ADAPTATION FUND

AFB/PPRC.5/12
June 6, 2011

Adaptation Fund Board
Project and Programme Review Committee
Fifth Meeting
Bonn, June 20, 2011

PROPOSAL FOR PAPUA NEW GUINEA

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   5. Implementation Arrangements.

5. Based on the Adaptation Fund Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Adaptation Fund was sent out on April 8, 2010.

6. According to the Adaptation Fund Board Decision B.12/10, a project or programme proposal needs to be received by the secretariat not less than nine weeks before a Board meeting, in order to be considered by the Board in that meeting.

7. The following project document titled "Enhancing adaptive capacity of communities to climate change-related floods in the North Coast and Islands Region of Papua New Guinea" was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. This is the second submission of this proposal. It was first submitted as a project concept, using the two-step proposal process, for the 12th Adaptation Fund Board meeting, and the concept was not endorsed by the Board. It was

received by the secretariat in time to be considered in the 14th Adaptation Fund Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number PNG/MIE/DRR/2010/5, and filled in a review sheet.

8. In accordance with a request to the secretariat made by the Adaptation Fund Board in its 10th meeting, the secretariat shared this review sheet with the World Bank, and offered it the opportunity of providing responses before the review sheet was sent to the Project and Programme Committee of the Adaptation Fund.

9. The secretariat is submitting to the Project and Programme Review Committee the summary of the project, prepared by the secretariat, in Annex 1. The secretariat is also submitting to the Committee the technical review sheet and the responses provided by the World Bank, in an addendum to this document.

II. Project Summary

Papua New Guinea – Enhancing Adaptive Capacity of Communities to Climate Change-Related Floods in the North Coast and Islands Region of Papua New Guinea
Implementing Entity: UNDP

Project/Programme Execution Cost: USD 418,000
Project/Programme Total Cost: USD 4,818,000
Implementing Fee: USD 409,530
Finance Requested: USD 5,227,530

Project/Programme Background and Context:

The proposed programme is planned to be implemented in two regions within Papua New Guinea. The North Coast area comprises 6 provinces with a population of around 1.8 million people. The Islands Region comprises 5 provinces with a population of around 750,000 inhabitants. Coastal flooding is the most important climate change related hazard in this region not only threatening the people in the coastal communities but also important economic centers, as most provincial capitals and economic centers are situated along the coast, particularly provincial capitals. Similarly, in the hinterland areas, climate change related inland flooding is the most pressing hazard with the largest potential for wide-spread damage. The lack of water impoundments and/or water reticulation schemes serves to increase the vulnerability of the largely agrarian communities.

The overall objective is to strengthen the ability of communities in Papua New Guinea to make informed decisions about and adapt to climate change-driven hazards affecting both coastal and riverine communities. In particular, the programme will focus on resilience towards occurrences of coastal and inland flooding events.

The proposed programme is said to "contribute to all outcomes listed within the 2 objectives of the Adaptation Fund Strategic Results Framework (AFB/EFC.2/3 from 31 August 2010)". The proposal states the programme would correspond particularly to the following higher order fund level outputs:

Output 1.1. Risk and vulnerability assessments conducted and updated at national level
Output 1.2 Targeted population groups covered by adequate risk reduction systems
Output 1.3 Targeted population groups participating in adaptation and risk reduction awareness activities
Output 2.2 Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability

Component 1: Adaptation to coastal flooding-related risks and hazards for North Coast and Islands Region communities (USD 2,000,000)
The combination of the outputs under this component will enhance the targeted coastal communities' capacity to adapt to the risks and hazards posed by climate-related coastal flooding. This will be achieved by increasing local capacity for adaptation by implementing a comprehensive coastal warning system, which, in combination with the establishment of a disaster preparedness and response plan will reduce the targeted communities' exposure to coastal flooding events.

Component 2: Adaptation to inland flooding-related risks and hazards for river communities in Morobe, East Sepik and West Sepik (USD 1,700,000)

Analog to the combination of outputs under the first component, the increased climate resilience of the targeted inland communities will be achieved by implementing a comprehensive early warning system that supports an established disaster preparedness and response framework while the impact of occurring floods will be further reduced by riverbank protection measures.

Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks (USD 350,000)
The activities under this outcome focus on the development of the relevant institutions' capacity to integrate aspects of climate change-related risks and respective adaptation strategies into policy making. A two-pronged approach is pursued under the proposed programme:

(i) Integration of climate change risk and resilience into development policies that encompass legal and planning frameworks.
(ii) Further capacity building through the systematic training of policy makers at the national, provincial and district level, which goes hand-in-hand with the above development and implementation of climate-resilient policies.

Component 4: Awareness raising and knowledge management (USD 350,000)
Under this component, a systematic and multi-facetted awareness raising strategy is proposed, to ensure the long-term sustainability and broad outreach of the programme outcomes, as well as the development of local capacity to replicate the measures and policies put in place under the programme

ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND PROJECT ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROGRAMME INFORMATION

PROGRAMME CATEGORY:	Regular
COUNTRY/IES:	Papua New Guinea
TITLE OF PROGRAMME:	Enhancing adaptive capacity of communities to climate change-related floods in the North Coast and Islands Region of Papua New Guinea (PIMS 4452)
CLIMATE CHANGE ADAPTATION	
TYPE OF IMPLEMENTING ENTITY:	Multilateral Implementing Agency
IMPLEMENTING ENTITY:	United Nations Development Programme
EXECUTING ENTITY/IES:	Office of Climate Change and Development

AMOUNT OF FINANCING Requested: 5,227,530 (in U.S Dollars Equivalent)

PROGRAMME BACKGROUND AND CONTEXT[1]:

Context:

Papua New Guinea (PNG) is a country of exceptional ethnic and biological diversity. The population of approximately 6.3 million people speaks more than 840 distinct languages. The country harbors hundreds of endemic species over its 462,840 sq km mass. The indigenous population of PNG is one of the most heterogeneous in the world; several thousand separate communities and tribal groups live spread out over the country. 80% of this population lives a traditional rural subsistence lifestyle that is supported by the biological richness and diversity of the forests, inland waters and coastal seas. 85% of the country's labour force is absorbed by the agricultural sector. Major agricultural produce include coffee, cocoa, copra, palm kernels, tea, sugar, rubber, sweet potatoes, fruit, vegetables, vanilla, shell fish, poultry, and pork. In terms of the importance of different sectors to GDP, the agricultural sector accounts for 32.6% of GDP, with industries and the service sector accounting for 36.8% and 30.6%, respectively. Mineral deposits, including copper, gold, and oil, account for nearly two-thirds of export earnings.

The North Coast area comprises 6 provinces (Morobe, Madang, East Sepik, Sandaun, Milne Bay and Northern Province) with a population of around 1.8 million people. The Islands Region comprises 5 provinces (East New Britain, Manus, New Ireland, Bougainville, West New Britain) with a population of around 750,000 inhabitants.

Coastal flooding is the most important climate change related hazard in this region not only threatening the people in the coastal communities but also important economic centers, as most provincial capitals and economic centers are situated along the coast

[1] A list of abbreviations used throughout this proposal is attached in Annex II

particularly provincial capitals East Sepik (Wewak), Madang (Madang), Morobe (Lae), West New Britain (Kimbe).

Similarly, in the hinterland areas, climate cahnge related inland flooding is the most pressing hazard with the largest potential for wide-spread damage. The lack of water impoundments and/or water reticulation schemes serves to increase the vulnerability of the largely agrarian communities.

Figure1: Map of Papua New Guinea

Climate change vulnerabilities, impacts and risks:

In recognising these emerging climate change related impacts and growing concern on the threats to the country, its people and the economy, the Government of Papua New Guinea has developed and adopted a Climate-Compatible Development Strategy (CCDS) and an Interim Action Plan, in response to the Copenhagen Accord. This strategic document sets out the challenges and strategies that promotes an inclusive economy-wide approach to building climate resilience with a common goal of protecting communities, property and economic infrastructure. The strategy and action plan focuses on six of the most serious climate-induced hazards, which are illustrated in the following and include coastal flooding and sea level rise, inland flooding driven by irregular rainfalls, landslides triggered by increased rainfall intensity,

the spread of Malaria amidst raising temperature as well as the variability in agriculture yields and sea temperature with adverse affect on coral reef systems.

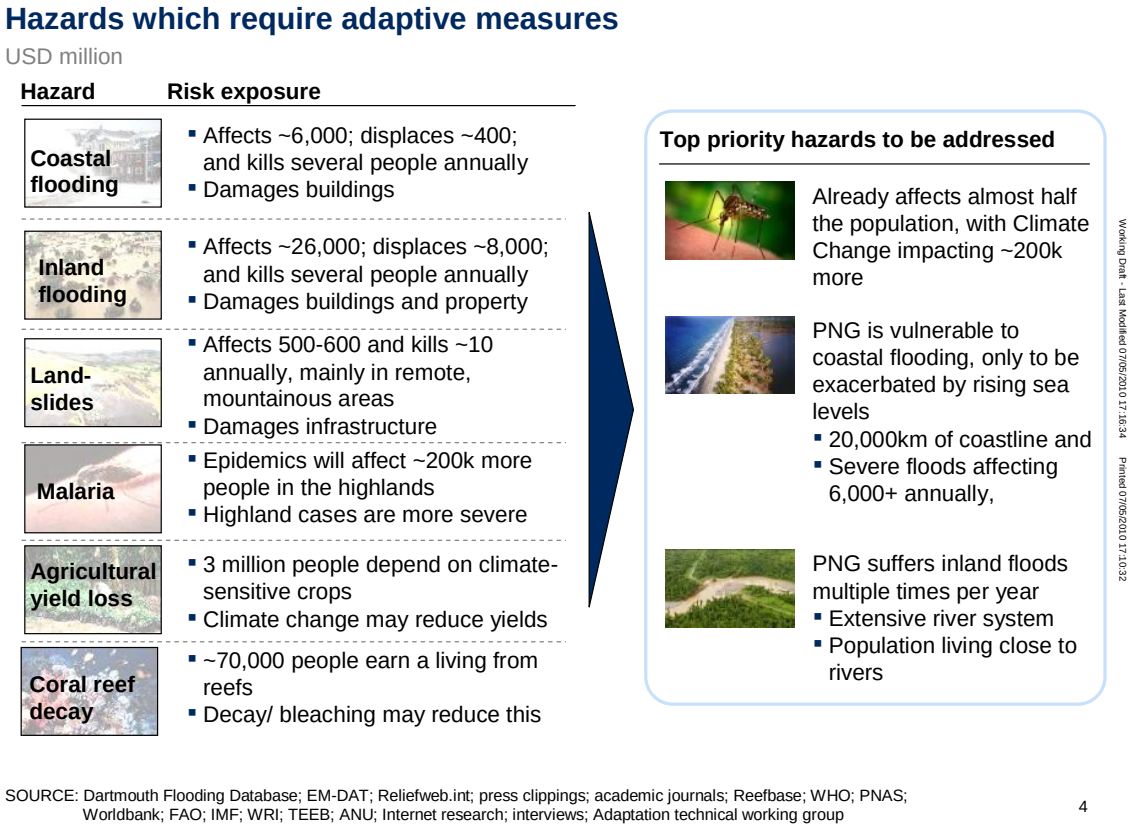

Figure 2: Hazards requiring adaptive measure

Based on these climate risks, the CCDS outlines that impacts will be most profoundly felt in regions along the northern coastline, where coastal villages and rural coastal population will be especially vulnerable to coastal flooding and sea level rise. Within coastal areas, flooding exacerbates problems caused by the loss of wetlands, seawater intrusion into freshwater sources, and loss of land, all of which have and are likely to further displace communities and induce knock-on social, economic and environmental problems. Inland flooding, driven by heavy irregular rainfalls, regularly affects valleys and wetlands in both lowlands and highlands. 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. Coastal as well as inland flooding has also had negative impacts on the health of the affected population through contaminated drinking water, inadequate disaster response and insanitary situations over prolonged time.

Coastal and islands areas including many coral atolls in PNG are low-lying, and nearly 500,000 people in 2,000 coastal villages are vulnerable to climate-induced flooding risks.[2] Communities in the islands and coastal areas have been increasingly affected by coastal erosion, king tides, cyclones and storm surges, which in turn leads to degradation of coral reefs and marine

[2] Reducing the Risk of Disasters and Climate Variability in the Pacific Islands, Papua New Guinea Country Assessment. (2010). Op cit. p. 7.

ecosystems and further diminishes fish resources. Salinization of freshwater resources is affecting crop production, and communities are being pushed further inland due to receding coastlines. As such, inland flooding in the coastal provinces is the most pressing hazard with the largest potential for wide-spread damage. The lack of water impoundments and/or water reticulation schemes serve to increase the vulnerability of the largely agrarian communities.

In addition to flooding, PNG is also expected to experience increased frequency of drought as announced by the National Agricultural Research Institute. The 1997/98 drought demonstrated the high vulnerability of agricultural crops (both for food and cash), water resources and environmental health problems.[3] In 1997 a national state of disaster was declared as a result of drought that also caused increased incidents of bushfire and frost hazards.[4] Between 1997 and 2002 almost 3.2 million people have suffered from drought and frost events, at an estimated cost of K85 million.[5] It is estimated that around 3 million people in the country depend on climate-sensitive crops, and that a yield loss of 10% on sensitive crops could cause a loss of USD 100 – 150m of value.[6]

In PNG, food security for more than one million people in vulnerable parts of the highlands and lowlands is considered to be seriously at risk, due recurrent and strengthening intensity El Niño and La Niña events. Currently, nineteen of the 89 districts have existing and emerging food insecurity based on energy intake per capita. During the 1997 El Niño drought, some 200,000 people were considered to be in a life-threatening situation with little or no food other than that hunted and collected from the bush. Another 980,000 people were estimated to have had inadequate amounts of food available from gardens, sago palm, coconuts or freshwater fisheries.

Many of the places where people affected by the abovementioned hazards live have poor access to services and markets. They are commonly located away from roads, along provincial borders, inland between the highlands and the lowlands, or inland on the larger islands and on most of the small islands. Even in normal times living conditions in these places are poor and government services minimal. Cash incomes are very low and child malnutrition rates are well above the PNG average.[7]

In short, the vulnerability of coastal communities in particular, to anticipated climate-induced hazards including floods and drought is expected to increase. As climate change unfolds, impacts on the population are likely to intensify and development will be hindered, if not reversed. The adverse impacts will compromise the country's ability to meet and sustain the Millennium Development Goals (MDG), the pursuit of which will be hampered by the loss of community livelihoods, property and economic infrastructure from a range of climate-related factors.

[3] Initial National Communication, Papua New-Guinea (2000).
[4] Office of Climate Change and Environmental Sustainability and World Bank. (2009). Climate Change in Papua New Guinea: A National Stocktake.
[5] PNG Development Strategic Plan (2010-2030).
[6] Climate-compatible Development for PNG (2010).
[7] ACNARS, 2006

PNG has recently started addressing climate change risks in national development frameworks, highlighting vulnerabilities of coastal regions in particular, but there is a need to systematically address such vulnerabilities in provincial and local level development programmes, and build institutional capacity accordingly.

Pressures due to unsustainable use of natural resources, further increasing vulnerability:

- Inappropriate land use practices, due to intensified farming systems accelerate land degradation (e.g. soil erosion, siltation, and loss of soil fertility). In PNG 97% of land is customary landowners control and 3% is government-owned land. The former ownership arrangements are often extended to coastal and marine resources. However for any resources development, the GoPNG's Physical Planning Act legislation (1989) provides for land-use management of all land through national and provincial land boards. Despite this there is little influence exercised on customary land use, with only 2% (most of which is government-leased land sub-leased for development or mining purposes) subject to the planning rules contained within the Physical Planning Act legislation.[8] Risk management and sustainable land management has not been incorporated into sectoral land-use planning and other technical measures.
- Unsustainable logging practices result in adverse environmental impacts (e.g. soil erosion, hydrology and water quality impacts, and loss of habitat and biodiversity). In the forestry sector poorly managed commercial logging contributes to major cause of deforestation, as is subsistence agriculture, with lesser causes being fires, plantations and mining. There is awareness of degradation issues, but analysis has been limited, and programmes to address these issues are significantly under-funded.[9]
- Destructive fishing practices and harvesting of corals for cultural purposes destroy natural barriers (reef) and result in exposing coastal areas including assets and people to coastal erosion. Increased destruction of natural coastal barriers such as mangroves and coastal pollution due to run-off from land-based activities as well as oil spills cause impacts on coastal and marine resources.
- Environmental impacts of large-scale mining operations (e.g. discharge of heavy metals, cyanide, and acids into rivers) cause adverse impacts on forests and water quality. Through increased sedimentation this also has an impact on river flow and potentially exacerbates floods.
- Increase in population and the need for income to meet basic necessities have led to unsustainable fishing practices that contributed pressures on coastal and inshore marine resources. There are already growing concerns on overfishing of certain species. Associated with this pressure is the demand for access and use of mangrove forests for building materials, smoking of fisheries resources for storages purposes as well as process requirements such as beche der mer. The clearance of mangrove forest has also affected the breeding grounds of some fish species and thus threatens food and income security. Furthermore, the unsustainable fisheries practices such as use of dynamite and harvesting of corals destroys reef systems which serves as natural wave

[8]Reducing the Risk of Disasters and Climate Variability in the Pacific Islands, Papua New Guinea Country Assessment. (2010). Op cit. p. 7.

[9] Office of Climate Change and Environmental Sustainability and World Bank. (2009). Climate Change in Papua New Guinea: A National Stocktake, June 2009.

barriers. The loss of reefs and mangrove forests expose the coastal communities to coastal erosion from sea level rise and increased impact from flooding events, which consequently affect peoples' livelihoods and can displace communities who search for better places to settle.

The Preferred Solution:

The preferred solution is to support the Government of Papua New Guinea to lead the planning and coordination to facilitate adaptation at all administrative levels to manage climate change risks with a particular focus on increasing vulnerable communities' resilience to climate change. Papua New Guinea at all societal levels requires support to effect a paradigm shift in development processes in order to transform reactive and ad hoc responses into anticipatory and planned interventions to manage the uncertainties of climate change. Resources are required to support the country to put in place pro-active systems and measures that can provide real benefits to vulnerable communities and development-critical sectors with respect to adapting to climate change.

These resources are critical for the GoPNG to achieve its aspirations laid out in the overarching development frameworks: PNG Vision 2050, Development Strategic Plan (2030), Medium Term Development Plan (2011-2015) and the Climate Change Compatible Development Strategy (CCDS) and the Interim Action Plan. In March 2010 the Cabinet created the necessary organizational and governance structure to implement PNG's CCDS. This included the establishment of the Office of Climate Change and Development as well as the National Climate Change Committee, who take full and exclusive responsibility of climate change and environmental sustainability.

Since September 2010 OCCD has been fully staffed. In addition PNG's National Climate Change Committee meets on a monthly basis to guide the country's climate change work. The NCCC includes departmental heads of all government departments and authorities most concerned with climate change issues including but not limited to Forestry, Agriculture, Environment and Conservation Finance, National Planning and Monitoring.

At a working level, the country has created multi-stakeholder Technical Working Groups (TWG) and sub-working groups. These TWGs include stakeholders from different backgrounds (government departments, non-governmental organization, developing partners and academics) and focus on specific areas such as adaptation and REDD+. Sub-working groups are convened to focus on more detailed solutions such as the implementation of a coastal early warning system and community based mangrove planting projects.

These Technical Working Groups have already undertaken significant efforts to identify, analyse, prioritize and develop appropriate adaptation solution such as a Coastal Early Warning System and community based mangrove planting projects. For these efforts to be successful, it is instrumental to support and build capacity for the Office of Climate Change and Development (OCCD). At the same time, it is essential that this support is extended to line agencies and departments including the National Disaster Center (NDC), Department of Environment and Conservation (DEC), Department of Agriculture and Livestock (DAL) and other research and academic institutions in order to effectively coordinate and implement climate and disaster risk reduction measures. A strengthened institutional framework will enable the development and implementation of measures for disaster preparedness and the responses necessary for managing the increased incidence and intensity of climate change-related hazards at the

national, sub-national and community level. Further, the strengthened capacity of key government agencies and communities will be key to facilitate the mainstreaming of climate change considerations in sustainable water management, agriculture and land-use practices.

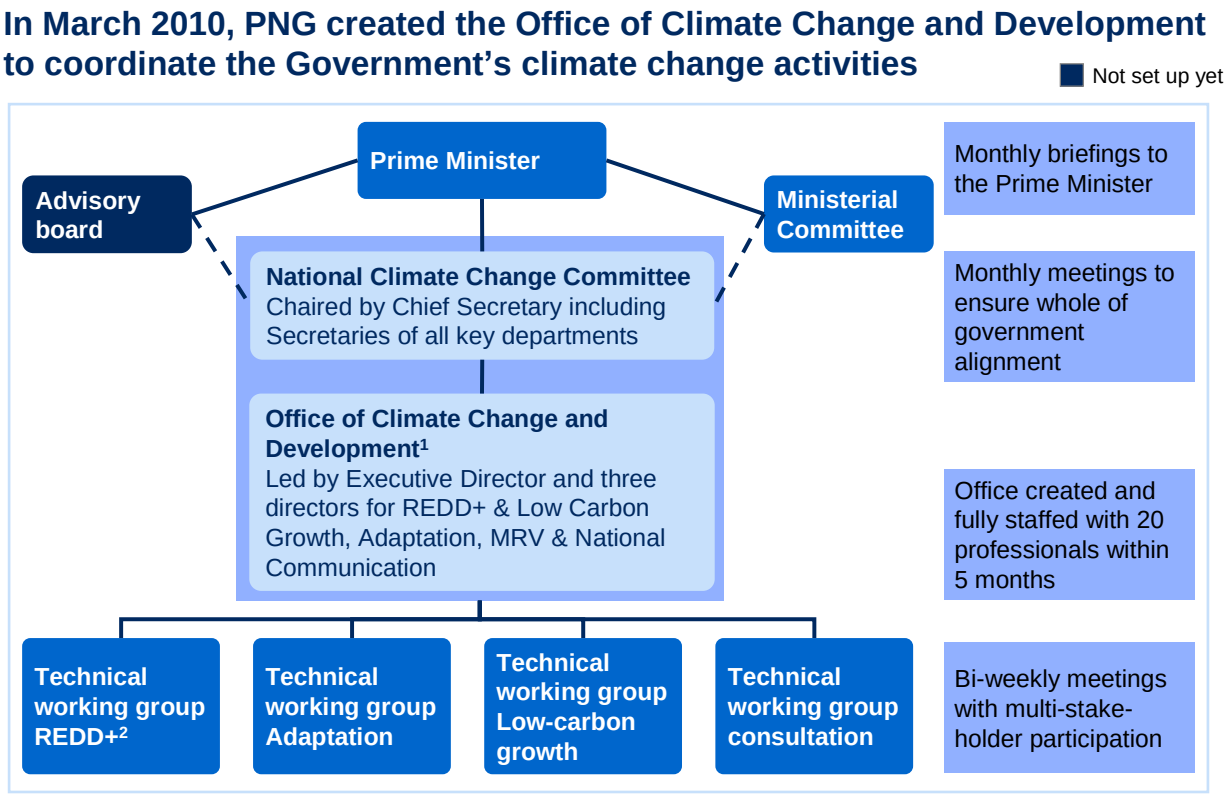

Figure 3: OCCD Organigramme

Barriers to integrate climate-resilience into development of coastal development:

There are a number of legal and policy, institutional, capacity, coordination, and financial barriers hindering the Government's ability to put in place an effective and systematic mechanism to support the vulnerable population to adapt to the uncertainties of climate change.

Technical resource and human capacity constraints

There is a constraint from insufficient technical resources and human capacity to apply pertinent information on climate change (including projections of likely impacts) and make informed decisions about livelihood development and protection options for affected communities. The Papua New Guinea Weather Service (PNGNWS) is mandated to collect and archive data on weather. It is also mandated to prepare information on projected climate change and variability

as well as sea level rise based on research.[10] It operates with very real constraints including reliance on 14 meteorological observation stations across a highly diverse country, with little or no significant presence in most of the provinces. In the whole country there are only 2 tidal monitoring stations.

Currently there are no water-level or rain gauges at communities living by rivers, which severely limits the local capacity to monitor floods and put early warning systems in place. With limited information, the PNGNWS produces monthly climate outlook information at the national and provincial scale. Furthermore, the dissemination and uptake of this information amongst provincial and local authorities, farmers and villagers is very limited - in part because of confidence issues including relevance to decision-making processes and constraints in outreach among others. There is therefore a desire on the part of the PNG government to establish an effective system of generating relevant information for decision-making to manage the uncertainties of climate change on key sectors as well as a communication and information distribution system, tailored to different user groups and their specific needs. This system will also be the informational basis for an integrated disaster preparedness and response plan.

In addition, the absence of early warning systems for droughts, floods and sea level rise constraints efficient management of anticipated risks which in turn hinders the effective function of National and Provincial Disaster Centers and their coordination with key technical agencies. These agencies are staffed with individuals who have limited training, but high potential to generate relevant climate change and weather information for decision-making at all levels — at the household, sectoral or sub-national/national levels.

Ineffective policy and legal instruments to implement climate change adaptation and disaster risk reduction policy frameworks

A programmatic and systematic approach to implement the recently developed climate change-related policy and planning frameworks in an integrated way is hindered by existing challenges in institutional coordination between various relevant Ministries, Departments and Committees.

A number of existing policy instruments and strategies will need to be strengthened to better support the integration of climate change risks into disaster risk reduction and other development policies. These frameworks include:

- National Strategic Plan containing Papua New Guinea's Vision for next 40 years: Vision 2050
- Development Strategic Plan (4 different 5 year plans called Medium Term Development Plan)
- Climate- Compatible Development Strategy (CCDS), and an Interim Action Plan Climate Change in PNG – A National Stock-take (Office of Climate Change and Environmental Sustainability and World Bank, 2009)
- Reducing the Risk of Disasters and Climate Variability in the Pacific Islands – PNG Country Assessment (SOPAC and WB)
- PNG DRR-DRM National Framework for Action (2005-2015)
- Framework for the National Climate Change Strategy and Action Plan (2009)

[10] Initial National Communications, Papua New Guinea (2000)

Similarly, there is an absence of systematic integration of climate change and disaster risks in most sectoral management and development policies, strategies and plans. The objectives of the National Agricultural Development Plan that contains the National Food Security Policy which emphasis improvement of the quality of agricultural produce and increase income-earning opportunities for agriculture-dependent communities is likely to be jeopardized by climate-induced disasters and gradual changes in the mean climate patterns. The current legal frameworks on natural resources use such as Fisheries Management Act and relevant fisheries specific Acts, Forest Management Act, Environment Act including various conservation and protected area management Act), does not integrate climate change risks, and is anticipated to be ineffective to support the resilience of ecosystems and related services, such as mangroves, that are vital for protecting communities from climate-induced hazards, such as cyclones or floods. There is currently no integrated climate change-sensitized coastal zone management plan and policy in the country.

Assessments undertaken by UNDP[11] and UNCTAD[12] underlined that despite the relatively well established Disaster Risk Management National Framework, and existing institutional structures from national to provincial, district and local levels, the government continues to be reactive rather than proactive in responding to natural hazard risks, and capacity for effective Disaster Risk Management (DRM) planning and action at sub-national levels remains low and fragmented. The current DRM Act is outdated (1987) and does not clearly set out roles, responsibilities and lines of decision making, especially in regard to the National Disaster Centre, National and Provincial Disaster Committees, the Controller, and the parliamentary Emergency Committee. Many stakeholders have different interpretations of the current disaster management legislative and institutional arrangements and thus an inconsistent appreciation of their respective roles and responsibilities. This is a significant obstacle to effective disaster preparedness and response in PNG. Based on the above assessments, a national DRM Mainstreaming Programme has been developed recently, with the support of UNDP and the Secretariat of the Pacific Community (SOPAC), endorsed by the PNG National Disaster Committee on May 2010[13].

Absence of awareness. education and advocacy of climate change impacts and practical adaptation measures.

Systematic efforts to inform and prepare the public in the North Coast and Islands Region to adapt and manage expected and uncertain changes have not yet been undertaken. The comprehensive and sustainable awareness, education and advocacy programmes that are linked to livelihood support initiatives of the government (e.g. extension services, media outreach) have not been designed and thus not implemented. Even provincial, district and local level disaster management offices have inadequate capacity and presence for all areas in the country for the extension services on awareness on preparedness and response to climate-induced disasters that have short to long-term impacts on peoples' livelihoods. In particular, strategic capacity and resources for implementing comprehensive programmes of support have been inadequate and in most cases not been available through other existing sources (e.g. public funds) due to competing needs for scarce resources to cover the entire country. OCCD and some NGOs undertook climate change awareness programmes, but only on ad-hoc basis.

11 GAPS AND OPPORTUNITIES FOR DRM PROGRAMMING IN PAPUA NEW GUINEA, UNDP PNG CPR Programme, 2008

[12] Disaster Response Preparedness Mission to Papua New Guinea, UNDAC Report, 2009

[13] Disaster Risk Management (DRM) Mainstreaming Programme for Papua New Guinea

In the remoter provinces, the provincial DRM Offices are isolated from the rest of the administration with DRM not viewed as a priority. Consequently, there is a mindset “challenge” among the local famers that there is a compensation claim potential following localised hazard events (mostly hail damage, drought, landslides and flooding along river banks). This strongly suggest that there is little understanding of disaster risk reduction. Some of these provinces have undertaken some public awareness campaigns through radio broadcasts in the past (including sharing long-term weather forecasts received from the PNGNWS), but have had no regular awareness programmes. DRM resource materials such as posters and brochures are distributed to schools and districts whenever they are received (the province does not produce its own).

In the North Coast Provinces there is little or no acknowledgement or awareness, education and advocacy of the need for disaster risk reduction and a coastal early warning system. Preparedness for a large scale flooding is lacking in all levels of management from the provincial, district and community levels. This was apparent in the recent flooding disasters in Oro Province. There was no early warning and initial reaction to the disaster was slow, chaotic and disorganised. Relief efforts subsequently became bogged down in compensation squabbles and with no clear strategy for the management of care centres. Further there are no large scale evacuation plans in all North Coast Provinces.
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PROGRAMME OBJECTIVES:

Programme Objective

The overall objective is to strengthen the ability of communities in Papua New Guinea to make informed decisions about and adapt to climate change-driven hazards affecting both coastal and riverine communities. In particular, the programme will focus on resilience towards occurrences of coastal and inland flooding events.

The proposed programme will contribute to all outcomes listed within the 2 objectives of the Adaptation Fund Strategic Results Framework (AFB/EFC.2/3 from 31 August 2010), and corresponds particularly to the following higher order fund level outputs:

Output 1.1. Risk and vulnerability assessments conducted and updated at national level
Output 1.2 Targeted population groups covered by adequate risk reduction systems
Output 1.3 Targeted population groups participating in adaptation and risk reduction awareness activities
Output 2.2 Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability

Programme strategy

The focus of the programme lies on implementing measures as well as building institutional and policy capacity that promote efficient and cost-effective adaptation to flood-related risks at the sub-national levels. The programme focuses on community level-interventions in 2 distinct geographic areas, with specific vulnerability characteristics:

1) The Northern Coastal regions of PNG and the island provinces, which face coastal flooding risks
2) River communities in the North Coast Region that are exposed to inland flooding.

Those areas comprise 11 provinces and the majority of the country's 2.3m people exposed to flood risks. The reach and impact of the implemented measures and strengthened institutions will further be supported by the facilitation of policy making and awareness raising activities that support PNG's Climate-compatible Development Strategy.

With the objective of the programme and focus on adaptation to climate-change related flood risks, the activities, outputs and expected outcomes have been grouped into four components and are designed to be implemented in an integrated way over a span of four years. The focus of adaptation measures take into consideration that adaptation to climate-related impacts from issues such as malaria, (committed funding of USD 150m over 5 years through the Global Fund to Fight AIDS, Tuberculosis and Malaria) and agriculture (committed funding through several initiatives currently under development or in implementation) is addressed through a number of initiatives currently being implemented or developed.

Components 1+2: These first two components comprise the activities and outputs related to the adaptation measures in the coastal areas and river communities respectively. Both components include outputs on the establishment of climate early warning and information systems, disaster preparedness and response plans as well as integrated protection measures that are adapted to the respective river and coastal environments and prevalent vulnerabilities.

Component 3: The institutional strengthening component will serve to create an overall enabling environment for the effective implementation and long-term sustainability of adaptation measures and strengthen resilience to climate change.

Component 4: Through the programme's awareness raising and knowledge management component it will be ensured that the lessons learnt and best practices that are systematically extracted from the above components are disseminated locally, regionally and globally. Locally, the particular aim lies in the strengthened awareness and ownership of adaptation and climate change –related risk reduction processes that will support the replication of outputs through locally built capacity.

The combined outcomes of the above components will be a set of established and tested local adaptation measures that are supported by the institutional capacity, awareness and national policies to increase and maintain the level of resilience to climate change-related hazards in the targeted areas and at a national level. The components of the progamme are not sequential, but highly interrelated and mutually beneficial in the overall implementation process.

The programme will catalyze action on integrated risk management by building upon PNG's Climate Compatible Development Strategy. The strategy has been developed in cooperation with various governmental and non-governmental stakeholders and was approved by the PNG government (Cabinet decision 55/2010). The broad institutional support and the well established coordination among these stakeholders through Technical Working Groups will support the successful implementation of the proposed initiatives. Further details on the structure and composition of the OCCD and its TWGs as well as the role of the National Climate Change Committee (NCCC) are outlined in the section covering the implementation arrangements.

The outputs and activities outlined in the following will be further specified in line with the development of the Strategic Results Framework for the preparation of the full Programme Proposal.

The intervention strategy in light of various climate change scenarios

The proposed programme builds on the assessments and analysis contained in the Climate Compatible Development Strategy (CCDS). The CCDS uses three scenarios of the Intergovernmental Panel on Climate Change (IPCC) to account for the full breadth of uncertainty of climate change effects.[14]

While effective mitigation measures are crucial to curb climate change in the long run, IPCC models show that the level of GHG emissions will have little effect on temperature in the next 20 years, due to lags in the climate system. Hence, 2030 was selected as a time horizon for the underlying adaptation analyses. Depending on the scenario, temperature will increase by 0.2–0.7 degrees Celsius, rainfall will change minimally (by -0.9–3.4 mm) and the sea level will rise 0.08–0.20m by 2030.

The expected losses linked to climate change have been analysed in detail for inland and coastal flooding as well as for malaria. Economic development increases expected losses, as the economic value of assets at risk grows. In line with the rate used in the overall strategy, a GDP growth rate of 6% per year has been assumed. As demonstrated in the exhibit below, the projected damage resulting from inland flooding, coastal flooding and malaria is forecast to double from about USD 150m in 2010 to USD 275–365m in 2030[15].

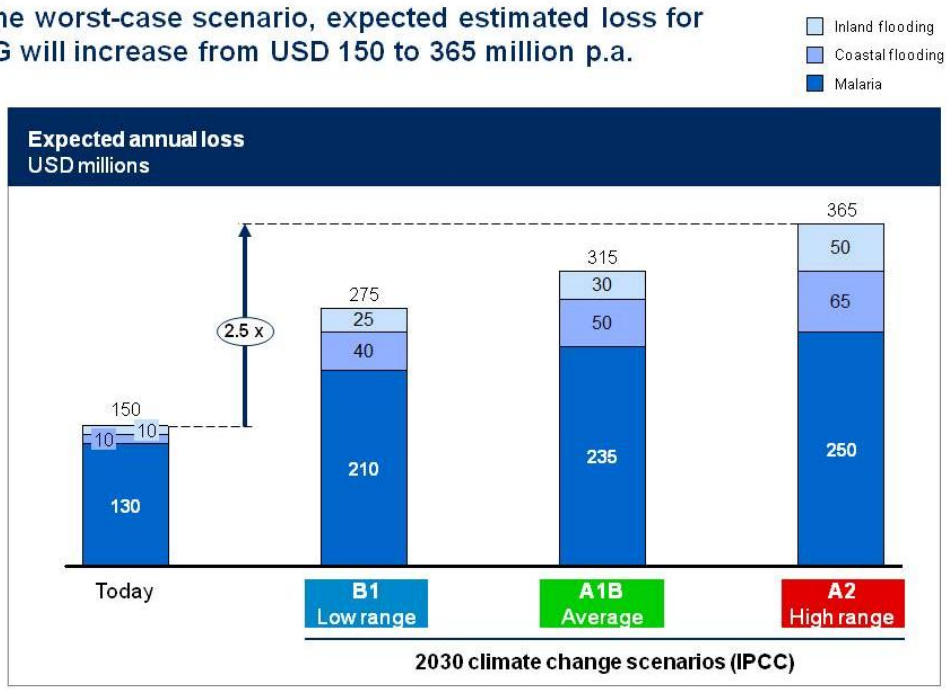

Figure 4: IPCC scenarios and estimated losses

[14] The IPCC scenarios are based upon assumptions on global integration (globalization vs. regionalization) and economic orientation of the world (ecological vs. economic). The three scenarios include: A2, which portrays an economically focused world with high economic that is divided into regional blocs; A1B, which reflects usage of mixed energy sources that balances economic and ecological interests; and scenario B1, which envisions a integrated, ecologically friendly world with relatively lower economic growth.

[15] Analysis of the OCCD on the basis of data from IPCC AR4, CSIRO, SEAFRAME, Expert interviews, Academic literature, Meteorological data, NASA SRTM, CGIAR, ESRI, PNG RIS, PNAS, WHO, CDC, World Bank, PNG MRI, WRI; Adaptation Technical Working Group. Ranges depend on the climate change scenario used and the uncertainty of case study-based analysis and extrapolation.

Based on the described climate change scenarios, potential initiatives to address the hazards were prioritized through a series of filters that seek to maximize the benefits in terms of protecting livelihoods and assets while ensuring that resources are efficiently allocated. A five step process was used to filter adaptation measures:

(1) Cost effectiveness: measures with a cost-benefit ratio greater than 1 were eliminated;
(2) Feasibility in PNG: interventions such as beach nourishment were eliminated due to lack of skills and feasibility in PNG;
(3) Need for funding
(4) Ability to protect human life: outputs that protect human life were valued above those primarily protecting physical and financial assets;
(5) Cost per life affected: All measures meeting the above criteria were sequenced for implementation based upon the lowest cost per life protected.

PROGRAMME COMPONENTS AND FINANCING:

PROGRAMME COMPONENTS	EXPECTED CONCRETE OUTPUTS		EXPECTED OUTCOMES	Amount (US$)
1. Adaptation to coastal flooding-related risks and hazards for North Coast and Islands Region communities	1.1	Coastal early warning systems established for observation, data collection and information management and dissemination.	1. Reduced exposure and increased adaptive capacity of coastal communities to flood-related risks and hazards in 27 coastal districts of the 11 provinces of the North Coast and Islands Region .	**2,000,000**
	1.2	Coastal flood preparedness and response plan and systems established		
	1.3	Integrated mangrove planting and conservation measures implemented for coastal protection of North Coast and Islands Region communities		
2. Adaptation to inland flooding-related risks and hazards for river communities in Morobe, East Sepik and West Sepik	2.1	Inland flooding early warning systems established for observation, data collection and information management and dissemination.	2. Reduced exposure and increased adaptive capacity of targeted river communities in 19 districts of the 3 provinces	**1,700,000**
	2.2	Inland flood preparedness and response plan and systems established		
	2.3	Integrated riverbank protection measures implemented to protect communities along the Bumbu River and Sepik River		
3. Institutional strengthening to support climate- and disaster-resilient policy frameworks	3.1	Climate change-related risks and resilience to flooding integrated into coastal zone management related polices, legal and planning frameworks at the national and sub-national levels	3. Strengthened institutional capacity at national and sub-national level to integrate climate change-related risks into sectoral policies and management practices	**350,000**
	3.2	Policy makers and planners at the national, provincial and district offices, institutions and extension services systemically trained to implement climate-sensitive policies and plans		
4. Awareness raising and knowledge management	4.1	Lessons learned and best practices generated, captured and distributed to other communities, civil society, policy makers in government and globally through targeted mechanisms	4. Strengthened awareness and ownership of adaptation and climate change-related risk reduction processes at national and sub-national level	**350,000**
	4.2	Climate change awareness and education programmes carried out		
5. Programme Execution cost				**418,000**
6. Total Programme Cost				**4,818,000**
7. Programme Cycle Management Fee charged by the Implementing Entity				**409,530**[16]
Amount of Financing Requested				**5,227,530**

[16] On the request of the Government of Papua New Guinea, the project will be implemented by UNDP using the MIE modality. UNDP is able to provide the following implementation services through its country office, regional and headquarters networks: project identification, formulation, and appraisal; determination of execution modality and local capacity assessment of the national executing entity; briefing and de-briefing of project staff; oversight and monitoring of AF funds, including participation in project reviews; receipt, allocation and reporting to the AF Board of financial resources; thematic and technical capacity building and backstopping; support with knowledge transfer; policy advisory services; technical and quality assurance; and troubleshooting assistance to the national project staff. Further details on the types of specialized technical support services which may be provided are articulated in the table provided to the AFB Secretariat on 14 May 2010 (as annexed).

PROJECTED CALENDAR:

Indicate the dates of the following milestones for the proposed programme

Submission of Concept to AF	April 18, 2011
Approval of the Concept by the AF Board (Estimate)	June 23, 2010
Submission to AF of a Full Programme Proposal	July 15, 2011
Approval of the Full Programme Proposal by the AFB (Estimate)	October 2011
Start of Programme Implementation	October 2011
Mid-term Review (if planned)	October 2013
Programme Closing	October 2015
Terminal Evaluation	End 2015

PART II: PROGRAMME JUSTIFICATION

A. Describe the programme components, particularly focusing on the concrete adaptation activities of the programme, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Component 1: Adaptation to coastal flooding-related risks and hazards for North Coast and Islands Region communities

Outcome 1: Reduced exposure and increased adaptive capacity of coastal communities to flood-related risks and hazards in the 27 Districts of the North Coast and Islands Region.

The combination of the outputs under this component will enhance the targeted coastal communities' capacity to adapt to the risks and hazards posed by climate-related coastal flooding. This will be achieved by increasing local capacity for adaptation by implementing a comprehensive coastal warning system, which, in combination with the establishment of a disaster preparedness and response plan will reduce the targeted communities' exposure to coastal flooding events.

As part of the flood management plan, specific measures will be implemented to protect coastal communities from coastal flooding. Integrated mangrove planting and conservation measures will aim at reducing the impact of anticipated coastal floods.

Output 1.1: Coastal early warning systems established for observation and data collection capacity, database and information system management as well as information dissemination

The implementation of the coastal early warning system will build upon and be integrated within the infrastructure of the National Disaster Centre's early warning system, which currently does not include provisions for monitoring data and issuing warnings on coastal flooding. To facilitate

a largely automated process of disseminating warnings, the OCCD has already established a public-private partnership with national mobile telecommunications provider Digicel for which the Memorandum of Understanding is currently being finalized. This partnership is of particular importance since it utilizes the public-private partnership model to provide a low-cost and efficient solution to reach communities at risk. The system had its recent and successful maiden test when it was used to disseminate warnings to 300,000 people in the North Coast and Islands Regions in response to the recent (2011) Japan Tsunami. In addition, the OCCD is in discussions with a large multi-national company, which has expressed a general interest in supporting disaster preparedness activities in PNG through the Corporate Social Responsibility activities.

In terms of activities under this output, the integration of the coastal early warning system will require the assessment and mapping of coastal flooding hazards in the targeted areas, with areas of major population being of higher priority. Further, a review of the limited early warning measures for coastal flooding that are currently in place will ensure the seamless integration of the system and avoid breaches and open-ended processes along the warning and information chain. At the same time, the capacity to collect and monitor the relevant data will be strengthened by equipping the PNG Weather Service with automated weather stations and water-level gauges in coastal areas as well as deriving appropriate risk indicators from the observed data as basis for triggering respective warnings. The observation data will be collected in a central database to be established under this programme and relevant data and warnings distributed via the abovementioned partnership with Digicel and media organizations. Workshops and continuous training for the establishment, maintenance and use of the coastal early warning system will be undertaken alongside the implementation of the above activities and in cooperation with the relevant stakeholders such as the National Disaster Centre, PNG National Weather Service, Tele-communication companies (Digicel) and partners from the targeted communities and media.

Output 1.2: Coastal flooding preparedness and response plan and systems established

The enhanced capacity to collect and monitor information and the ability to make informed decisions through the measures under the above output together with the mapped hazards are also the informational basis for the disaster preparedness and response system that is to be implemented under the proposed programme.

The activities under this output will encompass the development of a disaster preparedness and response plan for coastal flooding in one province. In terms of measures for flood preparedness, the establishment of emergency water storage facilities and the setting up and strengthening of evacuation centers will be targeted through the activities. The institutional coordination on the preparedness and response to flood-related disaster, will be strengthened by the facilitation of communication among the provincial, district and ward leaders of the province and the establishment of coordination mechanisms such as flood management committees. At the same time, the establishment of this network among provincial and district leaders will be the basis for the further replication of the disaster preparedness and response plan in other costal provinces with priority given to provinces with the highest vulnerability to coastal flooding.

Another activity to complement the flood preparedness plan will be the conduct of a feasibility study on coastal protection structures with a particular focus on flood preparedness of 3 high-risk and major economic provincial capitals of Lae, Madang and Wewak[17]. The study will build

[17] In Wewak, for example, the king tide 3 years ago washed away large parts of the main street at the beach.

on the coastal hazard mapping and flood management plan developed under Output 1.1. The aim of this activity is to build a fact base to make an informed decision on the effectiveness and feasibility of putting seawalls and/or other coastal protection infrastructure in place. This includes a review of the underlying cost-benefit analysis of the measures. An initial estimate by the OCCD puts the investment cost of seawall construction at 1,7m USD per kilometre and an additional 25,000 USD per kilometre in annual maintenance costs[18]. However, seawalls offer the potential to avert a significant part of the expected losses from climate-change related flood impacts. An estimate by the OCCD places this potential at around 30% of the expected losses[19]. The study will serve to identify cost-effective and suitable locations and designs as well as resources for funding the identified measures. The feasibility study under this output will also seek the collaboration and coordination with activities undertaken by the PNG Pilot Project under the UN HABITAT Cities and Climate Change Progamme.

Although targeting different geographic regions and addressing a distinct set of hazards, there will be a systematic exchange among this output and output 2.2, which aims at establishing a disaster preparedness and response systems for inland flooding. This will ensure the incorporation of knowledge and lessons learnt especially in regards to the effectiveness and communication and coordination among institutional stakeholders.

Output 1.3: Integrated mangrove planting and conservation measures implemented for coastal protection of North Coast and Islands Region communities

Mangroves can be found along much of the PNG coastline but this ecosystem is currently decreasing due to unsustainable use of mangrove resources by coastal populations. As detailed in the exhibit below, Mangroves are one of the prioritized adaptation measures to protect the coastline of PNG.

[18] The estimate is based on an averaged analysis. Costs vary depending on site specific conditions as well as on the respective design of the seawall.
[19] The estimated relates to economic centers with high value at risk.

Prioritization process for adaptation measures to address coastal flooding

Priority measure

	Cost-benefit ratio for assets[1] Percent	Feasible in PNG	No existing programs/ funding in place	Ability to protect people	Cost per life protected USD
Early warning system	N/a	✓	✓	✓	<1
Elevate new structures in flood zone	8	✓	✓	✗	–
Revive reefs	14	✗	–	–	–
Plant mangroves	17	✓	✓	✓	1
Nourish beaches	41	✗	✓	–	–
Retrofit important buildings	83	✓	✓	✗	–
Coastal engineering in high-value locations	88	✓	✓	✓	18
Flood-adapt house contents	114	–	–	–	–
Build dikes	115	–	–	–	–
Create offshore breakers	365	–	–	–	–

1 Best-case cost benefit ratio, may not be applicable in PNG: does not quantify value of protecting human lives

SOURCE: Press clippings, UNESCO, WHO, NAPAs, Academic Journals, press clippings, CDC, PNG High Commission, Delta Committee reports, SFWM System, US Army Corps, team analysis

Figure 5: Prioritisation of adaption measures

Mangrove initiatives are included in the proposal to the Adaptation Fund as such programmes do not yet address many vulnerable areas. Mangroves have the ability to protect tens of thousands of people and their assets. Mangrove planting and conservation can offer protection at low costs (around $1 per protected life and less than $0.20 per protected USD of assets) and can be coordinated at a community level. Though mangrove projects do exist in PNG (e.g. in the area around Port Moresby and in Manus), they are often small scale and lack an overall coordination. The OCCD has an important role to play in scaling up the mangrove planting initiatives by bringing more funds in and by playing a coordinating role to the wide range of NGOs and development partners.

The OCCD is currently conducting a stock take of planned and existing mangrove projects in PNG. A member of the OCCD adaptation team is meeting with the various development partners and NGOs to ascertain where they are planting mangroves and learning from their experience especially in regards to systems for incentivizing community participation. At this stage, a cost-benefit analysis of various mangrove project implementation modalities is being conducted with a special focus on initiatives that have shown to overcome problems regarding the low survival rate of seedlings and have managed to ensure long-term sustainability by achieving a buy-in from the communities. The data derived from this analysis will also be the basis for determining exact baselines, targets and means of verification for the Strategic Results Framework of this programme. When completed, this analysis will form the basis for further refining the scope and implementation sites for these activities in the submission of the full programme document, avoid overlap with ongoing projects and provide the baselines for qualitatively measuring the results under this output.

Bottom-up analysis to identify final locations for the mangrove projects is currently being undertaken. As part of consultations with local communities, OCCD in collaboration with NGOs and community based organizations (CBOs) has started to identify the most vulnerable areas. These discussions are the basis for an analysis of a list of the lengths of coastline most at risk and the suitability of community-based mangrove planting.

Under this output, the stock take will be complemented by the analysis and mapping of risk-exposed locations for strengthening existing and initiating new mangrove planting and conservation activities.

As next step proposed, regional mangrove nurseries will be established as supply centers for community-based mangrove projects. The nurseries will also supply the mangrove planting and conservation projects, which will be implemented as another activity of this programme and will be based on the above analysis of risk-exposed locations that are not being targeted by other initiatives.

With the aim of ensuring long-term sustainability and local capacity for the planting and conservation of mangroves the training activities under this output will go hand-hand with the implementation of the mangrove planting projects above. The trainings will target provincial and local officials as well as communities with the aim of collaboratively developing mangrove management and monitoring plans.

Another activity will be the facilitation of communication and coordination among provincial, district and village leaders with the aim of expanding the reach of the above activities and raising awareness on mangrove planting and conservation as a cost-effective coastal protection measure. Throughout the activities under this output, the programme will draw on expert support, which is available from previous and ongoing mangrove planting pilots (e.g. the work by Motupore Island Research Centre - MIRC in East Hiri and a Wildlife Conservation Society - WCS project in Manus).

Component 2: Adaptation to inland flooding-related risks and hazards for river communities in Morobe, East Sepik and West Sepik

Outcome 2: Reduced exposure and increased adaptive capacity of riverine communities in Morobe, East Sepik and West Sepik to flood-related risks and hazards in 3 provinces.

Analog to the combination of outputs under the first component, the increased climate resilience of the targeted inland communities will be achieved by implementing a comprehensive early warning system that supports an established disaster preparedness and response framework while the impact of occurring floods will be further reduced by riverbank protection measures as outlined and justified below.

To address the risk of inland flooding in PNG, the OCCD has analyzed flood frequencies and scale; population numbers and asset value at risk as well as the vulnerability of people and assets in selected catchment areas. From this analysis early warning systems, drainage and the construction of retaining walls and levees around cities were identified as the most effective measures.

Catchment management in principal deals with regulating, controlling and managing activities conducted within the entire catchment, typically targeting head catchment use in order to reduce the environmental and flooding impacts in the middle to lower catchments. However, catchment

management is only viable when there are conflicting and competing demands on limited natural resources in the catchment such as one river system serving as the main water source for hydropower generation, domestic water supply, agricultural irrigation and riparian users. In PNG, most large catchments including Sepik, Fly and Ramu are very rural with largely natural vegetation and where there is very little development taking place. This limits the viability of a catchment approach, given that there is little room to enhance the existing rainfall absorption and retention capacity through landuse measures at the catchment level.

To this end a combination of riverbank protection measures and an integrated early warning system is seen as the most effective measure to limit damage and loss from flooding.

The protection of river banks is a localized, site-specific measure to protect the assets, infrastructure and population living in the low lying flood plains and is based on the assessment of the risks and severity of the flood events impacting on the assets, infrastructure and the population. Flood protection dykes can be built on the sides of river banks susceptible to inundation, and are commonly located along the middle to the end of the river channel. Whereever possible, community-managed measures using locally available materials, such as protective walls made of logs and complemented with vegetation planting, will be implemented. Successful examples of these measures have taken place in Fiji[20].

Lae City in the targeted Morobe Province is prone to flooding annually from the Bumbu River flash floods. The SMEC report of early 1990 recommended to the GoPNG and Morobe Provincial Government to construct embankment at lowly elevated areas to keep the flood waters away from the residential areas, industrial areas and government institutions. Financial constraints halted the project progress, which subsequently prevented it from fulfilling its primary objective of protecting the people from flood water; although only partially completed, some major assets (Lae Technical College, Bumbu Police Baracks and Cassowary Road Residential Area) and a portion of the population have been saved from the Bumbu River flood.

Output 2.1: Inland flooding early warning systems established for observation and data collection capacity, database and information system management as well as information dissemination

Similar to the implementation of the coastal flooding early warning system, the initial activity necessary to achieve the output is an assessment that includes the analysis and mapping of inland flooding hazards faced by the communities along the Bumbu River and Sepik River with a particular focus on areas of major population. The assessment will also encompass the review of existing flood early warning systems that cover preparedness and response measures by vulnerable river communities with the aim of avoiding breaches and open-ended processes in the warning and information chain.

In order to increase the flood disaster preparedness, the following actions will enhance the collection and observation of relevant data: The capacity of the PNG Weather Service in this regard will be enhanced by installing water level and rain gauges. This will be complemented by evaluating, selecting and implementing further technological options with the view of establishing an integrated system for the early detection of flooding hazards.

The database for the collection and monitoring of the collected data will be developed in a collaborative arrangement with the respective activity under output 1.1 in order to avoid the

[20] Community-based adaptation project implemented by University of South Pacific in Buretu village, Fiji

duplicity of infrastructure and processes where possible. Analog to the activity in output 1.1 an alert system for river communities will be put in place. The warnings for inland flooding hazards will be distributed via the abovementioned partnership with Digicel and media organizations. Workshops and continuous training for the establishment, maintenance and use of the inland flooding early warning system will be undertaken alongside the implementation of the above activities and in cooperation with the relevant stakeholders such as the National Disaster Centre, PNG Weather Service, Digicel and partners from the targeted communities and media.

The collected data shall also be monitored in regards to risk indicators for landslides that could affect populated areas or areas of strategic importance in regards to disaster preparedness and response (access roads, infrastructure etc.).

Output 2.2: Inland flooding preparedness and response plan and systems established

The enhanced capacity to collect and monitor information on inland flooding hazards and the ability to make informed decisions through the measures under the above output 2.1 are also the informational basis for the disaster preparedness and response system for inland flooding that is proposed here.

The activities under this output will encompass the development of a disaster preparedness and response plan for inland flooding in two provinces in order to take different flood scenarios such as flash floods and slow rising floods into consideration. For flood preparedness, the establishment of emergency water storage facilities and the setting up and strengthening of evacuation facilities will be targeted through the activities. The disaster response and preparedness plan shall also include aspects of preparedness for landslides that could affect populated areas or areas of strategic importance in regards to disaster preparedness and response (access roads, infrastructure etc.).

The institutional coordination on the preparedness and response to inland flooding will be enhanced by the facilitating systematic collaboration and exchange among the provincial, district and ward leaders of the province and the establishment of coordination mechanisms such as flood management committees. At the same time, the establishment of this network among provincial and district leaders will be the basis for the further replication of the disaster preparedness and response plan in other river provinces with priority given to provinces with the highest vulnerability to inland flooding. As mentioned in output 1.2, there will be a systematic collaboration among these outputs, which will ensure the incorporation of knowledge and lessons learnt especially in regards to the effectiveness of communication and coordination among institutional stakeholders The collaboration among the two outputs will also ensure thay redundant processes and infrastructure are avoided.

Output 2.3: Integrated riverbank protection measures implemented to protect communities along the Bumbu River and Sepik River

As a basis for the other activities under this output, a comprehensive assessment and a series of community consultations will be will be conducted in order to identify cost-effective and suitable locations and designs of riverbank protection measures. Based on this, the main activity under this output is the installation of suitable measures in the identified locations, whereas special emphasis will be put on the use of locally available materials. The protection of the riverbanks will be further complemented by the planting of suitable vegetation and land use planning that anchors the improved riverbank protection in further development and land use planning.

In order to ensure long-term sustainability and an enhanced local capacity the training activities on riverbank protection techniques under this output will go hand-in-hand with the implementation of the riverbank protection measures.

The facilitation of communication and coordination among provincial, district and village leaders will be another activity with the aim of expanding the reach of the above activities and raising awareness on river protection measures and easily replicable and cost-efficient measures such as vegetation planting in particular.

Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks

Outcome 3: Strengthened institutional capacity at national and sub-national level to integrate climate change-related risks into sectoral policies and management practices, with focus on flooding

The activities under this outcome focus on the development of the relevant institutions' capacity to integrate aspects of climate change-related risks and respective adaptation strategies into policy making. A two-pronged approach is pursued under the proposed programme:

(i) Integration of climate change risk and resilience into development policies that encompass legal and planning frameworks.
(ii) Further capacity building through the systematic training of policy makers at the national, provincial and district level, which goes hand-in-hand with the above development and implementation of climate-resilient policies.

Through the above processes, the proposed programme will also aim at strengthening ongoing dialogue and coordination among several stakeholders, feeding into the ongoing development of the Climate Change Act.

Output 3.1: Climate change-related risks and resilience to flooding integrated into coastal zone management related polices, legal and planning frameworks at the national and sub-national levels

A comprehensive analysis of climate change gaps in existing coastal zone management policies and the related legal and planning frameworks at different levels will constitute the first activity. Based on this, the OCCD, in its coordination function, will establish plans and timelines for the process of mainstreaming climate change issues into economic and land-use planning frameworks. The plans and timelines shall be based on the prior facilitation of agreements with the relevant bodies regarding the mainstreaming objectives and policy instruments to be modified or developed.

Following the above preparatory work, the OCCD will take on the facilitation of consultations to integrate climate change issues into the relevant policies. The implementation of the policy frameworks will then be monitored and analyzed in order to extract practical implementation challenges (such as issues in regards to communication, resistance to change or enforcement) adapt the policies accordingly and feed the lessons learned back into the national policy-making frameworks and processes.

As final activity under this output, the OCCD will facilitate the official approval and endorsement process for the new climate-resilient Coastal Zone Management Policy, which will create an enabling environment to enhance resilience to climate change at the national level.

Output 3.2: Policy makers and planners at the national, provincial and district offices, institutions and extension services systemically trained to implement climate-sensitive policies and plans, including climate-sensitive integrated land-use planning

In order to equip policy makers with the ability to develop and implement climate-sensitve policies and plans in line with PNG's climate compatible development strategy a series of targeted workshops and seminars on climate change-related topics encompassing risk assessments, policy and planning processes will be undertaken. The key agencies, which will be involved include the OCCD, Department of Environment and Conservation, Department of Agriculture and Livestock, Department of Health, Department of National Planning and Monitoring, Department of Provincial and Local Level Affairs, National Weather Service, and National Disaster Center. The scope of this activity will also cover the integration of climate change and disaster risks in the development of standards for building codes and land-use planning codes in collaboration with provincial authorities.

Another activity related to the achievement of the implementation of climate-sensitve policies will be the programme's support for the establishment of the proposed Conservation and Environment Protection Authority (CEPA), which is currently ongoing.

The preparation and dissemination of regular policy briefs to inform higher-level policy makers on mainstreaming climate change-related risk reduction and related adaptation processes will ensure the national and cross-sectoral reach of integrating climate resilience in policies.

A further activity will be the facilitation of the cross-sectoral and inter-ministerial dialogue via a strengthened National Climate Change Committee and Technical Working Groups as well as their constituencies at the sub-national level.

Component 4: Awareness raising and knowledge management

Outcome 4: Strengthened awareness, education and advocacy to promote ownership of adaptation and climate change-related risk reduction processes at national and sub-national level, with a focus on flooding.

In order to ensure the long-term sustainability and broad outreach of the programme outcomes, as well as the development of local capacity to replicate the measures and policies put in place under the programme, a systematic and multi-facetted awareness raising strategy is proposed.

The intended audiences include the communities in the coastal and inland areas targeted by the intervention measures under components 1 and 2 with the aim to enable them to make informed decisions in regards to the occurrence of climate related risks and hazards. This includes awareness raising that informs vulnerable communities on the early warning system and the implications of warnings in regards to actions that need to be takne for disaster preparedness and response.

Further, the dissemination of lessons learnt and knowledge transfer among civil society, policy makers and educational institutions throughout the programme's implementation phase will

support building of local capacity to replicate and sustain the achieved outcomes and thus ensure increased climate change resilience on a national level.

Output 4.1: Lessons learned and best practices generated, captured and distributed to other communities, civil society, policy makers in government and globally through appropriate mechanisms

Based on the experience from the implementation of adaptation measures under component 1 and 2 of this programme, targeted learning materials that include case studies, photo stories, short videos, posters and brochures (including in local languages), will be developed and disseminated via the local government institutions, extension services, NGOs and CBO's.

Further, regular information on the progress and undertakings under the proposed programme shall be made available by implementing a programme communication plan and using range of national and local media.

Another activity will be the setting up of a national web-based adaptation knowledge platform, which will be maintained through the OCCD and ensures that the knowledge and tools are available to stakeholders and other initiatives aiming at strengthening climate change resilience in PNG.

The developed knowledge products shall be disseminated through regional and global platforms, such as the Climate Change Portal of the Secretariat of the Pacific Regional Environment Programme (SPREP), the Adaptation Learning Mechanism (ALM) and the UNDP Energy and Environment Network. The extracted knowledge on adaptation practices shall also be presented and discussed at national and regional forums and meetings.

At community-level, exchange and site visits will facilitate the sharing of lessons learnt and first-hand experience among the vulnerable communities as well as the replication of the adaptation measures to climate-related hazards.

Output 4.2: Climate change awareness and education programmes carried out
Under this output, the aim is to integrate the experience drawn from the implemented flood adaptation measures into training materials, school programmes and community awareness programmes. This includes a dedicated activity on the development of educational materials and actions for schools. In order to integrate the materials into school curricula, this also requires an activity focused on the training of teachers and educators on issues of climate change, adaptation and disaster preparedness and response. It will also be instrumental to facilitate school visits to programme sites and their inclusion in local consultation events.

B. Describe how the programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

Details including a more precise quantification on the programme's economic, social and environmental benefits, especially to the vulnerable communities, will be further refined in line with the preparation of the programme's results framework and underlying baselines for the full programme proposal. Through its outputs, the programme will deliver livelihood benefits (especially in the context of protection of lives, economic activities and assets) and create the enabling environment for resilience to medium, longer and creeping impacts of climate change.

The coastal early warning, shoreline and river bank protection activities will protect essential community assets, with expected spin-off benefits to livelihoods through the soft-adaptation measures (mangrove conservation, vegetation planting along riverbanks), such as sustainable supply of raw-materials, enhanced fish production. By reducing exposure to flooding events and an increased ability to prepare for and respond to disasters, the implemented measures will also enhance the effectiveness and benefits of other initiatives that target the improvement of livelihoods of the vulnerable communities. Further, the reduced exposure to flooding events will also reduce negative impacts on the health of the population in flood-prone areas and thus support efforts aimed at improving health and fighting outbreaks of waterborne disease such as Cholera.

The adaptation measures to be introduced by the programme are also designed to provide key environmental benefits that will further support livelihoods. The riverside and coastal vegetation and mangrove conservation actions will strengthen the resilience of vital coastal ecosystems that provides a range of ecosystem services, including coastal protection and buffer for flooding, cyclones and other extreme climatic events. Given the role of mangroves in marine and near shore ecosystems as breeding and raising ground of many marine species, it is expected that food supply from coastal areas will be also enhanced.

Responding to the severe climate-related flood hazards and risks, as detailed in the context section, it is expected that the programme will produce impacts at scale, considering the direct involvement of around 200 villages, across 61 districts, and broader outreach cross 11 Provinces, representing the most populous areas of the country, comprising around 3.8 million inhabitants.

The OCCD is undertaking an intensive period of consultation with a broad range of stakeholders, including government representatives, members of the civil society, private sector and local communities. One objective of OCCD's provincial consultation is the identification of implementation sites that offer the largest potential for providing benefits to the most vulnerable communities. Provincial consultation events involve local NGOs, Community-Based Organisations (CBOs) as well as provincial, ward and community representatives. Provincial consultation events have already been held in Manus, Milne Bay and East New Britain. In September 2011, the OCCD met with more than 150 Ward Councillors and Local-Level Government (LLG) Presidents at the Manus Leaders' Summit. In collaboration with the provincial administration, agencies and NGOs, the OCCD actively engaged participants in discussion about climate change-related issues. These resulted in needs assessments that detailed the required adaptation initiatives. Similar events have happened and are currently being planned for other provinces. Based on these consultations as well as the top-down vulnerability assessment, UNDP, OCCD as well as local NGOs and CBOs will collaboratively select the implementation sites, which will allow the quantification of beneficiaries as well as the determination of baselines and means for verifying the qualitative impact.

C. Describe or provide an analysis of the cost-effectiveness of the proposed programme.

The proposed interventions outlined in this programme concept are based on the PNG's Climate Change Interim Action Plan that identified priority actions that resulted from a thorough in-country consultation and contains analytical information, as well as recent assessments legislative, policy and capacity references, such as the draft National Capacity Self Assessment

Report, National Climate Change Stocktake by World Bank and OCCD, the Climate Change Vulnerability and Adaptation Assessment under the Second National Communication Project, and the review of the DRM assessments conducted for PNG by UNDP in 2008 and UNDAC in 2009.

Over the course of developing this proposal, potential initiatives to address the indentified hazards were prioritized through a series of filters that seek to maximize the benefits in terms of protecting livelihoods and assets while ensuring that resources are efficiently allocated. A five step process was used to filter adaptation measures:

(1) Cost effectiveness: measures with a cost-benefit ratio greater than 1 were eliminated;
(2) Feasibility in PNG: interventions such as beach nourishment were eliminated due to lack of skills and feasibility in PNG;
(3) Need for funding
(4) Ability to protect human life: outputs that protect human life were valued above those primarily protecting physical and financial assets;
(5) Cost per life affected: All measures meeting the above criteria were sequenced for implementation based upon the lowest cost per life protected.

As it has been demonstrated through recent (Oro Province) and past flood-related disasters in PNG, the current disaster management and response system has proven to be largely ineffective. Investing in climate-early warning systems will enhance disaster preparedness and builds long-term climate-change resilience of communities by saving economic loss and damage to properties and lives in a more efficient way. The coastal disaster warning system of the NDC, which was enhanced by the partnership with a telecommunication company that was facilitated by the OCCD had its recent and successful maiden test when it was used to disseminate warnings to 300,000 people in the North Coast and Islands Regions in response to the recent (2011) Japan Tsunami. At this scale, the cost-effectiveness is self-evident. However, the shortcomings of the current system are the insufficient capacity and equipment that would allow the monitoring, storage and analysis of data, which can be used to determine the risk level for coastal floods and trigger the respective warning and/or information dissemination when required.

The alternative to ecosystem-based coastal protection (mangroves planting), and riverside protection using local material and complementary soft techniques (vegetation planting) is the employment of hard structures, which are highly investment and engineering intensive, and cannot be implemented and maintained through community-based actions. While hard infrastructure is preferable to critical assets with very high exposure, local and soft options are preferable in that the communities themselves can manage them, if empowered by training and technical assistance activities. The additional livelihood benefits as outlined in the above section further improve the cost-effectiveness of the measures implemented under this programme. There are some emerging experiences on soft coastal and riverside protection in the region (like the Tikina Wai mangroves adaptation project by WWF through UNDP-Small Grants Programme, and the University of South Pacific coordinated CBA projects on riverbank protection in Fiji), with well-documented evaluation of results, that can be used as reference for effectiveness. As outlined in the intervention strategy, a mix of harder and soft solutions (with the latter preferred), will be employed in the programme, based on site-specific assessments. The flood protection measures will be designed in a complementary way to the WB-Pilot Programme on Climate Resilience, Pacific Project and its PNG pilot initiative (currently the Phase 1, design stage is being initiated and coordinated through ADB), which aims at climate-proofing national infrastructure.

In regards to the adaptation through mangrove planting, the OCCD is currently conducting a stock take of planned and existing mangrove projects in PNG. At this stage, a cost-benefit analysis of various mangrove project implementation modalities is being conducted with a special focus on initiatives that have shown to overcome problems regarding the low survival rate of seedlings and have managed to ensure long-term sustainability by achieving a buy-in from the communities. The data derived from this analysis will also be the basis for determining the most cost-efficient implementation modality that ensures long-term sustainability.

At the operational level, cost effectiveness of the programme concept is reflected through the following characteristics:

- Throughout the programme, AF resources will be aligned with the financing and delivery of programme outputs that have competitive procurement components to ensure best value for money. In this regard, the programme will apply best practices identified by other, ongoing climate change adaptation projects in the region (e.g. PACC, SGP-CBA, USP-CBA).
- This programme will utilize existing government structures and processes for implementation such as the District Support Development Programme, District and Ward Development Plans and sectoral extension services. By building on existing government and institutional structures, the programme will also harness in-kind support and contributions from offices at the national, provincial, district and local levels (office space, staff time, communications, etc.)
- Through the existing network of stakeholders, the results framework of the programme, will be able to utilize existing baseline surveys of line agencies and harness existing delivery mechanisms such as the Papua New Guinea Small Grants Programme, if applicable. This will further expand the reach and replicability of outputs.
- The bulk of the programme's funds will be directed to community-level activities and hence brings opportunities for local procurement of goods and services with it.

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Programme Sustainability

The strong commitment of the Government of Papua New Guinea to sustainably address climate change and its social, economical, environmental and financial impacts has been evident through several initiatives from the country's leadership. This clear intention is reflected in the country's Climate-Compatible Development Strategy and the establishment of the National Climate Change Committee as well as the Office of Climate Change and Development.

AF funds are sought to support the Government of Papua New Guineas in fulfilling these high ambitions and to facilitate the integration of climate-change adaptation into the relevant policies and decision making processes. AF resources will be used to ensure that the relevant institutions are equipped with the capacity to turn the policies into sustainable and positive impacts on the ground. At the same time, the programme's coastal and inland flooding components will clearly demonstrate the social, economic, financial and environmental benefits of adapting to the hazards of climate change under a climate-compatible policy and decision-making framework that will support the resiliency of longer-term development efforts beyind the programme cycle.

The outputs of this proposed programme serve to increase the targeted beneficiaries' resilience to climate change and the most pressing climate hazards, that remain insufficiently addressed to date. The activities for the implementation of adaptation measures are conducted on a community level and aim at building an understanding and awareness of the issues at hand while including the communities in the development and maintenance of the adaptation measures. The participation of the targeted communities is, for example, an instrumental part of the mangrove planting and related activities under this output. To a large part, the protective riverbank measures implemented under this programme are designed in a way that they can be maintained and replicated in the longer term using locally built capacity and locally available material.

Trainings and participatory processes as well as the establishment of local processes and institutions (e.g. flood management committee at village level) aim at creating the local capacity to make informed decisions in regards adapting to climate change-related floodings. The implemented measures will protect the well-being, health and assets of individuals, households and villages, which in turn is a basis for further development of the targeted areas.

The programme integrates a specific component on awareness raising and knowledge management as key part of the sustainability and replicability strategy of the initiative. Through systematically documenting and disseminating good practices, and through a broad network of partnerships, it is ensured that lessons learnt from other initiatives are integrated in this programme's implementation while providing a wide dissemination of programme results and lessons learnt.

D. Describe how the programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programmes of action, or other relevant instruments, where they exist.

This programme is in line with the objectives of the Government of Papua New Guinea's (GoPNG) Vision 2050 pillar on Climate Change and Environmental Sustainability, Development Strategic Plan 2030 (comprising 4 five-year Medium Term Development Plans), as well as sectoral policies including the National Agricultural Development Plan, PNG National Marine Programme, Environment Act and Fisheries Management Plan.

The proposed programme is further supportive of the key vulnerability areas identified by the Climate–Compatability Development Strategy and Interim Action Plan, which include agricultural yield loss, coral reef loss, coastal flooding, inland flooding, landslides and malaria. The interim actions from the Climate Compitable Development Plan at the national level form the basis for provincial, district and local level government development plans. These plans will be further enhanced by programme activities that aim at integrating aspects of climate resilience.

Most importantly, this programme seeks to support gender particpation, and that women and youth are given a greater role in building community resilience to the climate hazards. Furthermore, this programme also seeks to institutionalise gender sensitivity in disaster management. This is inline with the MDGs, the 2005 Hyogo Framework for Action, PNG Vision 2050, Development Strategic Plan 2010-2030 and the Medium Term Development Plan 2011-2015.

The Development Strategic Plan 2010-2030 under part 6, sections 6.2-6.8, clearly articulates the strenghtening of cross sectoral policies on youth, gender, HIV/AIDS, Vulnerable and Disadvantaged, Environment, Climate Change and Natural Disaster Management as priority. The proposed AF programme is supportive of these sections, having the objective of building climate change resilience in communities and at the sametime foster development leading to more secure livelihoods.

The programme, therefore will serve to review and strengthen existing national policy frameworks through better integrating climate risks and resilience considerations. Building on existing government institutions at the different levels, the programme will foster inter-ministerial and sectoral coordination on climate change adaptation issues, including consultations with representatives NGOs and private sector. Through its interventions on the institutional and policy levels as well as its cross-sectoral partnerships and implementation strategy, the programme will be instrumental to the mainstreaming of the objectives outlined in the Climate-Compatible Development Strategy for PNG.

E. Describe how the programme meets relevant national technical standards, where applicable.

All UNDP supported donor funded projects are required to follow the mandatory requirements outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes the requirement that all UNDP development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities under United Nations in PNG Delivering as One (UN DaO).

In addition, all UNDP supported donor funded projects are appraised before approval. During appraisal, appropriate UNDP representatives and stakeholders ensure that the programme has been designed with a clear focus on agreed results. The appraisal is conducted through the formal meeting of the Programme Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they should not have participated in the formulation of the programme and should have no vested interest in the approval of the programme. Appraisal is based on a detailed quality programming checklist which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the programme design.
The programme will be consistent with all relevant national legal frameworks and standards, such as:

- Lands and Physical Planning Act
- Fisheries Management Act
- Marine Protection Act,
- Environment Act (including Environmental Impact Assessment procedures and standards for water and wastes)
- Agriculture Act
- Disaster Management Act
- Codes of Practices for industries targeting the forestry and fisheries sector
- Flora and Fauna Act – covers various conservation acts
- Forest Management Act

Additional details will be provided in the full programme proposal when it is submitted to the AF Board for final approval.

F. Describe if there is duplication of project / programme with other funding sources, if any.

In this regard, the programme will clearly benefit from the executing entity's (OCCD) mandate to lead the coordination and facilitation of all climate change-related policies, initiatives and actions as stipulated under Pillar Five (Climate Change and Environmental Sustainability) of PNG's Vision 2050. In its function as clearing house, the OCCD will consider the implementation of a project (including this proposed AF programme), if it satisfies four criteria:

1) no existing programmes or no existing funding in place for this considered project;
2) the ability to protect people;
3) cost-effectiveness of the measures; as well as
4) high people-protection factors.

With the above in mind, the programme will be developed and implemented to create synergies with and implement complementary actions to the projects and initiatives outlined in the following table. Further, these initiatives will serve as resources for valuable lessons learnt and, at the same time, be part of the audience for the knowledge management and dissemination activities under the awareness raising component of the proposed programme.

Initiative/ Organisation	**Status, results, limitations**	**Complementarities to proposed AF programme**
The Pacific Adaptation to Climate Change (PACC) 2009-2011 (UNDP-GEF)	PACC is a regional UNDP-GEF funded programme executed through SPREP, involving 13 countries of the PIC. In Papua New Guinea the activities under this programme are focuseing at aspects of food security and droughts in, and limited to the pilot communities at Kivori, southern coast of Papua New Guinea.	The programme will ensure close coordination with the PACC national project coordinator and technical group in PNG, especially considering land use and water management issues related to flood preparedness and response measure. Lessons learnt from the proposed programme will be also fed through the UNDP-SPREP partnership the PACC project in order to ensure a broader regional outreach and exchange of experience.
Mangrove planting initiatives by Motupore Island Research Centre in East Hiri and a Wildlife Conservation Society project in Manus, PNG	The mangrove planting initiatives have been facing some limitations in regards of the survival rate of mangrove seedlings, both factors being essential for long-term sustainability.	The OCCD is currently conducting a stock take of planned and existing mangrove projects in PNG. Further, an analysis of the most cost-efficient and successful mangrove planting modalities that ensure community buy-in and long-term sustainability will be undertaken. This will be the basis for the coordination of mangrove planting initiatives and respective capacity building activities in the country.
NDC-OCCD-Digicel Partnership	The coastal warning system set up through this public-private partnership has already demonstrated to be a cost-efficient warning dissemination	The outputs under this programme will ensure the integration of the coastal early warning system and build respective capacities. The system will be expanded through further equipment and

	system for disaster preparedness. The system, however is not fully integrated and there is insufficient capacity and equipment to allow the system's use as coastal flood warning.	data management that allows the analysis in regards to climate-related coastal floods.
Coastal and Marine Resources Management in the Coral Triangle of the Pacific	This GEF-funded project falls under the purview of the Pacific Alliance for Sustainability Programme and is being implemented by ADB. It seeks to address vulnerability to various forms of risk including the impacts of climate change. As part of the project outcomes lessons learned on targeting the development of broad-scale resilience strategies (social, economic and biological) will be shared.	The GEF programme represents a valuable resource in regards to two outputs of the proposed AF intervention: - The development of a coastal zone management plan, and - Conservation and reforestation of mangrove forests
PNG Pilot Project under the UN HABITAT Cities and Climate Change Progamme.	The global programme aims to identify and reduce the impact of city-based sources of climate change while implementing measures to increase resilience to the effects of climate change in city areas. The pilot project in Papua New Guinea will focus on Port Moresby.	An exchange between this programme and the UN HABITAT Cities and Climate Change Programme will be mutually beneficial: The proposed AF-funded programme will be able to draw from the experiences made in the major towns of the North Coast (Lae, Madang, Wewak). At the same time, lessons learnt from the pilot project in Port Moresby will be incorporated in the activities under this proposed programme.
WB-Climate Investment Fund, Pilot Programme on Climat Resilence (PPCR).	PNG is one of the 3 pilot countries in the Pacific PPCR Project and the PNG national pilot is directed at climate proofing national infrastructure.	The proposed AF project will complement PPCR activities through introducing community-led coastal and riverside protection measures and early warning systems. Further, the proposed analysis of feasibility of coastal engineering measures, will be draw on the experiences made under the PPCR.
UNDP-SOPAC PNG DRM Mainstreaming Programme	This programme provides the overarching framework for UNDP-SOPAC support to PNG in 6 focal areas encompassing high-level advocacy, mainstreaming of DRM issues in national and sectoral plans, strengthened capacity and governance frameworks as well as risk information.	The proposed programme will build close synergies with this DRM programme, especially in regards to the integration of climate change adaptation and disaster risk reduction in the sectoral policy frameworks addressed under this programme as well as when taking capacity building support to provincial, district and local levels.

The programme will further explore and create partnerships with country support programmes of regional organizations, such as SPC, SPREP, SOPAC and the University of the South Pacific (USP), as well as regional and national initiatives financed by bilateral donors, such as AusAID, the European Commission, JICA, GIZ, and others.

Due to the time lag between the approval of the programme concept and the approval of the full programm proposal, a further analysis of other ongoing initiatives of relevance will be

undertaken during the programme formulation phase. Regular exchanges with the identified initatives will identify areas of complementarity and ensure that unnecessary duplications are avoided.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The proposed programme includes an explicit outcome (4) on knowledge management to promote ownership and raise awareness of climate change and disaster risks at national and local levels. This is not a standalone outcome but one that will be fully operationalized in the context of the other outcomes. The purpose of the outcome's arrangement under a separate component in the proposed progamme structure is to emphasise that the element of learning and knowledge dissemination is instrumental to strengthen the adaptive capacity at the local and natinal level. The systematic capturing of lessons learnt and good practices from early stages will allow the generation of a variety of knowledge management products, such as case studies, technical reports, photo stories, short videos, posters and brochures which will be tailored to different user groups with a particular focus on local communities. Materials will be developed in local a language, which is of importance in a country with such ethnic and language diversity. Direct learning from programme implementation will be supported through peer-to-peer site visits between communities engaged, and national and regional forums. A range of web-based platforms will be harnessed (including the development of a national portal under OCCD, as well as regional and global platforms, such as the SPREP CC Portal, or the Adaptation Learning Mechanism) and UNDP's Energy and Environment Network to disseminate knowledge products generated by the programme, and engage national stakeholders in web-based interactive exchanges. In the early implementation stage, the programme will establish a communication plan, to disseminate regular information using range of national and local media. The systematic integration of lessons learnt in educational and awareness activities, involving schools and educational institutions will support the long-term sustainability and replicability of the programme results.

Programme stakeholders will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks and events, which may be of benefit to support the diffusion of lessons learned. The programme will identify, analyze, and share lessons learned that can be beneficial in the design and implementation of similar future projects both in Papua New Guinea as well as elsewhere in the Pacific and beyond.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during programme preparation.

The formulation of this programme concept has benefitted from the strong institutional ties of the OCCD as coordinating body for climate-change related issues and its reach that encompasses local, provincial and national level institutions including policy-making bodies and key decision makers. It has also benefited from the series of provincial consultations that have been and will be held. The provincial consultations have fed vital information in regards to the needs and gaps that need to be addressed through interventions on the local and provincial levels.

The proposed intervention had also been reviewed by and received valuable contributions from the OCCD's Technical Working Group on Adapation, which meets every 2-3 weeks. The TWGs comprise the OCCD Director for Adaptation and representatives of other government agencies, civil society and the private sector:

- Development partners (World Bank, AusAID, UNDP);
- Private sector (Digicel);
- Government (PNG National Weather Service, Department of Mineral Policy and Geo-hazard Management, Office of Urbanization, Department of National Planning and Monitoring, Treasury Department, Office of Climate Change and Development, PNG Forest Authority, National Maritime Safety Authority, National Disaster Center);
- NGOs (WWF, Conservation International, University of PNG, The Nature Conservancy, Wildlife Conservation Society)

The intervention strategy of the proposed programme was developed with further contributions from a range of stakeholders which include the following national agencies and organizations:

- Department of Environment and Conservation
- Department of Agriculture and Livestock
- Department of Health
- Department of National Planning and Monitoring
- Department of Provincial and Local Level Development Affairs
- National Forest Authority
- Papua New Guinea National Weather Office
- National and subnational level Disaster Risk Centers
- National Agricultural Research Institute
- Provincial level authorities

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Upon the approval of this programme concept, the involved stakeholders will be invited to collaboratively contribute to the preparation of the full programme proposal. This will ensure that project activities are undertaken by or in collaboration with the relevant departments while respective needs in terms of capactiy building and technical support be addressed. It will further enable the OCCD to draw on the existing knowledge and lessons learnt, which will serve as a vital basis for establish targets, baselines and forms of measuring and evaluating advances in the achieving the desired outputs and outcomes of the programme. The programme formulation process will also be building on and serve to strengthen existing inter-ministerial coordination mechanisms.

The full acount of the stakeholder consultation process for the preparation of the results framework will be then added to the programme proposal submitted for AF Board approval.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Component 1: Adaptation to coastal flood-related risks and hazards for North Coast and Islands Region Communities

Baseline (without AF resources)

As mentioned in the barriers section, the government continues to be reactive rather than proactive in responding to natural hazard risk, lacking an integrated early warning system that would allow preventive measures, resilience building and preparedness to climate-induced hazards. Due to the lack of adequate coordination and capacity of sub-national government institutions, flood hazards will continue to cause damage to community assets and livelihoods.

Without proper awareness, education and advocacy on climate risks, and the systematic use of early warning systems, the vulnerable communities will remain inadequately prepared for disasters and insufficiently informed about responsive measures, which will further result in continued costs through compensations as solutions to hazards.

The current low capacity and insufficient equipment of the PNG National Weather Service to collect, monitor, manage and communicate relevant data will continue to hinder the effective production and uptake of climate information services. Due to the lack of tailored climate information services, coastal communities will continue to be exposed to flood risks, which will further impede coastal protection efforts. The current efforts undertaken by other initiatives (such as the identification and introduction of climate resilient crops by NARI) will have limited impacts, if communities do not receive timely information on potential flood hazards.

Current unsustainable coastal practices (clearing of mangroves, over-fishing), will continue to increase vulnerability of coastal communities to flood and cyclone-related hazards, with diminished and further decreasing function of protective coastal ecosystems, and related ecosystem services.

Additionality (with AF resources)

AF resources will be used to undertake comprehensive analysis and mapping of hazard impacts along the coastal area in order to facilitate the development and establishment of an early warning system. By supporting the capacity of the National Weather Service, and Disaster Centres at different societal levels, information will be communicated in a more effective and timely manner, allowing appropriate preparedness and needed response measures, in case of climate-related hazards. This will directly improve the vulnerable communities' resilience to climate-related hazards. The timely communication of early warning information and alerts will be supported through partnerships with telecommunication companies as well as the press, TV and radio media.

The programme will support the conservation of mangroves, through replanting, establishment of nurseries and community-based conservation measures. It is expected that intact and healthy mangrove ecosystems will buffer coastal settlements and limit the impact from flood and storm hazards. This will continue to provide spin-off benefits through sustainable use of mangrove forests as outlined in section B on the benefits derived from the intervention measures.

Further, the proposed measures will also provide a clear picture on the effectiveness, potential, ideal locations and feasibility of other coastal infrastructure measures including but not limited to the construction of seawalls.

Component 2: Adaptation to flood-related risks and hazards for river communities in Morobe, East Sepik and West Sepik.

Baseline (without AF resources)

The baseline scenario in regards to early warning systems as well as disaster preparedness and response in the targeted river communities is analogue to the abovementioned situation with respect to the coastal communites: Capacities and equipment to collect and manage early warning data as well as the communication of information related to disaster preparedness and response remains inadequate.

Without the establishment of locally designed riverbank protection measures, riverine communities will continue to suffer from flood-hazards. Current coping techniques (filling of riverbanks, ad hoc planting of vegetation) including traditional knowledge will not be sufficient to withstand the expected increase in intensity of rainfall events and associated floods.

Additionality (with AF resources)

A comprehensive analysis and mapping of hazard impacts will be the basis for the implementation of an integrated early warning system and provide the required capacity to identify the location of river and rain water gauges and develop tailored information services and respective communication channels. This will enable vulnerable communities to appropriately prepare for and respond to climate-related hazards and increase local resilience to climate-related hazards. Analogue to the coastal early warning system, the distributed of information and alerts will be supported through partnerships with telecommunication companies as well as the press, TV and radio media.

Through capacity building and technical assistance, communities will be able to implement appropriate riverside protection measures, constituting of a mix of hard structures based on the use of locally available material and complementary soft techniques such as planting and conservation of appropriate vegetation. This will significantly reduce flood-related impacts on livelihoods and assets in the vulnerable communities. The locally adjusted design of the protection measure will allow active community participation, and the long-term maintenance of such measures through local capacity.

Component 3: Institutional strengthening to support climate- and disaster-resilient policy frameworks

Baseline (without AF resources)

Although the country recently completed a series of climate risk assessments and plans under the framework of the Climate-Compatible Development Strategy, sectoral policies, plans and related legal frameworks continue to omit climate change and disaster-related risks. The objectives of sectoral frameworks, such as the National Agricultural Development Plan, Environment Act, Fisheries Management Plan, PNG National Marine Programme among others are likely to be jeopardized by climate-induced disasters and gradual changes in climate patterns. In the absence of an integrated and climate change-sensitized coastal zone management policy in the country, coastal protection efforts will remain fragmented and unsustainable in the long-term. Climate-change and disaster responses will remain fragmented and ineffectively coordinated within and between the national and local levels and will remained insufficiently addressed and mainstreamed into the policy-making processes.

Additionality (with AF resources)

AF resources will support a systematic overview and analysis of the policies and institutional capacities related to disaster preparedness and response, coastal zone management and development planning in flood-prone areas as well as legal frameworks at the different levels. This will serve to support the mainstreaming of climate and disaster risks, alongside similar supportive initiatives (like the UNDP DRM Mainstreaming programme), for the development of climate-resilient policies at the regional and local levels. This will be conducted though facilitating dialogue and providing capacity building to relevant line institutions (In particular:

OCCD, DEC, DAL, NARI, DCD, NDC, National Weather Service) while continuously informing higher level policy makers through regular policy briefs. The programme will support the strengthening of institutional structures, such as establishment of the proposed Conservation and Environmental Protection Authority, and the integration of climate and disaster-related risk responses in the development of standards for building and land-use planning codes in collaboration with provincial authorities.

Component 4: Awareness raising and knowledge management

Baseline (without AF resources)

Current dissemination of climate change and disaster risk-related information is completely ad-hoc, piecemeal and largely limited to some activities of OCCD and some NGOs. Without this programme ongoing adaptation experiences from other initiatives will not be communicated broadly, and opportunities will be missed to link ongoing projects and programmes (such as PACC, or the UNDP DRM Mainstreaming Programme) with the overarching policy-making process in a coordinated manner. Broader applications of the climate early warning system will be limited by the absence of systematic awareness raising programmes that provide the population and vulnerable communities in particular with the information to prepare and respond to climate and disaster risks.

Additionality (with AF resources)

The programme will support the active outreach to and engagement of local communities through climate change awareness raising and information exchange activities while harnessing a range of media, tailored to local cultural context. As result, vulnerable communities will be able to make informed decisions in regards to flood preparedness and undertake coordinated responsive measures when necessary. In addition, the OCCD as executing agency will provide the channels for the lessons learnt and best practices generated to be fed back into the policy-making processes on the provincial and national levels.

The introduction of the produced knowledge materials (case studies, photo stories, brochures) in school activities will ensure a mechanism for longer term impact and replication of experiences and climate resilience. The facilitation of peer-to-peer exchange visits will allow communities to learn from each other's experience on-site in a practical way. AF resources will also support the sharing of experiences more broadly at the national, regional and global levels through the establishment of knowledge sharing platforms and presentations at regional events.

The full cost of adaptation reasoning will expanded upon in line with the quantification of the beneficiearies and baselines as part development of the results framework.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for programme implementation.

The Government of Papua will execute this five year programme with the support of UNDP under the National Execution (NEX) modality. The Office of Climate Change and Development (OCCD) will function as executing agency and will be responsible for ensuring that the stated

programme objective and outcomes are delivered, and that resources are allocated and disbursed in an efficient and effective manner as detailed in the Programme Document. OCCD will be responsible for ensuring effective coordination between this Programme and other relevant projects in PNG.

The OCCD is the lead coordinating institution in the area of climate change and as such has strong cross-sectoral mechanisms. The OCCD reports directly to PNG's Prime Minister and through the National Climate Change Committee (NCCC). Through these strong links, the OCCD can draw on support of the line agencies and departments represented in the NCCC. The NCCC is comprised of 11 secretaries from different government departments, including the executive director of the OCCD and is chaired by the Chief Secretary, PNG's highest ranking civil servant. The NCCC meets every month and is mandated to oversee all policies and actions under Pillar Five of the Vision 2050, concerning Climate Change and Environmental Sustainability.

The Programme will be coordinated through a Programme Steering Committee (SC) which will provide support for the operational management of the Programme. It will be chaired by a high-level representative from OCCD, UNDP and representatives of the main programme beneficiaries.

The programme structure will be constituted by a National Programme Director (NPD), comprising a National Programme Coordinator (NPC). The National Programme Director will be responsible for supervising the Programme on behalf of OCCD and will work with the NPC. The NPD is the administrative and executive manager of activities described in the Programme Document. The NPC will be supported by a team, which is to include an assistant whose focus will be the support of the internal capacity building of the OCCD in relation to the coordination and management of the programme acitivities.

OCCD will follow the norms and procedures detailed in the UNDP NEX manual for programme execution. For its part, UNDP will provide support to the Director and the Coordinator of the programme, in order to maximize its reach and impact as well as the quality of its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Programme Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Programme activities, will be undertaken under the direct supervisión of the UNDP Country Office. This includes an operational work plan on an annual basis prepared by OCCD in consultation with UNDP and is approved by the Programme Steering Committee.

UNDP will undertake the internal quarterly monitoring of the programme and of evaluation activities, taking into account the local capacities for administering the programme, capacity limitations and requirements, as well as the effectivenes and efficiency of communications between ministries and other institutions that are relevant to the programme.

OCCD will prepare an Annual Work Plan that incorporates programme activities and results to be delivered through the Work Plan. The plan will define the execution time frame for each activity and the responsible parties for its implementation. The first Work Plan will be finalized and incorporated into the Programme Document within 30 days of its signature.

The participatory development of the work plans will be essential for the results-focussed planning, that will locate the execution of indivdiual activities under the programme according to

the capacities of the stakeholding departments and institutions and will ensure that adequate resources for capacity building and technical assistance are provided respectively.

B. Describe the measures for financial and programme risk management.

Key assumptions underlying the programme which will be explored during the formulation phase include:

- A series of unusually adverse climatic conditions does not damage adaptation measures being implemented, or weaken the interest of key stakeholders to addressing adaptation issues.
- A national consensus on the institutional management of climate change is reached, meaning that collaboration of key government departments in the programme is not hindered by unforeseen influences.
- There is sufficient coordination between local, provincial and national authorities to scale up the area-based action in an integrated and effective manner.
- Political or security complications in programme sites does not limit implementation of activities.
- The government remains supportive, politically and financially, to a cross-sectoral and integrated approach to the management of climate risks and opportunities.
- Communications difficluties between national, provintial, district authorities and local communites, furthermore acces problems to remote villages does not hinder effective programme coordination and implementation.
- There is sufficient co-operation and commitment within the target communities to support community level action for the adaptation measures.
- The techniques and technologies developed are gender sensitive – i.e. they do not increase inequity between men and women or change the social roles of men and women in a way that reduces self reliance.
- The selection of target sites follows the established criteria and not derailed due to political processes and influences.

While the above risks need to be assessed in detail, strong commitment from the Government of Papua New Guinea exists. This limits the likelihood of institutional-level risks to have a negative impact on the proposed programme and the desired outcomes. Furthermore, linkages made to ongoing and planned baseline development activities implemented by other government agencies as well as local buy-in will also minimize these risks. The most serious risk related to institutional coordination is staff turnover, a common issue in a number of Pacific countries and often a cause for broken communication chains. The mitigation strategy to address this risk involves early and consistent engagement of senior government decision makers on programme progress and monitoring, the application of an awareness programme for policy makers, and the involvement of a group of core technical officers in relevant line ministries and departments, as well as national NGOs and community—based support organizations.

A more comprehensive risk assessment will be carried out during the programme formulation phase and an appropriate mitigation strategy will be outlined in the programme proposal. During regular programme review meetings, in which UNDP is an active participant, all risks and mitigation measures will be reviewed and updated as per established practices.

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Programme monitoring and evaluation will be conducted in accordance with established UNDP procedures by the programme team with the support of UNDP Staff. The results framework for the programme (based on the outline provided in this concept and to be developed and presented in the full programme proposal) will provide performance and impact outcome level indicators along with their corresponding means of verification. These will form the basis on which the programme's Monitoring and Evaluation system will be built.

The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The programme's Monitoring and Evaluation Plan will be presented in the final programme proposal (including necessary budgetary resources) submitted for AF Board approval and finalized in the Programme's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of programme staff M&E responsibilities.

In accordance with the programming policies and procedures outlined in the UNDP User Guide, the Programme will be monitored at the national levels through the following:

Within the annual cycle

- On a quarterly basis, a quality assessment shall record progress towards the completion of key results, based on quality criteria and methods captured in the Quality Management table below (to come).
- An Issue Log shall be activated in Atlas and updated by the Programme Manager/National Programme Managers to facilitate tracking and response of potential problems or requests for change.
- Based on the initial risk analysis submitted, a risk log shall be activated in Atlas and regularly updated by reviewing the external environment that may affect the programme implementation.
- Based on the above information recorded in Atlas, a Programme Progress Report (PPR) shall be submitted by the Programme Manager to the Programme Board and the National Programme Managers to the National Programme Boards through Programme Assurance, using the standard report format available in the Executive Snapshot.
- A Programme Lesson-learned log shall be activated and regularly updated to ensure on-going learning and adaptation within the organization, and to facilitate the preparation of the Lessons-learned Report at the end of the programme.
- A Monitoring Schedule Plan shall be activated in Atlas and updated to track key management actions/events.

Annually

- *Annual Review Report.* An Annual Review Report shall be prepared by the National level Programme Manager and shared with the Programme Board. As minimum requirement, the Annual Review Report shall consist of the Atlas standard format for the Quarterly Progress Report (QPR) covering the whole year with updated information for each above element of the QPR as well as a summary of results achieved against pre-defined annual targets at the output level.
- *Annual Programme Review.* Based on the above report, an annual programme review shall be conducted during the fourth quarter of the year or soon after, to assess the performance of the programme and appraise the Annual Work Plan (AWP) for the following year. In the

last year, this review will be a final assessment. The national review is driven by the Programme Board and may involve other stakeholders as required. It shall focus on the extent to which progress is being made towards outputs, and that these remain aligned to appropriate outcome(s). The regional review is driven by the Programme Board.

Mid-term and terminal evaluation report

According to established UNDP practices, the programme will undergo an independent mid-term and terminal evaluation.

D. Include a results framework for the programme proposal, including milestones, targets and indicators.

Upon the approval of this programme concept, the involved stakeholders will be invited to collaboratively develop the results framework for the preparation of the full programme proposal. This will ensure that programme activities are undertaken by or in collaboration with the relevant departments while respective needs in terms of capacity building and technical support while be addressed. It will further enable the OCCD to draw on the existing knowledge and lessons learnt, which will serve as a vital basis for the development of baselines and means for qualitatively verifying the achievement of the desired outputs and outcomes of the programme.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT[21] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional programme:*

Dr. Wari Iamo, Acting Executive Director, Office of Climate Change and Development	Date*: 15 April 2011*

6. Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

B. IMPLEMENTING ENTITY CERTIFICATION *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the programme contact person's name, telephone number and email address*

<table>
<tr><td colspan="2">I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this programme.</td></tr>
<tr><td colspan="2"> 
Yannick Glemarec
Director, Environmental Finance, UNDP</td></tr>
<tr><td>Date: April 18, 2011</td><td>Tel. and email: +1-212-906-6843;
yannick.glemarec@undp.org</td></tr>
<tr><td colspan="2">Programme Contact Person: Gabor Vereczi</td></tr>
<tr><td colspan="2">Tel. And Email: gabor.vereczi@undp.org</td></tr>
</table>

ANNEX I: UNDP Environmental Finance – Specialized Technical Services

Stage	Specialized Technical Services Provided
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues and specialized funding opportunities (SOFs)
	Verify soundness and potential eligibility of identified idea
Feasibility Assessment / Due Diligence Review	Technical support: provide up-front guidance; sourcing of technical expertise; verification of technical reports and project conceptualization; guidance on SOF expectations and requirements
	Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against identified SOF
	Assist in identifying technical partners; Validate partner technical abilities.
	Obtain clearances – SOF
Development & Preparation	Technical support, backstopping and troubleshooting
	Technical support: sourcing of technical expertise; verification of technical reports and project conceptualization; guidance on SOF expectations and requirements
	Verify technical soundness, quality of preparation, and match with SOF expectations
	Negotiate and obtain clearances by SOF
	Respond to information requests, arrange revisions etc.
	Verify technical soundness, quality of preparation, and match with SOF expectations
Implementation	Technical and SOF Oversight and support
	Technical support in preparing TOR and verifying expertise for technical positions. Verification of technical validity / match with SOF expectations of inception report. Participate in Inception Workshop
	Technical information and support as needed
	Technical support, participation as necessary
	Advisory services as required
	Allocation of ASLs
	Technical support and troubleshooting, Support missions as necessary.
	Project visits – at least one technical support visit per year.
	Technical support, validation, quality assurance
	Return of unspent funds

Stage	Specialized Technical Services Provided
Evaluation and Reporting	Technical support, progress monitoring, validation, quality assurance
	Technical support, participation as necessary
	Technical support in preparing TOR and verifying expertise for technical positions. Verification of technical validity / match with SOF expectations of inception report. Participate in briefing / debriefing
	Technical analysis, compilation of lessons, validation of results
	Dissemination of technical findings

Service standards:

1. initial response to communication within 2 working days
2. full response to communication (with the exception of a response requiring travel) within 10 working days

ANNEX II: List of Abbreviations

ADB	Asian Development Bank
AF	Adaptation Fund
AFB	Adapation Fund Board
ALM	Adaptation Learning Mechanism
AusAID	Australian Government Overseas Aid Programme
CBA	Community-based Adaptation
CBO	Community based organization
CCDS	Climate-Compatible Development Strategy
CEPA	Conservation and Environment Protection Authority
DAL	Department of Agriculture and Livestock
DEC	Department of Environment and Conservation
DRM	Disaster Risk Management
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ/GTZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoPNG	Government of Papua New Guinea's
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
LLG	Local-Level Government
M&E	Monitoring & Evaluation
MDG	Millenium Development Goals
MIRC	Motupore Island Research Centre
MIE	Multilateral Implementing Entity
NARI	National Agriculture Research Institute
NCCC	National Climate Change Committee
NDC	National Disaster Centre
NEX	National Execution
NGO	Non-Governmental Organisation
NIE	National Implementing Entity
NPC	National Programme Coordinator
NPD	National Programme Director
OCCD	Office Of Climate Change and Development
PAC	Programme Appraisal Committee
PACC	Pacific Adaptation to Climate Change Project
PIC	Pacific Island Centre (formally named the South Pacific Economic Exchange Support Centre)
PNG	Papua New Guinea
PNGNWS	Papua New Guinea National Weather Service

PPCR	Pilot Programme on Climat Resilence
PPR	Programme Progress Report
SGP	Small Grants Programme
SOPAC	Secretariat of the Pacfic Community
SPREP CC	Secretariat of the Pacific Regional Environment Programme
TWG	Technical Working Group
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDP POPP	UNDP Programme and Operational Policies and Procedures
UNEP	United Nations Environment Programme
UN HABITAT	United Nations Human Settlements Programme
USP	Univeristy of the South Pacific
WB	World Bank
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

Annex: Letter of Endorsement

OFFICE OF CLIMATE CHANGE AND DEVELOPMENT (OCCD)

– OFFICE OF THE EXECUTIVE DIRECTOR –

Telephone: (675) 325 0180
Facsimile: (675) 325 0182
Email: officesec@dec.gov.pg

Level. 7 Somare Foundation
P O Box 6601
BOROKO, NCD

15th April 2011

Adaptation Fund Board
c/o Adaptation Fund Secretariat
Washington DC
USA

Endorsement for Papua New Guinea's Adaptation Fund Programme Concept "Enhancing adaptive capacity of communities to climate change-related floods in the North Coast and Islands Region of Papua New Guinea"

In my capacity as Designated Authority for the Adaptation Fund in Papua New Guinea, I confirm that the above Programme Concept is in accordance with the Government of Papua New Guinea's national priorities in enhancing resilience to the adverse impacts posed by climate change in Papua New Guinea.

Accordingly, I am pleased to endorse the above proposal with support from the Adaptation Fund. If approved, the Programme Concept will be expanded upon and re-submitted for the Adaptation Fund Board's consideration as Programme to be implemented under the coordination of UNDP as Multilateral Implementing Entity.

I look forward to seeing further measures aiming at enhancing Papua New Guinea's resilience to climate change being undertaken with the continued support and designated resources from the Adaptation Fund.

Sincerely,

Dr. Wari Iamo,
Acting Executive Director, Office of Climate Change and Development

Cc: Ambassador Robert Aisi, PNG Representative to the United Nations, New York
Yannick Glemarec, Implementing Entity Coordinator, UNDP
David McLachlan-Karr, Resident Representative, UNDP, PNG
Kevin Conrad, PNG's Special Envoy on Climate Change and Environment, New York