



Papua New Guinea
National Action Plan for the United Nations Convention to
Combat Desertification (UNCCD)

Final Report

Conservation and Environment Protection Authority
Port Moresby, Papua New Guinea

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Acronyms

CCDA	Climate Change and Development Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSOs	Civil Society Organisations
DAL	Department of Agriculture and Livestock
CEPA	Conservation and Environment Protection Authority
DLPP	Department of Lands and Physical Planning
DPE	Department of Petroleum and Energy
EU	European Union
FIMS	Forest Information Management System
GCU	Global Coordination Unit
GEF	Global Environment Facility
GIS	Geographical Information Systems
GoPNG	Government of PNG
GPS	Global Positioning Systems
IFAD	International Fund for Agricultural Development
ITCZ	Inter Tropical Convergent Zone
LDN	Land Degradation Neutrality
LMIS	Land Management Information System
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MEAs	Multilateral Environment Agreements
MRA	Mineral Resources Authority
MTDS	Medium Term Development Strategy
NADP	National Agriculture Development Plan
NAP	National Action Plan/Programme
NAPs	National Action Plans/Programmes
NARI	National Agriculture Research Institute
NCSA	National Capacity Self-Assessment
NDC	National Disaster Centre
NDS	National Development Strategy
NEC	National Executive Council
NFA	National Fisheries Authority
NRI	National Research Institute
NRSC	National Remote Sensing Centre

NSDS	National Sustainable Development Strategy
NSO	National Statistical Office
PAU	Pacific Adventist University
PIP	Project Implementation Plan
PMU	Project Management Unit
PNG	Papua New Guinea
PNGFA	Papua New Guinea Forest Authority
PNGGIS	PNG Land Information Systems
PNGRIS	PNG Resource Information System
REDD+	Reduced Emissions from Deforestation and Degradation Plus
SC	Steering Committee
SDG	Sustainable Development Goal
SGP	Small Grants Program (UNDP/GEF)
SLM	Sustainable Land Management
StaRS	Strategy for Responsible Sustainable Development
TOR	Terms of Reference
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNRE	University of Natural Resources and the Environment
UOT	University of Technology
UPNG	University of Papua New Guinea

Foreword

Papua New Guinea is a signatory to the United Nations Convention to Combat Desertification (UNCCD) and is committed to meeting its obligations. For Papua New Guinea (PNG), this means preventing and mitigating general land degradation. I would like to express my strong support of this initiative as this is in line with my Government's policies and development planning as espoused in the Vision 2050 and Development Strategic Plan (2010 – 2030).

PNG is unique in terms of biodiversity as compared to the rest of the world. Our people depend on this biodiversity for food, medicines and other essential needs. The protection of this biodiversity is very vital for now and the future generations.

In the current Marape-Steven's government, it is our desire to ensure that our land and biodiversity is maintained. I have embarked on the notion of having 10 million trees planted as they would also contribute towards reducing the level of greenhouse gases in the earth, as well as cover degraded areas, and this work has commenced in 2020.

The economic development of PNG is essential and imperative, as our people need to prosper. PNG possesses vast natural resources, which can help sustain the development of our country. And as such, the demand for developing the land and its resources is rapidly growing.

The current Government also insists that the economic development must not have severe adverse effects on the very same people, who the development is supposed to benefit, neither in the short term nor in the long term. Therefore, development must be sustainable. Furthermore, there is an increasing perception and understanding that a healthy environment contributes to a fair sustainable economic growth by reducing risks to people and business potential and investment opportunities.

Hence, the purpose of this National Action Plan is to help put a system into place to ensure that development is achieved by applying sustainable land management practices and approaches through our policies, engaging with traditional land owners and government sectors, and partnering with our development partners.

Coordinating and managing land resources is often demanding as 97% of the land is owned by the local inhabitants, however in recent years, the landowners have seen the need to

have legitimate titles which can be used for business transactions. Hence, we must ensure that land and resources are developed, managed and governed sustainably. Therefore, the government of PNG is now engaging in collaborative management with stakeholders (government agencies, CSOs, businesses, and development partners) as a sign of the shared responsibility. All levels of society shall have to be adaptive.

Adaption will require review and adjustment of existing policies and regulations, as well as the design of new ones, including effective safe guarding mechanisms, mitigative measures and promotion of more sustainable land use practices. It also requires improved integrated monitoring systems, and strengthening the role of research to underpin land use practices and policies.

Further, PNG is affected by climate change and natural disasters, which tend to exacerbate existing challenges on one hand, and on the other hand exacerbate the risks and consequences of climate change and natural disasters. Land management techniques and plans must incorporate appropriate measures.

Finally, I am indebted to the Managing Director of the Conservation and Environment Protection Authority, Mr. Gunther Joku, and his team, under whose guidance and responsibility the NAP was developed, and to the United Nations Development Programme and United Nations Environment Program for their collaboration and Global Environment Facility for the financial support.

I look forward to the journey to a more sustainable and prosperous future and development trajectory of our country.



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HON. WERA MORI, MP

Minister for Environment and Conservation and Climate Change

Preface

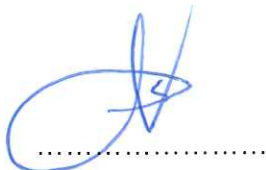
The Conservation and Environment Protection Authority (CEPA) is mandated under the 4th Goal of the National Constitution to manage the environment and its natural resources are protected and used sustainably for its inhabitants. As the custodian for this, my agency has been strongly advocating for this amidst the development challenges that come with developing countries at this modern era. CEPA on behalf of the Government of PNG had consultations with stakeholders to ensure that the National Action Plan (NAP) is based on and benefits from the opinions and technical insights of stakeholders.

The purpose of the NAP is three-fold: Firstly, to mainstream sustainable land management; secondly, to develop and enhance capacities for sustainable land management; and thirdly, to enhance and develop capacities for knowledge management in sustainable land management efforts.

This NAP provides a unified framework for the next 5-10 years for all stakeholders and the GoPNG envisages that funding shall be appropriated by development partners, private sectors and government. Strategic partnership, including private-public partnerships shall be important.

On behalf of the peoples and government of PNG, I would like to re-iterate PNG's commitment to the UNCCD. I am also honored to endorse this important document which provides the guidance to sustainable land management as the underlying principle for the National Action Plan for the UNCCD for PNG.

I wish to express my sincere gratitude for the commitment of everyone involved. I would like to acknowledge and thank the various agencies, departments, organizations and individuals, whose collective efforts have made this NAP possible as well as our development partners, United Nations Environment Programme, United Nations Development Programme and funding organization Global Environment Facility.



Gunther JOKU

Managing Director, Conservation and Environment Protection Authority

Executive Summary

The major challenge for Papua New Guinea is to get the balance right between the short term development on urgent need for improved welfare (including food, water security and poverty alleviation) of our people and the long term sustainable management of our vast resources.

Papua New Guinea cannot afford to slow development and growth, because she must be able to feed its ever increasing population, and meet its related social and economic obligations. Papua New Guinea relies a lot on imported foods with exorbitant prices as a consequence. Of course, the already poor are disproportionately affected. Therefore, development and investments of agricultural production is necessary.

This however, will depend on sufficient revenues to fund these investments. On a more positive note, Marape – Steven's government is committed to ensuring that the country is restored to a state where Papua New Guinea will be "*the richest black Christian country* by the year 2030.

The suggested equity splits of 51% for the Government of Papua New Guinea and 49% for the investor is not a new concept and was used as a setup of business arrangements in the early years of the country's development. This will have to be funded through production, trade and income from the vast potential of our forests and minerals as well as marine resources. The global demands for resources are ever increasing and will only accelerate over the years to come. Papua New Guinea needs to be prepared to counter this acceleration. If the full potential is to be harnessed to benefit all and without destroying opportunities for the future, then a coordinated and balanced approach is needed.

Common for all sectors – agriculture, forestry and mining – effective and timely transport and distribution of the products will require a very significant improvement in infrastructure, especially to improve access to markets, education and health. It is therefore paramount that we maintain and manage our resources in a way which ensures that we can continue to benefit from these resources for generations to come.

Papua New Guinea is in global demand! Not just for the exploitation and extraction of our natural resources but the abundance of our biological diversity as well. Firstly, the natural forests of Papua New Guinea play a very important role for the future of the global climate. It is therefore only reasonable that the vested interest of the global community in sustainably

managing and conserving our forests, contribute substantially thereto. Secondly, our absolutely unique biological diversity must be conserved to sustain us and for the benefit of future generations.

Papua New Guinea's status as a home to about 6 - 8 % of the world's biological diversity is threatened by the rapidly growing demand for land and its resources for socio-economic development of the country¹. These threats particularly result from land degradation and have been addressed from various sectors of natural resource development. Despite these efforts and investments, land degradation will continue to be addressed as an isolated impact on biological diversity unless integrated into the overall institutional arrangements on land use management in the country. Hence, this National Action Plan (NAP) aims to contribute to achieving preventive measures on land degradation through promoting sustainable land management practices.

The Papua New Guinea National Action Plan was initiated and developed for a 10year timeframe through a series of stakeholder consultations and workshops in 2012, and this process further continued in 2017. The main underlying focus of the National Action Plan is on the wise application and development of integrated and sustainable land management approaches and practices.

This National Action Plan outlines an approach and roadmap towards an improved and enhanced way of managing land in Papua New Guinea. Furthermore, it focuses on the three main primary sectors – agriculture, forestry and mining - on which Papua New Guinea has depended and will continue to depend on. The potential impacts of these sectors are large and hitherto untapped, and will likely undergo rapid development.

The purpose of this National Action Plan is to help put a system into place to ensure that development is achieved by applying sustainable land management practices and approaches through our policies, engaging with traditional land owners and government sectors, and partnering with our development partners.

Finally, the Papua New Guinea National Action Plan 2020-2030 sets out the priorities for combating land degradation, in terms of overarching principles, outcomes, outputs and

¹ GoPNG,2017, Papua New Guinea's Fifth National Report to the Convention on Biological Diversity, United Nations Development Programme and Global Environment Facility, Port Moresby, Papua New Guinea.

activities. In addition, it is integrated and compliments our national development policies such as MTDP III, StaRS and above all aligned to achieving the United Nations Sustainable Development Goals.

Acknowledgements

The Government of Papua New Guinea is deeply indebted to all stakeholders who have invested their time and effort to ensure that this National Action Plan is comprehensive as possible by integrating all their aspirations. Everyone deserves special and personal thanks, beginning in 2012 workshops to 2019 workshops and discussions.

- Coffee Industry Corporation
- Communities in Vunamami – East New Britain
- Hargy Oil Palm Limited
- New Britain Palm Oil Limited
- Oil Palm Industry Corporation
- Oil Palm Research Association
- Papua New Guinea Cocoa Board
- University of Natural Resources and the Environment
- Traditional Landowners in Eastern Highlands, East New Britain and Oro Provinces
- Department of National Planning and Monitoring
- Department of Lands and Physical Planning
- Department of Trade, Commerce and Industry
- Department of Agriculture and Livestock
- Department of Foreign Affairs and Trade
- Department of Prime Minister and National Executive Council
- National Statistical Office
- PNG Tourism Promotion Authority
- Oil Palm Industry Corporation
- PNG Chamber of Mines and Petroleum
- Climate Change and Development Authority
- Eda Ranu
- National Agricultural Research Institute,
- National Research Institute and
- Conservation and Environment Protection Authority

Finally, the Government of Papua New Guinea in partnership with the United Nations Development Programme (UNDP) and the Global Environmental Facility (GEF) formulated the UNDP-GEF Medium Size Targeted Portfolio Capacity Building for Sustainable Land Management (SLM) Project in 2007. At the SLM Inception Workshop in November 2010,

the development of the National Action Plan was approved to begin. This process was an at hiatus until it was reactivated in 2017.

This was through the United Nations Environment Programme (UNEP) and GEF through the Umbrella Coordination and Regional Support for National Level Activities for NAP Alignment and Reporting and Review Process under the Small Scale Funding Agreement.

The realignment of the NAP has been developed and structured in accordance with guidelines provided by the UNEP. Hence the UNEP is greatly acknowledged in this endeavour in the completion of this document in 2020.

1.0 Introduction

The Government of Papua New Guinea (GOPNG) ratified the United Nations Convention to Combat Desertification (UNCCD) on the 6th December, 2000, and it became effective on the 6th March, 2001. With it was the commitment to implement this agreement in the country and report on its programmes and activities to the Secretariat regularly. The call for the development and implementation of National Action Plan (NAP) is considered a priority for the GOPNG to meet its international obligations under the UNCCD.

The definition of land degradation in the context of the UNCCD is:

A reduction or loss, in the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as;

- *Soil erosion caused by wind and/or water,*
- *Deterioration of the physical, chemical and biological or economic properties of soil, and*
- *Long-term loss of natural vegetation.*

Two underlying challenges to sustainability in PNG are:

- Tradeoffs between Local and National needs/drivers
 - Local: subsistence, improvement of livelihood
 - National: Food production, Water Reticulation/Improvement and Infrastructure, Economic growth.
- Short-term versus Long-term returns/incentives
 - Locally: driven by short-term issues
 - Nationally: driven by medium-longer term issues.

In the context of PNG, this implies preventing and mitigating general land degradation through Sustainable Land Management (SLM). Many areas under current exploitation are often unsustainably managed, with environmental and related socioeconomic effects as a consequence.

The key objectives of the NAP are:

- Mainstream SLM into policies, regulations, strategies, plans, educational systems networks;

- Develop and enhance capacities for SLM; and
- Enhance and develop capacities for SLM knowledge management.

The NAP is seeking ways in which SLM approaches can contribute to win-win solutions. This will involve integrated approaches, based on appropriate research questions and hands on experience.

The strategic planning documents of the PNG are hierarchical in nature. The Development Strategic Plans consists of Vision 2010 - 2050 (40-year Economic Strategy), Development Strategic Plans (DSP) 2010 - 2030, Development Strategic Plan 2031 - 2050, National Strategy for Responsible Sustainable Development (StaRS) and the Medium Term Development Plan (MTDP) 2018 - 2022.

The Vision 2050 describes a day in the future where the welfare of every Papua New Guinean will be well looked after. The challenge is to achieve this vision within 40 years from 2010. The Vision sets the foundation of developing the National Strategy for Responsible Sustainable Development (StaRS), which contained 21 principles and compliments the United Nations Sustainable Development 17 Goals.

The PNG Development Plan 2010-2030 sets out the strategy to achieve the Vision 2050 in the first 20 years (2010-2030) of the Vision 2050. The PNG DSP has specific targets that PNG would like to achieve by 2030. Furthermore, the PNG DSP is charting a new path from the past traditional planning (business as usual) approaches and sets forth new direction and parameters for development planning.

For example, this current PNGDSP (2010-2030) includes the cross-cutting sector. The cross-cutting sector contains strategies for; population, youth, gender, HIV/AIDS, Vulnerable and disadvantaged, Environment, Climate change, National Disaster Management, Public Sector Management, National Statistics Systems, and, International Relations and Security.

The Medium Term Development Plan 2018 - 2022 (MTDP 2018 -2022) is the action plan to implement the PNG DSP in the political aligned years (2018 - 2022) in order to also work towards achieving our Vision 2050.

"In summary, the MDTP III outlines the O'Neill/Abel and now Marape/Steven Government roadmap to grow the economy significantly in the next five years (2018–2022) with the goal of generating higher internal revenue on a sustained basis to meet the growing demands

and needs of our population” [Hon. Richard Maru B Tech MBA, OBE, MP. Then Minister for National Planning and Monitoring].

The MTDP III has integrated the UN SDGs by incorporating the PNG tailored SDG targets and indicators in each respective sector log frames. It also includes a list of deliverables/activities that each sector will carry out with its costing / funding allocation (input) for the next five years.

Climate change and environmental sustainability is one of the seven strategic focus areas or pillars of Vision 2050. This calls for the promotion of sustainable development through the ‘wise use’ principle and emphasizes maintenance of biodiversity and sustainable use in economic planning.

The Development Strategic Plan 2010-2030 (DSP) sets out the strategy for transforming PNG from a low-income to middle income country by 2030, by quadrupling its GDP through sustained growth of 8% per annum and including the creation of two million jobs as well as opening up 20% of customary land to commercial uses.

The DSP is a broad framework and roadmap to put PNG on track to meet the Vision 2050 targets. The DSP is implemented through a series of Medium Term Development Plans (covering consecutive politically aligned five-year periods).

The GDP of PNG is dominated by the extractive sectors². In 2014, petroleum and mining accounted for 41%, agriculture 23.8%, manufacturing 6.2% while other industries and sectors covered for 29%.

² https://en.wikipedia.org/wiki/Economy_of_Papua_New_Guinea

1.1 The National Action Plan

The UNCCD Conference of the Parties (COP- Decisions 3/COP 8) called for a 10-Year Strategic Plan and Framework for UNCCD (2008 – 2018) and outlines strategies to achieving them. Two Objectives and Expected Outcomes are stated, i) Strategic and ii) Operational. This included four strategic objectives and five operational objectives:

i) Strategic Objectives and Expected Outcomes

1. To improve the living conditions of the affected populations
2. To improve the condition of affected ecosystems
3. To generate global benefits through effective implementation of the UNCCD
4. To mobilise resources to support implementation of the Convention through building effective partnership between national and international actors

ii) Operational Objectives and Expected Outcomes

1. Advocacy, awareness raising and education
2. Policy framework
3. Science, technology and knowledge
4. Capacity- building
5. Financing and technology transfer

In response to the decisions of the UNCCD (COP/8), the Government of PNG is committed to addressing this global issue as a party to this convention and implements the programmes and activities at the country level.

As an important requirement in reporting to UNCCD Secretariat, PNG continues to implement this convention in developing its 10 years strategy policy and action plan to align with its vision 2050 and its policies and especially achieving its Strategy for Responsible Sustainable Development (StaRS). Reporting its achievements and outcomes to the UNSDGs Secretariat and the UNCCD Secretariat within the period 2020 – 2030.

Vision

Our vision of the PNG NAP will be forging partnerships with all to mitigate and prevent desertification /land degradation and reduce drought in the country and *achieves the responsible sustainable development outcomes and aspirations of communities in PNG.*

Goal

The ultimate goal of our PNG NAP is, *to achieve the PNG Vision 2050 objectives and ensure sustainable development measures from the use of the lands and its resources are achieved.*

Guiding Principles and Implementation Strategy: 2020 - 2030:

The six (6) umbrella guiding principles in achieving the Objectives, Vision and Goal of the strategy for implementation, are outlined in the National Action Plan.

The overarching framework consists of the following principles which will govern the national action plan for PNG:

1. Sustainable development achieved
2. Land management governance and policy
3. Education, training and awareness
4. Knowledge information and research
5. Evaluation and monitoring
6. Partnership and financing

Specifically, the PNG NAP will contribute towards:

Sustainable productive systems within the agricultural, pastoral, mining, forestry and other terrestrial land uses of PNG so that the ecosystem productivity and ecological functions are maintained while contributing directly to the environmental protection, economic growth and social livelihood of the people of the country.

This will be achieved through a comprehensive effort to build capacity for sustainable land management in PNG: Capacities for sustainable land management are built in appropriate government and civil society institutions/user groups and mainstreamed into government planning and strategy development.

1.2 Stakeholder Involvement Plan

The NAP has been developed under the overall leadership and coordination of CEPA in collaboration with the UNDP, UNEP and with the financial support from the GEF.

The process for developing the NAP involved wide consultations with stakeholder organizations and government agencies. In addition, the content of the NAP was discussed in workshops with stakeholders. The Stakeholder Matrix is shown in Annex 1.

The NAP sets out a framework that will enable organizations and agencies to enhance their contribution to and impact on society through enhanced integrated approaches. This will happen through enhancing capacities and improving access to funding. Further, the NAP sets the foundation for collaborative efforts among agencies and organizations. The emphasis of the NAP is on integrated approaches to land management, leading to sustainable management.

The ambitions set out in the NAP are only possible if everyone contributes collectively based on their mandates, strengths and comparative advantages.

1.3 Timeframe and Boundary.

The NAP has a ten-year horizon from 2020-2030. Annual work plans will be developed by agencies and organizations based on the outputs and activities.

The NAP encompasses a comprehensive range of interventions designed to build capacity for developing sustainable land management systems that address the root causes of land degradation, thereby overcoming barriers to SLM. The NAP focuses on sustainability of the key land uses: agriculture, mining and forestry.

1.4 Institutional setup of the NAP

The coordination of the execution of the NAP is under the responsibility of the CEPA through a committee chaired by the CEPA and with a broad membership from government agencies, CSOs, private sectors and development partners:

- Government³: Foreign Affairs, Agriculture, Forestry, Mining, Climate Change, National Planning, CEPA, infrastructure (Land and Physical Planning, Works, Transport)
- Research and academic
- Civil society: An NGO
- Private Sector – NBPOL, PNGCMP
- Land owners or Resource owners

The responsibilities of the CEPA will be similar to the government's management of other multilateral agreements, and will include:

- Report to UNCCD

³ This listing is not exhaustive and depending on the subject matter, then appropriate government department will be engaged in a committee.

- Establish and formalize the committee for the NAP
- Coordinate the NAP and the development of specific work plans by individual stakeholders
- Communicate information related to UNCCD and the NAP to stakeholders
- Facilitate cooperation among stakeholders and partners on efforts related to the NAP
- Institutionalize the UNCCD activities into the CEPA operations
- Develop framework for implementation including all levels of government - responsibility of implementation lies at all levels of government
- Establish a data portal and develop a website for the NAP

1.5 Coordination

Inter-sectoral coordination and cooperation will be enhanced through technical working groups where experts from different sectors meet to discuss specific cross-cutting issues and to ensure mainstreaming of sustainable practices and approaches into and among sectors.

2.0 General Profile of PNG, Land Use Classification, and Land Use Patterns

Papua New Guinea is the largest country of the South Pacific island nations apart from Australia in terms of natural wealth, landmass and population base and occupies the eastern half of the island of New Guinea. Its geographical grid reference are 141° W and 156° W longitudes and the latitudes of 5° S and 10° S (Figure 1).



Figure 1. Location Map of Papua New Guinea

2.1 People and Culture

The people of PNG are mainly Melanesians with minority Polynesians and Micronesians. They have lived in a communal society for over 40,000 years. Although the first expatriates were sighted as early as the 15th century, the formal contact with the Europeans was made in 1884 with the establishment of the British protectorate in the south (Papua) and the German colony in the north (New Guinea) of the country.

Generally, the society in PNG has developed, over centuries, very strong traditional social structures. It is divided into different levels with the highest level being a tribe. A tribe consists of number of clan groups and a clan is made up of several family units. Such social structure existed to maintain the welfare of the people as well as protect the land. The vast cultural diversity is reflected by the over 800 different languages in the country and that there

are over ten thousand autonomous tribes with their unique social, cultural and political features.

2.2 Land Area

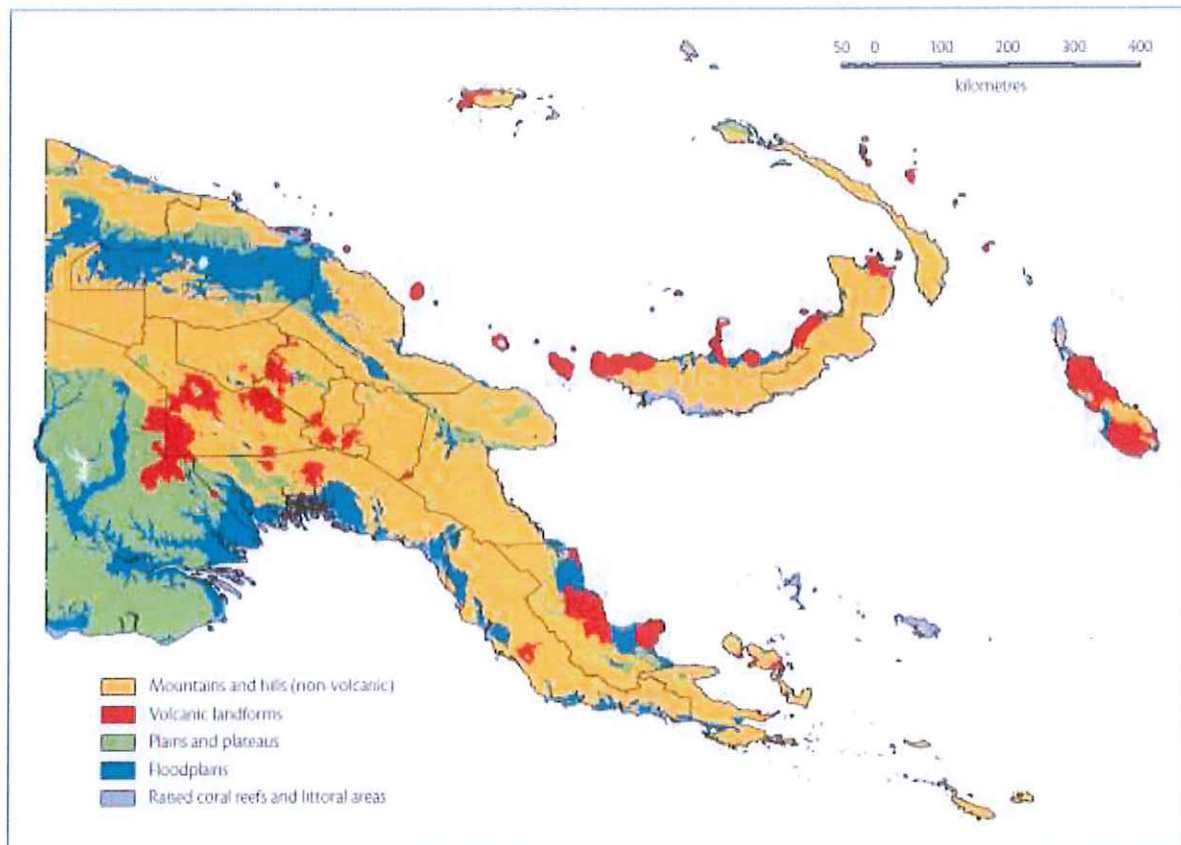
The total land area of PNG is 464,000 km² (46.28 million hectares). Geologically, PNG is situated between two active tectonic plates namely the Australian plate and Indo-Pacific plate. The northern part of the country is located in a volcanic active zone and is frequently hammered by various geophysical hazards while its southern part is relatively stable. The geomorphological attributes of the country vary significantly. Geologically, PNG is a very young nation, which is constantly going through massive uplift processes.

A series of mountain chains run through the centre of the mainland and the Islands to the southeast. The landscape of PNG undergoes gradual and continuous changes due to volcanism, landslides induced by seismic activity and various denudation processes. PNG is subdivided into five major landforms. These are i) Mountains and hills (not of volcanic origin), ii) Landforms of volcanic origin (including volcanic foot slopes and plains), iii) Plains and plateaus, iv) Flood plains, and v) Raised coral reefs and littoral areas (beach ridges, tidal flats, mangrove swamps and other coastal features)⁴.

Around half (52%) of the total land area of PNG is mountains and hills; almost 19% is plains or plateaus; 18% is floodplains; and a considerably smaller proportion is volcanic landforms or raised coral reefs and littoral areas (Figure 2).

⁴ Bourke, R.M. and Harwood, T. (eds) (2009). Food and Agriculture in Papua New Guinea. ANU E Press, The Australian National University, Canberra, pp 87 - 88.

Figure 2: Five basic landforms of the PNG Landscape⁵



2.3 Soil and Water

Soils within PNG fall into eight classes or orders ranging from Entisols (mangrove, alluvial soils), Histosols (peat soils), Inceptisols (humic, ash and clay soils), Vertisols (earth soils), Mollisols (limestone soils), Alfisols (meadow, podzolic, brown clay soils), Ultisols (lateritic, humic clayey soils), and Oxisols (strongly weathered red and brown clay soils). Within these eight orders are 73 individual soil types. Of these, over half are very much localized while others are common soil types (Bryne & Sherman 2008). Their distribution is determined by the geological and geomorphologic processes at work and influenced by extensive rainfall patterns. Soil distribution with the main classes is in Table 1.

About three million of PNG's population live on Inceptisols, mainly derived from volcanic ash or mixed with volcanic ash from explosive eruptions which are now extinct in the Highlands and also a few from volcanic islands off Madang (Long Island) (Hope & Hartemink 2007).

⁵ (McAlpine and Quigley (c 1995 – PNGRIS) cited in Bourke and Harwood (2009) pg. 88.

Table 1: Major soil orders in Papua New Guinea⁶

Major Soil Classes	Area of coverage (10 ³ km ²)	Percentage of coverage (%)
Entisols	120	26
Histosols	8.6	2
Inceptisols	219	48
Vertisols	0.2	< 0.1
Mollisols	34	7
Alfisols	13.3	3
Ultisols	63	14
Oxisols	0.007	< 0.1

PNG is a water-rich nation, with approximately 9 hydrological drainage basins and some 5,383 freshwater lakes. However, only 60% of the population of 8 million people in PNG (4.8 million people) live without a safe water supply, with PNG having one of the poorest access to clean water compared to the rest of the world. The volume of renewable water available per person per year in PNG is 111,762 m³. Only 40% of PNG has access to an improved drinking water source. Improved water sources in rural population and urban population is almost 30% and 90% respectively⁷.

Water consumption is derived from precipitation, water supply schemes, irrigation, dams, wells, stream, bores, streams and rivers. The average precipitation varies across the nation. Access to good quality water in sufficient quantity for domestic, agricultural and industrial purposes is costly in areas where average rainfall is below normal. Thus, good water supplies are often very limited in some of the most remote areas and in some urban centres.

2.4 Climate

The climate of PNG is tropical with relatively high temperature, high precipitation and high humidity. The major factors affecting PNG's climate are its topography and the seasonal latitudinal movement of two air masses under the influence of inter tropical convergence zone (ITCZ). The variability of the climate and particularly El Nino are the most influential phenomena in the country and the wider region. The consequences include drought and frost on land and soils. In addition, several parts of the country have a savanna (Aw) climate type that has distinct annual dry and wet seasons.

⁶ Table adapted from Hope & Hartemink, 2007, p.174.

⁷ CEPA, 2019, Draft State of the Environment Report for PNG, Conservation and Environment Protection Authority, Port Moresby, PNG, pg. 212.

PNG has a unique flora and fauna, largely reflecting its special bio geographical location and geological conditions. Vegetation types in PNG are at the interchange of the Indo-Melanesian and Australian flora zones. Lowland vegetation of PNG is dominated by rainforest (70 percent of total landmass), whereas Montane forests dominate at higher altitudes.

2.5 Forest Resources

Forests in PNG are the largest renewable natural resource. About 33.6 million hectares (72.5% of total land area) is forested, of which 8.8 million hectares is classified as productive forest containing high quality tropical hardwoods⁸. There is also 62,000 hectares of forest plantation.

PNG's forest industry is under greater pressure to ensure sustainable management of forest resources, given the onset of Special Agriculture Business Leases (SABL) where there is about 38,242 km² of rainforest under them. Most that proceed through the Environmental Impact Assessment (EIA) process through the Conservation and Environment Protection Authority (CEPA) are agroforestry projects, where logging is opted to occur first followed by plantation of cocoa or oil palm.

There are practices of selectively logged forest in a 40-year cutting cycle, however, these are not conclusive. Coupled with that is the increasing population that places pressures on additional land which need to be cleared to support livelihood as well as socio – economic development.

2.6 Ecosystems and Biodiversity Resources

PNG is comprised of 0.5 percent beaches and ridges, 11 percent swamps, 15 percent lowlands, 43 percent foothills and mountains up to 1000m above sea level, 25 percent mountains 1000-3000m and 4 percent above 3000m. About 6-8 percent of the world's total biodiversity exist in PNG. PNG's forest ecosystems and its genetic biodiversity is the richest in the world. Over 9,000 species of higher plants, including 1,500 species of forest trees are found in PNG, as well as over 700 species of birds, two hundred species of mammals, 15,000-20,000 species of vascular plants as well as the microbes.

⁸ CEPA, 2019, Draft State of the Environment Report for PNG, Conservation and Environment Protection Authority, Port Moresby, PNG, pg. 75.

PNG is recognized as one of the four mega-diversity areas of the world^{9,10}. Some are flagship species of socio-cultural, economic and spiritual significance to the country. The future “food basket” and sources of future medicines and cures. Much of the country's unique flora and fauna species are under threat of being depleted and some close to extinction, due to overexploitation and unsustainable development practices. Yet, much of it is less visible and less charismatic biodiversity remains undocumented, such as viruses, bacteria, algae, and fungi are needed. Some cataloging of data such as for forest tree species but not all species are covered.

2.7 Population

The greatest challenge being the doubling of PNG's population every decade after the projected 2019 figure of 8.6 million and the envisaged exponential demand for resources to exceed the 2018 GDP of 0.3% and race to more than 2.5%, and HDI to drastically improve from the current 0.25 to realize the targets of PNG Vision 2050. The significance of this current scenario is premised on the development of land-based resources since pre-Independence with more pressing issues.

The life expectancy in PNG is under 60 years, with an infant mortality rate of 64 deaths per 1000 live births, and the maternal mortality rate is 300 deaths per 100,000 births. The adult literacy rate and the completion rate of primary school is about 52 percent and 59 percent respectively.

Civil society in PNG has also been affected by an escalating law and order situation, as well as poverty, security, governance issues, land tenure arrangement, limited infrastructure, lack of basic services, increasing environmental disasters and HIV/AIDS. Generally, the quality of life has significantly deteriorated and level of unemployment has reached an unprecedented level over the years. However, there is optimism to reverse these trends with economic sectors as well as social and development sector interventions.

⁹ Mittermeier, R. A. Robles-Gil, P., Mittermeier, C.G (eds) 1997, Megadiversity. Earth's Biological Wealthiest Nations, CEMEX/Agropacia on Sierra Madre, Mexico City.

¹⁰ Sekhran N. and Miller (eds) 1994. Papua New Guinea Country Study on Biological Diversity, Department of Environment and Conservation, Conservation Resource Centre and the Africa Centre for Resource and the Environment (ACRE), Colorcraft Ltd, Hong Kong.

2.8 Governance

Papua New Guinea (PNG) gained its political independence and was declared a democratic state on the 16th of September 1975. It has twenty two provinces that are administrated by 22 provincial governments, and 86 districts cutting across the 22 provinces. Under the new legislation, the “Organic Law on Provincial Governments and Local-Level Governments, 1995”, it created about 289 local level governments which spreads across the country. These local governments consist of Ward Councilors who represent about 6000 wards in the country. Recently the District Development Authorities (DDA) were introduced and these have its own challenges in PNG.

2.9 Socio-Economic Context

The economy of PNG is dominated by labor-intensive agriculture and capital-intensive extraction of oil and gas, gold, copper, and other minerals. Mining and petrochemicals now account for over 25% of PNG’s gross domestic product and over 80% of its exports. The country continues to face significant challenges in making economic growth more inclusive and sustainable. Many areas of service delivery such as health, education, transport, energy, and water remain weak, particularly in rural areas¹¹.

From the mid-1980s, PNG has maintained a steady economic growth and an increasing GDP, except a decline during the 1990s. During the first decade of the 21st century, favorable external market conditions, political stability, efforts to curb corruption and prudent monetary and trade policies, as well as firm fiscal management, contributed to 3.5 percent increase in growth.

In 2013 and 2014, the economy continued to perform strongly due to favourable commodity prices for liquefied natural gas investment through the PNG LNG Project. However, the government adopted a strategy of fiscal expansion and incurred large budget deficits, equivalent to 6.9% of Gross Domestic Product (GDP) in 2013 and 6.3% in 2014, as it embarked on a growth drive during this period. This trend continued into 2015 but was brought to an abrupt end following a sharp decline in worldwide commodity prices, compounded by the end of the liquefied natural gas investment cycle and drought¹². These

¹¹ <https://www.adb.org/sites/default/files/publication/27788/png-2018.pdf>

¹² CEPA, 2019, Draft State of the Environment Report for PNG, Conservation and Environment Protection Authority, Port Moresby, PNG, pg. 63.

deficits contributed to an increase in public debt, which rose from K7.4 billion in 2011 (equivalent to 17.4% of GDP) to K21.9 billion in 2016 (equivalent to 32.4% of GDP).

It was projected that growth rate is to remain relatively modest in 2018 and 2019 in petroleum, mining, forestry and agriculture. Most sectors are expected to expand, with the Asia Pacific Economic Cooperation (APEC) meetings providing an additional boost in 2018. Added to that were improved commodity prices of oil and gas, metal prices, agricultural products, timber, and fisheries will translate into higher growth.

However, an earthquake in 2018 resulted in LNG production wells being shut down for about six months and resulting in setbacks in the growth in petroleum, mining, forestry and agriculture sectors. The continued difficulty in accessing foreign currency and fiscal constraints will also limit growth¹³.

The agriculture, forestry, and fishery sectors are projected to grow by about 3% in 2018 and 2019 as output increases for all major crops with favorable growing conditions, as the area under cultivation expands, and heightened international demand in recent years. Palm oil production, which accounts for some 45% of agricultural exports, should grow modestly. Agricultural production for the domestic market will expand as well as in line with a growing economy, an expanding population, and investment in the sector (ADB, 2018).

In all of this, continuous debt servicing and demand for foreign currency and the need for improvement of services and standard of living for the population have placed a challenge to the Government of PNG for additional revenue to meet these challenges.¹⁴

2.10 Land Tenure and Land Use Trend

In PNG, 97 percent of the land is customary land. The remaining three percent is alienated land. The customary land tenure system has existed as a form of '*social contract*' and sets the terms and conditions for land use between the members and the land group within the given society. The specific land tenure arrangements differ among different ethnic groups and associated cultures in PNG.

Almost 60 percent of alienated land is owned by government and the remaining percent is shared between Faith-Based Organizations and privately owned business entrepreneurs.

¹³ ADB 2019 Fact Sheet

¹⁴ CEPA 2019, p 63 – 64.

State land, freehold land, and customary land can be leased provided that the applications are registered by the appropriate legislations which include “Land Group Incorporation Act, 1974” and the “Land Dispute Settlement Act, 1975”. Under these legislations, the customary-oriented ‘social contract’ still remains intact, thus ownership also remains intact, only the land becomes registered and therefore available to the modern open market.

2.11 Agriculture

Agricultural land use can be divided into three broad categories: subsistence cultivation, cash cropping (indigenous), and plantation. Most indigenous people are engaged in subsistence cultivation. Many people in lowland and highland areas have moved into cash cropping, particularly tree crops such as coffee, cocoa, and oil palm.

About twenty five point six (25.6) percent of the total land area of PNG is cultivated or arable for agricultural production¹⁵. This coupled with less than optimal food distribution. Agriculture is undergoing gradual and significant change towards a more commercialized sector in response to global market demands and opportunities. In villages and communities, cash cropping increasingly replace subsistence food crops - coconut, coffee, tea, sugarcane, oil palm and peanuts which are typically grown on flat and fertile land.

In addition, soil erosion problems associated with unsustainable agricultural practices at the commercial or subsistence level are increasing in many parts of PNG particularly on steep sloping fertile lands. Soils under intense farming pressure are subject to fertility depletion due to decline in soil organic matter, leaching and acidification. Thus, nutrient demanding (e.g., corn for home consumption) receives very little fertilizers with consequent soil quality depletion.

Soils in many provinces such as Western Highlands and Morobe are severely depleted in nitrates and phosphates. Phosphate and nitrates replacement through commercial fertilizers is expensive due to long haul transport and import from overseas. Lack of effective management and soil fertility maintenance techniques particularly on customary land has transformed fertile marginal lands into degraded and/or potentially degradable land.

2.11. 1 Overgrazing

¹⁵ Bourke, R.M. and Harwood, T. (eds) (2009). Food and Agriculture in Papua New Guinea. ANU E Press, The Australian National University, Canberra.

Overgrazing by domestic livestock husbandry causes severe land degradation in PNG. In savannah areas/provinces the dry season limits growth of grasses, and therefore these areas are also typically overgrazed. Overgrazing causes gradual depletion of soil and nutrients and further loss due to sheet erosion. Over time, good quality forage species are gradually replaced by low quality forage plant species with relatively shorter reproductive cycles. Poor pasture management has led to significant weed problems such as in the lower Markham area of Morobe province. Introduction of more appropriate pasture species is necessary but rather expensive.

The tribal ownership structure also poses challenges in terms of addressing overgrazing. Pastures are generally state-owned whereas livestock are privately owned. Most of the smallholders' grazing areas are tribal pastures and can only sustain low pasture and livestock productivity. There is no lease system for pasturelands, no viable models for sustainable management for these pastures, no policies, and therefore there is a need to promote sustainable management.

New approaches should be more participatory, involving livestock owners, as well as combining top-down and bottom-up approaches to jointly enhance design, management, monitoring and evaluation.

Further, there is a need for enhancing capacity on expertise in common pasture management (conceiving, testing and adaptively modifying sustainable grazing systems) and participatory pasture/natural resource management approaches.

Some grassland areas have been 'enhanced' through establishment of plantations, but it is acknowledged that these have not sufficiently been integrated with the agricultural and forestry sectors. The plantations may again become open access grazing lands if they are not properly managed. Or alternatively being converted to oil palm ventures due to the short-term financial benefits to owners.

2.11.2 Towards Sustainable Agriculture

There are many positive changes towards more sustainable agricultural practices. For example, minimum tillage best practices are used by large and small sugarcane farmers in Markham in Morobe province, a key agricultural production area of PNG. This practice minimizes erosion and maintains soil organic matter thereby, ensuring that soil fertility is maintained. There are still planters who burn residues from sugar, coconut trees, tea, banana and grasslands which expose the soil to erosion.

Mechanization is happening in the management of many crops. In recent times, rice is done on a commercial basis on customary land cooperating with major rice producer, Trukai Industries. At this stage not much is known of the possible consequences of this mechanization, such as soil compaction. Also, new weeds from plantation forestry areas may be an issue.

Some crops have been profitable due to international subsidies, e.g., support from the European Union for sugar cane for more than 20 years. Major uncertainties still remain on the sustainability of the likely alternatives to sugarcane, when the sugar cane subsidy ends. Oil palm has aligned itself to the Roundtable on Sustainable Palm Oil and while it does not offer subsidies. It is focused on Certified Sustainable Palm Oil (CSPO) which has implication of producing in an environmentally acceptable manner.

Agricultural production in the 21 provinces is performed by a few large companies and the many small community farmers or small holders. Virtually all land is tribal/clan owned with some subsistence farming. The lease system for agricultural lands is no longer functional as lands have been returned to landowners or clans. Investing in sustainable practices requires certainty about the future, and the uncertainties of land tenure may discourage major investments in the agricultural sector.

Further, there is a widespread need for public awareness and training on improved land management strategies. This should increasingly apply bottom-up approaches focusing on smallholder or clan agricultural extension. Specifically, there is a need for enhancing appropriate policies, incentives and monitoring systems.

2.11.3 Deforestation

Large-scale destruction of tropical forest resources is a major impediment to ecological and economic sustainability, including the loss of goods and services provided by forest and forest ecosystems for local communities as well as watershed services. Deforestation contributes to climate change through the greenhouse effect and the sustainable management of PNG's vast forests are thus of global significance. At the local level, deforestation reduces and changes local rainfall patterns and exposes topsoil and thus susceptible to severe erosion and preventing natural forest regeneration.

Deforestation is a very big problem along the mainland coast and island provinces of PNG that have a number of large forestry programmes. These areas have increasingly been

deforested over the past 50 years. There is certainly a need to enhance forest protection and enforcement of existing regulations. Most deforestation in PNG is on privately/clan owned forestlands. Enhanced monitoring and quantification of these trends are needed.

The GoPNG introduced a ban on clearing forests in river reserves and mountain reserves but stronger enforcement is needed. The introduction of the Reduced Emissions from Deforestation and Degradation Plus (REDD+) Policy and associated activities under the umbrella of UN and channeled through the PNGFA and CCDA, are opportunities that could reverse the deforestation of PNG's forests. While seeking opportunities to provide livelihood benefits to the local communities, adjacent to the forest operations which are exacerbated through the Special Agriculture Business Leases (SABL). The SABLs often lead to agroforestry projects.

Other reasons for clearing of forest are cattle pastures on both private and tribal/community lands. On customary lands, deforestation is for subsistence agriculture. The GoPNG acknowledges the need for more effective regulations.

2.11.4 Reforestation

Reforestation as a means to reduce land degradation has progressed substantially over the past three decades, particularly in East New Britain, Madang, and Morobe provinces, through exotic and recently native species. To ensure financial sustainability of these initiatives, the full economic potential of these plantations need to be fully developed and realized.

Conversely, oil palm and vanilla plantations have high financial returns and have thus been attractive to communities and overseas companies and buyers.

Enhanced monitoring and enforcement are needed to ensure that clearing of virgin forest land is kept to a minimum to avoid soil degradation and pollution to the coastal communities in provinces of West New Britain, Milne Bay, Oro, Madang, Morobe and Western.

As part of the PNGFA Act, its policy framework of Climate Change and Forestry, and the country's REDD+ policy, it has embarked on planting 800,000 hectares of forest throughout the country.

2.11.5 Mining and Petroleum Development

Mining and petroleum operations are important for PNG, both for domestic consumption but in particular for export to create critical revenues. The challenge is to balance benefits to

society (at both local and national levels, i.e., jobs and revenues) with negative adverse impacts. Some impacts of mining operations on the landscapes in which the operations are located, are unavoidable. Thus, several mines have operated for decades and have had substantial adverse impacts on surrounding communities and environment, including clearance of existing vegetation and changing habitats, e.g., through pollution and sedimentation loads into terrestrial and aquatic ecosystems.

Therefore, the GoPNG initiated a review of policies related to both design and rehabilitation during closure of such sites. One such review is in the Mining (Safety) Act and Regulations. This helps move the mining industry towards more responsible standards¹⁶. Land rehabilitation programmes will ensure that adverse impacts are temporary.

GoPNG has developed a sustainable mining policy, which recognizes the rights of people on community lands. Past mistakes at mining sites will be avoided in the future. The review of the Mining Act 1992 has been earmarked to be reviewed to ensure that these are more applicable to PNG. The Ok Tedi Mine is scheduled to close in 2027 and a mine closure plan needs to capture the above concerns¹⁷.

The above reviews as well the application of Environment Impact Assessment (EIA) to mining, LNG and Petroleum developments will ensure developers, government and communities adhere to such policy. In ensuring the management and protection of environment and conservation is adhered to support sustainable development measures with land owners.

2.11.6 Fire

The Western rain shadow side of mountains and the Eastern sides of mountains, as well as Central, Milne Bay and Gulf provinces are now dominated by fire-adapted exotics species and grasses, due to gradual conversion of the natural forests from fires. Local communities have contributed to these fires as part of converting forest lands to areas for grazing, subsistence agriculture and collection of firewood. The slopes are used for grazing lands and firewood. Although grazing is no longer economically viable, fires are frequent during the dry season (June to late November) thereby preventing natural regeneration of woody species. Fires are often set to catch wild games and preparing land for subsistence gardening.

¹⁶ www.actnowpng.org/blog/revised-mining-act-making-headwa, Accessed 10/12/15.

¹⁷ The National 2/3/2020.

Fire prevention programs and the capacity at the provincial level should be enhanced. Further, improved conservation and reforestation techniques are required. This would include community rangers to work with landowners and provincial governments to manage bush fires deliberately started for community gardening and wild games.

2.11.7 Use of Chemicals and Plant Residues

Chemicals used in the agriculture and mining sectors have caused harm to the land and water resources and to human health. Some pests and diseases may have developed resistance to specific pesticides, although not a lot of studies have been done in that area.

2.11.8 Natural Disasters

PNG is increasingly challenged by recurring natural disasters such as droughts, mass landslides, volcano eruptions, floods and tsunamis. These cause considerable environmental damage, destruction of agriculture activities, loss of life, and with significant consequences for the national and local economy.

Enhanced efforts to mitigate the impacts and reduce associated risks and increase resilience remain important for the country especially the remote and small island communities. The National Disaster Centre (NDC) with funding from UNDP launched the National Disaster Risk Reduction Framework (NDRRF) covering the period 2017–2030. This framework provides an Action Plan that NDC together with the provinces and development partners and the community would apply in a disaster event and furthermore, it promotes building back better infrastructures for the provinces, towns and communities¹⁸.

Capacity building through education, comprehensive multi-hazards risk profiling and risk management are now becoming increasingly important for all communities starting with curriculum deployment for early formal schoolings and Teachers' Training Colleges and institutional strengthening of lower level government institutions. Increasingly development partners such as the Asian Development Bank are making a start through the TVET program¹⁹.

¹⁸ National Disaster Centre 2014, National Disaster Risk Reduction Framework 2017 – 2030, Kit Peng Building, Waigani Drive, Port Moresby.

¹⁹ ADB TVET TA programme to begin in March 2020 which is the initial scoping for a larger project.

2.12 Causes of Land Degradation

The broad causes of land degradation are:

- Population increase
- Commercial development
- Resources extraction
- Inappropriate management practices – Improvement of management practices
- Lack of policy implementation – Strengthen policy implementation and enforcement
 - Human/financial resources – Enhance resource allocations to human/financial resources
 - Lack of awareness and understanding of sustainability (local, provincial, national)
- Inappropriate policies
- Natural disasters
- Lack of incentives, and disincentives
- Governance, ownership, tenure, corruption
- Institutional setup

These lead onto pressures that are placed on the environment as stated in the Draft State of the Environment Report for PNG²⁰.

2.13 Major Pressures on PNG's Environment

In recent years, three types of pressures have been evident on the environment of PNG. Table 2 lists land development, resource extraction and consumption and waste cover as the main types of pressures. Land development covers for both urban development as well as agriculture with roads and infrastructure. Logging leads to resource extraction where also overhunting and fishing as well as illegal trade robs the Government from revenue which could be used to reverse these pressures.

Consumption and waste, the third major pressure on the environment where energy consumption and soil and liquid waste generation contribute immensely to it. Most of the urban centres outside of Port Moresby or Lae cities do not have dedicated waste dump or management sites. Most of the wastes from the towns are dumped along road sides or close to rivers or waterways, where they end up in the rivers or water bodies.

²⁰ CEPA, 2019, Draft State of the Environment Report for Papua New Guinea, Conservation and Environment Protection Authority, Port Moresby, Papua New Guinea., p 20.

Table 2: Major pressures on PNG’s environment²¹

Land Development	Resource Extraction	Consumption and Waste
<ul style="list-style-type: none"> • Urban and development • Agriculture • Roads and infrastructure 	<ul style="list-style-type: none"> • Logging • Overhunting and fishing • Illegal trade 	<ul style="list-style-type: none"> • Energy Consumption • Soil and liquid waste generation

These pressures are exacerbated by the causes of land degradation in particular where appropriate management practices are not implemented effectively.

3.0 Institutional Framework

3.1 Institutional and Governance Barriers to Sustainable Land Management

The GoPNG is committed to sustainable development and is working to improve alignment of resources and state agencies towards the sustainability agenda. The GoPNG aims to ensure continuity and a critical mass of people within key departments and agencies. This is necessary to ensure policy coherence and resources security for implementing the obligations of the GoPNG to the MEAs including the UNCCD.

Enhancing the institutional capacity is important to enable development and implementation of land development programs. Institutional capacity (manpower, skills, and attitudes) and institutional systems (planning, implementation, monitoring, training and management) will be enhanced.

Annex 4 provides an overview of related government agencies and institutions at central and local levels, respectively, including research and development.

4.0 Legal and Policy Framework

Within Annex 4 is also an overview of national laws, acts, regulations and policies relevant to natural resources and the environment, and these come under the different government departments and agencies.

PNG is also bound by several other global and regional mandates for sustainable development, including signatory to most UN Conventions, with which there are obvious potential linkages to the NAP (Annex 5).

²¹ Ibid.

United Nations Framework Convention on Climate Change (UNFCCC)

There are substantial possible synergies and linkages between Sustainable Land Management (SLM) and Reduced Emissions from Deforestation and Degradation (REDD), because many of the initiatives and efforts under the proposed REDD scheme are very similar to and in support of those needed for SLM.

The REDD PNG National Development Programme has developed the legal and administrative practice for REDD+. The PNG REDD+ Strategy 2017 – 2027²² endorsed by the GoPNG on 5th May 2017 outlines the Policies and Measures, Coordination and Reporting, Financing REDD+ and the Way Forward. This strategy is implemented by the Climate Change and Development Authority.

In the context of SLM, the relevant REDD+ abatements include:

- Reduced Impact Logging
- Sustainable Forest Management
- Reforestation
- Shift oil palm to degraded grasslands
- Driving subsistence agriculture away from primary forest
- Moratorium on new timber and agricultural leases

REDD+ will apply a participatory approach through stakeholder engagement at all levels - central, provincial, district and local levels. Consultations and mechanisms for coordination and dialogues are being established at local levels and the Strategy above elaborates on this.

Pilot sites on REDD + are sought to be established and already the April Salumei project²³ is the first pilot site in PNG. In addition, 5 project sites in the country have been identified by the GoPNG.

United Nations Convention on Biological Diversity (UNCBD)

PNG being a signatory to the UN Convention of Biological Diversity continues to provide input to the UN and its development partners. In its 5th National Report to CBD in 2017²⁴, the

²² CCDA, 2017, PNG REDD+ Strategy 2017 -2027, Government of PNG, UNDP, Port Moresby.

²³ The April Salumei project on <http://pacificforestalliance.org/>

GoPNG highlighted biodiversity as its importance as having 6 – 8% of the world's biodiversity, its status, trends and implications for human well - being.

The major threats to biodiversity are from land use changes through logging, agriculture, plantation as well as the controversial SABL and fire. It also lists a number of biodiversity related projects in the country that have occurred up to 2017 and as well through ongoing initiatives which could provide synergies to the UNCCD. The document also states the progress made in PNG towards the Aichi Biodiversity Targets which are from 2011 to 2022. On another front, the announcement by the Minister for Environment, Conservation and Climate Change to plant 10 million trees in the next 10 years (2020-2030) will provide an example of this effort. This will target degraded grassland and forested areas as well as the areas under the SABL.

5.0 Planning

A number of planning aspects are considered in this section. It will begin with thematic programmes, management of resources, energy requirements, research, monitoring and capacity building. The intention is to incorporate these aspects into the NAP where appropriate. In a lot of the possible funding scenarios, development partners as well as in country funding can offer coverage of these aspects in their portfolio.

5.1 Thematic Programmes and Projects

- Providing enabling conditions
- Land degradation and soil inventory and monitoring
 - Surveys
 - Scale and level of mapping
 - Use of remote sensing tools
 - Forest cover assessments
 - Type and extent of land degradation)
- Measures to combat and mitigate effects of land degradation
 - Rehabilitation of degraded lands
 - Improvement of irrigation facilities and water conservation
 - Silvo and agro-pastoral development, agroforestry
- Monitoring and evaluating climatic variation (relationship between climate and desertification / degradation of land; rainfall distribution, climate and weather forecasting)
- Empowerment of local communities and local institutions
- Providing guidelines and manuals
- Creating and improving market systems

²⁴ GoPNG, 2017, Fifth National Report to the Convention on Biological Diversity, UNDP, Port Moresby, Papua New Guinea.

5.2 Management of Natural Resources

- Land management and planning processes
- Water resources
 - meeting water requirements of the country: drinking, irrigation
- Environmental issues
- Consideration of scale of operations:
 - Larger scale and medium scale – farming and plantations
 - Small scale – traditional shifting cultivation
- Exploitation of mineral resources
- Unsustainable agricultural practices
- Unsustainable forestry practices

5.3 Management for Food, Fuel, Fodder and Energy Requirements

- Food security
- Fuel-fodder security
- Meeting rural energy needs

5.4 Research and Development: Integrated Approach

The role of science and research must be strengthened. Policies should be based on thorough and sound research and science. The government of PNG will seek to improve the linkages and synergies between policy and extension agencies on the one hand, and research agencies on the other hand.

The strong capacity of the existing research agencies will be further improved and the role of applied research on sustainable land management will be enhanced and mainstreamed into policy-setting government agencies. The continuation to collaborate with CSOs should progress as this often possesses a strong research capacity. Good examples and experiences of collaborative efforts between government agencies and CSOs already exist, where the latter complement the government in terms of specific research questions.

5.5 Monitoring Mechanism on Land Degradation

There are already policies and linkages with the UN Sustainable Development Goals (UN agencies, FAO, UNDP, UNESCO, UNEP and WMO) and Sub-Regional organisations (Secretariat of Pacific Regional Environment Program – SPREP and Secretariat of Pacific Communities - SPC) in the country and the Asia Pacific region to sustain monitoring of land degradation.

The country's Medium Term Development Plan III (2018-2023) is to monitor the overall government to to implement their developmental programmes throughout the country and monitor all issues on sustainable development especially through sectors including land, forestry, agriculture, mining, energy and water. The government data base and information

management system, and its statistic office are contributing to this effort but needs more integrated approach to constantly update these activities.

5.6 Capacity Building and Human Resources

Capacity building and human resources development continues to be a challenge throughout the country. The land and oceans and their natural resources are owned under traditional and customary tenure systems; and similarly, the traditional conservation and management practices align well with traditional and customary land owners and deserve due recognition.

The land owners therefore command a principal position and decision-making in access and benefit-sharing arrangements, including capacity building and training programmes. The Action Plan therefore must assert for maximum benefits to the traditional land owners, and not the State and its agencies per se.

The government sectors such as tertiary institutions with international partners will need to develop programmes and training. Hence, institutions are listed in Annex 3 that would need to be engaged to be able to provide for this.

6.0 National Action Plan

In line with the implementation of UN Sustainable Development Goals such as Goal 1 (end of poverty), Goal 2 (zero hunger, food security), Goal 4 (quality education), Goal 15 (life on land, forestry) and Goal 17 (Partnership) in PNG, and linked to the Vision of UNCCD in forging partnership to reverse and prevent desertification/ land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability.

The overarching framework of the NAP will be implemented through the 6 principles for PNG. For each principle under the NAP, a set of outcomes, outputs and activities have been identified. Outcomes and outputs are presented here, and the associated activities and possible leverage funding opportunities are presented in Annex 4. Hence, the development and implementation of the PNG National Action Plan from 2020 - 2030 will be as follow:

Principles

1. Sustainable Development

Outcome

1.1 SLM incorporated into existing development policies will encourage and generate economic growth, alleviate poverty and improve livelihoods while maintaining sustainable/stable ecosystems

Output

- 1.1.1 Environmental governance of the natural resource base and maintenance of ecosystems improved – through a strengthened regulatory process
- 1.1.2 Income earning opportunities through SLM practices increased, through the application of best practices
- 1.1.3 Access to basic goods and services for the rural/local communities improved – relevant social and physical infrastructure developed

2. Land Management Governance and Policy

Outcome.

2.1 Capacity building, training and human resources strengthened

Outputs

- 2.1.1 Human resources at all levels strengthened
- 2.1.2 Database / IT facilities developed and enhanced
- 2.1.3 GIS and mapping/surveying facilities enhanced
- 2.1.4 Valuation techniques and models of SLM (including environmental services) developed and tested
- 2.1.5 Physical planning improved
- 2.1.6 Educational tools for SLM developed and enhanced

Outcome

2.2 Granting of titles strengthened

Outputs

- 2.2.1 Existing procedures to be supplemented by a checklist for endorsement and approval at all levels of government authorities

Outcome

2.3 Policies developed and strengthened

Outputs

- 2.3.1 Land use policy (SLM)
- 2.3.2 Land mobilization policy
- 2.3.3 Relevant existing policies reviewed

Outcome

2.4 Legislation developed

Output

- 2.4.1 New legislation developed, based upon review and amendment of ILG Act 2009 and Customary Land Registration Act 2009, Land Use Act (SLM), Lands Act 1996.

3. Education, Training and Awareness

Output

- 3.1 To enhance and achieve sustainable development and sustainable land management issues through development of capacity building and human resources of the country, communities and stakeholders

Outcomes

- 3.1.1 Monitoring and Evaluation Taskforce established
- 3.1.2 SLM training program developed
- 3.1.3 Education program on SLM developed
- 3.1.4 Awareness programs on SLM prepared

4. Knowledge Information and Research

Output

- 4.1 Knowledge information and research system on SLM enhanced

Outcomes

- 4.1.1 SLM research objectives to be identified
- 4.1.2 Database of and access to global knowledge on SLM established
- 4.1.3 SLM tools and technologies developed, enhanced and synergized.
- 4.1.4 SLM piloted in provinces and communities
- 4.1.5 Exchange of national experiences on SLM

5. Evaluation and Monitoring

Output

- 5.1 Progress of the NAP monitored and evaluated

Outcomes

- 5.1.1 Monitoring and evaluation plan for SLM developed
- 5.1.2 Monitoring and evaluation of SLM programme performed
- 5.1.3 Reporting to UNCCD on progress and performance of NAP

6. Partnership and Financing

Output

6.1 Partnerships developed and strengthened, and sustainable financing mechanisms instituted, to address all aspects of SLM

Outcomes

- 6.1.1 Public-private partnerships to promote SLM, strengthened
- 6.1.2 Financing agreements, MOUs between National Government and Development Partners, developed
- 6.1.3 All relevant government agencies at national and provincial levels, as well as CSOs and industries, engaged to access financing to manage and implement SLM initiatives

7.0 Cross-cutting Issues

Cross cutting issues are numerous and the two listed here are ones that have relevance at this compilation of the NAP.

7.1 Gender

The onset of a change from a male and female outlook to a gender perspective has had its challenges in a contemporary PNG setting. Traditional societies have set out boundaries for male and female children as well as adults. Where women's role has been seen to be confined to the house and the gardens to support the household within a family unit.

This tradition is continually changing within provinces and regions, and those that have embraced this change have seen an increased in the changing of livelihood. And for females to be in schools, this is also one of the priorities under the Development Strategic Plan (2010 – 2030) as well as being an outcome of SDG 4 & 5.

7.2 Use of Traditional Knowledge

Papua New Guineans have been using traditional knowledge since time immemorial and these practices have sustained them up to the present time. In the current contemporary setting, outside influences through media such as television, radio and internet have been somewhat destructive at times. Although there are also useful processes and outcome in those introduced practices that may assist the enhancement of these traditional knowledge and practices.

PNG has within its original eight-point plan to do things the PNG Way and the NAP will also seek the use of local and traditional insights, when setting out interventions into land areas that are under the resource owners with a view to meeting the development goals for PNG. As well as UN SDGs and demonstrate that these interventions are a “win – win” situation for all stakeholders. It is also noted that the importance of traditional knowledge on the global scientific scale has been recognized and used to provide a Summary Analysis for Policy Makers, through the Intergovernmental Science – Policy – Platform on Biodiversity and Ecosystem Services (IPBES) in 2019²⁵.

²⁵ IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian,

8.0 Strategy for Communication, Information and Dissemination

The need for an integrated communication and dissemination strategy is important. The strategy will include all aspects of the SLM approach. The mechanisms by which these issues should be addressed include: awareness, training, compilation, information on approaches, conceptual frameworks, and pilot demonstration sites.

9.0 Financing and Resources Mobilization, Including Investment Policies

Funding is a pre-requisite to implementing the NAP. Total costing of the NAP has not been attempted, however, this section focuses on identifying strategic funding opportunities in relation to prioritized outcomes and outputs. Some of the possible funding sources that could be solicited for the NAP are in Annex 4.

A funding and costing plan for the National Action Plan for PNG for the next 5 to 10 years will be prepared for individual outputs and activities of the NAP and will be the responsibility of relevant agencies and organizations. At this stage, information is not available for individual sectors, i.e. agricultural, forestry or mining sectors and hence, what is presented is based on available information.

The available funding sources are in the bilateral and multilateral negotiations with international partners as well as private sector partners. Although the latter has not been confirmed for inclusion into this NAP.

Four main categories of investors and investment relationships are considered relevant. These are Government, Multi-laterals, Bilateral, and, Public-Private-Partnerships (PPP).

9.1 Categories of Investment and Investment Relationships

9.1.1 Counterpart Government funding for SLM

If the CEPA needs to seek funding for a specific component of the SLM programme from the National Government, then the CEPA being the executing agency will have to submit a project proposal for funding under the Public Investment Program (PIP), in order for the project to be considered in the development budget. There is a project document format in which the project proposal will adhere to and submitted before June 30th in a year to be appraised and considered for funding in the next coming year.

Recently the Minister for Environment, Conservation and Climate Change has announced the planting of 10 million trees in a bid to combat forest degradation and this activity will contribute to the Land Degradation Neutrality (LDN) target for PNG.

9.1.2 Public Private Partnership (PPP)

A policy framework for PPP with government is pending. PPP offers potentially immense opportunities both in terms of funding and real impacts on the ground. But collaboration with the private sector is often considered as risky and with concern, both by government and by CSOs. PPP arrangements could serve to ensure proper integration with other sectors.

9.1.3 Levies from specific sectors

In the case of forestry, levies (approximately PNG Kina 50 million) from logging operators are allocated to reforestation efforts which are managed by PNGFA. The LNG project will have potentially big impacts on the environment and on development, both at the national level on general budget allocations, and at the local level on areas surrounding the LNG project. This has not been fully established although it is a proposed concept where biodiversity off set credits will need to be determined.

9.1.4 Multilaterals

The World Bank is generally involved in land issues, including mining as well as agriculture (cf. coffee, oil palm, and cocoa) and infrastructure projects. A number of projects exist in PNG and the Productive Partnership in Agriculture (PPAP) besides the Road Maintenance and Rehabilitation II Additional Funding Project (RMRP IIAF) are two such projects. These however, have limited coverage on NAP related activities.

The GEF has allocated USD 20 million for biodiversity, climate change and land degradation, while the European Union (EU) tends to focus on agriculture and livelihoods issues. Although in recent times, EU with FAO with the assistance of other partners are funding the Biodiversity Forest Inventory listed in Annex 4, which have synergies with the activities of the NAP.

International Fund for Agricultural Development (IFAD) has expressed interest to support mainstreaming of SLM into national plans and strategies, for human resource development in key sectors and for developing knowledge management capacities for integrated SLM and for completing the NAP.

PNGFA is an affiliated member of the International Tropical Timber Organisation (ITTO), through an annual membership fee of USD 250,000.00. ITTO provides technical support in terms of capacity building and provides funds in several projects related to sustainability, such as afforestation of grassland areas and also Forest Law Enforcement and Governance workshops.

9.1.5 Bilateral

Japanese International Corporation Agency (JICA) has been supportive of PNGFA in terms of capacity building and has also provided technical support. JICA is currently involved in the establishment of a Remote Sensing Unit in PNGFA and capacity building in the form of providing training to forestry officers in Information Technology and Remote Sensing. It is also involved in a number of projects as listed in Annex 4 and these are possible funding options for the NAP.

9.2 Strategic Priority Areas

Attention and fund raising should focus on the following strategic key gaps for each of the three main sectors: agriculture, forestry and mining. At this stage, these are preliminary statements and will be reviewed when funding is secured for the NAP.

9.2.1 Agriculture

- There is no one specific policy on SLM in place (cf. Output 1.1)
- Lack of specialist human resource to support research and development in SLM (cf. Output 2.1)
- Standardise check-list for issuance of land titles (cf. Output 2.2)
- Need for review of the Lands Act with reference to SLM benefits (cf. Output 2.4)

- Facilitators and educators trained (cf. Output 3.1)
- Lack of nationwide awareness about SLM (Output 3.1)
- Strengthen existing agricultural research and training providers in PNG (cf. Output 4.1)
- Lack of application of research findings (cf. Output 4.1)
- Develop specific indicators for M&E purpose (cf. Output 5.1)
- Lack of partnership with farming communities and farmers organisations and access to credit facilities – e.g., womens groups, youths (cf. Output 6.1)

9.2.2 Forestry

- Forestry investment interventions
 - Reduced Impact Logging (RIL), Secondary Forest Management, Forest Conservation, Reforestation/Afforestation, Forest Extension Services, Forest Research (Multipurpose Plants Trees and Shrubs), Agroforestry Management

9.2.3 REDD+

- Government should invest into ensuring that the forest sector resource is developed under the principles of SFM
- Economic opportunities for forest conservation should be encouraged
- Government through PNGFA should invest into the tree plantation development and afforestation of grassland areas
- Government through PNGFA should revive and strengthen forest extension services to the rural areas
- Government through PNGFA should encourage and strengthen forest research and training on multi-purpose tree species
- Government through PNGFA and DAL relevant stakeholders should facilitate investment opportunities under PPP etc for agroforestry development
- Government through PNGFA and PNG Fire Services encouraged to strengthen fire management in rural communities
- Government should enable the REDD+ programme by relevant funding streams through all of government approach and PPP

9.2.4 Mining

- Provisions of the mining closure policy and the mine rehabilitation plan should be included in the mining tenements as well as the review of the Mining Safety Act

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- More incentives provided to Incorporated Land Groups (ILGs) within mining sectors to enhance the knowledge on SLM best practices for the mid – long term
 - PPP
 - Tax credit scheme
- How SLM practices can be captured under PPP arrangements

10.0 Conclusion

The PNG NAP presented here will naturally function as a policy document, which continuously will need further revision and attention, as development progresses.

The cross-cutting areas will deserve additional attention and consideration beyond what has been possible in this document, viz. land rights and access, disasters and gender.

Land rights and access is one of the fundamental challenges towards improving sustainable land management in PNG. Making general solutions are difficult, because of the many different local rules in relation to issuance of land titles. It is noteworthy that the primary focus and priority of the NADP is on small-holders. The local SABL is a contentious issue and the government has recently issued a temporary moratorium on new SABLs. In addition, the CCDA and CEPA are working towards establishing complete audits on already-existing SABLs.

The need for baselines in virtually all sectors under the NAP was highlighted as being crucial. It was argued that without baselines on land use and practices, it is very difficult or even impossible to measure progress in performance (against targets, through indicators). Baselines are necessary for proper identification of areas for intervention and initiatives.

The lack of a national land use plan was highlighted as very crucial. Again, however, development of a national land use will depend on good baseline data and the development of the Sustainable Land Use Policy by the DLPP.

Innovative ways for funding the establishment of protected areas and jointly managing the protected areas will be pursued as is stated in the Protected Areas Policy (PAP). Experiences from elsewhere in the world have seen their relevance in PNG. Within the PAP, private sector companies have been identified to be involved in protected area conservation and management, as a means to offset some of the adverse impacts which the company might have, and/or as part of efforts to improve the corporate responsibility profile of the company.

Mining investments in PNG are booming and can potentially have substantial positive impact on the development path of PNG. The mining law is under revision and will be updated to suit the current circumstances and this will include enhancing attention to social and environmental responsibility and sustainability. This will help ensure that benefits from the

mining boom are shared more equitably across the society including the local communities and disadvantaged areas.

Changes in market requirements can potentially be a driver of changes in land use and practices. Thus, certification requirements are examples where the markets can demand and impose improved management regimes and practices on production and land use.

Policies should be based on thorough and sound research and science. The government of PNG should seek to improve the linkages and synergies between policy and extension agencies on the one hand, and research agencies on the other hand. The strong capacity of the existing research agencies will be further improved and the role of applied research on sustainable land management will be enhanced and mainstreamed into policy-setting government agencies. Continued collaboration with CSOs often possess a strong research capacity and is imperative. There are already good examples and experiences of collaborative efforts between government agencies and CSOs, where the latter complement the government in terms of specific research questions.

The need for awareness and knowledge management is broad and multifaceted and is a key element of this NAP. This is a combination of education and training. An effective communication strategy has to be developed to ensure that the key target audiences are reached.

Sustainability is both conceptually and technically very complex. Developing common understanding of what SLM entails at both the strategic level and at terms of on-the-ground efforts will need continuous efforts. Thus, the NAP sets out a plan for further systematic efforts to build stronger understanding of the importance of SLM and its role in the national context, particularly at the sub-national level and at local level. This also includes a formal review of practical tools and methods in the local context.

11.0 Reference

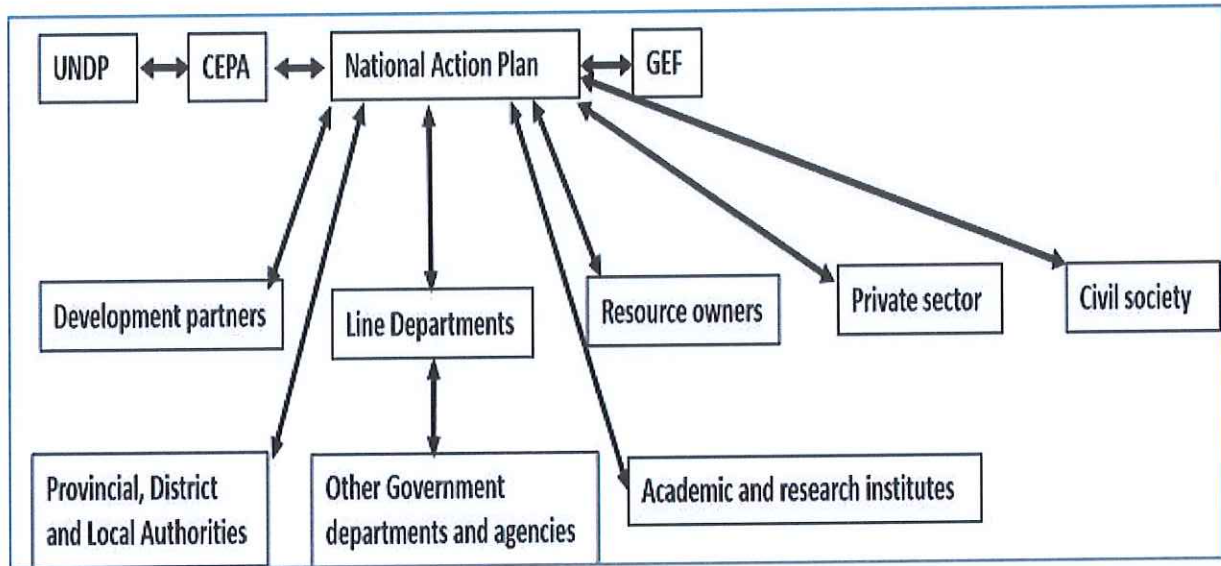
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Annexes

1. Stakeholder Matrix for the Development of the NAP.
2. Overview of Policies relevant to Natural Resources and the Environment.
3. Regional and Global International Agreements.
4. Possible Funding Opportunities for the NAP

Annex 1: NAP Stakeholder Matrix



Here Development Partners include World Bank, European Union, Asian Development Bank
 Line Departments are DLPP, PNGFA, DAL, and CCDA as well as others coopted if in their area of responsibility.

Other Departments include Prime Minister and NEC, PNGFA, DNMP and others relevant for their participation.

Private Sector includes PNGMP, NBPOL, OPIC

Academic and Research Institutes include UPNG, OUT, UNRE, PAU, UOG, NARI

Annex 2: Overview of Policies for Natural Resources and the Environment

Departments, Agencies, Private Organizations and Research Institutions involved in Land Development in Papua New Guinea

1. Department of Lands and Physical Planning (DLPP)
2. Department of Provincial and Local Level Government (DPLLG)
3. Department of Agriculture and Livestock (DAL)
4. Papua New Guinea Forest Authority (PNGFA)
5. Climate Change and Development Authority (CCDA)
6. Conservation and Environment Protection Authority (CEPA)
7. Department of National Planning and Monitoring (DNPM)
8. Mineral Resources Authority (MRA)
9. Department of Mineral Policy and Geohazard Management (DMPGM)
10. Petroleum and Energy Department (PED)
11. PNG Cocoa Board (PNGCB)
12. Kokonut Industri Koperesan (KIK)
13. Coffee Industry Corporation (CIC)
14. New Britain Palm Oil Limited (NBPOL)
15. Hargy Oil Palm Limited (HOPL)
16. PNG Forest Products Limited
17. Research Institution and Universities

The listing of 17 departments, agencies, private organizations and research institutions is not exhaustive. There are bound to be additional organizations that are involved with the land development and this list will increase in updated versions of this NAP.

1.0. Department of Lands and Physical Planning

The Department of Lands and Physical Planning is the main government department whose jurisdiction is the overseeing of land in Papua New Guinea. Its role and mission focusses on the ownership, allocation and release of State and customary land for development purposes thus to alleviate poverty and improve the lives of people. This is contained in the Land Act 1996.

Other relevant legislation and policies are; i) Land Registration (Amendment) Act 2009, ii) Incorporation Land Group (Amendment) Act 2009, iii) Physical Planning Act 1989, and, iv) Draft National Sustainable Land Use Policy 2018.

➤ Land Registration (Amendment) Act 2009

This Act allows for land to be registered and it is an amendment from an earlier date most likely in the 1990s and this will be confirmed in the final report. It ensures that land is documented properly so that it is used for its intended purpose.

➤ Incorporated Land Group (Amendment) Act 2009

This Act is also an amendment to a previously legislation and it allows for the landowners to be properly represented in projects, so that benefits owing to them would go into a designated landowners account for all to access. There are some issues regarding the process of administrating this Act and hopefully this will be resolved soon.

➤ Physical Planning Act 1989

The Physical Planning Act 1989 allows for the development, management and the best use of land and land resources from both within and outside the sphere of planning process. Unimproved land could also be an avenue for sustainable development if appropriate land use practices are in place.

➤ Special Agriculture Business Lease (SABL)

This lease has been controversial and has been mentioned in the Draft Report on Drivers and Trends of Land Degradation and is stated here again. A Commission of Inquiry was instituted which examined aspects of the SABL granted and where a lot of customary land was being taken up by logging or large agriculture area without benefits reaching the landowners.

DAL and PNGFA are involved in the deliberation of the SABLs and DAL has issues with them as stated in the Draft Report on Drivers and Trends of Land Degradation in PNG.

➤ **Draft National Sustainable Land Use Policy 2018**

The Draft National Sustainable Land Use Policy 2018 is the latest policy by DLPP where an extract on page 2 of the policy²⁶ reads;

“Based on Agenda 21, the legally binding conventions on climate protection, biodiversity and combating desertification have been developed. While the convention on combating desertification explicitly mentions land management as a key instrument to achieve its objectives, land use planning has the potential to contribute meaningfully in achieving the objectives of the above conventions which PNG ratified. Land use planning can contribute to mitigating climate change by identifying areas of forest protection or afforestation as well as to adaptation to climate change by identifying risk areas or new suitable areas for agricultural productions. Land use planning also can protect biodiversity through zoning of protected areas”.

This sustainable land use policy will need amendments in the Physical Planning Act 1989 to cater for it and from the extract will recognize LDN.

2. Department of Provincial and Local Level Government

The Department of Provincial and Local Level Government prime mission and objective is to administer effectively the derivation grants that are handed from the national to the provincial and local level governments in the districts.

Most of its activities are not attributed to land, however, it has a principal role where customary land needs to be alienated to State land for development purposes. Under the sections of the Organic Law on Provincial Governments & LLGs 1998, a Certificate of Alienation will need to be issued by DPLLG after a Land Investigation Report has been completed by DLPP.

3. Department of Agriculture and Livestock

This department has its jurisdiction on agriculture and livestock and its activities cover full aspects on land. A number of policies have been promulgated to meet its core mission and objective as providing food security and services in improving agriculture for the inhabitants of Papua New Guinea. Those that are applicable to SLM or LDN are as follows;

²⁶ DLPP, 2018, Draft Sustainable Land Use Policy (in circulation)

➤ **National Food Security Policy 2016 - 2026**

The National Food Security Policy 2016 - 2026 provides a framework for agriculture considering natural disasters, including climate change for a 10-year period which fits well into the timeframe for the SDG (2016- 2030) and LDN. This policy will consider climate smart farming techniques and be inclusive of all genders and the private sector.

➤ **National Agriculture Sector Plan (NASP) 2019 - 2029**

DAL has been revising its National Agriculture Development Plan and has now the National Agriculture Sector Plan (NASP) 2019 – 2029 besides other initiatives and these may have implications for land acquisitions²⁷. The previous version of NADP was from 2007 to 2016.

➤ **Agriculture Smart Policy**

An Agriculture Smart Policy is in the drafting stage that will take care of the challenges in developing agriculture for Papua New Guinea²⁸. Its outcome will have an impact on food security in Papua New Guinea.

4. Papua New Guinea Forestry Authority

The PNGFA is tasked with promoting the harvesting of trees from the forest while providing for sustainable harvesting pattern that will allow for forest regrowth during a 20-year logging cycle. Through the Forestry Act and its amendment, the harvesting of trees was done through a Timber Rights Purchase Agreement right up to a Forest Management Agreement (FMA).

➤ **Forestry and Climate Change Framework for Action 2009 – 2015**

This framework for action discussed the harvesting and replanting of degraded forest area while also considering Reduced Emissions from Deforestation and Degradation (REDD) and REDD plus projects. A newer framework from 2016 onwards would have been promulgated, however, this has not been sighted by the author in this collation.

➤ **National REDD+ Strategy 2017 - 2027**

Through UNDP, a UN REDD+ project is in progress where stakeholders including PNGFA, CCDA, DAL and CEPA as well as other organizations are involved. The National REDD+

²⁷ Reference from Agriculture Nius

²⁸ See foot note 6

Strategy 2017 – 2027 emphasizes on national development and land use planning where the bulk of the area would be the forested areas. The introduction of carbon sequestration projects would ensure that these forest areas remain without less destruction and hence promote LDN. A Technical Working Group meets regularly and their current progress to date will be reported in the final report and this would progress the framework of action up to 2027.

5. Climate Change and Development Authority

This agency was initially an office and this was then upgraded to an authority as more development funding became available through the United Nations Framework for Climate Change (UNFCCC) and also Green Climate Fund, besides other bilateral or multilateral funding sources. PNG is also a signatory to the Paris Accord and hence, strengthen its place to seek funding sources through this agreement. Hence, the Paris Agreement Implementation Act 2016 does provide for the implementation of Climate Change related activities in PNG.

The Climate Change and Development Authority (CCDA) has its programs set up for Adaptation, Mitigation and Monitoring, Verification and Reporting (MRV) through collaboration with other key stakeholders such as PNGFA, DAL and CEPA in REDD+ discussions.

➤ Climate Compatible Development Management Policy 2013-2015

The Climate Compatible Development Management Policy 2013 – 2015 which has lapsed, focused on a low carbon growth pathway and green economic growth. This would have ensured the resilience of the environment provided for a robust and sustainable economy where land and its resources would be planned and allocated accordingly.

6. Conservation and Environment Protection Authority

The Conservation and Environment Protection Authority (CEPA) is the national focal point for the Land Degradation Neutrality (LDN) programme in PNG. Through this project, CEPA coordinates input into LDN from key stakeholders such as DLPP, PNGFA, DAL, and CCDA.

➤ Environment Act 2000

This is the only legislation that provides for due consideration regarding the assessment of impacts that would arise from development activities in PNG. Depending on the severity of these activities, mitigation measures are put in place to limit impacts into the environment

whether it be land or into rivers or sea. Those within mining projects do impact on land areas as well as oil palm development or special agriculture business lease (SABL) areas have large footprints on the environment.

7. Department of National Planning and Monitoring

The Department of National Planning and Monitoring (DNPM) is the department that is responsible for the development of the National Development Plans such as the Vision 2050 and Development Strategic Plan (DSP). It has also developed the National Strategy for Responsible Sustainable Development (StaRS).

➤ National Strategy for Responsible Sustainable Development

The National Strategy for Responsible Sustainable Development 2017 emphasizes inclusive green growth as well as reducing poverty, wellbeing, livelihoods and social protection and access to essential services while retaining and protecting the biodiversity with its ecosystems and services. Land ecosystems are essential for LDN and hence, this strategy supports this immensely.

8. Mineral Resources Authority

Mineral Resources Authority evolved out of the Department of Mining and is an authority under the Mineral Resource Authority Act 2005. It is responsible for overseeing of mining exploration and issuance of mining tenements. As well as conducting research and development of geological data that is required by mining and exploration companies in PNG.

Besides that, it interacts with development partners such as the World Bank and European Union for special projects relating to mining and the communities in PNG. It administers the Mining Act 1992, Mining (Safety) Act 1977 and Regulations 1935.

9. Department of Mineral Policy and Geohazard Management

The Department of Mineral Policy and Geohazard Management is the other organization that evolved out of the Department of Mining. Its primary functions are in the development of mineral policies that are beneficial for the stakeholders in Papua New Guinea and the overseeing of geological hazards that are prevalent in country. PNG is prone to volcanoes, earthquakes, flooding as well as tsunami and hence, these disasters do impacts on the land resources as well as the marine resources in the country. It is responsible for the

management of the geohazard such as overseeing the observation of earthquakes and volcanoes. Besides that, it seeks to review policies relating to mining as well.

10. Department of Petroleum and Energy

The Department of Petroleum and Energy oversees the issuing of exploration licenses as well as the development of licenses for the oil and gas industry in PNG. It administers the Oil and Gas Act 1998, Unconventional Hydrocarbon Act 2015 and Oil and Gas Regulation 2002. In addition, it oversees the energy policies and appropriate legislation relating to energy development alongside with PNG Power Limited and the private energy developers.

11. PNG Cocoa Board

PNG Cocoa Board is a statutory body established under the Department of Agriculture and Livestock. It is focused on the development of finest cocoa flavor that are used for the development of chocolate and associated products where the majority of cocoa beans are exported to overseas markets around the world.

The outreach activities involve research and development, and supply of seedlings to the general public at a cost recovery for cocoa producing provinces in PNG. Most of the coastal provinces as well as a few highland provinces are now producing cocoa. It is implementing the Productive Partnership in Agriculture Project (PPAP) funded by the World Bank and a component covers road upgrades for the cocoa to reach markets, as well as developing Cocoa Pod Borer resistant seedlings for distribution at reasonable costs to farmers.

12. Kokonut Industri Koporesen

Kokonut Industri Koporesen²⁹ is a statutory body established under the Department of Agriculture and Livestock. It is focused on the development of high breed coconuts that will produce better outcomes from coconuts which can be used for food and associated products such as hair oils and creams. A large component of coconut is smoked in flesh (copra meal) is exported to overseas market for oil, soap and other products. Most coastal provinces grow coconuts for daily consumption as well as a cash crop.

²⁹ This is a pidgin spelling of Coconut Industry Corporation.

The outreach activities involve research and development, and supply of hybrid coconuts to the general public and plantation through a cost recovery process for provinces in PNG.

13. Coffee Industry Corporation

Coffee Industry Corporation is a statutory body established under the Department of Agriculture and Livestock. It is focused on the development of finest coffee flavor that are used for the development of ground coffee where the majority of coffee beans are exported to overseas markets around the world.

The outreach activities involve research and development, and supply of seedlings to the general public at a cost recovery for coffee producing provinces in PNG. This includes both highlands and coastal provinces. It is also an implementing agency for the Productive Partnership in Agriculture Project (PPAP) funded by the World Bank and the upgrading of road networks. As well as improvement in the processing of coffee beans is an outcome from this whilst also safeguarding the industry against Coffee Cherry Borer.

14. New Britain Palm Oil Limited

New Britain Palm Oil Limited (NBPOL) is a private company with its parent company Sime Darby Plantation Bhd. NBPOL is the world's leading producer of sustainable palm oil certified in accordance with the Roundtable on Sustainable Palm Oil (RSPO) Principles & Criteria. Its operations are fully vertically integrated, producing its own seed and planting, cultivating and harvesting its own land and processing and refining palm oil and the shipping of products to the EU³⁰.

NBPOL has plantation operations in PNG and in the Solomon Islands, where it has a refinery and a bulking terminal. It has also a newly built refinery in the United Kingdom (New Britain Oils) which delivers segregated, traceable and certified sustainable food ingredients to its customers. It also is the largest domestic sugar and beef producer in PNG and a global leader in high-quality oil palm seed production and research. Besides this, NBPOL operates in Morobe, Madang, Milne Bay, West New Britain and New Ireland provinces.

³⁰ <http://www.nbpol.com.pg/>

15. Hargy Oil Palm Limited (HOPL)

HOPL is wholly owned by the SIPEF NV Group of Belgium, comprising of four (4) companies who owned Oil Palm Estates and fruit from 3,700 Smallholder Growers (SG) harvesting in an area of 13,064 planted Hectares. As with NBPOL, they harvest and export oil palm to Belgium for downstream processing into products that are used in food and other industries such as hygiene and cosmetics. They are listed here as they constitute areas where the forest is cleared and replaced by oil palm trees.

16. PNG Forest Products Limited

PNG Forest Products Limited are a company based in Bulolo –Morobe province where it grows klinki³¹ pine trees which are harvested and made into plywood and other products, which supply houses and the building industry in PNG. Their area of plantation does cover large tracts of area within the Bulolo and adjacent areas in the Bulolo valley.

17. Research Institutions and Universities

A number of research institutions have been formed which has research activities focused on land developments. There is the National Agricultural Research Institute (NARI) which focused on food crops and farm animals and their adaptation to climate change as well as protection against diseases and pests.

The Forest Research Institute focuses on the taxonomy and composition of the flora that exists in forest areas in PNG. They have also been involved in forestry inventory work to determine the extent of the biodiversity within forest areas and this work is being funded by FAO, UNDP and other development partners.

The National Research Institute has its focus on research but is more focused on the socio – economic setting in PNG and the development impacts brought about by the logging as well as agricultural developments and the issues surrounding this.

A total of five universities exist in PNG and each has its own connection to land development and associated activities which include research and development. The University of Papua New Guinea (UPNG) has both the Natural and Physical Sciences as well as Medical

³¹ *Araucaria hunsteinii* – native to PNG.

Science and Humanities Schools and conduct research into land development such as for Climate Change – REDD+, Drug Discovery and Socio – Economic aspects from logging and mining activities.

In Lae, the University of Technology (UOT) has an Agriculture Department as well as a Forestry division which also has affiliation with the University of Natural Resources and the Environment (UNRE) through agriculture development. The forestry connection is with Forestry College in Bulolo which trains foresters in forestry management.

The University of Goroka (UOG) has its connection to land development through the natural sciences and conservation and the latter connection is with the conservation organizations in the highlands of PNG.

The Divine Word University and Pacific Adventist University are Faith based Universities which offer socio – economic research related to land development as well as natural and physical sciences and medical sciences. Both are providing support to the other universities and complement each other's programme of study, research and consultancies.

Annex 3: Regional and Global Multilateral Environmental Agreements

1. South Pacific Nuclear Free Zone Treaty
2. POPs Convention (Stockholm)
3. Invasive Species Strategy
4. United Nations Framework on Climate Change (UNFCCC), Kyoto Protocol
5. London Convention
6. Vienna Convention
7. Montreal Convention
8. PICTA & PACER
9. SPARTECA
10. Tuna Convention
11. Basel Convention
12. Aitutaki Convention
13. Waigani Convention
14. Tarawa Declaration
15. Honiara Declaration
16. Beketawa Declaration
17. Marine Pollution from Ships (MARPOL)
18. Nasonini Declaration on Regional Security
19. Pacific Islands Framework for Action on Nature Conservation
20. Pacific Islands Climate Vulnerability, Climate Change & Sea Level Rise Framework
21. Convention on Biological Diversity
22. Regulation of Whaling Treaty
23. World Heritage Convention
24. United Nations Convention on Combating Desertification (UNCCD)
25. SPREP Convention
26. Biosafety Protocol
27. Convention on International Trade of Endangered Species (CITES)
28. Apia Convention
29. Ramsar Convention
30. Agenda 21 & BPOA
31. Wellington Convention
32. UNCLOS (Law of the Sea)
33. Pacific Islands Ocean policy
34. Avifauna Conservation Strategy
35. Migratory Species of Wild Animals
36. Reg Act Plan (Whales, Dugongs, Dolphins & Turtles)

Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands signed, but not ratified³²:

³² https://www.indexmundi.com/papua_new_guinea/environment_international_agreements.html

Source listed Jan 2018 update

Annex 4: Possible Funding Agencies for the National Action Plan ³³

Name of Project	Financier	Duration	Cost (\$)
Nationwide 10 Million Tree Planting	CEPA	2020 - 2030	Not known
Bilateral on Climate change, agriculture, forestry and marine sectors	Australian Government	2015	Aus\$ 1.5 billion
Papua New Guinea Forest Authority (PNGFA) / Papua New Guinea Forest Research Institute (FRI) Priority 1 Natural Resources Management Priority 2 Food Security & Nutrition Priority 3 Economic Development & Job creation	FAO, Italian Government	2014 - 2020	US\$ 11.92 Million 1.5 million 100 Million
UPNG Forestry-REDD+ (Pilot sites in the 6 provincial areas)	Australia (Quantas and Australia Bank))	2012-2025	Aus\$ 10 Million
Blue carbon (Central, Gulf and Manus Provinces)	Australian Government and Total Energy (France)	2019-2025	Aus\$ 50 Million
World Bank	Forest Carbon Partnership Facility Project 2	2018 - 2020	US\$ 5 million
JICA	Biodiversity Conservation through implementation of PNG Protected Areas	2015 – 2020	US\$ 15.3 million

³³ The bulk of this funding table taken from GoPNG, 2018, First Biennial Update Report to the United Nations Framework on Climate Change, Port Moresby, Papua New Guinea, as well as information from Professor Kaluwin. This needs to be confirmed in further updates of the NAP.

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GEF	Strengthening capacity in the agriculture and land use sectors for enhanced transparency in implementation of monitoring Nationally Determined Contribution under the Paris Agreement	2018 – 2021	US\$ 1 million
EU	Technical support to the PNGFA to implement multipurpose National Forest Inventory	2014 - 2019	EUR 5.8 million
ADB and World Bank	Infrastructure and ocean and coastal	2015 - 2021	US\$ 15 Million