

Pilot Program for Climate Resilience

Summary - Project Concept Note for the Use of Additional PPCR Resources

1. Country/Region:	Papua New Guinea (PNG)	2. CIF Project ID#:	XPCRPG067A
3. SPCR endorsement date:	1 November 2012		
4. Project title:	Building Resilience to Climate Change in Papua New Guinea ¹		
5. Type of PPCR investment	Private:	Public: X	Mixed:
6. Funding request (in USD million total) (including preparation grant):	Grant: USD5 million	Loan: None	
7. Financing will be used for:	a –topping up an approved PPCR project/program <input type="checkbox"/> b –topping up a PPCR project/program in preparation for Sub-Committee approval <input checked="" type="checkbox"/> c –a new PPCR project/program <input type="checkbox"/>		
8. Implementing MDB:	Asian Development Bank		
9. National executing agency:	Office of Climate Change and Development (OCCD)		
10. MDB PPCR focal point and project/program task team leader (TTL):	Headquarters-PPCR Focal Point: Cinzia Losenno Senior Environment Specialist (Climate Change Adaptation) Sustainable Development and Climate Change Department closenno@adb.org	<i>TTL</i> Maria Lourdes Drilon Senior Natural Resources Economist Pacific Department mldrilon@adb.org	

11. Project Description (including objectives and expected outcomes):

The Government of Papua New Guinea (PNG) seeks the endorsement of an additional allocation of \$5 million in grant resources from the Strategic Climate Fund under the Pilot Program for Climate Resilience (PPCR) for the proposed Building Resilience to Climate Change in Papua New Guinea Project (the project). This is the only investment under the PNG Strategic Program for Climate Resilience (SPCR). The PPCR Sub-committee endorsed the PNG SPCR on 1 November 2012, allocating grant resources totaling \$25 million, of which \$750,000 was for project preparation. Also, in its meeting in November 2012, the PPCR Sub-committee allocated an additional grant of \$5 million to PNG.

This request for approval of the PPCR additional allocation is being submitted together with the PPCR funding request for the project. The project is in the final stage of preparation, and an adequate basis for the utilization of the additional financing has been identified. The project aims to contribute to the achievement of transformational change in development planning in support of the country's Climate Compatible Development Strategy's goal to make PNG's development investments climate resilient. The project is also aligned with PNG's Vision 2050, the Development Strategic Plan (2010-2030), and the Medium Term Development Plan (2011-2015). The project impact is increased resilience to the impacts of climate variability and change. The outcome is improved capacities of communities (in vulnerable atolls and islands), government agencies, and civil society to plan and respond to the impacts of climate change.

The project has three outputs: (i) climate change and vulnerability assessments carried out and adaptation

¹ The name of the proposed project was changed by the administering Multi-lateral Development Bank to better reflect the nature of proposed interventions.

plans developed target communities, (ii) sustainable fishery ecosystems and food security investments piloted in nine vulnerable island and atoll communities, and (iii) enabling framework for climate resilient infrastructure established and early-warning communications network extended.

Output 1: Climate change and vulnerability assessments carried out and adaptation plans developed for target communities (\$9.75 million). The project will, for the 21 identified vulnerable islands, (i) prepare local climate projections; (ii) undertake climate vulnerability assessments in consultation with local administrations and beneficiary communities, develop climate change vulnerability assessment and adaptation plans (CCVAPs) and emergency response strategies in the event of extreme climate events, and provide training in actions and procedures to be followed if such extreme climate events occur; (iii) install around 190 priority water supply/storage facilities and 100 ventilation-improved pit latrines near community facilities—schools, aid posts, and churches with their large collection areas and public access to improve village hygiene against water-borne disease—identified during the vulnerability assessments and incorporated in the CCVAPs; (iv) assist communities to prepare climate adaptation subprojects for financing; (v) incorporate the climate adaptation subprojects in local government, district, and provincial development plans; and (vi) establish a Small Grant Facility totaling \$5 million to provide grant finance in support of subprojects aimed at increasing climate resilience of vulnerable island and atoll communities, as identified in the climate change vulnerability assessment and adaptation plans. The project will support communities in preparing applications for financing the climate adaptation subprojects to either the government's District Services Improvement Program² or, where appropriate and eligible, the Small Grants Facility (see section 19 for further details).³

Output 2: Sustainable fishery ecosystems and food security investments piloted in nine vulnerable island and atoll communities (\$7.25 million). The project will assist local communities in nine pilot sites to (i) demonstrate techniques used in the rehabilitation of protective coral reefs and degraded mangrove forests, including delineation and operation of locally managed marine areas and the development and implementation of management plans, mapping, and environmental monitoring (including fish, coral, and seaweed species); (ii) pilot income-generating activities in the marine environment, including aquaculture of fish and crustaceans, and localized processing of marine products to extend their shelf life and improve food security; and (iii) pilot the stabilization of watershed catchment areas, adopting a ridge-to-reef approach in island hinterlands through tree planting and other slope stabilization measures, as appropriate.

To further improve food security in the same nine vulnerable islands and strengthen trading links between the islands and mainland areas - the project will (i) assess the extent of food insecurity anticipated from climate variability and change; (ii) identify options and priorities to address food insecurity in consultation with local communities; (iii) demonstrate how to implement selected priority options; and (iv) increase the production and distribution of planting material on selected agricultural stations. Demonstrations will include production techniques, drought-tolerant planting material, and water management and rehabilitation of sago areas.

The project will also support food processing and storage initiatives in villages to extend the shelf-life of perishable goods and increase the production of planting material on local agricultural stations. Through these activities, the trading links between vulnerable islands and the mainland will be strengthened and food insecurity reduced in both locations.

Output 3: Enabling framework for climate resilient infrastructure established and communications network extended as part of early warning system (\$6 million). The project will develop an enabling framework to mitigate the impacts of climate change on coastal infrastructure (ports, wharves, and jetties) by (i) developing policy documents;⁴ (ii) upgrading engineering design standards; (iii) incorporating benefits from climate protection in feasibility studies; and (iv) recommending sustainable financing alternatives for operations and maintenance. Training will be provided to enhance the capacity of national agencies, PNG Ports Corporation Ltd (PPCL), provincial administration, and Coastal and Inland Fisheries Development Agency personnel to incorporate climate change considerations into design, construction, operation, and maintenance of coastal infrastructure.

² The Government allocated K10 million to each of the 89 districts in PNG to be spent on infrastructure and rehabilitation maintenance projects covering education, health, law and justice, water supplies, agriculture, electrification, transport, and community infrastructure.

³ The governance of the Small Grant Facility and the eligibility criteria for the subprojects are described in the Project Administration Manual

⁴ These will include the strategic policies on operations and maintenance of port facilities, designs for climate proofing coastal assets, upgrading national, provincial and Coastal and Inland Fisheries Development Agency managed facilities, and the extension of the infrastructure in support of the marine transport network in the islands.

Under Output 3, the project will extend the radio communications network to improve communications and early warning of natural disasters and extreme climate events by the installation of a very high frequency network linked to PNG's National Disaster Center. This will provide emergency and general communication services to the target islands and others within the signal coverage of the network. Equipment for five relay stations will be installed on existing towers, one in each province, together with receiving equipment and disaster warning sirens on the 21 vulnerable target islands complemented with operating and maintenance training of communities.

Under the financing arrangements proposed in the SPCR, \$25 million⁵ has been allocated for investment, which includes Output 1 (\$9.26 million), Output 2 (\$8.41 million), and Output 3 (\$3.94 million), with an allocation for project management of \$2.64 million. The net amount available for investment after deducting project preparation grant is \$24.25 million. Subject to additional funding from the PPCR, a change in scope to Output 3 will be made to include the upgrading of Alotau Provincial Government Wharf. This will serve as a model for climate proofing similar, structures currently planned in PNG.

Current Status of Project: ADB approved a project preparation technical assistance⁶ (PPTA) for \$750,000 on 2 May 2013 to design the project. Several consultative meetings and design missions took place between September 2013 and February 2015. Target island vulnerabilities were confirmed during project preparation using current socio-economic and climate data together with consultative meetings attended by national and provincial agencies, civil society and community representatives. The technical feasibility of adaptation measures to be delivered through the project's outputs were assessed on the basis of preliminary vulnerability assessment carried during the preparation of the SPCR, climate information available in the literature and extensive consultation with government agencies and local communities. Benefits of the proposed measures include:

- reduced damage from extreme climate events, including damage to property and life (Output 1);
- reduced incidence of water-borne disease expressed in terms of increased working days (for the working aged population) made possible by the water and sanitation initiative of the project (Output 1);
- the incremental value of a coral reef under 'with' and 'without project' scenarios to reflect the improved management regimes in pilot sites resulting from the fisheries interventions, and the incremental productivity in food-producing locations resulting from the food security initiatives (Output 2); and
- reduced loss of lives valued at a derived value of statistical life resulting from the communication and early warning measures (Output 3).

Safeguards due diligence was carried out during the project preparation. The proposed project was categorized as B for environmental impact because impacts may occur during the installation of water supply and latrine facilities and other activities. An Environmental Assessment and Review Framework was prepared to address environmental impacts that may result from the project. The project was categorized as C for involuntary resettlement as the project is not expected to require land acquisition or resettlement. The project was categorized as C for indigenous peoples as the project is not expected to affect any vulnerable group of indigenous peoples as defined under ADB's Safeguards Policy Statement.

The project preparation has been completed and the project is scheduled for approval from the ADB board on 18 September 2015.

Use of Additional Allocation:

It is proposed that additional PPCR funding of \$5 million be utilized to pilot the upgrading and climate proofing of the Provincial Government wharf in Alotau, Milne Bay. Reliable maritime infrastructure is an essential prerequisite for trade, economic development, health services, and poverty reduction in PNG. Ensuring that maritime infrastructure such as wharf, jetties and ports and other critical coastal assets are designed and built to cope with the adverse effects of climate change is crucial to the economic development of PNG. The Alotau Provincial Government Wharf was identified as a vulnerable wharf with the high demonstration value on the basis of selection criteria agreed between the government of PNG and ADB. Selection criteria included: (i)

⁵ The PPTA was financed as project preparation grant (PPG) from the total PPCR envelope of \$25 million allocated to PNG, leaving a total of \$24.25 million available for project initiatives.

⁶ PPTA No.8362 PNG: Strategic Program for Climate Resilience – Climate Change Consultancy Team (46495-001) with the consulting company, GHD Pty. Ltd. Australia.

vulnerability to the impacts of climate change, (ii) critical infrastructure in terms of servicing remote island communities, (iii) significant economic benefit, (iv) accessibility of the site in order to provide a demonstration to other provincial governments, (v) priority investment and inclusion in the provincial development plan, (vi) rehabilitation cost lower than K13 million (to conform with available funds), and (vii) counterpart assistance from the beneficiary provincial to the investment.

The Alotau wharf is located in Milne Bay in a readily accessible location. It is vulnerable to the adverse effects of climate change, especially sea level rise and storm surges. Upgrading and climate proofing Alotau wharf will serve as an example of climate proofing, complement the enabling framework that will be developed under Output 3 of the project, and strengthen the learning generated by the project. The wharf upgrading will demonstrate how such assets can be protected from rising sea level, storm surge, and increased wave height and frequency, providing a model that can be replicated for climate proofing similar infrastructure in PNG and in other island states. Associated with upgrading the port facility, the capacity of the concerned port and provincial government staff will be enhanced through on-the-job training during the detailed design process and as a result the project will contribute to technology transfer for application elsewhere in the country.

The PPCR additional allocation will be utilized for (i) subproject concept design and feasibility study, including social and environmental due diligence and an economic and financial assessment of the investment, and (ii) upgrading and climate-proofing of the Alotau Provincial Government Wharf under a design-and-build contract. Should the request for additional allocation be approved by the PPCR Subcommittee, the funds will be merged with the project through additional financing, which is scheduled for ADB board approval in March 2016.

12. Activities to be financed from the additional resources (including breakdown of funding by component, as appropriate):

A preliminary estimate for upgrading and climate proofing the wharf is listed below. Within the proposed \$5 million budget, these estimates are subject to revision based on the results of the feasibility study.

a. Feasibility study	200,000
b. Detailed engineering design	400,000
c. Civil works for upgrading (including equipment and materials)	3,420,000
d. Associated amenities supporting wharf access	500,000
e. Contingencies	480,000
TOTAL	5,000,000

13. Briefly summarize how the proposed project further advances the objectives of the endorsed SPCR:

As stated in the SPCR, PNG is sensitive to such natural hazards as coastal flooding, inland flooding, landslides, and drought. Significant risks are posed by climate change to PNG's economy, and its people from natural disasters exacerbated by climate change and gradual shifts in climatic conditions. Climate change will disrupt daily life, cause damage to assets and infrastructure, destroy livelihoods, endanger cultural and ecological treasures, and kill or injure people. Analysis suggests that the average cost of coastal flooding could increase from \$20 million per year to \$90–\$100 million by 2030 and the economic loss due to malaria from \$130 million to \$210–\$250 million per year, due to the interaction of climate change with the increased value of assets at risk as a result of economic growth.⁷

In March 2010, in order to implement key goals outlined in the country national development strategy (*Vision 2050*), PNG's Office of Climate Change and Development (OCCD) led the development, through a broad-based consultative process, of the *Climate Compatible Development Strategy for Papua New Guinea* (CCDS). The CCDS outlines key measures that will shape a more climate resilient development. With the preparation of the CCDS and the establishment of the OCCD, substantial progress has been made at the policy and strategy level, and a commitment has been given to fast-track pilot programs in the future. Climate risk management is still to be integrated into policy, planning, and budgetary processes. Moreover, there is limited understanding of climate risks and a lack of technical capacity to integrate climate risk management into planning processes. The need to integrate climate change considerations into infrastructure design, building codes, and physical/coastal planning processes has been identified by the government as an urgent priority.

⁷ Papua New Guinea: 2012. Strategic Program for Climate Resilience.

The PNG SPCR makes provision for support through three components. Through support provided under component 1 of the SPCR (build climate resilient communities by strengthening their capacity to address priority climate change risks), PNG will develop capacity for climate change vulnerability mapping and adaptation planning and develop early warning systems and community emergency preparedness training. Component 1 will also establish a climate change financing framework which will support priority climate change adaptation interventions in vulnerable communities. Through support provided under component 2 of the SPCR (address threats to food security from climate change impacts by piloting adaptation measures in vulnerable communities), PNG will pilot food processing, preserving, and storage systems and ecosystem-based, climate resilient fisheries management. Through support provided under component 3 of the SPCR (strengthen approaches to design, construct, operate, and maintain selected ports/wharves/jetties and associated infrastructure to improve the resilience of vulnerable social and economic support systems to climate change impacts), PNG will pilot an enabling framework for climate proofing of critical ports/wharves/jetties and develop a pool of trained, qualified personnel who are capable of mainstreaming climate change adaptation in infrastructure development planning and implementation.

Complementing the establishment of an enabling environment for climate proofing coastal infrastructure, the inclusion of Alotau wharf for climate proofing aims to demonstrate adaptation measures that can be applied in their design and construction given an enabling environment. Such an intervention is highly relevant in a country so dependent on maritime transport to sustain the socioeconomic functions of its geographically dispersed island communities. There are comprehensive plans already in place to upgrade a range of coastal assets as funding becomes available, but such upgrading will most likely follow the least-cost designs that will be unlikely to incorporate resilience to climate change impacts unless the advantages for same are demonstrated. Current design practices place little emphasis on longer-term climate change projections and the government does not fully appreciate the benefits from the additional costs that climate proofing will incur. The wharf upgrading will demonstrate how such assets can be protected from rising sea level, storm surge, increased wave height and frequency, providing a model that can be replicated for climate proofing similar infrastructure facilities in the country.

Moreover, ensuring that the wharf is resilient to the adverse effects of climate change will further advance the endorsed SPCR by providing a pilot that can be replicated in PNG and in the region, strengthening the learning on climate risk management of critical infrastructure that will be generated by the PPCR funding. The pilot will offer the opportunity to identify and test engineering solutions that can reduce the vulnerability of the asset, as well as the opportunity for training of PPCL and other engineering and planning departments, and contribute to knowledge and guidance on climate resilient infrastructure development that can benefit other countries .

14. Expected Key Results from the use of the new resources

Result	Indicators (consistent with approved PPCR Results Framework)
a. Improved climate resilient building codes and design standards used in upgrading Alotau wharf to climate proofing standards supported by enabling policies and procedures for enhanced resilience of coastal infrastructure developed under BRCC.	Quality and extent to which climate responsive instruments/ investment models are developed and tested with specific reference to coastal infrastructure.
	Extent to which the relevant institutions, businesses, and public sector services use improved PPCR supported tools, instruments, strategies, and activities to respond to climate variability or climate change, including climate resilient design standards through demonstration of climate proofing of Alotau wharf.
b. Demonstration of enhanced resilience of coastal infrastructure to climate change including various aspects of climate proofing of the Alotau wharf in terms of design, construction, economics, financing, and implementation.	Degree of integration of climate change in sector planning and design (in terms of new building codes and design standards) as evidenced by planning and design documents adopted by institutions such PPCL, various national, provincial and district agencies responsible for coastal infrastructure facilities (ports, wharves, jetties etc.).

c. Enhanced capacities of staff through on-the-job training during design and construction.	Evidence of strengthened government capacity and coordination mechanism to mainstream climate resilience design and construction of coastal infrastructure.
d. Increased economic activities to support the livelihood and social needs of the communities resulting from enhanced longevity of the Alotau wharf in terms of its functions and usefulness under climate extremes; and improved mobility of people and connectivity to facilitate exchange of goods and services including climate resilient port facilities, hygiene and sanitation for traders, passengers especially women and children.	Number of people supported by the PPCR to cope with the effects of climate change in outer islands served by Alotau wharf.

15. Expected Co-Financing for the project or program⁸⁹:

	Amount (\$million):	Type of contribution:
<ul style="list-style-type: none"> Provincial Government 	\$0.45	Budgetary allocations for construction and future operations and maintenance
<ul style="list-style-type: none"> National Government 	TBD	Waiving of taxes and duties for construction
<ul style="list-style-type: none"> Private Sector (please specify) 	TBD	
<ul style="list-style-type: none"> Bilateral (please specify) 	n.a.	
Others (please specify)	n.a.	
Total	\$0.45 +	

16. Anticipated Timetable for Processing:

Expected date of PPCR Sub-Committee approval of additional allocation: June 2015
 Recruitment and mobilization of consultants to design Alotau wharf: August-September 2015
 Feasibility study preparation: September – November 2015
 Updating of the Report and Recommendation of the President (RRP) and the Project Administration Manual (PAM) to include the additional financing \$5million: November – December 2015
 Submission to PPCR Sub-Committee for approval: January 2016
 ADB Approval of the additional financing: March 2016

17. Other Information:

Selection Criteria

Selection criteria for climate proofing coastal infrastructure include the level of vulnerability to extreme climate events, and socioeconomic significance including consequent risks to the regional economy (passenger utilization and transport of traded goods). The Alotau wharf was selected as the most appropriate port facility because of its (i) vulnerability to the impacts of climate change with moderate to high level of risk; (ii) economic significance in the outer island trade, (iii) the volume of passenger traffic and traded goods handled through the facility, (iv) ease of access and inspection to monitor progress and performance of the upgraded facility during extreme climate events, and (v) willingness of the provincial government to participate in upgrading the wharf.

Stakeholder Consultation

An extensive stakeholder consultation was undertaken at the national, provincial, and district level as well as

⁸ This includes: in-kind contributions (monetary value), MDB loan or grant, parallel financing, etc.

⁹ The feasibility study will determine the estimated cost for upgrading the Alotau wharf to climate proof design standards. Financing plan will be based on these cost estimates, of which \$4.8 million will be contributed by PPCR additional Allocation and the balance (to be determined) by the national and the provincial government budgets and PPCL.

with beneficiary stakeholders. Endorsement for climate proofing the wharf was provided by PNG Ports Corporation Ltd, the concerned provincial and district agencies, affected communities, and other stakeholders including potential civil works contractors. The willingness of the provincial and district government administration and the affected communities has been a contributory factor in the selection of the wharf for climate proofing. The active, inclusive process of working toward a common purpose with the aim of fostering relationships of trust and building social capital among clans has been an important element of the consultation process. The consultation process ensured the inclusion of poor and vulnerable groups, especially women and youth, at the community level to secure their feedback and support.

Gender Dimensions

The upgrading of the Alotau wharf will be designed taking into account gender considerations. The review of design/construction codes for PPCL and provincial governments demonstrated that specific needs of women and children have been considered. For example, wharves used for passenger embarkation have hygienic toilets and safe waiting areas for mothers and children. Women and girls living within the port's service area working in food processing, fisheries, and tourism will especially benefit from better access to markets and services, increase in food availability including marketing surpluses and livelihood opportunities, and overall promotion of their economic empowerment. The upgrading of the Alotau wharf will be aligned with the Gender Action Plan for the project to ensure that women participate in planning and decision making and that the wharf design meets their specific needs. The proposed upgrading will also include a safe waiting area for women, illuminated wharf platform for night time transport, improved security of the premises and permanent on-site latrines.

Knowledge Management

A knowledge depository will be established in OCCD with a dedicated web page for the project and will include information on feasibility for climate proofing, socioeconomic benefits, design features, implementation progress and lessons learned with specific reference to climate proofing of Alotau wharf with potential application to other coastal infrastructure. Knowledge management activities carried out under the project includes the GIS database, project baseline data, targets, and implementation progress including documentation of best practices, guidelines on climate change risk management, and application of tools including climate proofing of infrastructure.