities

The AFOLU sector is comprised of four (4) direct mitigation action (DA) pathways which are outlined in the PNG NDC Implementation Roadmap for AFOLU Sector. The DA pathways are the sector-based action areas required to help reduce emissions and enhance removals from the sector. While it is difficult to quantify the specific emissions-based impacts of some mitigation actions, such as enhanced land use planning, these action areas will directly impact the way sector agencies, subnational governments and other stakeholders manage land. The 4 direct mitigation action pathways of AFOLU sector are as follow.

SECTION 4.1

FORESTRY PATHWAY

DA 1.1 Enhanced monitoring and enforcement of timber legality standard.

Indicator: Percentage of all forestry concession types (over 500 m³) including forest clearance authorities (FCA) with full legal certification

Mid-term (2025) target: 50% of concessions (including FCA timber)

Long-term (2030) target: 100% concessions

DA 1.2. Regulate small-scale timber (>500m3 pa)

Indicator: Enhanced information on nature of small scale production

Mid-term (2025) target: Quantification of impacts of small-scale timber in place by 2022. Measures identified to Enhance management of small-scale timber harvesting by 2025

Long-term (2030) target: No target – approach and target to be reviewed by 2025 based on data collected

DA1.3. Enhanced supply of planted timber and reforestation

Indicator: Hectares of new timber planted

Mid-term (2025) target: 110,000 ha

Long-term (2030) target: 220,000 ha

DA1.4. Establish enhanced policy environment for forest governance

Indicator: Enhanced forest policy environment

Mid-term (2025) target: Draft forest policy by 2023, Updated forest policy by 2025

Long-term (2030) target: No targets – to be reviewed in 2025

DA1.5. Establish a transition package for 'old' timber concessions

Indicator: Decrease in area under 'old' license types

Mid-term (2025) target: 40% of total concessions

Long-term (2030) target: 10% by 2030

Table 1: Forestry pathway mitigation activities

ACTIVITY	MEANS OF IMPLEMENTATION				TIME FRAME
	Funding	Capacity Building	Technology	R & D	
1. Enhanced monitoring and enforcement of timber legality standard	• Government (PNGFA) • Multilateral donors • Bilateral donors	• Strengthen capabilities (personal, budget, transport assets) of provincial forest offices to carry out site monitoring and • Build community/village management plans and monitoring capacity	• Explore use of GNSS /RS technology to monitor logging sites & operations in real time by via GNS transponders installed on all logging machines	• Conduct independent research to verify achievement of ecological sustainability standards, and • Conduct "market intelligence" to keep abreast of legality standards and trends to inform evidenced based and fair policy	2022-2025
2. Regulation of small-scale timber (>500m3 pa)	• Government (PNGFA) • Multilateral donors • Bilateral donors	• Increase capabilities (personal, budget, transport assets) of provincial forest offices to carry out site monitoring and • Build community/village management plans and monitoring capacity	• Explore use of GNSS /RS technology to monitor community harvesting	• Study to document current trends in small scale timber consumption (housing needs vs timber sales and income to households) to inform evidence based fair policy	2022-2025
3. Enhanced supply of planted timber and reforestation	• Government (PNGFA) • Multilateral donors • Bilateral donors • Private sector	• Establish an enabling policy environment for private sector to run and maintain the timber industry for the economy without severely compromising ecological sustainability standards and national environment and conservation goals covering vital landscapes	• Explore use of GNSS /RS technology to monitor plantations & operations in real time via GNSS transponders	• Conduct Independent Research to verify achievement of ecological sustainability standards, and • Conduct Market Intelligence to keep abreast of legality standards and trends to inform evidenced based fair policy	2022-2025
4. Establishment of enhanced policy environment for forest governance	• Government (PNGFA) • Multilateral donors • Bilateral donors • Private sector	• Strengthen community forest governance structures, and provide people with all the information to make better decisions on forests & their wise use including their constitutional rights • Strengthen government system for enhancing forest governance	• Explore technology and media to conduct mass awareness& education on forest governance issues and advocacy programs at policy and grassroots level	• Conduct baseline research on the key drivers of non-compliance to regulations and bad decision making in order to develop a strategic action plan to improve policy on forest governance	2022-2025
5. Establishment of a transition package for 'old' timber concessions	• Government (PNGFA) • Multilateral donors • Bilateral donors • Private sector	• Strengthen national and provincial compliance processes, and • Update technical assessments and TRP records in PNGFA to enable transition from old timber concessions to the new FMAs	• Explore use of GNSS /RS technology to monitor logging sites & operations in real time by via GNSS transponders installed on all logging machines and to match sites with database records and status for red flag alerts	• Conduct independent research on application of grace period and its misapplication and implications for improving the processes and procedures to tighten loopholes for abuse	2022-2025

SUB - SECTION 4.1.1

Collaboration and Partnership

The lead implementing agency for the implementation of mitigation actions/activities under the Forestry pathway is the PNG Forest Authority (PNGFA). CCDA, CEPA, DAL, DPLGA, DLPP, OPIC, Cocoa Board, FPDA, CIC and PNG Customs, will play supporting roles in the implementation of the mitigation activities/actions under Forestry pathway through the development and implementation of related policies and measures. The private sector, NGOs/CSOs, and Development Partners within Forestry sector will also play a crucial role in the implementation of mitigation actions under Forestry Pathway hence their collaboration with PNGFA is really crucial.

SUB - SECTION 4.1.2

Ensuring Sustainability for the Mitigation Actions under Forestry Pathway

Sustainability of the mitigation actions under this pathway will depend on government's annual budget allocation to PNGFA and the relevant agencies to implement their sectoral policies and the international policies targets. The current mitigation actions under Forestry pathway are integrated with the following domestic policies and international policy targets relating to the forestry sector in PNG.

- MTDP3

KRA1. Increased Revenue and Wealth Generation:

- o 1.2 Increasing value of exports, by increasing the unit value of timber with higher legality assurance
- o 1.3 Creating employment and economic opportunities, through enhanced forest management capacity and tree planting.

KRA7. Promote PNG's environment sustainably, by reducing forest depletion rates

- SDGs

13. Climate action
15. Life on land

- o 15.1 Conservation and rehabilitation of forest areas
- o 15.2 Sustainable use of forest resources

- SDG 13 Roadmap

10. REDD+ results delivered
11. Internationally recognized timber legality standard+
12. Increased environmental and commercial planting
13. Enhanced strategies for secondary forest utilization
14. Enhanced information on Forests

- National REDD+ Strategy

2.3.2.3. Strengthening forest management and enforcement practices

Due to funding constraints experienced by the PNGFA, financial assistance from multilateral and bilateral donors is highly crucial in the successful implementation of the mitigation actions under the Forestry pathway. The existing and potential funding sources within the Forestry sector constitute of a number of development partner initiatives including: GEF6 CBIT Phase 2; Two GEF7 projects (UNDP and FAO administered); Reforestation fund and GCF RBP finance. Additional support on systems development possible through proposed JICA project for the forest sector; and GCF REDD+ Readiness project including the FAO administered GCF Readiness project which support the development of REDD+ registry and nesting system.

SECTION 4.2

ENVIRONMENT AND CONSERVATION PATHWAY

DA2.1 Strengthen application of environmental safeguards

Indicators: (i) Environmental assessments, permits and management plans for land use projects are updated and publicly available; (ii) Sub-national governments engaged in environmental monitoring and enforcement.

Mid-term (2025) targets: (i) Documents for 50% of projects updated and publicly available; (ii) 3 subnational jurisdictions operating with designated authority on environmental monitoring and enforcement.

Long-term (2030) targets: (i) Documents for 100% of projects updated and publicly available; (ii) 6 subnational jurisdictions operating with designated authority on environmental monitoring and enforcement.

DA2.2. Enhance Protected Area (PA) development and management

Indicators: (i) Enhanced terrestrial PA coverage; (ii) PA Effectiveness Enhanced; (iii) PAs sustainably financed

Mid-term (2025) target: (i) An additional 3 million ha of PAs added to network against 2020 levels of which at least 30% is identified as at high risk of land use conversion; (ii) Reduction in levels of forest loss within PA by 30% against 2020 levels; (iii) 60% PAs included within subnational budgets and US$10 million mobilized per annum to support PA management.

Long-term (2030) targets: (i) An additional 6 million hectares of PAs are added to network against 2020 levels of which at least 30% is identified as at high risk of land use conversion; (ii) Reduction in levels of forest loss within PA by 80% against 2020 levels; (iii) 100% PAs included within subnational budgets and US$20 million mobilized per annum to support PA management.

Table 2: Environment and Conservation pathway mitigation activities

ACTIVITY	MEANS OF IMPLEMENTATION				TIME FRAME
	Finding	Capacity Building	Technology	R&D	
1. Strengthen application of environmental safeguards	• Government (CEPA) • Multilateral donors • Bilateral donors	• Strengthen capabilities (personnel, budget, transport assets) of CEPA/PNGFA/DAL, PGs, and LLGs to ensure environmental safeguards are incorporated in development activities and to carry out site monitoring and • Build community/village monitoring capacity	• Explore use of GNSS /RS technology to monitor type of development activity according to permits and environmental management plans	• Conduct independent research to verify achievement of environmental safeguards, and to strengthen application	2022-2025
2. Enhance Protected Area (PA) development and management	• Government (PNGFA) • Multilateral donors • Bilateral donors • Private sector • NGOs (philanthropy)	• Strengthen capabilities (personal, budget, transport assets) of CEPA, PGs, and LLGs to enhance development and management of Protected Areas and to carry out site monitoring • Build community/village monitoring capacity for Protected Areas • Conduct Training workshops to assist communities, PGs, LLGs, explore options for access and mobilization of PA financing, and establishment of good practice management models for sustainability	• Explore use of GNSS /RS technology to monitor Community Protected Areas all over the country	• Conduct independent study on the establishment of protected areas and the nexus between traditional customary management and modern legal frameworks to enhance management and compliance to PA rules. • Conduct independent surveys from people about their values regarding the protection of their forest or marine areas, and their needs and aspirations and how PAs can or cannot assist them to achieve these needs	2022-2025

SUB - SECTION 4.2.1

Collaboration and Partnership

The lead implementing agency for the implementation of mitigation actions/activities under the Environment and Conservation pathway is the Conservation and Environment Protection Authority (CEPA). PNGFA, CCDA, DLPP and DPLLGA will play supporting roles in the implementation of the mitigation activities/actions under Environment and Conservation pathway through the development and implementation of related policies and measures. The private sector, NGOs/CSOs, and Development Partners within Environment and Conservation sector will also play a crucial role in the implementation of mitigation actions under this Pathway hence their collaboration with CEPA is important.

SUB - SECTION 4.2.2

Ensuring Sustainability for the Mitigation Actions under Environment and Conservation Pathway

Sustainability of the mitigation actions under the Environment and Conservation pathway will depend on government's annual budget allocation to CEPA and the relevant agencies to implement their sectoral policies and the international policies targets. The current mitigation actions/activities under Environment and Conservation pathway are integrated with the following domestic policies and international policy targets relating to the Environment and Conservation sector in PNG.

- MTDP3
  KRA7.1. Promote PNG's environment sustainably, by placing areas under legal protection and through improved permitting

  KRA7.2. Manage and reduce the risk of natural disasters, by maintaining ecosystem services.
- SDGs
  13. Climate action
  15. Life on land
  - o 15.1 Conservation and rehabilitation of forest areas
  - o 15.2 Sustainable use of forest resources
- SDG 13 Roadmap
  25. Biodiversity integrated into productive landscapes
  26. Climate resilient PA network
- National REDD+ Strategy
  2.3.2.3. Strengthening conservation and environmental management
- CBD Aichi Targets
  17% of terrestrial areas under conservation

Conservation and Environment sector is also a huge sector hence there is always funding issues/challenges when it comes to implementation of the mitigation actions hence financial assistance from multilateral and bilateral donors is really important for the successful implementation of the identified mitigation actions. The existing and potential funding sources within the Environment and Conservation sector constitute of a number of development partner initiatives including: Inform Project (SPREP) GEF7 FOLUR; Lukautim Graun Project; USAID GEF-6; UNDP GEF-7 FOLUR; GEF-7 STAR; FAOGEF-7 STAR; UNEP; and EU GCCA.

SECTION 4.3

LANDS PATHWAY

DA3.1. Establish national sustainable land use planning framework

Indicator: Guiding policy and regulatory framework for sustainable land use planning in place

Mid-term (2025) target: NSLUP approved by NEC by 2022 two regulations supporting implementation developed by 2023 and draft National LUP developed by 2025

Long-term (2030) target: Updated NSLUP and regulations approved by NEC and full national LUP in place

DA3.2. Establish national sustainable land use planning information system

Indicator: Establish a fully operational land use information system (LUIS)

Mid-term (2025) target: Central LUIS in place by 2025; System integrated with systems at provincial level in four provinces by 2025; and System with interim links with other sector systems.

Long-term (2030) target: System fully operational with fully linked with other sector systems by 2030; and System operational within all provinces.

DA3.3. Develop spatially explicit subnational development plans

Indicator: Spatially explicit plans in place at provincial level

Mid-term (2025) target: Spatially explicit LUPs in place for five provinces by 2025

Long-term (2030) target: Spatially explicit land use plans in place for all provinces by 2030

Table 3: Lands pathway mitigation activities

ACTIVITY	MEANS OF IMPLEMANTATION				TIME FRAME
	Funding	Capacity Building	Technology	R&D	
1. Establish national sustainable land use planning (NSLUP) framework	• Government (DLPP) • Multilateral donors • Bilateral donors	• Strengthen capabilities (personnel, budget, knowledge, skills & competencies and tools) of DLPP, PGs, and LLGs and Communities(Wards) to ensure land use planning is a two pronged approach from both bottom-up & top-down • Build capacity of village planning committee (VPC)	• Explore use of GNSS /RS technology as a key component of the NSLUP framework	• Research and analyze sustainable land use management planning at spatial level to have better understanding of land use dynamics across the landscape and impacts on the ecology of the planning units and areas.	2022-2025
2. Establish national sustainable land use planning information system (NSLUPIS)	• Government (DLPP) • Multilateral donors • Bilateral donors	• Strengthen capabilities (personnel, budget, knowledge, skills & competencies and tools) of CEPA, PGs, and LLGs and Communities(Wards) to plug in to the NSLUPIS	• Explore use of GNSS /RS technology to build and operate the NSLUPIS.	• Conduct research and analysis on the technical capabilities and options for the NSLUPIS to be used by Government, line agencies, PGs, LLGs,	2022-2025
3. Develop spatially explicit subnational development plans	• Government (DLPP) • Multilateral donors • Bilateral donors	• Build the capacity of PGs and LLGs to develop the components of the spatial plan at the site level in the provinces	• Use GNSS technology in developing the spatial plans	• Research and analyze the key requirements for development and use of spatial plans	2022-2025

SUB - SECTION 4.3.1

Collaboration and Partnership

The lead implementing agency for the implementation of mitigation actions/activities under the Lands pathway is the Department of Land and Physical Planning (DLPP). DPLLGA, DAL, CEPA, PNGFA and DNPM will play supporting roles in the implementation of the mitigation activities/actions under Lands pathway through the development and implementation of related policies and measures. Like the other AFOLU pathways, the private sector, NGOs/CSOs, and Development Partners within the Lands sector will also play a crucial role in the implementation of mitigation actions under Lands pathway hence their collaboration with DLPP is important.

The lands sector, like other sectors within AFOLU pathways, is a huge sector hence funding from the National Government only is not sufficient to implement all the mitigation actions/activities. Therefore, financial support from the multilateral and bilateral donors is really crucial for the successful implementation of the identified mitigation actions. The existing and potential funding sources in the Lands sector comprises of a number of development partner initiatives including: GEF7 – FOLUR New Britain; GEF7 STAR – Highlands (UNEP and FAO); and EU GCCA – Enga Province, Papua New Guinea.

SUB - SECTION 4.3.2

Ensuring Sustainability for the Mitigation Actions under Lands Pathway

Sustainability of the mitigation actions under the Lands pathway will also depend on government's annual budget allocation to DLPP and the relevant agencies to implement their sectoral policies and the international policies targets. The current mitigation actions/activities under Lands pathway are integrated with the following domestic policies and international policy targets relating to the lands sector in PNG.

- MTDP3

KRA1. Increased revenue and wealth creation, by improving mobilization of land into commercial use

KRA7.2. Manage and reduce the risk of natural disasters, by maintaining ecosystem services.

- SDGs

1. End poverty in all its forms, by avoiding the displacement of communities from their land

- National REDD+ Strategy

2.1.1 Strengthened land use and development planning

SECTION 4.4

AGRICULTURE PATHWAY

DA4.1. Strengthen the agricultural planning and policy framework and its application

Indicator: Enhanced policy and legislative framework

Mid-term (2025) target: Climate-Smart National Agricultural Development Policy by 2023; and Passage of updated agriculture sector legislation by 2025

Long-term (2030) target: N/A

DA4.2. Strengthen access to and quality of extension systems

Indicators: (i) Establishment of effective extension development and financing system; (ii) Number of local-level governments (LLGs) with trained agricultural extension officers in place.

Mid-term (2025) targets: (i) Framework for extension financing agreed and in place; (ii) 30% increase in number of extension officers.

Long-term (2030) target: (i) Full financing in place for extension by 2030 (targets), (ii) 296 agriculture extension officers operating in all (296) LLG in the country.

DA4.3. Strengthen the framework for sustainable palm oil development

Indicator: Policy framework in place and changed in percentage of sustainably certified exports

Mid-term (2025) targets: Palm oil action plan agreed by 2022; Palm oil policy by 2023.

Long-term (2030) target: 90% of palm oil exports sustainably certified.

DA4.4. Strengthen the Framework for sustainable cocoa development

Indicator: Policy framework in place and changed in percentage of sustainably certified exports.

Mid-term (2025) target: Cocoa action plan agreed by 2022; Cocoa policy by 2023; 30% of cocoa exports sustainably certified

Long-term (2030) target: 60% of cocoa exports sustainably certified

DA4.5. Strengthen the framework for sustainable coffee development

Indicator: Policy framework in place and changed in percentage of sustainably certified exports

Mid-term (2025) target: Coffee action plan agreed by 2022; Coffee policy by 2023; 30% of coffee exports sustainably certified.

Long-term (2030) target: 60% of coffee exports sustainably certified by 2030

Table 4: Agriculture pathway mitigation activities

ACTIVITY	MEANS OF IMPLEMANTATION				TIME FRAME
	Funding	Capacity Building	Technology	R&D	
1. Strengthen agricultural planning and policy framework and its application	• Government (DAL) • Multilateral donors • Bilateral donors	• Strengthen capabilities of DAL/DLPP/CEPA/PNGFA, PGs, and LLGs to ensure there is harmonization rather than massive overlaps and competing development in the same landscapes • Build community/ village monitoring capacity	• Explore use of GNSS /RS technology to update national agricultural maps required to better understand land use vs agricultural plans in the broader landscape	• Conduct research and analysis on biophysical resources, agricultural production capabilities and also market intelligence to have a strategic agriculture policies and plans rather than ad-hoc plans	2022-2025
2. Strengthen access to quality extension systems	• Government (DAL) • Multilateral donors • Bilateral donors	• Strengthen capabilities of LLGs, WDC and VPC for community extension with quality training and tools	• Using technology and machine learning, satellite imagery, and digital processes to provide critical information to farmers via mobile phone (Digital extension-farming advice at your fingertips) and other ICT platforms	• Research and analysis into creating a digital extension platform for PNG	2022-2025
3. Strengthen framework for sustainable palm oil development	• Government (DAL/OPIC/OPRA) • Multilateral donors • Bilateral donors	Strengthen capabilities of small holder farmers as well as the large companies (NBPOL, Hargy Oil Palm, etc.)	Explore use of technology to send agricultural information via mobile phones and other ICT platforms straight to the village level	Conduct independent research on value adding opportunities for palm oil in country and utilization of palm wastes/residuals	2022-2025
4. Strengthen Framework for sustainable cocoa development	• Government (DAL/Cocoa Board) • Multilateral donors • Bilateral donors	Strengthen capabilities of small holder farmers as well as the large PNG companies through friendly policies for value adding domestically and exports	Explore use of technology to send agricultural information via mobile phones and other ICT platforms straight to the village level *(CTA example in ACP)*	Conduct independent research on value adding opportunities for cocoa in country	2022-2025
5. Strengthen framework for sustainable coffee development	• Government (DAL/Coffee Board) • Multilateral donors • Bilateral donors	Strengthen capabilities of small holder farmers as well as the large PNG companies through friendly policies for value adding domestically and exports	Explore use of technology to send agricultural information via mobile phones and other ICT platforms straight to the village level *(CTA example in ACP)*	Conduct independent research on value adding opportunities for coffee in country	2022-2025

SUB - SECTION 4.4.1

Collaboration and Partnership

The lead implementing agency for the implementation of mitigation actions/activities under the Agriculture pathway is the Department of Agriculture and Livestock (DAL). CCDA, DNPM, DPLLGA, NRI and Agri-Commodity Boards will play supporting roles in the implementation of the mitigation activities/actions under Agriculture pathway through the development and implementation of related policies and measures. The private sector, NGOs/CSOs, and Development Partners within the Agriculture sector will play an important role in the implementation of mitigation activities/actions under this Pathway hence their collaboration with DAL is important.

SUB - SECTION 4.4.2

Ensuring Sustainability for the Mitigation Actions under Agriculture Pathway

Sustainability of the mitigation actions under the Agriculture pathway will depend on government's annual budget allocation to DAL and the relevant agencies to implement their sectoral policies and the international policies targets. The current mitigation actions/activities under Agriculture pathway are integrated with the following domestic policies and international policy targets relating to the agriculture sector in PNG.

- MTDP3

KRA1 Increase wealth creation, by increasing the value of exports of all commodities, creating more employment, reducing imports, and promoting small and medium-sized enterprise development and direct investments

KRA7.2. Manage and reduce the risk of natural disasters, by maintaining ecosystem services.

- SDGs

8. Sustainable and inclusive economic development
13. Action on climate change
15. Zero hunger

- SDG 13 Roadmap

18. Climate-resilient agribusiness supply chains
19. Climate-compatible sustainable palm oil sector
20. Establish national sectors for carbon farming and climate-smart agriculture
22. Targeted extension and support services

- National REDD+ Strategy

2.3.3.1. Development of a sustainable commercial agriculture sector

Agriculture sector is a huge sector hence there is funding issues/challenges when it comes to implementation of the mitigation actions therefore, like other sectors under AFOLU pathway, financial assistance from multilateral and bilateral donors is crucial for the successful implementation of the identified mitigation activities/actions. The existing and potential funding sources within the Agriculture sector is comprised of a number of development partner initiatives including: PHARMA, PACD, MVP, GEF7 FOLUR and others.

PART 5

MONITORING AND EVALUATION

MONITORING AND EVALUATION

The CCDA in close collaboration with the key AFOLU sector agencies, AFOLU sector-based sub-technical working committees, Private sector and NGOs, and NDC key Development Partners, will provide monitoring and evaluation of the mitigation plan – its targets and indicators over the NDC period in line with the Revised Enhanced NDC 2020 Implementation Plan (2021-2030) and the PNG NDC Implementation Roadmap for AFOLU sector.

The relevant Ministries/Departments in the AFOLU sector should outline their M&E plans to achieve implementation targets, and how their plan fits into the CCDA M&E framework inclusive of the Paris Agreement Enhanced Transparency Framework (ETF) – Both actual implementation of projects and finance flows should be tracked.

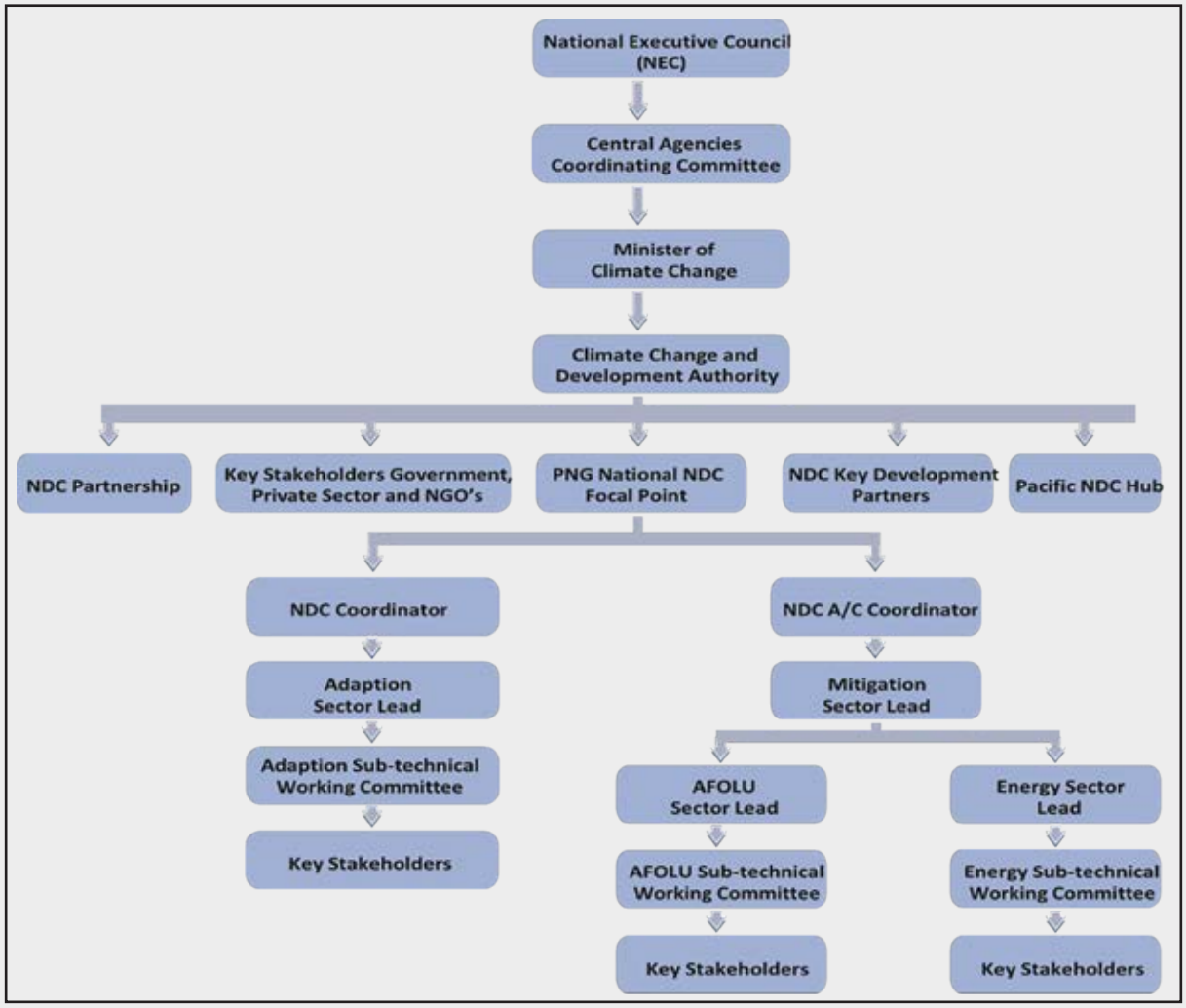

Figure 5: CCDA Institutional Arrangement for M&E of Mitigation Activities

SECTION 5.1

FORESTRY PATHWAY MONITORING OF ACTIVITIES

Table 5: Monitoring and reporting of forestry pathway activities

Activity	Lead agency	Operational reporting	Mitigation/Climate Change National Reporting	Reporting period
1. Enhanced monitoring and enforcement of timber legality standard	PNGFA	Timber Permit Holders/SGS Data Company	PNGFA - CCDA	Annual
2. Regulation of small-scale timber (>500m3 pa)	PNGFA	LLGs and Communities	PNGFA - CCDA	Annual
3. Enhanced supply of planted timber and reforestation	PNGFA	LLGs and Communities	PNGFA - CCDA	Annual
4. Establishment of enhanced policy environment for forest governance	PNGFA/ CEPA	Provincial Governments (PGs) and Local Level Governments (LLGs)	PNGFA/CEPA - CCDA	Annual
5. Establishment of a transition package for 'old' timber concessions	PNGFA	PGs and LLGs	PNGFA - CCDA	Annual

SECTION 5.2

ENVIRONMENT AND CONSERVATION PATHWAY MONITORING OF ACTIVITIES

Table 6: Monitoring and reporting of Environment and Conservation pathway activities

Activity	Lead agency	Operational reporting	Mitigation/Climate Change National Reporting	Reporting period
1. Strengthen application of environmental safeguard	CEPA	PGs and LLGs	CEPA - CCDA	Annual
2. Enhance Protected Area (PA) development and management	CEPA	PGs and LLGs	CEPA - CCDA	Annual

SECTION 5.3

LANDS PATHWAY MONITORING OF ACTIVITIES

Table 7: Monitoring and reporting of Lands pathway activities

Activity	Lead agency	Operational reporting	Mitigation/Climate Change National Reporting	Reporting period
1. Establish national sustainable land use planning (NSLUP) framework	DLPP	PGs and LLGs	DLPP - CCDA	Annual
2. Establish national sustainable land use planning information system(NSLUPIS)	DLPP	PGs and LLGs	DLPP - CCDA	Annual
3. Develop spatially explicit subnational development plans	DLLP	PGs and LLGs	DLLP - CCDA	Annual

SECTION 5.4

AGRICULTURE PATHWAY MONITORING OF ACTIVITIES

Table 8: Monitoring and reporting of Agriculture pathway activities

Activity	Lead agency	Operational reporting	Mitigation/Climate Change National Reporting	Reporting period
1. Strengthen agricultural planning and policy framework and its application	DAL	PGs and LLGs	DAL - CCDA	Annual
2. Strengthen access to and quality of extension systems	DAL	PGs and LLGs	DAL - CCDA	Annual
3. Strengthen framework for sustainable palm oil development	DAL	PGs and LLGs	DAL - CCDA	Annual
4. Strengthen Framework for sustainable cocoa development	DAL and Cocoa Board	DAL and Cocoa Board	Cocoa Board - CCDA	Annual
5. Strengthen Framework for sustainable coffee development	DAL and Coffee Board	DAL and Coffee Board	Coffee Board - CCDA	Annual

SECTION 5.5

OVERALL MONITORING SCHEDULE OF THE ACTIVES/ACTIONS UNDER THE FORESTRY, ENVIRONMENT AND CONSERVATION, LANDS, AND AGRICULTURE PATHWAYS

Monitoring and evaluation of the progress of the AFOLU mitigation plan will be coordinated through the governance structure as illustrated and described in the Revised Enhanced NDC 2020 Implementation Plan (2021-2030)[7].

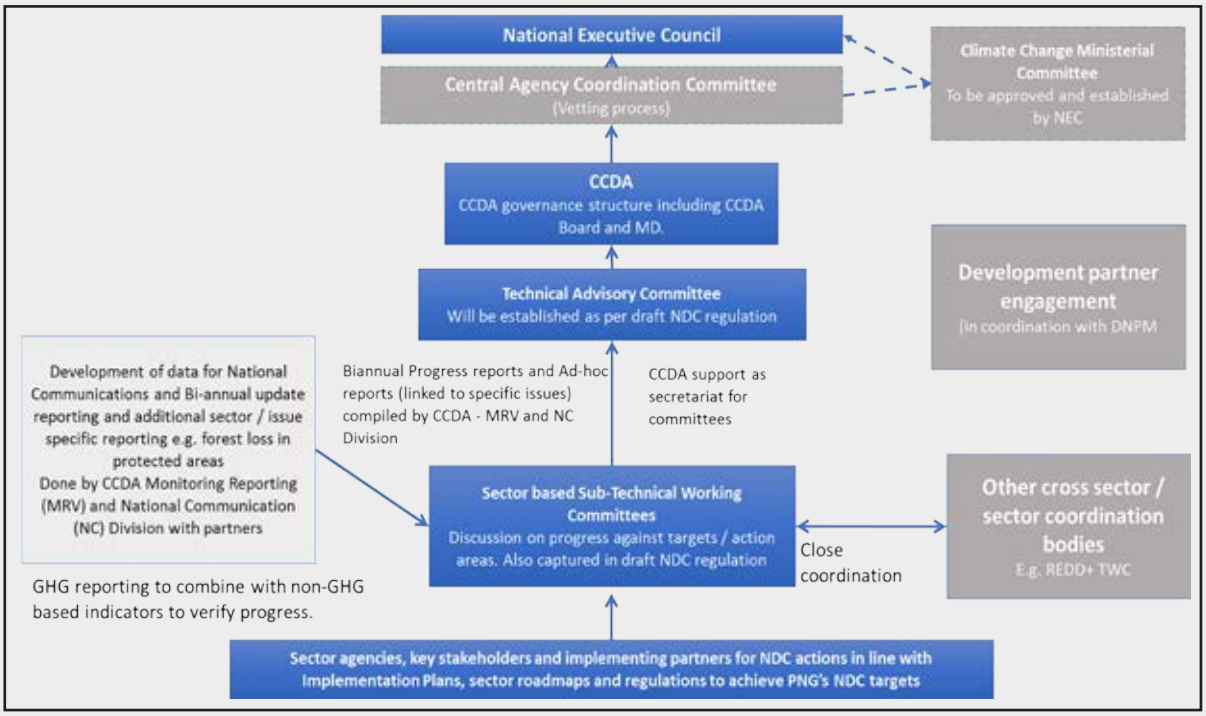

Figure 6: PNG Enhanced NDC 2020 Governance Structure for Implementation

The specific intervals of the reporting periods and the institutions required to report are described in in the table below.

Table 9: MRV Framework of PNG's Enhanced NDC 2020

Action	Timing	Responsible agencies
Status update for each activity	Biennially Quarterly progress updates with annual progress reports.	Implementing government agencies and supporting development partners
Progress reports on Development partner assistance	Quarterly through STWC	Development partners
Annual reports	Annually, except for 2025 and 2030	CCDA, implementing agencies, and stakeholders.
Mid-term review and evaluation report	December 2025	CCDA, implementing agencies, and stakeholders.
Final evaluation report	January 2030	CCDA, implementing agencies, and stakeholders.

Annex 1:

AFOLU Sector's Activities/Action Plan in the PNG Revised Enhanced NDC 2020 Implementation Plan (2021-2030)

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD Millions)	Funding Sources Existing/Potential	Existing Progress	Link with NCD Action Bassed Targets[8]	Supports Needs of Implementing Agencies
Mitigation activities/actions within the Forestry sector									
DA. 1.1.	*DA 1.1 Enhanced monitoring and enforcement of timber legality standard*	- 50% of all concessions fully legal (including FCA timber) by 2025 - 100% of concessions fully legal by 2030 (including FCA timber)	PNGFA	DAL, CEPA	$99.9	Existing and proposed support through a number of development partner initiatives including GEF6 CBIT, Two GEF7 projects (UNDP and FAO administered), Additional support on systems development possible through proposed JICA project for the forest sector and GCF RBP project as well as FAO administered GCF supported REDD+ registry development work.	Timber Legality Criteria (Standard) has been approved and work is moving for early trailing. PNGFA has in place a number of systems to support data availability.	- Strengthen monitoring of FCA permits - Enhanced application of timber legality	Further support to roll out of legality standard and its monitoring.
DA 1.2.	*Regulation of small-scale timber (>500m3 pa)*	- Quantification of impacts of small-scale timber in place by 2022 - Measures identified to enhance management of small-scale timber harvesting by 2025 - Approach and target to be reviewed by 2025	PNGFA	Provincial and district governments PNG Customs and Excise	$2.5		Initial was work done on assessing and reviewing options for small-scale operations. Information needing updating.	- Enhancement of timber legality	Support to early action on assessment
And DA 1.3.	*Enhanced supply of planted timber and reforestation*	Target 2025 – 110,000ha of land planted Target 2030 – 220,000ha of land planted	PNGFA	Subnational Governments CEPA	$6.6	GoPNG budget and Reforestation fund	Initial awareness-raising materials developed	- Promoting the Painim Graun Planim Diwai i nitiative and planting 10 million trees initiative.	Support to the development of targeted strategies for key provinces as well as national financing plan
DA 1.4.	*Establishment of enhanced policy environment for forest governance*	- Draft forest policy by 2023 - Updated forest policy by 2025	PNGFA		$2	Possible GCF RBP finance as well as support through the JICA forestry project.	Work conducted on legislative review and scenario analysis for future forest sector development	- Enhancement of timber legality - Promoting REDD+ - Promoting downstream processing	Support to the policy review.
DA 1.5.	*Establishment of a transition package for 'old' timber concessions*	60% reduction in old concession types 90% reduction in old concession types.	PNGFA	Subnational governments, CEPA, DAL, DLPP, OPIC, Cocoa board, FPDA, CIC	$TBC	Possible GCF RBP finance	Number of landscape levels projects developed	- Enhancement of timber legality - Promoting REDD+	Development of an approach for a multi-agency engagement at a subnational level

[8]see Figure 3 AFOLU sector's Goals and Targets

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD Millions)	Funding Sources Existing/Potential	Existing Progress	Link with NCD Action Bassed Targets[a]	Supports Needs of Implementing Agencies
Mitigation activities/actions within the Environment and Conservation sector									
DA 2.1	Strengthened application of environmental safeguards	Documents for 50% of projects updated and publicly available by 2025, Documents for 100% of projects by 2030. By 2025 3 and by 2030 6 subnational jurisdictions operating with designated authority on environmental monitoring and enforcement	CEPA	PNGFA, CCDA, Provincial Govt., Other sector agencies, NGOs, Private Sector, Donors	$17	Inform Project (SPREP) GEF7 FOLUR	Work is undertaken on a data repository for environmental information under SPREP	- Enhancement of timber legality - Strengthened monitoring of FCA permits - Certification system for climate-friendly - Agriculture products	- Establishment of an Environmental management information system - Piloting of sub-national monitoring and enforcement of environmental regulations
DA 2.2.	Enhance protected area development and management	-By 2025 An additional 3mha of PA's are added to the network against 2020 levels of which at least 30% is identified as at high risk of land use conversion. -By 2030 An additional 6mha of PA's are added to the network against 2020 levels of which at least 30% is identified as at high risk of land-use conversion.	CEPA	Provincial Govt., Other sector agencies, NGOs, Private Sector, Donors	$18 - 40	Lukautim Graun Project, USAID GEF-6, UNDP GEF-7 FOLUR GEF-7 STAR, FAO GEF-7 STAR, UNEP	Significant support to PA's already in place through development partner programmes with GEF6 PA finance also currently working to establish and capitalise a funding mechanism	- Enhanced land use planning - Promoting REDD +	- Establishment of an effective financing system for PAs - Support to gazettement and the full establishment of 10 PAs
		- By 2025 reduction in levels of forest loss with PA by 30% against 2020 levels - By 2030 reduction in levels of forest loss within PA by 80% against 2020 levels							
		- By 2025 60% of PAs included within subnational budgets And - $10m mobilized per annum to support PA management - by 2030 100% PA's included within subnational budgets And - $20m mobilized per annum to support PA management							

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD Millions)	Funding Sources Existing/Potential	Existing Progress	Link with NCD Action Bassed Targets[8]	Supports needs of Implementing Agencies
Mitigation activities/actions within the Lands sector									
DA 3.1	Establishment of National Sustainable Land Use Planning Framework	- NSLUP approved by NEC by 2022 - 2 regulations supporting implementation developed by 2023 - Draft National Land Use Plan developed by 2025 - Updated NSLUP and regulations approved by NEC by 2030 - Full National Land use plan in place by 2030	DLPP	DLPP, DPLLGA, DAL, DNPM	$1.1	GEF7 – FOLUR New Britain GEF7 STAR – Highlands (UNEP and FAO) EU GCCA - Enga	- NSLUP at the final phase of development - Provincial physical planning offices established in a number of provinces - Provincial Physical Planning Boards (11 in place at the moment	Enhanced land use planning	Establishment of a central coordination system for sustainable land use planning that works to bring together existing support linked to land use planning
DA 3.2	Establishment of National Sustainable Land Use Planning Information System	- Central LU Information system in place by 2025 - System integrated with systems at the provincial level in four provinces by 2025 - System with interim links with other sector systems by 2025 - The System fully operational with fully linked with other sector systems by 2030 - The System operational within all provinces	DLPP	DNPM, DPLLGA	$3.1	GEF7 – FOLUR New Britain GEF7 STAR – Highlands (UNEP and FAO) EU GCCA – Enga	Existing systems are in place with the need for these to be strengthened and integrated with approaches to local level planning as well as increasing links with other sector data management systems.	Enhance land use planning	- Technical support to system design.
15	Development of spatially explicit subnational development plans	- Spatially explicit land use plans in place for 5 provinces by 2025 - Spatially explicit land-use plans in place for all provinces 2030	DLPP	DNPM, DPLLGA	$20	GEF7 – FOLUR New Britain GEF7 STAR – Highlands (UNEP and FAO) EU GCCA – Enga	Work done on site-specific land use plans.	Enhance land use planning	- Technical support to the development of the subnational approach. Support to the coordination of existing development partner initiatives working on subnational land use planning.

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD Millions)	Funding Sources Existing/Potential	Existing Progress	Link with NCD Action Bassed Targets[8]	Supports Needs of Implementing Agencies
Mitigation activities/actions within the Agriculture sector									
16	Strengthen agricultural planning and policy framework and its application	- Climate Smart National Agricultural Development Policy by 2023 Passage of updated agriculture sector legislation by 2025	DAL	NRI, Agri-Commodity Boards	$1	(PHARMA, PACD, MVP, GEF7 FOLUR	Draft agriculture bills developed. Work on commodity-based climate-smart agriculture policies under development.	Promoting climate-friendly agriculture Enhancing community level agriculture productivity Certification system for climate-friendly agriculture products Enhancing value chain of climate-friendly agriculture products	Technical support to the development of and consultation on documents
17	Strengthen access to and quality of extension systems	- Framework for extension financing agreed and in place. Full financing in place for extension by 2030 - 30% increase in the number of extension officers by 2025 296 agriculture extension officers operating in all (296) LLG in the country by 2030	DAL	NARI, Provincial Government, line Agencies, Development Partners	$32	PHARMA, PACD, GEF7 FOLUR	Some provinces have recruited RO	Promoting climate-friendly agriculture Enhancing community level agriculture productivity.	Development of an approach to effective financing of an extension systems
18	Strengthen Framework for sustainable palm oil development	- Palm oil Action plan agreed by 2022 - Palm Oil policy by 2023 - 90% of palm oil exports are sustainably certified in 2025 and 2030.	DAL	CCDA, DNPM	$90	GEF7 FOLUR	Initial scoping studies for Palm Oil Platform and operations were conducted. Initial reviews on HCV/HCS classifications in PNG as well as possible market access and options for future development.	Promoting climate-friendly agriculture Enhancing community level agriculture productivity Certification system for climate-friendly agriculture products Enhancing value chain of climate- friendly agriculture products	Require finance, technical and human resource and training of smallholder farmers
19	Strengthen Framework for sustainable cocoa development	- Cocoa Action plan agreed by 2022 - Cocoa policy by 2023 30% of cocoa exports sustainably certified by 2025 60% of cocoa exports sustainably certified by 2030	DAL	CCDA, DNPM	$90	PHARMA, PACD, GEF7	Operational working groups for cocoa development and development partner support to improved quality of production and market access.	Promoting climate-friendly agriculture Enhancing community level agriculture productivity Certification system for climate-friendly agriculture products Enhancing value chain of climate-friendly agriculture products	Require finance, technical and human resource and training of smallholder farmers
20	Strengthen framework for sustainable coffee development	- Coffee Action plan agreed by 2022 - Coffee policy by 2023 30% of coffee exports sustainably certified by 2025 60% of coffee exports sustainably certified by 2030	DAL	CCDA, DNPM	$90	PHARMA, PACD, GEF7 FOLUR	Draft Climate Compatible Coffee Strategy developed	Promoting climate-friendly agriculture Enhancing community level agriculture productivity Certification system for climate-friendly agriculture productsEnhancing value chain of climate- friendly agriculture products	Require finance, technical and human resource and training of smallholder farmers

REFERENCES

A. **Papua New Guinea Climate Change and Development Authority. (2022)** *Papua New Guinea First Biennial Update Report to the UNFCCC*. Port Moresby: Climate Change and Development Authority.

B. **Papua New Guinea Climate Change and Development Authority. (2022)** *Papua New Guinea Second Biennial Update Report to the UNFCCC*. Port Moresby: Climate Change and Development Authority.

C. **Papua New Guinea Climate Change and Development Authority. (2021)** *Papua New Guinea Revised Enhanced NDC 2020 Implementation Plan (2021–2030)*. Port Moresby: Climate Change and Development Authority.

D. **Papua New Guinea Climate Change and Development Authority. (2021)** *Papua New Guinea NDC Implementation Roadmap, for Agriculture, Forestry, and Other Land Use (AFOLU) Sector*. Port Moresby: Climate Change and Development Authority.

E. *The Agriculture, Forestry and Other Land Use (AFOLU) Sub-Technical Working Committee, December, 2021, Climate Change and Development Authority (CCDA), Government of Papua New Guinea*

F. *The Agriculture, Forestry and Other Land Use (AFOLU) Sub-Technical Working Committee, June, 2022, Climate Change and Development Authority (CCDA), Government of Papua New Guinea*

G. IPCC of the UNFCCC (2006). UNFCCC Secretarial Bonn, Germany. Retrieved from https://www.ipcc-nggip.iges.or.jp/public/2006gl/ on December 2021.

H. IPCC 2006 GLs VO_Overview_VO_2_Glossary (2006). UNFCCC Secretarial Bonn, Germany. Retrieved from https://www.ipcc-nggip.iges.or.jp/public/2006gl/ on December 2021

I. IPCC 2006 GLs V4_04_Ch4_Forest_Land (2006). UNFCCC Secretarial Bonn, Germany. Retrieved from https://www.ipcc-nggip.iges.or.jp/public/2006gl/ on December 2021.