



Papua New Guinea's Sustainable Development Goal 13 Roadmap

An Empowering Response to Challenges and Opportunities
Posed by Climate Change

30 ACTIONS BY 2030



For more information contact:

Climate Change and Development Authority
Address: PO Box 4017, Boroko, National Capital District
Papua New Guinea
Telephone: (+675) 70910300
Email: info@ccd.gov.pg

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The background features a light grey map of Papua New Guinea. Overlaid on the map are two sets of concentric blue lines, resembling ripples or topographic contours, one in the upper left and one in the lower right. A dashed blue line curves across the map from the top right towards the bottom right.

Papua New Guinea's
Sustainable Development Goal 13
Roadmap 30^{BY}30
REPORT



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"I commend the Government of Papua New Guinea for its ambition and commitment to increase its Nationally Determined Contributions, and I was pleased to hear that the SDG 13 Roadmap is the cornerstone of the country's climate action response.". Amina J. Mohammed, United Nations Deputy-Secretary General. New York, May 12, 2020.

This Roadmap has been endorsed by the National Executive Council of Papua New Guinea under NEC Decision No 196/2020.

Foreword by the Prime Minister of Papua New Guinea



Honourable James Marape, MP
Prime Minister of Papua New Guinea

Like our neighbours, Indonesia and Australia, Papua New Guinea is fortunate to be one of the world's 17 megadiverse countries. This natural endowment is a great blessing to our people. However, our people, our biodiversity and our economic development are already under stress from climate change. Global resources and conservation efforts must be heavily focused on biodiversity and carbon sequestration hotspots like Papua New Guinea.

The Government of Papua New Guinea is committed to taking action on climate change as part of its national development. We are undertaking the necessary measures to ensure that our development pathway does not compromise our ability to provide for the wellbeing of our people now, or in the future. We recognize both the major impact that climate change will have on the country and the country's responsibilities, as part of the international community, in the global effort to mitigate climate change. Before we began our work on the Agenda for Sustainable Development and our implementation of the Sustainable Development Goals, we already had effective groundwork laid by Vision 2050 and the National Strategy for Responsible Sustainable Development (StaRS).

The direction set by those strategies has been followed with a process for integrating and aligning the Sustainable Development Goals (SDGs) into our national priorities, which customize the global SDG indicators to the context of our nation. These goals and their indicators are now integrated into our national development programming, including the development of national plans and strategies, monitoring frameworks, annual reporting and periodic evaluation. This process of "localizing the SDGs" to Papua New Guinea identified climate change as one of ten critical sectors that required action. Our commitment to urgent action to combat climate change and its impacts (SDG13) was also reflected in the leadership role we took in negotiating and ratifying the Paris Agreement in 2015.

This year, the Government of Papua New Guinea is releasing its 30 by 30 Climate Change Response Roadmap. The roadmap presents the 30 major actions that we will take by 2030 to respond to climate change. Using the Sustainable Development Goals as a framework, the Roadmap will help set us on a pathway to becoming a truly climate smart, healthy and prosperous nation, and to achieve the objectives set out in the country's Medium Term Development Plan III. We hope that this Roadmap will focus attention on the themes that matter most in our own national context: climate governance; energy; forestry; agriculture; infrastructure; fisheries; tourism; biodiversity; minerals; biodiversity conservation and health.

At present, we are protected from some of the worst impacts of climate change by our outstanding and unique natural capital. Mangroves have helped buffer the impacts of storm surges on coastal community. High levels of forest cover help maintain weather patterns and reduce soil loss and flash flooding. Our country acts as one of the most important global sinks for trapping and storing greenhouse gases, by reducing deforestation and promoting forest conservation and sustainable management of its forests through our National REDD+ Strategy. With increasing population and our need for economic development many of these protections are under threat.

My Government has recently presented its first Voluntary National Review (VNR) to the High-Level Political Forum on "Accelerated action and transformative pathways: realizing the decade of action and delivery for sustainable development" to track the progress on SDG 2030 targets. The VNR provides a clear pathway towards bringing together all SDGs particularly national efforts to address nature-based challenges such as climate change and its impact to the livelihoods of the country.

The actions that Papua New Guinea is taking now, and those we will need through the coming decade, to achieve climate-compatible development are outlined in this 30 by 30 Roadmap. Although the Government of Papua New Guinea may take the lead on many of those actions, we will also need the resources, energy and commitment of our people, subnational governments, the private sector, our development partners and civil society to be successful. This Roadmap will guide our work together.

A handwritten signature in blue ink, appearing to be 'J. Marape', written in a cursive style.

Honourable James Marape, MP
Prime Minister of Papua New Guinea

Message by the Minister for Environment, Conservation and Climate Change

Honourable Wera Mori, MP

**Minister for Environment,
Conservation and Climate Change**



Papua New Guinea must take urgent action to prepare for the impending impacts of climate change. The country is vulnerable to climate change due to our geography, reliance on subsistence farming and natural resources, underdeveloped infrastructure, and constrained financial capacity as an early emerging economy. The Climate Change Response Roadmap was developed with the goal of coordinating crosssectoral, efficient, and responsible development that is measurable and practically achievable. The Roadmap serves to increase our capacity to respond to climate change and facilitate responsible development.

This Roadmap was developed by a diverse set of stakeholders from across different sectors and walks of life in Papua New Guinea. The Roadmap is for all citizens of Papua New Guinea, addressing women and children, remote and urban communities, and stakeholders across sectors from agriculture to mineral resources, policy makers, and the private sector. This Roadmap will be used to guide actions for real and practical interventions that are needed to increase resilience to climate change and reduce greenhouse gas emissions.

Such progress however will not be possible without strong partnerships and investment and I call upon my good stakeholder agencies, international partners and private sector bodies to work with us in this endeavour.

Recently the government initiated its first multistakeholder round table on climate finance, and we wish to drive this process forward to show a model of how climate finance, sustainable supply chains and international partnerships can be blended together to deliver real climate, environmental and development outcomes.

The Government has shown leadership and ownership of its national response to the adverse effects of climate change and disasters. This is evident from the range of policy, institutional and legislative reform that had been progressed over the past few years. While a significant amount of climate change finance has been accessed, there needs to be a coordinated effort to ensure these resources reach the most vulnerable people in the communities and achieve tangible impacts.

I therefore truly believe that the 30 by 30 Actions of the Climate Roadmap will help to achieve our national development goals in line with climate actions and contribute to the green growth of our beautiful country.

A handwritten signature in blue ink, appearing to be 'Wera Mori', written in a cursive style.

Honourable Wera Mori, MP
Minister for Environment, Conservation and Climate Change

Message by the Managing Director of the Climate Change and Development Authority

Mr. Ruel Yamuna, LLB

**Managing Director
Climate Change and Development Authority**



Papua New Guinea is known for our diverse and pristine natural environment and our equally rich culture which keeps us inherently attached to the land and all its natural features.

Yet the level of climate threats that our unique and fragile ecosystems are facing has also not ceased to concern us. It is for this reason that we work tirelessly to ensure that we can have sustainable development while maintaining and preserving our strategic natural assets.

These actions on climate change is therefore embedded in Papua New Guinea's Vision 2050 and national development strategies.

The Climate Change Response Roadmap outlines a set of tangible and high impact accelerators to reduce, prevent and reverse the negative effects of climate change on people and the land and set the country on course for achieving the SDGs. This document will serve not only as a Roadmap but a crucial advocacy tool to garner political will and influence development investment to tackle climate change as a truly urgent crosscutting national issue. The localized SDGs and the national climate change commitments will be the key tenets of this Roadmap. Specifically, the document will outline actions towards reaching the National Climate Compatible Development Management Policy (NCCDMP) target of a 50% reduction in emissions by 2030.

The Roadmap lays out a broad plan that we need to monitor and adjust, if needed. Many of the opportunities presented to PNG by climate change require us to demonstrate to our international partners that we are indeed making good progress.

Another important part of this Roadmap is how it aligns with PNG's obligations under the Sustainable Development Goals and the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC). The Roadmap will help us achieve these important international initiatives.

As Managing Director of the Climate Change and Development Authority it has been my pleasure to lead the development of this climate roadmap. It has also been a privilege to work closely with the Department of National Planning and Monitoring and all our good stakeholders from the government agencies, civil society and private sector in its development.

On this note, I would like to thank the United Nations Development Programme in PNG for provision of technical and financial support in the development of this roadmap and all our development partners - the Government of Australia, the Green Climate Fund, the World Bank's Forest Carbon Partnership Facility, the Global Green Growth Institute, the Food and Agriculture Organisation (FAO), the USAID Climate Ready Programme, the Government of Italy, the European Union (EU), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the Japan International Cooperation Agency (JICA), and the Coalition for Rainforest Nations (CfRN) for their partnership and contributions in this tireless process.

I am extremely proud to present this roadmap, which has the potential to provide real benefits to our communities, our environment and our nation while also supporting the global fight against climate change and link it with the development. We want to track our progress over the next ten years. The Roadmap is also closely aligned with PNG's third Medium-Term Development Plan and as such compliments existing efforts to enhance sustainable economic development in PNG. A core principle of the Roadmap is the need for our collective response to climate change to be cross-sectorial and inclusive.

I urge all our good stakeholders from the government agencies, private sector and civil society to see this roadmap not as an achievement in itself but as the beginning of the next phase of our work

We must bring together our existing sector skills and experience, while also accessing climate finance and technical support to ensure we can achieve the transformational change that our nation needs and that our people and the environment deserve.

A handwritten signature in blue ink, appearing to read 'Ruel Yamuna'. The signature is stylized and fluid.

**Mr. Ruel Yamuna, LLB
Managing Director
Climate Change and Development Authority**

Message by the UNDP Resident Representative



Mr. Dirk Wagener

**Resident Representative
United Nations Development Programme
Papua New Guinea**

Climate Change is the defining issue of our time. For Papua New Guinea, there is no greater question of national interest. A truly global threat, there are few areas of our lives it will not or has not begun to affect. For many around the world, the impacts have already raised fundamental questions of human security. Those hardest hit today are among the world's poorest and most vulnerable, many of whom live in developing countries, many of whom are women.

Papua New Guinea is in the Asia-Pacific, a region that for the last four decades has powered global growth. Over this time, economies have dramatically grown, and millions of people have been lifted out of poverty. Since 1989, the region's GDP has grown from US\$ 19 trillion to approximately US \$ 42 trillion today. Governments have collectively committed to freer trade in goods and services. Investments have increased, infrastructure has improved, and disposable incomes have grown and with it, unprecedented levels of consumption, waste, and environmental degradation. This linear 'take-make-dispose' economic model has truly come at a huge cost. There are many reasons why the international community has and should pursue development. It remains inexcusable that so many still lack access to clean water, basic education or better health care. Climate change has, however, brought into sharp focus the importance of continuing to shift current development paradigms toward more sustainable development. The future lies in green economies that are low carbon, resource efficient and socially inclusive. This is a question that Papua New Guinea now faces.

It is in this spirit that the 2030 Agenda for Sustainable Development was born and that the Sustainable Development Goals or SDGs were agreed by the international community. The SDGs are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we all face, among them poverty, inequality, peace and justice and of course, climate change and the pursuit of a green and sustainable future for all.

The SDGs are interconnected. The international community has agreed that all 17 goals should be achieved by the target date of 2030. The SDGs are underpinned by three principles. First, all goals and targets are relevant to all Governments and their actions. Second, policy integration means a balance of all three SDG dimensions, these being social, economic and environmental. Third, no one should be left behind meaning that the SDGs should benefit all and ensure that we take care of the those that are the most vulnerable.

The United Nations Development Programme (UNDP) has supported the Government of Papua New Guinea in the preparation of its Climate Change Road Map. It presents 30 actions to be implemented by 2030. Their full implementation will better prepare Papua New Guinea for the impacts of climate change and help the country to mitigate future greenhouse gas emissions. These actions span key socio-economic sectors and are fully aligned with the national policy architecture. The Road Map highlights the importance of all partners — Government, communities, civil society, development partners and the private sector — in coming together to address these impacts. The importance of tackling the impacts of Climate Change now cannot be understated, and the roadmap will serve the Government's efforts to better define and increase its so-called 'Nationally Determined Contributions' to the global climate goals. In doing so, it fosters partnerships, innovation and action.

Looking toward to 2030, I take this opportunity to reiterate UNDP's commitment to support Papua New Guinea in this endeavour.

**Mr. Dirk Wagener
Resident Representative
United Nations Development Programme
Papua New Guinea**

Glossary

ACIAR	Australia Centre for International Agricultural Research Agriculture
AFOLU	Forestry and Other Land Use
CCC	Climate Change Committee
CCDA	Climate Change and Development Authority of PNG
CEO	Chief Executive Officer
CCMA	Climate Change (Management) Act 2015
CEPA	Conservation and Environment Protection Agency
CO ₂ e	Carbon Dioxide Equivalent
CSO	Civil Society Organisation
DNPM	Department of National Planning and Monitoring
DSIP	District Services Improvement Program
DSP	Development Strategic Plan 2010 — 2030
FAO	Food and Agriculture Organization
Gg	Giga gram
GHG	Greenhouse Gas
IFAD	International Fund for Agricultural Development
ILO	International Labor Organization
KMA	Key Management Area
KRA	Key Results Area
MTDP or MTDP III	Medium Term Development Plan III for 2018 — 2022
NCCDMP	National Climate Compatible Development Management Policy
NDC	Nationally Determined Contribution
NEC	National Executive Council
NGO	Non-Government Organisation
PHA	Provincial Health Authority
PIF	Project Identification Form
PIR	Project Implementation Report
PIP	Project Initiation Plan
PM	Project Manager
PNG	Papua New Guinea
PNGFA	Papua New Guinea Forest Authority
PNGPMRA	Papua New Guinea Planning and Monitoring Responsibility Act 2016
PSIP	Provincial Services Improvement Program
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries
	Sustainable Development Goal
SDG	National Strategy for Responsible Sustainable Development for PNG
STaRS	Refugee Agency
OHCHR UN	United Nations
UN	UN Habitat Program
UN Habitat	UN Program on AIDS
UNAIDS	UN Capital Development Fund
UNCDF	UN Development Program
UNEP	UN World Heritage
UNESCO	UN Children's Fund
UNICEF	UN Population Fund
UNFPA	United Nations Development Program
UNDP	United Nations Framework Convention on Climate Change
UNFCCC	United Nations Paris Agreement (Implementation) Act 2016
UNPA (I)A	United States Dollar
USD	World Meteorological Organization
WMO	



Overview of 30^{BY}30 Climate Change Response Roadmap

PNG is committed to taking action on climate change as part of its climate compatible approach to development. The PNG Government recognises both the major impact that climate change will have on the country and the country's responsibilities, as part of the international community, in the global effort to mitigate climate change. The actions that PNG is taking now, and those we will need through the coming decade, to respond to climate change are outlined in the 30 by 30 Roadmap presented in this document. Although the Government of PNG may take the lead on many of those actions, they will also need the resources, energy and commitment of subnational governments, the private sector, our development partners and civil society to be successful. This Roadmap should guide our work together.

The Government of Papua New Guinea is undertaking the necessary measures to ensure that our development pathway does not compromise our ability to provide for the wellbeing of all our people now, or in the future. We began our work on the Agenda for Sustainable Development and our implementation of the Sustainable Development Goals with the effective groundwork laid by Vision 2050 and the National Strategy for Responsible Sustainable Development (StaRS). The direction set by those strategies has been followed with a process for integrating and aligning the SDGs into our national priorities, which customize SDG indicators to the context of our nation. These goals and their indicators are now integrated into our national development programming, including the development of national plans and strategies, monitoring frameworks, annual reporting and periodic evaluation.

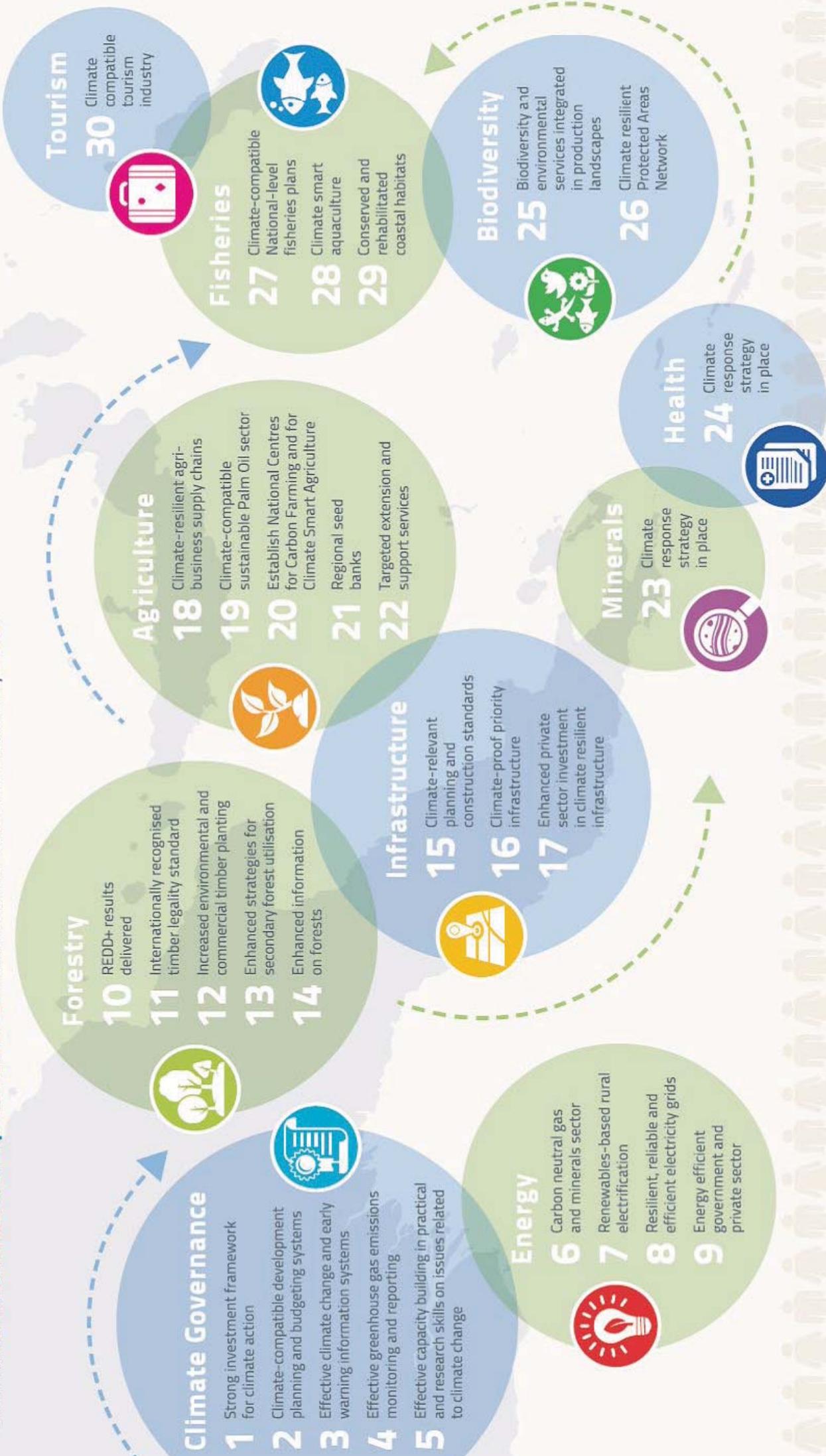
This process of "localizing the SDGs" to Papua New Guinea identified climate change as one of ten critical sectors that required action. Our commitment to urgent action to combat climate change and its impacts (SDG13) was also reflected in the leadership role we took in negotiating and ratifying the Paris Agreement in 2015.

The 30 by 30 Roadmap maps out a path towards climate compatible development which will reduce the PNG's vulnerability to climate change and contribute to global action on reducing greenhouse emissions. By utilising the guiding framework of the Sustainable Development Goals and SDG 13 ('take urgent action to combat climate change and its impacts') the Roadmap includes 30 sets of actions that must be completed between 2020 and 2030 in order for PNG to meet SDG 13 and make progress across all 17 of the SDGs.

The 30 by 30 Roadmap is structured by nine sectors, with one cross-sectorial category called Climate Change Governance and Knowledge. The Roadmap is a product of an extensive mapping exercise where stakeholders and scientists were engaged to identify climate hazards and risks. Those risks were mapped against: (1) SDG 13 Indicators; (2) other SDGs; (3) elements of PNG's Third Medium Term Development Plan (MTDP III) and Strategic Development Plan (SDP); (4) work done on PNG's Nationally Determined Contributions (NDCs); (5) donor-sponsored projects already completed or underway in PNG; (6) other actions at national or provincial-level undertaken by public or private sectors stakeholders in PNG related to SDG 13; and (7) how those existing plans and initiatives could be further developed and enhanced. The subsequent pages of this Report provide a more detailed summary of the 30 action areas as well as their links with SDGs, PNG's NDCs and targets within PNG's MTDP III, Papua New Guinea's Climate Change (Management) Act (2015) and the United Nations Paris Agreement (Implementation) Act 2016.

30 BY 30 CLIMATE CHANGE RESPONSE ROADMAP

The Papua New Guinea Government is putting in place a plan to ensure that our country and people respond to climate change in a strong, responsible and resilient way. This plan outlines **30 Sustainable Development actions** that the Government will enable by **2030**.





Putting the Roadmap Into Action

The Roadmap consists of a set of 30 actions that need to be achieved by 2030. The Timeline outlines four phases of milestones that will act as the foundation for PNG to achieve the 30 actions of the Roadmap by 2030 and therefore the key targets of SDG13 and PNG's NDCs (as they currently stand). The Stakeholder Action Plan outlines the key stakeholder groups who the PNG Climate Change and Development Authority should collaborate with to achieve the 30 actions of the Roadmap. The Management and Implementation table suggests some measurable outcomes that are either already underway or perhaps could be developed to achieve the 30 action of the Roadmap.

Critically, the 30 actions of the Roadmap are intended to not only address the challenges of climate change but also help set PNG on a pathway to a truly climate smart, healthy and prosperous nation, and to achieve the objectives set out in the country's MTDP III. The 10 sectoral themes relate to climate governance, energy, forestry, agriculture, infrastructure, fisheries, tourism, biodiversity, minerals, and health. These themes are largely related to the impacts of climate change that will be felt in PNG, as well as key sectors of the PNG economy, which are particularly important for both national development and livelihoods of Papua New Guineans.



30 BY 30 ROADMAP IMPLEMENTATION TIMELINE



The timeline below includes some key milestones that if achieved, will see PNG deliver on the 30 by 30 Roadmap and meet its SDG 13 goals.

It is 2030 and PNG has achieved the 30 by 30 Roadmap. PNG is on track to meet its domestic emissions reduction targets and play its part in limiting global warming to less than 2°C. PNG's own National Development Goals have been achieved and there is general acknowledgement that PNG's actions in response to climate change have made a positive contribution to people's livelihood.

PNG has delivered on all of the actions listed in the 30 by 30 Roadmap and as a consequence, has met the SDG 13 Goals.

2030

PHASE 4

- 1 Well-Governed domestic carbon market operational
- 2 REDD+ commercialised
- 3 Primary forests conserved and secondary forests better used.
- 4 More reliable, cost-effective electricity supply network for major centres
- 5 Remote communities have access to reliable clean electricity
- 6 Infrastructure in PNG is resilient to severe climate events
- 7 Climate-resilient Minerals, Fisheries, Tourism and Health sectors
- 8 Climate-resilient agribusiness supply chains

- 9 Conduct and report on Roadmap monitoring system Report on how SDG 13 has been achieved
- 10 Communicate to PNG stakeholders how the 30 by 30 Roadmap has helped achieve broader development objectives and other SDGs
- 11 Demonstrate how the 30 by 30 Roadmap has helped PNG achieve its Paris Agreement obligations or equivalent international obligations at that time

PHASE 3

- 1 Develop ways to integrate biodiversity and ecosystem services into production landscapes
- 2 Promote climate smart aquaculture pilot projects
- 3 Link coastal rehabilitation projects to Blue Carbon and carbon market opportunities

- 4 Take stock on progress towards 30 by 30 objectives
- 5 See graduates of capacity building initiatives start to take on major responsibilities and leadership roles in the public and private sector

2025

PHASE 2

- 1 See REDD+ results delivered
- 2 Implement internationally recognised timber legality standard
- 3 Develop strategies for enhanced utilisation of secondary forest
- 4 Implement the plan for a carbon neutral gas and minerals sector and commence a well-Governed domestic carbon market
- 5 Establish regional seed banks

- 6 Conduct and report on Roadmap monitoring system, revise plan as needed
- 7 Further developed systems to gather information about PNG's forests
- 8 Promote energy efficiency initiatives in the public sector
- 9 Integrate climate change response considerations into the national strategies for Fisheries, Health, Minerals and Tourism

PHASE 1

- 1 Develop an action plan (mini Roadmap) for each of the 30 by 30 action targets
- 2 Establish a strong investment framework for climate finance and investment
- 3 Establish climate compatible development planning and budgeting systems
- 4 Establish national training and research centres for Carbon Farming and Climate Smart Agriculture
- 5 Engage with industry to develop a plan for a carbon neutral gas and minerals sector
- 6 Further develop a climate resilient protected areas network

- 7 Develop a system to monitor progress on the 30 by 30 Roadmap, including how the Roadmap activities are contributing to MTDP objectives and indicators, SDG 13 goals and indicators, and PNG's evolving NDCs or equivalent international obligations
- 8 Further develop enhanced early warning systems for severe climate events
- 9 Further develop national greenhouse gas emissions monitoring and reporting systems. Implement climate-relevant planning and construction standards
- 10

2020

Formally adopt the 30 by 30 Roadmap as PNG's guiding plan to achieve SDG 13 and implement a strong response to climate change that supports the countries broader development objectives

In a rapidly changing world, engage with the international community to show how PNG has formed a plan to meet its SDG 13 objectives – one that also helps it meet its NDCs and domestic development objectives



STAKEHOLDER ACTION PLAN

The 30 by 30 Roadmap needs an action plan. Whilst the PNG CCDA is primarily responsible for the implementation of the Roadmap, many stakeholders must be involved and benefit from the outcomes of the Roadmap's implementation that engages people from all sorts of background. A summary of how those stakeholders can take action to support the implementation of the Roadmap is below. The Stakeholder Action Plan is orientated around four Pillars that establish a foundation for the implementation of the 30 by 30 Roadmap and the benefits it can provide.

 GOVERNMENT National, Provincial, Local	 PRIVATE SECTOR Oil and Gas, Banks, Telecommunications, Tourism	 DONORS Foreign Governments, United Nations, GGGI, GCF	 KEY SECTORS Forestry, Energy, Conservation, Infrastructure, Health, Fisheries, Tourism, Minerals	 CITIZENS Communities, Advocacy Groups	 SERVICE PROVIDERS Carbon Market Developers, Consultants, NGOs	 EDUCATION AND RESEARCH Universities, Institutes, Training Colleges, Schools
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PILLAR 1 – ESTABLISHING SUPPORTIVE CLIMATE GOVERNANCE FRAMEWORKS

Establish climate-compatible development planning and budgeting systems	Engage constructively with Government, particularly in rules regarding Carbon Market development or similar initiatives	Support initiatives by Government to enable improvements in development planning and budgeting systems	Collaborate with CCDA and Planning to link with relevant Climate Governance frameworks	Participate in consultative activities associated with Climate Governance processes		
Align and integrate relevant regulatory frameworks						
Include multiple Government agencies and Provincial Governments in governance processes		Support the further development and next Phases of the 30 by 30 Roadmap	Align and integrate relevant regulatory frameworks			

PILLAR 2 – UNLOCKING CLIMATE FINANCE AND INVESTMENT

Establish a clear investment framework for climate finance and investment	Engage constructively with Government, particularly in rules regarding Carbon Market development	Provide funding to support the implementation of the 30 by 30 Roadmap	Facilitate diverse stakeholders to access international climate finance such as the GCF	Participate and support pilot projects and trials to demonstrate climate finance and investment be actualised in real projects		
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PILLAR 3 – MONITORING PROGRESS – KEEPING TRACK AGAINST NDCs AND SDGs AND THE PNG MTDP

Continually improve monitoring and reporting of national greenhouse gas emissions and report on SDG 13 NDC and Roadmap progress	Support the PNG CCDA to monitor progress of the 30 by 30 Roadmap and track against PNG's NDCs, SDGs and MTDP		Support the CCDA and planning agencies in the improvement of monitoring systems around relevant climate-related activities.			
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PILLAR 4 – COMMUNICATING ACHIEVEMENTS AND BENEFITS AND BUILDING CAPACITY

Communicate achievements and maintain a highly inclusive approach to the implementation of the 30 by 30 Roadmap	Support capacity building initiatives across the private sector in climate-related skills and knowledge	Provide funding for capacity building initiatives across public and private sectors, across multiple levels of Government in climate-related skills and knowledge	Identify ways in which the Roadmap has and can assist in the achievement of related MTDP goals and indicators	Participate in 30 by 30 Roadmap initiatives		Lead the further development of training and research capacity around climate-related knowledge and skills
Further improve early warning systems for severe climate events					Participate in the development of new Carbon Farming methodologies tailored for the PNG context	

Management and Implementation of Roadmap

The four-phase implementation of the actions in this roadmap need a clear accountability structure and timeline to ensure progress and transparency are achieved.

PHASE 1

30 BY 30	SUGGESTED REPORTABLE OUTPUT	PRIMARY UNDAF SUSTAINABLE DEVELOPMENT OUTCOME	KEY STAKEHOLDERS THAT NEED TO BE INVOLVED WITH THE CCDA	KEY DONOR AGENCIES THAT NEED TO BE ENGAGED
Strong investment framework for climate action	Increased number of amended laws and regulations enabling investment frameworks for climate actions. Improve regulatory quality from the bottom 30% in the world to the top 50% in the world (DSP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: National Disaster Centre (NDC)/ Disaster Risk Management Commission (DRMC)	UNDP, UNCDF, World Bank
Climate compatible development planning and budgeting systems	Improved Public Expenditure and Financial Accountability Indicators scoring A or B from 34% in 2006 to 75% by 2030 (MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Department of Personnel Management, Department of Finance, PSC, Provinces	UNDP, UNCDF, World Bank, UNFPA
Effective greenhouse gas monitoring and reporting systems	Increased the number of automated meteorological stations from 1 (2017) to 5 (2022) Increased the number of automated Weather Stations/Instruments per strategic location installed and operational from 2 (2017) to 5 (2022 target)(MTDP) Increased the number of tide monitoring stations from 2 (2009) to 20 (2030)(DSP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: National Disaster Centre (NDC)/ Disaster Risk Management Commission (DRMC), Department of Mineral Policy & Geohazards Management	UNDP, WMO
Effective greenhouse gas monitoring and reporting systems	Increased the number of automated meteorological stations from 1 (2017) to 5 (2022)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Disaster Centre (NDC)/ Disaster Risk Management Commission (DRMC), Department of Mineral Policy & Geohazards Management	FAO, UNFCCC
Carbon neutral gas and minerals sector	Increases in gas, hydro, geothermal, wind and biomass power generation by 2022 (MTDP) Increase in power generation by sustainable energy sources from 4.4% (2017) to 11.25% (2022)		The Public Private Sector GoPNG Bodies: Department of Petroleum & Energy, PNG Power Limited (PPL)	UNFCCC, UNDP
Climate-relevant planning and construction standards	Increase Road Network from 8460km of national roads to 25,000km (2022)(MTDP). Increased access to improved water source from 39% of total population (30% of rural population in 2008) to 70% of population (2022)(MTDP). Improve access to improved sanitation from 44% of population to 70% of population (2022)(MTDP).	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: Water PNG, WASH Project Management Unit	UNDP, UNCDF
Climate compatible sustainable Oil Palm sector	Population in palm oil production (Number of people) increased from 200,000 (2017) to 500,000 (2022)(MTDP). Multi-stakeholder platforms on PNG's Sustainable Palm Oil established and effectively led by the respective government agency (DAL).	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: DAL, LDC, NARI, KIK, CBPNG, OPIC, CIC, NAQIA, CUSTOMS	UN-Habitat, UNESCO, FAO, IFAD
Establish National Centres for Carbon Farming and Climate Smart Agriculture	Established National Forest Resource Inventory System (2022)(MTDP) and developed National carbon accounting system in the country (2020)(MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: PNG Forest Authority, CCDA	UNDP, IFAD, FAO
Targeted extension and support services	Increased SME access to finance by 2019 (MTDP). Increased coffee rehabilitation and development to increase coffee exports value increase to K1,125m (2022) from K646.9m (2017)(MTDP) and establish 2 cocoa nurseries by 2022 (MTDP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: Department of Community Development, Coffee Industry Corporation, Department of Agriculture & Livestock, Department of Works Cocoa Board PBG, DAL	FAO, IFAD, ILO, UNCDF
Climate resilient protected areas network	Increase in percentage of land area protected to maintain & improve biological diversity from 3.98% (2017) to 17.90% (2022) and the percentage of marine area protected to maintain & improve biological diversit from 0.21% (2017) to 9% (2022)(MTDP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Fisheries Authority, PNGDF, Police, Customs, DCI, Provincial Governments and Donor partners	UNEP, UNFCCC, UNESCO, FAO, IFAD, UN-Habitat

PHASE 3

30 BY 30	SUGGESTED REPORTABLE OUTPUT	PRIMARY UNDAF SUSTAINABLE DEVELOPMENT OUTCOME	KEY STAKEHOLDERS THAT NEED TO BE INVOLVED WITH THE CCDA	KEY DONOR AGENCIES THAT NEED TO BE ENGAGED
Effective capacity building on practical and research skills on issues related to climate change	Percentage of population identified as Vulnerable and Disadvantaged reduced from 52.5% (2017) to 30% (2022)(MTDP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: Department of Community Development and Religion	UNDP, ILO, FAO, WORLD BANK, IFAD
Biodiversity and environmental services integrated into production landscapes	Increase in percentage of land area protected to maintain & improve biological diversity from 3.98% (2017) to 17.90% (2022) and the percentage of marine area protected to maintain & improve biological diversit from 0.21% (2017) to 9% (2022)(MTDP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Fisheries Authority, PNGDF, Police, Customs, DCI, Provincial Governments and Donor partners	UNEP, UNFCCC, UNESCO, FAO, IFAD, UN-Habitat
Climate-smart aquaculture	Stock assessment of prawn fisheries under exploited to increase catch by 25% and raise stock assessment to fully exploited (2030)(DSP) Increased licence fees generated from tuna fisheries from K60 million (2008) to K120 million in 2008 prices (2030)(DSP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Fisheries Authority, PNGDF, Police, Customs, DCI, Provincial Governments and Donor partners	FAO, IFAD
Conserved and rehabilitated coastal habitats	Increased percentage of marine area protected to maintain & improve biological diversity from .21% (2017) to 9% (2022)(MTDP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience	The Public Private Sector GoPNG Bodies: National Fisheries Authority, PNGDF, Police, Customs, DCI, Provincial Governments and Donor partners	UNEP, UNFCCC, UNESCO, FAO, IFAD, UN-Habitat

Management and Implementation Table



This Roadmap coordinates action on existing targets set forth in the DSP and MTDP III. These targets will be implemented in four phases agreed in consultation with our stakeholders.

PHASE 2

30 BY 30	SUGGESTED REPORTABLE OUTPUT	PRIMARY UNDAF SUSTAINABLE DEVELOPMENT OUTCOME	KEY STAKEHOLDERS THAT NEED TO BE INVOLVED WITH THE CCDA	KEY DONOR AGENCIES THAT NEED TO BE ENGAGED
Energy efficient Government and private sector	Specific projects on key buildings to enhance energy efficiency	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: Department of Petroleum & Energy, PNG Power Limited (PPL)	ILO, UNDP, WORLD BANK, UNFPA
REDD+ results delivered	Reduced primary forest depletion rate per year due to commercial agriculture, logging, mining and urban town development from 9% (2017) to 5% (2022)(MTDP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Forest Authority, Conservational & Environmental Protection Authority (CEPA)	UNEP, UNFCCC, UNESCO, FAO, IFAD, UN-Habitat
International recognised timber legality standard	Improvements for a reduction in total round logs exports annually from 3.6 (2016) to 1.5 (2022)(MTDP) and a complete reduction in the share of log harvest coming from virgin forest (2030)(DSP)	Peace: Promoting Inclusive, Governance, Justice & Peace.	The Public Private Sector GoPNG Bodies: National Forest Authority, Conservational & Environmental Protection Authority (CEPA)	OHCHR, FAO, IFAD, UNDP
Increased environmental and commercial timber planting	Substantial increase in the area of plantation forests (2030) (DSP)	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Forest Authority, Conservational & Environmental Protection Authority (CEPA)	FAO, IFAD
Enhanced strategies for secondary forest utilisation	Increased Forestry Products Exports from K1,093.1 million (2016) to K2,500.0 million (2022)(MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: National Forest Authority, Conservational & Environmental Protection Authority (CEPA)	FAO, IFAD, ACIAR
Enhanced information on forests	Next iterations of National Forest Inventory	Planet: Sustainable management of natural resources, biodiversity conservation, strengthened climate & disaster resilience.	The Public Private Sector GoPNG Bodies: National Forest Authority, Conservational & Environmental Protection Authority (CEPA)	FAO
Regional seed banks	Increased funding for Seed Production Program Investment by K5.00 million/year over several years (MTDP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: FPDA	FAO, IFAD, UNICEF,
Climate response strategy in place for Minerals sector	Climate change plan for Minerals sector developed	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Mineral Resource Authority, DMPGM National Disaster Centre (NDC)/ Disaster Risk Management Commission (DRMC), Department of Mineral Policy & Geohazards Management	UNDP
Climate response strategy in place for Health sector	Upgraded district health centre to district hospitals (Level 4) provincial hospitals to Level 5, 4 regional hospitals to Level 6, and referral hospital (Angau and POMGH) to Level 7 status (2030)(DSP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: Department of Health	UNICEF, UNAIDS, OHCHR, UNFPA
Climate compatible national-level Fisheries plans	Increased Marine Products Exports from K573.1 million (2016) to K1,113.47 million (2022)(MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: National Fisheries Authority, PNGDF, Police, Customs, DCI, Provincial Governments and Donor partners	UNDO, FAO, IFAD, UNEP, UNFCCC, UNESCO, UN-Habitat

PHASE 4

30 BY 30	SUGGESTED REPORTABLE OUTPUT	PRIMARY UNDAF SUSTAINABLE DEVELOPMENT OUTCOME	KEY STAKEHOLDERS THAT NEED TO BE INVOLVED WITH THE CCDA	KEY DONOR AGENCIES THAT NEED TO BE ENGAGED
Renewables-based rural electrification	Increase in power generation by sustainable energy sources from 4.4% (2017) to 11.25% (2022)(MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Department of Petroleum & Energy, PNG Power Limited (PPL)	UNCDF, UNDP, IFAD, WORLD BANK
Resilient, reliable and efficient electricity grids	Establishment of a national grid for all major towns and cities to be in the national grid which will feed off an electricity super corridor by 2030 (DSP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Department of Petroleum & Energy, PNG Power Limited (PPL)	WORLD BANK, UNDP, UNCDF
Climate-proof priority infrastructure	Specific projects that demonstrate the benefits of climate-proof infrastructure	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG	UNCP, UNCDF, ILO, UNICEF
Enhanced private sector investment in climate-resilient infrastructure	Increased the number of MOUs between government and private organisations for education and awareness purposes	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Social Protection Program Management System, Investment Promotion Authority	UNDP, UNCDF
Climate resilient agribusiness supply chains	Increased horticultural production, including organic by 5 times from 2010 to 2030 (DSP) and increase volumes of commodities exported from K2,254.2 million (2016) to K34,106.90 Million (2022)(MTDP)	People: Inclusive Human Development & Equitable Services.	The Public Private Sector GoPNG Bodies: DAL,	FAO, IFAF, UNICEF, ILO
Climate compatible Tourist industry	Increased the number of Foreign Visitors Arrivals from 197,632 (2017) to 385,470 (2022) (MTDP)	Prosperity: Inclusive & Sustainable Growth. By 2022, all people in Papua New Guinea, including marginalized and vulnerable populations, benefit from shared prosperity and contribute to growth and development that is equitable, inclusive and sustainable	The Public Private Sector GoPNG Bodies: Tourism Promotion Authority	UNDP

Monitoring Progress

Measuring progress, monitoring and evaluation are highly important for refining the actions proposed here, to ensure their effectiveness, particularly over the 10-year time scale. This document has been developed by the CCDA in close partnership with DNPM and key sector agencies, as well as with support from UNDP. Coordination, implementation and governance management are critical elements of managing an effective national response to climate change, which is necessary to ensure the actions proposed in this report go ahead. A cross-sectoral Climate Change Committee (CCC), which will be established in partnership between the CCDA and DNPM and overseen by the CCDA, is planned for creation in 2020 to ensure monitoring and management of these actions. This CCC will facilitate coordination of both financial and technical elements of PNG's climate change response, particularly pertaining to the actions that will be implemented as a result of this report. While the CCC will coordinate and administer these roles, targets in each area will also be linked to their service delivery agency. The CCC will also need to work across levels of government, engaging with activities up to national and international reporting bodies.

The targets put forth in the national frameworks and the SDGs are composed of measurable components, and additionally, a concrete timeline is established in this report to consider performance against targets in given time periods. The national frameworks together with the SDGs and this document provide a framework for overall monitoring and evaluation to track progress and results, which can be adaptively managed over the decade. These measures will be transparent and measurable, and fit with required reporting at an international level (for example, regarding NDC reporting) as well as domestically, complying with the PNG Planning and Monitoring Responsibility Act 2016.

A Cross Sector Phased Approach to Implementation

The challenges and actions here show the need for a phased approach that builds on existing targets and national frameworks. The 30 actions will be implemented in four phases from 2020 to 2030, as illustrated in the Roadmap Implementation Timeline (page 8). This phasing will require integration of stakeholder values and actions across sectors, which have been conceptualised in four founding pillars.

These include:

- Establishing supportive climate governance frameworks
- Unlocking climate finance and investment
- Monitoring progress, particularly against the MTDP III and NDC
- Communicating achievements and benefits of building capacity.'

These will allow the primary coordinating body of this Roadmap, the CCDA, to efficiently and synergistically guide actions in order to achieve positive and measurable outcomes. The timeline and action plan provide an accountability structure, ensuring that targets are clear, achievable and coordinated, and so that these are carried out and reported upon at the appropriate interval by the suitable government body.



Links with Paris Agreement

The 30 actions of the Roadmap are consistent with and help to deliver Papua New Guinea's global climate change commitments under the Paris Agreement. Those commitments are called our Nationally Determined Contribution (NDC).

The current NDCs for PNG state:



for adaptation "PNG is highly vulnerable to the effects of climate change and given the temperature increases locked in by present world emissions of greenhouse gasses, adaptation is a high priority. The country will need financial support, capacity building and technical support to face the uncertain future posed by climate change"; and,



for mitigation "The main mitigation contribution for PNG would be in terms of an indicative replacement of fossil fuelled electricity generation with renewable energy sources. This could be accomplished at a rate determined by the availability of external funding.





The 30 actions of the Roadmap are therefore closely linked with the current NDCs and suitably comprehensive and flexible to accommodate future iterations of the NDCs. By achieving the 30 actions of the Roadmap the NDCs will also be delivered.

PNG - a Country Vulnerable to Climate Change

PNG is one of the most vulnerable of all countries globally to the impacts of climate change. Globally ranking 161st out of 181 countries. This vulnerability is a function of PNG's high exposure to a changing climate (e.g. rising temperatures, sea level rise, increased high intensity rainfall), the sensitivity of its society and economy to those changes (e.g. the sensitivity of subsistence farmers to changes in rainfall patterns, or proportion of population living in low lying coastal areas) and sensitivity of its economy and societal systems to those changes. These two elements indicating the level of impact that climate change will have on a country. The adaptive capacity and readiness to address climate change form the final element looking at the capacity of those impacted to respond and adapt to minimise the harm of the climate impacts. Within this process the five capitals model can also be used to help structure both where capacity exists or is limited to respond and how this impacts on vulnerability. The below section provides a summary of this assessment within PNG.

PNG has a high level of exposure to rapid climate change. Climate modelling indicates that PNG will have one of the highest localised rates of climate change with particularly high levels of change occurring through sea level rise as well as localised variations in rainfall. What is also clear is that while levels of exposure across PNG are universally high the nature of this exposure is as varied as PNG's geography and society. Rapid sea

level rise is prominent in coastal regions with many of these areas also experiencing significant increases in rainfall. Highland areas will see rises in temperature and the intensity of rainfall events but may also experience periods of extended draught linked to El Niño events although the relationships between climate change and these weather cycles remains poorly understood. Academic modelling provides an overview of predicted change, but more detailed assessment is limited by a lack of accurate data on current trends in PNG's climate across its diverse geography.

PNG is highly sensitive to both existing and predicted levels of climate change. With over 80% of the population relying on rain fed agriculture for sustenance and livelihoods small changes in rainfall and temperature can have a significant impact. Climate change will affect agricultural production in most areas by increasing variability of production across geographies; some areas will experience increased droughts while others see more flooding and more intense storm activity. Cash crops and subsistence crops will both be damaged, resulting in potential damage to life and livelihoods.

Enhanced ocean acidification will also impact PNG's diverse and extensive network of coral reefs with the potential to have a significant impact on coastal fisheries — a key source of protein for PNG's coastal population. Changes in sea surface temperatures are also anticipated to impact tuna fisheries with skipjack and tuna catch reducing by around 30% by the end of the century.

The country's extensive coastline as well as network of low-lying atolls will be heavily impacted by rising sea levels with increases in levels of soil salination exposure to tidal surges as well as limited access to fresh water for drinking. These impacts are already being felt with communities from the Carteret Atoll being among the world's first climate refugees as they were forced to move from the islands due to sea level rise.

»»» Fast Facts on Impacts and Projections for PNG

- ▶ Sea level rise — the sea level around PNG is rising at 7mm per year more than twice the global average
- ▶ Ocean acidification
- ▶ Increasingly intense cyclones
- ▶ Changes in rainfall (both extreme rainfall days and a 10-15% increase in annual rainfall in some areas)
- ▶ Increase in surface temperatures, particularly with an increase in extremely hot days.
- ▶ Changes in cycles of drought linked to El Niño.

Increasing intensity of storm and rainfall events will also impact PNG's road and port infrastructure through flash flooding and storm surges. PNG's agricultural land will also be degraded and soil erosion caused by severe rainfall events.

PNG currently has a very low adaptive capacity and readiness to respond to climate change. In-terms of financial capital the country ranks 124th based on GDP (PPP) with the national government facing significant levels of debt and limited resources to invest in key infrastructure or climate responses (such as roll out of widespread agricultural extension services, or targeted response to potential climate exacerbated health risks), with many adaption measures requiring additional investment beyond the business as usual. This is particularly apparent with regard to PNG's infrastructure (manufactured capital) with extensive investment in road and marine based (wharfs, coastal defences) also needed.

Constraints, Gaps and Capacity Needs identified in the First Biennial Report

Constraints

- ▶ Data sensitivity
- ▶ Limited budget to carry out climate change activities
- ▶ Geographical situation of the country
- ▶ Ineffective institutional arrangement

Capacity Needs

- ▶ Unavailability of data from data source
- ▶ Inaccurate and inconsistent data
- ▶ No established monitoring system to monitor climate change activities

Gaps

- ▶ Understanding of 2006 IPCC guidelines
- ▶ Mitigation analysis knowledge and skills
- ▶ Vulnerability need assessment knowledge and skills

These core limitations in PNG's capacity to adapt to climate change also impact on its long term readiness to respond through economic, governance and social systems. PNG has extremely limited ability to leverage financial and technical investment that can be directed towards adaptation actions. In terms of the business environment and institutional factors that encourage private investment, PNG has few frameworks in place, with limited coordination, as well as limited education access, infrastructure, and a high proportion of the population that is impoverished or low-income. This results in a low preparedness and low capacity to implement systematic changes and improvements.

At the household level over 86.9% of the population were estimated to be living below \$5.50 a day in 2009 . Within this context there is limited access to savings and the majority of income being linked to agricultural production, there are limited options for adoption of alternative livelihood strategies and coping measures within the context of climate shocks. High levels of social capital linked to strong clan and community-based linkages have in many areas helped to provide short term social safety nets they are ill equipped to address widespread impacts or long term systemic changes. With the high level of customary land title (over 97% of PNG land) also making internal migration complex.

These challenges are exacerbated by low levels of human capacity with low levels of literacy and access to education limiting opportunities for individuals and households to adopt new livelihood strategies or access information to enhance their adaptive capacity.

At present many of the worst impacts of climate change have been mitigated by PNG's high levels of natural capital. Mangroves have helped buffer the impacts of storm surges. High levels of forest cover help maintain weather patterns and reduce soil loss and flash flooding. However with increasing population and desire for development many of these key elements are also being diminished.

PNG - Potential to Reduce Greenhouse Gas Emissions

PNG's emissions are primarily from the energy sector, with the minority coming from land use change, waste, agriculture and industrial processes and product use, with GHG emissions totalling 15,193Gg of CO₂e in 2015. That year, emissions contributions were 87.5% from the energy sector, 11% from land use and land change, 6.5% from the waste sector, 5.9% from agriculture, 0.2% from industrial processes and product use. The first Biannual Report to the UNFCCC identifies the following constraints, gaps and capacity needs for implementing climate change activities where support is needed financially and technically.

Given these, key areas of opportunity are in the energy production sector and in reducing land use change, particularly by further developing REDD+, which will have a multitude of positive impacts including facilitating adherence to the Paris Agreement and NDCs as well as facilitating goals related to biodiversity and the forestry and tourism sectors.



PNG's constitution, adopted upon independence, enshrines five key objectives within all of PNG's development planning.

- 1 Integral human development
- 2 Equality and participation of all
- 3 Enhancement of national sovereignty and self-reliance
- 4 Responsible management and use of natural resources for environmental sustainability, and
- 5 Sharing of resources in Papua New Guinean ways for the benefit of clans, tribes and communities rather than for individual benefit.



These elements are critical in finding a climate compatible and responsible approach to development and are integrated within PNG's long-term (Vision 2050 and the Strategic Development Plan 2030) and medium-term development plans as well as supporting policies including the National Strategy for Responsible Development (2014) and National Climate Compatible Development Management Policy (2015).

Across these plans the GoPNG has laid out an ambitious development pathway that seeks to meet several ambitious targets, highlighted here.

BY 2030



Reduce emissions by 50%



Improve PNG's Human Development Index ranking to 50 from 148.



Ensure that half of the population are self-employed entrepreneurs



Increase rural electrification from 15% to 100% of the population

Carbon neutrality by 2050



As part of this response, PNG was one of the first countries globally to submit its Nationally Determined Contributions to the UNFCCC as part of the Paris Agreement. Within this the country lays out the following objectives. Responsible conservation and use of natural resources is a constitutional responsibility for PNG and a national priority area. The PNG national government has several major frameworks and guidelines that connect to the SDGs and action on climate change. Several key documents, including the MTDP and DSP, make up PNG's framing for environment and sustainable development through 2050. These national frameworks align with the National Climate Compatible Development Management Policy and other frameworks for sustainable development, ultimately laying the groundwork for achieving Vision 2050 and adherence to the Paris Agreement through the NDCs. The first revision of its NDC, the Biannual Report from 2018 relays emissions data, identifying constraints, gaps and capacity needs for implementing climate change activities where support is needed financially and technically.

PNG's emissions are primarily from the energy sector, land use change, waste, agriculture and industrial processes and product use, with GHG emissions totalling 15,193Gg of CO₂e in 2015. That year, emissions contributions were 87.5% from the energy sector, 11% from land use and land change, 6.5% from the waste sector, 5.9% from agriculture, 0.2% from industrial processes and product use. Though energy is a large emitting sector from PNG today, there is a major goal for carbon neutrality by 2050.

The Sustainable Development Goals



The primary objective of Roadmap is:

To set out a clear pathway by which PNG can achieve the goals of SDG 13 by 2030 through meaningful action on climate change while also supporting the achievement of PNG's development objectives and other SDG targets within the context of sustainable and responsible development.

Central to this objective is the need to ensure that globally relevant action on climate change is integrated as domestically appropriate objectives across all sectors of PNG's economy and government. As such this Roadmap links closely with existing national development plans including the Strategic Development Plan, Medium Term Development Plan as well as the guiding framework of the Sustainable and Responsible Development Strategy (STaRS). It also pays close attention to sector development plans in particular PNG's targets on climate change and objectives laid out in its NDCs. Implementation of these actions align with the NDC targets and adherence to the Paris Agreement based on taking action for climate change mitigation and adaptation through synergies with the SDGs, and bilateral commitments to climate action and water security, gender equity, nature-based solutions, inclusion of traditional knowledge, public participation, facilitation of partnerships and cost and energy efficiency.

The use of the SDG framework and the targets of SDG13 help to frame this approach within the international sphere as well as providing a structure for assessment. Within this the proposed actions seek to not only address the domestic elements of SDG13 but also to ensure PNG is able to engage with and access international objectives linked to the mobilising of finance and capacity building support.

SDG 13 TARGETS

13.1

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

13.2

Integrate climate change measures into national policies, strategies and planning

13.3

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

13.a

Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible

13.b

Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities



The SDG's are an internationally recognised approach for action towards supporting development. They provide a measurable framework around which global action and resources are mobilised to support efficient and responsible sustainable development. A key of the SDGs is their recognition that climate change is one of the biggest threats to achieving development, The SDGs focus on earth's life-support system and poverty reduction as dual priorities that are entrenched in one another. Earth's environment cannot flourish while vast amounts of humanity are impoverished, yet humanity cannot thrive across generations without sustainably safeguarding the natural resources that it relies upon; this demonstrates the importance of addressing environmental issues like climate change.

There are 17 globally coordinated SDGs to achieve by 2030 that provides a blueprint to achieve a better and more sustainable future for all. SDG 13 aims to take urgent action to combat climate change and its impacts and includes three 'national' action areas and two 'international' areas of action:

National Objectives are to:

- 1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
- 2 Integrate climate change measures into national policies, strategies and planning.
- 3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning systems.

The International objectives are to:

- 1 Implement the commitment undertaken by developed-country parties to the UNFCCC to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.
- 2 Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

It is around these goals that the current roadmap has been developed.

Roadmap Guiding Principles





The Roadmap has been developed around a number of core guiding principles that are drawn from both the SDG framework and national development frameworks. Central to this is the concept that 'no-one is left behind' and as such that interventions should address the varied impacts and vulnerabilities of different groups within society and support their differing needs, particularly those who are most marginalised. Gender is an important issue in PNG and throughout these actions, gender-specific barriers should be addressed that limit climate change adaptation. Steps should be taken to integrate intersectional gender analysis in the relevant policy revisions and creation. This is particularly pertinent for climate change governance and policies relating to agrarian populations and natural resource management.

By building on the concepts of responsible and sustainable development, as well as the guiding objectives of the PNG constitution to safeguard the country's wealth for future generations, the Roadmap has also sought to adapt this concept at an intergenerational level to ensure that the actions taken now do not compromise the opportunities of future generations.

The following section outlines the 30 actions to be achieved by 2030. The actions are structured around 10 thematic areas that cover key elements of PNG's economy and governance framework. These thematic areas were identified partially to facilitate engagement of key sector agencies and stakeholders and to better align actions with the plans of these sectors. Thus whilst the Climate Change Development Authority (CCDA) acts as the central hub for action on climate change and has a pivotal role in achieving SDG 13 and this roadmap, it is critical to note that their role is that of a guide for and catalyst to action helping to provide information and knowledge. The CCDA should also facilitate the actions of other sectors to take action on climate change. Further information on the responsibilities for actions is provided within each action area as well as the Roadmap Timeline, Stakeholder Action Plan and Management and Implementation Table.

Climate Change Governance and Knowledge



SDG 13 TAKE URGENT ACTION TO COMBAT

PNG Medium Term Development Plan (MTDP) Key Management Area (KMA) 7 Responsible and Sustainable Development

7.2 Adapt to the Domestic Impacts of Climate Change and Contribute to Global Efforts to Abate Greenhouse Gas Emissions

Climate change Impacts

- Sea level rise of 7mm per annum (observed since 1993)
- Increased ocean acidification
- Increases in temperature with increased incidences of hot days and 1-5°C increase in surface temperatures
- Changes in rainfall patterns resulting in more extreme events and with some areas experiencing increased drought while others increased rainfall
- Increase in intensity of tropical cyclones
- Heterogeneity in impacts, which will primarily impact women, the poor, smallholder farmers, and those relying on fisheries and other natural resources for livelihoods.



Opportunities through climate action

Emissions reductions — coordinated action on climate change will help to deliver emissions reductions supporting global efforts to mitigate climate change.

Access to finance — Access to international support on adaption and engagement in mechanisms for mitigation finance will help to bridge the investment gap on many new and climate compatible development approaches enabling PNG to adopt a low emission green development path way.

Cross sector coordination — Increasing coordination across sectors will support improved integrated development action that will increase impacts of government, private sector, NGOs, CSOs, and international finance on key development outcomes including SDG targets.

ACTION 1

STRONG INVESTMENT FRAMEWORK FOR CLIMATE ACTION

PNG is a high priority country for climate finance because of the combination of significant mitigation opportunities as well as adaptation needs. This represents a substantial opportunity for PNG but requires effective structures to mobilise, manage and distribute finance.

KEY REQUIREMENTS INCLUDE:

- Effective coordination and overall governance structures
- Effective financial management systems that do not create duplication
- Base line of priority investments
- Capacity to monitor and report on spending and linkages with climate impacts
- Integration of governance and implementation systems linked to Disaster Management and Climate Change Adaptation to reduce overheads and improve targeting of support.



SDG TARGETS AND INDICATORS

- 13.a** Mobilise finance
- 13.b** Mechanisms to raise capacity for effective climate change action

MTDP STRATEGIES

Negotiate to get improved funding, technical, institutional and technology support for climate change mitigation in the country.

ACTION 2

CLIMATE COMPATIBLE DEVELOPMENT PLANNING AND BUDGETING SYSTEMS

PNGs CCMA lays out a framework for climate change governance and the integration of climate action into sector and subnational development planning. Establishing this framework will provide a critical mechanism to incentivise action on climate change as well as providing structures for finance to be distributed. Key areas for early action including integration of climate change considerations into PIP and CIP criteria as well as into DSIP and PSIP criteria.



ACTION 3

EFFECTIVE CLIMATE CHANGE AND EARLY WARNING INFORMATION SYSTEMS

Limited information on climate change risks in the short, medium and long-term present significant barriers to effective planning within those time scales and at varied geographical scales. Establishment of an effective network of weather stations and supporting forecasting and information management systems would allow for improved climate information to be provided within PNG. These and improved collaboration with the with National Weather Service will also result in improved early warning systems for major weather events that will impact rural farmers as well as marine fisheries.

SDG TARGETS AND INDICATORS

13.2

Integrate climate change measures into national policies, strategies and planning

MTDP STRATEGIES

Improve climate change legislative frameworks, policies, regulations, and standards

SDG TARGETS AND INDICATORS

13.3

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

MTDP STRATEGIES

Improve climate change legislative frameworks, policies, regulations, and standards



ACTION 4

EFFECTIVE GREENHOUSE GAS EMISSIONS MONITORING AND REPORTING

Strengthening PNG's capacity for emissions monitoring and reporting is fundamental to effective policy development on how to reduce emissions as well as accessing mitigation-focused climate finance. Strengthening the monitoring system on Agriculture Forestry and Other Land Use (AFOLU) sector since it is a major part of PNG's national emissions accounts, the most complex sector for monitoring emissions and the highest potential sector for climate finance.

SDG TARGETS AND INDICATORS

13.4

Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

MTDP STRATEGIES

Build capacity to effectively plan and deal with natural disasters including improved warning systems, monitoring and disaster response

ACTION 5

EFFECTIVE CAPACITY BUILDING IN PRACTICAL SKILLS AND RESEARCH FOR CLIMATE CHANGE

Enhancing knowledge and understanding on climate change is critical to effective action but must also be designed to ensure it is fit for purpose and strengthens PNG's capacity to deliver on its development objectives. Indicative areas of investment include:

- Integration of base level climate science into primary and secondary curricula
- Integration of climate change modules into university courses
- Development of relevant vocational / short courses in key target areas (e.g. solar voltaic installation and maintenance, micro-hydro installation and maintenance, climate smart agricultural practices, climate change governance and management (for key civil servants and private sector actors)
- Establishment of Research and Innovation Centres around Carbon Farming and Clean Energy Solutions based at local Universities and done in partnership with leading international Universities.
- Investment in preservation and promotion of Traditional Knowledge, particularly relating to conservation and natural resource use.

SDG TARGETS AND INDICATORS

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

MTDP STRATEGIES

Support educational, research and development programmes associated with mitigating Climate Change impacts and management



Energy

7 RENEWABLE ENERGY



SDG 7
ENSURE ACCESS TO AFFORDABLE, RELIABLE, SUSTAINABLE AND MODERN ENERGY FOR ALL

ACTION 6 **CARBON NEUTRAL GAS AND MINERALS SECTORS**

PNG has developed significant gas and minerals processing sectors around the Nation's natural reserves. The sectors produce large volumes of greenhouse gas emissions from Scope 1 and Scope 2 activities as well as its Scope 3 impacts. Scope 1 emissions are directly from owned or controlled sources, scope 2 are indirect emissions from purchased energy generation and cooling consumed, and scope 3 includes all other indirect emissions. This presents a considerable barrier to PNG's current target of carbon neutrality but also an opportunity for partnership to reduce the impact of these production systems globally while supporting domestic low carbon development pathways.

SDG TARGETS AND INDICATORS

7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

MTDP STRATEGIES

KRA 2 - Quality Infrastructure and Utilities
Power generation by sustainable energy·

- Increase household electrification rate from 17% to 33% by 2022 (MTDP)
- Increase access to electricity from 12.4% to 70% of households by 2030 (DSP)
- Reduce diesel power generation from 158MW to less than 40MW by 2030 (DSP)
- Generate 30MW of power from coal by 2030 (DSP)
- Increase hydropower generation from 217MW to 1020MW by 2030 (DSP)
- Increase power generation from other renewables from 56MW to 500MW by 2030 (DSP)

CLIMATE CHANGE IMPACTS

Decreased reliability of service — extreme weather events impact existing supply infrastructure.

Increased GHG emissions — due to increased levels of demand for energy from a growing population and economy.

OPPORTUNITIES THROUGH CLIMATE ACTION

Reduced costs — renewable energy sources provide lower cost opportunities due to high costs of diesel

Reduced imports — reduction in reliance on imported fuels

Increased access in rural areas — small-scale renewable energy systems provide options for rapid roll out of rural electrification.

ACTION 7

RENEWABLES-BASED RURAL ELECTRIFICATION

PNG has set strong targets for increasing levels of electrification from close to 12% of the population to 70% by 2030. Putting renewable energy technology at the forefront of this approach will help avoid increases in emissions to deliver significant emissions reductions while also reducing costs of access to electricity within rural areas.

SDG TARGETS AND INDICATORS

7.1

By 2030, ensure universal access to affordable, reliable and modern energy services

MTDP KRA 2 QUALITY INFRASTRUCTURE AND UTILITIES

- Increase electricity supply with extension of transmission power grid on to communities through National Electricity Supply Roll out Plan.
- Increase supply of energy with sustainable energy source.

ACTION 8

RESILIENT, RELIABLE AND EFFICIENT ELECTRICITY GRIDS

PNG already has significant installed renewable energy capacity but much of this is underutilised and not fully operational. Enhancing the operations of these facilities while also establishing new large-scale renewable projects within the system will help both to ensure that PNG is able to effectively avoid increasing emissions and that the systems in place are resilient to a changing climate.

SDG TARGETS AND INDICATORS

7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support

ACTION 9

ENERGY EFFICIENT GOVERNMENT AND PRIVATE SECTOR

PNG has a draft policy on energy efficiency with opportunities to further action to help reduce energy use from key government and private sector bodies both reducing emissions and the load on existing grid systems. There is also an opportunity to improve upon and facilitate capacity building among existing research and innovation bodies that aim to improve the renewable energy sector.

SDG TARGETS AND INDICATORS

7.3

By 2030, double the global rate of improvement in energy efficiency

MTDP KRA 2 QUALITY INFRASTRUCTURE AND UTILITIES

Increase electricity supply with extension of transmission power grid on to communities through National Electricity Supply Roll out Plan.
Increase supply of energy with sustainable energy source.

Forests

15 LIFE ON LAND



**SDG 15
PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS**

MTDP NATIONAL TARGETS

KRA 7 – RESPONSIBLE SUSTAINABLE DEVELOPMENT

- Increase forestry product exports from K1,093m in 2016 to K2,500m by 2022 (MTDP)
- Increase share of processed timber in total timber exports from 21% (K106m) to 80% by 2030 (DSP)
- Reduce primary forest depletion rate per year from 9% to 5% by 2022 (MTDP)
- Increase in GNI from forestry sector by 1.3% by 2030 (DSP)
- Increase in GDP from forestry sector by 1.2% by 2030 (DSP)
- Increase in tax revenue from forestry sector by 60Kmillion by 2030 (DSP)

KEY CLIMATE CHANGE IMPACTS



Loss of productivity — due to extreme weather events

Reduced capacity for natural regeneration — due to changing climatic patterns resulting in increasing potential for land degradation

Increased environmental impacts — due to extreme weather events resulting in increased sediment run off and damage to regenerating forests.

OPPORTUNITIES THROUGH CLIMATE ACTION

Increased access to global markets and price premiums — through adoption of higher climate compatible production processes including sustainability standards and sustainable use of secondary forests

Enhanced downstream processing and productivity — through development of a plantation sector that helps reduce emissions, impact on primary forests and increases employment and standardisation of production.



ACTION 10 REDD+ RESULTS DELIVERED

REDD+ provides a significant opportunity for PNG to deliver emissions reductions while securing the key environmental services that forests provide. Effective integration of REDD+ approaches into forest policy and planning as well as action across the environment, agricultural and planning sectors will deliver emissions reductions while supporting effective utilisation of PNG's forest resources.

SDG TARGETS AND INDICATORS

15.1

By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland fresh-water ecosystems and their services, in particular forests, wetlands, mountains and drylands, are in line with obligations under international agreements

15.2

By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

ACTION 11 INTERNATIONALLY RECOGNISED TIMBER LEGALITY STANDARD

PNG's timber legality standard and verification are fully operational, increasing information and transparency of forest production and increasing market access, while also improving standards of operations that help reduce climate impacts and ensure key environmental services remain intact to improve climate resilience.

SDG TARGETS AND INDICATORS

- 15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

MTDP KRA 1 - INCREASED REVENUE AND WEALTH CREATION

STRATEGY - Encourage sustainable reforestation and afforestation programmes, and promote manufacturing of timber products.

ACTION 12 INCREASED ENVIRONMENTAL AND COMMERCIAL TIMBER PLANTING

Increased awareness and support to tree planting for local level and commercial timber use as well as environmental planting in line with Painim Graun Planim Diwai (Find land plant trees) will support reductions in impacts on natural forests while also helping to improve the environmental

SDG TARGETS AND INDICATORS

- 15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.3** By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

MTDP KRA 1 - INCREASED REVENUE AND WEALTH CREATION

STRATEGY - Encourage sustainable reforestation and afforestation programmes, and promote manufacturing of timber products.

ACTION 13

ENHANCED STRATEGIES FOR SECONDARY FOREST UTILISATION

Enhanced strategies to utilise logged over or degraded forests for timber harvesting or managed agricultural expansion provide an opportunity for PNG to minimise impacts of development on primary forest areas while also helping to manage unplanned expansion of agriculture into these areas. Additionally, increased capacity development of downstream processing for a sustainable forestry industry and national economic development, and the increase of employment opportunities.

SDG TARGETS AND INDICATORS

- 15.2** By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.3** By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

MTDP KRA 1 - INCREASED REVENUE AND WEALTH CREATION

STRATEGY - Encourage sustainable reforestation and afforestation programmes, and promote manufacturing of timber products.

ACTION 14

ENHANCE INFORMATION ON FORESTS

Enhanced information on the nature and status of PNG's forests will improve the quality of policy and management responses, helping to increase the resilience of the forests, its contribution to biodiversity and environmental service provision as well as acting as a global GHG sink.

Infrastructure

9 INNOVATION AND INFRASTRUCTURE



SDG 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

KEY CLIMATE CHANGE IMPACTS

- ▶ Loss of productivity and access to services - due to damage to infrastructure from extreme weather events.
- ▶ Displacement of people and disrupted livelihoods - due to coastal and inland flooding destroying homes and key infrastructure.
- ▶ 25% increase in estimated costs to climate proof new road infrastructure.
- ▶ \$28m in damage from intense rainfall across just 3 months in 2012.

OPPORTUNITIES

Reduced recurrent and build costs — through combined use of natural systems and improved design to increase resilience of infrastructure

Enhanced social, economic impacts — through increased reliability, quality and equality of access to infrastructure.

MTDP NATIONAL TARGETS

KRA 2 - QUALITY INFRASTRUCTURE AND UTILITIES

- Increase number of bridges on national roads in good condition from 15 to 80 by 2022 (MTDP)
- Increase total length of national roads from 8,740km to 12,000km by 2022 (MTDP)
- Increase percentage of national roads in good condition from 28.7% to 100% by 2030 (DSP)
- Reduce percentage of urban population in settlements from 28% to less than 15% by 2030
- Increase estimated length of provincial and district roads from 16,100km to 18,000km by 2022 (MTDP)
- Increase number of missing link roads constructed from 16,100km to 18,000km by 2022 (MTDP)

ACTION 15

CLIMATE RELEVANT PLANNING AND CONSTRUCTION STANDARDS

Effective integration of climate change considerations into development planning and construction standards including considerations of sea level rise, high intensity storm events, and changing temperature regimes will be critical to reducing PNG's future vulnerability and ensuring all new infrastructure is climate resilient.

SDG TARGETS AND INDICATORS

- 9.1** Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- 9.a** Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small-island developing states

ACTION 16

CLIMATE PROOF PRIORITY INFRASTRUCTURE

Climate proofing existing and new infrastructure will require additional investment with a need to prioritise key infrastructure that supports delivery of essential services (e.g. hospitals) and supports economic activity (e.g. roads and wharfs).

SDG TARGETS AND INDICATORS

- 9.1** Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- 9.4** By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

- Implement and enforce building standards for the construction of infrastructure in disaster prone areas.
- Develop policy and regulatory framework for the development of Sustainable Environment and Infrastructure — development of standards and regulations for climate proofed and resilient infrastructure.

ACTION 17

ENHANCED PRIVATE SECTOR INVESTMENT ON CLIMATE RESILIENT INFRASTRUCTURE

Considerable infrastructure at the subnational level is delivered by private sector investment through tax credit or other project-based agreements. Scaling up the delivery of this infrastructure in partnership with government and ensuring that it is both climate resilient and addresses key vulnerabilities at the subnational level will strengthen PNG's resilience to climate change. At the national level, several measures to promote low-emissions vehicles will also be taken utilizing the newly established strong investment framework for climate action. These measures include policy to promote both public investment in climate action and public-private partnerships to promote sustainable transport. An effective mass transport system, primarily in the form of busses and minivans will continue to be developed to increase sustainable transport throughout the nation. Also contributing to SDG 11 Sustainable cities and Communities - 11.1 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all.

SDG TARGETS AND INDICATORS

- 9.1** Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- 9.a** Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing states

MTDP KRA 2 QUALITY INFRASTRUCTURE AND UTILITIES

- Construct vital missing link roads and district trunk roads to strategic communities of economic potential for transportation of commodities like coffee, cocoa and tea to markets.
- Rehabilitate and maintain national highways including bridges, which are identified to contribute to economic growth.
- Rehabilitate and upgrade major ports and strategic wharves and jetties along the coast and waterways.





Agriculture

2 NO HUNGER



SDG 2 END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUS- TAINABLE AGRICULTURE

KEY CLIMATE CHANGE IMPACTS

INCREASED RISK OF DISEASE — due to increased temperatures and rainfall, including spread of disease to new areas of the country.

LOSS OF CROPS — due to extreme weather events

LOSS OF FARM LAND — due to ground water salinization from rising seas and increased land degradation from extreme weather events.

PRICE VOLATILITY OF CROPS — volatility of prices in both local and international markets impacting cash crop farmers as well as national level access to foodstuffs. .

OPPORTUNITIES

ENHANCED RESILIENCE OF PRODUCTION — through climate smart agriculture, increased access to information on changing weather and climate patterns and agricultural support systems.

INCREASED PRICES AND PRODUCTIVITY — through increasing quality of production of key cash crops and increasing market access as well as promoting climate friendly production.

ACTION 18 CLIMATE RESILIENT AGRI-BUSINESS SUPPLY CHAINS

Strengthened value chains through improved market linkages (including infrastructure and information), networks of suppliers, access to seed, technical support and climate information will be essential for maintaining high quality supply and strengthening the rural economy.

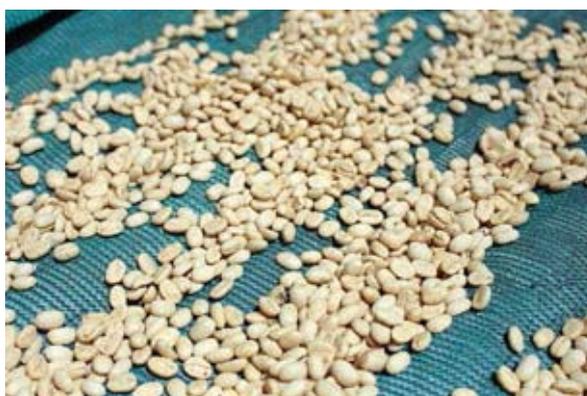
MTDP KRA 1 INCREASED REVENUE AND WEALTH CREATION

- Revitalise production of the key commodities in quality and quantity.
- Enhance bio-security standards and capacity of PNG institutions to meet the required global standards for agriculture, fishery and other products to access the niche markets.

NATIONAL TARGETS

KRA 1 — increased revenue and wealth creation
KRA 7 — responsible sustainable development

- Increase GNI from agriculture sector by 29.9% by 2030 (DSP)
- Increase GDP from agriculture sector by 25.4% by 2030 (DSP)
- Increase tax revenue from agriculture sector by 2,110K million (DSP)
Increase cocoa production to 310,000 tonnes by 2030 (DSP)
- Increase coffee exports from K646.8m to K1,125m by 2022 (MTDP)
- Increase coffee production from 63,000 tonnes in 2008 to 500,000 tonnes by 2030 (DSP)
- Increase oil palm production to 1.6 million tonnes by 2030 (DSP)
- 70% of subsistence farmers expand into small/- medium primary agricultural enterprises by 2030 (DSP)



SDG TARGETS AND INDICATORS

2.a

Increase investment, including enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.

ACTION 19

CLIMATE COMPATIBLE SUSTAINABLE PALM OIL SECTOR

PNG has embarked on establishing a Sustainable Palm Oil platform that will progress the sector towards a climate compatible approach to both expansion and management of existing plantation systems, helping to reduce forest clearance and the impacts of plantations on key environmental services and resources

SDG TARGETS AND INDICATORS

SDG Indicator 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

MTDP KRA 1 INCREASED REVENUE AND WEALTH CREATION

- Revitalise production of the key commodities in quality and quantity.
- Enhance bio-security standards and capacity of PNG institutions to meet the required global standards for agriculture, fishery and other products to access the niche markets.

ACTION 20

NATIONAL CARBON FARMING AND CLIMATE SMART AGRICULTURE INNOVATION CENTRES

Investment in research and innovation to deliver climate compatible solutions to enhance agricultural production and food security in PNG, will be critical to addressing climate risks. Establishment of a central hub will help to target research and catalyse increased impacts through coordinating action and linking farmers, government, development partners and the private sector.

ACTION 21

REGIONAL SEED BANKS

Establishment of regional seed stores to improve the availability of high-quality planting stock and capacity to replant following environmental shocks will help to increase resilience to climate impacts.

ACTION 22

TARGETED EXTENSION AND SUPPORT SERVICES

Climate impacts will vary significantly across PNG with targeted support required to those areas of highest vulnerability to introduce improved practices, new crops or support access to markets that will help to increase resilience.

SDG TARGETS AND INDICATORS

2.a

Increase investment, including enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

- Support human capital development in educational, research and other environmental awareness programmes in universities aimed at developing capacities to transition to sustainable development.
- Support educational, research and development programmes associated with mitigating climate change impacts and management.

SDG TARGETS AND INDICATORS

2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

SDG TARGETS AND INDICATORS

2.a

Increase investment, including enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.



Minerals



SDG 12 ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

KEY CLIMATE CHANGE IMPACTS

LOSS OF PRODUCTIVITY - Floods and landslides cause damage to mining infrastructure and reduce access to transport, decreasing the capacity of mines and disrupting supply chains operations.

ENHANCED ENVIRONMENTAL IMPACTS — due to extreme weather events impacting production systems and management of waste.

STRANDED ASSETS

Shifting global consumption patterns in response to climate change may lead to unpredictable commodity prices or even stranded assets.

NATIONAL TARGETS

KRA 1 — Increased revenue and wealth creation
KRA 7 — responsible sustainable development

- Earn K5 billion a year of revenues from petroleum projects by 2030 (DSP)
- Increase value of mineral exports to K18 billion by 2030 (DSP)
- Increase number of operating mine sites from 9 to 20 in operation by 2030 (DSP)
- Increase government revenues from mining to K3 billion per year by 2030 (DSP)
- Increase petroleum and non-mining exports to at least 60% of total export value by 2022 (MTDP)
- Increase refinery production to 9 million barrels of crude oil by 2030
- Increase mining and petroleum exports to K34.18 billion by 2022 (MTDP)

OPPORTUNITIES

ENHANCED PRODUCTIVITY — through climate resilient production systems.

IMPROVED MARKET ACCESS — through development of world leading climate compatible production systems.

ACTION 23 CLIMATE RESPONSE STRATEGY IN PLACE FOR THE MINERALS SECTOR

Development of a sector wide climate change response strategy will help to ensure that existing developments are effectively mitigating their impacts and new developments are able to align with a climate compatible approach, especially towards working to secure key environmental services and to reduce future vulnerability commercial production or the communities that surround it.

MTDP KRA 1 INCREASED REVENUE AND WEALTH CREATION

- Explore and develop new mines (Wafi-Golpu and Frieda River Copper Mine) and petroleum and LNG projects with revision of tax agreements.
- Improve the quality and quantity of manufactured products to meet international market standards.
- KRA 7 Responsible sustainable development
- Promote sustainable uses of non-renewable natural assets in forestry, marine, minerals and biodiversity.

SDG TARGETS AND INDICATORS

- 12.2** By 2030, achieve the sustainable management and efficient use of natural resources
- 12.6** Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle

Health



SDG 3 ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

CLIMATE CHANGE IMPACTS

INCREASED SPREAD OF DISEASE - Rising temperatures will facilitate the spread of vector borne diseases such as malaria and dengue fever as well as expanding their range. While flooding will spread infectious and diarrhoeal diseases.

ENHANCED RISK FOR VULNERABLE PEOPLE — extreme temperatures and weather will result in higher risk of cardiovascular and respiratory diseases among vulnerable people and increased risk of pneumonia for children under 5 years old.

INCREASED VULNERABILITY — extreme weather events resulting in food shortages and migration will result in increased vulnerability to spread of diseases through migration and malnutrition.

OPPORTUNITIES THROUGH CLIMATE ACTION

ENHANCED SERVICE DELIVERY — improved access to information and planning on potential climate change risks will help ensure effective planning of appropriate service provision.

REDUCED VULNERABILITY — action across other sectors will help to reduce vulnerability individuals through improved food security, access to services, increased income, maintained environmental services.



NATIONAL TARGETS

KRA 3 — Sustainable social development
KRA 7 — Responsible sustainable development

- Reduce incidence of reported malaria patients to 72 per 1,000 population by 2022 (MTDP)
- Reduce under 5 mortality rate per 1,000 live births from 75 in 2006 to below 20 by 2030 (DSP)
- Increase number of functioning aid posts to 7,500 by 2030 (DSP)
- Increase percentage of facilities with adequate medical supplies from 51% to 100% by 2030 (DSP)
- Increase number of community health workers to 20,000 by 2030 (DSP)
- Increase access to improved water source from 39% of total population to 70% by 2030 (DSP)
- Increase access to improved sanitation from 44% of total population to 70% by 2030 (DSP)
- Increase ratio of physicians per 100,000 people from 5 (300 physicians) to 50 (4,900 physicians) by 2030 (DSP)

ACTION 24

CLIMATE RESPONSE STRATEGY IN PLACE FOR THE HEALTH SECTOR

The health sector in PNG will be made more resilient to the impacts of climate change if the other actions in this Roadmap are adopted. There is a need, however, to extend the infrastructure-focussed activity of Action 16 and complete a more comprehensive vulnerability assessment for the National health system. In addition to climate risks to infrastructure, the assessment should also consider climate change impacts on disease and health and on the capacity of the PNG health system to manage related challenges, as well as addressing adaptation measures to improve healthcare infrastructure. A strategic / management plan should then be developed, which addresses those risks and enables the national health system to work effectively to address multiple SDG targets, ensuring inclusion of promotion of healthy living, use of local food, physical activities, and wellbeing.

SDG TARGETS AND INDICATORS

- 3.3** By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- 3.8** Achieve universal health coverage, including financial risk protection, access to health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
- 3.d** Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

MTDP KRA 3 SUSTAINABLE SOCIAL DEVELOPMENT

- Upgrade all health training institutions to increase the number of health professionals.
- Upgrade district health centre to district hospitals (Level 4) and provincial hospitals to Level 5, regional hospitals to Level 6, and referral hospital (Angau and POMGH) to Level 7 status.
- Roll out of Provincial Health Authorities (PHA) and strengthen Community Health Posts (CHP) throughout the country.
- Improve the procurement and management of medical supplies.
- KRA 7 Responsible sustainable development
- Establish National Water, Sanitation and Hygiene authority to oversee and coordinate the water, sanitation and hygiene services.
- Water, Sanitation and Hygiene program to provide safe water and improved sanitation services to all rural households and business houses.
- Water PNG Limited to provide safe water and improved sanitation services for all urban households and businesses houses.
- Water PNG Limited to provide safe water and improved sanitation services to all health and education institutions in the country.

Biodiversity



**SDG 14.
CONSERVE AND SUSTAINABLE USE THE OCEANS, SEA AND
MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT**



**SDG 15.
PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL
ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION,
AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS**

ACTION 25 BIODIVERSITY AND ENVIRONMENTAL SERVICES INTEGRATED IN PRODUCTION LANDSCAPES

Effective management of biodiversity and environmental services within production landscapes including implementation of best practices for land use, will be critical to maintaining connectivity between key species habitats and allowing for movement of species as climates change. Maintaining these systems will also increase resilience of production systems to a changing climate, reducing impacts of extreme weather events or shifting climatic regimes.

ACTION 26 CLIMATE RESILIENT PROTECTED AREAS NETWORK

PNG's biodiversity is of global significance. A protected areas network is needed to conserve habitat and biodiversity and mitigate climate change risks. Work on these protected areas network is underway and should continue to be supported, both for the establishment of the network and in the longer-term, for the management of those protected areas. A well-managed protected areas network in PNG will also serve as a globally significant carbon sink.

SDG TARGETS AND INDICATORS

- 15.1** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- 15.9** By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

- Improve biodiversity conservation for tourism purposes and protection of PNG's diverse flora and fauna.
- Promote sustainable uses of non-renewable natural assets in forestry, marine, minerals and biodiversity.
- Enforce the implementation of the STaRS principle 1 associated with protecting the environment by shifting responsibility to polluters to internalise environmental cost through setting standards for penalties and fees.

SDG TARGETS AND INDICATORS

- 14.5** By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on best available scientific information
- 15.4** By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
- 15.5** Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

Enforce the implementation of the STaRS principle 1 associated with protecting the environment by shifting responsibility to polluters to internalise environmental cost through setting standards for penalties and fees.

KEY CLIMATE CHANGE IMPACTS

LOSS OF CORAL REEFS — through extensive coral bleaching due to increase sea surface temperatures.

REDUCTION IN ECOSYSTEM RESILIENCE — due to changes in climatic regime, making many species and habitats increasingly vulnerable to direct and indirect human impacts.

LOSS OF ECOSYSTEM SERVICES — loss of key ecosystem services due to habitat loss linked to direct human impacts and climate impacts.

NATIONAL TARGETS

KRA 7 — Responsible sustainable development

- Increase percentage of protected land areas from 3.98% to 17.9% by 2022 (MTDP)
- Increase percentage of protected marine areas from 0.21% to 9% by 2022 (MTDP)
- Reduce primary forest depletion rate per year from 9% to 5% by 2022 (MTDP)
- Enhance mangrove planting initiative by increasing 10,000 seedlings in 2009 to 50,000 seedlings in 2030 (DSP)
- Increase percentage of pollution complaints investigated and resolved from 20% to 80% by 2022 (MTDP)

OPPORTUNITIES

ENHANCED RESILIENCE — through action to integrate biodiversity and environmental considerations into land use and productive landscape planning, as well as increased environmental planning.

ENHANCED CONSERVATION — through strengthening of protected areas system.



Fisheries



SDG 14. CONSERVE AND SUSTAINABLE USE THE OCEANS, SEA AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

CLIMATE CHANGE IMPACTS

LOSS OF PRODUCTIVITY - Due to new climate analogues, skipjack tuna and big eye tuna catch will decline by 30% and 28% respectively by the end of the century.

LOSS OF FOOD SECURITY — Ocean acidification will lead to loss of crustaceans and molluscs; coral bleaching could lead to a decline in reef-related fish diversity, abundance and catch, while increased extreme weather will reduce available time for sea fishing.

OPPORTUNITIES

INCREASED PRODUCTIVITY AND FOOD SECURITY — through development of climate smart aquaculture as well as enhanced management of coastal fisheries to reduce damage to stocks.

INCREASED RESILIENCE OF COASTAL FISHERIES — through mangrove rehabilitation and conservation.

NATIONAL TARGETS

KRA 1 — Increased revenue and wealth creation
KRA 7 — Responsible sustainable development
Increase prawn catch by 25% by 2030 (DSP)
Double tuna revenues and reach K120 million in 2008 prices by 2030 (DSP)
Establish 4 onshore tuna processing facilities by 2022 (MTDP)



ACTION 27

CLIMATE COMPATIBLE NATIONAL-LEVEL FISHERIES PLANS

The fisheries sector is an important part of PNG's economy and food supply as well as an important potential tool for mitigating climate change. The sector is exposed to several substantial climate risks. These risks are yet to be incorporated into the various National-level fisheries plans that govern the sector. The integration of climate change consideration into National-level fisheries plans will support PNG's pursuit of multiple SDG targets and building capacity efforts in this area can support achievements of PNG's NDCs.

SDG TARGETS AND INDICATORS

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

MTDP KRA 1 INCREASED REVENUE AND WEALTH CREATION

- Develop Marine Industrial Zones (MIZs) to undertake offloading and onshore processing of PNG tuna.
- Enhance bio-security standards and capacity of PNG institutions to meet the required global standards for agriculture, fishery and other products to access the niche markets.

ACTION 28

CLIMATE SMART AQUACULTURE

There is substantial opportunity for PNG to develop a climate smart aquaculture industry. Climate smart aquaculture differs from conventional aquaculture by having a smaller environmental footprint (less negative impact on mangrove or river ecosystems), producing less greenhouse gas emissions and using less synthetic inputs in stock feed. This initiative could be developed under the climate smart agriculture innovation centre listed in Action 20.

14.7

SDG TARGETS AND INDICATORS

By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

Promote sustainable uses of non-renewable natural assets in forestry, marine, minerals and biodiversity.

ACTION 29

CONSERVED AND REHABILITATED COASTAL HABITATS

PNG has the fourth largest extent of mangroves globally. These provide a vital set of environmental services including coastal protection, fish nurseries and carbon sequestration. Conserving and rehabilitating these areas will play an important role in increasing PNG's resilience to climate change, as well as enhancing emissions reductions, with opportunities to develop approaches to registered blue carbon approaches.

SDG TARGETS AND INDICATORS

- 14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
- 14.c** Enhance the conservation and sustainable use of oceans and their resources by implementing international law

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

Promote sustainable uses of non-renewable natural assets in forestry, marine, minerals and biodiversity.

Tourism

8 GOOD JOBS AND ECONOMIC GROWTH



**SDG 8
PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL**

ACTION 30 CLIMATE COMPATIBLE TOURISM INDUSTRY

The tourism sector is an important part of the PNG economy. Tourism is also an important sustainable development opportunity that has the potential to improve the livelihoods of people in regional parts of PNG. Numerous initiatives are underway to have 'climate friendly' tourist facilities and operators 'certified'. These initiatives should be supported as a way of increasing the resilience of the sector to climate change risks and enhancing related economic development opportunities.

SDG TARGETS AND INDICATORS

- 8.9** By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
- 14.7** By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fishers, aquaculture and tourism

MTDP KRA 7 RESPONSIBLE SUSTAINABLE DEVELOPMENT

Promote sustainable uses of non-renewable natural assets in forestry, marine, minerals and biodiversity.

CLIMATE CHANGE IMPACTS

LOSS OF REVENUE - Climate-induced impacts on coral reef bleaching, changing migration patterns of bird species and extreme weather events will result.

OPPORTUNITIES OF CLIMATE ACTION

INCREASED REVENUE — Development of world leading climate compatible tourism industry.

MTDP NATIONAL TARGETS

KRA 7 — Responsible sustainable development

- Reach 1.5 million tourists by 2030 (DSP)
- Increase in GNI from tourism sector by 30% by 2030 (DSP)
- Increase in GDP from tourism sector by 21.2% by 2030 (DSP)
- Increase in tax revenue from tourism sector by 2,440 K million by 2030 (DSP)
- Create 310,000 jobs from tourism sector by 2030 (DSP)



Roadmap Development Methodology

The development of the PNG 30 by 30 Roadmap involved extensive research and comprehensive stakeholder consultations across levels of government, the public, and private sector. Various stages of development, which occurred over a six-month period are outlined below. The methods captured the collective view of climate change action targets across sectors and communities in PNG.

1

Desktop Review of Impacts on Climate Change

2

Desktop analysis of previous and existing climate change initiatives

3

Mapping of SDGs with MTDP III, NDCs and existing climate change initiatives

4

Stakeholder Consultation

5

Stakeholder Workshop

6

Plan revised in response to reporting and feedback'

These results were analysed along with analysis of other targeted stakeholder feedback, general feedback and desktop research, which formed the basis of the actions listed in the 30 by 30 roadmap.

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Authors:

Dr Paul Dargusch
Mr Phil Cowling
Ms Genia Hill
Ms Ei Hnin Hlaing

Design by

Ms Kireina Medrilzam.



**Papua New Guinea
SDG 13 Roadmap**



