



FINAL PROJECT REVIEW REPORT

[YEAR (OF PROJECT OPERATIONAL CLOSURE)] 31 DECEMBER 2017

United Nations Development Programme

The Government of Papua New Guinea

[Project Title]: Enhancing the Adaptive Capacity of Communities to Climate Change Related Floods in the North Coast and Islands Region, Madang, PNG Project.

Award ID [00059799]: UNDP-Papua New Guinea

Award ID:
Project Duration:5 years
Extension(s): 1
Implementing Partner: Climate Change and Development Authority
Total Budget: US\$ 7,212,116
[Donor] Contribution¹:
Adaptation Fund: US\$ 6,018,777
Australia Department of Foreign Affairs and Trade: USD\$649,394
UNDP TRAC Fund: USD\$543,945
GoPNG (In-kind): SD220,000
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Date of Report:30 Nov

¹ List all donor contributions

Brief project description (possibly from Project Document):

The impact of climate change-related hazards in the Papua New Guinea (PNG) country has been increasing in intensity and frequency. Further impacts from climate change include the loss of food gardens due to extensive flooding (both in coastal and riverine areas) combined with extended periods of drought. The rising sea level is causing some of PNG's islands to be gradually submerged. Salt water intrusion is affecting groundwater particularly in the islands and in coastal areas, threatening domestic water supplies and agriculture. With the onset and multitude of climate change impacts, the country's economy, environment and people are becoming more vulnerable and are at risk of not meeting basic human development needs. Climate change puts at risk the achievement of the goals set out in PNG's major development plans.

Flooding in the coastal areas is one of the most important climate change related hazards in the North Coast and the Islands Region as settlements are usually located in the coasts, particularly the provincial capitals of East Sepik (Wewak), Madang (Madang), Morobe (Lae), and West New Britain (Kimbe). Similarly, in the hinterland areas, climate change-related inland flooding is the most pressing hazard with the largest potential for wide-spread damage.

In response to the above challenges, since 2012, Government of PNG through the Climate Change and Development Authority in partnership with other government agencies, Provisional Governments and civil society organisations to implement a project on Enhancing Adaptive Capacity of Communities to Climate Change-related Floods in the North Coast and Islands Region of PNG with funding from the Adaptation Fund, the UK Department for International Development and UNDP. The overall objective of this programme is to enhance the adaptive capacity of communities to make informed decisions about and adapt to climate change-driven hazards affecting both coastal and riverine communities in the North Coast and Islands Region of Papua New Guinea. In particular, the programme will focus on resilience towards occurrences of coastal and inland flooding events. The proposed programme will contribute to several outcomes and outputs listed within the Adaptation Fund Strategic Results Framework.

The project had 4 outcomes:

1. Reduced exposure and increased adaptive capacity of coastal communities to flood-related risks and hazards in 8 communities and 3 cities of the 11 provinces of the North Coast and Islands Region;
2. Reduced exposure and increased adaptive capacity of 8 riverine communities of the 4 provinces (East Sepik, Oro, Morobe and Madang Provinces);
3. Strengthened institutional capacity at national and sub-national levels to integrate climate change-related risks into sectoral policies and management practices; and,
4. Strengthened awareness, education and advocacy to promote ownership of adaptation and climate change-related risk reduction processes at national and sub-national levels.

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ACRONYMS

EXECUTIVE SUMMARY

(Minimum half a page, maximum 2 pages)

The project was designed to strengthen ability of coastal and riverine communities in Papua New Guinea to make risk informed decisions and to undertake concrete actions to adapt to climate change-driven hazards affecting their specific locations. This was to be achieved through; i) reduced exposure and increased adaptive capacity of coastal and riverine communities to flood-related risks and hazards; ii) strengthened institutional capacity at national and sub-national levels to integrate climate change-related risks into sectoral policies and management practices; Strengthened awareness and ownership of adaptation and climate change-related risk reduction processes at national and sub-national levels.

Through various partners the project has enhanced resilience of Local Level Government bodies and communities to climate induced inland and coastal flooding. Through the community based projects local/indigenous livelihoods were strengthened in the five provinces of Madang, East Spike, New Ireland, Morobe and Northern Province. These adaptation measures were based on a participatory and community based approach to map climate hazards, vulnerabilities and risks. The consultation processes involved women and other vulnerable sections of the communities to ensure that their views are incorporated into the planning and decision-making process.

About 263.1 hectares and 131.6 km of the coastline will be protected following planting of 61,400 seedlings generated from 30 community nurseries supported by the project. This is expected to reduce hazard exposure of up to 13,976 people from coastal flooding. These mangrove restoration measures were based on a coastal ecosystem survey and Geographical Information System mapping which identified 75.9km degraded coastlines (4660ha), 2088ha mangrove habitat distribution in Madang North Coast region. In addition, riverine protection and adaptation measures adopted on Ramu and Bumbu rivers are expected to reduce vulnerability of up to 31,223 people. Community mangrove management plans have been developed to provide a basis for resource allocation to sustain the mangrove conservation efforts at the community level. Additional adaptation measures adopted include installation of 18 water tanks each with 9000 liters capacity, bamboo plantations to protect erosion caused by river floods, seed multiplication and setting up family gardens as part of diversifying agricultural production systems for food security.

Establishment of an automated early warning system for River Bumbu flooding has enabled National Weather Services to provide real time forecasts to inform early warning. Development of the early systems was informed by results of the early warning systems assessment completed in 2014. Based on these warnings, the provincial and ward disaster management committees can be able to mobilise communities to take early in line with the ward disaster management plans that have been developed at ward level and first line responders who have been trained during the project. In addition, the pilot early warning system on Bumbu river will result in reducing vulnerability of up to 200,000 people who live in Morobe, Lae and Wawek towns. Further investment in private sector partnerships to provide digital public display of forecast will further enhance capacity for risk informed decisions and reduce vulnerability.

Climate Change Adaptation and disaster risk management has been mainstreamed in development plans of key sectors in each of the provinces. This provides a basis for government to invest in adaptation and disaster risk reduction measures as part of PNG Strategic Plan (2010-2030) climate change goal on adaption to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions in realization of Vision 2050. Through the climate change adaptation planning process, provincial technical staff and policy makers capacity has been built about the importance of mainstreaming climate change adaptation into development

planning and enhanced understanding of the practical realities of mainstreaming climate change adaptation into development planning and budgeting.

Institutional framework has been strengthened through establishment of provincial climate change committees and ward disaster management committees. These committees have been strengthened through training to enable them support implementation of on-ground adaptation and disaster risk reduction measures. Working through existing national and provincial structures has ensured ownership of project results, ensures retention of capacity in the community and provides a strong foundation for sustainability of results.

A website has been developed to act as a hub and key repository for information on climate change impacts and adaptation measures www.climateadaptationpng.org. As a result, PNG actions on climate change adaptation have been shared globally. All the knowledge products, community experiences and stories have been uploaded to the website and can be accessed by the global community and positioned PNG as a leader in climate change action.

Through the different interventions, the project has increased women participation and empowerment to enable them understand climate change adaptation and disaster risk reduction concepts and take appropriate measures to cope and adapt. Out of 50,316 direct beneficiaries of the project, 41% were women. This exceeds the end of project target of 20%. Specific training was conducted for women on climate smart agriculture and food preservation attended by 375 (51.2% women) people. Notwithstanding, these results, there are still inequalities in representation on community leadership structures.

The project established partnerships with national and international NGOs through micro capital grants for implementation of on-ground activities and with international institutions to undertake analytical studies. By establishing partnerships with NGOs and regional institutions, the project has enhanced south to south and triangular cooperation ensuring that both local and national institutions can continue to work together in sustaining project results. Through this project, the working relationship between Climate Change Development Authority (CCDA), National Weather Services (NWS), National Disaster Center (NDC) and Conservation and Environment Protection Authority (CEPA) has been strengthened. As a result, government has been able to establish an integrated early warning system for River Bumbu flooding and developed integrated climate change adaptation and disaster risk management plans by leveraging synergies across the institutions. Because of these partnerships, the project has been able to achieve more than 90% of all its planned outputs and utilized 100% of all financial resources in expenditure and commitments by 31 Dec 2017.

Working through existing partners at provincial level has high positive impact on delivering and sustaining results. During scale up to other provinces, NGO partnerships could be utilized to strengthening capacity of existing community based organizations to innovate and deliver on climate change actions building on their local knowledge. This would further increase ownership and sustainability of on-the-ground investments. In addition, further investment in private sector engagement in climate information dissemination could increase effectiveness of early warning systems, preparedness and adaptation capacity.

Notwithstanding, some activities such as child-centred climate change adaptation activities with target schools in Middle and Upper Ramu communities could not take place as planned due to climate change challenges. For instance, Wanang Conservation Elementary and Primary Schools in Middle Ramu District were closed because of drought conditions in 2015.

This report provides a final review of the project performance over the implementation period, its contribution towards realizing national development goals over its life including lessons learned. The report is divided into six sections. Section I covers project context; Section II covers summary of project results by output; Section III covers performance review with respect to its contribution to achieving the UN Development Assistance Framework outcomes and programming principles, implementation strategy; and management effectiveness; Section IV presents project

implementation issues while Section V presents lessons learned and Section VI presents financial status and utilization of project resources.

I. CONTEXT

(Minimum half a page, suggested 1 page)

The National Vision of PNG recognizes that climate change and variability is inevitable and poses one of the greatest challenges to achieving a Smart, Wise, Fair, Healthy and Happy Society by 2050 ranked among the top 50 countries on the United Nations Human Development Index. The impact of climate change-related hazards in Papua New Guinea (PNG) has been increasing in intensity and frequency. With the onset and multitude of climate change impacts, the country's economy, environment and people are becoming more vulnerable and are at risk of not meeting basic human development needs. Climate change puts at risk achievement of the goals set out in PNG's major development plans. Flooding in the coastal and riverine areas is one of the most important climate change related hazards in the North Coast and the Islands Region as settlements are usually located in the coasts, particularly the provincial capitals of East Sepik (Wewak), Madang (Madang), Morobe (Lae).

In response to the increasing climate change impacts, Government of PNG with support from UNDP designed the enhancing adaptive capacity of communities to climate change related floods project with financing from the Adaptation Fund. The project contributes to realization of strategic focus area five of the PNG 2010-2050 on environmental sustainability and climate change. Under this focus area, the Vision and the National Development Strategy 2030 aim to manage environmental issues such as the health of the environment as well to address the issues of climate change in ways that best suit PNG's developmental needs. The PNG Strategic Plan (2010-2030) climate change goal states "Adapt to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions".

The project was designed to contribute towards UNDAF/CPAP 2012-2017 outcome 4 on environment, climate change and disaster risk management: "By 2015, Government and civil society have enhanced their capacity to implement biodiversity conservation, low carbon and climate resilient development initiatives for environmental sustainability and improved community livelihoods to reduce the vulnerability of women, girls, men and boys to disaster risks; CPAP outputs of Output Theme: Promote Low Carbon Growth and Climate Resilient Economic Development. Output Statement: "Public institutions, private sector and local communities enhance the implementation of low carbon growth and climate resilient development initiatives for environmentally sustainable economic growth.

Implementation of the project was led by the Climate Change and Development Authority in collaboration with the National Weather Services, Conservation and Environmental Protection Authority; National Disaster Center and Provincial Administrations of Morobe, Northern, East Sepik, Madang, and New Ireland. The targeted beneficiaries of the project include: 9 coastal communities and 8 riverine communities in the five provinces of Morobe, Madang, New Ireland, East Sepik and Northern.

II. PROJECT RESULTS SUMMARY

(Suggested 1-2 pages per project output)

1.1 Coastal early warning system established for observation, data collection and information management and dissemination in the provinces of the North Coast and Islands Region

Under this output, the key activities undertaken include; An assessment of early warning systems for inland and coastal flooding in Papua New Guinea; ii) Comprehensive multi-hazard profiling of each province; iii) climate risk, vulnerability and needs assessment for each of the five provinces and iv) community level climate hazard and risk assessment was conducted in 30 communities of the five provinces.

Through these assessments, climate risks, exposure and vulnerability to principal climate hazards affecting five pilot provinces (East Sepik, Madang, Morobe, Northern, and New Ireland) were identified and used to prepare composite risk Atlas and maps and indices for the hazards at the district level. The vulnerability and hazard assessments provide exposure data for the three provincial capitals of Lae, Madang and Wewak.

Table 1 Participation in Provincial Vulnerability Assessment Workshops

Northern (Oro)	6	2	8
Morobe	13	3	16
Madang	8	3	11
East Sepik	18	4	22
New Ireland	7	4	11
Total	52	16	68

The exposure data/maps have been shared with provinces and coastal adaptation measures identified through a consultative process as part of developing provincial adaptation plans. The community level climate hazard and risk assessment conducted in 30 communities of the five provinces documented community perspectives on climate change; types of climate and weather-related issues that are affecting the communities, impact of climate hazards on local economic systems, ecology and livelihoods of the communities and document community coping/ adaptation mechanisms.

These climate risk, vulnerability and hazard profiles have provided evidence based for development and implementation of climate and disaster risk reduction measures in the provinces and informed preparation of climate change adaptation and disaster risk management plans. The early warning system assessment informed the design and establishment of the pilot Bumbu river early warning system and installation of automatic weather stations and rain guages in strategic locations.

1.2 Coastal flood preparedness and response plan and systems established in the provinces of the North Coast and Islands Region

Activities undertaken to support and build community resilience and capacity of coastal communities vulnerable to coastal flooding, tropical storm and strong winds include: i) disaster risk management/climate-change awareness and training at a provincial level; ii) formation of Community Disaster Management Committees, iii) First aid/search and simulation exercises, iv) development of community disaster response plans v) Assessment of the sustainability of coastal and estuarine ecosystems with specific relation to mangrove rehabilitation and replanting schemes; vi) support, monitor and report on mangrove rehabilitation and replanting vii) study and review of indigenous early warning systems/mechanisms with the aim of strengthening existing indigenous early warning systems and linking them to different levels of governing bodies at the province. Based on the early warning system assessments, vulnerability assessment and multi-hazard profiles, comprehensive disaster preparedness and response plans have been reviewed and or developed in the 5 provinces. The plans articulate the hazard risks in the provinces, institutional framework for disaster risk management, roles and responsibilities of key stakeholders.

A total of 2,155 (1113 Male & 1042 female) benefited from training and capacity building activities towards climate change response in the four communities of New Ireland Province. As part of capacity building, provincial staff (4-men) were supported to participate in a 3-week training in Thailand on disaster risk management. This has enabled them to facilitate preparation of disaster risk management at ward level that inform development of provincial plans. In addition, disaster management committees were established at ward level in lower local governments of Tikana and Lovongai in Kavieng District. Sumuna in Djaul Island Ward 17, Tikana and Taskul Government station in Ward 1, Patiagaga in ward 2 and Konomatalik in Ward 3 of Lovongai lower local government in New Hanover Island and; refresher training was conducted for 861 people for six Ward Disaster Management Committee in community-based disaster response management, climate change adaptation, and emergency response; and 32 community members as first responders.

The project established basic DRM and CCA management structures at the grass-roots level and enabled a basic understanding of hazards, risk, and suitable adaptation measures amongst the target communities. By working in schools as well as communities, the beneficiaries were not only the adult population, but also children, who have shown a keen interest in DRM and CCA. The project provided capacity development of the local ward disaster management committee through structured training, as well as coaching on-site during the facilitation of awareness sessions. These committees will remain after the project ceases and continue to work on building up adaptation measures within their communities. Through the project they have established close links with the local authorities and will therefore be able to access further support in the future and keep actively Ramu River Community Resilience Project engaged in DRM and CCA activities, for instance by assisting the district in carrying out needs assessments.

By enhancing capacity of provincial and local governments in DRM and CCA, the project has enabled them to continue similar work with other communities, as well as providing follow-up support to the target communities. While this will be depending also on the availability of operational budget for DRM and CCA activities, the project clearly contributed to human capacity with the provincial, district and lower local government administrations. For instance, the Usino-Bundi District Administration was part of the ward disaster management plan updating process conducted in September 2015 and they stressed how much this process had assisted them with their work. The willingness of the District Administration to support future DRM and CCA programming was clearly articulated and demonstrated by the consistent attendance of the Usino-Bundi District Community Development Officer and the Deputy District Administrator. The Deputy Administrator stated that he was prepared to extend continued support to the target communities, guided by World Vision, and also confirmed that the district was planning to develop another Ward DRMPs as well, so that all of them could be consolidated in lower local government and district

disaster risk management plans. He further pointed out that a budget allocation will be made in the annual plans for the district.

The District's commitment was further expressed through the co-funding of PGK 50,000 provided for the construction of a gravity-fed water system to complement the project achievements and ensure a sustainable and safe water supply in the target area.

1.3 Support system for community-led mangrove reforestation and conservation projects

Under this output, the project promoted the recognition, restoration and sustainable management of mangrove ecosystems for their coastal protection and wider ecosystem service value to ensure their continued role in mitigating against the predicted impacts of climate change. The project undertook participatory climate change impact vulnerability mapping; ii) conducted community climate change education awareness in 25 coastal communities along North Coast; iii) trained local communities in the methods and actions for the conservation and restoration of mangrove habitats and supported restoration projects at participating communities; raised awareness and understanding of the ecosystem service value of mangrove habitats including their role as a coastal barrier to limit coastal flooding from climate change impacts; facilitated establishment of mangrove nurseries and field demonstration trials for mangrove nursery, species identification, collection and propagation for individual or clustered communities, including schools; investigation and research on potential alternatives to mangroves in areas of NG north coast which are unsuitable for mangrove planting. and developed community and provincial mangrove management plans to ensure the long-term conservation of mangroves.

A total of 4,265 people in twenty-five coastal communities in Madang (15) and New Ireland (10) Provinces benefited from mangrove conservation and plantation initiatives. The communities in which nurseries have been established and mangrove restoration undertaken include: Tugalop, Limanak, Nonovaul, Enang, Metetui, Angat, Eruk, Pati, Salapiu of New Ireland; Kave (Rempi), Lusik (Kubugam, Sarang 2, Tokain 2, Sikor (Ulingan Bay)), Rurunat, Mereman-Sapra, Numuru, Yambayabar, Wanam, Sisimagun (Nubia), Awar, Borori Burag (Karkar Is.), Kavailo Bay (Karkar Is.).

Thirty (30) community nurseries were established with capacity of 61,400 seedlings. Planting of these mangrove seedlings will result in protection of 263.1 hectares and 131.6km of the coastline. These mangrove restoration measures were based on a coastal ecosystem survey and Geographical Information System mapping undertaken in collaboration with WWF which identified 75.9km degraded coastlines (4660ha), 2088ha mangrove habitat distribution in Madang North Coast region. The project recruited 25 community facilitators and trained forty (40) people (36-men and 4-women) in mangrove nursery establishment & climate change in Madang.

Community mangrove management plans have been developed in 15 communities identified for piloting. These plans provide basis for resource allocation by local governments to sustain the mangrove conservation efforts at the community level.

Because of these interventions, there has been improved general health of the ecosystem and contributed positively to addressing food security issues, and enhancing livelihood of the local communities whilst addressing climate change impacts. It is important to note that mangrove restoration program will take time to monitor and maintain, and there is need for continuous support to local communities during transplanting. During implementation, we have also learnt that strong community leadership is needed to ensure effective community participation in the mangrove planting activities.

Some communities have been undertaking mangrove nursery and planting activities as part of their local initiatives to manage coastal ecosystem and sea. The project intervention has further strengthened them and they will continue to do mangrove nurseries and replanting in degraded coastlines. At the community level, the lower local government ward and village development committee members have been supportive in seeing this project through. They have been behind

community organization, mobilization and have committed future support through the district strategic investment plan funds to roll down at their level. Sustainability is assured but this would take time to be structured into the government system.

Notwithstanding, the project encountered challenges related to irregular and unreliable communication with provincial climate change officers which made planning field visits for some provinces more difficult than anticipated and caused some delays. Consequently, some community leaders and head teachers from participating villages and schools did not attend the repatriation meetings. ELNINO effect in 2015 affected much of the mangrove seedlings. There was severe pest and disease (Insect & Fungus) attack on mangrove seedlings in some nurseries resulting in average seedling mortality for all necessities at 18.5%. On-site demonstrations were made on making homemade insecticide were established and implemented. Remote and distant location of the projects sites consume time spent in terms of accessing these communities and even affecting communication with communities.

1.4 Integrated coastal adaptation measures implemented to protect 8 communities in East Sepik Province, Oro Province and New Ireland Province

Strengthened resilience of the eight coastal communities against climate risks through community-based climate change adaptation. Under this project eight communities of Big Muschu (Muschu Is.), Brauniek (Kairiru Is.), Ingo-Krupia (Boikin), Kambilal (Wallis Is.), Mandi (Turubu), Mengar (Wewak Local), Moem (Wewak Local) and Wom (Wewak Local) were supported to develop and adopt climate change adaptation and disaster risk reduction measures. Selection of these communities was based on a Vulnerability Needs Assessments (VNA) into the coastal people of Wewak District in the East Sepik Province during the El Nino and drought period conducted in 2015. The VNA established that these communities do not have early warning systems in place and the houses are unstable and vulnerable to flash floods and strong winds. Most also do not have a safe and sustainable drinking water supply. In addition, most do not have proper coastal erosion mitigation measures in place. Given this low level of resilience and exposure to climate change hazards a community-Based Climate Change Adaption and Disaster Risk Reduction initiative was implemented in collaboration with World Vision PNG. Through a community based approach climate hazards, vulnerabilities and risks were mapped to develop appropriate mitigation planning. The consultation process involved women and other vulnerable sections of the communities to ensure that their views are incorporated into the planning and decision-making process. Food security training on seed multiplication and setting up a family garden at the community level was conducted. Adaptation training and preparation of plans has been completed in 3 communities in New Ireland Province and 6 communities of East Sepik provinces.

Table 2: Community Participatory Risk Assessment Matrix

Community Participatory Risk Assessment Tools (CPRATs) completed									
No	Risk Assessment Tools	CCADRR Project Communities							
		Moem	Mandi	Menger	Wom	Boiken	Wallis Is	Kairiru Is	Mushu Is
1	Hazards Identified	✓	✓	✓	✓	✓	✓	✓	✓
2	Vulnerabilities Identified	✓	✓	✓	✓	✓	✓	✓	✓
3	Capacities Identified	✓	✓	✓	✓	✓	✓	✓	✓
4	Historical Disaster Timeline	✓	✓	✓	✓	✓	✓	✓	✓
5	Seasonal Calender	✓	✓	✓	✓	✓	✓	✓	✓
6	Food Calender	✓	✓	✓	✓	✓	✓	✓	✓
7	Risk Map	✓	✓	✓	✓	✓	✓	✓	✓
8	Disaster Preparedness Plan	✓	✓	✓	✓	✓	✓	✓	✓
	CB DRM Plan compiled	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

A total of 2796 (1,123-males and 1673 females) people participated and benefited from awareness and implementation of community-based coastal erosion protection measures as wells as adoption of infrastructure and livelihood assets protection measures. The project also facilitated

the propagation of drought tolerant crops to ensure communities are food secure. Eight (8) disaster management committees were established for Mandi (3 members), Wom (4 members), Moem (3 members), Ingo-Krupier (3 members), Big Muschu (5 members), Mengar (5 members, Kabilal (5 members) and Brauniek (4 members). These DMCs were facilitated to develop disaster risk management plans for their communities.

Table 3: Disaster Risk Reduction & Climate Change Adaptation Awareness

Disaster Risk Reduction & Climate Change Adaptation Awareness									
No.	Community	Ward	LLG	District	Sessions	Awareness	Male	Female	Total Attendance
1	Moem	9	Wewak Rural	Wewak District	Night Session	DRR CCA	74	69	143
2	Mandi	1	Turubu	Wewak District	Day Session	DRR CCA	98	84	182
3	Mengar	21	Wewak Rural	Wewak District	Day Session	DRR CCA	72	106	178
4	Wom	18	Wewak Rural	Wewak District	Day Session	DRR CCA	160	150	310
5	Boiken	10	Boikin Dagua	Wewak District	Day Session	DRR CCA	105	86	191
6	Boiken Primary School	10	Boikin Dagua	Wewak District	Day Session	DRR CCA	124	205	329
7	Karasau Island	1	Boikin Dagua	Wewak District	Night Session	DRR CCA	123	62	185
8	Messy Secondary School	16	Wewak Rural	Wewak District	Day Session	DRR CCA	0	700	700
9	Kairiru Island	15	Wewak Rural	Wewak District	Day Session	DRR CCA	102	54	156
10	Wallis Island	18	Wewak Rural	Wewak District	Night Session	DRR CCA	154	68	222
11	Mushu Island	17	Wewak Rural	Wewak District	Night Session	DRR CCA	111	89	200
Total							1123	1673	2796

Disaster risk reduction measures adopted include; relocation of households at risk, opening up drainage channels; and construction of stone and sand banks especially in the island communities of Wallis, Mushu and Kairiru. In addition, green belt zones were created by replanting mangroves and other salt tolerant tree species to prevent coastline erosion. The project provided poly bags for the nurseries and replanting of mangroves and other coastal plants that act as buffers, reducing erosion and maintaining water quality. Further, to address water, sanitation and hygiene in the coastal communities, a total of eighteen (18) 9000 litre rain water catchment tanks were distributed to the eight communities as livelihood assets. As part of addressing effects of drought on food security, the project established demonstration sites for drought resistant crop varieties such as African yams, sweet potatoes and lowland bananas in collaboration with the National Agriculture Institute in Lae, Morobe Province.

2.1 Inland flooding early warning systems established for observation, data collection and information management and dissemination in the North Coast provinces

Key activities under this output included piloting flooding early warning system for Bumbu river catchment in Morobe including procurement and installation of Automatic Weather Station (1), 5 automatic rain gauges (5), water level gauges (3) and integrated data management system at the National Weather Services in PortMoresby; ii) Ramu river early warning system including development of community adaptation measures through land-use planning within the Ramu River area; raise awareness and train communities of upper and middle Ramu river about importance of stream gauges and several rainfall gauges to reduce on vandalism and improve operation and maintenance; conducting community-based disaster risk management awareness and training with selected communities within the Upper and Middle Ramu River region; and developing child-centered climate change awareness and education program with schools within the Upper and Middle Ramu River region. In addition, automatic weather stations have been procured and installed in each of the provinces of Lae, New Ireland, Bougainvillea, Madang and East Sepik by the end of March 2018. Deliberate effort was made to ensure that siting of the equipment was on either public land or individuals who would guarantee their protection from Vandalism. Formal agreements to provide security of the sites are yet to be finalized. All the equipment procured and installed under the project meet World Meteorological Organisation standards. Each weather station is expected to cover 2 communities in each province.

As part of capacity building for operation and maintenance of the system, 4 staff of the National Weather Service and the Conservation, Environment and Protection Agency were provided with hands on training. This was preceded by a south to south learning exchange to Australia which

provided basis for development of a proof of concept that has guided establishment of the Bumbu river early warning system. Installation also utilised leadership of the provincial disaster coordinators in mobilising community engagement and ensuring ownership of the equipment. Design and development of the flood pilot Early Warning System was informed by assessment early systems for inland and coastal flooding completed in 2014.

A total of 26,6912 (11,232 females and 15459 males) people directly benefited from the project activities under this output through the different initiatives. In addition, the capacity of the National Weather Services to forecast, predict and disseminate climate early warning information has been strengthened. PNG can now receive real time early warning to inform decision on adaptation measures.

However, the planned 20 voluntary weather stations were not procured due to increased cost of Bumbu river flooding pilot early warning system that went above what was earlier budgeted for in the project. Government prioritized investment into development of the Bumbu river flooding early warning system pilot to inform documenting lessons for scale up in other inland river systems.

2.2 Inland flood preparedness and response plan and systems established in the North Coast provinces

Under this output, the project strengthened community disaster risk management capacity to prepare for and respond to inland flooding in vulnerable communities in Upper Ramu including: refresher training for 6 ward disaster management committees in community-based disaster response management, climate change adaptation, and emergency response planning; updated 5 ward disaster management plans and 3 lower local government disaster management (Usino, Bundi & Gama) plans in Usino-Bundi District with sections on emergency response and climate change adaptation; provided First Aid Training and First Aid Kits to 32 community members; conducted disaster risk Management, climate change, and inland flooding awareness sessions in 10 communities (Waput, Asas, Koroba, Abegal, Boko, Waramea, Biamodo, Kalafulim, Moimara and Usiema) and four schools, namely Waput Adventist Primary School, Koroba Primary School, Dumpu Primary School, and Karani Community School. The project established basic disaster risk management and climate change adaptation management structures at the grass-roots and enabled a basic understanding of hazards, risk, and suitable adaptation measures amongst the target communities. By working in schools as well as communities, the beneficiaries were not only the adult population, but also children, who have shown a keen interest in the topic and significant knowledge increase.

A total of 3045 (1575 males and 1459 females) people directly benefited from the inland flood preparedness and response measures undertaken by the project. Through a child-centred approach to introducing DRR/CCA awareness and initiatives, the project introduced climate change adaptation and disaster risk management to climate change-induced floods in the Ramu river basin. Training was provided to children, youth, women, teachers, the disabled and community members; improved food seed management and climate change adaptation techniques and skills transfer.

2.3 Integrated riverbank protection measures implemented to protect communities in East Sepik Province, Oro Province and Morobe and Madang Provinces

Under this output the project built resilience and capacity of 10 riverine vulnerable communities in Morobe (4 communities) and Madang (6 communities) exposed to climate change related inland flooding and other natural hazards. This was realized through effective climate-change driven disaster preparedness & response measures in partnership NGOs in promotion of good practice. As a result, communities adopted river bank protection measures by planting bamboo to prevent erosion.

A total of 1507 (793-male and 714-female) directly benefited from activities supported by the project under this output. As a result, river bank and flooding area protection measures such as bamboo planting and climate resilient crops and contingency water supply were adopted. The measures adopted were informed by a community based climate hazards, vulnerabilities and risks mapping that facilitated development of appropriate planning. The consultation process involved women and other vulnerable sections of the communities to ensure that their views are incorporated into the planning and decision-making process.

To enable communities, adopt food preservation techniques, food processing and preservation training was conducted. A total of 248 (23 males and 225 females) participants attended the trainings in their respective communities. The training targeted women in the target sites to learn the basics of how they can use tubers, such as cassava, sweet potato, banana, sago and taro to produce muffins, pops and chips.

This value addition training would result in increased shelf life of products and serve as contingency food supply during floods and droughts and increase market price at local markets. This will enable families to generate additional income and diversify coping strategies in the event of an emergency or disaster. In addition, drought resistant crops were purchased and provided to ward disaster management committees to distribute in their communities. A total of fifty (50) African Yams tubers were distributed to the targets communities. With each community receiving five tubers. Ward disaster management committee identified key farmers in their community and gave them tubers to plant in nurseries to multiply them and distribute further to the community members once they are ready.

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

Under this output, the project utilized recommendations of the climate hazards, vulnerabilities and risks assessment to facilitate development of integrated climate change adaptation and disaster risk management policies and plans (with budgets) for selected sectors in each of the provinces in collaboration with Asian Disaster Preparedness Center. Mangrove management plans have also been completed for New Ireland Province. The project supported development of mangrove restoration handbook and mainstreaming handbook. As part of institutional strengthening for mainstreaming climate change adaptation and disaster risk management, provincial climate change committees have been established comprising of provincial level government agencies, and NGOs to approve climate change adaptation related plans, policies, projects and programmes. While the project supported establishment of climate change committees in the 5 provinces, Climate Change and Development Authority has been able to build on these efforts to scale up in Eastern Highlands and Engar provinces. In addition, a mainstreaming manual was prepared to facilitate focal points in training of communities in climate change adaptation planning.

Table 4 People trained in Adaptation Planning

	Male	Female	Total
Oro	13	6	19
East Sepik	30	6	36
Morobe	15	4	19
New Ireland	14	8	22
Madang	20	3	23
	92	27	119

A total of 119 (22.7% women) people benefited from adaptation planning workshops. Further, the project provided computers and furniture for climate change focal points to enable them

coordinate provincial level initiatives. Climate change assistants recruited and trained during the project are expected to be integrated in the provincial administration as part of institutional strengthening. To facilitate climate change adaptation mainstreaming, climate change committees have been established in the 5 provinces.

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

Climate Change Adaptation has been mainstreamed in development plans of key sectors in each of the provinces. This has been achieved through awareness of key departments and policy makers about the importance of mainstreaming climate change adaptation into development planning; enhancing understanding of department heads and policy makers in the pilot provinces about the practical realities of mainstreaming climate change adaptation into development planning and budgeting; and developing climate change adaptation plans for key sectors in the pilot provinces. Mainstreaming of climate change adaptation was informed by a detailed analysis of the climate hazards, vulnerabilities and risks undertaken for the five pilot provinces.

As part of mainstreaming climate change adaptation and disaster risk management in development planning, more than 150 people were trained at National and provincial level. Through the training, the understanding of provincial and local government was built with regards to climate change science, its causes, effects, modelling and implications for the provinces. Besides, the training enhanced capacity of provincial and local governments to integrate climate change adaptation into provincial and local development planning processes, identifying and selecting entry points for climate change adaptation, and possible adaptation measures to be pursued, as well as proactive planning options. Utilising lessons learnt from the pilot, Climate Change and Development Authority has been able to scale up establishment of climate change committees in the Eastern Highland and Engar provinces using government resources.

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

Under this output, the project supported documentation of community experiences digital stories and photo essays; and development of an adaptation website for PNG to act as a hub and key repository for information on climate change impacts and adaptation measures. An important achievement of the project has been the development of the website <http://www.climateadaptationpng.org> which is now live. The website is based on the WordPress Content Management System (CMS) which allows for the inclusion of rich and dynamic features for the website. Both the hosting and domain name services have been paid for a 12-month period and will have to be renewed via their respective accounts on May 4, 2018 CCDA which will be responsible for it after the first-year subscription is over. The website acts as a climate change resources hub for the people to access and all materials are freely available for download. The website has provided a platform to show case adaptation result to the global community including during the UNFCCC COP23.

Examples of stories and photo essays uploaded on the website on our PNG series include: <https://undp-adaptation.exposure.co/realizing-potential>; <https://undp-adaptation.exposure.co/92375b11928cf6cdda9eb47934c7a716> to reach global stakeholders. The materials can be accessed on the following website link: <http://www.climateadaptationpng.org/media-material/>. In addition, community stories on food security issues, water-borne diseases, natural disasters, and economic consequences of drought from were recorded. These stories have been edited into digital stories, incorporated in an online, interactive Story Map (<https://scgismaps.maps.arcgis.com/apps/MapTour/>); (<http://www.climateadaptationpng.org/digital-stories/>), searchable by province. The digital stories are short, multi-media pieces that combine a narrated script, images (still), text, and a musical soundtrack and can accessed through; <http://www.climateadaptationpng.org/education-curriculum/>. Twenty-seven (27) stories were used for a Story Map which an innovative and interactive online story map (<https://scgismaps.maps.arcgis.com/apps/MapTour/>) to showcase community experiences with climate change from the ground. The stories selected showcase climate impacts being felt by local people and actions they are taking to build resilience in the five provinces across Papua New Guinea.

At the national level, Digital and photo stories have been produced on climate change adaptation and different media have been used to disseminate these stories including a national stakeholder dialogue.

4.2 Climate change awareness and education programmes carried out to build next generations' resilience to climate change

Under this output, the project raised awareness for implementation of on the ground actions among vulnerable communities and decision makers in five provinces on the threats posed by climate change and the means to strengthen resilience and adaptive capacity to climate change. In this regard, awareness raising activities were conducted in 60 communities through NGO partners. Education activities undertaken include: i) Evaluation of applicability and relevance of existing materials on climate change based on the feedback received from provincial visits; ii) Develop climate change curriculum materials for primary schools incorporating key threats and adaptation measures from the five provinces; iii) development, printing and disseminating posters on improved agriculture practices, mangrove conservation, drought and flood preparedness. More than 2000 copies of these posters and factsheets were printed and distributed to schools, and project communities; provincial climate change offices and provincial education office.

A total of 23 school including 200 (girls and boys) students and 140 teachers and 97 school governors across five provinces benefited from the process of developing climate change curriculum supplementary materials. The course books have been printed and disseminated in all the primary schools of the five provinces. In addition, awareness has been raised among vulnerable communities as a key component of the community interventions.

As part of mainstreaming climate change and adaptation, school curricula and university academic programmes; and equipping teachers with the required knowledge and materials, a curriculum for primary schools has been developed following intensive consultations with schools. The materials can be accessed online through <http://www.climateadaptationpng.org/education-curriculum/>

Five (5) short videos were produced in local languages and included as part of the activity under the topic "Impacts of climate change" in the supplementary teaching material titled "Introduction to Climate Change: Supporting Existing Education Curricula in Papua New Guinea schools". A supplementary resource for teachers (Kuang et al. 2017) was produced under this project.

Notwithstanding, inadequate internet connections disrupted or delayed the design, content upload of the website. Providing editions and comments on website, awareness materials and curriculum material via email was a challenge between WCS, UNDP and CCDA. Emails don't seem to capture the intended messages or misinterpreted. We found that face to face meetings are better to ensure there is no misunderstanding in context. Video production took more time than expected and this delayed uploading on the website. The demand for more awareness and supplementary curriculum materials unfortunately could not be met because of budget constraints. For instance, the Morobe Provincial Education Office wanted the project to produce more supplementary curriculum material for all schools in the province.

III. PERFORMANCE REVIEW

PROGRESS REVIEW

(i) Overall progress towards the CPAP outcome and output(s)

The project results on establishing early warning system and restoration of mangrove ecosystem and mainstreaming of climate change adaptation and disaster risk management has contributed to UNDP CPAP output on “Public institutions, private sector and local communities enhance the implementation of low carbon growth and climate resilient development initiatives for environmentally sustainable economic growth. In addition, strengthening early warning systems, climate change adaptation and disaster risk management for flooding has been implemented in collaboration with on-going UNDP initiatives on. Disaster Risk Management (DRM) aimed at supporting Provincial Disaster Office’s located in the provinces of Central, Bougainville, Western Highlands, Simbu and Madang aimed at increasing capacity of the National Disaster Centre, and better inform all actors doing disaster risk reduction. In addition, the project supplemented world bank disaster risk management programme.

Restoration of coastal mangroves complements government initiatives on Community-based Forest and Coastal Conservation and Resource Management which aims at having at least an additional 1 million hectares of high conservation-value terrestrial and marine resources to be under improved protection.; Forest Carbon Partnership Facility REDD2+ Readiness Project that aims at contributing to PNG’s REDD+ Readiness and establish the basis for emission reductions and the receipt of REDD+ benefits; and ongoing initiatives by World Conservation Society and World Wildlife Fund on restoration of mangroves.

(ii) Capacity Development

The project has enhanced evidence based and risk informed decision making on climate action through undertaking analytical studies such as assessment of early warning systems, vulnerability and hazard profiling for each province and coastal ecosystem degradation mapping. The local community capacity has been built in terms of enhancing understanding on climate change and their impacts on coastal communities, mangrove nurseries and planting in degraded coastlines as an ecosystem based adaptation. As part of mainstreaming process, 187 people (17% female) were trained at national and provincial level with regards to climate change science, its causes, effects, modelling and implications for the provinces. In addition, staff of the National Weather Service and the Conservation, Environment and Protection Authority were provided with hands on training during installation of the early warning system as part of capacity building for operation and maintenance. Furthermore, training was provided at and national and regional level on mainstreaming climate change adaptation and disaster risk reduction in sectoral strategies and mainstreaming manual developed. The project supported development of supplementary school curricular materials and training teachers in 23 schools.

(iii) Gender Mainstreaming

Through the different interventions, the project has increased women participation and empowerment to enable them understand climate change adaptation and disaster risk reduction concepts and take appropriate measures to cope and adapt. Out of 50316 direct beneficiaries of the project, 41% were women. Specific training was conducted for women on climate smart agriculture and food preservation attended by 375 (51.2% women) people. Notwithstanding, there are still inequalities in representation on community leadership structures. For instance, out of the total of 25 ward disaster management committee members, only one (4%) is female. This is largely because of cultural setting where men are generally recognized as leaders are always nominated to committees.

² REDD+: Reducing Emission from Deforestation and Forest Degradation

(iv) Human Rights Mainstreaming

Raising awareness on the threats posed by climate change and the means to strengthen resilience and adaptive capacity to climate change was a key element of each project intervention. Awareness raising activities targeted both men and women, children in school and out of school and people with disability. Schools were targeted as part of developing supplementary materials for climate change curriculum which involved up to 29 schools in the flood risk areas. For the non-literate community members, the project supported drama through road shows and use of documentaries to raise awareness on climate change and disaster risk management. In addition, efforts were made to ensure equal participation of men and women in project activities. As a result, out of 50,316 direct project beneficiaries, 41% were women. The project also invested in documenting voices of both men and women to ensure that their right to be heard is guaranteed through photo essays. Investments in restoration of mangroves and early warning systems have contributed to protecting house hold shelter while interventions on climate smart agriculture, rain water harvesting catchments and food preservation have ensured access to water and food.

(v) Impact on direct and indirect beneficiaries

The project was designed to target communities vulnerable to coastal and riverine flooding in the northern coast. Analytical studies on early warning systems, mangrove degradation assessments, vulnerability and hazard assessments; and capacity needs assessments carried out in a participatory manner, informed targeting of project beneficiaries. Through the different interventions on restoration of mangroves, riverine protection measures, mainstreaming of climate change adaptation and establishing early warning system for flooding, 50,316 (41% women) people directly benefited from the project and about 200,000 people indirectly benefited. The provinces have been able to develop integrated climate change adaptation and disaster risk management plans while communities have adopted and implemented adaptation measures including restoration of mangroves and water catchments as an ecosystem based approach; installation of water tanks and planting of climate resilient crops for food security. In addition, the National Weather Service can now provide real time weather forecast to inform decision on disaster risk reduction.

(vi) Communication and publicity

From the outset of the project, communication has been at the forefront of the implementation of this project. Outcome #4 is focusing on “strengthening awareness and ownership of adaptation and climate change-related risk reduction processes at national and sub-national level”, including dissemination of lessons learned and best practices to different levels of government but also civil society organizations and communities. Key events that received media coverage include: i) press coverage - Inception Workshop on Flood Early Warning; ii) press coverage - Mangrove planting and conservation in East Sepik; iii) press Website Story on TV Infomercial - El Nino Preparedness (45 Second infomercial broadcasted on National TV for two months); iv) website story titled “Local communities of Papua New Guinea are committed to fight climate change”; v) Exposure Photo Story: “Take Care of the Mangroves” (<https://undp-adaptation.exposure.co/take-care-of-the-mangroves>); and photo essays on the undp adaptation website which also featured at COP23 in Bon. During the World Environment Day 2016 commemoration, the project showcased climate change education awareness information including booklet on Climate Change Impact and brochure on Mangrove.

IMPLEMENTATION STRATEGY REVIEW

(i) Sustainability

Implementing the project through a national execution modality in accordance with UNDP policies and procedure was the main sustainability framework. Other key sustainability strategies adopted by the project include: working through existing institutions; establishing partnerships and delivering outputs through national and international NGOs and regional partners; building capacity of national and provincial government agencies through training and south-south and triangular linkages; community based participatory approaches to implementing adaptation measures. Throughout the project period, the Climate Change and Development Authority (CCDA) provided leadership for communicating on all project activities with partners with UNDP providing implementation support services. In the final year of the project, staff of CCDA have taken leadership in managing all the project tasks including preparing the final project performance and lessons learned report for submission to the Adaptation Fund; and organizing the stakeholders dialogue and launch of knowledge products. Following operational closure of the project, government agencies under the leadership of CCDA financed participation of its staff in monitoring and capacity building activities by service providers-a clear demonstration of national ownership and commitment to sustain project results.

(ii) Participatory/consultative processes

The project established 3 levels of stakeholder consultation and decision making during implementation. The project steering committee with representation from the participating agencies and chaired by the Director Climate Change Adaptation provided strategic oversight including approval of workplans and reports. A joint technical steering committee was also established composed of UNDP, CCDA to approve micro capital grants. Approval of project deliverables and reports was undertaken in a consultative manner. During the process of undertaking analytical studies, deliberate effort was made to adopt a community based approach as a mechanism to capture views of both men and women into the products and decisions. Design of the school climate change curriculum materials involved consultation with staff and management of 23 schools ensuring that their needs are reflected in the final product. The project facilitated operationalization of the provincial climate change committees. These committee also participated in the project steering committee meetings and presented progress reports and priorities on what the project was doing in their provinces.

(iii) Quality of partnerships

The project benefited from a multi-donor partnership between UNDP, Adaptation Fund and the Australian Government through the Department of Foreign Affairs and Trade. The project established partnerships with National and international NGOs through micro capital grants for implementation of on-ground activities and with international institutions to undertake analytical studies. Because of these partnerships, project delivery increased from USD \$122,445 in 2013 when the first micro capital grant was signed to USD \$1,278,094 in 2015. This has enabled the project to utilize all the project resources and deliver on all outputs by end of 2017 despite loss of 12 months due to start up challenges. Through this project, the working relationship between CCDA, NWS, NDC and CEPA has been strengthened. As a result, government has been able to establish an integrated early warning system for River Bumbu flooding and developed integrated climate change adaptation and disaster risk management plans by strengthening synergies across the institutions. These partnerships provide a strong foundation for multi-sectoral collaboration in tackling climate change and building resilience of PNG people. More effort is still needed to strengthen partnerships with the private sector.

(iv) National Ownership

The project is a direct response to the government agenda to address climate change impacts on both coastal and inland areas. The project is "rooted" in the national climate change policy framework and is supporting implementation of identified policy measures. It is anticipated that the government will continue to implement this climate change policy in the foreseeable future and, therefore, the project achievements should be sustained in the medium-term and used as demonstrations to be replicated throughout PNG. On an annual basis, joint sessions were held between project partners to review project progress and identify priorities for implementation. This is evidenced in minutes of the project steering committee meetings. At the community level, project achievements are "owned" by these communities through capacity building initiatives provided to the climate change and disaster management committees.

MANAGEMENT EFFECTIVENESS REVIEW

(i) Monitoring and Evaluation

A comprehensive M&E plan was developed during the formulation of the project in accordance with standard UNDP and AF procedures, including the UNDP monitoring and evaluation practices for NIM projects. An M&E budget of USD 83,000 was allocated representing 1.4% of the AF grant. Project performance monitoring was through monthly, quarterly and annual project performance reports. Field monitoring was conducted by CCDA and provincial staff. At provincial level, project management assistants recruited by the provinces provided day to day monitoring of activities and provided monthly reports to CCDA and UNDP. This strategy for monitoring was considered more cost effective considering the travel logistical challenges.

(ii) Timely delivery of outputs

The project was initially designed to operationally closure in October 2016. The medium-term review mission recommended extension of 12 months, up to Sept 2016. A no cost extension for 15 months was requested and approved by the Adaptation Fund Board with the project operationally closing on 31 December 2017. The extension was approved in consideration of the remaining resources of 3,861,400 representing about 64% of the AF grant as of the 31 October 2015 and the need to utilize the investment made in undertaking analytical studies and assessments which would be wasted if the project was to close as planned on 31 October 2016. The project experienced start up challenges including resignation of the project manager after 12 months of the project start and leadership transition at the Climate Change and Development Authority.

(iii) Resource Allocation

Project implementation was very efficient in utilisation of resources to deliver adaptation results on ground. Ten percent of the project grant was utilized for project management. Seventy-one (71%) percent of the resources were directed towards reducing exposure to coastal and riverine flooding while 19% was directed towards institutional strengthening and development of awareness materials. This allocation of resources was in line with need to invest in on-the-ground adaptation measures. It is important to note that all activities were underpinned by comprehensive awareness activities.

(iv) Cost-effective use of inputs

Compare the level of available resources: "what was used" and vis-à-vis outputs achieved: "what was done". In writing this section, be as objective and as critical as possible. For example, identify budgetary categories (ex: rental, transport, translation, equipment) where you could have saved. If

possible, make innovative recommendations for future implementation to increase cost-effectiveness.

IV. IMPLEMENTATION ISSUES

This section is a concise analysis of the main implementation issues that are generic to the project and not related to a specific output or activity; and adjustments performed to address these issues. This section can draw from previous risks and issues logs.

Content:

#	Description	Date Identified	Type	Impact & Priority	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
1	Enter a brief description of the issue	When was the issue first identified	Request for Change Problem Other	Describe the potential effect on the project Enter priority on a scale from 1 (low) to 5 (high) Priority =	What actions have been taken/will be taken to address this issue	Who has been appointed to address this issue	Who submitted the issue	When was the status of the issue last checked	e.g. pending, solved
2	The project is facing stiff competition from the flourishing resource extractive industry in attracting the best candidates for the full-time project positions. The project manager resigned in October 2014	2014	Operational	Delayed establishment of the project management unit. When established, the manager resigned after 12 months. Priority =4	Based on request for support expressed by the PNG Government / UNDP appointed an international staff to manager to oversee the A full time project manager is currently being recruited. Project Associate; and Project Administrative & Finance associate and driver/clerk were recruited to ensure timely and effective implementation of the project.	CCDA	UNDP assigned an international staff from the Country Office to manage the project	2014	Solved

#	Description	Date Identified	Type	Impact & Priority	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
	after 12 months of reporting								
3	National Elections disrupted project activities in the field resulting in delayed completion of contracted work during the no cost extension	2017	Political	The National Institute of Water and Atmospheric Research; and the Asian Disaster Preparedness center entered into contracts for establishing early warning system for Bumbu river and development of integrated climate change adaptation and disaster risk management plans by 31 Dec 2017. However, due to the 2017 National elections, the contractors were unable to implement activities in the provinces resulting in delayed conclusion of the assignments before the project operationally closes.	UNDP engaged government on possibility of extending the project life for another 3 months to allow the contractors to complete the work.	UNDP	UNDP	2017	pending

#	Description	Date Identified	Type	Impact & Priority	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
				Priority =5					

Table 5: Issues Log

V. LESSONS LEARNED

This section is an analysis of lessons learned required by the POPP and ATLAS, and should be uploaded on ATLAS.

Project-Related CPAP Outcome	Outcome 4 on environment, climate change and disaster risk management: “By 2015, Government and civil society have enhanced their capacity to implement biodiversity conservation, low carbon and climate resilient development initiatives for environmental sustainability and improved community livelihoods to reduce the vulnerability of women, girls, men and boys to disaster risks;
Project Description and Key Lessons-Learned	
Brief description of context	The National Vision of PNG recognizes that climate change and variability is inevitable and poses one of the greatest challenges to achieving a Smart, Wise, Fair, Healthy and Happy Society by 2050 ranked among the top 50 countries on the United Nations Human Development Index. The impact of climate change-related hazards in Papua New Guinea (PNG) has been increasing in intensity and frequency. With the onset and multitude of climate change impacts, the country’s economy, environment and people are becoming more vulnerable and are at risk of not meeting basic human development needs. Climate change puts at risk achievement of the goals set out in PNG’s major development plans. Flooding in the coastal and riverine areas is one of the most important climate change related hazards in the North Coast and the Islands Region as settlements are usually located in the coasts, particularly the provincial capitals of East Sepik (Wewak), Madang (Madang), Morobe (Lae). In response to the increasing climate change impacts, Government of PNG with support from UNDP designed the enhancing adaptive capacity of communities to climate change related floods project with financing from the Adaptation Fund. The project contributes to realization of strategic focus area five of the PNG 2010-2050 on environmental sustainability and climate change. Under this focus area, the Vision and the National Development Strategy 2030 aim to manage environmental issues such as the health of the environment as well to address the issues of climate change in ways that best suit PNG’s developmental needs. The PNG Strategic Plan (2010-2030) climate change goal states “Adapt to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions”.
Brief description of project	<p>The project was designed to contribute towards UNDAF/CPAP 2012-2017 outcome 4 on environment, climate change and disaster risk management: “By 2015, Government and civil society have enhanced their capacity to implement biodiversity conservation, low carbon and climate resilient development initiatives for environmental sustainability and improved community livelihoods to reduce the vulnerability of women, girls, men and boys to disaster risks; CPAP outputs of Output Theme: Promote Low Carbon Growth and Climate Resilient Economic Development. Output Statement: “Public institutions, private sector and local communities enhance the implementation of low carbon growth and climate resilient development initiatives for environmentally sustainable economic growth.</p> <p>Implementation of the project was led by the Climate Change and Development Authority in collaboration with the National Weather Services, Conservation and Environmental Protection Authority; National Disaster Center and Provincial Administrations of Morobe, Northern, East Sepik, Madang, and New Ireland. The targeted beneficiaries of the project include: 9 coastal communities and 8 riverine communities in the five provinces of Morobe, Madang, New Ireland, East Sepik and Northern.</p>

	<p>The project had 4 outcomes and 12 outputs.</p> <p>Outcome 1: Adaptation to Coastal Flooding-related Risks and Hazards for North Coast and Island Region Communities. Under this outcome, the project target was to protect at least 8 coastal communities through adaptation measures against coastal flooding scenarios, with attention to the special concerns of women as participants and beneficiaries.</p> <p>Outcome 2: Adaptation to Inland Flooding-related Risks and Hazards for Riverine Communities in East Sepik, Northern, Madang and Morobe Provinces. The target was to protect at least Eight (8) riverine communities through adaptation measures against inland flooding, with attention to the special concerns of women as participants and beneficiaries</p> <p>Outcome 3: Institutional Strengthening to Support Climate and Disaster Resilient Policy Frameworks. Under this outcome, the project at ensuring that adaptation to climate change is managed, monitored and planned at the provincial level in the targeted provinces and supported by a framework of policies and plans including disaster preparedness and response plans, coastal zone management plans.</p> <p>Outcome 4: Awareness Raising and Knowledge Management: 75 % of the risk-affected population is exposed to awareness raising activities and materials including integration in of climate change adaptation in PNG’s school curricula and university academic programmes; and teachers are equipped with the required knowledge and materials</p>
<p>Key project successes</p>	<p>About 263.1 hectares and 131.6 km of the coastline will be protected following planting of 61,400 seedlings generated from 30 community nurseries supported by the project. This is expected to reduce hazard exposure of up 13,976 people from coastal flooding. In addition, riverine protection and adaptation measures adopted on Ramu and Bumbu rivers are expected to reduce vulnerability of up to 31,223 people. Community mangrove management plans have been developed to provide a basis for resource allocation to sustain the mangrove conservation efforts at the community level.</p> <p>An automated early warning system for River Bumbu flooding has been established. Additional automatic weather stations have been installed at each of the airports. The established early warning system has been linked to the regional integrated multi-hazard early warning system at the National Weather Services in the 5 provinces. This has enabled National Weather Services to provide real time forecasts to inform risk informed decision making. Development of the early systems was informed by results of the early warning systems assessment completed in 2014. Based on these warnings, the provincial and ward disaster management committees can be able to mobilise communities to take early in line with the ward disaster management plans that have been developed at ward level and first line responders who have been trained during the project.</p> <p>Climate Change Adaptation and disaster risk management has been mainstreamed in development plans of key sectors in each of the provinces. This provides a basis for government to invest in adaptation and disaster risk reduction measures as part of PNG Strategic Plan (2010-2030) climate change goal on adaption to the domestic impacts of climate change and contribute to global efforts to abate greenhouse gas emissions in realization of Vision 2050.</p> <p>A website has been developed to act as a hub and key repository for information on climate change impacts and adaptation measures www.climateadaptationpng.org. As a result, PNG actions on climate change adaptation have been shared globally. All the knowledge products, community experiences and stories have been uploaded to the website and can be accessed by the global community and positioned PNG as a leader in climate change action.</p>

	<p>By establishing partnerships with NGOs and regional institutions, the project has enhanced south to south and triangular cooperation ensuring that both local and national institutions can continue to work together in sustaining project results.</p>
Project shortcomings and solutions	<p>Please describe what have been the main challenges of this project?</p> <p>Notwithstanding, some activities such as child-centred climate change adaptation activities with target schools in Middle and Upper Ramu communities could not take place as planned due to climate change challenges. For instance, Wanang Conservation Elementary and Primary Schools in Middle Ramu District were closed because of drought conditions in 2015. In addition, further investment in private sector engagement in climate information dissemination could increase effectiveness of early warning systems, preparedness and adaptation capacity.</p> <p>Project field monitoring relied on partner reports and provincial administration to monitor partner activities in the field. In addition, the project recruited field assistants who were based in the provinces and could provide day to day monitoring of the activities and report back to the project management unit.</p>
Lessons learned	<p>The contract on vulnerability assessment did not include capacity building component which would enable national partners to update the profiles on regular basis using available government resources. During scale to other regions, effort should be made to integrate capacity building component in the vulnerability assessments and profiling. Working through existing partners at provincial level has high positive impact on delivering and sustaining results. During scale up to other provinces, NGO partnerships could be utilized to strengthening capacity of existing community based organizations to innovate and deliver on climate change actions building on their local knowledge. This would further increase ownership and sustainability of on-the-ground investments.</p> <p>Use of institutional contracts was instrumental in ensuring high delivery with limited operational management by managing few contracts. However, the level of national partner ownership was limited. A hybrid of consultant and national taskforce of key agencies would be helpful in building capacity and enhancing ownership of results. In addition, budgeting for stakeholder participation in execution of contracted assignments could be integrated in the total costs of the activities to ensure clear understanding of resource requirements.</p> <p>Implementation of the project with leadership and participation of partner staff in all the activities has provided a foundation for scale up in other regions. Already, Climate Change Development Authority has replicated establishment of provincial climate change committees in additional 2 provinces which were not part of the pilot. Development of tools and manuals such mainstreaming manual has provided equipped partners to facilitate processes in other regions. This could be enhanced with establishment of a pool of facilitators at the national level. This was not included in the ADPC assignment. Through the NIWA contract, capacity for installation and maintenance of automatic weather stations has been built including development of standard operating procedures. This will enable National Weather Services and Conservation and Environment Protection Authority to replicate in other regions.</p>
Follow-up Actions	<p>Use of adaptation plans to budget for climate change activities at provincial level of trainers for mainstreaming and vulnerability assessment at national level.</p>

Table 6: Lessons Learned

VI. FINANCIAL STATUS AND UTILISATION

Financial Summary

The project had a total initial budget of USD 6,338,777 including 100,000 from UNDP TRAC and 220,000 in kind contribution from government. During implementation, the project received additional USD \$649,394 from the Australian Department Foreign Affairs and Trade and UNDP provided additional \$443,945 TRAC resources bringing the total project investment to \$7,412,116. The project realized all the donor funds and UNDP co-financing resources increased. GoPNG in-kind contribution of staff time was also realized through staff time to participate in all project activities. The project spent USD 53,173 (2012), 136,311.43 (2013), 935,567.62 (2014), 2,649,623.52 (2015), 844,661.13 (2016) and 1,751,484.00 (2017) as at 30 Oct resulting in total cumulative delivery including commitments to 98% as at 30 Oct 2017 and is expected to be at 100% by 31 Dec 2017.

Financial Overview

DONOR	COMMITTED (US \$), as per the cost sharing	RECEIVED (US \$)	EXPENDITURES (US \$)			REMAINING FUNDS (US \$), i.e. (Received- Total Exp.)
			Period Prior to [2017]	[ex. 2017]	TOTAL, i.e. Prior to 2017 + 2017	
Adapation Fund	6,018,777	6,018,777	1,619,337	1,314,930	5,934,267	84,510
Autralian Department for Foreign Affairs and Trade		649,394	129,007	104,048	533,054	16,340
GoPNG	200,000					
UNDP TRAC F	100,000	543,945	100,356	59,896	170,252	73,693
TOTAL	6,318,777	7,212,116	5,248,700	1,788,874	7,037,574	174,542

Table 7: Financial overview for the whole duration of the project

Financial Utilization³

Outcome	AF	DFAT	UNDP	TOTAL
Outcome 1: Adaptation to Coastal Flooding-related Risks and Hazards	2,169,392.26	185,841.12	57,994.16	2,413,227.54
Outcome 2: Adaptation to Inland Flooding-related Risks and Hazards	2,091,025.30	198,331.30	95,897.16	2,385,253.76
Outcome 3: Institutional Strengthening	736,548.66	185,650.50	123,902.80	1,046,101.96
Outcome 4: Awareness Raising and Knowledge Management	395,144.55	3,487.57	0.00	398,632.12
Outcome 5: Project Management and Coordination	626,666.23	150.00	130,963.61	757,779.84
Total	6,018,777.00	573,460.49	408,757.73	7,000,995.22

Table 8: Financial utilization by donor and activity for [2017]

³ Note: All expenditure figures presented in this report are provisional. As per the cost-sharing agreement, UNDP Head Quarters provides donors with an annual certified financial statement on 30 June of every year.