



Papua New Guinea Revised Enhanced

NDC 2020 Implementation Plan

(2021 – 2030)

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This Revised Enhanced NDC 2020 Implementation Plan 2020-2030 has been developed by the NDC Partnership alongside the Climate Change and Development Authority (CCDA) as part of the Climate Action Enhancement Package (CAEP), which is aimed at fast-tracking support to countries to enhance the quality, increase the ambition, and implement nationally determined contributions (NDCs). The project was supported by the NDC Partnership and its associated donors.

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ADB	Asian Development Bank
AE	Accredited Entity
AFOLU	Agriculture, Forestry and Other Land Use
AOSIS	Alliance of the Small Island Developing States
BRCC	Building Resilience to Climate Change
CBIT	Capacity Building Initiative for Transparency
CCDA	Climate Change and Development Authority
CCMA	Climate Change (Management) Act
CEPA	Conservation and Environment Protection Authority
CRfN	Coalition for Rainforest Nation
CTCN	Climate Technology Center and Network
DAL	Department of Agriculture and Livestock
DFAT	Department of Foreign Affairs and Trade
DHERTS	Department of Higher Education, Research, Science and Technology DNPM Department of Lands and Physical Planning
DLPP	Department of National Planning and Monitoring
DoT	Department of Transport
DPLLGA	Department of Provincial and Local Level Government Affairs
EF	Emission Factor
ESS	Energy Storage System
ETF	Enhanced Transparency Framework
EU	European Union
FAO	The Food and Agriculture Organizations of the United Nations
FRL	Forest Reference Level
GCF	Green Climate Fund
GEF	Global Environment Facility
Gg	Giga gram
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
GoPNG	Government of Papua New Guinea
IFC	International Finance Corporation
IMR	Institute of Medical Research
IRENA	International Renewable Energy Agency
JICA	Japan International Cooperation Agency
KRA	Key Result Area
LULUCF	Land Use, Land-Use Change and Forestry

MTDP	Medium-Term Development Plan
MRV	Measurement, reporting and verification
MW	Mega Watts
NAC	National Airports Corporation
NAP	National Adaptation Plan
NARI	National Agriculture Research Institute
NRI	National Research Institute
NC	National Communication
NCCDMP	National Climate Compatible Development Management Policy
NDA	National Designated Authority
NDC	Nationally Determined Contributions
NDOH	National Department of Health
NEA	National Energy Authority
NEC	National Executive Council
NRS	National REDD+ Strategy
NSLUP	National Sustainable Land Use Policy
NSO	National Statistical Office
PNG	Papua New Guinea
PNGFA	PNG Forest Authority
PPA	Power Purchase Agreement
PPL	PNG Power Limited
PHA	Provincial Health Authority
RBP	Result Based Payment
REDD+	Reducing Emissions from Deforestation and Forest Degradation, and Foster Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks
RFIP REDD+	Finance and Investment Plan
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SNC	Second National Communication
SPREP	The Secretariat of the Pacific Regional Environment Programme
	STaRs Strategy for the Responsible Development for PNG
STWC	Sub-Technical Working Committee
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCM	Voluntary Carbon Market
WHO	World Health Organization

As part of the Papua New Guinea's (PNG) Commitment under the United Nations Framework Convention on Climate Change (UNFCCC), the Government of PNG (GoPNG) has mainstreamed climate change in its development priorities and are captured in the national long-term visions, plans and strategies which includes; PNG Vision 2050, the National Development Strategies Plans 2010 – 2030, and the Medium-Term Development Plan III. The development of the PNG Enhanced NDC 2020 aligns well with the countries national strategies as noted above.

PNG's Revised Enhanced NDC 2020 Implementation Plan is a revised version of the NDC Implementation Plan (2021-2030) which was an Annex to the Enhanced NDC 2020. The Revised Enhanced NDC 2020 Implementation Plan provides a concise framework for the country to achieve its Enhanced NDC 2020 targets. The overall goal for the Revised Enhanced NDC 2020 Implementation Plan is to achieve 50 percent carbon neutrality by 2030 and full carbon neutrality by 2050 and the objective is to reach the mitigation targets and adaptation targets of the Enhanced NDC 2020.

The Revised Enhanced NDC 2020 Implementation Plan seeks to address five key modules: Mitigation; Adaptation; Governance; Finance; and Monitoring and Evaluation.

Mitigation Actions within the Agriculture, Forestry and Other Land Use Sector

The mitigation targets for the AFOLU sector outlined in the Enhanced NDC 2020 include an overall headline target for PNG to transition its AFOLU sector from one with increasing emissions to one of decreasing emissions to support action towards national carbon neutrality. And this will be achieved through:

- GHG Absolute target
 - By 2030, annual net emission from deforestation and forest degradation due to agriculture expansion and commercial logging is reduced by 10,000 Gg CO₂ eq comparing to the 2015 level
- GHG Relative target
 - LULUCF will be converted from net GHG source (1,716 Gg CO₂ eq) in 2015 to net GHG sink (- 8, 284 Gg CO₂ eq) by 2030 to mitigate emissions from other sectors
- Non-GHG Quantitative targets
 - The area of annual deforestation is reduced

- by 25% of 2015 level by 2030 (Equating to a reduction of 8,300 ha of annual deforestation)
- The area of annual deforestation is reduced by 25% of 2015 level by 2030 (Equating to a reduction of 8,300 ha of annual deforestation).
- The area of planted forest and forest restoration is increased

- Non-GHG Action Based targets
 - Enhanced land use planning
 - Promote climate-friendly agriculture
 - Enhancement of timber legality
 - Promoting REDD+
 - Promoting downstream processing
 - Promoting the Painim Graun Planim
 - Diwai initiative and planting 10 million trees initiative

To achieve these targets, the Revised Enhanced NDC 2020 Implementation Plan provides a summary of 20 main action areas with these being divided by key sectors (Forestry, Environment & Conservation, Lands and Agriculture) and into direct action pathways and enabling pathways. More detailed information on the action areas are captured in the PNG NDC Implementation Roadmap for the AFOLU sector.

Mitigation Actions within the Energy Sector

The mitigation targets for the Energy sector outlined in the Enhanced NDC 2020 includes a headline target of Carbon neutrality within the energy industries sector and this will be achieved through:

- Non-GHG Quantitative target
 - Enhance the level of renewables in the energy mix from 30% (2015) to 78% by 2030 for on-grid connection
- Non-GHG Action based target
 - Reduce energy demand through the adoption and implementation of Minimum Energy Performance Standards and Labelling (MEPSL)
 - Establish a framework for fossil fuel emission offsetting
 - Enhance data collection capabilities

To achieve these targets, the Revised Enhanced NDC 2020 Implementation Plan outlines 41 actions to be implemented from 2021 to 2030. In addition to this, there is also an action to be implemented to achieve a potential measure outlined in the Enhanced NDC 2020 under the transport sector.

Adaptation Actions

Under Adaptation the goal is to implement adaptation actions that reduce vulnerability and increase climate resilience and will be achieved through:

- 10% of the total population (0.8 million beneficiaries (25% are women)) have increased resilience with respect to food and water security, health, and well-being in PNG
- 100% of the population benefits from improved health measures to respond to malaria and other climate-sensitive diseases in PNG
- US\$ 1.2 b (PGK 4.2 b) value of transport (air, sea, and land) infrastructure built/rehabilitated according to climate-resilience codes and standards
- 6 million people (70% of the population) benefit from improved early warning systems/information to respond to extreme climate events. US\$ 172m (PGK 608 m) value of building and utility infrastructure assets built/rehabilitated according to climate-resilient codes and standards

The Revised Enhanced NDC 2020 Implementation Plan also lays out actionable adaptation targets that focus on four development sectors: agriculture, health, infrastructure, and transport. PNG has identified 17 action plans with quantifiable targets from all four development sectors and they will be implemented by lead Government agencies and development partners.

Governance

To ensure the effective delivery of Revised Enhanced NDC 2020 Implementation Plan, PNG has taken early action to build on the governance structures established as part of the Enhanced NDC 2020

development process and structures identified within the Climate Change (Management) Act (CCMA) 2015. The Climate Change (Management) (Nationally Determined Contribution Regulations) 2021 takes this process further to provide a regulatory framework for the implementation of PNG's NDCs. Among other things, the regulation provides for the establishment of Technical Advisory Committee and Sub Technical Working Committees; formal recognition of targets contained in the NDC; development implementation plan; Implementation Measures; and Monitoring, Reporting, and Verification.

Finance

As a Small Islands Developing State, PNG will seek access to additional finance to implement the Revised NDC 2020 Implementation Plan. A finance plan for climate action will be developed with support from international partners and will seek to target a range of financing approaches including from Government; Development partners and bilateral support; climate financing mechanisms; result-based finance; and private sector finance.

Monitoring and Evaluation

Monitoring and evaluation of the progress of the Implementation plan will be coordinated through the governance structure. Information on ongoing performance towards action-based targets will be collected through line agencies and implementing partners and provided on a quarterly basis through Sub-Technical Working Committee (STWC) meetings with more detailed information linked to GHG reported collated in line with PNG's reporting commitments to the UNFCCC.



1.1. BACKGROUND OF PAPUA NEW GUINEA IN THE CONTEXT OF CLIMATE CHANGE

Papua New Guinea (PNG) like other small islands developing states is faced with the effects of climate change that has had an impact on the socio-economic development of the country. To combat climate change causes and effects, PNG signed the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and ratified the Convention in 1993. Then in 2016 PNG signed and ratified the Paris Agreement and committed to implementing the Agreement by passing the United Nations Paris Agreement (Implementation) Act 2016 in Parliament.

The Government of PNG (GoPNG) has shown its commitment to fulfilling its obligations under 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 (MTDPIII). 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 GHG emissions.

In 2015 the Climate Change (Management) Act (CCMA) was passed in Parliament which establishes the Climate Change and Development Authority (CCDA) to coordinate climate change related policies and actions in PNG. Since 2015, CCDA has coordinated the preparation and submission of PNG's first Nationally Determined Contribution (NDC), First Biennial Update Report (BUR1) including REDD+ Technical Annex, Forest Reference Level, National REDD+ Strategy (NRS), and the Enhanced NDC 2020 to the UNFCCC. In addition, CCDA has also developed PNG's Sustainable Development Goal (SDG) 13 Climate Change Roadmap which outlines 30 sustainable development actions that the GoPNG will enable by 2030. CCDA is currently developing PNG's National Adaptation Plan.

1.2. OVERVIEW OF PAPUA NEW GUINEA'S ENHANCED NDC 2020

PNG's Enhanced NDC 2020 builds on the first NDC submitted in 2016 and reflects the country's commitment to implementing the Paris Agreement. The Enhanced NDC 2020 provides sector-specific

defined contributions in compliance with Article 4 and 13 of the Paris Agreement. It captures mitigation contributions from the agriculture, forestry, and other land use (AFOLU) and energy sectors which are the largest emitting sectors in PNG. As identified in the First Biennial Update Report (BUR1) submitted in 2019 to the UNFCCC the two sectors contributed a total net emission of 14,318 Gg CO₂ eq from the total 2015 net emission of 15,193 Gg CO₂ eq.

The Enhanced NDC 2020 also includes adaptation actions comprising of tangible and intangible activities that aim to benefit targeted populations. These include smallholder farmers, micro, small, and medium-enterprises in business, community-based organizations, clans, and villages, with particular focus on the most vulnerable groups, including women, children, young persons, the elderly, and people living with disabilities, members of underprivileged or less advanced groups, or residents of less advanced areas.

PNG's Enhanced NDC 2020 is fully conditional and subject to relevant technical and funding support made available by the developed countries through relevant international funding instruments. Some technical support required includes conducting a qualitative assessment to assess the impact of the different proposed mitigation and adaptation actions under the Enhanced NDC Implementation Plan on the Sustainable Development Goals (SDGs). The monitoring, reporting, and verification (MRV) system shall be improved to provide a detailed assessment of the Enhanced NDC 2020 after it has entered the full implementation phase to determine the exact impacts of the actions.

1.3. GOALS, OBJECTIVES, AND SCOPE OF THE REVISED ENHANCED NDC 2020 IMPLEMENTATION PLAN

PNG's Revised Enhanced NDC 2020 Implementation Plan aims to provide a clear and concise framework for implementing the country's agenda to meet its GHG emission reduction targets in the AFOLU and energy sectors and undertake its priority actions for adaptation from 2021 to 2030. It seeks to drive and coordinate support from the international development community, investments from both the public and private sectors, and other actions from other relevant key stakeholders, both domestic and foreign, to help PNG achieve its NDC targets.

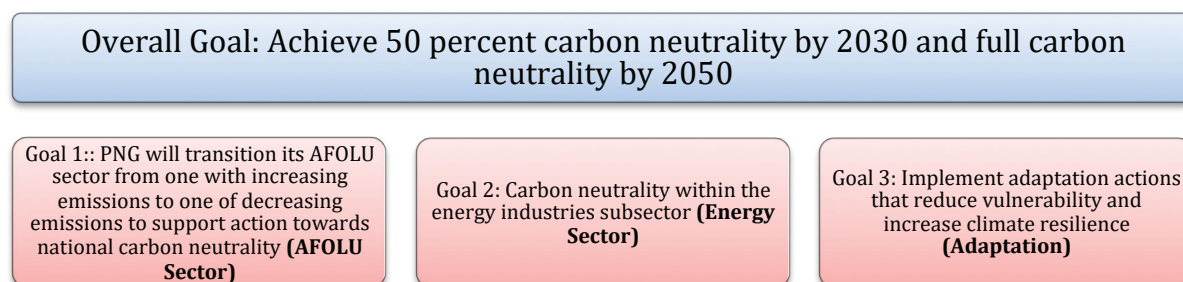


Figure 1: Logical framework of Revised NDC 2020 Implementation Plan

The main objective of the Revised Enhanced NDC 2020 Implementation Plan is to reach the emissions reduction targets and adaptation targets as defined in PNG's Enhanced NDC 2020. The overall goal is to achieve 50 percent carbon neutrality by 2030 and full carbon neutrality by 2050¹. This will be achieved through the following sectoral goals for the Energy, AFOLU, and cross-sectoral outcomes for Adaptation:

- Carbon neutrality within the energy industries subsector by 2030;
- PNG will transition its AFOLU sector from one with increasing emissions to one of decreasing emissions to support action towards national carbon neutrality;
- Implement adaptation actions aimed at reducing vulnerability and building climate resilience across different parts of the country.

For each set of goals, measures identified fall into two categories: (1) those that contribute directly to the achievement of the sectoral mitigation targets and adaptation actions; and (2) those that provide enabling mechanisms for enhanced actions in the next iteration of the NDC.

In determining the necessary actions to be taken, existing national policies, strategies, and plans were taken into consideration in identifying measures to ensure alignment with these existing efforts. A detailed narration is contained in the Enhanced NDC 2020.

1.4. OVERVIEW OF THE REVISED ENHANCED NDC 2020 IMPLEMENTATION PLAN

PNG's Revised Enhanced NDC 2020 Implementation Plan aligns with sectoral policies, plans, and strategies that stakeholders will implement in response to achieve the Enhanced NDC 2020 mitigation contributions and adaptation actions. Different sectoral organizations

have been consulted under the AFOLU sector, the Energy sector, and Adaptation priority areas which include government agencies, private sector, international partners, and Non-Government Organizations (NGOs).

The Revised Enhanced NDC 2020 Implementation Plan seeks to address the five key modules: Mitigation; Adaptation; Governance; Finance; Monitoring and Evaluation. Elements of the Finance module have been incorporated into each of the other four modules.

The Implementation plans for mitigation and adaptation actions in chapters 2, 3, and 4 are designed to clearly outline the activities, and their respective operational elements to guide implementation. The Implementation plans set out the following information:

- the activity/action that will be introduced, or enhanced, relative to the established target;
- the indicators that will be used to track progress during implementation, and for monitoring and evaluation;
- listing of the lead and supporting government agencies;
- timeframes, including the start/end dates for each of the activities; and
- the budget estimates for each activity, and sources of funding, including potential sources of funding.

1.5. ALIGNMENT OF THE REVISED ENHANCED NDC 2020 IMPLEMENTATION PLAN TO NATIONAL POLICIES/STRATEGIES/PLAN

The measures outlined in the Revised Enhanced NDC 2020 Implementation Plan were conceived and selected based on their potential synergies and alignment with existing national strategies, policies, plans, and program. These include the ones outlined in table 1:

¹ Papua New Guinea Sustainable Development Goal 13 Roadmap. 30 by 30

Table 1: Relevance of different national policies, plans, programs and strategies to NDC sectors

National Policies, Plans, Programs and Strategies	Agriculture	Forestry and other land uses	Energy	Adaptation
Vision 2050 (2009)	X	X	X	X
PNG REDD+ Strategy (2017)	X	X		X
Strategic Development Plan 2030 (2009)	X	X	X	X
Strategy for Responsible and Sustainable Development (STARS) (2014)	X	X	X	X
Medium Term Development Plan III (2018)	X	X	X	X
SDG13 Roadmap (2020)	X	X	X	X
National Climate Compatible Development Management Policy (2014)	X	X		X
PNG's Action Plan for Enhanced Transparency Framework on AFOLU and REDD+ National Forest Monitoring System 2021-2025 (2021)	X	X		X
PNG REDD+ Finance and Investment Prospectus (2020)	X	X		X
National Reforestation Policy 2020	X	X		X
Protected Areas Policy (2014)	X	X		X
Protected Areas Policy Implementation Plan	X	X		X
National Food Security Policy (2012 - 2016)	X	X	X	X
National Energy Policy 2017 - 2027			X	X
National Electrification Roll - out - Plan			X	
PNG Power 15 Year Plan			X	

PNG's Revised Enhanced NDC 2020 Implementation Plan sets out a comprehensive package of policies and measures, sectorial targets, and sector-specific actions that are tailored towards meeting defined contributions to addressing climate change through both immediate action and developing the enabling environment and technical capacity for an ongoing process of increased ambition. Specific information on the alignment of sector-specific strategies, policies, and measures are outlined in chapters 2, 3, and 4.

1.6. DEVELOPMENT OF THE ENHANCED NDC 2020 IMPLEMENTATION PLAN AND REVISED VERSION

The Enhanced NDC Implementation 2020 Plan development was done in parallel with the preparation of the Enhanced NDC 2020 as can be seen in figure 2 below. The preparation observed the following steps to ensure that actions, resource requirements, timings, and responsibilities.

A series of stakeholder engagements were carried out in 2020 to identify and incorporate sector policies and plans into the Enhanced NDC Implementation Plan. This included four sub technical working committee meetings, 3 lockdown sessions, one-on-one meetings with key stakeholders, consultation and validation workshops.

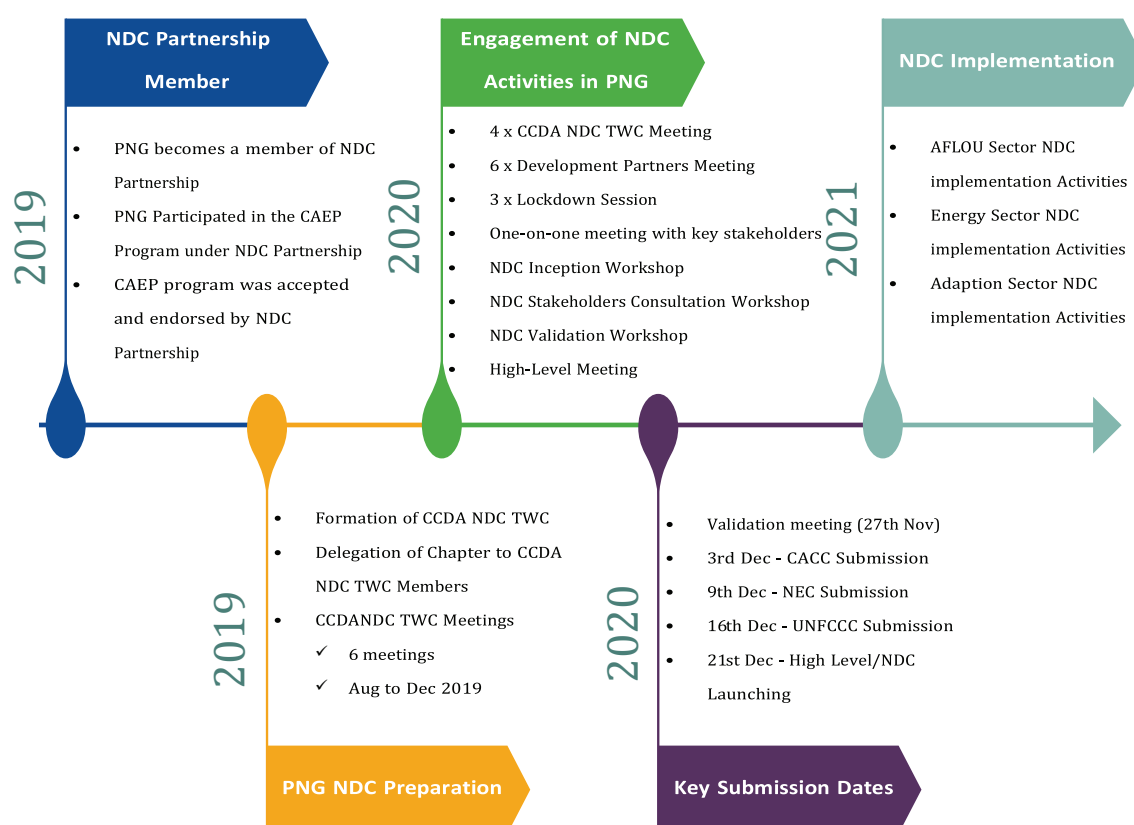


Figure 2: PNG NDC Implementation Preparation and Planning Process.

The development of the Revised Enhanced NDC 2020 Implementation Plan was done in parallel with the development of the AFOLU roadmap and Electricity roadmap. Additional information were identified in a series of stakeholder engagements within the AFOLU and Energy sectors in 2021 which are captured in the revised version. The stakeholder engagement includes one-on-one meetings with key stakeholders, sub technical working committee meetings, lockdown sessions, and consultation and validation workshops.

1.7. STAKEHOLDER ENGAGEMENT AND GENDER MAINSTREAMING PROCESS

The implementation of PNG's Enhanced NDC 2020 requires concerted effort and engagement from a broad range of stakeholders throughout the process. This is essential to secure ownership and buy-in on the targets set in the Enhanced NDC 2020 and the required measures. An inclusive engagement process also considers the voices and expertise of stakeholders involved not only in the implementation but also those that will be benefited or impacted in any way by the actions that will be undertaken based on the Enhanced NDC 2020 Implementation Plan. The implementation of the NDC will pursue a gender-sensitive approach to ensure that differentiated interests, needs, and adaptive capacities of women and men to climate change are properly recognized and addressed.

The Enhanced NDC 2020 Implementation plan has taken account of gender as one of its priorities and incorporated the national development strategies (Vision 2050 and Medium Term Development Strategy) which highlight the importance of gender inclusiveness in the nation's development. Despite PNG has a largely heterogeneous population with most communities being patriarchal and women especially, children and also disabilities, generally suffering as a result of their low status, the PNG Government has taken steps in eradicating this gender bias issues and trying to create a gender-inclusive society. Gender issues have now been captured in most Governmental documents but there are still challenges in the implementation of these approaches.

Gender-sensitive approach or gender programming is very important before undertaking the project in an area. This approach will be taken in all stages of the Project Cycle that is from the project need assessment and analysis to implementation, monitoring, and evaluation. Through the office of CCDA, supporting partners will be encouraged to use a gender lens approach in situation analysis to identify gender-related barriers, and bottlenecks and opportunities where the project is involved. For all barriers and bottlenecks, it will be important to make sure the most marginalized women and girls are identified, including analysis by income, disability, and ethnicity. For the

implementation of the plan, it will start by conducting a desk review and informational interviews such as baseline surveys to understand the barriers, bottlenecks, and opportunities. Once the baseline issues are understood on the gender-related barriers, bottlenecks, and opportunities for high-quality, equitable project/program outcomes, specific to implementing the NDC plans, CCDA and developing partners will be ready to develop creative and evidence-based interventions that achieve project results for all. Through the CCDA and with the support of partners, gender sensitization training can be delivered to all stakeholders, and engaging women in decision-making process before project implementation will increase the participation of women as well as encouraging stakeholders and beneficiaries to see things through a gender lens. The concept is to involve the marginalized citizens to be involved in project implementation for the viability and sustainability of the project in their areas.

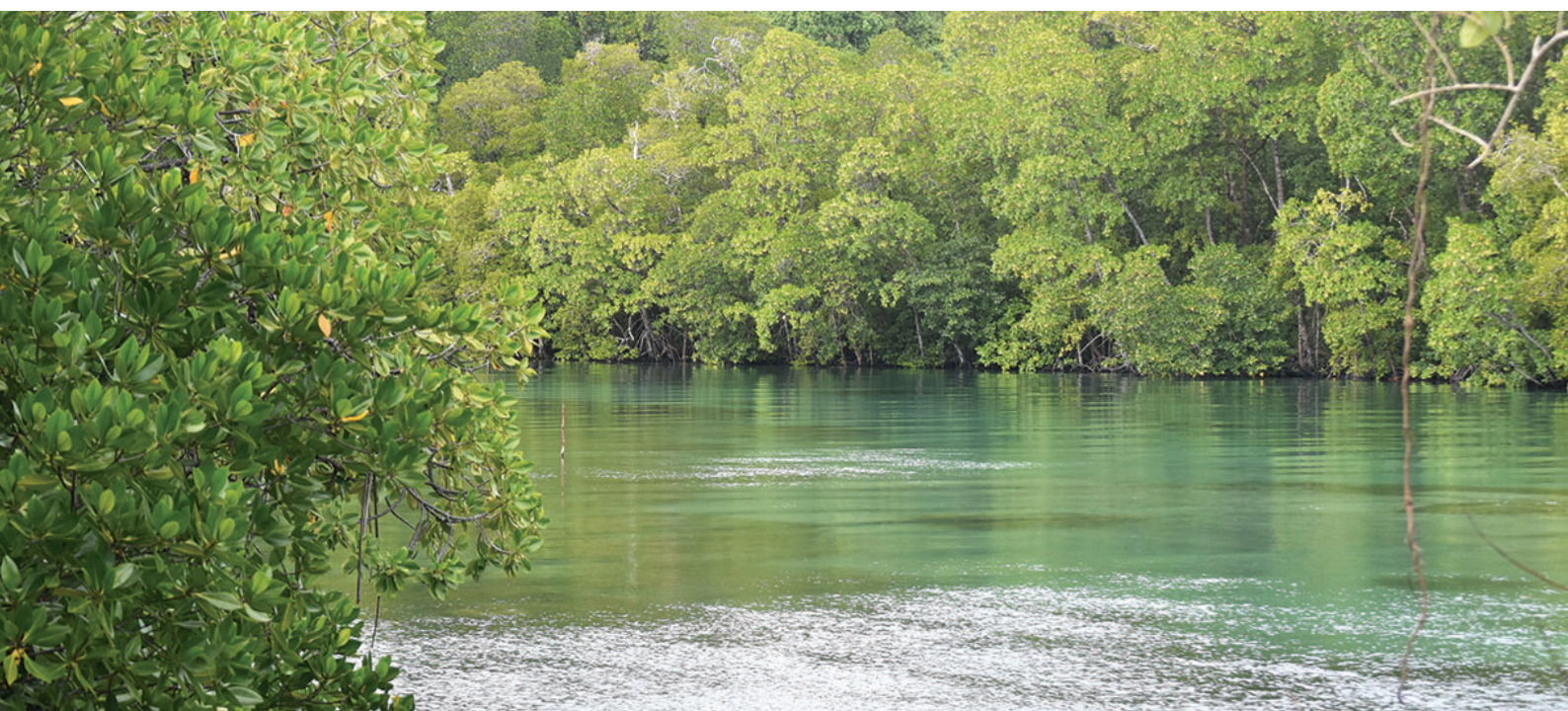
This approach will be mainstreamed in the detailing of on-the-ground actions and identification of intermediaries and beneficiaries for both mitigation and adaptation actions, information dissemination, capacity building, training, and provision of access to finance and other resources. The implementation shall specifically highlight the engagement with a gender perspective to ensure both are completely addressed.

It is also recommended to incorporate the UNFCCC's Gender Action Plan into the assessment. The CCDA will coordinate the overall stakeholder engagement, and sectoral focal points will coordinate stakeholders to their sectors. Stakeholders can be engaged in several ways based on the objective of their involvement as shown in table 2. The NDC commits to ensuring gender-responsive and human rights-based approaches in all related planning, programming, and implementation.

As mentioned, this includes the participation of women, youth, and vulnerable groups in consultations, planning, and decision making in the sectors, as well as to ensure women and youth have opportunities to sustainable low-carbon livelihoods.

Table 2: Stakeholder Engagement and key actors

Stakeholder group and key actors	Area of engagement and expected contributions			
	Governance	Implementation	Monitoring and evaluation	Communication
Government				
National government	X	X	X	X
Local governments	X	X	X	X
Sectoral agencies	X	X	X	X
Donors and development partners	X	X		
Foreign governments (Bilateral donors)	X	X	X	X
UN agencies, international NGOs, NDC Partnership	X	X	X	X
Multilateral development banks		X	X	
Financing mechanisms (GCF, AF, GEF)	X	X	X	
Private sector		X	X	
Local industries		X		
Financial institutions	X	X		
CSOs and People's organizations		X	X	
Women's organizations	X	X	X	X
Farmer's organizations	X	X		X
Research and academe	X	X	X	X



2.1. OVERVIEW OF MITIGATION ACTIONS IN THE AFOLU SECTOR

The AFOLU sector has been identified as one of the most significant contributors of GHG emissions in PNG alongside the Energy sector. Though while a large emitter the sector also provides the highest potential for GHG removal. Within the AFOLU sector, the LULUCF sub-sector accounted for a net emission of -21,654 Gg CO₂ eq in 2000 (thus acting as a net sink) and 1,716 Gg CO₂ eq in 2015 (net source) representing a total decrease of removals of 23,370.40 Gg CO₂ eq (PNG BUR 2019, 35).

PNG's Enhanced NDC 2020 includes for the first time quantitative and specific qualitative targets for the sector with these broken up into:

- GHG - Absolute Targets,
- GHG - Relative Targets,
- Non-GHG Quantitative Targets, and
- Non-GHG Action Based Targets.

Initial work on the development of activities and actions to achieve targets was also undertaken and has fed into the development of the Revised Enhanced NDC 2020 Implementation Plan and AFOLU NDC Implementation Roadmap which provides more detailed information on how targets will be achieved. In all cases, these targets and actions were derived from and intended to support the key government plans/strategies and initiatives within the Forestry, Environment, Lands, and Agriculture sectors.



2.2. GOAL AND TARGETS

The Enhanced NDC sets out targets as shown in Figures 3 below:

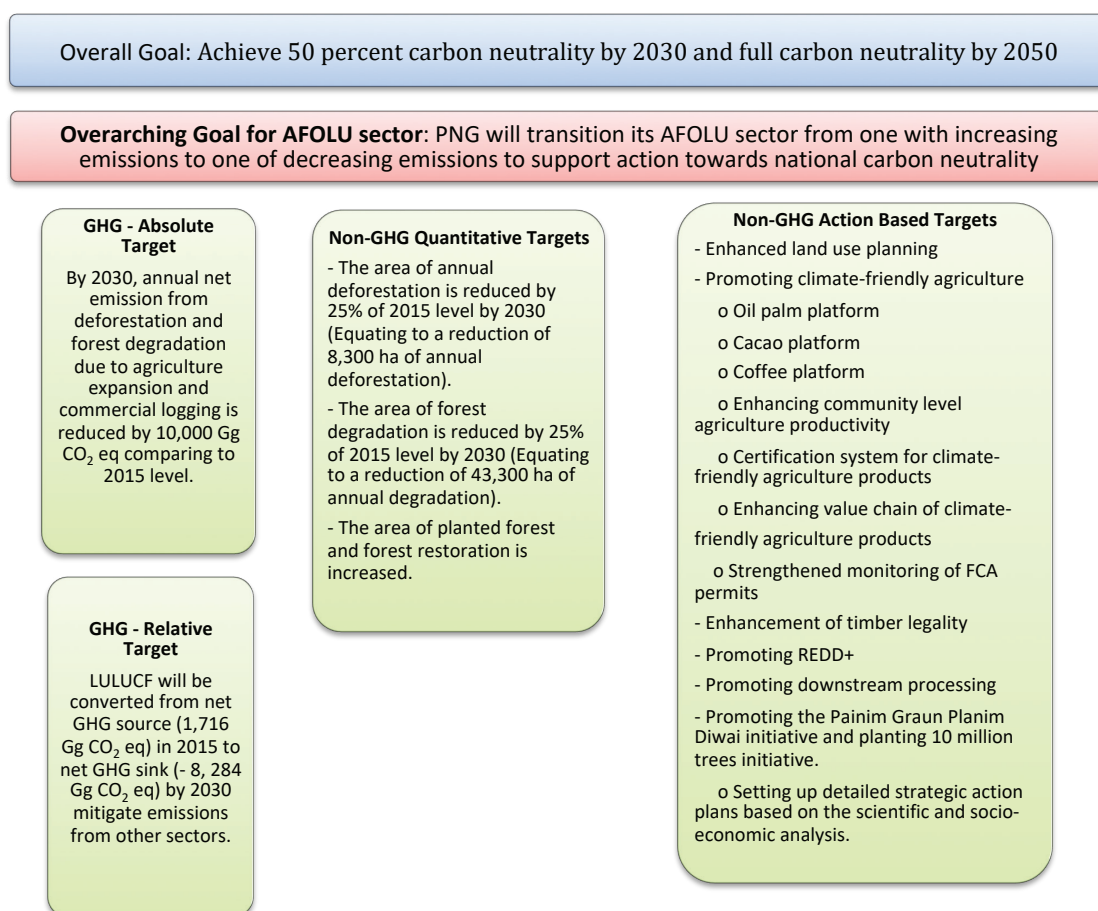


Figure 3: AFOLU sector goal and targets

Activities/actions on improving NDC monitoring in the AFOLU sector:

- Completing National Forest Inventory for:
 - More accurate emissions factor;
 - More accurate post-disturbance forest growth;
 - A better understanding of biodiversity
- Re-vitalizing Permanent Sample Plot for:
 - Understanding the rate of carbon sequestration of regrowth forest;
 - More accurate post-disturbance forest growth;
 - Understanding the carbon sequestration of the primary forest;
 - A better understanding of forest recovery for better forestry planning and policy making.
- Assessment of forest and land use prior to 2000 for:
 - More reliable estimation of GHG removal of forest degradation prior to 2000;
 - Understanding of longer historical trend of forest and land-use change in PNG.
- Improving the monitoring of logging concession for:
 - More precise emission data for logging, which is the far most significant GHG emission source in PNG;
 - Enhancement of timber legality system by implementation of Near-Real-time Deforestation and Degradation Alerts Monitoring System for PNG at relevant government institutions and agencies

The Revised Enhanced NDC 2020 Implementation Plan sets out to provide an overall summary of how these goals and targets will be achieved. The action areas presented are aligned with key government approaches and are outlined in more detail in the PNG NDC Implementation Roadmap, AFOLU sector.

2.3. APPROACH TO ACHIEVING NDC AFOLU TARGETS

The approach to achieving the proposed NDC AFOLU targets as laid out in this document build on key national, sector, and cross-sector strategies and plans and has been developed through a multi-stakeholder process over 12 months.

The actions identified focus on the delivery of the key NDC goals of the AFOLU sector and more specifically only on how the targets of PNG's Enhanced NDC 2020 (which focuses on the LULUCF sector). They target a reduction in levels of emissions as well as action to increase levels of emissions removals (sinks) as currently measured and reported on by PNG. They also consider what improvements in data management and reporting are needed to strengthen PNG's capacity to report on and take action with other areas of the AFOLU sector. It does not include actions linked to targets outside of the LULUCF sector (e.g. emissions from agricultural practices such as fertiliser application or livestock management).

Time Line - The implementation plan covers the 10 years period of PNG's enhanced NDC but is anticipated to be reviewed and updated within 5 years to reflect the ongoing changing context in PNG and globally.

Target Audience - The target audience for the document is the PNG government and development partners who may be seeking to the support implementation of NDC action. While summaries of the document are also expected to be developed for other stakeholder groups including the private sector and landholding communities.

The approach also noted the existing context of PNG's changing emission profile and opportunities for change. Critically this included information from an initial draft update of PNG's LULUCF assessment 2015-2019 which indicated that PNG has already achieved and surpassed its NDC targets – thus the current implementation plan focuses on the consolidation of these targets and progress towards a 40% reduction in emissions against 2015 levels.

2.4. ACTION AREAS - OVERVIEW

Based on this approach and information, and building on the action areas identified within the Enhanced NDC 2020, 20 main action areas were identified with these being divided by key sectors and between direct action pathways and enabling pathways, as noted below and in Figure 4. Further information on each of these action areas is also provided in Table 4 in Section 2.6. on p20.

- *Direct Action Pathways* – focused on Sector-based actions that link to the delivery of emissions reductions and direct changes in the way that land is managed, and
- *Enabling Pathways* – focused on key elements of PNG's climate governance framework that are required to ensure PNG is able to effectively coordinate action, report emissions, and manage finance linked to mitigation actions within the AFOLU sector.



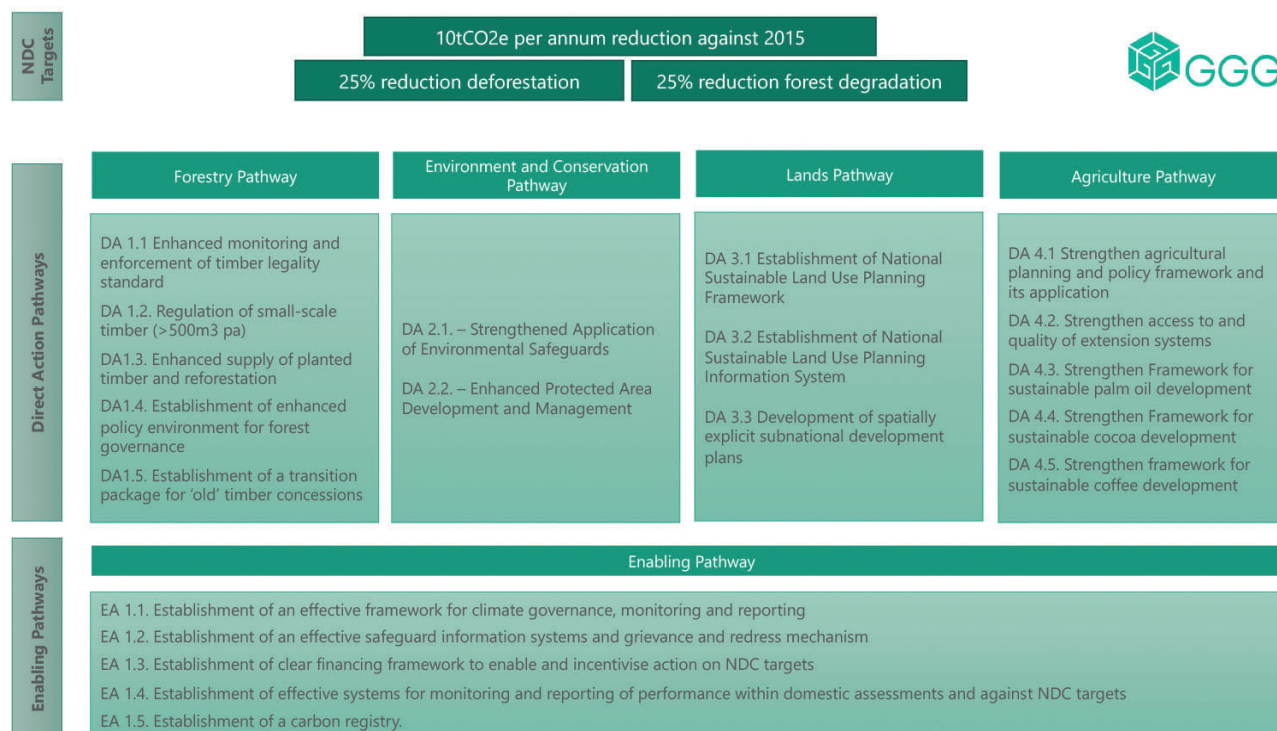


Figure 4: AFOLU sector's 20 main action areas

2.5. POTENTIAL COSTS AND IMPACTS OF PROPOSED ACTIONS

Implementation of these action areas has been identified as:

Costing close to 500 million (USD) to implement over the coming 10 years (although cost estimates vary significantly in some areas and thus aggregate assessments must be treated with caution).

Delivering close to 112,000 Gg of cumulative emission reductions between 2021-2030 against 2015 levels and 20,528 Gg CO₂ of annual emission reductions against 2015 levels by 2030 (a reduction of over 40%)

In addition, it will help to deliver:

- 6.5 million hectares of additional forest under conservation – over 8mha of terrestrial PAs – meeting PNG's targets under the Convention of Biodiversity (Aichi targets)
- 470 threatened species for which habitat has been secured
- 200,000 hectares native forest planted

- USD75 million in sustainable forest products developed
- USD 2 billion plantation stock established
- 50% increase in cocoa and coffee production and increases in palm oil production
- Enhanced unit values of agricultural commodities
- Enhanced food security for rural communities

In line with many of these additional benefits, the proposed action areas also link directly with key PNG development objectives under both domestic and international commitments as well as providing linkages across elements of the NDC – most significantly with those actions identified within the Adaptation section.

Table 3: Summary of key policies and linkage with AFOLU action areas

Stakeholder group and key actors	Link with Key Domestic Policy Documents
Forestry	<p>MTDP3</p> <p>KRA1 – Increased Revenue and Wealth Generation</p> <p>1.2. Increasing value of exports – through increased unit value of timber with higher legality assurance</p> <p>1.3. Creating employment and economic opportunities – through enhanced capacity for forest management as well as tree planting.</p> <p>KRA7 – Promote PNG's Environment Sustainably - Through reducing rates of forest depletion.</p> <p>SDGs</p> <p>13 Climate Action</p> <p>15. Life on Land</p> <p>15.1 Conservation and rehabilitation of forest areas</p> <p>15.2 Sustainable use of forest resources</p> <p>SDG 13 Roadmap</p> <p>Action areas:</p> <p>10. REDD+ Results delivered</p> <p>11. Internationally recognised timber legality standard</p> <p>12. Increased environmental and commercial planting</p> <p>13. Enhanced strategies for secondary forest utilisation</p> <p>14. Enhanced information on Forests National REDD+ Strategy</p> <p>2.3.2.2. Strengthening forest management and enforcement practices</p>
Environment	<p>MTDP3</p> <p>KRA7 – Promote PNG's Environment Sustainably</p> <p>Through actions linked to.</p> <p>KRA7.1 – Promote PNG's Environment Sustainably – through areas being under legal protection and improved permitting</p> <p>KRA7.2 – Manage and reduce the risk of natural disasters – through maintenance of eco-system services.</p> <p>SDGs</p> <p>13 Climate Action</p> <p>15. Life on Land</p> <p>15.1 Conservation and rehabilitation of forest areas</p> <p>15.2 Sustainable use of forest resources</p> <p>SDG 13 Roadmap</p> <p>25. Biodiversity integrated into productive landscapes</p> <p>26. Climate resilient protected areas network</p> <p>National REDD+ Strategy</p> <p>2.3.2.3 Strengthening conservation and environmental management</p>
Lands	<p>MTDP 3</p> <p>KRA1 – Increased Revenue and Wealth Creation</p> <p>Through options for improved mobilisation of land into commercial use</p> <p>SDGs</p> <p>1 - End Poverty in All its forms</p> <p>Through avoidance of displacement of communities from their land</p> <p>National REDD+ Strategy</p> <p>2.1.1 Strengthened land-use and development planning</p>
Agriculture	<p>MTDP3</p> <p>KRA1 – Increased Wealth Creation</p> <ul style="list-style-type: none"> • Value of exports of all commodities • Create more employment • Reduce imports • Create wealth by promoting SME development and direct investments <p>KRA7.2 – Manage and reduce the risk of natural disasters</p> <p>SDGs</p> <p>8. Sustainable and inclusive economic development</p> <p>13. Action on Climate Change</p> <p>15. Zero Hunger</p> <p>SDG 13 Roadmap</p> <p>18. Climate-Resilient Agri-business supply chains</p> <p>19. Climate Compatible Sustainable Palm Oil Sector</p> <p>20. Establishment of national sectors for carbon farming and climate smart agriculture</p> <p>22. targeted extension and support services</p> <p>National REDD+ Strategy</p> <p>2.3.3.1. Development of a sustainable commercial agriculture sector</p>

2.6. ACTION AREA IMPLEMENTATION PLAN FOR AFOLU SECTOR

The below provides a summary of the proposed direct action pathways that will contribute to achieving the NDC targets.

Effective implementation of these pathways is estimated to consolidate PNG's existing progress in emissions reductions, thus ensuring the early achievement of PNG's NDC targets (initial assessments indicate PNG has already achieved its enhanced NDC targets for the AFOLU sector) are made permanent and

that actions further enhance ambition towards a 40% reduction in emission against 2015 levels by 2030. All direct action areas are identified as contributing to the targets of reduced emissions and enhanced removals as well as the 25% reduction in levels of deforestation and forest degradation and increase levels of tree planting. Their links with PNG's Non-GHG Action based targets are also noted in column 9 of the table below.

Further information on all action areas, their potential impacts on emissions, and other environment and development goals as well as costs and implementation approach are included within the AFOLU Roadmap.

Table 4: AFOLU sector action plan

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD millions)	Funding Sources (Existing/Potential)	Existing Progress	Link with NDC Action Based Targets ²	Support needs of implementing agencies
Mitigation activities/actions within the Forestry sector									
DA 1.1.	<i>DA 1.1 Enhanced monitoring and enforcement of timber legality standard</i>	<ul style="list-style-type: none"> - 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.	<ul style="list-style-type: none"> - Strengthen monitoring of FCA permits - Enhanced application of timber legality 	Further support to roll out of legality standard and its monitoring.
DA 1.2	<i>Regulation of small-scale timber (>500m³ pa)</i>	<ul style="list-style-type: none"> - 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 work was done on assessing and reviewing options for small-scale operations. Information needing updating.	<ul style="list-style-type: none"> - Enhancement of timber legality 	Support to early action on assessment
And DA 1.3.	<i>Enhanced supply of planted timber and reforestation</i>	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	<ul style="list-style-type: none"> - Promoting the Painim Graun Planim Diwai initiative 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.	<i>Establishment of enhanced policy environment for forest governance</i>	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Enhancement of timber legality - Promoting REDD+ - Promoting downstream processing 	Support to the policy review.

² See Figure 3 on AFOLU sector's Goal and Targets

Table 4: AFOLU sector action plan (continued)

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD millions)	Funding Sources (Existing/Potential)	Existing Progress	Link with NDC Action Based Targets ¹	Support needs of implementing agencies
DA1.5.	<i>Establishment of a transition package for 'old' timber concessions</i>	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	<ul style="list-style-type: none"> - Enhancement of timber legality - Promoting REDD+ 	Development of an approach for a multi-agency engagement at the sub-national level
Mitigation activities/actions within the Forestry sector									
DA2.1	<i>Strengthened application of environmental safeguards</i>	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	<ul style="list-style-type: none"> - Enhancement of timber legality - Strengthened monitoring of FCA permits - Certification system for climate-friendly agriculture products 	<ul style="list-style-type: none"> - Establishment of an Environmental management information system - Piloting of sub-national monitoring and enforcement of environmental regulations
DA2.2.	<i>Enhance protected area development and management</i>	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Enhanced land use planning - Promoting REDD+ 	<ul style="list-style-type: none"> - Establishment of effective financing system for PAs - Support to gazettelement and full establishment of 10 PAs
		<ul style="list-style-type: none"> - By 2025 Reduction in levels of forest loss within PA by 30% against 2020 levels - By 2030 Reduction in levels of forest loss within PA by 80% against 2020 levels - By 2025 60% PAs included within subnational budgets And <ul style="list-style-type: none"> - \$10m mobilised per annum to support PA management By 2030 100% PAs included within subnational budgets And <ul style="list-style-type: none"> - \$20m mobilised per annum to support PA management 							
Mitigation activities/actions within the Forestry sector									
DA3.1	<i>Establishment of National Sustainable Land Use Planning Framework</i>	<ul style="list-style-type: none"> - 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, DPLGA, DAL, DNPM	\$1.1	GEF7 – FOLUR New Britain GEF7 STAR – Highlands (UNEP and FAO) EU GCCA - Enga	<ul style="list-style-type: none"> - 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) 	<ul style="list-style-type: none"> - Enhanced land use planning 	Establishment of central coordination system for sustainable land use planning that works to bring together existing support linked to land use planning
DA3.2	<i>Establishment of National Sustainable Land Use Planning Information System</i>	<ul style="list-style-type: none"> - Central LU Information system in place by 2025 - The system integrated with systems at the provincial level in four provinces by 2025 - The system with interim links with other sector systems by 2025 - The system fully operational with fully linked with other sector systems by 2030 - System operational within all provinces 	DLPP	DNPM, DPLGA	\$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	<ul style="list-style-type: none"> - Technical support to system design.

Table 4: AFOLU sector action plan (continued)

No	Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Supporting Agencies	Budget (USD millions)	Funding Sources (Existing/Potential)	Existing Progress	Link with NDC Action Based Targets ¹	Support needs of implementing agencies
15	<i>Development of spatially explicit subnational development plans</i>	<ul style="list-style-type: none"> - 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.
Mitigation activities/actions within the Forestry sector									
16	<i>Strengthen agricultural planning and policy framework and its application</i>	<ul style="list-style-type: none"> - 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	<i>Strengthen access to and quality of extension systems</i>	<ul style="list-style-type: none"> - Framework for extension financing agreed and in place. Full financing in place for extension by 2030 - 30% increase in number of the 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 approach to effective financing of extension systems
18	<i>Strengthen Framework for sustainable palm oil development</i>	<ul style="list-style-type: none"> - 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 where 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	<i>Strengthen Framework for sustainable cocoa development</i>	<ul style="list-style-type: none"> - 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	<i>Strengthen framework for sustainable coffee development</i>	<ul style="list-style-type: none"> - 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 products Enhancing value chain of climate-friendly agriculture products	Require finance, technical and human resource and training of smallholder farmers

2.7. SUPPORTING ACTIONS (ENABLING CLIMATE PATHWAYS - EA) WITHIN THE AFOLU SECTOR

To support the delivery of the Direct Action Pathways noted above a number of cross-cutting enabling actions must also be taken that will deliver a clear set of governance, safeguards, grievance and redress, finance and monitoring, and reporting frameworks. As such the Enabling Pathways are divided as shown below (further information on these is provided in the

AFOLU Roadmap). It should also be noted that these pathways link with the information provided in Section 5 on Governance and Section 6 on Finance within the current document and thus while they are presented here as AFOLU specific it is expected that they will form part of and integrate fully with PNG's broader cross-sector climate change response – this approach will also help to reduce costs of implementation within the current sector as well as avoiding duplication of effort.

Table 5: Cross cutting enabling actions of the AFOLU sector

Action or Activity	Targets (2025 and 2030)	Lead Implementing Agencies	Budget (USD millions)	Existing Progress	Link with NDC Actions to improve monitoring and actions on enabling environment	Funding Source	Support needs
EA 1.1. Establishment of an effective framework for climate governance, monitoring and reporting	<i>National NDC Technical Advisory Committee (or other form of Senior level cross sector climate focused coordination body) and supporting framework for climate action and finance decision making established by 2022</i> <i>Climate targets (AFOLU Sector) mainstreamed into MTDP 4 targets for key sector agencies 2024</i>	CCDA / DNPM	1.5	Outline of roles of a committee developed in draft ToR by DNPM and SPC. Requirement for committee noted in PNG Climate Change (NDC) Regulation 2021	NDC Institutional Arrangements and planning	None / GoPNG Potential GCF REDD+ RBP finance	The initial financing of set up and operation
EA 1.2. Establishment of an effective safeguard information systems and grievance and redress mechanism	<i>Safeguard Information system linked to reporting on REDD+ fully operational.</i>	CCDA	1	Work done on Safeguard Information System and plan for improvement through FCPF support to REDD+	Commitment to the application of safeguards as per NDC commitments	None / GoPNG Potential GCF REDD+ RBP finance	Support to further development of the system
EA 1.3. Establishment of clear financing framework to enable and incentivise action on NDC targets	<i>Mobilise \$20m per annum in AFOLU focused climate finance by 2025</i> <i>Mobilise \$50m per year in AFOLU focused climate finance by 2030</i>	CCDA / DNPM / Treasury	1.5	Work on reviewing possible structures and initial action taken to develop a Biodiversity and Climate Fund	Action to mobilise finance	GEF6 Protected Areas Financing Project Potential GCF REDD+ RBP finance	Further support to initial operation of the fund. Initial fund capitalisation
EA 1.4. Strengthening system for GHG measurement and reporting linked to NDC targets and commitments to raised ambition across new sectors.	<i>Submission of PNG's NC and Biennial Update Report in a timely manner and in line with the ETF.</i> <i>Establish enhanced emission factors for PNG's forests and land use change categories – in particular impacts of logging on forest areas.</i>	CCDA / PNGFA	20	Action plan for enhanced monitoring capacity and application of ETF developed.	<ul style="list-style-type: none"> - Completing National Forest Inventory - Re-vitalizing Permanent Sample Plots Assessment of forest and land use prior to 2000 - Improving the monitoring of logging concession 	GCF Registry Development project GEF CEBIT Potential GCF REDD+ RBP finance	Further support to development of the systems and strengthening of their policy application.
EA 1.5. Establishment of a carbon registry.	<i>Structure and prototype registry agreed and operational 2022</i> <i>Initial Registry fully operational 2025</i>	CCDA / PNGFA	2	Work done on development of options for a registry.	Ensuring application of the ETF and transparency of any carbon transactions.	GCF Registry Development project GEF CEBIT Potential GCF REDD+ RBP finance CFRN MoU	Further support to development of systems.

3.1. OVERVIEW OF MITIGATION ACTIONS IN THE ENERGY SECTOR

The Enhanced NDC 2020 outlines three categories of targets as part of the mitigation contributions from the energy sector. These targets were identified, discussed, and approved through a series of stakeholders' consultations for the development of the Enhanced NDC 2020. These categories of targets include a headline target of carbon neutrality within the energy industries sub-sector. And this will be achieved through a Non-GHG quantitative target and 3 Non-GHG Action Based Targets.

3.2. GOAL AND TARGETS

The Enhanced NDC 2020 sets out targets as shown in Figures 5 below:

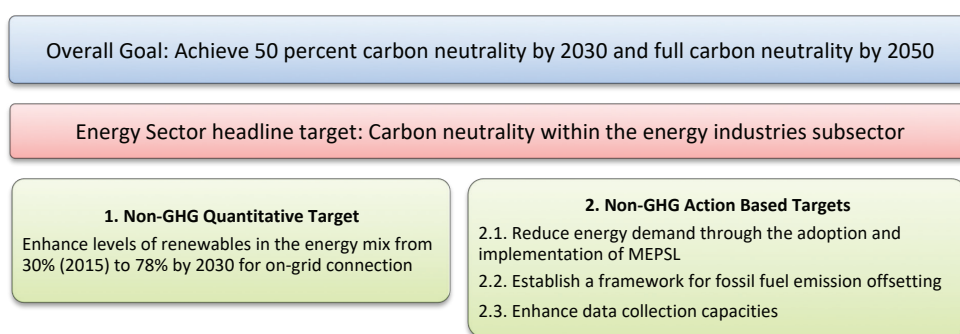


Figure 5: Energy sector Goal and Targets

Approach to achieving Enhanced NDC targets

The following is an overview of the number of activities or projects that will be implemented to achieve the energy sector targets in the Enhanced NDC 2020. Detailed information including timeframe and budget are captured in section 3.2.

1. **Non-GHG Quantitative Target:** Enhance levels of renewables in the energy mix from 30% (2015) to 78% by 2030 for on-grid connection

There are 36 renewable energy projects that will be implemented from 2021 to 2030 to achieve this target. Detailed Information on the pathway for implementing these projects and the enabling environment are captured in the NDC Implementation Roadmap for the Electricity sector. The 36 renewable energy projects are categorized into Planned Projects and Proposed Projects. Planned Projects are projects that are in the final planning stage with possible or secured funding. Proposed Projects are projects that have been identified through preliminary studies and will require funding for further feasibility studies, planning, and development. In addition to the 36 projects, there are two additional activities which include the development of a renewable energy policy and resource mapping for available renewable energy sources.

2. **Non-GHG Action based targets**

2.1. **Reduce energy demand through the adoption and implementation of Minimum Energy Performance Standards and Labeling (MEPSL):** A national energy efficiency roadmap is currently being developed to provide practical guidance and recommendations for the sustainable development of the country's energy efficiency sector. The roadmap proposed EE policies and regulations; management approaches; financing and business models; awareness creation; capacity building; research and development; monitoring, verification, and enforcement; and a framework for the roadmap's implementation.

- 2.2. Establish a framework for fossil fuel emission offsetting:** The activity for this action is to develop an Action Plan by 2024 that will capture detailed activities to achieving this action. This is a newly proposed activity and will require technical assistance.
- 2.3. Enhancing data collection capabilities:** The activity for this action is to develop an energy data collection strategy by 2022. There is ongoing technical assistance provided by development partners to improve the energy data collection including data analysis and GHG estimations.

In addition to the energy sector target activities, there is also an activity to be implemented under one of the potential measures that were identified in the Enhanced NDC 2020. This involves the introduction of electric vehicles. Technical support has been secured from the Climate Technology Centre and Network to assist with the implementation of this activity.

The activities or projects outlined in the implementation plan that will achieve the Enhanced NDC 2020 energy targets are directly linked to key strategies and policies for the energy sector. The table 6 shows the linkage with key domestic strategy and policy documents.

Table 6: Summary of linkage with key strategy and policy documents

Type	Link with Key Domestic Strategies and Policy Documents
Overarching strategy	<p>Papua New Guinea Vision 2050: A framework document that establishes a long-term strategy for the country, outlining seven key strategic focus areas (pillars), including referring to environmental sustainability and climate change.</p> <p>MTDP III: A five-year planning document to support PNG's aims for "inclusive sustainable economic growth", with eight key result areas: increased revenue and wealth creation; quality infrastructure and utilities; sustainable social development; improved law and justice and national security; improved service delivery; improved governance; responsible sustainable development; and sustainable population. Relevant key result areas (KRA) include:</p> <p>KRA7.1 – Promote PNG's Environmental Sustainability</p> <p>KRA7.2 – Adapt to the domestic impacts of climate change and contribute to global efforts to abate GHG emissions.</p>
Climate change focused	<p>National Climate Compatible Development Management Policy (2014): Outlines a framework for climate-resilient and carbon-neutral sustainable economic development.</p> <p>Climate Change Management Act 2015: Currently under review, the CCMA establishes the mandate for CCDA to operate as the national designated authority, coordinating climate change-related activity.</p> <p>BUR 1: Submitted as part of PNG's obligations under the UNFCCC in 2019, it states PNG's emissions profile but does not go into detail on the electricity sector. BUR2 is under development.</p> <p>Sustainable Development Goal 13 Roadmap 2020: Outlines 30 sustainable development actions by 2030, four of which are for energy: 6. Carbon-neutral gas and minerals sector, 7. Renewables-based rural electrification, 8. Resilient, reliable and efficient electricity grids, 9. Energy-efficient government and private sectors.</p>
Energy-focused	<p>National Energy Policy 2017–2027: Aims to ensure affordable, reliable, and accessible provision of energy in a competitive, sustainable, and environmentally friendly way.</p> <p>National Electricity Roll Out Plan (NEROP): Provides a comprehensive scan of least-cost power development options, employing geographic information systems (GIS) mapping, focusing on grid extension and densification, and referencing the role of mini-grids and solar home systems for most difficult-to-access communities. Work is underway to accelerate NEROP implementation; any revised information should feed into ongoing electricity NDC discussions.</p> <p>PNG Power 15-Year Plan: Produced every two years, it outlines planned generation projects and asset retirements, acting as a guide to potential renewable energy projects for implementation. A revised 15-year plan is currently before the PPL Board for approval. Once approved, it should feed into ongoing electricity NDC discussions.</p>
Transport-focused	<p>National Transport Strategy (NTS): The NTS is the Government's policy for the development of the transport sector over the next 20 to 30 years. The strategy outlines the use of sustainable energy in the transport sector.</p>

3.3. IMPLEMENTATION PLAN FOR THE ENERGY SECTOR

The tables below outline the action plan for each of the energy sector targets as well as the potential measure. The tables capture information on the activities or project, lead implementing agencies, timeframe, and funding source including other information. There are five tables which include: i) 1.1 Planned projects; ii) 1.2 Proposed project and iii) 1.3 Additional Activities all of which are action plans for the non-GHG quantitative target; iv) 2.1 Non-GHG Action Based targets action plan, and; v) Potential measures action plan.

Table 7: Non-GHG Quantitative target – Planned Projects

1. Non-GHG Quantitative target: Enhancing levels of renewable in the energy mix from 30% (2015) to 78% by 2030 for on-grid connection										
Indicators										
Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
%	42%	60%	66%	70%	71%	73%	73%	79%	79%	79%
1.1. Planned Projects (Projects in final planning stage with possible or secured funding)										
N o.	Project	Techno-logy	Propo- sed Capac- ity (MW)	Lead Implementin- g Agencies	Supporti- ng Agencies	Year due to be commissi- oned	Timefra- me	Funding Source (Existing/Pote- ntial)	Other Support	Status (ongoing/new proposal)
1	Markham Valley Biomass (PNG Biomass IPP)	Biomass	30	PNG Biomass	Oil Search	2024	Medium-term	Existing	ADB (IFC); DFA T (AUS) ,EU	Ongoing
2	Divune-Popondetta/ Divune HPP	Hydro	3.1	PPL	ADB	2023	Short-term	Existing	GoPNG	Ongoing
3	Samarai	Solar	0.075	PPL	UNDP, CCDA	2022	Short-Term	Existing	GoPNG	Ongoing
4	Naoro Brown	Hydro	80	Independent Power Producer	World Bank	2023	Short-term	Existing	GoPNG	Ongoing
5	Edevu-PNG	Hydro	51	Independent Power Producer	TE PNG; China Gezhouba Group	2023	Short-term	Existing; overseas consortium project is under progress. Aus DFAT may support transmission line work.	GoPNG	Ongoing
6	Ramazon	Hydro	3	PPL	Hydro	2022	Short-Term	ADB (Tranche 2)	GoPNG	Ongoing
7	Baime (IPP)	Hydro	11.6	Independent Power Producer (PNGFP)	SMEC (engineer)	2024	Medium-term	PNGFP		Ongoing
8	Rouna Hydro-additional (R1 & STOD)	Hydro	8	PPL	Dongfang (Engineer)	2021	Short-term	Existing	GoPNG	Ongoing
9	Lower Lake Hargy Hydro (Biala)	Hydro	2	PPL	PPL	2022	Short-Term	ADB (Tranche 2)	GoPNG	Ongoing
10	Ru Creek 2 Hydro (Kimbe)	Hydro	2.5	PPL		2026	Medium-Term	TBC	GoPNG	Ongoing
11	Markham Valley Solar with Battery	Solar	17	PNG Biomass/PPL	AUSAID	2022	Short-term	Existing	European Union	Ongoing
12	Warangoi Rehabilitation	Hydro	10	PPL	ADB (Trench 2)		TBC	Existing	GoPNG	Ongoing
13	Wabag Hydro (Wabag Provincial Gov)	Hydro	12	Wabag Provincial Gov/PPL/Eng a Energy Investment Limited		2023	Short-term	TBC	GoPNG; PPL China (part)	Ongoing
14	Ramu 1 (Refurbishments)	Hydro	17	PPL	AUS DFAT; WBG	2023	Medium-term	Existing	Aus DFAT	Ongoing
15	Ramu 2	Hydro	180	PPL	Shenzen Hydro	2028	Long-term	Existing	Chinese Consortium m,	New proposal

Table 8: Non-GHG Quantitative target – Proposed Projects

1. Non-GHG Quantitative target: Enhancing levels of renewable in the energy mix from 30% (2015) to 78% by 2030 for on-grid connection											
Indicators											
	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	%	42%	60%	66%	70%	71%	73%	73%	79%	79%	79%
1.2. Proposed Projects (Projects that will require funding)											
No.	Project	Technology	Proposed Capacity (MW)	Location/System	Lead Implementing Agencies	Supporting Agencies	Proposed Timeframe for implementation	Timeframe description	Proposed Budget (Million USD)	Type of Funding	Funding Source (Existing/Potential)
1	Kerema Solar PV + ESS	Solar	1.5	Gulf/Kerema	PPL	NEA/CCDA	2022-2024	Short-Term	1.9	Not Identified	Potential
2	Alotau Solar PV + ESS	Solar	1.5	Milne Bay/Alotau	PPL	NEA/CCDA	2022-2024	Medium-term	1.9	Not Identified	Potential
3	Daru Solar PV + ESS	Solar	1.5	Western Province/Daru	PPL	NEA/CCDA	2024-2026	Medium-term	1.9	Not Identified	Potential
4	Manus Solar PV + ESS	Solar	1.5	Manus/Lorengau	PPL	NEA/CCDA	2022-2024	Short-term	1.9	Not Identified	Potential
5	Alotau Solar PV + ESS	Solar	1	Milne Bay/Alotau	PPL	NEA/CCDA	2023-2026	Short-term	1.4	Not Identified	Potential
6	Saussia Solar PV + ESS	Solar	10	East Sepik/Wewak	PPL	NEA/CCDA	2022-2024	Short-term	12.9	Not Identified	Potential
7	Aitape Solar PV + ESS	Solar	0.4	West Sepik/Aitape	PPL	NEA/CCDA	2022-2023	Short-term	0.5	Not Identified	Potential
8	Fincshafen Solar + ESS	Solar	0.45	Morobe/Fincshafen	PPL	NEA/CCDA	2024-2026	Medium-term	0.6	Not Identified	Potential
9	Kavieng Solar and + ESS	Solar	1.5	New Ireland/Kavieng	PPL	NEA/CCDA	2023-2025	Medium-term	1.9	Not Identified	Potential
10	Maprik Solar + ESS	Solar	0.2	East Sepik/Wewak	PPL	NEA/CCDA	2022-2024	Short-term	0.3	Not Identified	Potential
11	Murua Hydro	Hydro	3	Gulf/Kerema	PPL	NEA/CCDA	2025-2028	Long-term	15.3	Not Identified	Potential
12	Gumini Hydro	Hydro	1.5	Milne Bay/Alotau	PPL	NEA/CCDA	2023-2026	Medium-term	2.9	Not Identified	Potential
13	Damar/Mabam	Hydro	3	East Sepik/Wewak	PPL	NEA/CCDA	2025-2028	Long-term	15.3	Not Identified	Potential
14	Daundo Hydro	Hydro	1.5	West Sepik/Vanimo	PPL	NEA/CCDA	2025-2028	Long-term	2.9	Not Identified	Potential
15	Lawes Hydro	Hydro	2	Manus/Lorengau	PPL	NEA/CCDA	2025-2028	Long-term	5.7	Not Identified	Potential
16	Kereu 1 Hydro	Hydro	0.6	AROB/Arawa	PPL	NEA/CCDA	2022-2025	Medium-term	1.1	Not Identified	Potential
17	Butaweng Hydro	Hydro	0.2	Morobe/Fincshafen	PPL	NEA/CCDA	2024-2026	Medium-term	0.4	Not Identified	Potential
18	Kimadan Hydro	Hydro	1.5	New Ireland/Kavieng	PPL	NEA/CCDA	2025-2027	Long-term	2.9	Not Identified	Potential
19	Sohun Hydro	Hydro	0.3	New Ireland/Kavieng	PPL	NEA/CCDA	2023-2025	Long-term	0.6	Not Identified	Potential
20	Mavelo	Hydro	10	East New Britain/Gazelle	PPL	NEA/CCDA	2025-2029	Long-term	19.2	Not Identified	Potential
21	Kavieng biomass plant (PPA has been signed)	Biomass	2	New Ireland/Kavieng	Private Investment (Independent Power Producer)	NEA/CCDA/PPL	2026-2030	Long-term		Not Identified	Potential

Table 9: Non-GHG Quantitative target - Additional Activities

1. Non-GHG Quantitative target: Enhancing levels of renewable in the energy mix from 30% (2015) to 78% by 2030 for on-grid connection Indicators										
Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
%	42%	60%	66%	70%	71%	73%	73%	79%	79%	79%

1.2. Additional Activities										
No	Activity	Objective	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Timeframe	Budget (Million USD)	Funding Source (Potential)	Other Support	
1	Development Renewable Energy Policy	To provide an enabling framework for renewable energy development	New Proposal to develop an overall renewable energy policy. Although there is ongoing work on developing a Solar Energy Policy supported by UNDP	NEA	PPL/CC DA	2022-2023	Need scoping to verify budget	Donor Funding/Annual National Budget	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer	
2	Resource mapping for potential renewable energy sources	Map out potential renewable energy sources to achieving the vision 2050 target which is to generate electricity from 100% renewables	New Proposal	NEA	PPL/CC DA	2022-2025	Need scoping to verify budget	Donor Funding/Annual National Budget	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer	



Table 10: Non-GHG Action Based Targets Action Plan.

2. Non-GHG Action Based Targets									
No	Activity	Objective	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Timeframe	Budget (Million USD)	Funding Source (Potential)	Other Support
2.1.Reduce electricity demand through the adoption and implementation of Minimum Energy Performance Standards and Labeling (MEPSL)									
1	National Energy Efficiency roadmap	Energy Efficiency roadmap design and implementation	Ongoing	NEA/CCDA	UNDP (FREAGER Project) /GreenMax Capital Advisors	2018-2021	Budget determined by the scope of support	GEF	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer
2.2. Establish a framework for fossil fuel emission offsetting									
1	Development of an Action Plan	To identify detailed activities that will be implemented to establish a framework for fossil fuel emission offsetting	New Proposal	CCDA	NEA/PNG FA	2022-2024	Need scoping to verify budget	Donor Funding/Annual National Budget	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer
2.3. Enhance data collection capabilities									
1	Development of energy data collection strategy	To address gaps, challenges and capacity building needs to improve energy data collection	New Proposal	CCDA/NEA/ES TWC members	GIZ/IREN A	2022		Donor Funding/Annual National Budget	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer

Table 11: Potential Measure Action Plan.

No	Activity	Objective	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Timeframe	Budget (Million USD)	Funding Source (Potential)	Other Support
3.1. Encourage the introduction of electric vehicles									
1	Green Transport E-Mobility Policy for PNG	The E-Mobility Policy will enable the development and implementation of electric vehicles in PNG	New Proposal	DoT	CCDA/NEA/DHERTS	2022 - 2030	Budget will be determined as per the scope of support determined by Climate Technology Center and Network (CTCN)	Donor Funding (CTCN)	<input type="checkbox"/> Capacity Building <input type="checkbox"/> Technology transfer

4.1. OVERVIEW OF ADAPTATION IN PNG

Adaptation is integral as it addresses PNG's vulnerability to climate related hazards and is highlighted in national dialogues, political commitments and national key documents. Nine adaptation priorities have been identified and prioritized, these are: Coastal Flooding and Sea Level Rise; Inland Flooding; Food Insecurity; Cities and Climate Change; Climate Induced Migration; Damage to Coral Reefs; Malaria and Vector Borne Diseases; Water and Sanitation; Cities and Climate Change; and Landslides.

The recently endorsed PNG's Revised Enhanced NDC emphasizes on four key development sectors, influenced by the nine adaptation priority areas. These key development sectors are: Agriculture, Health, Transport and Infrastructure. PNG's National Adaptation Plan (NAP) will constitute a national adaptation operational and governance framework that sets out the national strategy to reduce the vulnerability of the country to address the anticipated impacts of climate change, provide a structured programme of action on adaptation across different sectors and levels of government, and the policy, institutional and coordination frameworks to enable adaptation actions in achievement of PNG's CCA priorities. It will also establish specific sectoral adaptation plans to adequately address the Adaptation sector specific targets within the NDC

4.2. GOAL AND TARGETS

Overall Goal: Achieve 50 percent carbon neutrality by 2030 and full carbon neutrality by 2050

Goal 3: Implement adaptation actions that reduce vulnerability and increase climate resilience

10% of total population (0.8 million beneficiaries (25% are women)) have increased resilience with respect to food and water security, health and well-being in PNG

100% of the population benefits from improved health measures to respond to malaria and other climate-sensitive diseases in PNG

US\$ 1.2 b (PGK 4.2 b) value of transport (air, sea and land) infrastructure built/rehabilitated according to climate-resilience codes and standards

6 million people (70% of the population) benefit from improved early warning systems/information to respond to extreme climate events
US\$ 172m (PGK 608 m) value of building and utility infrastructure assets built/rehabilitated according to climate-resilient codes and standards

Figure 6: Adaptation Goal and Targets

4.3. IMPLEMENTATION PLAN FOR ADAPTATION PRIORITIES

The NDC Implementation Plan focuses on the four (4) National Adaptation Plan (NAP) priority development sectors that are influenced by the 9 adaptation priority areas. These development sectors are Agriculture, Health, Infrastructure, and Transport. The adaptation targets are measured against beneficiaries for the agriculture and health sectors, and the value and number of assets for the transport and infrastructure sector.

Table 12: Adaptation action plan

Action or Activity	Indicator	Status (ongoing/new proposal), and previous reference s	Lead Implementing Agencies	Supporting Agencies	Start Date	Timeframe/ End Date	Budget (USD)	Funding Source (Existing/Potential)	Other Support
Priority Sector: Agriculture									
Quantifiable Targets: By 2030, 10% of the total population (0.8 million beneficiaries (25% are women)) have increased resilience of food and water security, health and well-being in PNG.									
Application of Sustainable Agriculture Practices (ASAP) for Smallholder Farmers in the Southern Region (Western, Central and Milne Bay Province)	By 2025, at least 20% of total beneficiaries of 163,000 have increased capacity to apply climate-resilient farming practices	Green Climate Fund (GCF) Simplified Approval Process Concept Note	Department of Agriculture and Livestock (DAL)	Accredited Entity (AE): Global Green Growth Institute (GGGI)	2022	Dec 2022 – Nov 2027	10,000,000	Existing: GCF, GGGI, GoPNG Potential:	NDA supported. Require international support
Climate Resilient Agriculture for Farmers and Agricultural SMEs in Vulnerable Regions of Papua New Guinea,	By 2025, at least 63,000 beneficiaries (20% are women) have improved capacity to implement climate resilient agricultural practices	GCF Simplified Approval Process Concept Note	DAL	AE: Food and Agriculture Organization (FAO)	2022	Jun 2022 – May 2029	12,000,000	Existing: GCF, FAO, GoPNG Potential:	NDA supported. Require technical and partnership support
PNG Agriculture Commercialization and Diversification Project, World Bank, \$40m (PGK136m), targeted beneficiaries: 20000	By 2025, at least 50% of direct beneficiaries have applied commercial and diversification planning in their agriculture business	Project approved 2020	DAL	World Bank	2020	April 2020 – December 2025	40,000,000	World Bank	Support committed
STREIT, EU 85m Euros, target beneficiaries: 250,000+ (25% are women) (July 2020, Issue No. 3)	By 2025, at least 20% of beneficiaries (20% are women) have increased capacity to conduct agriculture business	Ongoing	DAL	FAO, UNDP, UNCDF, UN Women, DNPM, NFA, Cocoa Board, Spice Board, Provincial governments in the Momase region.	Ongoing	Ongoing - 2025	340,000,000	European Union	Support committed
Priority sector: Health									
Quantifiable Target: By 2030, 100% of the population benefit from introduced health measures to respond to malaria and other climate-sensitive diseases in PNG.									
Improve vector control measures, with a priority of all households	By 2025, at least 95% of PNGs households with at least one LLIN Proportion of children <5years	Ongoing	NDOH	PNG Institute of Medical Research (IMR),	Ongoing	Ongoing	-	Existing: GoPNG, WHO, The Global Fund Potential:	Require resource support (financial, technical) and capacity

Table 12: Adaptation action plan (continued)

Action or Activity	Indicator	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Start Date	Timeframe/ End Date	Budget (USD)	Funding Source (Existing/Potential)	Other Support
having access to a long-lasting insecticidal net (LLIN).	sleeping under insecticide treated nets (%)			Provincial Health Authority (PHA)					support
Maximize access to prompt quality diagnosis and appropriate treatment for malaria.	Proportion of children <5 years with fever received treatment with antimalarial drugs (%)	Ongoing	NDOH	IMR, PHA, WHO	Ongoing	Ongoing	-	Existing: GoPNG, WHO, The Global Fund Potential:	Require resource support (financial, technical) and capacity support
Maintain high coverage of LLINs and increase the utilization of appropriate malaria prevention measures.	By 2025, at least 85% of [people/children<5/pregnant women] who slept under an LLIN the previous night By 2025, at least 80% of districts have access to affordable WHOPES approved LLINs through retailer outlets.	Ongoing	NDOH	IMR, PHA, WHO	Ongoing	Ongoing	-	Existing: GoPNG, WHO, The Global Fund Potential:	Require resource support (financial, technical) and capacity support
Strengthen malaria program management at all levels with district level as priority.	By 2025, 90% of District Activity Implementation Plans (DAIP) with Malaria Control Act and funding allocated	Ongoing	NDOH	IMR, PHA, WHO	Ongoing	Ongoing	-	Existing: GoPNG, WHO, The Global Fund Potential:	Require resource support (financial, technical) and capacity support
Strengthen malaria advocacy, communication, and social mobilization.	By 2025, at least 80% of mothers and caregivers in home managed malaria (HMM) and Integrated Community-based Case Management (iCCM) villages aware of diagnostic and treatment services available from trained volunteers. Percentage of eligible villages with HMM/iCCM services	Ongoing	NDOH	IMR, PHA, WHO	Ongoing	Ongoing	-	Existing: GoPNG, WHO, The Global Fund Potential:	Require resource support (financial, technical) and capacity support
Priority sector: Transport									
Quantifiable Target: By 2030, US\$1.2b (PGK 4.2b) value of transport infrastructure and assets built / rehabilitated according to climate resilient codes and standards.									
Quantifiable Target for Air Transport: By 2030, US\$90m (PGK 320m) value of 16 airports rehabilitated to international and climate resilient standards.									
Design and/or manage the rehabilitation of airports to international and climate resilient standards in partnership with	Number of airports rehabilitated to international and climate resilient standards. Number of laws, policies, strategies, plans or regulations addressing climate change (mitigation or	Ongoing	NAC	DNPM	Ongoing	2021-2030	90,000,000	Existing: GoPNG NAC Potential:	Require technical advisory and funding support

Table 12: Adaptation action plan (continued)

Action or Activity	Indicator	Status (ongoing/new proposal), and previous reference s	Lead Implementing Agencies	Supporting Agencies	Start Date	Timeframe/ End Date	Budget (USD)	Funding Source (Existing/Potential)	Other Support
development partners	adaptation) officially proposed, adopted, or implemented.								
Quantifiable Target for Sea Transport: By 2030, US\$85m (PGK 302m) value of 4 wharves rehabilitated according to climate resilient codes.									
Design and/or management of the 4 wharves in partnership with development partners	GoPNG design and implement at least 2 wharves.	Ongoing	PNG Ports Authority	DNPM	Ongoing	2021-2030	85,000,000	Existing: GoPNG PNG PA ADB BRCC Potential: ADB	Require capacity and funding resource support
Incorporate climate change adaptation goals into National Ports policies and support policy implementation	Number of laws, policies, strategies, plans or regulations addressing climate change (mitigation or adaptation) officially proposed, adopted, or implemented.	Ongoing	PNG Ports Authority	ADB BRCC, DNPM, UNDP	Ongoing	2021-2030	-	Existing: GoPNG PNG PA ADB UNDP Potential: ADB	Require human capacity and resource support for implementation
Quantifiable Target for Land Transport (Green transport): By 2030, US\$20m (PGK 6m) value of low-emissions public transport services and infrastructure in urban centers in PNG									
PNG green energy transport project. Objectives: Green Transport Action Plan linked to Medium Term Transport Plan III, Electrified bus rapid transit systems in urban centers and climate-resilient supporting infrastructure, Implementation of pilot projects in Port Moresby and Lae	Draft Green Transport Action Plan Feasibility studies conducted for electrified bus rapid transit systems in urban centers and climate-resilient supporting infrastructure (such as flood proofing of bus stops)	Project idea: Country Programme pipeline	Department of Transport (DoT)	DoW, CCDA, CEPA, DNPM AE: tbc	TBC	TBC	20,000,000	GCF	Requires Accredited Entity support
Quantifiable Target for Land Transport (National roads): By 2030, US\$907m (PGK 3.2b) value of 2,838 km of national roads built / rehabilitated according to climate resilient codes.									
National roads built to climate resilient codes and standards	Kilometers of national roads built / rehabilitated to climate resilient codes	Ongoing	Department of Works and Implementation (DoW)	DNPM, ADB, WB	Ongoing	2021-2030	907,000,000	Existing: GoPNG PNG PA ADB	Require human capacity, technology and resource support for

Table 12: Adaptation action plan (continued)

Action or Activity	Indicator	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Start Date	Timeframe/ End Date	Budget (USD)	Funding Source (Existing/Potential)	Other Support
	Number of climate resilient codes and standards policy addressing climate change proposed, adopted and applied to national road projects Number of national road projects adopting climate resilient codes and standards in management							UNDP Potential: ADB	application, monitoring of climate resilient codes and standards
Quantifiable Target for Land Transport (Bridges and culverts): By 2030, US\$104m (PGK 370m) value of 2,171 bridges and culverts built / rehabilitated according to climate resilient codes.									
Bridges and culverts built to climate resilient codes and standards	Number of bridges and culverts built / rehabilitated to climate resilient codes Number of climate resilient codes and standards policy addressing climate change proposed, adopted and applied to bridge and culvert projects Number of culvert and bridge projects adopting climate resilient codes and standards in management	Ongoing	Department of Works and Implementation (DoW)	DNPM, ADB, WB	Ongoing	2021-2030	104,000,000	Existing: GoPNG ADB Potential: ADB World Bank DFAT Australia New Zealand USAID China	Require human capacity, technology and resource support for application, monitoring of climate resilient codes and standards
Priority sector: Infrastructure									
Quantifiable Target 1: By 2030, US\$172m (PGK 608m) value of building and utility infrastructure assets built / rehabilitated according to climate resilient codes and standards.									
Quantifiable Target 2: By 2030, 6 million people (70% of population) benefit from improved early warning information to respond to climate extremes.									
Infrastructure: Early Warning Systems									
Quantifiable Target 1: By 2030, US\$48.9m (PGK 173m) value of early warning system assets built / rehabilitated according to climate resilient codes.									
Quantifiable Target 2: By 2030, 6 million people (70% of population) benefit from improved early warning information to respond to climate extremes.									
Enhancing Adaptation and Resilience Through Impact-Based Forecasting and End-to-End Early	Number of beneficiaries in Highlands, riverine and coastal communities benefiting from early warning information.	SAP Concept Note (2020)	National Weather Service (NWS)	FAO	2023	2027	10,000,000	Existing: GCF SAP, FAO, GoPNG Potential:	Require development partner support

Table 12: Adaptation action plan (continued)

Action or Activity	Indicator	Status (ongoing/new proposal), and previous references	Lead Implementing Agencies	Supporting Agencies	Start Date	Timeframe/ End Date	Budget (USD)	Funding Source (Existing/Potential)	Other Support
Warning (EARTH)	Early warning system assets built / rehabilitated according to climate resilient codes (USD, million)								
Infrastructure – Health Quantifiable Target: By 2030, US\$123m (PGK 435m) value of Community Health Posts built / rehabilitated according to climate resilient code requirements.									
Rehabilitate and refurbish priority health infrastructure identified to meet the National Health Service Standards	<p>Climate change incorporated into National Health Service Standards</p> <p>Number of Community Health Posts constructed to meet climate resilient standards and are fully operational</p> <p>Number of Climate Health programs introduced at Ward level</p>	Ongoing	NDOH	PHA, WHO	2020	2020-2030	123,000,000	<p>Existing:</p> <p>GoPNG, WHO, The Global Fund</p> <p>Potential:</p> <p>The Global Fund</p> <p>Potential:</p>	Require resource support (financial, technical) and capacity support



5.1. GOVERNANCE AND COORDINATION

To ensure effective delivery of PNG's Enhanced NDC 2020 targets and the actions identified within this implementation plan and supporting sector Roadmaps and National Adaptation Plan it is essential that an effective climate governance framework is place.

PNG has taken early action to establish this and build on the governance structures established as part of the Enhanced NDC 2020 development process and structures identified within the CCMA (2015). **PNG's Climate Change (Management) (Nationally Determined Contribution) Regulation 2021** takes this process further and mandates the formal establishment of a Climate Change Management Technical Advisory Committee that will operate at the Managing Director's level and have representatives from across government as well as key non-government representatives.

This body will act as a senior level body for coordination and decision making on climate action. Its work will be

supported by CCDA as the secretariat as well as multi-agency and stakeholder, sector-based sub-technical working committees (these structures were used for Energy and AFOLU for NDC and their respective Roadmap development) that will help coordinate action in line with this Implementation Plan and the relevant Roadmaps. These bodies will also work closely with other existing and emerging sector and issue-based multi-stakeholder bodies such as the REDD+ Technical Working Committee, with the membership of the TAC and STWC's also including representatives of relevant sector agencies and other key partners in the private sector and civil society. This overall structure is shown in Figure 7 below. It also links with the internal CCDA structures as shown in Figure 8.

These mechanisms will be continuously reviewed and improved to ensure PNG NDC-related legal and institutional frameworks are effective. The Government will also strive to ensure that the NDC implementation process is consultative and representative, involving all of the country's stakeholders.

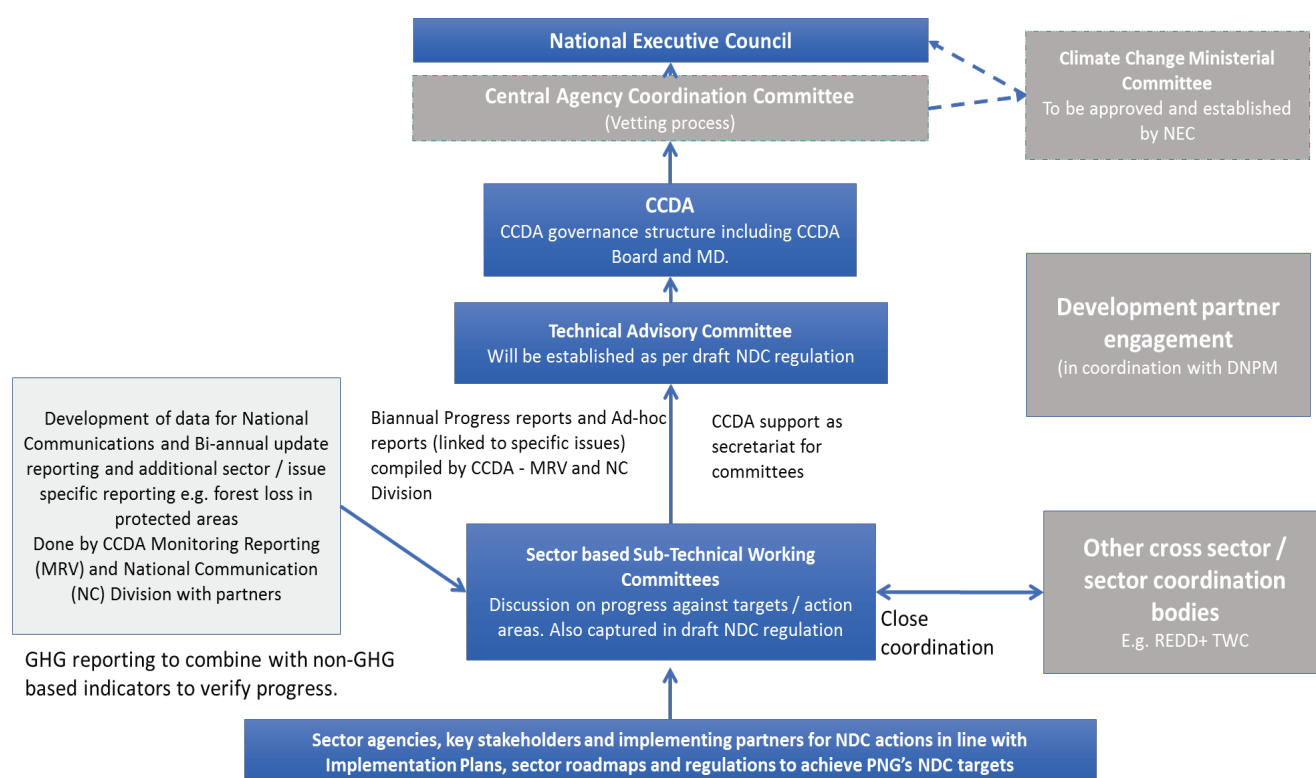


Figure 7: The Governance Structure

This structure is in line with the relevant mandates of different bodies outlined within the CCMA as well as other relevant legislation. The proposed roles and responsibilities of these bodies as well as those of other key agencies are summarized in Table 12.

Table 12: Summary of roles and functions of different institutions involved in governing the NDC implementation in PNG.

Agencies/ organizations	Description and mandate	Relevant roles in NDC implementation
National Executive Council	<ul style="list-style-type: none"> • Most senior level of government decision making, chaired by Prime Minister and attended by senior government ministers. • Responsible for approving legislation, government budgets and other high level decisions. 	<ul style="list-style-type: none"> • Endorse the GoPNG NDC Targets and its activities and actions to reach the target goal
Central Agency Coordination Committee (CACC)	<ul style="list-style-type: none"> • Clears and ensure all documentation to NEC are in order 	<ul style="list-style-type: none"> • Endorse all Documentation to NEC
Climate Change Ministerial Committee	<ul style="list-style-type: none"> • Senior level (Ministerial) coordination and decision making body for climate action • Approve climate change actions, ensure coordination across sectors and present proposals to NEC for final decision. 	<ul style="list-style-type: none"> • Endorse sectorial activities and provide support for implementation • Ensure close coordination across sectors and maintain PNG's coherent approach to climate action.
CCDA	<ul style="list-style-type: none"> • Focal point for PNG action on Climate Change • Reporting to UNFCCC • Support Government coordination and act as facilitator and secretariat to key climate related bodies (Ministerial Committee, TAC and STWCs) • Provision of technical support on climate change issues to all government bodies and private sector • Monitoring and evaluation of PNG's emissions and action on adaption 	<ul style="list-style-type: none"> • Communicates and coordinates actions to achieve outcomes and activities outlined in the implementation plan • Ensures relevant MRV data needs are conveyed with the appropriate government agencies • Review and amend the Implementation Plan as deemed necessary • Secretariat/overall NDC implementation coordination
Technical Advisory Council	<ul style="list-style-type: none"> • Department level coordination and decision making 	<ul style="list-style-type: none"> • Provide technical arguments on the determination of the targets and actions
Sub-Technical Working Committee	<ul style="list-style-type: none"> • Technical level coordination and decision making 	<ul style="list-style-type: none"> • Provide sector specific arguments on the determination of the targets and actions
Key line agencies and subnational governments	<ul style="list-style-type: none"> • Implementing agencies 	<ul style="list-style-type: none"> • Provide advice on challenges and way forward in implementation
Donors, development partners, IFIs, NDC Partnership	<ul style="list-style-type: none"> • Bilateral/multilateral support and coordination 	<ul style="list-style-type: none"> • Provide Technical Expertise • Provide Financial Support

To ensure effective delivery of this approach within CCDA a clear structure for engagement on NDC has been established and is summarized in Figure 8 below.

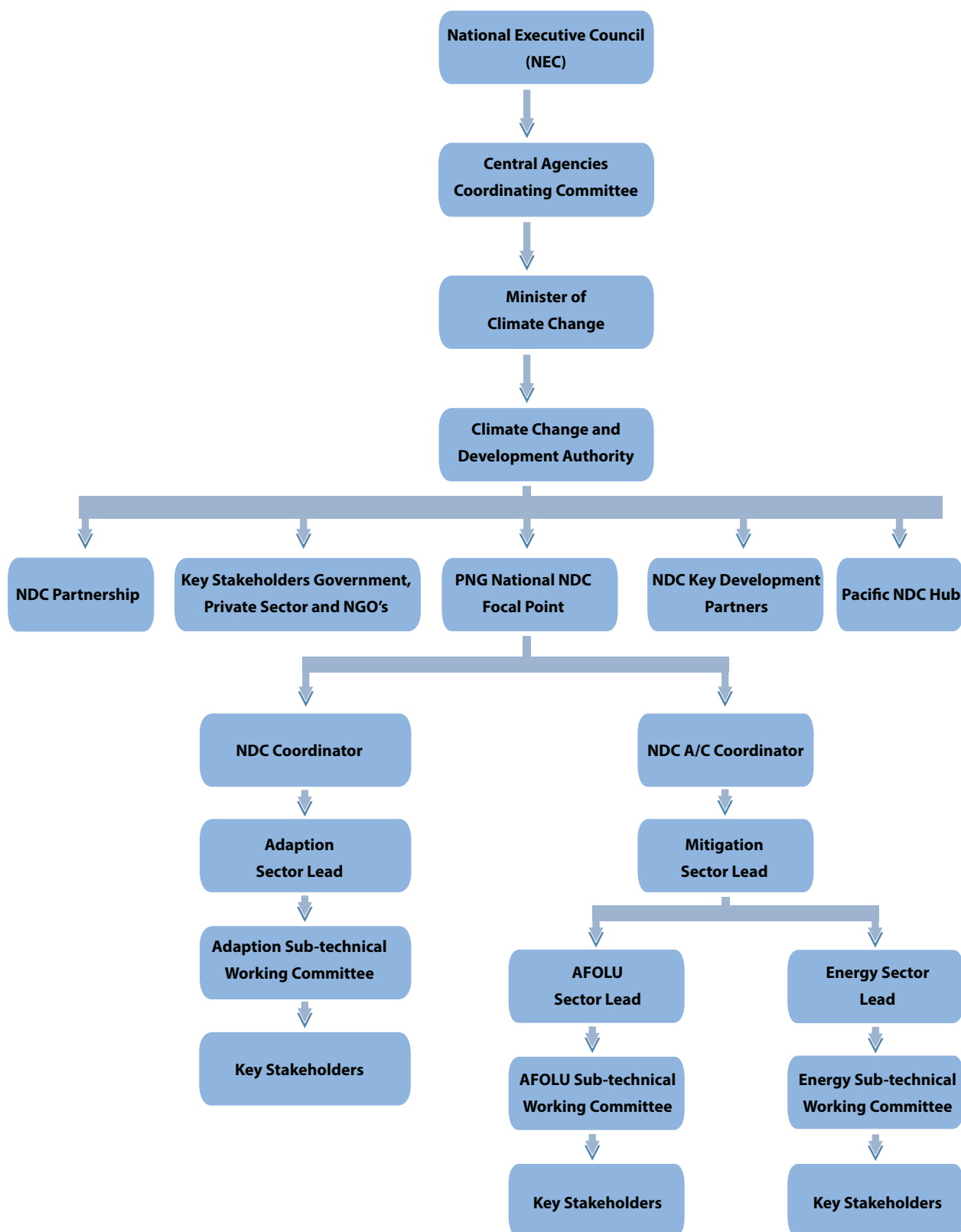


Figure 8: CCDA Institutional Arrangement

5.2. LEGAL FRAMEWORK

Effective delivery of the NDC targets through the implementation of the existing plan and supporting roadmaps requires a clear legal framework that enables action and supports delivery through mandated bodies. Further review and development work is required to fully establish this legal framework however a number of key mechanisms are already in place.

The country already has the Climate Change Management Act of 2015 (CCMA), which provides a framework to promote climate compatible development and to guide the implementation of climate targets developed by the government. The CCMA, which is currently undergoing revision, also

establishes the CCDA as well as identifying regulated sectors in which the act has the power to engage with. In addition to the CCMA, the NDC goals and targets exist in the context of policies such as PNG Vision 2050, National Climate Change Development Management Policy, and the National REDD+ Strategy 2017-2027, alongside relevant sectoral laws.

Implementation of the Enhanced NDC 2020 is supported by the Climate Change (Management) (Nationally Determined Contribution) Regulation 2021 that reinforces the legal infrastructure under the CCMA and other relevant Acts, for the realization of the goals and targets set out in the revised NDC.



6.1 FINANCE NEEDS

For PNG to achieve its Enhanced NDC 2020 target and activities listed in the Implementation Plan substantial resources are required with estimates indicating that funds in excess of 1 billion USD³ over the next 10 years will be needed to meet and further expand PNG's NDC targets.

These are significantly in excess of PNG's existing levels of available finance and capacity as a Small Islands Developing State. Thus in line with PNG's position and conditionality of NDC commitments, PNG is seeking to access additional finance to achieve its targets.

Initial work on developing these has been undertaken in key areas with work on the development of a Finance and Investment Prospectus for REDD+, a Finance and Investment Plan for Protected Area development as well as reviews of financing as part of the Energy and AFOLU Roadmaps linked to the current document.

CCDA is continuing to develop these approaches and is working, in partnership with other key government agencies, in particular DNPM, as well as international partners towards the development of a clear financing plan for climate action. Within this approach, PNG is seeking to target a range of financing approaches including:

- *Government* – PNG will seek to ensure that its domestic budget is fully climate aligned. This will be achieved through the mainstreaming of climate targets into the development planning process as well as the key role of the senior level working committees on climate action that will help to ensure new investment decisions are in line with PNG's climate priorities. In addition, action is already being taken to help mobilise domestic climate finance through imposing climate change fees and charges.
- *Development partners and bilateral support* – PNG receives significant development partner support and through CCDA's work with DNPM as well as key development partners PNG will work to help ensure that this finance is aligned with PNG's Enhanced NDC 2020 targets and where possible further finance is mobilized.

- *Climate finance mechanisms* – PNG will work to enhance access to global climate finance initiatives and will seek where possible to achieve multiple outcomes through this finance with action on adaption and mitigation delivering multiple goals (e.g. action to reduce vulnerability to extreme weather events through maintaining tree cover will also help to reach PNG's AFOLU targets). In addition, PNG will seek to investigate options for the development of Green Bonds to allow for rapid upscaling of finance.
- *Results-based finance* – PNG will work to ensure that a framework is effectively in place to access results based finance linked to climate change. The initial focus will be on accesses to finance within the AFOLU sector with early efforts already in place through proposals to the GCF's REDD+ results-based payment pilot and the LEAF coaling. In addition, PNG will continue to work with other partners seeking to develop agreements under Article 6 of the Paris agreement as well as others seeking to develop projects for the Voluntary Carbon Market (VCM).
- *Private sector finance* – the above approaches will look to stimulate further private sector investment in PNG that is fully aligned with PNG's climate goals. This element is seen as critical in developing PNG's green economy and ensuring the sustainability of actions.

6.2 PATHWAYS TO ACCESS FINANCE

In line with CCDA's responsibility as the focal point for Climate Action in PNG (as noted in section 5 above) CCDA will act as the key contact point for supporting enhanced access to climate finance and aligning other key finance sources (government, donor and private sector) with climate priorities. As such those groups identified as implementing agencies under the current Implementation Plan and supporting roadmaps that are seeking additional finance should work closely within CCDA in enhancing access. This will be done through the governance structure noted above and in close collaboration with agencies mandated to support international cooperation including DNPM and PNG's DFAT.

³ Costs estimates developed as part of the AFOLU NDC Implementation and Energy NDC Implementation process indicate that costs will be in excess of 500m USD and 250m USD respectively in 'additional' finance with early estimates from costs of adaptation actions linked to PNG's national adaptation plan also being in excess of 250m USD.

Monitoring and evaluation of the progress of the Implementation plan will be coordinated through the governance structure illustrated in Figure 7.

The process will bring together both quantitative GHG information that will be developed and reported on in line with the Enhance Transparency Framework (ETF) of the Paris Agreement as well as information on non-GHG based action targets.

Information on ongoing performance towards action based targets will be collected through line agencies and implementing partners and provided on a quarterly basis through STWC meetings with more detailed information linked to GHG reported collated in line with PNG's reporting commitments to the UNFCCC.

The table below describes the specific intervals of the reporting periods and the institutions required to report.

Table 13: MRV Framework

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.

A biennial update report shall be submitted by implementing government agencies and/or development partners supporting the implementation of these targets and actions. These are submitted to CCDA, who will then be responsible to compile these status updates into a bi-annual progress report to be shared with stakeholders and an annual report submitted to the National Government. At the end of the implementation period for the NDC Implementation Plan 2021-2025, a final evaluation report should be prepared by CCDA as the NDA and submitted to the UNFCCC.

Asian Development Bank (ADB). (2012). Papua New Guinea Country Gender Assessment. Port Moresby, PNG: UNDP

Australian Government. (2014). Pacific-Australia Climate Change Science and Adaptation Planning Program Current and Future Climate of Papua New Guinea. Retrieved from: https://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/14_PACCSAP-PNG-11pp_WEB.pdf.

Bourke, RM. (2018). Impact of Climate Change on Agriculture in Papua New Guinea.
Campbell, J., and Warrick, O. (2014). Climate Change and Migration Issues in the Pacific.
Connell, J., and Lutkehaus, N. (2017). Environmental Refugees? A tale of two resettlement projects in coastal Papua New Guinea.

Department of Agriculture and Livestock. (2018). Papua New Guinea Agriculture Sector Overview and Future Plans. Department of Agriculture and Livestock. Retrieved from https://www.sprep.org/attachments/Climate_Change/PACC_Report_of_in-country_consultations_Papua_New_Guinea.pdf

Department of National Planning and Monitoring. (2020). Papua New Guinea's Voluntary National Review 2020: Progress of Implementing the Sustainable Development Goals. Department of National Planning and Monitoring. Port Moresby: Department of National Planning and Monitoring. Retrieved from https://sustainabledevelopment.un.org/content/documents/26452VNR_2020_Papua_New_Guinea_Report.pdf

FAO. (2019). Country gender assessment of agriculture and the rural sector in Papua New Guinea. Port Moresby.

Global Green Growth Institute. (2019). Green Growth Potential Assessment. Papua New Guinea Country Report. July 2019. Retrieved from: <https://gggi.org/report/green-growth-potential-assessment-of-papua-newguinea/>.

Government of Papua New Guinea. (2009). "Papua New Guinea Vision 2050." Port Moresby: Government Printing Office.

GSMA Connected Women. (2020). The Mobile Gender Gap Report 2020. London: GSMA.

Huyer, S. and K. Freeman. (2020). Integration of gender equality and youth meaningful engagement considerations in the revision of Papua New Guinea's Nationally Determined Contributions (NDCs). UNDP: Port Moresby.
International Climate Change Adaptation Initiative. (2013). Pacific Climate Change Science Program. Current and Future Climate of Papua New Guinea. Retrieved from: https://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/14_PCCSP-PNG_8pp.pdf

International Organization of Migration. (2015). Assessing the Evidence: Migration, Environment and Climate Change in Papua New Guinea.

Mehrabi, Z., McDowell, M.J., Ricciardi, V. et al.(2020) The Global Divide in Data-Driven Farming. Nat Sustain (2020). Retrieved from: <https://doi.org/10.1038/s41893-020-00631-0>

Pacific Islands Forum Secretariat, DNPM, CCDA. (2019). Options for Strengthening Climate Finance Coordination and Accessibility in Papua New Guinea.

Papua New Guinea Climate Change and Development Authority. (2017). Papua New Guinea's National REDD+ Forest Reference Level - Modified Submission for UNFCCC Technical Assessment in 2017. Port Moresby: Climate Change and Development Authority.

Papua New Guinea Office of Climate Change and Development. (2014). Change (Management) Act of 2015. Port Moresby: Government Printing Office

Papua New Guinea Office of Climate Change and Development. (2014). National Climate Compatible Development Management Policy. Port Moresby: Office of Climate Change and Development.

Papua New Guinea Climate Change and Development Authority. (2017). National REDD+ Strategy 2017-2027. Port Moresby: Climate Change and Development Authority.

Papua New Guinea Climate Change and Development Authority. (2019.) Papua New Guinea First Biennial Update Report to the UNFCCC. Port Moresby: Climate Change and Development Authority.

Papua New Guinea Climate Change and Development Authority. (2020). Papua New Guinea and the Green Climate Fund. Country Programme.



Papua New Guinea Climate Change and Development Authority. (2015). Papua New Guinea's Nationally Determined Contribution. Port Moresby: Climate Change and Development Authority.

Papua New Guinea Climate Change and Development Authority. (2020). Papua New Guinea's Sustainable Development Goal 13 Roadmap. Port Moresby: Climate Change and Development Authority.

Papua New Guinea Climate Change and Development Authority. (2020). REDD+ Investment Finance and Investment Prospectus (RFIP). Port Moresby: Climate Change and Development Authority.

Papua New Guinea National Department of Health. (2014). National Malaria Strategic Plan 2014 – 2018.

Papua New Guinea Department of Health. (2016). Health Sector Strategic Priorities 2016 – 2018.

Papua New Guinea Department of National Planning and Monitoring. (2015). Papua New Guinea Water, Sanitation and Hygiene (WASH) Policy 2015-2030.

Papua New Guinea Department of National Planning and Monitoring. (2018). Papua New Guinea Medium Term Development Plan 2018-2022. Port Moresby: Department of National Planning and Monitoring.

Papua New Guinea Department of National Planning and Monitoring. (2010). Papua New Guinea Development Strategic Plan 2010-2030. Port Moresby: Department of National Planning and Monitoring.

Papua New Guinea Department of National Planning and Monitoring. (2010). Papua New Guinea Medium Term Development Plan 2011-2015. Port Moresby: Department of National Planning and Monitoring

Papua New Guinea Department of National Planning and Monitoring. (2014). National Strategy for Responsible Sustainable Development for Papua New Guinea. Port Moresby: Department of National Planning and Monitoring
Papua New Guinea Department of National Planning and Monitoring. (2015). Papua New Guinea Medium Term Development Plan 2016-2017. Port Moresby: Department of National Planning and Monitoring .

Papua New Guinea Department of Petroleum and Energy. (2018). National Electricity Roll-Out Plan. Port Moresby: Department of Petroleum and Energy.

Papua New Guinea Department of Public Enterprises and Department Of Petroleum and Energy. (2017). National Energy Policy 2017-2027. Port Moresby: Department of Public Enterprises and Department of Petroleum and Energy.
Papua New Guinea Department of Transport. (2013). National Transport Strategy. Port Moresby: Department of Transport.

Papua New Guinea Forest Authority. (2019). Forest and Land Use Change in Papua New Guinea 2000-2015. PNG Forest Authority. Port Moresby.

United Nations Development Programme. (2018). National Adaptation Plan process in focus: Lessons from Papua New Guinea. Retrieved from: <https://www.undp.org/content/undp/en/home/librarypage/climate-anddisaster-resilience-/national-adaptation-plan-process-in-focus-lessons-from-Papua-New-Guinea.html>.

United Nations Development Program. (2020). Advancing Papua New Guinea's National Adaptation Plan. Retrieved from: https://www.pg.undp.org/content/papua_new_guinea/en/home/projects/advancing-papuanew-guineas-national-adaptation-plan.html.

United Nations Framework Convention on Climate Change, Ad Hoc Working Group on the Paris Agreement. (2018). Additional Tool Under Item 3 of the Agenda.UNFCCC, 1-35. Retrieved from: https://unfccc.int/sites/default/files/resource/APA1.6.Informal.1.Add_1.pdf

United Nations Framework Convention on Climate Change, Ad Hoc Working Group on the Paris Agreement. (2018). Additional Tool Under Item 4 of the Agenda.UNFCCC, 1-19. Retrieved from: <https://unfccc.int/sites/default/files/resource/APA1.6.Informal.1.%20Add.2.pdf>

United Nations Framework Convention on Climate Change. (2020). Glossary of Climate Change acronyms and terms. Retrieved from: <https://unfccc.int/process-and-meetings/the-convention/glossary-of-climatechange-acronyms-and-terms>



