PAPUA NEW GUINEA

NATIONAL CLIMATE COMPATIBLE DEVELOPMENT MANAGEMENT POLICY

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Foreword

Hon. Peter O'Neill CMG MP

After years of debate the scientific community has proven that the global climate is changing. Although there is still some political debate that exists particularly surrounding what is changing, how to address the changes and who to address the changes, there is political consensus that climate change is an important global issue for governments to consider and effect measures to address it.

In 2005, in recognition of our unique natural environment and our strong reliance on our natural environment as the backbone of our economy, Papua New Guinea proposed to the world that we could help save the climate system by protecting our forests, which were fast being depleted to grow our economy and sustain our people's livelihoods.

PNG succeeded in having the REDD+ issue embedded into the global climate change negotiations as a positive measure for reducing greenhouse gas emissions. Our political leadership has ensured a banding of likeminded rainforest countries under the umbrella of the Coalition of Rainforest Nations (CfRN). REDD+ is now globally recognized as a measure to create financial incentives by reducing emissions from rainforests through an array of activities that stop deforestation, promote sustainable forest management and enhance forest conservation. These actions are not new to PNG, as the principles that guide them are already embedded in our National Constitution.

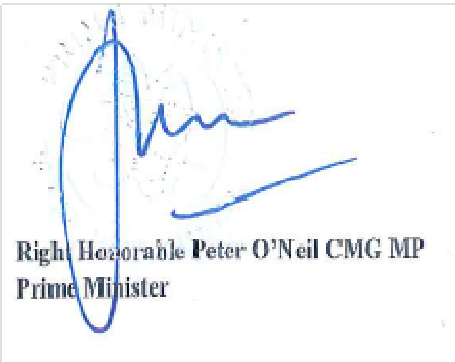
We have also articulated climate change in our current national long term political vision, plans and strategies, namely the Vision 2050 and the National Strategic Plan 2010-2030. Furthermore, government's strategy on climate change, the PNG Climate-Compatible Development Strategy, already identifies key priority areas to improve our economic growth whilst reducing greenhouse gas emissions and enhancing climate resilience.

This National Climate Compatible Development Management Policy (NCCDMP) is our Government's blue print to achieve our vision in building a climate-resilient and carbon neutral pathway through sustainable economic development for Papua New Guinea. Our Government's actions are driven by our commitment to international obligations and national goals and directive principles to strive to achieve a climate resilient and carbon neutral society for all. To achieve this, we intend to drive a whole of country effort towards a low carbon growth pathway by 2030 and become climate compatible by 2050.

Particular emphasis is also placed on the promotion and adoption of cost effective measures to reduce green-house gas emissions driven mainly by abatement measures in Agriculture, Land Use, Land Use-Change and Forestry (LULUCF) sectors and become carbon neutral while investing into low-carbon infrastructure.

Our Government would like to ensure that our people build their capacity to be resilient to the risks and impacts of climate change through the implementation of appropriate adaptation measures to counter extreme weather and climatic events. We would like to also strengthen effective decision making and good governance by recognizing that all stakeholders have a role to play in addressing the risks and effects of climate change and further integrate climate change into cross-sectorial policies in the country.

This is the biggest challenge of our time and we are determined that our Government will lead by example within the region to implement the most immediate readiness activities over the next 3 years, which will put us on a long term course to achieving Vision 2050.



Preface

Hon. John Pundari, MP

Action on Climate Change is integral to a robust and resilient economy. This is a new challenge for Papua New Guinea and our Government is serious about this by taking a step in formulating this National Climate Compatible Development Management Policy.
Climate change is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
We are already experiencing an increase in extreme weather events and the knock-on economic effects.

- The king tides in 2008 which affected coastal provinces of Sandaun, East Sepik, Kavieng and Manus
- Sea level rise in Caterets Island resulting in the relocation of people (climate change refugees) to Tinputz, in the Autonomous Region of Bougainville
- Cyclone Guba which devastated parts of Oro Province
- The landslide in Koma, Southern Highlands
- Coastal erosion in coastal provinces
- Food and water security

From these extreme events we learn that no amount of science can predict the future, however what it does allow us to do is map the possibilities, assess the risks and take the actions needed, to ensure our future resilience and well-being.
Climate change has a significant global policy dimension. Decisions on combating climate change are made through international treaties. This is largely due to the fact that managing the atmosphere is beyond sovereign boundaries; however managing man-made emissions can be within sovereign boundaries. Papua New Guinea has taken a global lead in seeking to combat climate change, particularly by proposing measures to activate carbon abatement opportunity offered by preserving tropical forests.

Many factors are contributing to climate change, from fossil fuel use to the burning and clearing of tropical forests. We need a comprehensive approach to reduce the impacts of climate change – an approach that decreases emissions across all sectors and enhances the adaptive capacity of all Papua New Guineans.

Deforestation and forest degradation are major contributors to greenhouse gas emissions, through large scale logging and the conversion of forests into agricultural use. These activities continue because the value of forests as carbon sinks and a source of livelihood have not been fully recognized by a market mechanism. PNG together with rainforest countries have been successful in placing REDD+ as a mechanism for discussion in the international negotiations.

The National Climate Compatible Development Management Policy takes its leverage from the National Constitution .The 4th National Goal on natural resources and environment provides the context for this Policy; however, the other four national Goals provide the elements for the successful achievement of this Policy. To resolve the challenges from climate change we require human development, equality and participation, political and economic independence and we need to employ first and foremost our diverse and unique cultural and societal forms.

Papua New Guinea is committed to developing a thriving economy, a fair and happy society and a sustainable environment as set out in our Vision 2050.This entails doubling current economic growth rate and doing so in the traditional sectors like agriculture. Mining and forestry and emerging ones like natural gas and services.

Our land-use and forestry sector is a large source of green-house gas emissions and we can reduce these emissions through more sustainable forestry and agricultural practices. There is global indication of willingness to support implementation of activities in the land use and forestry sectors especially for avoided deforestation and forest degradation (REDD+). PNG and particularly our rural communities will be able to benefit from these initiatives.

The National Climate Compatible Development Management Policy preparation process has been facilitated under PNG's Climate Compatible Development Strategy (CCDS). The CCDS is a detailed fact based strategy which guides and outlines PNG's priorities that facilitated the fact-finding process.

The development of this policy has been conducted in consultation with these multiple stakeholders. Their input has been invaluable and the strong working relationships that have been established with the Government will continue. Through concerted joint action, with the leadership of the Government, Papua New Guinea will be part of the effort to combat climate change in this global village.

The policy will provide a clear demarcation of the roles and responsibilities for coordination, implementation and review of climate change strategies, including but not limited to the utilization of existing service delivery mechanisms such as under the Organic Law on Provincial & Local Level Governments (OLPLLG. This Policy will also provide an avenue in fostering greater indigenous participation from the community and ward level, while encouraging District and LLG implementation.

As Minister responsible for climate change I am pleased to provide a guiding framework to facilitate the successful implementation of climate compatible development in line with international, regional and national strategies in collaboration with sectoral policies and all relevant stakeholders to achieve green economic growth.

Honourable John Pundari, MP
Minister for Environment & Conservation and Climate Change

Ambua Lodge, Tari Southern Highlands Province. Climate Change presents opportunities - many alternative livelihood that local communities can venture into, example eco-tourism.

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Acronyms

BAU	Business as Usual
CCDS	Climate-Compatible Development Strategy
CI	Conservation International
DAL	Department of Agriculture and Livestock
DLPP	Department of Lands and Physical Planning
DNA	Designated National Authority
DNPM	Department of National Planning and Monitoring
DOH	Department of Health
DPLLGA	Department of Provincial and Local-Level Government Affairs
DSP	Development Strategic Plan
EMWIN	Emergency Managers Weather Information Network
FMA	Forest Management Area
FRI	Forest Research Institute
ILG	Incorporated Land Group
IPCC	Intergovernmental Panel on Climate Change
LLG	Local-Level Government
LULUCF	Land-Use, Land-Use Change and Forestry
MRV	Monitoring, Reporting and Verification
MTDP	Medium Term Development Plan
NARI	National Agriculture Research Institute
NBC	National Broadcasting Corporation
NDC	National Disaster Center
NEC	National Executive Council
NFA	National Fisheries Authority
NRI	National Research Institute
NWS	National Weather Services
OCCD	Office of Climate Change and Development
ODA	Overseas Development Assistance
PLLSMA	Provincial and Local Level Services Monitoring Authority
PNGDF	Papua New Guinea Defense Force
PNGFA	Papua New Guinea Forest Authority
REDD+	Reducing Emissions from Deforestation and forest Degradation, Plus conservation, carbon stock enhancement and sustainable forest management
SWG	Sub-Working Group
TPR	Timber Purchase Right
TWG	Technical Working Group
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Scheme

Sea Level rise in Caterets Island, AROB

Background

A. Policy Rationale

To drive and stimulate climate-compatible development, the following gaps are to be addressed by the introduction of a new forward-looking National Climate Compatible Development Management Policy:

- Rapid increase in extreme weather events, rising sea levels, floods, landslides and malaria, and their knock-on social economic effects in recent years;
- Increasing greenhouse gas (GHG) emissions from all economic sectors in particular the land-use, land-use change and forestry sector, despite the fact the country can reduce these emissions through more sustainable forestry and agricultural practices;
- Significant challenges to human development and service delivery, especially in rural areas, where our rich cultural, biological and environmental resources are under threat as never before.
- Lack of effective dissemination and utilisation of "clean" technology and "adaptive" standards; and poor coordination of climate-related policies, which hamper sustainable development.

Furthermore, the current institutional establishment must be comprehensively revised to provide strong leadership, coordination and harmonized implementation necessary for climate-compatible development.

B. Policy Vision

"A Robust and Sustainable Economy for Papua New Guinea through a Low Carbon Pathway and Green Economic Growth."

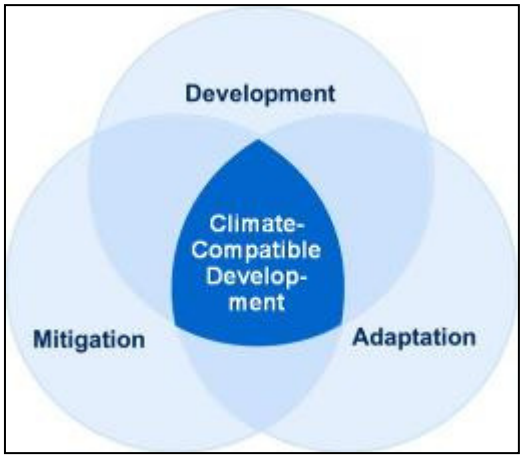


Figure 1: PNG's Climate-Compatible Development Strategy combines economic development with mitigation and adaptation

C. Policy Mission Statement

To build a climate resilient and carbon neutral pathway for climate compatible development in Papua New Guinea.

D. Policy Principles

A number of fundamental principles are identified and adopted that are crucial for strengthening the enabling environment for implementation of this Policy at different levels. This Policy is characterized by the following:

6.1 National Constitution and Guiding Principles

The policy is underpinned by PNG's Fourth National Goal and Directive Principles under the National Constitution on sustainable use of natural resources and environment.

6.2 International Obligations

To fulfill our international commitments and obligations according to our national circumstances, and fully participate and be actively involved in international negotiations.

6.3 Good Governance

To ensure and uphold good governance and safeguards when implementing the policy so that it is robust, fair, transparent and accountable for its actions.

6.4 Religious Values

To show respect for each other's religious beliefs. Involvement of church groups and other religious beliefs in climate change programs is encouraged as they have effective network to local communities

6.5 Equal Participation

To ensure fair and equal participation in representation of views at various levels, including men, women, youth, vulnerable or minority groups and respect the rights of resource owners and increase community participation in all activities so that they will take ownership of the issue

6.6 Cultural Sensitivity

To recognize, respect and uphold existing customary values, authorities, institutions, and processes.

6.7 National Sovereignty and Leadership

To ensure that the collective interest of the country is pursued in all facets of climate change and demonstrate responsible leadership.

6.8 Capacity Building

To build and enhance national and regional capacity to deal with all issues of climate change.

6.9 Integrity

To apply and uphold highest ethical standards of people and processes involved in addressing the climate change.

6.10 Precautionary

To practice precautions in the absence of scientific consensus that an action is harmful, so that the welfare of both people and environment is upheld.

6.11 Sustainability

To ensure sustainable development with a balance between social, economic and environmental aspects.

Part 1: Policy Themes

Mitigation and Adaptation form the core policy themes in this policy document which will strengthen responses in their various levels of government and sectors. Specific climate change adaptation and mitigation policies in the following sectors will need to be formulated in alignment to the key policy themes in this policy document; land-use, transport, energy, natural resources, green development, economic development, hazards management, public health and public infrastructure. Table 1 provides an overview of specific sector and thematic policies. They are guided by the following policy themes.

E. Enabling Environment

1. Enabling Environment Policies:

a. **Legislation and Institutional Arrangement**: PNG national vision for climate change action shall be empowered by appropriate legislation and institutional frameworks.

b. Integrated Climate Change Management: National responses to climate change carried out in coordinated fashion across all relevant government decision making and coordination mechanisms, equitability, climate change awareness and understanding, research and development, information dissemination and capacity for action.

2. Enabling Environment Strategies

a. **Legislative and Institutional Set-Up:** Legislation will be enacted to legitimize the Office of Climate Change and Development as an institution to function as an Authority to manage, organize, plan, direct, coordinate, supervise, communicate, report and evaluate policy outcomes and strategies. And to be the Designated National Authority as per the Kyoto Protocol as well as for all carbon projects and as Focal Point for existing and new entities as established under the UNFCCC.

b. **Climate Understanding and Capacity Enhancement:** Components to be developed to enable PNG to respond to climate change include education and awareness, media advocacy, capacity building, research and technology transfer.

c. **Climate Mainstreaming:** Consideration and abatement of climate change contributing factors and risks will be integrated into decision making processes in all relevant sectors and at all levels of government service delivery to support climate compatible development.

d. **Grievance Mechanisms:** Promote independently-accessible and transparent grievance mechanisms for fair conflict resolution, prevention and redress on climate change-related issues and policy decisions.

F. Information

1. Information Policies

a. **Data Gathering, Storing and Reporting:** Climate-relevant information, including on forest and land use change, accessed, collected and stored centrally for support of mitigation and adaptation policies and measures.

2. Information Strategies

a. **National Information Systems:** Develop national systems for information gathering, monitoring and evaluation, management and reporting, including national GHG registry, GHG inventory and monitoring, reporting and verification (MRV) on forest and land use change surveys.

i. Capacity Building: Develop national capacities to effectively gather and report climate information and manage national information systems.

ii. Data Accessibility: Facilitate efficient access to reliable climate change data among government agencies, private sector, non-governmental organizations, civil society organizations and communities.

iii. **Methodology and Standards:** Ensure climate change data collection methods and standards are consistent with international best practices.

iv. Data Credibility: Ensure climate change data is credible through quality control and assurance.

G. Adaptation

1. Adaptation Policies

a. Adaptation Measure Policies

i. Adaptation Responses: Resilience to climate change impacts in the natural and built environment is significantly enhanced.

Ii. Adaptive Capacity: Ability of government and partners to prevent and respond to climate change impacts is maximized.

2. Adaptation Strategies

a. Risk Management

i. Quantifying & Prioritizing Hazards: Identify communities and sectors most at risk to climate change impacts (e.g., coastal and inland flooding, landslides, marine ecosystem health, agricultural yield change, vector-borne diseases) by conducting national and subnational vulnerability assessments of human, environmental and socio-economic systems (e.g., Kimbe Bay Method). Develop baseline indicators for relevant criteria.

ii. Identifying & Selecting Interventions: In conjunction with relevant sectoral stakeholders, analyze potential losses and benefits and examine feasibility of available adaptation measures (e.g., coastal early warning system, community-based mangrove planting, coastal engineering protection, human settlements and migration) including identifying barriers and necessary actions.

iii. Monitoring & Evaluation: Review and measurement of intervention outcomes relative to baseline information. Based on evaluation results, identify lessons learned and apply to successive interventions.

b. Adaptive Governance

i. Sectoral Coordination: Promote coordination, integration and facilitation among sectors such as but not restricted to agriculture, fisheries, forestry, water resources, transport, climate-induced migration , human settlement and infrastructure to ensure a holistic approach to climate change adaptation including eco-system friendly measures.

ii. Institutional Strengthening: Support the strengthening and maintenance of key institutions that have an important role in providing scientific data including climate modelling and forecasting to formulate and implement adaptation measures.

iii. Data Management: Establish an integrated system to manage and store important data for adaptation including information on vulnerability assessment, potential losses and damages, traditional knowledge and appropriate technologies to evaluate, report and enhance implementation of strategies and subsequent measures.

H. Mitigation

1. Mitigation Policies

a. Carbon Neutrality by 2050: PNG is climate compatible by 2050.

b. Land Use and Forest Sector Emissions Abatement: GHG emissions mitigated in the land use, land-use change and forestry (LULUCF) sector.

c. Green Economic Growth: Development is climate-compatible via efficient, low GHG emissions infrastructure and technology.

2. Mitigation Strategies

a. **LULUCF Relevant Programs, Projects and Reforms:** Support LULUCF emissions reductions by incentivizing initiatives that reduce and sequester GHG emissions, and by dis-incentivizing GHG-emitting activities, emphasizing co-benefits from sustainable development, ecosystem conservation, biodiversity protection, community engagement, equitable distribution of benefit through the identification of appropriate carbon ownership rights. A 'no regrets' dual mitigation-adaptation approach will be implemented.

b. **Green Economic Development:** Promote low-carbon growth and investment while increasing environmental quality and social welfare by incentivizing investments in low carbon infrastructure and technology development, renewable energies, energy efficiency, transport, waste management, manufacturing and construction, and industrial processing sectors.

c. **SABL Reforms:** Promote the reform process for SABLs so that they become climate compatible, including assessing former SABLs on their potential for payment for ecosystem services (e.g., REDD+ initiatives).

d. **Sustainable Land Use Planning:** Promote establishment of nation-wide sustainable land use planning, starting from community-Ward-LLG level, to District-Provincial and National levels, whilst ensuring collaboration of all relevant Government Departments in considering climate change resilience and maximizing payment for ecosystem services under REDD+ management as national land use priorities.

I. Finance

1. Finance Policies

a. **New and Additional Climate Financing:** Current funding from government sources maintained, and new and additional funding drawing on a broad range of finance sources including domestic and international including the new Green Climate Fund, and public and private sources, incorporating the polluter pays principle, for long-term sustainable financing of climate measures.

Finance Strategies

a. **Funding Mechanism(s):** Create transparent, independent mechanism(s) meeting international fiduciary standards through the consolidation of multiple sources into a fund, including appropriate use of financial incentives and disincentives, to support climate change measures (e.g., PES, REDD+, adaptation and community initiatives).

b. **Funding Access:** Encourage multi-lateral and bi-lateral partnership for funding access and implementation directly through the utilization of existing national mechanisms in particular the National Development Budget.

c. **Funding Effectiveness**: Establish a process that will report and verify effectiveness of all funding for climate change in particular those from multi-lateral and bi-lateral sources.

J. Partnerships

1. Partnership Policies:

a. **Equitable, Effective Participation:** Networking, coordination, and equitable engagement with and between multiple stakeholders through active participation, consultation and engagement at national and subnational levels in all climate change programs, incentives and activities.

2. Partnership Strategies:

a. **Community Partnerships:** Promote recognition and respect of community rights, support for improved community climate change outcomes, and information sharing and collaborative partnerships for community climate risk management.

b. **Sub-National Partnerships:**

i. Empower Provincial, District, Local Level Governments and Wards through partnerships with the Department of Provincial and Local level Government Affairs (DPLLGA) through the Provincial and Local Level Services Monitoring Authority (PLLSMA).

ii. Promote sub-national governments' communication of the National Climate Compatible Development Management Policy and willingness to participate in climate-related programs and projects, and to detect and document any concerns.

1. **Gender-Balanced Decision-Making:** Ensure gender balance in all community, national and sub-national decision-making processes.
2. **Development Partner Engagement:** Strengthen coordination with development partners in assisting achievement of national climate compatible development goals.
3. **Government Collaboration:** 'Whole of government' approach promoted in collaboration with all government levels and relevant sectors.
4. **Civil Society, Churches and Private Sector Partnerships:** Encourage collaboration between government, civil society, churches and private sector through innovative approaches (e.g., MoUs and public-private partnerships).

Part II: Implementation

A. Institutions

1. **Climate Change Institutional Authority:** Administrative responsibilities for climate change portfolio vested in the Ministry responsible for climate change.
2. **National Climate Fund**: Legislation should seek to establish a national climate fund, which will be responsible for managing pooled funds from CDM, REDD+, grants and other climate finance schemes under an independent trusteeship.

B. Instruments

1. **Legislation**: All relevant existing legislation to be revised and new legislation developed to address low carbon growth investments, mitigation and adaptation issues, as outlined here. Securing the above policies in legislation will strengthen compliance, coordination, accountability, drive innovation, enforce compliance and assure implementation.
2. **Thematic Policies and Plans:** Thematic policies and plans will be developed to give further more detailed guidance on design, implementation, monitoring and review of individual climate change areas (e.g., adaptation, mitigation, REDD+ and CDM, finance, MRV).

C. Roles and Responsibilities

1. National Roles: National Institutions will be responsible for implementing climate change activities in coordination with the Ministry responsible for climate change and existing and/or new coordination mechanisms**.**

National Government Roles at the national level, climate change is primarily addressed in four areas:

i. Research and Development – The national government through the OCCD will through climate research and information-sharing with other international research agencies will form the basis for informed climate change action from the international level to local level as well as to reduce uncertainties about scales of impacts and effectiveness of mitigation and adaptation measures as Papua New Guinea lacks the capacity to conduct large research programs.

ii. Standards, Incentives and Regulation – The national government can play a key role in developing standards, incentives and regulations. This can be managed by imposing incentives and disincentives for emissions reduction. All of these efforts will result in the mitigation of climate change.

iii. Policy Development and Implementation – By developing energy policies which focus on renewable energy, improved energy transmission and storage systems, and carbon free energy sources will assist with climate change mitigation. Transportation, environmental and housing policies including agriculture and forestry practices will help mitigate climate change.

iv. Provide National and International Leadership – Climate change will not respect political boundaries and every nation state will be impacted to some degree. The National Government of Papua New Guinea must lead in helping develop international response to climate change, ranging from humanitarian aid to severely impacted nations and regions to worldwide efforts to reduce GHG emissions. Papua New Guinea has ratified the Kyoto Protocol; hence, we are obligated to observe the climate change policy principles.

2. Sub-National Roles: The roles of Sub-National actors will be strengthened to address capacity and knowledge gaps via education, advocacy, awareness and consultation programs.

Provincial Government Roles

The role played by the Provincial Governments in climate change policy in Papua New Guinea is very important in the implementation of the climate change policy through the Provincial Climate Change Committees. The provincial administration is to take a lead in discussions with NGOs, CBOs and development partners on provincial priorities in terms of planning for climate change and environment sustainability projects.

Local Level Government Roles

In Papua New Guinea it is at the local level of government where most climate impacts occur. When storms and floods occur, citizens look to their local leaders for answers and solutions, as well as for protection. The district administrator will coordinate and facilitate all activities at the district level on behalf of the Provincial Climate Change Office (PCCO). Also build the network with NGOs and CBOs on the ground and identify new potential project sites. This composition is usually made up of LLG leaders (ward councillors & district officers).

3. Public Private Partnerships: Active private sector participation will be driven through the Public Private Partnership arrangement.

D. Table 1: Specific national, sectoral and provincial policies

Policy	Description	Rationale
1: National Strengthening through New Climate Change Legislation	The National Government through its Legal process, strengthen the enabling environment by giving instructions to appropriate legal entity to draft and pass a new legislation enabling the Office of Climate Change and Development to function as an established institution under the Constitution of Papua New Guinea.	As a Party to the United Nations framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol, it is mandatory for the National Government to pass an Act on Climate Change that will strengthen and give power, authority and recognition to the Office of Climate Change and Development (OCCD) to fulfill all obligations under these treaties including being the Designated National Authority (DNA) and at the same time enabling it to manage carbon emissions in Papua New Guinea.
2: Climate Change Authority	National Government enacts a new law to establish and declare OCCD as a "Climate Change Authority". OCCD and the new Authority will function as the Designated National Authority for CDM and other carbon projects, and Focal Point for existing and new entities established by the UNFCCC, Kyoto Protocol and future agreements under the UNFCCC.	It is required by Law that government institutions establish/ create for the purpose of goods and service delivery should acquire legal legitimacy to function as an authority to deliver any functions of government through an enactment pass by the legislature.
3: Climate Change Fund	It is fundamentally correct by climate change function that, a **"Climate Change Fund"** will be created and managed within the Financial Management Act 1995 provisions. Climate Change Fund (CCF) provisions will clearly detail how the fund will be generated and expended.	With the economic incentives arising from climate change sources, including national government funding, with international Donor funding, the creation of climate change fund requires a special instruction in the Financial Management Act 1995 and other relevant financial frameworks and legislation, to specifically make reference to the provision of pre-appropriation, similar to the provisions designated to sovereign wealth fund.
4: National Leadership on Climate Change.	Strong leadership from the national government in establishing policies, programs, national standards, and funding prioritization that mitigate greenhouse gas emissions and prepare communities to adapt to climate change is required.	The national government will provide necessary funding, produce research through the Office of Climate Change and Development and establish baseline regulation and policy on many topics related to climate change, such as motor vehicle fuel efficiency standards and energy policy. Also, action at the National Government can establish larger and more predictable markets for emissions reduction systems than can state or regional actions. Providing for such at the National Level will result in a consistent approach nationwide and greater potential for successfully achieving emission reduction goals.

Southern regional NCCDM Policy Workshop, 2012

5: Provide International Partnership and Leadership on Climate Change.	As a partner in the greenhouse gas emissions reduction, the Papua New Guinea National Government must take the lead and participate with regional partners in efforts to create and adopt an international framework for mutual cooperation and understanding on issues of climate change. Climate Change attaches will ensure strong global connectivity with domestic policies.	Papua New Guinea should participate in creating and implementing an international framework for reducing greenhouse gas emissions in all nations. Participating and acknowledging and contributing to international agreements are critical to the protection of climate-endangered natural assets, ecosystems and communities. Having limited extensive scientific expertise, Papua New Guinea will learn from member states through information sharing the various data required for decision making on climate change.
6: National Government Support for Climate Change Planning.	Enforce the current climate change plans stipulated in the Vision 2050 (2010-2050), the Papua New Guinea Development Plan (2010-2030), the Medium Term Development Plan (2011-2015) and employ the strategies to all stakeholders.	The National Government has the legitimate position to address climate change at the local level and regional level by adapting and improving planning, policy priorities and capital funding that already direct public and private investment and development. Changing the plans and strategies will require new studies and analysis and implementation techniques that many communities have not undertaken or used in the past.
7: Climate Data and Information	Through the Office of Climate Change and Development, the National Government will continue to fund and develop a Climate Information program as a central source of data and information concerning climate change. The national government will support the development and dissemination of climate data and information by other agencies as needed for specialized purposes under the "Umbrella" of the climate information program. Additionally, climate and weather monitoring technology, such as satellites and terrestrially based weather stations must be continuously modernized to ensure their ability to accurately capture critical data.	The National Government through the Office of Climate Change and Development to provide a one channeled development and dissemination of climate change data and information and reduce duplication of effort and provides more effective method of getting the full range of information to user groups and the general public.
8: Satellite Land Monitoring System	A remote sensing system to monitor forest cover which uses software to interpret and classify data such as the images taken by earth observation satellites	The National Government through the Office of Climate Change and Development to provide a one channeled development and dissemination of climate change data and information to user groups and the general public.
9: Research *a*nd Development	The National Government will establish and fund research and development programs to support alternative energy and fuel production, development of carbon capture and other technologies and materials and measures that are effective in climate change mitigation and adaptation.	The national government has been an enforcer to R&D projects and programs in many areas in the past. These experiences will make the National Government to source funding for R&D with counterparts agencies especially in climate changes matters.
10: Carbon Pricing or Incentives	The National Government should achieve at least in fulfillment of the Pillar 5, Directional Statements 1, 5 and 6 to reduce greenhouse gas by 90 percent to 1990 level (DI). Also conserve biodiversity at current 5-7 percent of the world's biodiversity (D5). This can be further strengthened by establishing a total of 20 national reserves, wilderness areas and national parks (D6).	Pricing carbon would reduce distortions in existing consumer spending and industrial investment patterns that result from market failure to capture the externalize costs associated with carbon emissions. Support generated from carbon incentives and disincentives will be channeled into either consolidated revenue and accounted for through normal government financial rules and processes or through a new Climate Change Fund and accounted for through its legislative and financial procedures. Incentives can be used to phase out high greenhouse gas emitting technologies and facilities, and support local initiatives and other similar actions that serve to reduce greenhouse gas emissions and those that build resilience to climate change impacts.
11: Regulation of Greenhouse Gases	The national government will support the regulation of greenhouse gases through close monitoring and application of the National Strategic Planning Documents of: Vision 2050 (40 year Economic Strategy), Development Strategic Plan (2010-2030), Medium Term Development Plan (2011-2015) with the Provincial and Districts plans which all incorporate mitigating and adapting strategies of emitting greenhouse gases whilst achieving economic growth.	All these national plans should recognize the regulation of human induced green house gases in order to limit our national contribution to global greenhouse gas emissions which as a Party to the UNFCCC PNG is obligated to report on under the Greenhouse Gas Inventory.

12: National Government Assistance to Provincial and Local Level Governments Mitigation and Adaptation Activities.	The national Government will increase its funding for technical assistance and critical planning data to provincial and local level governments for climate, weather, and hazard mitigation. More so, in close consultation with the provincial and local level governments, the national government will support improve climate model results that provide more localized information and predictions with standardize monitoring and reporting GHG emissions.	Papua New Guinea will develop significant expertise and information regarding future climate change scenarios and potential measures to mitigate the effects of climate change. National, provincial and local level governments are in need of these resources as they develop strategic responses.
Provincial and Local Level Government Role	**Description**	**Rationale**
13: Climate Change Planning	Provincial and LLGs should incorporate climate change action plans in their development plans, including regulatory measures, incentives, technical standards and specifications, integration of climate mitigation and adaptation measures into comprehensive, sub-national and national plans, and other plans and programs in a regionally and /or locally appropriate fashion coordinated by OCCD.	The national government through the Office of Climate Change and Development, and the Department of Provincial and Local Level Government develop strong collaboration among the provincial governments in terms of factoring the National Forest Policy, National Agriculture Policy, National Transport Policy, Environment Policy, National Energy Policy, and Disaster Mitigation Policy and Disaster Risk Reduction and Disaster Management Framework for Action 2005-2015 into the provincial plans. The Provincial Climate Change Implementation Strategy (PCCIS) will guide the implementation through its Provincial Climate Change Committee of all these national policies and report to the OCCD the outcome anticipated.
14: Provincial and LLGs Action on Climate Change.	Guided by the Vision 2050, PNGDSP (2010 -2030) and the MTDP (2011-2015), climate change planners will support collaboration by the National Government, the Provincial and Local Level Governments agencies to set greenhouse gas emission goals; develop and implement plans to address climate change; and incorporate climate impacts, indicators, benchmarks and targets in plans and developments reviews.	The Provincial Climate Change Implementation Strategy (PCCIS) will guide the implementation of potential compatible like: HIV/AIDS, agriculture, fisheries, forestry, disaster management, environment, community development, village courts, land mediation, commerce and industry, land and physical planning, non-renewable resources, infrastructure and telecommunication in fulfillment of **Pillar 5** of the Vision 2050 and various **Directional Statements** to reduce GHG emissions.
15: National Coordination	The three (3) levels of governments will ensure the successful implementation of the climate change policy by building on the current networking initiatives with the aim to promote networking, collaboration, and coordination between multiple stakeholders through active participation and community engagement and consultation of all climate change programs, incentives, and activities. Furthermore to recognize gender balance at community participation in decision making process by ensuring that in all national and sub-national committees and Boards, there is increased balanced representatives in composition.	In close consultation with the main national government development policy framework, a national coordination approach will improve synchronization of all activities between multiple stakeholders through the mechanism of collaborative participation and engagements. It is intended to build relationships/partnerships and promote alignment in all levels of governments.
All Levels of Government Role	**Description**	**Rationale**
16: Education and Coordinated Information Resources for Planners, the Community and for Decision Makers.	The three (3) levels of government support the updating and planning of school curricula to specifically address and prepare students in Papua New Guinea for new approaches to planning associated with climate change adaptation and mitigation. This will include the support and encouragement updates to primary and secondary curricula to educate and the next generation residents; planners and decision makers.	The national, provincial and local level governments have a duty and obligation to educate the people about climate change issues. In addition, they share an obligation to include education about climate change in the community outreach efforts in all planning programs aimed at the public and local policy makers. The effort to create a community climate change action plan will clearly include this educational component but should be included in all areas of planning, and capital investments.

17: Communities and Climate-Change Research.	Support research that improves the ability of communities to reduce their carbon footprint by qualifying their impacts on climate change and the effect of their actions to address this issue. Support research into areas where communities can act proactively to adapt to climate changes.	Continuous research is needed so communities, neighborhoods and individuals residents or businesses can take action in ways that will help mitigate or adapt to climate change. Communities need to know what current human actions are contributing to the GHG, so they can target those actions in research.
18: Land Use	Papua New Guinea has a land mass covering approximately 460,000 square kilometers. Its population is growing at a rate of 2.3 percent per annum (UN Economic & Social Commission for Asia Pacific 2007) and an economic growth of 5-7 percent per annum in the last 5 years mainly due to the extraction of raw materials/mining products such the LNG, gold, nickel, copper and other resources. Much of these raw materials require extraction from digging deep into the earth depth to extract them, hence, such process destroy the original structure of the land and the natural habitat that once grazed/nourished its rich originality. These development activities create climate change/land use challenges for Papua New Guinea and the communities that rely for their livelihood on the forest and land for hunting, fishing and subsistence agriculture.	
Land Use	**Description**	**Rationale**
19: Create a more Compact Urban Form	Adopt plans, regulations, and incentives that encourage a more compact urban form while preserving non-urban land for agriculture and forestry uses and for environmental purposes. Utilize public investments to support a more compact urban form and to preserve agricultural and environmentally sensitive land.	Significant climate change mitigation can occur from efforts to establish a more compact urban form. This will greatly reduce gas emissions and provide for effective carbon assessment to enhanced management of greenhouse gas emissions.
20: Integrate Land Use and-Transportation.	Integrate spatial planning and transportation planning so that the development patterns support mobility choices and reduced trip lengths to meet basic needs thereby allowing the transportation facilities to help achieve community climate change goals.	Our communities' ability to achieve climate change goals will depend on whether our people can make choices that reduce greenhouse gas emissions. Since trips choices and lengths –whether to travel in a single-occupancy auto or take transit, whether to walk or drive to local shopping and restaurant areas, how long a route is required from home to work – all affect transportation-related greenhouse gas emission, it is important that people be able to choose trips that lower these impacts.
21: Transportation	More energy-efficient transportation – infrastructure, vehicles, modes-can play a significant role in reducing carbon emissions in Papua New Guinea, helping to mitigate climate change. Additionally, a great deal of transportation infrastructure is vulnerable to a variety of climate change impacts, including excessive heat, storm surge, flooding, and inundation resulting from sea-level rise and will consequently require adaptive measures. Transportation Strategies to mitigate climate change include: reducing vehicle-miles travelled (VMT) through more compact development patterns, mandating higher fuel efficiency through new national and international standards.	
The Department of Transport in close Collaboration with OCCD Support the Planning and Development of Multi-modal National and Local Transportation system that reduce greenhouse gas emissions by reducing vehicles miles travel, increasing pedestrian and bicycle facilities, increasing alternative fuel infrastructure and alternative modes of Transport, increasing fuel-efficiency vehicles, improving connectivity of the Transportation network, reducing congestion, and Improving cooperation and Transit-oriented development, and address congestion management.		
Transportation	**Description**	**Rationale**
22: National Government Surface Transportation Authorization.	The National Government needs to explicitly support and incorporate climate change surface transportation programs with increase priority for funding public transit and non-motorized travel and integrate national and metropolitan planning as means to reduce the greenhouse gas emissions from the transport sector.	The reauthorization of the national government transportation program presents an opportunity to direct national government decisions and priorities to address climate change. This should establish goals for reduction of transportation-related greenhouse gas emissions.
23: Promote Clean Fuel Technology and Standards.	Establish low carbon fuel standards for autos, light trucks, heavy trucks, buses, air, water, school buses, and off-road transportation modes and encourage research into clean fuel options and system-wide implementation.	Clean fuel standards for all transportation modes are vital to a comprehensive transportation solution. National policy should actively promote new research into the development of cleaner fuels and the ability to make new fuels readily available to consumers.

24: National Government Action on Vehicle Emission.	Pass legislation setting standards for greenhouse gas emissions from vehicles at levels consistent with nationwide and economy-wide greenhouse gas reduction targets.	Reducing greenhouse gas emissions from vehicles is one of the steps that the Papua New Guinea National Government can take to reduce overall greenhouse gas emissions.
25: Economic Incentives for Fuel Efficient Vehicles.	Support enacting a system of fees and incentives that encourages the purchase or manufacture of fuel-efficient vehicles and discourages the purchase or manufacturer of fuel inefficient vehicles.	Fees and incentives that encourage the purchase and manufacturer of fuel-efficient vehicles are effective in modifying personal and corporate behavior.
26: Energy	Development Planners can address climate change mitigation through plans, incentives, and regulations which promote the efficient use of energy in building, transportation and industry; though the use of less carbon-intensive energy sources; and through the production of renewable energy. To succeed in these area planners will need to become educated about renewable energy sources such as wind, solar, geothermal, and biofuels, as well as innovative energy generation techniques like combined heat and energy systems. Internally Papua New Guinea has the potential to generate the majority of its energy needs from renewable sources. Significant investments in geothermal and hydro power have the potential to undertake this transformation sooner. With suitable climate conditions, fertile soil and low population density, many parts of the country are suited to biofuels production.	
The Department of Petroleum & Energy in close Collaboration with OCCD support efforts to reduce greenhouse gas emissions related to the production and the use of energy in the built environment.		
Energy	**Description**	**Rationale**
27 : Energy Sources Reduce Climate Change	Encourage and prioritize through policy, regulation and investment decisions, the use of energy sources that emit less greenhouse gases through their production, distribution and consumption, and promote the efficient use of energy. Provide incentives for the development, distribution and implementation of renewable energy sources and use.	While coal is currently the cheapest energy source available for large-scale electricity generation, it also is the most damaging in its climate impacts. New coal-fired plants in particular, but also other power plants relying on non-renewable energy sources, will overwhelm any reductions in greenhouse gas emissions mandated by the various domestic and international programs to reduce global warming.
28: Support a Transition to Renewable Energy	Adopt state, regional, and national policies that accelerate the transition to renewable energy sources.	Greenhouse gas emissions from energy use (including transportation) amount to about 70 percent of worldwide greenhouse gas emissions. Policies such as feed-in tariffs (the minimum price the utility must pay to an independent renewable energy producer), tradable green energy certificates (proof that a unit of electricity was generated from an eligible renewable energy source to be sold to entities that produce too much greenhouse gas), and renewable energy portfolio standards (minimum annual amounts of electricity to be generated by renewable energy sources), and similar mechanisms have been shown to be effective in accelerating the transition to a low-carbon economy, though no single approach is appropriate for all situations.
29 : Incentives for the Small Scale Use of renewable Energy Systems.	Establish incentives to encourage installation of renewable energy systems by homeowners and small business operators including the training and education of homeowners**.**	Given the artificially low price of coal and other fossil fuels, since environmental externalities are not included, it is often not cost-effective for individual homeowners or small business operators to install alternative energy systems. Such installation may also require up-front investment. Incentives for installation of small-scale renewable energy may include a per-watt rebate for newly installed electric generation capacity, loans or grants for installation of renewable systems, and net metering in which the property owner is paid for electricity fed back into the grid.

30: Local Energy Generation from Renewable Sources	Support initiatives that generate energy from local renewable sources as a part of economic development efforts.	Electricity generation is responsible for 32 percent of Papua New Guinea greenhouse gas emissions. Local generation of energy meets community needs without the costs – and greenhouse gas emissions – related to long-distance transmission. In addition, the use of local renewable sources reduces greenhouse gas emissions from carbon-based fuel sources. Not only does this approach help address climate change, it can also form the basis for new economic opportunities.
31 : Design for Alternative Sources of Energy.	Support urban design strategies that maximize use of renewable, sustainable, active and passive sources of energy design in architecture. Increase and/or extend incentives for the use of active energy generation in building design and construction practices.	Site planning and building design have a significant effect on the amount of energy needed to heat, cool and light buildings to meet the needs of their occupants. Sight and building design techniques can reduce energy consumption on-site, thus reducing demand for energy generated elsewhere and its related greenhouse gas emissions. Planning development review programs should encourage the use of passive solar energy and other on-site alternatives.
32: Funding for Energy Efficiency and Conservation	Fully fund the national Energy Efficiency and Conservation Program (EEC) to communities.	Even though energy conservation and the use of renewable energy may save money in the long term, higher up-front costs often prevent their use. National Government funding could provide resources to fiscally constrained localities (through grants) that could be used to reduce or offset these initial costs. This funding can play an important role in reducing reliance on fossil-fuel based energy and the greenhouse gas emissions from these energy sources, as well as allowing local governments to lead by example and help develop the market for "green jobs" locally.
33: Encourage Combine Heat and Power.	Facilitate the installation of combined heat and power (CHP) systems in industrial and institutional applications and in homes and businesses through education, grants, and the adoption of net metering nationally.	The average efficiency of the fossil-fuel power plants in the Papua New Guinea is approximately 33 percent. This means that, in the process of generating electricity, two-thirds of the energy in the fuel is lost as heat; an average of 8 percent more is lost in the transmission and distribution of electricity to users.
34 : Energy Generation	When sitting energy generation facilities, planners should encourage the power generation plant to become an anchor of an eco-industrial park.	By cascading energy resources through the combined production of electricity, heat and steam, energy generation facilities can be made more efficient. Co-locating industries which benefit from the use of these resources can make the industries more competitive in the world marketplace.
35: Integration of renewable Energy into Codes	Revise building codes and architectural design guidelines to allow for, encourage, or require integration of passive solar design, green roofs, and active solar and other renewable energy sources.	In many climates solar design and on-site solar systems have been shown to be effective in lowering overall building energy use. Design standards might include southern orientation of structures, extensive southern fenestration for winter heating, shielding of windows to prevent summer overheating, thermal mass to retain heat and coolness, and design for maximum natural summer ventilation, solar hot water heaters and photovoltaic electricity.
36:Eliminate Regulatory Barriers to the Use of Renewable Energy Systems.	Examine existing zoning laws and development standards and revise or eliminate provisions that act as a barrier to the installation and use of renewable energy systems, for example, is a technique that reduces installation costs, minimizing financial barriers for renewable energy systems.	Community resistance to large-scale wind turbines and solar energy "farms" is well-documented and has occurred for a variety of reasons, including aesthetic and wildlife safety concerns, among others.
37: Renewable Energy System and Energy Efficiency in Public Facilities.	Construct and renovate public facilities to serve as demonstrations of energy efficiency improvements and green building practices and include (where possible) renewable energy systems such as photovoltaic electricity or solar hot water panels.	Public facilities can be visible examples of the benefits of renewable energy systems and act as models for the private sector to follow. Greenhouse gas emissions can be reduced by use of renewable energy and energy-efficient systems in public facilities.
38: Methane Emissions from Landfills and Sewer Treatment Plants.	Support policies that result in the design, retrofitting, operation, and management of landfills (both existing and closed) and sewer treatment plants so that methane emissions are controlled and, where feasible, used for energy productions.	Methane is the second most common GHG, after CO2. Methane is produced in landfills as the result of anaerobic decomposition of waste. Landfills are a major contributor of methane emissions, accounting for approximately 34 percent of all methane emission in the Papua New Guinea. Methane is readily usable for the production of energy since it is a major component (95%) of natural gas. Land use planning and public facility sitting emissions.

39: Green Development	Emissions from the energy used for lighting and heating and cooling buildings represent a significant part of the PNGs greenhouse emissions. Though at this time of PNGs development is still small, in comparisons with other developing countries, planners need to design and make improvements in the way building and sites are designed constitute a major method by which planners can help mitigate climate change.

The Department of Health, Department of Works (Building Boards), and department of National Planning will support the implementation of green development design standards and incentives that reduce the carbon footprint and enhance the climate adaptive capabilities of new existing building and developments.

Green Development	Description	Rationale
40: Green Building Standards	Support the continued development and application of green building standards. Develop and promote the means and standards to reach low carbon buildings by 2030. Incorporate green building and energy efficiency standards in all public facilities.	A variety of organizations have developed green building standards. An example is the LEED (Leadership in Energy and Environmental Design) green building rating system of the U.S. which can be introduce and trial for adoption in Papua New Guinea. Such standards "raise the bar" on the energy efficiency of new building construction, improvement to existing buildings, or to specify the level of energy efficiency desired in new public facilities, at the local, provincial, or national level.
41: National Adoption of Mandatory Building Energy Codes	Support and seek adoption and ensure enforcement of mandatory building energy codes for commercial and residential buildings at the national level. As an alternative, set minimum standards for energy efficiency in new buildings and ensure that all provinces are achieving them through adoption and enforcement of mandatory building energy codes.	Most of Papua New Guinea does not have residential or commercial building energy codes; some provinces have either no enforcement or voluntary enforcement. This is a lost opportunity to set minimum expectations for energy efficiency in new buildings.
42: Minimum Standards for Building Energy Code	Support raising building energy code requirements to be at least as stringent as the most recent International Energy Conservation Code (U.S. DOE), or the most recent ASHRAE 90.1 code (For example, American Society of Heating, Refrigerating and Air-Conditioning Engineers), or equivalent.	Building heating, cooling, ventilation, and lighting will increasingly account for greenhouse gas emissions in the Papua New Guinea as development grows.
43: Performance Based Code Alternatives	Support the addition of performance-based alternatives to energy codes and appropriate sections of the building code.	Innovation in building techniques and construction is essential to raising the bar for energy efficiency standards. Unfortunately, prescriptive based building codes, which rely on tried-and-true measures, can stymie innovation. If it can be shown through energy modelling that a building using innovative techniques can achieve energy performance at least as good as an equivalent building using the prescriptive based measures, then that design should be allowed.
44: Ongoing Investment in Building Energy Efficiency	Support the adoption of standards requiring existing buildings larger than a certain size threshold to periodically invest in energy-efficiency improvements that have a reasonable payback period. Support incentives and standards that retrofit and redevelop existing buildings to improve energy efficiency while respecting the historic integrity of buildings and communities.	As building energy efficiency technology becomes more cost-effective, ensuring that it is incorporated into existing buildings will benefit not only the building owner but also the larger urban community through lower greenhouse gas emissions. Town and Cities will not be able to meet their targets by addressing only new construction.
45: Green Roofs	Encourage and incentivize the use of green roofs in the development of landscaping and building regulations.	When intensifying infill development, green space within a community may be lost. By greening rooftops, the community itself can become an effective carbon sink. A significant amount of total GHG emissions come from the built environment. Green roofs can help decrease building-connected emissions and are an important element of any strategy aimed at low carbon buildings.
46: Incentives and Education for Green Development	Support the creation of incentives and disincentives including appropriate complementing energy efficiency improvements with repayment through assessments on property tax bills, and education programs to encourage homeowners and developers to invest in green development improvements.	Many homeowners and developers want to improve the energy performance of their buildings, and may be concerned about climate change hazards. Education programs and incentives such as expedited permit review and fee waivers can encourage retrofit and voluntary compliance.

47: Performance Rating Standard	Support the adoption of a national building energy performance rating system.	Such a system would allow potential buyers and tenants to make informed choices about the energy costs associated with buildings. It could be similar to gas mileage ratings for vehicles and would improve market awareness of the energy performance of buildings.
48: Heat Islands effects	Design communities, neighbourhoods and individual development projects using techniques that reduce heat absorption throughout the community and region.	Heat island effects traditionally take place in urban areas where natural ground cover has been replaced with pavement, buildings, or other materials that tend to absorb and retain heat. While the resulting warmer temperatures may be benign or even welcome during colder times of the year, any such benefits are greatly outweighed by the negative impacts during hotter summer months when heat island effects significantly contribute to increased human health risk and increased use of air conditioning, resulting in greater energy use and greenhouse emissions.
49: Housing and Infrastructure Programs	National, provincial and local level housing and infrastructure programs should incorporate green development standards and requirements.	Public investment and grant programs offer an opportunity to implement green development techniques throughout the community, in addition to potentially saving money for clients and the public through greater efficiency.
50: Require the Use of Water Saving Fixtures	The use of water saving fixtures should be required in both new construction and in retrofit of existing structures.	Most building codes contain provisions for low-flow toilets. In areas where water supply is threatened by climate change, these codes should be examined to ensure that other water-saving alternatives are permitted. Plan review and inspections programs can promote water-saving technologies at the design level. Additionally, opportunities to retrofit older technology can be pursued through incentives or requirements.
51: Landscaping Requirement and Incentives	Landscaping standards should be designed to promote environmental benefits such as environment protection through national park declaration with a preference for indigenous plants.	Many zoning or development codes contain provisions for parking lot landscaping, perimeter site buffering, and/or open space preservation. These code requirements present national planners with opportunities to introduce or preserve carbon-sequestering vegetation as sites are developed. National planners should consider examining their code requirements with an eye to promoting tree canopy development, use of native species and xeriscaping **(landscaping and gardening that reduces the need for water)** practices, and integrating landscaping with rain water management techniques such as rain gardens. Larger trees keep more carbon and native tree species combined with xeriscaping and integrated rain water management are more likely to reach full maturity in urban environments.
52: Public Building and Infrastructure Investments.	Specify the use of energy-and water-saving products, appliances, technology, and installation techniques can be specified as part of the construction bid process for all public building and infrastructure projects.	Public buildings and infrastructure represent opportunities to implement green development in a highly visible fashion through the community. This communicates the community's commitment to green development and sets an example for the private sector.
53: Natural Resources	Climate change will modify natural systems. In many cases, these modifications will be significant. For example, rising sea levels will alter the salinity of low lying coastal islands, drought will affect the habitat of many plant and animal species, and rising temperatures will extend the ranges of some species while contracting those of others. These changes will affect food supply, species diversity, timber harvest, and many other important components of the human relationship to the natural world. As a mitigation of climate change, the majority of Papua New Guinea's emission are derived from land-used, with most of this a result of the forestry sector and clearance for extensive agriculture. This is due to large area over which logging operates in relation to its low population density. There are significant opportunities to reduce emissions from forestry, both by making the transition to sustainable forest management options and through re-afforestation. The shift to sustainable forestry with processing into products in Papua New Guinea, and judicious use of international carbon credits to raise incomes and promote development, better forest practices should greatly increase the contribution of forestry to the national economy.	
The Department of Environment and Conservation, the PNG Forest Authority, Department of Lands, Department of Agriculture, and Department of National Planning in collaboration with OCCD will support actions that preserve and manage natural assets, including agricultural and forestry lands and natural ecosystems, in such a way that the natural assets can be sustained despite climate change impacts and that the natural assets help reduce greenhouse gas emissions.		

Natural Resources	Description	Rationale
54: Natural Asset Protection	Protect important natural assets within communities and regions to maintain their roles as "carbon sinks" and to enhance their long-term resilience to climate change impacts. Governments, businesses and institutions of higher learning should help communities identify and map these assets and sustainably manage them.	Protect important natural assets within communities and regions to maintain their roles as "carbon sinks" and to enhance their long-term resilience to climate change impacts. Governments, businesses and institutions of higher learning should help communities identify and map these assets and sustainably manage them.
55: Reduce Greenhouse Gas Emission Through Agricultural Practices.	Establish educational programs and incentives to promote agricultural cultivation and livestock best management practices that reduce greenhouse gas emissions and that allow the sequestration potential of agricultural activities to be realized.	Plan implementation can include education and training programs which include agricultural preservation to promote sustainable agriculture.
Policy 3: Local Food and Energy Production	Consider local food production and energy in comprehensive plans with local regulations. Reform the national government agricultural policy to shift resources and funding priorities toward support of locally produced foods and assignable biofuels such as switch grass.	Locally produced foods and fuels can enhance regional security in the event of shortages resulting from climate impacts such as drought, extreme weather incidents, or floods.
56: Protect Agricultural Land From Urban and Suburban Encroachment.	Establish strategies to promote redevelopment and compact new development that will minimize the conversion of forest and grassland for urban and suburban use. Promote the Provincial and the local level governments to fund for preservation of grassland and forest.	Reducing conversion of agricultural and woodlands to urban and suburban use enhances carbon sequestration, supports the local economy, and retains rural character.
57: Natural Resource Climate Change Adaptation	Identify and map areas of concern and develop plans for a sustainable transition to new climate conditions.	Ecosystems, and forests face adaptive challenges to climate changes. Preservation of this systems will required sophisticated management approaches that support transition to a new climate in future.
Economic Development	One of the most significant issues of concern resulting to climate change that is proven was to do with Economic Development Impact. Papua New Guinea economy today and its growth was a resultant of mining and petroleum extraction from the environment, hence, the natural habitat have to be cleared away to make way for development.	
The Department of Treasury, Department of Finance and Department of National Planning in collaboration with OCCD will support planning that diversify local economies, incorporate and promote new technologies and sustainable businesses, and reduce the physical and sector vulnerabilities of local economies to climate change.		
Economic Development	**Description**	**Rationale**
58: Diversification of Local Economies	Diversify economies to reduce risks that climate change impacts, including weather-related disasters, will overly impact particular economic sectors leaving communities without important services.	In financial portfolio management we are often told to diversify to reduce risk to optimize returns. A parallel dictum could be applied to local and regional economic development sectors potentially impacted by climate change. Planners should adopt policies that anticipate potential climate and weather economic impacts and seek opportunities for self-reliance and economic resilience by developing local resources.
59: Technology and Communications	Support technology and business practices that encourage tele-communities and enable people to reduce vehicle miles travelled from home to work. These include the use of home offices and technology such as wireless communications and videoconferencing, and the expansion of rural broadband. This will require appropriate ICT policies to be adopted.	Evolving communications and computer technology allow people to work together without being in the same physical location. These changes allow effective collaboration with fewer vehicle miles travelled, and thus lower greenhouse gas emissions. They provide for more efficient use of space (i.e. building materials, parking, and roads) when home offices are combined with "hot desking" (one desk shared by many people at the main office). They also can provide social and economic benefits y offering more flexibility to accommodate full-time parents, the handicapped and part-time workers.

60: Green-Collar Jobs	Use comprehensive planning and shift economic development and working training programs to support local jobs in sustainable businesses.	Businesses in 'green' industries (or businesses that use 'green' approaches to traditional industries) will become increasingly important to greenhouse gas reduction and to sustainable economies. As companies and individuals seek to reduce their 'carbon footprints', they will look for more sustainable materials, technologies and services. Support for the businesses that are using green practices will make it possible for local climate change goals to be met. These businesses can also form the foundation for 'green' economic growth that can reduce reliance on fossil-fuel-based economies. Green businesses can be a positive focus for economic development which supports a living wage, offers career ladders as well as robust training programs to increase income to help everyone adjust to increasing costs.
61:Eco-Industrial Development	This concept utilizes a systems approach to siting industrial development, placing industries that use the by-products of other industries of that can share energy systems and other resources in close proximity, anticipating green construction and infrastructure industrial park layout and design, and collaborating with the surrounding community for services or resources or to ensure compatibility, among other synergistic and environmentally friendly practices. The goal is to create a node of industrial sustainability that minimizes waste, enhances inter-industry cooperation, and more effectively and efficiently utilizes local resources.	Harmonizing economic development and climate change is crucial for a prosperous future for humanity. Integrating economic development opportunities into our future is important and encourages a shift toward a more efficient use of resources throughout society, in keeping with the goals of sustainability.
62: Address Physical and sector Vulnerabilities	Create and implement economic development plans and programs that address physical and sector vulnerabilities resulting from climate change utilizing a risk assessment practices. This risk assessment should be supplemented by a cost-benefit study or an opportunities analysis that evaluates both the costs and benefits associated with possible adaptation measures. Tourism, commercial fishing and recreational fishing may be enhanced by the removal of a hydroelectric dam made obsolete by climate change due to low water flows, for instance. Such studies also need to take into consideration uncertainties in climate change impacts at regional levels so that adaptive responses are balanced with potential for risk.	Addressing physical and sector vulnerabilities will require planners to clearly identify the specific risks faced by the local and regional economy from specific climate change impacts. Do stronger electrical storms pose particular threats to the broadband cable network that supports the new high-tech company in town? Will the proposed timing of a controlled burn affect the scheduling of a particular tourism event? Will lower lake levels cause the businesses to close? If sea-level rise inundates the local port, what other businesses will be affected? And this baiting and answering these questions will build resilience into local economies.
Hazards Management	Hazards management, as it is applied to climate change, represents primarily an adaptive response dealing with public safety threats from climate change impacts. Many climate change impacts are manifested in stronger or more frequent natural hazards such as floods, cyclones, droughts. Hazards are by-products of disasters and the range of incidents management professional (OCCD) have to content with includes small scale disasters.	
General Hazard Management Policy A: The Department of National Planning in consultation with OCCD will support the development of plans, strategies, and standards to better anticipate and prepare for the hazards impacts of climate change.		
Hazards Management	**Description**	**Rationale**
63: Incorporate Climate Change Adaptation into hazards Management Planning.	Develop a comprehensive approach to hazards management planning that integrates the variety of climate change scenarios and includes both pre-incident and post-incident responses. Expand national and provincial support for climate-related hazards management. Continue to coordinate and cooperate with the hazards management committee (HMC)	Traditional hazards management planning is often separated by hazard type and uses a short planning time horizon. The cycle for most hazards management planning has normally been: event – warning – response – recovery – and back to event. It is only recently that the hazards management committee and the planning committee have begun to effectively coordinate and cooperate. Office of the Climate Change and Development should become more engaged in hazards management planning in a comprehensive way and should include climate change adaptation in hazards management mitigation plans, land use planning, natural resource conservation plans, development review, and community visioning.

64: Climate Change Scenarios.	Integrate climate change scenarios into local, provincial and national hazards management efforts. Increase funding for hazard mitigation planning that incorporates and addresses climate change-related scenarios and potential impacts.	Climate change will increase the risks associated with certain types of hazards. For example, more intense rainfall events will require adjustments to what are considered 100-year floods. Scenario planning can help put hazards heightened by climate change into perspective, allowing appropriate responses to be developed.
65: Building and Life Safety Codes.	Update building and life safety codes to better address the variety of hazards that are likely to result from climate change.	Building and life safety codes should be updated for increased safety from hazards. For example, wind load standards should be re-evaluated in light of an increased potential for stronger tropical and extra tropical storms.
66: Reducing Risk to Development.	Improve the ability to identify areas prone to greater risk from climate change hazards and restrict development and redevelopment in those areas. Increase support for mapping and data collection of high risk areas.	Improvements in our predictive capabilities relative to the impact of climate change should be pursued. Areas prone to significant risk from climate change should not be developed or redeveloped to minimize future loss of human life and impacts to property. Communities should investigate and promote opportunities for these areas, such as flood plain restoration, groundwater recharge, and flood-compatible agriculture. Place development in low-risk, low hazard areas. Restrict the development of buildings or infrastructure in flood-prone areas and low-lying coastal areas. Manage development in the urban/wild land interface area to minimize the risk from wildfire. Climate change is likely to bring increased risk of flooding to many areas, even those in which overall precipitation levels are less (due to greater storm severity, changes in the timing of precipitation, or changes in the proportion of precipitation that falls as rain versus snow.)
67: Coastal Zone Management Act Review.	Re-examine the Coastal Zone management initiatives in light of risks due to sea-level rise and increasingly strong tropical and extra tropical storms. Improve planning and risk assessment for development in coastal areas.	The national coast zone management program should be re-evaluated based on new hazards associated with climate change. Storm surge associated with stronger storms will be compounded by sea-level rise, for instance.
68: Reconstructions.	Encourage local level governments to develop post-disaster redevelopment plans that discourage the reconstruction of buildings and infrastructure in hazard zones following climate related disasters.	After major disasters, restricting rebuilding in hazard zones should be seriously considered. Abandoning intensive land uses in the hazard zone should be strongly considered with the government looking at ways to mitigate the pain of relocation.
69: Security and Disasters.	Develop strategies to maintain energy, water, and food security during and after climate related disasters, including coordination with appropriate state emergency management agencies.	Disasters tend to cut links to outside resources. Surpluses and supplies are needed to support the community until outside links are re-established. A dependable source of energy is necessary to support essential services for surviving extreme weather events. This could include distributed location of electricity generating facilities that could operate independent of the utility grid. This plan would be integrated with emergency food systems, medical services, police and fire protection, and infrastructure such as water, sewage and street lighting systems.
70: Risks Analysis and Event Impact Horizons	Develop scenarios to help the general public and decision-makers understand the potential risks associated with climate change and to develop contingencies for catastrophic events. Expand the timeframe associated with hazards management mitigation related to climate change to 100 to 500 years.	Conventional planning horizons should be extended. OCCD and scientific research partners should assess flood potential into the 100-year probability areas. Other hazard maps should also be extended into the 100 year frames. While the hazard maps are probability maps not time horizon maps, it is an easy shift to a time perspective for flooding and other hazards. As with the sinking sea level areas, the zones in these maps are not no-build zones but where the development is constructed with conditions that address potential risk factors.

71: Action Strategy.	When considering climate change impacts, first seek to avoid impacts altogether, then minimize them, and finally, adapt to the unavoidable impacts as much as possible.	The first decision choice on development in potential hazard areas should be avoidance. If avoidance is not possible or other requirements dictate a need to develop, evaluation should then move to minimization. From a hazards management planning standpoint it is minimization of areas at risk. The final decision step is mitigation to protect against the risk.
72: Identify and reach out to vulnerable Populations.	Identify and map vulnerable population areas. Develop effective outreach programs to increase public awareness about hazards exacerbated by climate change.	Hazards affect different populations in different ways. OCCD planners need to understand the public safety risks associated with various hazards and how they affect particular populations. Effective outreach to different populations requires different techniques in order to be successful; planners need to recognize these different approaches in outreach plans and programs.
Public Health	Managers and implementers of climate change programs needs to be vary of the implications of climate change on public health. Heath waves and storm-related disasters will create the need to adequately shelter the vulnerable population. New infectious diseases and increased incidence of air pollution will complicate the design and management of ecosystems, the preparations of tourism-related marketing, the timing of recreational programs and how emergency management services are delivered. Water supply management will face new health challenges from saltwater intrusions and algal pollution. Air pollution is one of the many health issues that can be significantly exacerbated by climate change. The population needs to be informed of the health issues caused by increased ozone concentration, dusty air people breath caused by drought and mould spores and other allergens people will breathe through increased precipitation. Climate-related public health effects are complicated and addressing their impacts requires those responsible to think creatively and utilize multi-disciplinary approach that may involve medical and emergency management personnel, community leaders, and local celebrities that can effectively reach target populations.	
General Public Health Policy A: The Department of Health in consultation with OCCD will support efforts to effectively manage public health impacts resulting from climate change, including customization of efforts to address particularly vulnerable populations.		
Public Health	**Description**	**Reason to Support**
73: Address Population Vulnerability.	Identify and map out populations having particular vulnerability to climate change. Develop cross-disciplinary approaches to ensure that these populations receive services they need during and after hazard incidents. Plan and implement outreach efforts in coordination with appropriate national, provincial and local level governments public health agencies directed at particular populations to increase awareness of specific types of climate change hazards.	Certain populations grouping will be more vulnerable to climate-related public health effects than others. Effective delivery of public health services will require special efforts to ensure that these populations are reached with information and any necessary services/treatment.
74: Determine National and Local Vulnerabilities.	Climate change will affect communities in specific ways with regard to health issues. Vector-borne diseases are less likely in drier climates, for instances. Governments should identify impacts having the highest likelihood of occurrence and focus resources on addressing consequences of these impacts.	Resources for addressing public health impacts are limited. It is prudent to concentrate on the most likely hazards and develop specific plans and programs for addressing them.
75: Conduct Health Impact Assessment.	Use health impact assessment (HIA), health checklists, and/or other tools to evaluate key climate change impacts to highlight the effects these will have on general wellbeing as well as upon the health of our most vulnerable populations.	By including a comprehensive health analysis during land use, transportation, and climate change planning, governments and public health professionals would have an opportunity to evaluate the health implications of important planning decision and suggest at an early stage. It would also elevate the importance of public health with the hope of making it as relevant to the policy-making process as economic or infrastructure.

Public Infrastructure	A significant amount of the public infrastructure in Papua New Guinea is vulnerable to the effects of climate change. Increase flooding potential and sea-level rise may threaten sewage treatment facilities constructed at the water's edge for gravity collection and discharge purpose. Potable water reservoirs may have reduced supply due to drought and increased evaporation resulting from higher temperature. Coastal area bridges, roads and highways face inundation threats resulting from sea-level rise and storm surge from stronger hurricanes and tropical storms. Airport runways may require lengthening due to higher temperatures and humidity which reduce air density, resulting in lowered aircraft performance. In addition to the need to adapt public infrastructure to climate change, the design and management of public infrastructure offer opportunities to help mitigate the severity of climate change. More energy-efficient operation of public utility systems, changes to street lights programs, purchase and /or retrofit of fleet vehicles that use alternative fuels, and recycling of asphalt and other construction materials are some of the many ways public infrastructure can contribute to lowering greenhouse gas emissions.

General Public Infrastructure Policy A: Papua New Guinea through the Department of National Planning in close consultation with the Office of Climate Change and Development supports the efforts to address climate resilience and reduce green house gas emission related to design, construction and installation, and operation of public infrastructure.

Public Infrastructure	Description	Reason to Support
76: Water Availability	Assess water resources demands and supply to determine long term environmental risks to ensure long-term availability to water for potable, industrial and agricultural purposes through techniques like water underground storage, diversion from lower priority uses, negotiated intra-and inter-basin transfers, conservation, regional interconnectivity, reuse of treated water or grey water, rain-water capture and similar measures. Give priority to measures which improve water use and energy efficiency, such as conservation and reuse, as opposed to measures which would simply increase water supply.	The national government through the Department of National Planning plans to take a comprehensive approach to water supply to water supply management. Since climate change will negatively affect water availability in many locations, it is critical for these communities to manage water availability in an effective and efficient fashion.
77: Threats to Water Supply.	Develop long-term assessments of potential water supply threats such as droughts, saltwater intrusion, and inundation, and evaporation, water-intensive industries, non-indigenous plants an plan to increase resilience to these threats.	Adapting to water supply threats brought on by climate change will be a critical undertaking for the many parts of Papua New Guinea in many locations. Availability to water is essential for meeting potable, agricultural, and industrial needs. Failure to properly plan to address these threats can place communities at risks, with consequences ranging from emergency evacuation, out-migration and disinvestment.
78: Sewage Collection and Treatment	Minimize the vulnerability of sewage collection and treatment facilities and systems to climate change effects. Eliminate joint storm water and sewage systems where feasible. Assess the potential for sewage collection and treatment systems in addressing water supply issues, such as the use of treated wastewater for farming purposes.	Reuse of treated wastewater can help address water supply issues by providing an alternate source of water for certain purposes.
79: Transportation Infrastructure.	Minimize the vulnerability of transportation infrastructure to climate change effects, including threats from individual weather events like floods and permanent effects like sea-level rise.	As with water and sewer systems, transportation infrastructure is vulnerable to a wide variety climate change impacts, both permanent and temporary. Where possible, the national governments seek to enhance resilience of the infrastructure or locate it in areas where its vulnerability is reduced.
80. Rain Water Management	Account for the potential impacts of climate change effects on rain water runoff in designing management systems and infrastructure. Utilize green infrastructure and regional management solutions.	More intense precipitation events will create rain water management problems in many communities. These problems include floods, erosion, and general flooding.

81: Green Infrastructure.	Create, protect and manage systems of green infrastructure (i.e., urban forests, parks and open spaces, green roofs, natural drainage systems, low impact developments) in regions and communities. Fully fund a program that supports the development, identification, and maintenance of green infrastructure. Support new research and training for design professionals on the development, incorporation and preservation of green infrastructure.	**Aligning with Pillar 5, Directional Statements 1-12,** when communities uses and enhances its natural environmental assets as an integral part of the its infrastructure, that community also reduces its impact on climate change and increases its ability to adapt to changes that may occur. For example, shade from the urban forest reduces the need for air conditioning, thus reducing electrical demand and the greenhouse gas emissions caused by electrical generation and transmission.
82: Energy-Efficiency Public Infrastructure	Implement energy-efficient technologies and management in public infrastructure design, installation and operation.	Climate change mitigation plans can include a focus on public infrastructure to take advantage of energy-efficient technologies and management practices. Street lighting and fleet management programs can improve energy-efficiency and reduce overall energy consumption. Compact development patterns can reduce utility service delivery costs.

Community-based Solar Farm panels in the Aroma Coast, Central Province

Part III: Monitoring and Evaluation

A. Monitoring and Progress Review

1. **Government Monitoring**: Government officials at national, provincial and district levels will operate appropriate monitoring systems to act as policy feedback loops.
2. **Implementation Progress Review:** An independent review process will be carried out annually to ensure ongoing progress. Through the review process, risk and challenges will be identified as well as appropriate measures to mitigate risks involved in achieving the Policy Objectives. To ensure implementation towards Policy Outcomes is time bound and measurable, performance will be graded with appropriate actions for different levels of achievements.

B. Policy Evaluation

1. **Policy Monitoring Policy Outcomes Reviews:** The National Climate Compatible Development Management Policy will be reviewed every 5 years by the OCCD in collaboration with implementing partners and lead agencies. An independent peer review team to evaluate the outcome of the policy and to incorporate new developments will be used if deemed necessary. Annual reviews however will be done by the OCCD through government's standing annual reporting process.

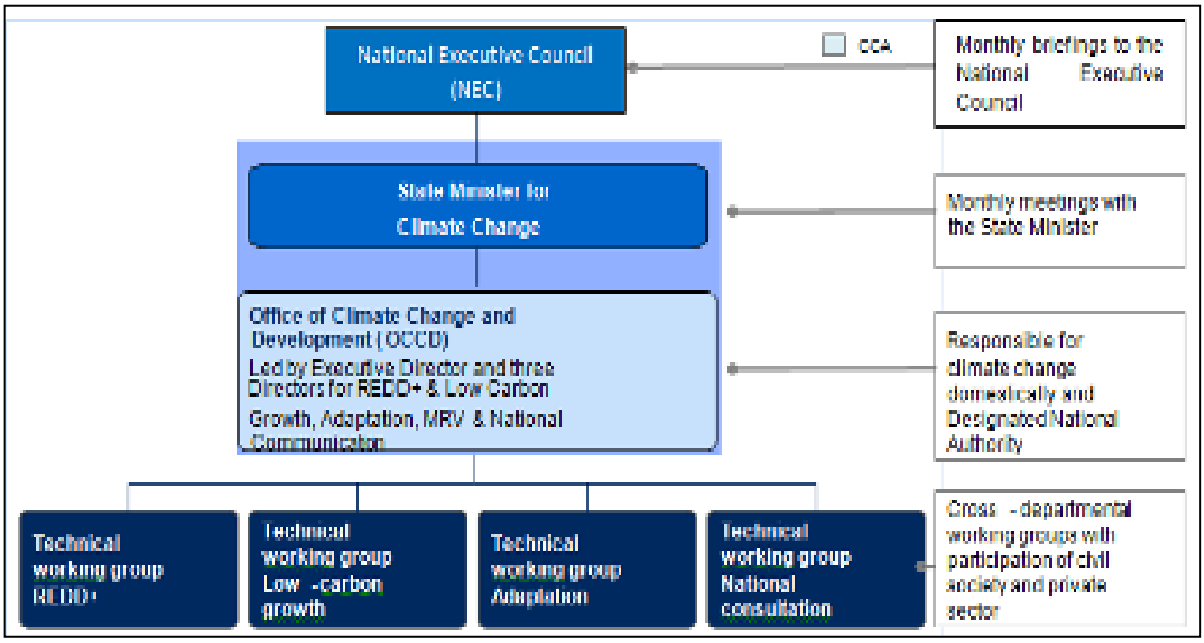
Forests are an important part of PNG's heritage and culture that is worth preserving. Ethnic diversity - more than 800 recognized language groups and ethnic communities each having a unique relationship with the forest and natural environment. ~ 80% of population is still dependent on forests and subsistence agriculture, 97% of the country's land is owned under customary land rights.

Annexes

Annex 1 - Institutional and Sectoral Policy Context

1. Institutional Context

Through NEC Decision 54/2010, the Government created the current Office of Climate Change and Development (OCCD). The governance structure supports the coordination role across relevant government department.



The Prime Minister's appointment of a Minister of Climate Change further underlines the importance that the Government gives to the topic of climate change. The Ministry reinforces the recent NEC decision NG137/2012 and will further strengthen the Government's capacity to address the multiple challenges and opportunities climate change poses for our country. The NEC decision NG137/2012 elevates OCCD to respond directly to the Minister. The ministry will play a leading role in shaping the government's strategy and will provide direction and assistance to OCCD's many tasks.

The objective of the OCCD is ''to provide a coordination mechanism at the national level for research, analysis and development of the policy and legislative framework for the management of climate change within the Government's National Strategy on Climate-Compatible Development (NEC Decision No 55/2010).

The Technical Working Group Member makes technical input on policy matters and contributes ideas to the priority activities that will be run by each division. It comprises of government, NGO's, academics, private sectors, development partners, church groups and research institutions. The public-private partnership is also strengthened when discussion becomes more transparent with clarity on roles and res responsibilities of each member in the TWG meetings are outlined clearly.

However, the current institutional establishment must be comprehensively revised to provide the appropriate higher and stronger level of leadership, effectiveness in coordination and harmonization in implementation in ensuring that a nationwide transformation to climate compatible development is realized. Over the experience of the past years through the various programs such as the National UN-REDD program, National Climate Change Consultation Program, Strategic Program on Climate Resilience, Adaptation to Climate Change Program, Clean Development Mechanism Projects, operations of the Climate Change Technical Working Groups, REDD+ pilot projects and the various other pilot projects to enable climate compatibility.

The 'guide to success' of the Vision 2050 is the 20-year Development Strategic Plan. It sets in motion pathways for delivery on the National Goals and Directive Principles. The DSP aims to maximize the benefits from natural resources whilst ensuring sustainable management of the environment.
Building the National Climate Compatible Development Management Policy (NCCDP) from the Guiding Principles of the constitution.

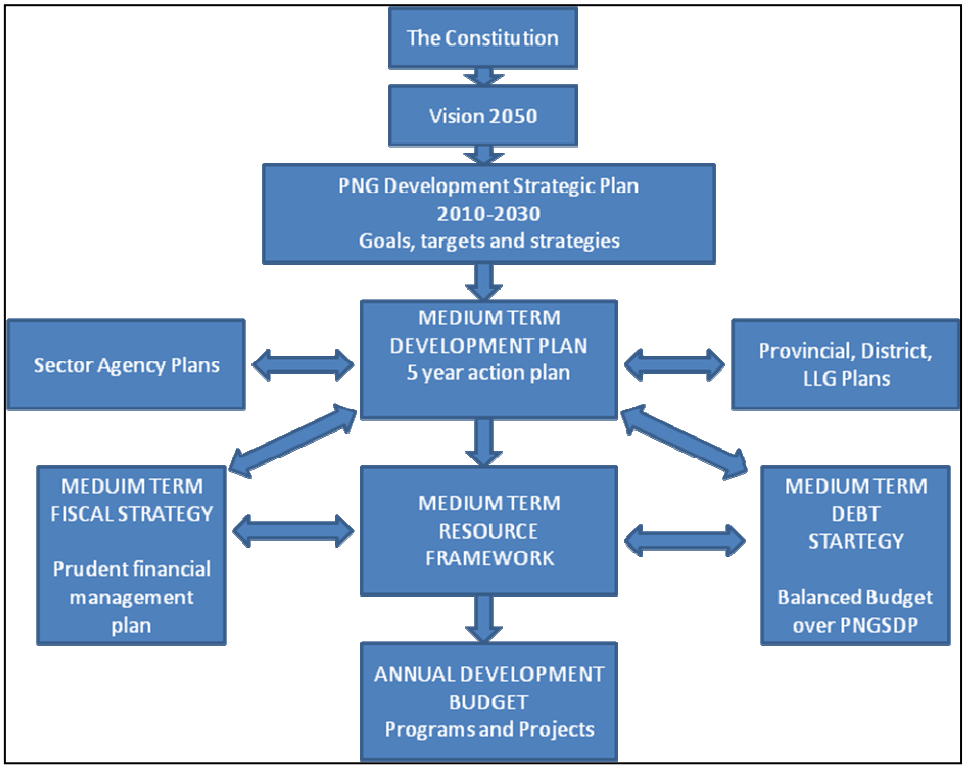


Figure 2 The PNG Development Strategic Plan mechanism

Source: PNG Development Strategic Plan 2010-2030

2. PNG sectoral policy, legislation, regulation and implementation plan analysis

The Policy provides an overall framework for Climate Change Adaptation and Mitigation in Papua New Guinea. The policy is supported by and complements other national plans, policies and legislations. In addition the policy provides mechanisms for reconciling all policies and strategies relevant to Climate Change in Papua New Guinea. The Policy also aims to integrate climate change concerns where relevant into development policies and planning at all levels of government, as well as in sector policies and plans.

The following key legislations, policies and strategies are, amongst others, complementary to the Policy:

National strategic planning documents
The Policy complements to the achievement of concurrent Policy and Planning documents of the Government of PNG. The strategic planning documents of the PNG are hierarchical in nature: Vision 2010-2050 (40 year Economic Strategy), Development Strategic Plans 2010-2030, and 1st Medium Term Strategic Plan 2010-2015. The PNG Development Strategic Plan 2010-2030 (DSP) 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. The Medium Term Development Plan 2011-2015 (MTDP 2011-2015) is the action plan to implement the PNG DSP in the first 5 years (2011-2015) in order to also work towards achieving Vision 2050.

PNG Vision 2050, which was launched in the year 2009, reflects the Government's aspiration to improve PNG's human development index through human capital development, economic growth, better service delivery, enhanced security and international relations, environment and climate sustainability, improved community development and sound political leadership and structures. Vision 2050 emphasizes that environmental sustainability and addressing climate change issues are crucial in the achievement of the developmental goals and visions envisaged by Government of Papua New Guinea by 2050.

The **PNG Development Strategic Plan 2010- 2030 (PNG DSP)** sets out key strategies to adapt to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions and reduce disaster risks is also relevant to this policy.

Medium Term Development Plan (MTDP) 2011-2015 is the key development framework that has identified environment, climate change and natural disaster management cross cutting sectors. This provides a framework to engage effectively in global climate change negotiations and will ensure synergy in the climate change response amongst all stakeholders, including government agencies, private organizations, churches and local communities. Moreover it also focuses on enforcing minimum technology and maintenance standards, particularly within the economic and infrastructure sectors such as forestry, agriculture and energy and addresses the adverse impacts on our local communities through community based adaptation programs subject to available financial resources.

National Forestry Policy

The National Forest Policy provides the basis for forest resource management in the country. Forests play an indispensable role in the preservation of ecological balance and maintenance of bio-diversity. Forest also constitutes one of the most effective carbon-sink. The Forest sector is critical to addressing the issues of climate change through supporting initiatives in climate impact and mitigation, particularly through carbon stock inventory and reducing emission from deforestation and forest degradation.

National Agriculture Policy

The National Agriculture and Livestock Policy provide the basis to make PNG agriculture more resilient to climate change. It identifies and adopts new varieties of crops, especially thermal resistant crops and alternative cropping patterns, capable of withstanding extremes of whether, long dry spells, flooding, and variable moisture availability. Agriculture will need to be progressively adapted to projected climate change and our agricultural research systems must be oriented to monitor and evaluate climate change and recommended changes in agriculture practices accordingly. This will be supported by the convergence and integration of traditional knowledge and practice systems, information technology, geospatial technologies and biotechnology. New credit and insurance mechanisms will be devised to facilitate adaptation of desired practices. Focus would be improving productivity of rain fed agriculture.

National Transport Policy

The National Transport Plan provides the basis for which transport infrastructure should be built in the country. It addresses the 3 priority modes and that includes wharves and jetties, airports and airstrips and roads and bridges. The transport sector has an important role to build climate resilient infrastructures through incorporation of appropriate climate change considerations into the designing and implementation of infrastructure projects and therefore linked to this Policy.

Environment Policy

The Environment Act 2000 articulates the promotion of sustainable development concept through 'wise use' principles and that proper environmental management will ensure 'environmental benefits' to be enjoyed by the present generations and investments for the future generations. It also emphasizes consideration of biodiversity conservation and sustainable use in economic planning. The Climate Change Policy is consistent and compliments the main principles of the Environment Policy. It is now important to ensure that environmental protection and biodiversity conversation assume a primary role in the climate change agenda.

National Energy Policy
The National Energy Policy provides for significant in the share of solar energy in the total energy mix while recognizing the need to expand the scope of renewable and non-fossil options such as nuclear energy, wind energy and biomass. PNG is a tropical country, where sunshine is available for longer hours per day and in great intensity. Solar energy therefore has great potential as future energy source. It also has the advantage of permitting a decentralized distribution of energy, thereby empowering people at the grassroots level. Photovoltaic cells are becoming cheaper with new technology. There are newer reflector-based technologies that could enable setting up scale power plants across the country.
A major R&D program could draw upon international cooperation as well, to enable the creation of more affordable, more convenient solar power systems, and to promote innovations that enable the storage of solar power for sustained, long term-use.

Disaster Mitigation Policy and Disaster Risk Reduction and Disaster Management Framework for Action 2005-2015
The National Disaster mitigation policy and disaster risk management strategy focuses on reducing disaster risk throughout the country through establishment of appropriate institutional and legislative mechanism and people centered early warning system. Knowledge, public awareness and education to improve disaster awareness, planning for effective preparedness and recovery and identification of risks and hazards are the key elements of existing disaster management strategies and policies. The climate change policy would complement the efforts of the National Disaster Centre in hazard assessment and facilitate instituting a national program to address identified threats and risks arising from climate change. The policy will also advise to integrate climate change concerns in all the disaster risk management actions.

National Weather Service
The National Weather Service (NWS) will provide timely information on climate variability and changes in weather patterns. It will improve its capacity to promote efficiency in weather forecasting and climate predictions on different time scales, so the country can respond effectively to any potential impacts, such as extreme climatic events (cyclones, precipitation variations leading to flood or drought), sea level rise or any other impact of climate change. Climate data recording must be improved to monitor climate change implications.

National Fisheries Policy
The National Fisheries Policy will have to work with the Climate Change Policy to competently monitor sea surface temperature, as a slight increase in sea level temperature will severely affect biodiversity in the oceans. PNG's coastal region is very dependent on marine resources, including tuna fisheries, and if implications of sea temperature is not monitored and addressed appropriately, it can affect the lives of many communities.

National Infrastructure Policy
The main threats presented by climate change to infrastructure assets include damage or destruction from extreme events, which climate change may exacerbate; coastal flooding and inundation from sea level rise; changes in patterns of water availability; and effects of higher temperature especially on operating costs. In this context, a National Infrastructure Strategy should be formulated to make infrastructure sustainable through improvements in energy efficiency in buildings, management of solid waste and modal shift to public transport. The Policy will promote energy efficiency as an integral component of urban planning and urban renewal through three initiatives.

Energy Conversation Building Code
The Code addresses the design of new and large commercial buildings to optimize their energy demand, will be extended in its application and incentives provided for retooling existing building stock. Recycling of material and Urban Waste management will be a major component of ecologically sustainable economic development. A special area of focus will be the adaptation of new technology for producing power form waste. The Strategy will include a major R&D programme, focusing on bio chemical conversion, waste water use, sewage utilization and recycling options wherever possible. Better urban planning and model shift to public transport. Making long term transport plans will facilitate the growth of medium and small cities in ways that ensure efficient and convenient public transport. In addition, the Strategy will address the need to adapt to future climate change by improving the resilience of in fracture, community based disaster management, and measures for improving the warning system for extreme weather events. Capacity building would be an important component of this Strategy.

National Health Policy
The Climate Change Policy will complement the National Health Plan (2001-2010) in addressing the impacts of global warming which has already resulted in a number of new health concerns. Malaria vectors have intruded into some parts of the PNG Highlands. Due to lack of immunity of human populations in these parts of the Highlands this poses a serious health risk. Also, fresh water sources are being contaminated by sea water intrusion resulting from sea level rise, especially in low lying coastal areas and atoll islands. This implies that the relationship of the NHP and the Climate Change Policy needs to be synchronized with a view to undertake the appropriate adjustments to include adaptation strategies.

National Disaster Risk Management Policy
The National DRM Policy acknowledges the negative impact of disasters on education sector and provides a framework to reduce disaster and climate risks in the education sector. The policy looks at emergency prevention and preparedness and moves from a corrective approach towards a proactive focus, and stresses the importance of reduction of risks and vulnerabilities before, during and after emergencies. The aim of the policy is to effectively manage emergency risks stemming from human made and natural disasters in the Education Sector through putting in place appropriate mechanisms and systems to efficiently prepare for, effectively respond to and timely recover from disasters. The Policy also focuses on strengthening the capacity of the DOE at the National and Provincial level and the schools in meeting the challenges posed by disaster and climate change hence compliments the climate change policy.

National Sustainable Land Use Policy
A sustainable land use policy is currently being developed that recognizes the threats of climate change to sustainable land use, environment and biodiversity in PNG and highlights the importance of incorporating climate and disaster risk concerns in the land using planning for risk reduction and sustainable development.

National Urbanization Policy
The Policy framework provides a basis for strengthening economic, social and environmental fabrics of Papua New Guinea's town and cities by better managing the urbanization processes and urban grown challenges. The policy, inter-alia, highlights the importance of incorporating climate change issues in the urban planning processes for sustainable urban development.

Other relevant policy documents
The rights of the most vulnerable groups, especially children and women, are provided for and protected by various policies and legislative frameworks. Women's vulnerabilities are addressed through the 1990 National Women Policy, the 1995 Papua New Guinea Platform for Action, the 2003 Gender Equity in Education Policy, the Gender Policy on HIV/AIDS 2006 -2010 as well as the Law and Justice Sector Gender Strategy. The climate change policy, *inter-alia*, focuses on increasing resilience of vulnerable groups hence compliments the above policies.

Adventure Park - opposite PAU (outside Port Moresby)

Annex 2 - Climate Science

The temperature of the ocean surrounding Papua New Guinea has a strong influence on average monthly air temperatures. Changes in the temperature from season to season are small but more marked around Port Moresby than further to the north.

Rainfall

Papua New Guinea has a wet season from November to April and a dry season from May to October (Figure 1), but these seasons are only noticeably different in Port Moresby, where about 78% of the yearly average rainfall comes in the wet season. Due to their location in the West Pacific warm pool, islands in the north of PNG experience rain throughout the year. Rainfall in the north of Papua New Guinea is also affected by the Intertropical Convergence Zone and, to a lesser extent, the South Pacific Convergence Zone. These bands of heavy rainfall are caused by air rising over warm water where winds converge, resulting in thunderstorm activity.

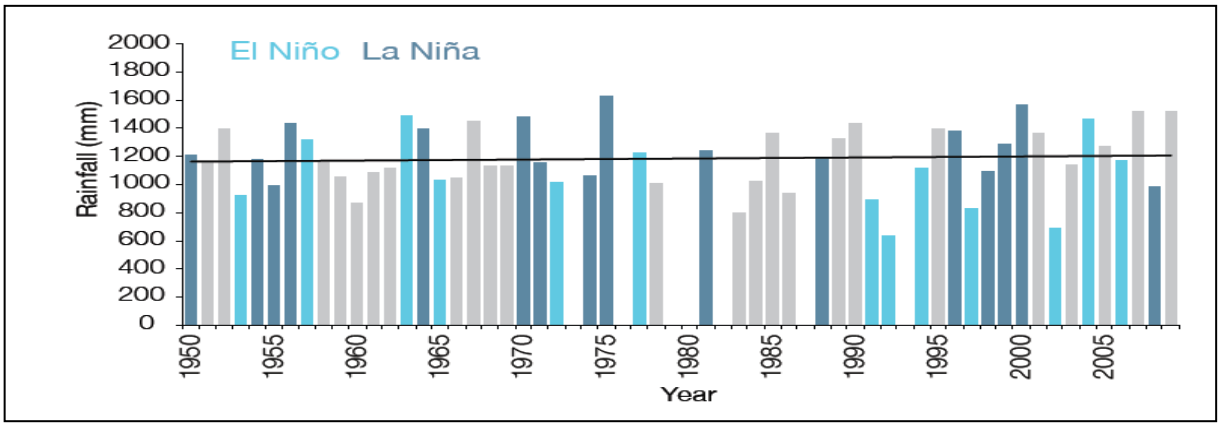


Figure 4: Annual Average rainfall for Port Moresby. Light blue bars indicate El Nino and dark blue indicates La Nina years and grey bars indicate neutral years

Temperature

Annual minimum and maximum temperatures have increased in Port Moresby since 1950. Maximum temperatures have increased at a rate of 0.11 °C per decade since 1950. These temperature increases are consistent with the global pattern of warming.

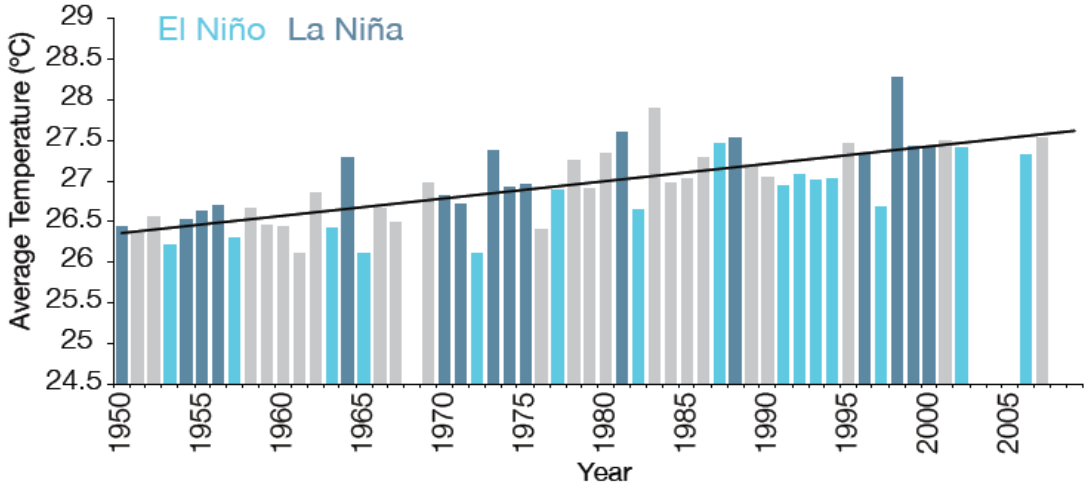


Figure: ENSO data since 1950 to 2010 against the ever increasing temperature.

Pacific Climate Change Science Program

El Nino Southern Oscillation (ENSO)

PNG's climate varies considerably from year to year due to EL Nino- Southern Oscillation. This is a natural climate pattern that occurs across Tropical Pacific Ocean that affects weather around the world. El Nino and La Nina are the two phases in the ENSO. El Nino events are usually drier than the normal then la Nina events are usually wetter. La Nina-associated with prolonged rainfall has led to flooding and landslides whilst El Nino associated droughts have also taken their toll in PNG.

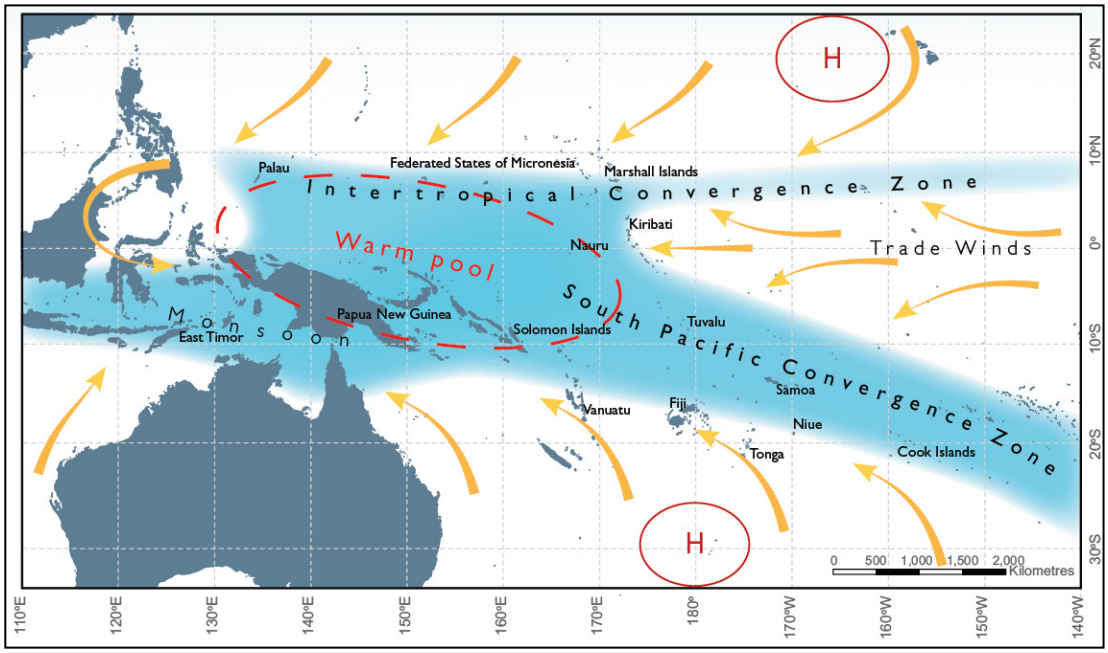


Figure 6: The average position of the major climate features in November to April. The arrows show near surface winds, the blue represents the bands of rainfall convergence zones, the dashed oval shows the West Pacific Warm pool and H represents typical position.

Tropical Cyclones

Tropical cyclones affect southern PNG between November and April. In the 41-year period between 1969 and 2012, 23 tropical cyclones passed within 400 km of Port Moresby, an average of less than one cyclone per season. Over this 1969-2010 period, cyclones occurred more frequent in neutral phases of the El Nino Southern Oscillation

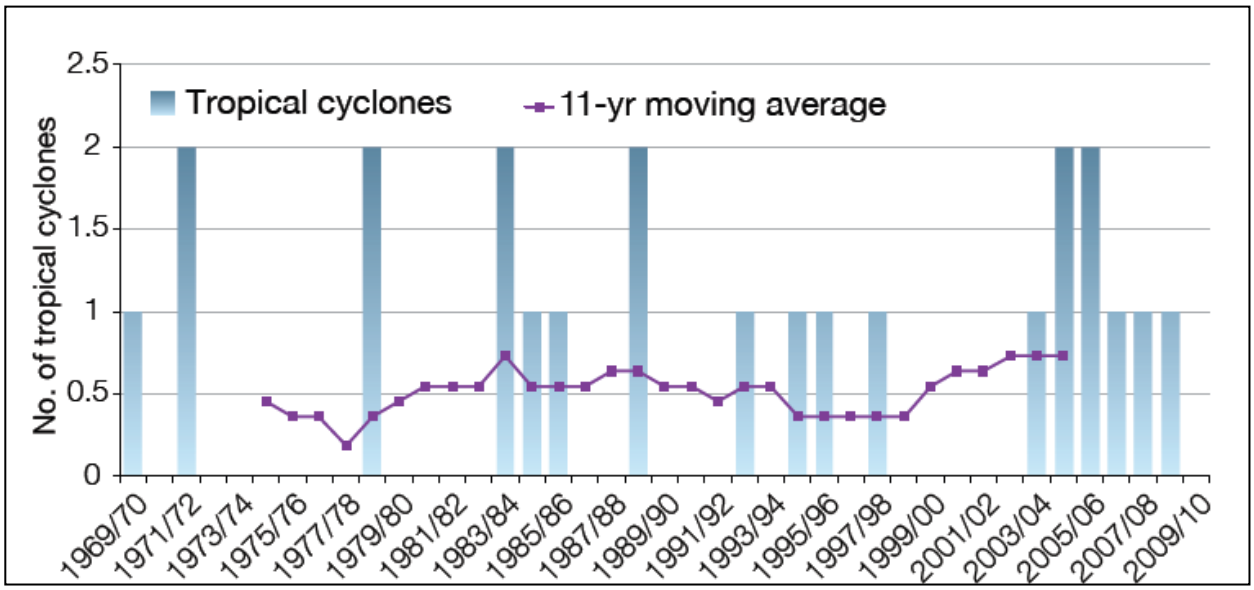


Figure 7: Number of tropical cyclones passing within 400 km of Port Moresby. Eleven year moving in purple.

Sea Level rise

As ocean water warms it expands causing the seal level to rise. The melting of glaciers and ice sheets also contribute to sea level rise. Sea level has risen near PNG by about 7 mm per year since 1993.

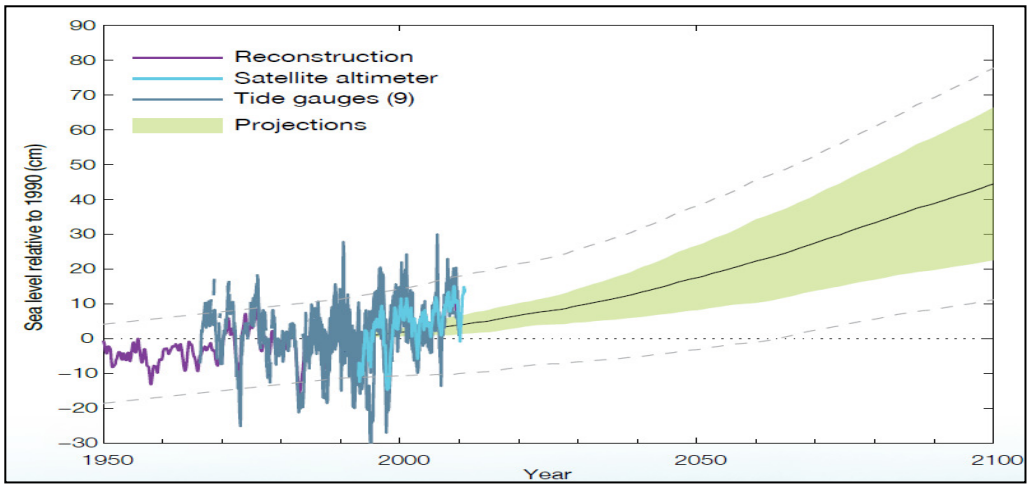


Figure 8: Observed and projected relative sea-level change near Papua New Guinea. The observed sea-level records are indicated in dark blue (relative tide-gauge observations) and light blue (the satellite record since 1993). Reconstructed estimates of sea level Papua New Guinea (since 1950) are shown in purple. The projections for the A1B (medium) emissions scenario (representing 90% of the range of models) is shown by the shaded green region from 1990 to 2100. The dashed lines are an estimate of 90% of the range of natural year to- year variability in sea level.

Summary

Temperatures will continue to warm with more very hot days in future. Rainfall shows no clear trend since 1950 at Port Moresby but decrease in wet season rainfall in the northern area of the country. Rainfall is generally predicted to increase over this century with more extreme rainfall days.

Sea level near PNG has risen and will continue to rise throughout the century. Ocean acidifications have been increasing in Papua New Guinea's waters. It will continue to increase and threaten coral reef ecosystems.

Evidence of Coastal Flooding and Sea Level rise in Papua New Guinea—aeriel picture

Annex 3 - Climate Related Hazards

Papua New Guinea (PNG) is amongst one of the island nations in the world under enormous threat from the impact of global warming and the effects of changing climatic patterns. The 4th Intergovernmental Panel on Climate Change (IPCC) report (2007) has shown scientific predictions of increased surface temperatures, thus accelerating changes in global and regional climatic patterns. In PNG, climate change will likely exacerbate event-driven hazards such as coastal flooding, inland flooding and landslides, and may also introduce new hazards due to gradual shifts in climatic conditions – most prominently, further malaria penetration into the highlands, changed agricultural yields and damaged coral reefs.

- **Coastal flooding and sea level rise will affect coastal regions in Papua New Guinea.** In the last 15 years and through four catastrophic flood events, coastal floods have affected some 8,000 people a year. On an annualized basis, the floods cause USD 10-20m of damage, displace 500 people and killed five. Rising sea levels worsen the effect of coastal floods and necessitated the evacuation of people from the Carteret Atolls and Duke of York Islands, as salinization and flooding are damaging fragile communities and cultures, making these areas uninhabitable.
- **Malaria severely affects our daily life, with 1.7m people infected every year.** About 60% of the population lives in high-risk malaria regions. In the last 20 years, climatic changes have worsened the effects of malaria; with rising temperatures, the parasite has established itself in the highlands where it was not previously present. Additional rises in temperature over the next 20 years will introduce malaria to previously risk-free regions and could worsen the impact of malaria for those living in low-risk zones.
- **Inland flooding, driven by heavy irregular rainfalls, regularly affects valleys and wetlands in both lowlands and highlands.** The effects of inland flooding are amplified by steep inclines and deforestation. Based on 19 years of data, 22,000-26,000 people are affected annually by inland floods, displacing 6,000-8,000 and typically resulting in a few deaths each year. Public records estimate annual damage at USD 8-12m, a burden usually shouldered by the poorest people in the country. Changes in climatic conditions – both through increased average precipitation and increased extreme rainfall events – will strongly affect the impact of inland floods.
- **Sea temperature increase and acidification may over time destroy Papua New Guinea's coral reefs, the fifth largest in the world.** Between 50,000 and 70,000 coastal inhabitants rely on coral reefs for their food, livelihoods and shelter. Not only do the reefs contribute to economic growth through fisheries and tourism, they protect the coastlines from storms and loss of land.
- **Landslides, triggered by increased rainfall intensity and land use changes, destroy vital assets in mountainous areas.** In recent decades, landslides have caused considerable damage to road infrastructure and remote communities. The effect of landslides is not well understood given the unpredictability and remote impact. At the same time, landslides have caused significant damage along the Highlands Highway, the sole lifeline for the highland communities and export businesses. Changes in precipitation patterns and land use are likely to increase the number of landslides.

Variability in agricultural yields will affect many agricultural regions. ***The highland regions are particularly sensitive to variability in agricultural yields as a result of change in climatic conditions. Sweet potato, coffee and cocoa are examples of climate-sensitive crops that Papua New Guineans are dependent on for food and livelihood.***

The following table illustrates the projected change in the annual and seasonal mean climate for Papua New Guinea, under the B1 (low; blue), A1B (medium; green) and A2 (high; purple) emissions scenarios. Projections are given for three 20-year periods centered on 2030 (2020–2039), 2055 (2046–2065) and 2090 (2080–2099), relative to 1990 (1980–1999). Values represent the multi-model mean change ± twice the inter-model standard deviation (representing approximately 95% of the range of model projections), except for sea level where the estimated mean change and the 5–95% range are given (as they are derived directly from Intergovernmental Panel on Climate Change Fourth Assessment Report values). The confidence (Section 1.7.2) associated with the range and distribution of the projections is also given (indicated by the standard deviation and multi-model mean, respectively).

Variable	Season	2030	2055	2090	Confidence
Surface air temperature (°C)	Annual	+0.7 ± 0.4 +0.8 ± 0.4 +0.7 ± 0.3	+1.1 ± 0.5 +1.5 ± 0.5 +1.5 ± 0.4	+1.6 ± 0.6 +2.4 ± 0.8 +2.8 ± 0.6	High
Maximum temperature (°C)	1-in-20-year event	N/A	+1.0 ± 0.9 +1.4 ± 0.9 +1.5 ± 0.7	+1.3 ± 1.0 +2.2 ± 1.3 +2.7 ± 1.5	Low
Minimum temperature (°C)	1-in-20-year event	N/A	+1.4 ± 1.8 +1.7 ± 2.0 +1.6 ± 1.8	+1.8 ± 1.8 +2.4 ± 1.9 +2.6 ± 2.1	Low
Total rainfall (%)*	Annual	+3 ± 13 +3 ± 13 +5 ± 9	+8 ± 13 +7 ± 17 +7 ± 13	+11 ± 13 +15 ± 20 +15 ± 21	Moderate
Wet season rainfall (%)*	November-April	+4 ± 12 +5 ± 11 +6 ± 10	+10 ± 13 +9 ± 17 +8 ± 12	+12 ± 12 +16 ± 18 +15 ± 20	Moderate
Dry season rainfall (%)*	May-October	+1 ± 15 +1 ± 16 +4 ± 12	+7 ± 16 +5 ± 20 +6 ± 17	+10 ± 16 +15 ± 24 +15 ± 26	Moderate
Sea-surface temperature (°C)	Annual	+0.6 ± 0.5 +0.7 ± 0.4 +0.7 ± 0.5	+1.0 ± 0.5 +1.3 ± 0.5 +1.3 ± 0.5	+1.4 ± 0.6 +2.2 ± 0.7 +2.6 ± 0.7	High
Aragonite saturation state (Ωar)	Annual maximum	+3.5 ± 0.1 +3.4 ± 0.1 +3.4 ± 0.1	+3.2 ± 0.1 +3.0 ± 0.1 +3.0 ± 0.1	+3.1 ± 0.1 +2.7 ± 0.2 +2.5 ± 0.1	Moderate
Mean sea level (cm)	Annual	+9 (4–14) +10 (5–14) +10 (4–15)	+18 (10–26) +20 (9–30) +20 (10–29)	+31 (17–46) +39 (20–58) +41 (22–60)	Moderate

*The MIROC3.2(medres) and MIROC3.2(hires) models were eliminated in calculating the rainfall projections, due to their inability to accurately simulate one or more of the South Pacific Convergence Zone, Intertropical Convergence Zone and the West Pacific Monsoon (Volume 1, Section 5.5.1).

Annex 4 - Roles and Responsibilities

Roles and responsibilities of stakeholders directly link to the OCCD structure

STRUCTURE	DESCRIPTION
Minister for Climate Change	Minister responsible for Climate Change matters. To provide political support, high level advocacy leadership in climate change matters.
Climate Change Advisory Board	Made up of international and national experts and eminent persons in the field of climate change and or development. The purpose of this group is to provide expert advice and guidance to NCCC and climate change Minister. Meeting Every 6 Months
Climate Change Ministerial Committee	Ministers Climate Change Minister and NCCC on Climate Change. *Meeting Every quarter or more often as needed*
Office of Climate Change and Development	Coordination and facilitation of climate change policies, plans, programmes, projects, activities, and financing at the national and sub-national level. At the National level, OCCD, and its committee (NCCC) are responsible for formulation, review and monitoring of the policy.
Technical Working Groups	Sector stakeholders from public, private and civil society make up these groups. Technical working groups are formed around these key thematic climate change areas (Low Carbon Growth, REDD+, Measurement, Reporting and Verification (MRV), National Consultation and Adaptation). TWGs provide technical advice and coordination on climate change projects, programs and work plans. TWG's meet once a month or more often as needed.
Development Partner s Forum	Development Partners and Non-Government Organizations To coordinate climate change technical and financial support. Meeting Once a month or more often as needed.
Provincial Climate Change Office	Provincial administration to take lead in discussions with NGOs, CBOs and development partners on provincial priorities in terms of planning for climate change and environment sustainability projects. These prioritized initiatives can also inform the provincial planning process. To establish a permanent contact from the provincial administration, potentially the provincial environment office, can link directly with the OCCD as the provincial focal point in all matters pertaining to both climate change and environment sustainability.
Provincial Climate Change Committee	Plan and coordinate provincial program implementation, monitoring and evaluation. Include representatives from government departments, churches, non-government organizations (NGO's) and private sector. Additional responsibilities like World Environment Day can also be implemented by this committee.
District Administration	Coordinate and facilitate activities at the district level on behalf of Provincial Climate Change Office (PCCO). Build the network with NGO's and CBO's on the ground and identify new potential project sites. Usually made up of LLG leaders, ward councilors and district officers
Local Level Government	Coordinate, facilitate and involve in climate change activities/ projects in their LLG to ensure sustainability of the activity. It will also be monitoring and reviewing key activities and report to the district. Coordinating stakeholder engagement amongst all stakeholders including awareness raising, trainings etc.

Nusa Island Resort in Kavieng, New Ireland is under threat from Sea Level Rise and Coastal Flooding

Annex 5: Provincial Cross-sector implementation priorities

The provincial cross-sector implementation priorities refers to a range of existing programs within the provincial planning structure that could easily be implemented with regards to climate change mitigation and adaptation priorities. The main key service delivery sectors in the provincial government sphere, operating under the legal mechanism of the Organic Law on Provincial and Local Level Government (OLPLLG), are;

- Education
- Health
- HIV and AIDS
- Agriculture
- Fisheries
- Forestry
- Disaster Management
- Environment
- Community Development
- Village Courts
- Land Mediation
- Commerce and Industry
- Lands and Physical Planning
- Non-renewable resources
- Infrastructure

It is now in the best interest of the national government through collaboration between the DPLLGA and the OCCD, to ensure that these sectors are climate resilient, as well as climate sustainable in terms of service delivery in the communities, and the province as a whole.

Education: Promoting a climate change literate society

"In fulfillment of Pillar 5, Directional Statement 11: Integrate Climate Change and Environment Sustainability in Primary, Secondary and High School Curricula"

It is in the best interest of the country through the national government, to see that all Papua New Guineans, both young and old are educated about climate change. However, for the country to achieve its target and objective of becoming carbon neutral and climate resilient by 2030, it has to have an educated population that will be able to ensure that society lives and fare in a climate sustainable and resilient manner.

The most significant and able avenue through which PNG societies can be able to achieve this a few years down the line is through the role of an educated society. At the moment, there isn't much emphasis placed by the Education sector on integrating climate change into the existing school curriculums. However, there is a greater need for this to be included in the near future. Again, much emphasis will have to come from the role of the provincial sectors, in their assessment of how an educated society will be able to contribute to the overall adaptation and mitigation efforts of the province.

The main intention of the government is to have an educated generation who will still be able to bring the aspirations of the Vision 2050 to fulfillment, and in climate change and development this is also the same. Therefore, the provincial education sector will also be relied upon to advice the national government appropriately on relevant education curriculums for the country through an assessment of mitigation and adaptation priorities of the country, and how it will affect the future generation. This much needed collaboration will ensure that the rising population will be able to translate in their own ways, best mitigation and adaptation measures. In conclusion, it will be best advised that the provincial education sector factor this into their planning and policy development.

HEALTH- Promoting a climate resilient society from diseases and natural disaster emergencies

"In fulfillment of Pillar 5, Directional Statement 2: Assist majority Papua New Guineans to become climate resilient to natural disasters, human disasters and environmental changes"

The main intention of the government is to promote a climate resilient society. Being climate resilient as explained earlier, encompasses the preparedness and response nature to climate change related events. The main role of the health sector is to ensure that society has access to medical attention in every way.

This includes delivering basic health care from the national to the sub-national levels, into communities and districts. Climate change alone will greatly affect the global health care systems. It would is in the interest of the government to ensure that the health sector is climate resilient in almost every way.

The current threatening issue now is the shift in malaria parasites, as a result in the in consistent weather patterns, coupled with shifts in regional climates. The priorities for the health sector within Adaptation, has been clearly outlined in the CCDS, and the DSP. However, the provincial health sector is encouraged revisit each provincial climate change consultation report. This individual reports specifically contains direct health priorities that could be aligned with annual planning and budgeting to fulfilling the strengthening of a climate change resilient society from natural diseases and natural disaster emergencies.

HIV AND AIDS: Promoting a conducive and safe environment for climate resilient victims

"In fulfillment of Pillar 5, Directional Statement 2: Assist majority Papua New Guineans to become climate resilient to natural disasters, human disasters and environmental changes"

The priority of this sector can be tied into the priorities of the health sector. The immune system is the most vulnerable and deteriorating element in any HIV/AIDS patient. Amongst the most vulnerable group to climate change impacts are these patients. Changing weather patterns and temperature will have a huge impact on their immune system.

HIV/AIDS patients will find it hard to adjust to these changes as a due to their weak and deteriorating immune system. Their only defense is good medical support and attention. Their adaptation and survival efforts will entirely depend on the efforts of the provincial health sector to upscale on its existing capabilities and capacities, even to the extent of basically improving their services.

AGRICULTURE: Promoting a sustainable and resilient society through food security and sustainable land use for agriculture

- *"In fulfillment of Pillar 5, Directional Statements 1, 2 and 3:*
  Reduce GHG by 90% to 1990 levels (D1)
- *Assist majority Papua New Guineans to become climate resilient to natural disasters, human disasters and environmental changes and (D2)*
- *Establish a Sustainable Development Policy in all sectors. Especially, Forestry,* ***Agriculture,*** *Mining, Energy and Oceans" (D3)*

Changing weather patterns coupled with intense and frequent weather patterns will greatly affect the agricultural sector in terms of agricultural yield and output. Large scale commercial farms to small holders, including subsistence agricultural farmers will be greatly affected by the impact brought about by climate change.

The next and fundamental factor that has to be highly considered during this event is the abatement of GHG emissions from the agriculture sector. This will be regarded as a strong drive from the national level through strong collaboration with relevant sectors in consistent with the need for a sustainable development policy/ and or plan.

The national government through the Office of Climate Change and the Department of Provincial and Local Level government would like to see a strong collaboration amongst the provincial governments in terms of factoring these issues into the agricultural sector's provincial planning. The provincial agricultural sector has to have provincial strategies, programmes and plans in place to address issues brought about by climate change. Also, the most important thing is to have a provincial agricultural plan that is extremely climate compatible by resembling elements of both adaptation and mitigation.

The provincial government should also consider capturing the greatest aspirations of the provinces. This has already been reflected in the provincial climate change reports through intensive interacting participation from all stakeholders concerned.

FISHERIES: Promoting climate resilience through the protection of marine and fishing zones
'In fulfillment of Pillar 5, Directional Statements 3 and 7

- *Establish a Sustainable Development Policy in all sectors especially* Agriculture*, Mining, Energy and* ***Oceans****) (D3)*
- *Establish at least one million hectares of marine protected areas (D7)*

The Provincial Climate Change Implementation Strategy (PCCIS) is aimed at guiding the implementation of potential fisheries programmes and activities at the provincial level. This is in respect to the provincial priorities relating to aspects of both adaptation and mitigation, as captured in the provincial reports. This should be done in strict alignment with the National and Provincial Fisheries key priority programme areas guided by both the Vision 2050 and the MTDP.

This is also captured as a sectoral priority under the guidance of the National Climate Change and Development Policy Framework. Provincial Fisheries Offices are advised to seek guidance from their national priorities with respect to the aspiration of Directional Statements 3 and 7 under Pillar 5. This has to be further guided by the provincial reports that captured key fisheries issues.

FORESTRY: Promoting a climate compatible society through forest conservation and sustainable timber harvesting options
'In fulfillment of Pillar 5, Directional Statements 1, 5 and, 6"

- *Reduce Green House Gas by 90% to 1990 levels (D1)*
- *Conserve biodiversity at the current 5-7% of the world's biodiversity (D5)*
- *Establish a total of 20 national reserves, wilderness areas and national parks (D6)*

The Provincial Climate Change Implementation Strategy (PCCIS) is aimed at guiding the implementation of potential climate compatible forestry and REDD/+ pilot programmes and activities at the provincial level. This is in respect to the provincial priorities relating to aspects of both adaptation and mitigation, as captured in the provincial reports. This should be done in strict alignment with the National and Provincial Forestry key priority programme areas guided by both the Vision 2050 and the MTDP.

This is also captured as a sectoral priority under the guidance of the National Climate Change and Development Policy Framework. Provincial Forestry Offices are advised to seek guidance from their national priorities with respect to the aspiration of Directional Statements 1, 5 and 6 under Pillar 5. This has to be further guided by the provincial reports that captured key forestry issues.

Within this provincial planning and alignment should be the consideration of how the provincial forestry sector can be able to effectively contribute to the government's overarching objective of reducing greenhouse gases through carbon sequestration. This is in regards to sustainable forest management and legitimate logging activities.

It would also look at allowing the provincial governments to support the efforts of conservations at the provincial government in alignment with national priorities and sectoral collaboration with other similar obligated stakeholders.

DISASTER MANAGEMENT: Promoting a Climate Resilient society through disaster risk management and planning
'In fulfillment of Pillar 5, Directional Statements 2, 4, 10

- *Assist the majority of Papua New Guineans to become resilient to natural and human disasters and environmental changes (D2)*
- *Develop mitigation, adaptation and resettlement measures in all impacted provinces by 2015 (D4)*
- *Provide a 100% weather and natural disaster monitoring systems in all provinces (10)*

The Provincial Climate Change Implementation Strategy (PCCIS) is aimed at guiding the Provincial governments in disaster management and responses. Priority key areas and programs of the Provincial Disaster Offices are supposed to capture some of the fundamental recommendations captured in the national climate change consultation provincial reports. These key considerations should be in alignment with the national priorities, as well as the provincial priorities.

The most fundamental thing that the Provincial Climate Change Implementation Strategy intends to achieve is ensure that the provincial disaster response measures and issues are well captured into the provincial planning. This includes alignment with national development priorities captured under the Vision 2050, as well as the three key areas emphasized under the Pillar 5 Directional Statements.

ENVIRONMENT: Promoting a sustainable society through the protection and preservation of the natural environment
'In fulfillment of Pillar 5, Directional Statements 3, while supporting the other eleven (D-1-D2, and D4-D12)'

- *Establish a Sustainable Development Policy in all sectors, especially forestry, agriculture, mining, energy and oceans by 2015 (D3)*

The PCCIS is aimed at supporting the role of the Provincial Environment Sector in delivering tangible out puts in the provinces. This sector will be relied upon to play a very strong coordination role at the provincial level with the other supporting sectors, while aligning all their activities with national priorities.

The Provincial Environment offices should be able to integrate some of the key issues being raised during the national consultation into their respective planning priorities. This would also include the need for alignment with national priorities, which includes the Vision 2050, the MTDP 2011-2015 and the DSP. This includes the need to ensure that Sustainable Development Policies are pursued for development across all the relevant provincial sectors.

The PCCIS also aim to ensure that the Environment sector in the provinces is fully supportive of the other provincial sector initiatives in order to ensure the successful implementation of the other directional statements under the Pillar 5 of the Vision 2050.

COMMUNITY DEVELOPMENT: Encouraging the creation of climate compatible communities
'In support of Pillar 5, Directional Statements 4 and 8"

- *Develop mitigation, adaptation and resettlement measures in all impacted provinces by 2015 (D4)*
- *Conserve and preserve cultural diversity (D8)*

The PCCIS in this sector emphasis support to the other sectoral initiative in ensuring that communities and LLGs are climate compatible. In the midst of planning, the community development sector should be able to support provincial initiatives in alignment with national priorities to see that communities are encouraged to develop and function in a climate compatible manner.

Most fundamentally is the support given to government officials and sectors who will be working on feasibility studies to identify community adaptation and mitigation measures. Even to the extent of assisting communities realizing some of the fundamental dangers behind changing weather patterns and the impact of natural disasters. In response, the Community Development sector should be able to play a very leading and supportive role to the provincial government stakeholders who will be drawing resettlement and contingency plans. In this process, they should also be able to ensure that the other goal of the Pillar 5 as captured is reached.

VILLAGE COURTS: Promoting a climate compatible society that is protected through strong community legal system

'In support of Pillar 5, Directional Statements 1-12"

Despite the fact that changing global climatic patterns affecting PNG won't necessarily impede this certain sector, there is still a relationship in the maintenance of a strong legal system in a climate compatible community. The role of the village courts in a very vulnerable society is as significant also in a society and community that is ready to address climate change issues.

The village courts system must support the initiatives of the other sectors in trying to maintain justice at the ward level. Appropriate alignment should be made in respect to national priorities, and some of the issues brought forward by the people. For instance, there may be issues surrounding the legality of land or conflict over benefit sharing distribution and etc. Such may increase the scale of social issues and problems in the community, and therefore this sector has to be ready enough to address such issues. The PCCIS intends to support any recognition from this sector to acknowledge their role in the overall protection of climate compatible communities.

LAND MEDIATION: Promoting community adaptation and mitigation measures that involves proper land mediation
'In support of Pillar 5, Directional Statements 1-12"

All the climate change related activities and programmes in the provinces will involve land acquisition and usage. Climate change impacts will be both disastrous for the land and can also be an economic opportunity in the renewable energy sector for economic development. This also includes opportunities for CDM projects where REDD/+ also comes into play.

In PNG where most of the land is customarily owned, there will be a significant need for the proper land mediation processes to facilitate the development of land for adaptation and mitigation projects. The PCCIS intends to recognize any acknowledgement from this sector to support climate change measures.

COMMERCE AND INDUSTRY: Promoting sustainable economic ventures in a climate compatible society
'In support of Pillar 5, Directional Statements *1-12"*

Climate Change will be both an opportunity as well as a disadvantage for this sector. Despite the foreseeable destruction and losses encountered in unpredictable extreme events, opportunities brought about by mitigation and adaptation can also compensate such. The PCCIS intends to support the provincial consultation reports which specifically address issues and opportunities captured under this sector.

The sustainability of most of the key activity areas promoted by this sector in the provinces will entirely depend on how climate compatible the province is to the drastic changes in the climatic patterns including potential and unpredictable natural disasters. The PCCIS also intends to seek acknowledge from this sector to fully support all adaptation and mitigation efforts carried out by each provinces.

LAND AND PHYSICAL PLANNING: Promoting Sustainable Land Use in Land Use-Land Use Change and forestry in response to climate change mitigation
'In fulfillment of Pillar 5, Directional Statements 1-12'

The PCCIS intends to support this sector in promoting sustainable land use planning at the provincial level. The provincial reports have actually highlighted fundamental issues surrounding sustainable land management and land use. The provincial governments including the District governments are encouraged align with national priority areas with regards to the aspiration of the Vision 2050.

The role of this sector will mostly be significant in assisting the government to launch its pilot initiatives in the provinces. This sector will be encouraged to align with national priorities, while ensuring that land use planning, management and usage clear supports provincial mitigation and adaptation measures.

NON-RENEWABLE RESOURCES: Promoting the sustainable use of renewable resources and sustainable environment management

'In fulfillment of Pillar 5, Directional Statements 1, 2 and 3'

- *Reduce Green House Gas by 90% to 1990 levels (D1)*
- *Assist the majority of Papua New Guineans to become climate resilient to natural and human disasters and environment changes (D2)*
- *Establish a Sustainable Development Policy in all sectors, especially forestry, agriculture, mining, energy and oceans by 2015' (D3)*

The PCCIS intends to support this sector but encourages more serious in approaching climate change related issues that will affect this sector. The most important things is to ensure that there are plans to also accommodate and address the efforts of reducing GHG emissions during the extraction of natural resources, while at the same time promoting adaptive measures.

The PCCIS intends to ensure that this sector tries to integrate the specific issues captured from the provincial consultation reports and address them through the provincial planning process. Any planning must be consistent with national priorities guided by the aspiration of the Vision 2050, and the national sector plans and legislations.

INFRASTRUCTURE: Promoting planning and building of climate compatible infrastructures for sustainable development

'In support of Pillar 5, Directional Statements 1-12"

The state of the infrastructures in PNG will play a great role in bringing about the desired socio-economic development by the government and its people. However, due to the topographic and geographic factors in PNG, climate change will also greatly affect this sector. The issues of vulnerability and adaptations will be likely flagged across by stakeholders bringing about the desired capital works to improve this sector.

The provincial reports, as province specific have actually outlined key issues of both adaptation and mitigation relating to infrastructure. The sector responsible for ensuring the appropriate implementation of infrastructures should also plan in alignment with the national plans guided by the Vision 2050, and the MTDP 2011-2015. This sector should be supporting of all the aspired objectives of the Pillar 5 Directional Statements under the Vision 2050.

TELECOMMUNICATIONS: Promoting a the use of telecommunications and advanced technology as a tool for survival in a climate compatible environment

''In fulfillment of Pillar 5, Directional Statements 2, 4 and 10"

- *Assist the majority of Papua New Guineans to become resilient to natural and human disasters and environment changes (D2)*
- *Develop mitigation, adaptation and resettlement measures in all impacted provinces by 2015 (D4)*
- *Provide 100% weather and natural disaster monitoring systems in all provinces (D10)*

Climate Change will greatly affect all sectors that the provinces will have to rely on their preparedness, planning and response strategies. In cases of extreme natural disasters, telecommunications will be relied upon for fast response and emergency assistance. The PCCIS intends to support the provincial sector in delivering in the Telecommunications sector, as per the recommendations captured in each of the provincial reports.

The PCCIS also intends to support the initiative of the provincial Telecommunications sector in terms of improving technological capacity, as well ensuring that there is better telecommunications coverage in each province. Telecommunication reliability will also be useful in the event of natural disasters and usage to outsource external assistance from abroad.

The PCCIS also intends to see that this sector assist and support the other sectors including the OCCD in achieving the key directional statements under the Pillar 5, of the Vision 2050. Most important of all is the target to set up weather and natural disaster monitoring systems in all the provinces. The sector is encouraged to work closely with the relevant sectors who will ensure that guiding directional statements relating to telecommunications is achievable at the provincial level.

The Role of NGOs and CBOs in parallel cross-implementation of community specific programmes

Most Non-Government Organizations and Community Based Organizations in each respective provinces have contributed to the overall implementation of climate change related activities and programmes in PNG. Some of the common NGOs and CBOs currently working in PNG but not limited to those given below;

- Binatang Research Centre (BRC)
- Conservation International (CI)
- Eco-Forestry Forum (EFF) alongside its umbrella NGOs
- Foundation for People's Community Development (FPCD)
- Green Peace
- Live and Learn
- The Nature Conservancy (TNC)
- Wildlife Conservation Society (WCS)
- World Wildlife Fund for Nature (WWF)
- LEAF Asia

The role of these existing NGOs and CBOs carrying out climate change related activities in each province and communities is guided by the National Climate Change and Development Policy Framework. This group of stakeholders is an extended aid-arm of the government in terms of specific service delivery implementation at the provincial and community level.

The Provincial Climate Change Implementation Strategy aims to support the continuous working relationship, governed by the provisions of the OLPLLG and the Climate Change Legislation.

The role of PLLSMA and climate change-cross sector reporting

The PLLSMA stands for Provincial Local Level Service Monitoring Authority and is an authority whose functions are given mandate under the OLPLLG under Section 110 (4). Some of the main responsibilities of the PLLSMA include;

- Coordination and monitoring of the implementation of national policies at the provincial and local level
- Establishing minimum development standards and monitor maintenance of those standards in the overall development of the rural and urban communities, amongst its many other functions, as captured under the PCMC guidelines.

The PLLSMA unit under the DPLLGA is mandated with responsibility of ensuring that its functions are fully operational within the sub-national systems, under the legislative framework of the OLPLLG. The PLLSMA through its membership under the National Consultation TWG group of the OCCD, has a responsibility to coordinate the reporting efforts within the provincial sectors through the PCMC on sectoral progress and impediments.

The reporting structure is also embedded into the existing reporting structure of PLLSMA, which includes the following information flow requirements. The OCCD makes its stand clear in regarding reported information as contributing to sectoral initiatives. These initiatives are those captured under the National Climate Change and Development Policy Framework, as contributing efforts towards the government's broader climate change compatible development objective as stipulated under the Vision 2050, Pillar 5 Directional Statements.

Annex 6 - Implementation Framework

	Policies and Strategies	Time Frame			Lead Agency	Implementing Agency
		2014	2015	2016		
Part I: Policy Themes						
Enabling Environment Policies						
1	**Overall Enabling Environment**: PNG national vision for climate change action empowered by equitability, climate issue awareness and understanding, information dissemination and capacity for action.	✓	✓	✓	**OCCD**	**All Relevant Govt. Stakeholders**
2	**Integrated Climate Change Management:** National responses to climate change carried out in coordinated fashion across all relevant government decision making.	✓	✓	✓	**OCCD**	**All Relevant Govt. Stakeholders**
Enabling Environment Strategies						
	Climate Understanding and Capacity Enhancement: Factors to be developed to enable PNG to respond to climate change include education and awareness, media advocacy, capacity building, research and technology transfer.	✓	✓	✓	**OCCD**	**All Relevant Govt. Stakeholders**
	Climate Mainstreaming: Consideration and abatement of climate change contributing factors and risks will be integrated into decision making processes in all relevant sectors and at all levels of government service delivery to support climate compatible development.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
	Grievance Mechanisms: Promote independently-accessible and transparent grievance mechanisms for fair conflict prevention, resolution and redress on climate change-related issues.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
Information Policies						
	Data Gathering, Storing and Reporting: Climate-relevant information, including on forest and land use change, accessed, collected and stored centrally for support of mitigation and adaptation policies and meas-ures.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
Information Strategies						
	National Information Systems: Develop national sys-tems for information gathering, monitoring and evalua-tion, management and reporting, including national GHG registry, GHG inventory and monitoring, reporting and verification (MRV) on forest and land use change surveys.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
	Capacity Building: Develop national capacities to effectively gather and report climate information and manage national information systems.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
	Data Accessibility: Facilitate efficient access to reliable climate change data among government agencies, pri-vate sector, Non-Governmental Organizations, civil society organizations and communities.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
	Methodology and Standards: Ensure climate change data collection methods and standards are consistent with international best practices.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**
	Data Credibility: Ensure climate change data is credible through quality control and assurance.	✓	✓	✓	**OCCD**	**All Relevant Stake-holders**

Adaptation Policies					
Adaptive Measures: Build resilience of people and sectors to the impacts of climate change through the implementation of appropriate adaptation measures, incorporating use of a risk management approach.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Adaptation Strategies					
Risk Management					
Quantifying & Prioritizing Hazards: Identify communities and sectors most at risk to climate change impacts (e.g., coastal and inland flooding, landslides, marine ecosystem health, agricultural yield change, vector-borne diseases) by conducting national and subnational vulnerability assessments of human, environmental and socio-economic systems (e.g., Kimbe Bay Method). Develop baseline indicators for relevant criteria.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Identifying & Selecting Interventions: In conjunction with relevant sectoral stakeholders, analyze potential losses and benefits and examine feasibility of available adaptation measures (e.g., coastal early warning system, community-based mangrove planting, coastal engineering protection, human settlements and migration) including identifying barriers and necessary actions.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Monitoring & Evaluation: Review and measurement of intervention outcomes relative to baseline information. Based on evaluation results, identify lessons learned and apply to successive interventions.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Adaptive Governance					
Sectoral Coordination: Promote coordination, integration and facilitation among sectors such as but not restricted to agriculture, fisheries, forestry, water resources, transport, climate-induced migration, human settlement and infrastructure to ensure a holistic approach to climate change adaptation including eco-system friendly measures.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Institutional Strengthening: Support the strengthening and maintenance of key institutions that have an important role in providing scientific data including climate modeling and forecasting to formulate and implement adaptation measures.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Data Management: Establish an integrated system to manage and store important data for adaptation including information on vulnerability assessment, potential losses and damages, traditional knowledge and appropriate technologies to evaluate, report and enhance implementation of strategies and subsequent measures.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**

Mitigation Policies					
Low Carbon Neutrality by 2050: PNG is climate compatible by 2050.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Land Use and Forest Sector Emissions Abatement: GHG emissions mitigated in the land use, land-use change and forestry (LULUCF) sector.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Green Economic Growth: Development is climate-compatible via efficient, low GHG emissions infrastructure and technology.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Mitigation Strategies					
LULUCF Relevant Programs, Projects and Reforms: Support LULUCF emissions reductions by incentivizing initiatives that reduce and sequester GHG emissions, and by disincentivizing GHG-emitting activities, emphasizing co-benefits from sustainable development, ecosystem conservation, biodiversity protection, community engagement, equitable distribution of carbon rights and benefits, and 'no regrets' dual mitigation-adaptation activities.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Low-Carbon Economic Development: Promote low-carbon growth and investment while increasing environmental quality and social welfare by incentivizing investments in low carbon infrastructure and technology development, renewable energies, energy efficiency, transport, waste management, manufacturing and construction, and industrial processing sectors.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
SABL Reforms: Promote the reform process for SABLs so that they become climate compatible, including assessing former SABLs on their potential for payment for ecosystem services (e.g., REDD+ initiatives).	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Sustainable Land Use Planning: Promote establishment nation-wide sustainable land use planning, starting from community-Ward-LLG level, to District-Provincial and National levels, whilst ensuring collaboration of all relevant Government Departments in considering climate change resilience and maximizing payment for ecosystem services under REDD+ management as national land use priorities.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Finance Policies					
New and Additional Climate Financing: Current funding from government sources maintained, and new and additional funding drawing on a broad range of finance sources including domestic and international, and public and private sources, incorporating the polluter pays principle, for long-term sustainable financing of climate measures.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Finance Strategies					
Funding Mechanism(s): Create transparent, independent mechanism(s) meeting international fiduciary standards through the consolidation of multiple sources into a fund, including appropriate use of financial incentives and disincentives, to support climate change measures (e.g., PES, REDD+, adaptation and community initiatives).	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**

Partnership Policies					
Equitable, Effective Participation: Networking, coordination, and equitable engagement with and between multiple stakeholders through active participation, consultation and engagement at national and subnational levels in all climate change programs, incentives and activities.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Partnership Strategies					
Community Partnerships					**All Relevant Stakeholders**
Promote recognition and respect of community rights, support for improved community climate change outcomes, and information sharing and collaborative partnerships for community climate risk management.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Sub-National Partnerships					
Empower Provincial, District, Local Level Governments and Wards through partnerships with the Department of Provincial and Local level Government Affairs (DPLLGA) through the Provincial and Local Level Services Monitoring Authority (PLLSMA).	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Promote sub-national governments' communication of the National Climate Compatible Development Management Policy and willingness to participate in climate-related programs and projects, and to detect and document any concerns.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Gender-Balanced Decision-Making					
Ensure gender balance in all community, national and sub-national decision-making processes.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Development Partner Engagement					
Strengthen coordination with development partners in assisting achievement of national climate compatible development goals.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Government Collaboration					
'Whole of government' approach promoted in collaboration with all government levels and relevant sectors.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Civil Society and Private Sector Partnerships					
Encourage collaboration between government, civil society and private sector through innovative approaches (e.g., MoUs and public-private partnerships).	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Part II: Implementation					
Institutions					
National Climate Fund: Legislation should seek to establish a national climate fund, which will be responsible for managing pooled funds from CDM, REDD+, grants and other climate finance schemes under an independent trusteeship.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Climate Change Institutional Authority: Administrative responsibilities for climate change portfolio vested in the Ministry responsible for climate change.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**

	Thematic Policies and Plans: Thematic policies and plans will be developed to give further more detailed guidance on design, implementation, monitoring and review of individual climate change areas (e.g., adaptation, mitigation, REDD+ and CDM, finance, MRV).	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Roles and Responsibilities						
	National Roles: National Institutions will be responsible for implementing climate change activities in coordination with the Ministry responsible for climate change and existing and/or new coordination mechanisms**.**	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
	Sub-National Roles: The roles of Sub-National actors will be strengthened to address capacity and knowledge gaps via education, advocacy, awareness and consultation programs.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
	Public Private Partnerships: Active private sector participation will be driven through the Public Private Partnership arrangement.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Part III: Monitoring and Evaluation						
Monitoring and Progress Review						
	Government Monitoring: Government officials at national, provincial and district levels will operate appropriate monitoring systems to act as policy feedback loops.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
	Implementation Progress Review: An independent review process will be carried out annually to ensure ongoing progress. Through the review process, risk and challenges will be identified as well as appropriate measures to mitigate risks involved in achieving the Policy Objectives. To ensure implementation towards Policy Outcomes is time bound and measurable, performance will be graded with appropriate actions for different levels of achievements.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**
Policy Evaluation						
	Policy Monitoring Policy Outcomes Reviews: The National Climate Compatible Development Management Policy will be reviewed every 3 years by the OCCD in collaboration with implementing partners and lead agencies. An independent peer review team to evaluate the outcome of the policy and to incorporate new developments will be used if deemed necessary. Annual reviews however will be done by the OCCD through government's standing annual reporting process.	✓	✓	✓	**OCCD**	**All Relevant Stakeholders**

Annex 7 - Glossary

Abatement	Refers to reducing the degree or intensity of greenhouse-gas emissions.
Adaptation	Adjustment in natural or human systems in response to actual or expected climatic variability or their effects, which moderates harm or exploits beneficial opportunities.
Afforestation	Planting of new forests on lands that historically have not contained forests.
Annex I countries/Parties	Group of countries included in Annex I (as amended in 1998) to the United Nations Framework Convention on Climate Change, including all the developed countries in the Organisation for Economic Cooperation and Development, and economies in transition. By default, the other countries are referred to as non-Annex I countries.
Carbon market	A popular but misleading term for a trading system through which countries may buy or sell units of greenhouse-gas emissions in an effort to meet their national limits on emissions, either under the Kyoto Protocol or under other agreements, such as that among member states of the European Union. The term comes from the fact that carbon dioxide is the predominant greenhouse gas and other gases are measured in units called "carbon-dioxide equivalents."
Carbon sequestration	The process of removing carbon from the atmosphere and depositing it in a pool.
Climate change	A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.
Conference of the Parties (COP)	The supreme body of the Convention. It currently meets once a year to review the Convention's progress. The word "conference" is not used here in the sense of "meeting" but rather of "association," which explains the seemingly redundant expression "fourth session of the Conference of the Parties."
Deforestation	Conversion of forest to non-forest.
Designated National Authority (DNA)	An office, ministry, or other official entity appointed by a Party to the Kyoto Protocol to review and give national approval to projects proposed under the Clean Development Mechanism.
Emissions	In the climate change context, emissions refer to the release of greenhouse gases and/or their precursors and aerosols into the atmosphere over a specified area and period of time
Forest degradation	Occurs when the structure or function of a forest is negatively affected, reducing the ability of the forest to provide services or products.
Greenhouse effect	Greenhouse gases effectively absorb infrared radiation, emitted by the Earth's surface, by the atmosphere itself due to the same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downward to the Earth's surface. Thus greenhouse gases trap heat within the surface-troposphere system. This is called the "natural greenhouse effect."
Greenhouse gases (GHGs)	The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N20). Less prevalent --but very powerful -- greenhouse gases are hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and sulphur hexafluoride (SF6).
Intergovernmental Panel on Climate Change (IPCC)	Established in 1988 by the World Meteorological Organization and the UN Environment Programme, the IPCC surveys world-wide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the Convention's subsidiary bodies. The IPCC is independent of the Convention.

Kyoto Protocol	An international agreement standing on its own, and requiring separate ratification by governments, but linked to the UNFCCC. The Kyoto Protocol, among other things, sets binding targets for the reduction of greenhouse-gas emissions by industrialized countries.
Land use, land-use change, and forestry (LULUCF)	A greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change and forestry activities.
Leakage	That portion of cuts in greenhouse-gas emissions by developed countries -- countries trying to meet mandatory limits under the Kyoto Protocol -- that may reappear in other countries not bound by such limits. For example, multinational corporations may shift factories from developed countries to developing countries to escape restrictions on emissions.
Mitigation	In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere.
Payment for Environmental Services (PES)	Payment for environmental services (PES) is a market-based approach to conservation based on the twin principles that those who benefit from environmental services (such as users of clean water) should pay for them, and those who generate these services should be compensated for providing them. In a PES mechanism, service providers receive payments conditional on their providing the desired environmental services (or adopting a practice thought to generate those services). Participation is voluntary.
Reducing Emissions from Deforestation and Forest Degradation (REDD)	REDD is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. “REDD+” goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
Reforestation	Replanting of forests on lands that have previously contained forests but that have been converted to some other use.
Renewable energy	This form of energy can be used to provide electricity, heating or fuel for transportation similar to the way we use fossil fuels for these purposes. Unlike oil, gas and coal, renewable energy sources are not finite. Key sources include wood, waste decomposition, geothermal activity, wind and solar energy. The use of renewable sources for generating energy usually involves lower emissions of greenhouse gases than the use of fossil fuels does.
Salinization	The accumulation of salts in soils.
Saltwater intrusion/ encroachment	Displacement of fresh surface water or groundwater by the advance of saltwater due to its greater density, usually in coastal and estuarine areas.
Sink	Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. Forests and other vegetation are considered sinks because they remove carbon dioxide through photosynthesis.
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
United Nations Framework Convention on Climate Change (UNFCCC)	The Convention was adopted on 9 May 1992 in New York and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Community. Its ultimate objective is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” It contains commitments for all Parties. Under the Convention, Parties included in Annex I aim to return greenhouse gas emissions not controlled by the Montreal Protocol to 1990 levels by the year 2000. The Convention entered into force in March 1994.

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