*Revised on 17th February 2017*

# Project Administration Manual

Project Number: 46495-002

# Grant No.0447-PNG: Papua New Guinea: Building Resilience to Climate Change in Papua New Guinea

**CONTENTS**

**Annexes**



**List of Tables**



**List of Figures**

**Project Administration Manual Purpose and Process**

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Climate Change Development Authority (CCDA) (Executing Agency), the Coastal and Fisheries Development Agency, the National Agricultural Research Institute, PNG Ports Corporation Limited (implementing agencies) are wholly responsible for the implementation of ADB financed projects, as agreed jointly between the and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by the CCDA (Executing Agency), the Coastal and Fisheries Development Agency, the National Agricultural Research Institute, PNG Ports Corporation Limited (implementing agencies) of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Grant Negotiations the Recipient and ADB shall agree to the PAM and ensure consistency with the Grant Agreement. Such agreement shall be reflected in the minutes of the Grant Negotiations. In the event of any discrepancy or contradiction between the PAM and the Grant Agreement, the provisions of the Grant Agreement shall prevail.

After ADB Board approval of the project's Report and Recommendation of the President (RRP) changes in implementation arrangements are and pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

## ABBREVIATIONS

| | | |
|---|---|---|
| ADB | - | Asian Development Bank |
| AFS | - | audited financial statements |
| BRCC | - | Building Resilience to Climate Change (in PNG) |
| CCDA | - | Climate Change Development Authority |
| CFDA | - | Coastal Fisheries Development Agency |
| CQS | - | consultant qualification selection |
| CSIRO | - | Commonwealth Scientific and Industrial Research Organization |
| DAL | - | Department of Agriculture and Livestock |
| DMF | - | design and monitoring framework |
| DOH | - | Department of Health |
| DSIP | - | District Services Improvement Program |
| EA | - | executing agency |
| EARF | - | environmental assessment and review framework |
| EMP | - | environmental management plan |
| GAP | - | gender action plan |
| IA | - | implementing agency |
| ICB | - | international competitive bidding |
| IEE | - | initial environmental examination |
| LMMA | - | locally managed marine area |
| NARI | - | National Agricultural Research Institute |
| NCB | - | national competitive bidding |
| NDC | - | National Disaster Center |
| NGOs | - | nongovernment organizations |
| PAC | - | provincial advisory committee |
| PAM | - | project administration manual |
| PISC | - | project implementation support consultants |
| PMU | - | project management unit |
| PNG | - | Papua New Guinea |
| PNGPCL | - | PNG Ports Corporation Limited |
| QBS | - | quality based selection |
| QCBS | - | quality- and cost based selection |
| RRP | - | Report and Recommendation of the President to the Board |
| SBD | - | standard bidding documents |
| SCF | - | Strategic Climate Fund |
| SGF | - | small grants facility |
| SOE | - | statement of expenditure |
| SPCR | - | Strategic Program for Climate Resilience |
| SPRSS | - | summary poverty reduction and social strategy |
| SPS | - | Safeguard Policy Statement |
| TOR | - | terms of reference |
| VLNSF | - | voluntary land-use and negotiated settlement framework |

# I. PROJECT DESCRIPTION

1. The proposed "Building Resilience to Climate Change" (BRCC - the project) will implement Papua New Guinea's (PNG) Strategic Program for Climate Resilience (SPCR)[1] aimed at achieving transformational change in addressing the current and future threats from climate change and related hazards. This will be achieved by mainstreaming climate resilience into development planning and addressing country priorities that focus on vulnerable communities in the provinces of Bougainville, East New Britain, Manus, Milne Bay and Morobe comprising 21 priority vulnerable islands/atolls identified through a participatory process using SPCR identified risk factors across four sectors including (i) infrastructure, (ii) natural resources, (iii) health, and (iv) agriculture against potential impacts from climate change and variability.

2. The project impact is increased resilience to the impacts of climate change and climate variability. 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."

3. The project has three outputs: (i) climate change and vulnerability assessments carried out and adaptation plans developed for target communities, (ii) sustainable fishery eco-systems and food security investments piloted in nine vulnerable island and atoll communities, and (iii) enabling framework for climate resilient infrastructure established and communications network extended.

## A. Output 1: Climate change and vulnerability assessments carried out and adaptation plans developed for target communities:

4. Climate change vulnerability assessment and adaptation plans developed and implemented by target communities: The project will, for the 21 identified vulnerable islands (Table LD3.1): (i) prepare local climate projections; (ii) undertake climate vulnerability assessments in consultation with provincial administrations and beneficiary communities, develop climate change vulnerability assessment and adaption plans, 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 identified during the vulnerability assessments as requiring priority action to meet basic community needs. These will be sited near community facilities—schools, aid posts, and churches with their large collection areas and public access to improve village hygiene against water-borne disease; (iv) assist communities to prepare climate adaptation subprojects for financing, (v) incorporate the climate adaptation subprojects in local government, district, and provincial development plans. Based on these plans, the project will support communities in preparing financing applications for identified climate adaptation subprojects to either the government's District Services Improvement Program[2] or, where appropriate, a Small Grants Facility (SGF)[3] to be established under the project.

---

[1] See http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Strategic_Program_for Climate_Resilience_for_Papua_New Guinea

[2] The National 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] This Small Grants Facility will serve as a pilot for the Climate Change and Green Growth Trust Fund which the government intends to establish in due course.

**Table LD3.1: Target Vulnerable Islands for Output 1**

| Province | District | Local Level Government | Island Group | Island | Villages | Population (2011) |
|---|---|---|---|---|---|---|
| Manus | Manus | | | | | |
| | | Lelemadih/Bupichupeu | | Ahus | | 606 |
| | | Pomutu Ndrehet Kurti | | Andra | | 486 |
| | | | | Ponam | | 534 |
| | | Bisikani/Soparibeu | | Bipi Island | Maso | 352 |
| | | | | | Matahai | 232 |
| | | | | | Salapai | 484 |
| | | | | | Sisi/Paii | 55 |
| | | | | | | |
| East New Britain | Kokopo | | | | | |
| | | DOY Rural | Duke of Yorks | Kerawara | | 530 |
| | | | | Utuan | | 609 |
| | | | | Mioko | Palpal | 949 |
| | | | | | Virian | 677 |
| | | | | Mualim | | 383 |
| | | | | | | |
| Milne Bay | Samarai Murua | | | | | |
| | | Bwanabwana | | Kwaraiwa | | 162 |
| | | | | Ware | | 1,250 |
| | | Murua Rural | | Budibudi | | 232 |
| | | | | Wiakau Island | Yanaba | 312 |
| | | | | | Egom | 135 |
| | | | Trobriand | Kaileuna | Kaisiga | 596 |
| | | | | | Giva | 391 |
| | | | | | Koma | 487 |
| | | | | | Kaduwaga | 822 |
| | | | | | Tawema | 466 |
| | | | | Kiriwina | 81 villages | 29078 |
| Morobe | Tewai-Siassi | | | | | |
| | | Siassi Rural | | Malai | | 499 |
| | | | | Aramot | Aromot 1-7 | 945 |
| | | | | Mandok | | 715 |
| | | Yabim Mape Rural | | Tami Island | Wanam | 143 |
| | | | | | Kalal | 182 |
| | | | | | | |
| Bouganville | Atolls | | | | | |
| | | Atolls-North Bougainville | Carterets (Tulun) | Han | | 413 |
| | | | | Piul | | 220 |
| | | | | Yangain | | 152 |
| | | | | Yolasa | | 102 |
| | | | | Yesila | | 116 |
| | | | Mortlock (Takuu) | Nukutoa | | 302 |
| | | | Tasman Atoll | Nukumanu | Amotu | 453 |
| | | | Fead (Nuguria) | Busuria | | 279 |
| | | | | Sauma | | 113 |
| | | | | Hunamohu | | 15 |
| | North Bouganville | | | | | |
| | | Teop | | | Tearuki MS | 294 |
| **Total Population** | | | | | | **12,931** |

5. Subprojects will be developed in consultation with local communities estimated to cost between $20,000-$50,000 per subproject, approved by the Project Steering Committee subject to conformity with eligibility criteria,[4] and administered by a suitably qualified financial administrator. The $5 million allocated to the SGF under the project will be used to finance approved climate adaptation subprojects (requiring a 20% in kind beneficiary contribution) and the financial administrator fees.

### 1. Vulnerability Mapping and Planning

6. The SPCR for PNG outlines the main areas of vulnerability to climate change across four key sectors including infrastructure, agriculture, natural resources, and health. Through this analysis, five target provinces were identified for the BRCC. During design preparation, CCDA identified 21 vulnerable islands to demonstrate approaches to enhance community capacities and assist by implementing adaptation measures to the potential risks of climate change. The design team also carried out sample vulnerability assessments on two of these target islands[5] to demonstrate approaches and coverage of the assessment. The survey instrument used, the analysis of results and the subsequent vulnerability maps produced are presented in Annex 3 hereto.

7. In order to identify the most likely threats from climate change confronting these target islands, the project will obtain down-scaled climate projections from the Commonwealth Scientific and Industrial Research Organization using their existing model developed for the Pacific. This will identify the potential threats at the lowest possible level against which the vulnerability assessments will be carried out.

8. Armed with these, vulnerability assessment teams will visit the target island communities where participatory investigations will be undertaken with all members of the community. The Gender Action Plan describes the necessary measures and approaches that need to be used in this process to assure that women contribute their views to the assessment. Assessment team personnel will receive training in procedures and in communication techniques to extract the relevant information during the island visits. The vulnerability assessment teams will be led by the facilitating NGO with team members comprising a representative from the district administration and local level government offices, the provincial representative from Coastal Fisheries Development Agency (CFDA), Health, DAL/NARI and, where available, the National Disaster Center. The instrument for the assessment will be further developed by the Project Implementation Support Consultants (PISC).

9. Subsequently, the communities will be revisited to discuss potential investments to address the challenges of climate change and assign priorities to these adaptation measures. Once an agreed list of priority activities has been identified, items will be incorporated into the local level government, district and provincial development plans where the identified investments can be financed through DSIP or other funding sources. This will initiate the process of bottom-up planning in target communities.

10. Identification of Priority Islands. The 21 priority vulnerable islands were identified during project preparation through a consultative process involving CCDA, national concerned agencies, representatives from the five participating provinces and members of civil society. The process was conducted in Port Moresby but the design consultants facilitated provincial participation. The workshop was conducted over a two day period during which the number of vulnerable islands

[4] Eligibility criteria and the process for approval are presented in Annex 1.

[5] Assessments were carried out on Kwaraiwa (Milne Bay) and Carteret Islands in Bougainville.

(some 200 identified in the SPCR) were reduced to 70 and subsequently to 21.

11. These 200 islands and atolls are characterized as: (i) being small, low-lying coral islands or atolls (usually not exceeding approximately 5m in elevation); (ii) inhabited by communities of small population (generally a few hundred households or less) but with high population density; (iii) being located in remote areas that are difficult to access and from main population centers given the limited transport facilities and infrastructure; and as having limited areas of good soil for food production.

12. Many of these islands lack groundwater, and even where groundwater resources are present, they are often compromised by saltwater intrusion or by percolation of nutrients, bacteria and other contaminants. Topsoil on such islands is typically nutrient-poor, comprised of a thin organic layer derived from leaf litter, and agricultural activities are thus limited. Low elevations make these sites particularly susceptible, in the short term, to inundation by waves and storm surges during extreme weather events, or extreme high tides ("king tides") and, over the long term, to sea level rise. In some sites, coral reefs that would otherwise provide some protection against storms and waves have been damaged due to coral harvesting and other damaging practices. Finally, the remoteness of these areas means that it is difficult for the local communities to access essential goods and services, and to transport any products (mainly fish, lime, and copra) to market. Thus, access to health, education, and other social services, as well as livelihood opportunities are extremely limited.

13. Due to limited resources available under the project and its pilot nature, potential sites for piloting activities to promote climate change resiliency were identified during the design phase based on a multi-criteria ranking and selection process. Criteria used to select the 21 pilot sites for Output 1 initiatives are detailed below:

(i) **Degree of Risk** - based on frequency, intensity and probability of impacts from climate change (extreme events, floods, drought, cyclones, seasonal changes);
(ii) **Degree of Vulnerability** - based on capacity and social capital of the community, and access to services/financing;
(iii) **Degree of Urgency** - based on assessment of hotspots by sector agencies (health, agriculture, fisheries, disaster);
(iv) **Cost efficiency / Effectiveness** - based on accessibility and logistical constraints; and
(v) **Potential for Success** - based on commitment/readiness by Provinces, or earlier work undertaken in communities by NGOs demonstrating a willingness by communities to participate.

14. Chosen in this manner, the final list does not purport to be the most vulnerable amongst the initial 200 but are islands where there is the greatest possibility of a successful outcome from designed activities and where the vulnerability and risk levels are high. Throughout this process, the contributions of local participants from the provinces were instrumental in guiding selection.

### 2. Priority Water and Sanitation Investments

15. During the vulnerability assessments, the DOH personnel will review existing facilities for sanitation, water supply and storage and determine the most appropriate methods for water collection and storage and where possible, gravity reticulation systems.[6] DOH will provide

[6] See Technical Manual on Rural Water Supply and Sanitation produced by the Health Protection Section of the Department of Health, 2001.

technical inputs as to the most appropriate water and sanitation (WATSAN) facilities to be piloted on the islands and will be dependent upon local conditions on the islands. The project will finance the establishment or rehabilitation of some 190 water collection and storage facilities identified in the vulnerability assessment to mitigate the incidence of extended drought periods anticipated from climate change. Based on sample vulnerability assessments,[7] water is likely to be the priority request from communities. Water collection, storage and distribution facilities will be installed around community facilities - schools, aid posts and churches where there are large collection areas with public access. Focus will be given to improving village hygiene with the introduction of communal ventilation-improved pit toilets[8] to reduce the impact from water-borne disease. About 100 latrines will be introduced on vulnerable islands together with associated training for local communities on operational and maintenance requirements.

16. The goods and materials required for the installation of facilities will be procured by CCDA based on technical recommendations of DOH and contractors will be engaged for their delivery and supervision of installation. Local materials should be used wherever possible by the beneficiary community as a counterpart contribution to improve ownership of the facilities and thereby assist in achieving sustainability. The project will provide training on their operations and maintenance requirements through the facilitating NGOs to be engaged under the project.

17. Vulnerable island target communities will be evaluated during the vulnerability assessment to determine the most appropriate mechanism for communications and to determine the equipment needed for this service. They will be supported by NGOs and provincial officers to develop emergency response strategies in the event of anticipated disasters. The introduction of early warning very high frequency (VHF) radio communications and/or mobile networks, and the development of emergency response plans will allow communities to take evasive action preventing the loss of assets and life.

### 3. Community Identified Climate Resilient Subprojects

18. With the completion of the prioritized investment plans (representing potential subprojects), communities can either request financing through the DSIP or, if eligible, secure financing through the SGF. Communities will be supported to prepare funding applications to either DSIP or, where appropriate, the SGF to be established under the project. Once approved, (in accordance with SGF eligibility criteria and evaluation procedures – Annex 1), funds will be released to implement priority climate change adaptation measures on the islands.

### 4. Small Grants Facility

19. The SGF will be established to provide grant finance to eligible beneficiaries for eligible subprojects that support activities aimed at increasing climate resilience of vulnerable island and atoll communities, as identified in the climate change vulnerability assessment and adaptation plans (CCVAP). Since the subprojects in the CCVAP may also be funded under the national, provincial, or the district budget, the SGF will fund only those subprojects that meet the eligibility criteria as described in the (Annex 1). Individual subproject financing shall range from $20,000 to $30,000. However, a maximum amount of $50,000 can be considered as long it can be justified, especially in areas where cost of construction material is high due to importation cost/logistics.

20. Eligible beneficiaries including women will provide 20% contributions in kind (the equivalent of $1 million), such as labor, to assist in construction of works and installation of equipment or provision of local materials. The SGF will operate for the duration of the project.

[7] Supplementary Document No.16: Sample Vulnerability Assessment Questionnaire, Interpretation and Output.
[8] Current practices have communal toilets built out over water on the periphery of islands, usually one per clan.

The SGF will be subject to annual audit of financial transactions and review of implementation performance to ensure the funds are used for their intended purpose. The status of implementation of the SGF will be reviewed at the end of the third year of implementation (mid-term evaluation) to assess the utilization of the funds and the amount that is unlikely to be utilized by the closing date. Any unused SGF allocation shall be reprogrammed for other activities informed by recommendations of the mid-term evaluation.

21. In view of the limited capacity of the Executing Agency in managing and administering such funds, the SGF will be assisted by a Secretariat. The Secretariat will be headed by a Secretary, and assisted by consultants (engaged under the PISC contract) who will coordinate the submission and evaluation of funding requests, including a subproject evaluation specialist and an independent financial administrator recruited by the PMU.[9]

22. The SGF imprest account will be established with an initial advance equivalent to 6 months estimate of eligible subproject expenditures in year 2 and will be liquidated and replenished in accordance with the Loan Disbursement Handbook. About 100 to 200 subprojects are expected to be financed under the project within the 21 target islands. A financial administrator will be engaged to manage and disburse funds from the SGF imprest account. The currency of the imprest account will be in US dollars.

23. Requests for financing of subprojects from the SGF will be prepared by eligible beneficiaries, endorsed by relevant local level government[10] and submitted to the SGF Secretariat. The support of facilitating NGOs will be made available on request to support eligible beneficiaries in developing and submitting subproject funding requests. The Secretariat will assess: (i) the eligibility of beneficiaries; (ii) the alignment of the proposed subproject with the relevant CCVAP developed under the project; and (iii) the technical viability of the proposed subproject on the basis of the subproject eligibility criteria described in Annex 1. The Secretariat may seek assistance of technical experts for a technical assessment of the subproject. Based on the assessment, the Secretariat may accept the request, reject it or return it to the eligible beneficiary for further development. Conforming applications will be recommended to the Project Steering Committee for funding approval.

24. For approved subprojects, a subproject participation, financing and implementation agreement (Agreement)[11] will be signed between the EA and the eligible beneficiary. Funds will be disbursed by the financial administrator at the direction of the Project Steering Committee to either beneficiaries or the contractor performing the works in accordance with the subproject request for financing. A progress report will be submitted to the Steering Committee at the end of each quarter. Funds will be disbursed by the financial administrator to the eligible beneficiaries and/or contractors in accordance with the terms of the Agreement.[12] Payments should follow an initial advance to commence subproject implementation, a midterm payment upon receipt

---

[9] Terms of reference for the appointment are included in Section 6 of the PAM.

[10] The Organic Law on Provincial Governments and Local-level Governments 1995 provides for participative structures. LLGs have an average of 19 members each, including the chairperson. LLGs have full discretion to establish the committees they deem necessary to carry out their functions effectively and efficiently. Each LLG may also have up to three additional members appointed to represent various interest groups: one each nominated by the Papua New Guinea Trades' Union Congress, the Employers' Federation and to represent women's organizations. As part of the LLG system, ward development committees (WDCs) are constituted at the community level. The WDCs comprise the member for the ward (as the chairperson) and a maximum of five community representatives (of whom two must be women) as associate members. See LLG system in PNG (www.clgf.org.uk).

[11] See a sample subproject financing and participation agreement in Appendix 2 of PAI 5.10 http://www.adb.org/sites/default/files/institutional-document/33431/pai-5-10.pdf .

[12] PAI 5.10 on Implementing Small Projects with Community participation http://www.adb.org/sites/default/files/institutional-document/33431/pai-5-10.pdf

of a satisfactory progress report and a final payment on receipt of a satisfactory project completion report as confirmed by the facilitating NGO.

## B. Output 2: Sustainable fishery eco-systems and food security investments piloted in nine vulnerable island and atoll communities

25. The project will assist local communities in nine pilot sites,[13] to: (i) demonstrate techniques used in the rehabilitation of protective coral reefs and degraded mangrove forests, including delineation and operation of local marine management associations (LMMAs) 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.

26. To further improve food security in the same nine vulnerable islands and strengthen trading links between the islands and mainland, the project will: (i) assess the extent of food insecurity anticipated from climate change and variability; (ii) identify options and priorities to address food insecurity in consultation with local communities; (iii) demonstrate how to implement selected priority options;[14] and; (iv) increase the production and distribution of planting material on selected agricultural stations.

27. Under this output, it is important to recognize the interdependency between target islands and the mainland communities whereby the island communities trade marine products in return for food items. For this reason, it is possible that some of the food security initiatives might be implemented in other locations not necessarily the target islands – such as Lou Island in the case of Manus food security initiatives.

### 1. Fisheries Eco-systems

28. This sub-output is directed at improving the food security of vulnerable populations whilst preserving the marine eco-system that forms an integral part of trading patterns between island and mainland communities. Three provincial sites will be included in the pilot that will adopt a "ridge-to-reef" approach with interventions extending to the watershed catchment areas from which surface run-off is delivered into adjoining marine areas. Fisheries eco-system interventions will include: (i) the establishment of LMMAs; (ii) facilitating marine resource mapping and monitoring, (iii) the development of LMMA marine management plans; (iv) the demonstration of rehabilitation and re-establishment of mangroves in coastal shorelines; (v) the rehabilitation of coral reefs surrounding vulnerable islands; and (vi) the demonstration of marine production, processing and marketing initiatives.[15] Land based activities will include demonstrations for rehabilitating upper reaches of watersheds with commercial tree species and, where appropriate, the introduction of vegetative buffer zones along water-ways and drainage channels.

---

[13] Manus (Ponam, Andra and Ahus Islands); Milne Bay (Trobriand Islands: Kiriwina, Munuwata and Kaeleuna Islands); and East New Britain (Duke of York Islands: Mioko, Utuan and Kerawara Islands).

[14] Demonstrations will include production techniques, drought-tolerant planting material, water management, and rehabilitation of sago areas

[15] These might include restocking and farming of shell fish such as crabs and crayfish, mari-culture (clams and trochus shells), and fish culture.

### 2. Food Security

29. Food security recognizes the dependency that off-shore islands have with mainland communities for the provision of food. Given the diversity of resources in these land areas, the sub-output will (i) carry out an initial participatory assessment to identify times and extent of food insecurity; then (ii) based on this assessment, identify options to address food deficit periods (under the guidance of National Agricultural Research Institute personnel); (iii) report these recommendations back to communities to determine their interest and priorities in undertaking identified options; (iv) demonstrate the introduction of diversified species and drought tolerant clones in commercial and household gardens; (v) provide support to local multiplication farms of planting material; and (vi) demonstrate the adoption of improved farming practices such as mulching and water management systems needed to address agricultural productivity and food insecurity in a changing climate environment. The project will also demonstrate the rehabilitation of degraded sago forests that provide the staple food of many coastal communities whilst also supporting diversification into dry-land rice where appropriate. Interventions may also incorporate food processing initiatives to extend the shelf life of the predominantly perishable goods traded together with collective marketing initiatives to preserve the quality of perishable goods. The capacity of local communities will be strengthened to continue their trading activities with island communities whereby mainland grown produce is traded for marine products caught by island communities.

### 3. Site Selection

30. For Output 2, the project will pilot food security and fisheries eco-system initiatives in three islands in each of the participating provinces of East New Britain, Milne Bay and Manus, six of which are common with the vulnerable islands under Output 1.[16] The selection of these sites were based on the government's knowledge of the presence of international and national NGOs working in the areas as they will be required to assume responsibility for much of the community level consultation work. Secondly, the sites had to be within reasonable access to transport services–either by boat or air as implementation of fisheries activities and food security activities will require better access to deliver technical packages financed under the project. Thirdly, it is also important that, for demonstration purposes, beneficiary islands needed are readily accessed. Finally, CFDA and NARI have confirmed[17] that opportunities exist in those locations to significantly improve both land based and marine based productivity through education, demonstrations and capacity building of local communities. These are also within the priority area of the Coral Triangle Initiative for PNG. This actual site decision was not restricted to vulnerable islands alone as in many cases, there is a strong linkage between island locations and the larger island hinterlands where there are better resources for land based activities impacting on food security.

## C. Output 3: Enabling framework for climate-resilient infrastructure and early warning and communication network extended

31. 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;[18] (ii) upgrading engineering design standards; (iii) incorporating benefits from

[16] CFDA and NARI in consultation with CCDA were responsible for the identification of pilot sites.

[17] Confirmation was provided by NARI at the Wrap-up Meeting of December 2014.

[18] These will include the strategic policies for upgrading national, provincial and Coastal Fisheries Development Agency managed facilities and the extension of the infrastructure in support of the marine transport network in the islands.

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,[19] PNGPCL, provincial administration, and CFDA personnel to incorporate climate change considerations into design, construction, operation, and maintenance of coastal infrastructure.

32. The project will extend the radio/mobile networks to improve communications and early warning of natural disasters and extreme climate events by the installation of a high and very high frequency (HF/VHF) network linked to PNG's National Disaster Center. This will provide emergency and general communication services to the target islands and those within the signal coverage area 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.

33. 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 in Milne Bay.[20] This will serve as a model for climate proofing similar, currently planned structures in PNG.

### 1. Enabling Framework

34. Activities will be directed at the creation of a favorable framework to incorporate mitigation measures from the impacts of climate change. This will require: (i) developing relevant policy documents to address the impacts of climate change for the upgrading of coastal infrastructure; (ii) upgrading engineering design standards to accommodate the influence of climate change; (iii) incorporating benefits from climate protection in the economic analyses when evaluating investments; and (iv) introducing sustainable financing approaches to ensure resources are available for facility operations and maintenance of the coastal shipping service. These initiatives will build the capacities of PNG Ports Corporation Ltd. (PNGPCL) staff, those of provincial administrations, and of CFDA, each with responsibility for the design of ports, wharves and jetties.

### 2. Early Warning Communications

35. The five target provinces include over 600 islands, of which over 150 are inhabited. The distances between these communities are significant and the cost of both transport and communication facilities to service these islands is extremely high–particularly where island populations are small (less than 400 families) and geographically dispersed. Islanders are very much dependent upon marine resources for their livelihoods and fishing provides their staple food that is also traded with land based communities for other essential food (sago) and household items. Fishing practices have severely depleted the inland and safer reef resources while unsustainable practices are evident by using dynamite to catch fish, destroying the reef environment. Invariably, fishermen are travelling further out to sea in search of fish and other marine resources. In doing so, they are becoming increasingly exposed to weather events such as storms and high winds that threaten their lives and livelihood assets.

---

[19] Additionally, the Department of Finance and Treasury, DNPM, Department of Transport, and Office of Rural Development and Implementation.

[20] Estimated to cost $5 million, including feasibility study and associated social and environmental safeguards due diligence.

36. One of the most frequent concerns expressed by these communities is the lack of a communication network that can be used for early warning systems and to improve personal safety in the event of a natural disaster or accident. The commercial mobile phone network is developing rapidly throughout the mainland areas of the country and some of the more significant New Guinea Island populations where it is commercially possible to extend the phone network. Coverage in the more remote areas is still non-existent and often district centers cannot communicate with island village communities. One solution to address the lack of communication facilities is to extend the HF/VHF network linked to provincial relay stations which in turn are linked to the National Disaster Center to expand the communication network with the target vulnerable islands (and other islands within the network service area).

36. The project will install communication equipment on existing towers (built by the current tele-communication network operators).[21] This will comprise the installation of relay equipment in key provincial locations with the desired coverage (sites have been proposed during design but need to be confirmed with the appropriate owner of the tower); the provision of receiving equipment in target islands including antenna pole (9m), warning siren, solar power generation bank, and hand held radios. The service that will be provided will be a communication facility throughout the coverage area, an emergency response option in case of emergencies (with access to Channel 16–the emergency channel worldwide), and an identification service where GIS coordinates are advised to all in the area in the event of an emergency. The facility will provide a means of providing early warning of extreme climate events and of anticipated natural disasters (tsunamis) with direct access to the National Disaster Center in Port Moresby. While the facility will be set up with the target islands in mind (estimated direct beneficiaries of 13,000 people), the extensive HF coverage will allow communications with a potential command area for over 500,000 people.

37. **Site Selection**. Site selection for the location of transmitting and relay equipment will be based on technical considerations to effect greatest coverage and therefore impact. It will also depend on the rental cost of placing equipment on others' towers as it is important that the initiative must be sustainable and not require subsequent recurrent expenditure. Whilst initial indications are that the rental cost will be zero as it is part of the service provided to the country, the final towers selected will be largely driven by technical considerations. Most of the towers in the areas considered are owned by Telikom PNG and initial indications are that cooperation with the project would be welcomed.

### 3. Climate Proofing Alotau Wharf

38. In view of the extended processing time required for the inclusion of the rehabilitation of Alotau Provincial Government Wharf under the project, financing of the rehabilitation will be subject of a separate grant application from the same funding source. An application for additional financing is under preparation and is expected to be applied to the upgrading of Alotau Provincial Government Wharf in Milne Bay estimated to cost about $5 million including feasibility study and associated social and environmental safeguard due diligence. This will serve as a model for the climate proofing of similar structures within PNG that are currently planned in this marine transport dependent environment. This PAM will be updated upon approval of the additional financing request.

39. Efficient project implementation and management: Implementation management and

[21] Existing telecommunication operators in PNG include Telikom PNG, TE (PNG) Ltd., Bmobile (Vodaphone) and Digicel Ltd.

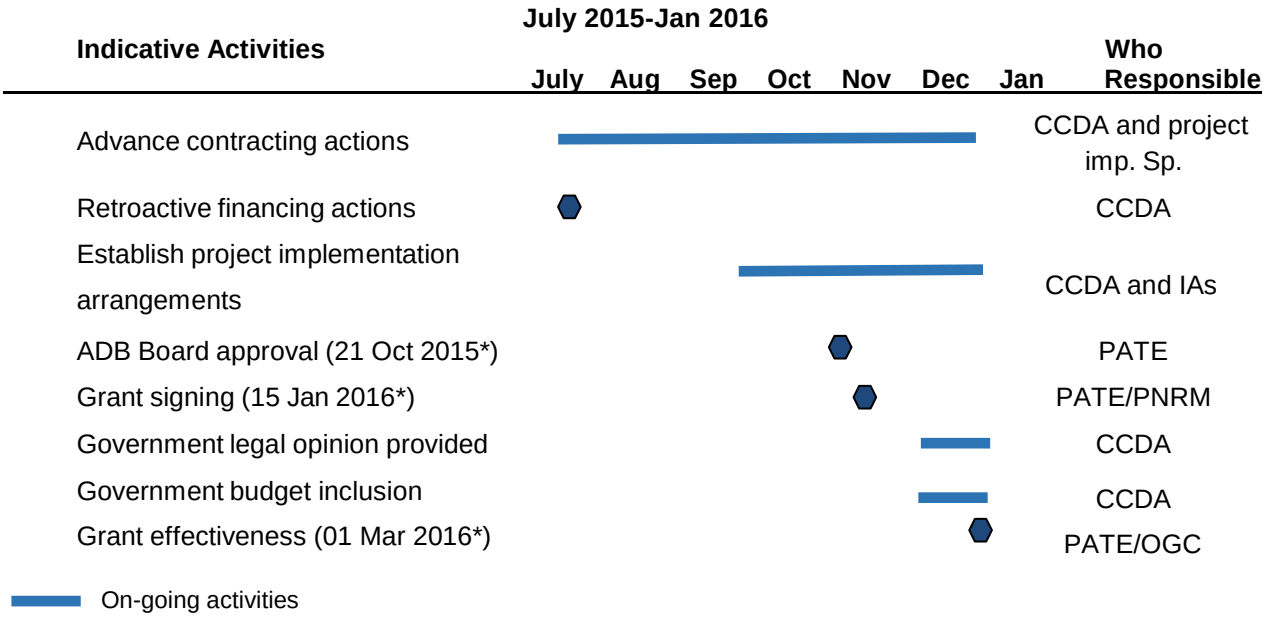
coordination will be provided through a Project Management Unit (PMU) to be established in CCDA and supported by PISCs recruited under the project. The PMU will ensure adherence to Safeguard Policy Statement (2009)[22] and ADB's *Guidelines on the Use of Consultants* (2013, as amended from time to time),[23] together with timely progress and financial management reporting to ADB and the Government. Knowledge management will be priority output as lessons from new approaches to climate adaptation measures are captured.

40. Based on the financial management assessment carried out on CCDA, the proposed executing agency, considerable support is deemed necessary in key areas of procurement, recruitment of consultants, financial management, governance and implementation coordination. As CCDA is a relatively in-experienced government institution with little experience in the implementation of multi-lateral development agency financed projects, considerable resources have been proposed in the PISC contract to support the PMU in its operations along with both formal and on-the-job training of the public servants assigned to the project as well as the contract employees engaged for project implementation. This, together with the lower level support to be provided by facilitating NGOs, has added significantly to the overhead costs of the project but are considered necessary to assure that ADB procedures will be followed and the relevant social and environmental safeguards applied.

[22] ADB's Safeguard Policy Statement, 2009. Manila.
[23] Available at: http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf

# II. IMPLEMENTATION PLANS

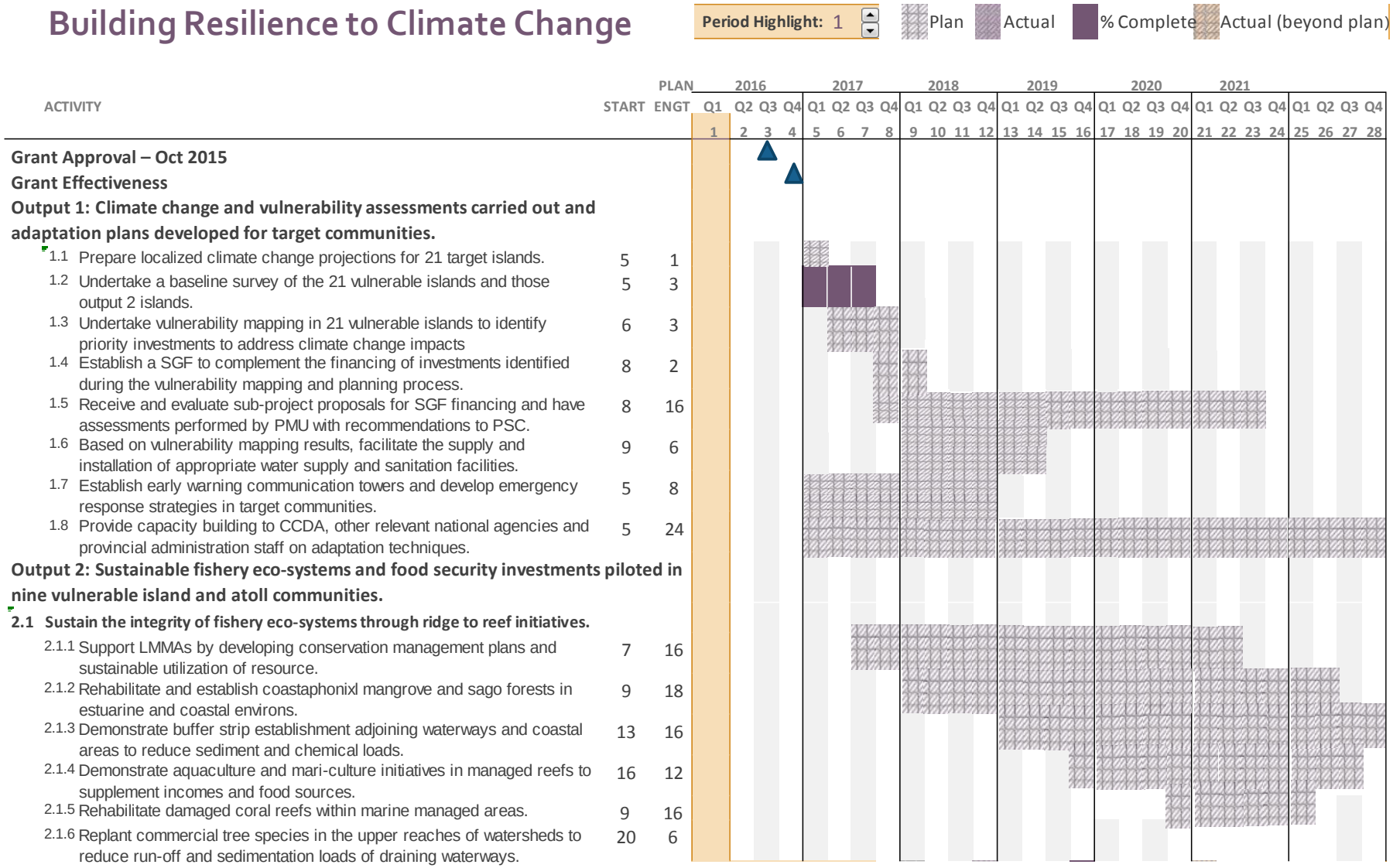
## A. Project Readiness Activities



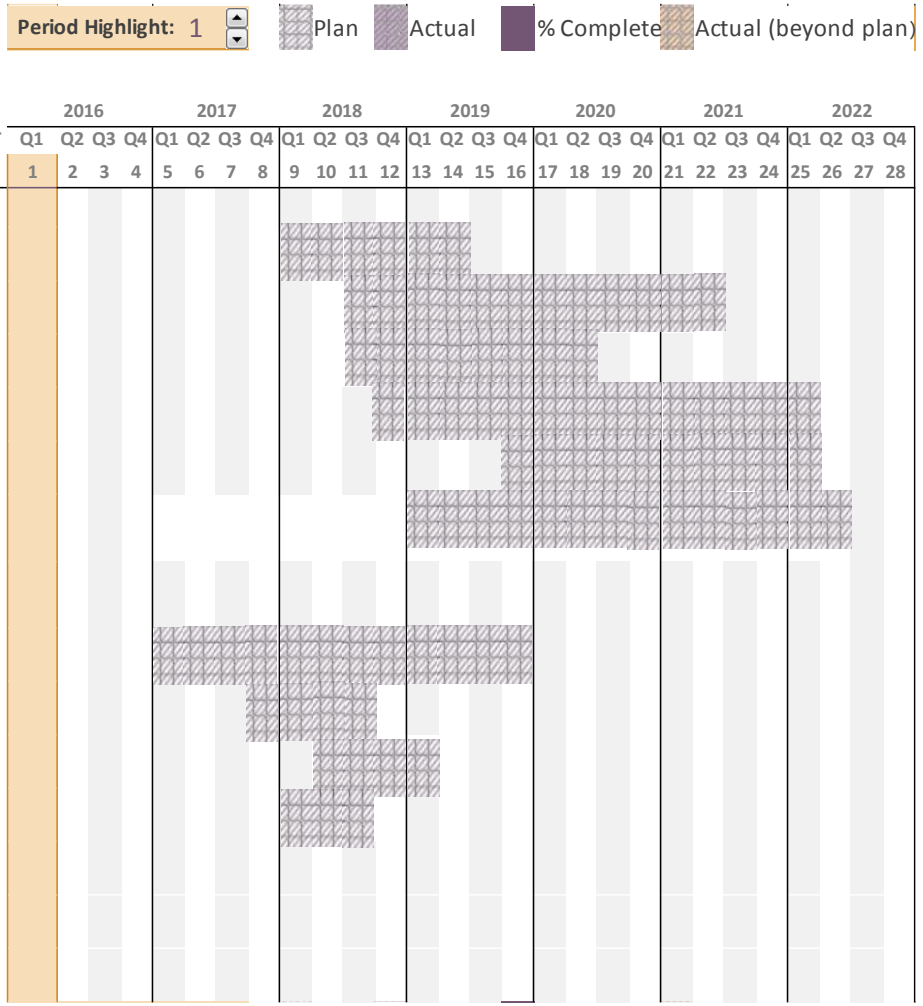

ADB = Asian Development Bank; IA = Implementing Agencies; CCDA = Climate Change Development Authority; OGC = Office of General Counsel; PATE = Transport Energy and Natural Resources Division, Pacific Department; PNRM = Papua New Guinea Resident Mission.

41. Throughout project implementation, the government will ensure that ADB's guidelines and policies will be adopted in all areas of project administration, management, reporting, procurement, disbursement, financial management together with the social and environmental safeguards in accordance with the respective ADB guidelines and policy documents.

## B. Overall Project Implementation Plan

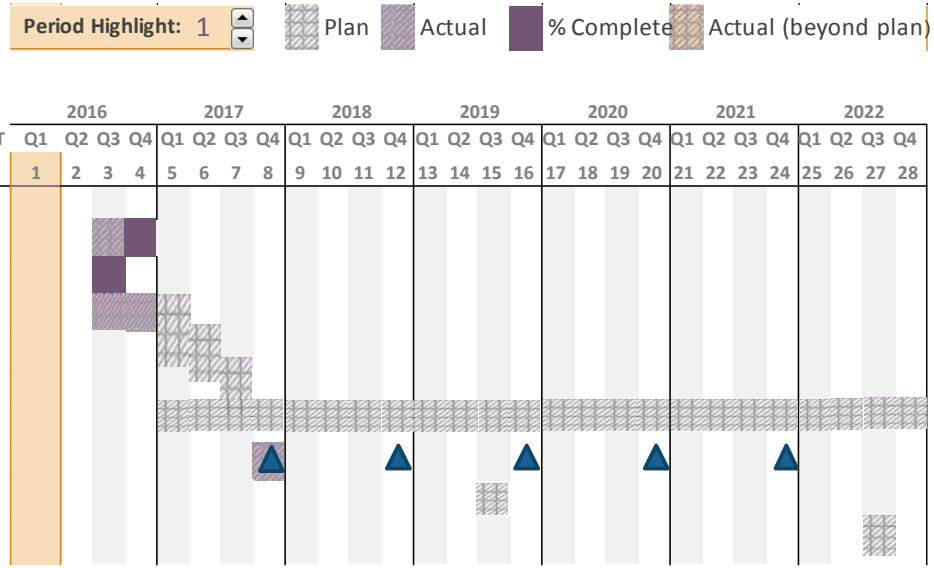


# Building Resilience to Climate Change




| ACTIVITY | START | ENGT |
|---|---|---|
| **2.2 Food security initiatives supported in coastal and island environs.** | | |
| 2.2.1 Evaluate farming systems to identify periods of food insecurity and other production constraints. | 9 | 6 |
| 2.2.2 Test alternative cropping options, farming practices and crop varieties to address the food insecure periods. | 11 | 12 |
| 2.2.3 Support local research and multiplication farms and communities with appropriate planting material (e.g. drought tolerant taro). | 11 | 8 |
| 2.2.4 Demonstrate new production techniques to prepare communities for anticipated climate extremes (e.g. mulching and composting). | 12 | 14 |
| 2.2.5 Support initiatives in food processing and marketing to extend the storage shelf life of perishable food items destined for trade with island | 16 | 10 |
| **2.3 Recruit NGO support to facilitate the delivery of food security initiatives and build capacities of communities and provincial staff.** | 5 | 22 |
| **Output 3: Enabling framework for climate resilient infrastructure established and communications network extended.** | | |
| 3.1 Provide specialists to promote policy dialogue for the design and maintenance of port infrastructure. | 5 | 12 |
| 3.2 Develop appropriate engineering standards to accommodate the impact of climate change in infrastructure design. | 8 | 4 |
| 3.3 Build capacities of national and provincial port and wharf design specialists to incorporate economic returns achieved from incorporating | 10 | 4 |
| 3.4 Develop options for the sustainable financing of port rehabilitation and upgrading taking into account climate change. | 8 | 4 |
| 3.5 Identify locations for optimal network coverage based on exiting towers covering target islands. | | |
| 3.6 Negotiate arrangements for establishing incremental VHF equipment with the identified tower owner. | | |
| 3.7 Establish equipment on identified towers and target islands with receivers transmission equipment and solar panels. | | |

# Building Resilience to Climate Change




| ACTIVITY | START | ENGT |
|---|---|---|
| **Project Management and Implementation** | | |
| Establish the PMU with staff and equipment | 3 | 2 |
| Recruit Start-up Specialist | 1 | 4 |
| Recruit Project Implementation Support Consultants | 3 | 3 |
| Undertake base-line survey | 5 | 2 |
| Develop project performance monitoring and evaluation program | 6 | 2 |
| Produce quarterly progress and financial reports to Govt and ADB | 4 | 25 |
| Undertake annual audit reviews | 8 | 1 |
| Mid term evaluation mission | 15 | 1 |
| Prepare Project Completion Report | 27 | 1 |

# III. PROJECT MANAGEMENT ARRANGEMENTS

## A. Project Implementation Organizations - Roles and Responsibilities

| Project Implementation Organizations | Management Roles and Responsibilities |
|---|---|
| **Executing Agency** | |
| • Climate Change Development Authority (CCDA) | The CCDA will be the Executing Agency and will be responsible for overall management and coordination of the project. |
| • Project Management Unit (PMU) | A PMU will be established within CCDA to manage the project and responsible for overall implementation performance. Among others, the PMU will be responsible for:<br>• overall management and coordination of BRCC;<br>• liaison with the provincial administration offices in Bougainville, East New Britain, Manus, Milne Bay, and Morobe;<br>• establishment and management of project imprest account once capacity has been demonstrated,<br>submission of withdrawal applications to ADB,<br>retention of supporting documents, and monitoring<br>SGF imprest account disbursements;<br>• provision of guidance and coordination to the implementing agencies;<br>• establishment and implementation of the project performance management system (PPMS);<br>• selection of consulting services following ADB procedures;<br>• preparation of annual forecast of contract awards and disbursements;<br>• preparation of the annual project financial statements and recruitment of an independent auditing firm for<br>annual audit of project financial statements;<br>• compilation of reports from the participating provinces and facilitating NGOs and preparation of project progress reports;<br>• submission of progress reports and annual audited project financial statements; and<br>• preparation of the draft project completion report. |
| **Steering Committees** | |
| • National Steering Committee | At national level, a Steering Committee will be established to guide the overall project implementation of the project. The Steering Committee shall be chaired by Managing Director or designated representative from the CCDA and |

have representatives from the Department of National Planning and Monitoring (alternate chair), with committee members appointed from Department of Treasury, Department of Health, Coastal Fisheries Development Authority, National Disaster Centre, PNG Ports Corporation Limited and National Agricultural Research Institute. The secretariat of the steering committee shall be the PMU established within CCDA. The Steering Committee shall meet every three (3) months initially or as required to ensure timely guidance to the project. A quorum of 50% of appointed members will be required to pass Steering Committee decisions. Its main responsibilities shall include:

- ensure interagency cooperation at national level;
- review and advise on policy issues and implementation constraints;
- ensure integration with other donors and government related development activities;
- monitor implementation progress;
- approve annual work-plans and budgets;
- approve applications for SGF financed subprojects;
- set up a multi-departmental procurement committee for the project; and
- provide overall guidance on implementation of the project.

- Provincial Advisory Committees

Five provincial advisory committees (PACs) will be established in the participating provinces to be chaired by the provincial Administrator. The Deputy Chairperson will be the head of the provincial administration office responsible for the agricultural and natural resources sector in each province. PAC membership will include representatives from the relevant provincial line departments (e.g. health, agriculture, fisheries etc.) and also a civil society representative appointed by the governor. A quorum of 50% of committee members will be need to pass PAC resolutions. The Committee will meet quarterly or as needed to:

- review implementation progress at provincial level;
- ratify applications for subprojects to confirm consistency with local development objectives;
- approve provincial annual work-plans and budgets; and
- ensure adequate resource allocation and coordination between concerned provincial agencies and facilitating NGOs.

**Implementing Agencies**

There will be four implementing agencies (IAs) for the project:

- At the national level, CCDA will be responsible for the

implementation coordination of Output 1 and Output 2 initiatives as well as the communication equipment under Output 3. Under Output 1, CCDA will be responsible for the recruitment of facilitating NGOs in the five provinces and for coordinating the vulnerability assessment work on the 21 target vulnerable island communities.

- The CFDA, and the National Agricultural Research Institute (NARI) will jointly implement the proposed initiatives under Output 2.
- The NDC and DOH are implementing partners under Output 1 for disaster management and water and sanitation activities, respectively.
- Output 3 will be implemented by PNG Ports Corporation Limited (PNGPCL) for the enabling framework whereas the National Disaster Centre will provide technical expertise to CCDA in the implementation of the extended HF/VHF/mobile networks coverage.
- At the provincial level, the administrator's office, or designated office in each participating province will be responsible for coordination of implementation activities in each of the first two outputs. As responsibilities are confined to coordination, it is not considered necessary to establish an implementation structure specifically for project implementation.

- **CCDA**
  - Recruit suitably qualified NGOs to support Output 1 vulnerability assessments;
  - Coordinate the implementation of Output 1 initiatives following the vulnerability assessments;
  - Liaise with provincial administrations to coordinate the activities on vulnerable islands;
  - Recruit the finance administrator to manage and administer the SGF imprest account;
  - Review applications for subproject financing by target communities for funding by the SGF; and
  - Coordinate implementation of Output 2 initiatives including the recruitment of facilitating NGOs to support food security and fishery eco-system base-line data.
  - Upon evidence of satisfactory financial performance and reporting during implementation, it is envisaged that two imprest accounts (one imprest account for project expenditures and one imprest account for SGF subproject expenditures) will be established by CCDA to facilitate project implementation. In view of the limited financial management experience of CCDA, the project will engage the services of an independent financial administrator to manage and disburse the funds for approved subprojects under the SGF.

| | |
|---|---|
| • **PNGPCL** | • Recruit consulting firm to support the creation of an enabling environment for port rehabilitation and construction; |

- CCDA will recruit contractors/consultants and PNGPCL will help prepare the TOR to prepare detailed design and build contract for the upgrading and climate proofing of Alotau Provincial Government Wharf (subject to successful funding application);
- Use the upgrading of the facility to provide on-the-job training for national and provincial engineers within PNGPCL and provincial administrations;
- Supervise construction of the facility to be upgraded according to upgraded designs; and
- Support Milne Bay Provincial administration to maintain the wharf in sound working order to facilitate demonstration impacts for future capacity building.

- **CFDA**
  - In cooperation with facilitating NGOs, conduct a detailed resource assessment of traditional fishing grounds and surrounding island reefs as a base line against which future impacts can be compared;
  - Provide the technical expertise to local marine management associations to assist in preparing marine resource management plans in target communities;
  - Assist in the identification of participating target communities for the fishery-ecosystem interventions;
  - Provide the technical support for the piloting of project interventions including mangrove rehabilitation, reef rehabilitation, commercial fisheries aquiculture and mari-culture and other identified initiatives;
  - Facilitate marine marketing and storage demonstrations in identified locations; and
  - Participate in annual reviews of project implementation.

- **NARI**
  - In cooperation with facilitating NGOs, conduct a detailed food security assessment of vulnerable islands as a base line against which future impacts can be compared;
  - Provide the technical expertise to local villages to assist in undertaking food security initiatives in target communities and in adjoining land masses that actively trade with the vulnerable islands;
  - Assist in the identification of participating target communities for the food security, marketing and processing interventions;
  - Provide the technical support for the piloting of project interventions including crop diversification, cultivation procedures, varietal modifications, multiplication of planting material and other identified initiatives;
  - Facilitate land based marketing and storage demonstrations in identified locations to extend the shelf life of food products for supply to the more food insecure locations; and
  - Participate in annual reviews of project implementation.

| | |
|---|---|
| • **ADB** | As the multi-lateral development agency administrator of the Pilot Program for Climate Resilience, ADB will:<br>• Administer the SCF-PPCR grant;<br>• monitor project implementation arrangements, disbursement, procurement, consultant selection, and reporting;<br>• monitor schedules of activities, including funds flow;<br>• review compliance with agreed procurement procedures;<br>• review compliance with loan covenants;<br>• monitor effectiveness of safeguard procedures;<br>• analyze the outcome of the capacity building and training programs;<br>• monitor conformity with ADB anti-corruption policies;<br>• undertake a periodic review mission; and<br>• undertake a joint midterm review mission with the Government. |
| • **SCF-PPCR** | • Provide grant financing to the Government of PNG for the implementation of the 'Building Climate Resilience in PNG project. |

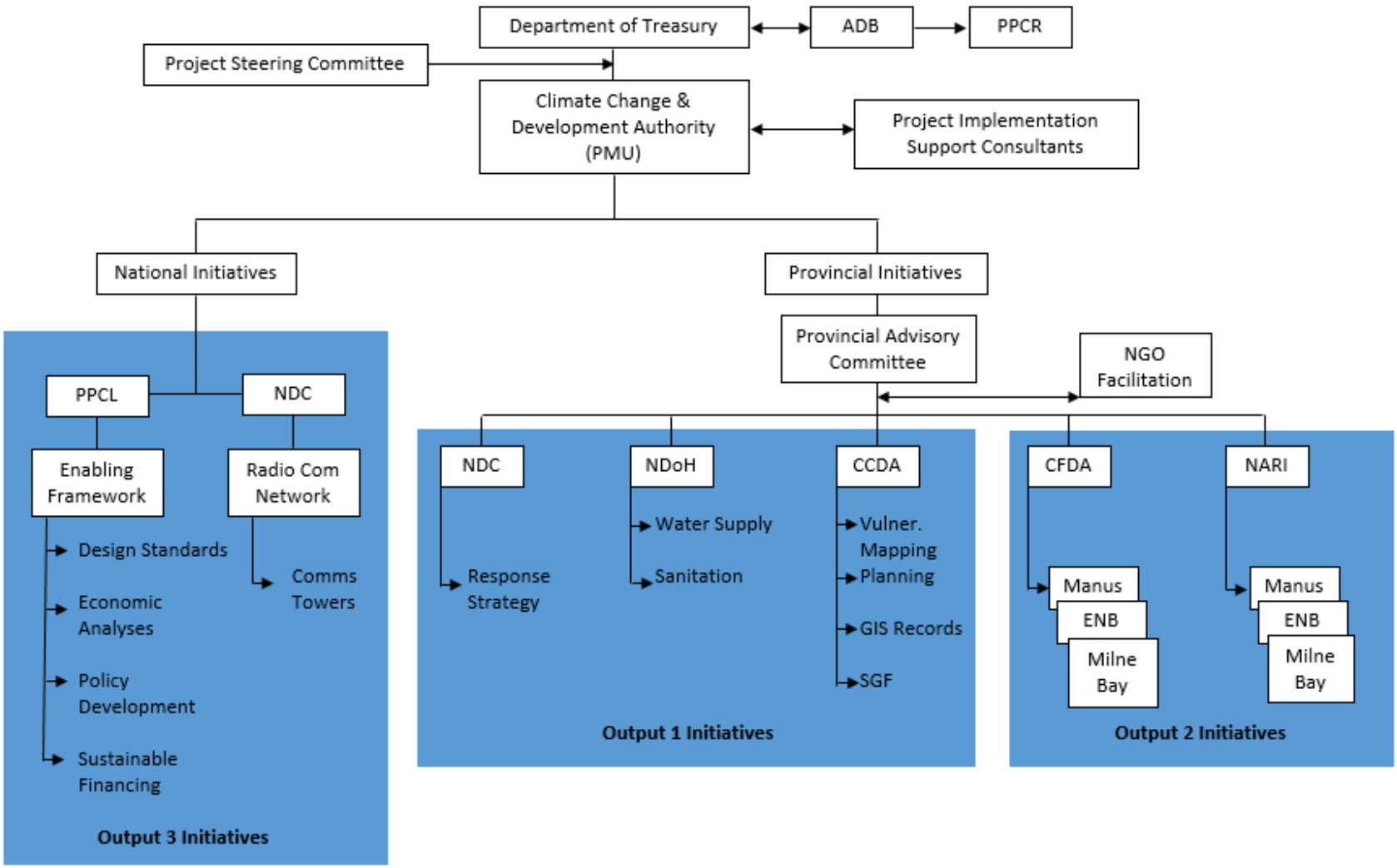
## B. Key Persons Involved in Implementation

| | |
|---|---|
| **Executing Agency** | |
| Climate Change Development Authority | Ruel Yamuna<br>Acting Managing Director<br>Telephone: +675 70910300<br>E-mail: ryamuna959@gmail.com<br>Avara Annex Building<br>Brampton Street, Downtown Port Moresby<br>P O Box 4017<br>BOROKO, NCD<br>Papua New Guinea |
| **ADB** | |
| Pacific Transport, Energy, and Natural Resources Division | Olly Norojono<br>Director<br>Telephone No. +632 632 6109<br>o.norojono@adb.org |
| Mission Leader | James Roop<br>Senior Natural Resources Specialist<br>Telephone No: +632 6325071<br>jroop@adb.org |

## C. Project Organization Structure

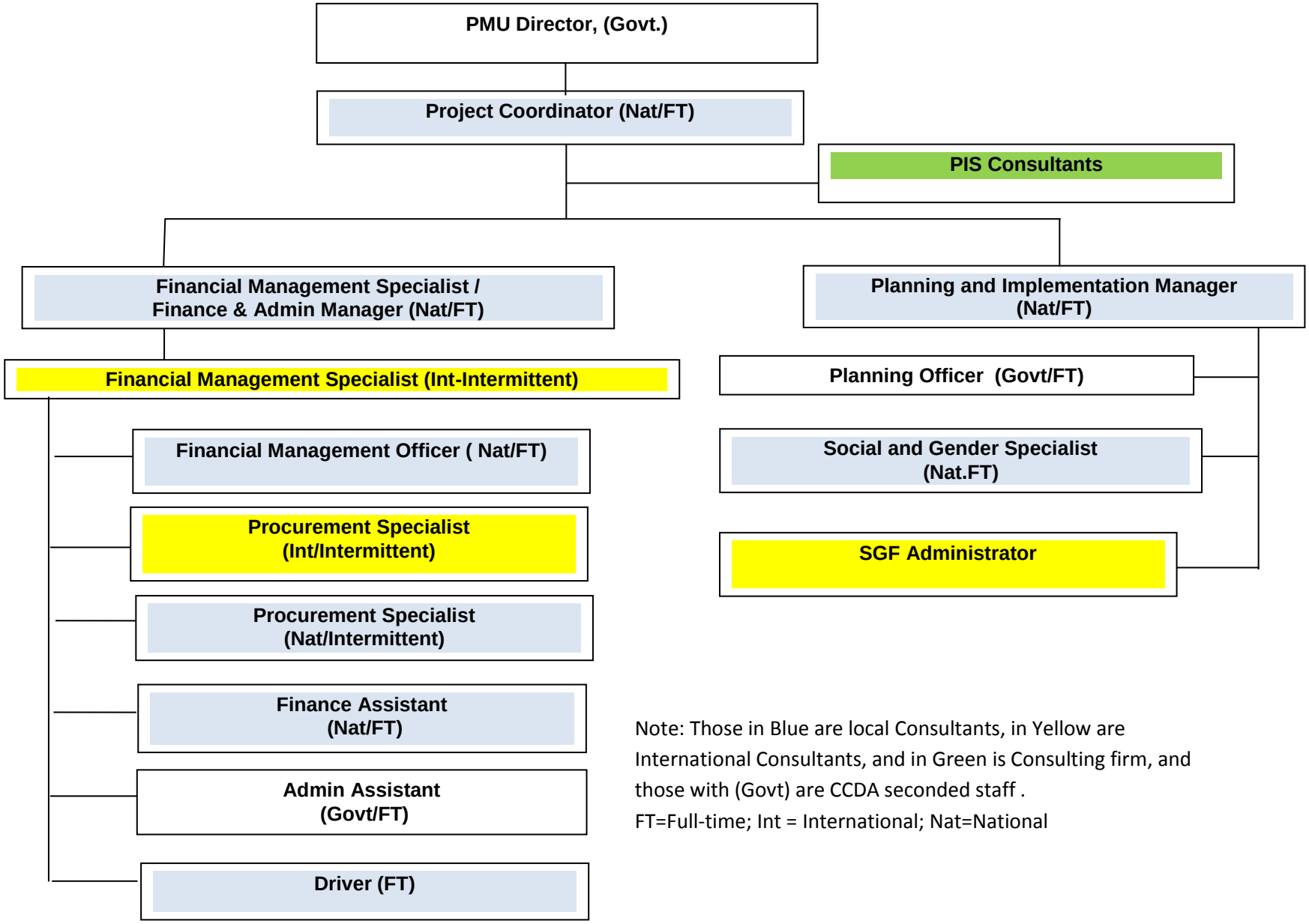
43. Figure 1 presents the overall project organization structure and Figure 2 presents the organizational chart of the PMU to be located in CCDA.

Figure LD3.1: Project Organization Structure




ADB = Asian Development Bank. CFDA = Coastal Fisheries Development Agency. DOH = Department of Health. GIS = geographic information systems. NARI = National Agricultural ResearchInstitute. NDC = Natioonal Disaster Center. NGO = non-government organization. CCDA = Climate Change Development Authority. PMU = project Management Unit. PNGPCL = PNG Ports Corporation Limited. PPCR = Pilot Program for Climate Resilience. and SGF = SmallGrants Facility.

**Figure LD3.2: Project Management Unit Structure**




Note: Those in Blue are local Consultants, in Yellow are International Consultants, and in Green is Consulting firm, and those with (Govt) are CCDA seconded staff .
FT=Full-time; Int = International; Nat=National

## D. Implementation Arrangements

| Outputs and Activities | Responsible Agency(ies) |
|---|---|
| **1. Climate change and vulnerability assessments carried out and adaptation plans developed for target communities.** | |
| 1.1 Prepare localized projections of climate change in 21 target island groups by Q2 2017. | CCDA to obtain downscaled climate projections from CSIRO in Australia based on established models for the Pacific |
| 1.2 Undertake baseline survey in 21 target islands and selected islands for Output 2 initiatives by Q2 2017. | CCDA with the support of provincial and district administrations and supported by PISCs. |
| 1.3 Undertake vulnerability mapping in 21 vulnerable islands to identify priority investments to address climate change impacts by Q1 2017. | CCDA will coordinate the vulnerability assessments facilitated by NGOs but will also involve DOH, NDC, NARI and CFDA together with provincial and district officers relevant to the 21 islands |
| 1.4 Establish a SGF to complement the financing of climate adaptation measures identified during the vulnerability mapping and planning process by Q3 2017. | CCDA to establish the SGF and provide secretariat services to the Steering Committee for approval |
| 1.5 Receive and evaluate sub-project proposals for SGF financing and have assessments performed by PMU with recommendations to PSC. | PMU supported by PISC specialists. |
| 1.6 Based on vulnerability mapping results, facilitate the supply and installation of appropriate water supply and sanitation facilities by Q4 2017. | CCDA/PMU to procure needed materials and equipment as recommended by DOH and to arrange installation in the needy island communities from the vulnerability |
| 1.7 Develop emergency response strategies in target communities by Q4 2017. | Emergency response strategies to be developed by NGOs and training provided in communities |
| 1.8 Provide capacity building to CCDA, other relevant national agencies and provincial administration staff on adaptation techniques to the impacts from climate change. | CCDA to ensure that participating institutions (national and provincial) will receive training in vulnerability assessments and bottom-up planning approaches |
| **2. Fisheries eco-systems and food security demonstrations piloted in nine vulnerable island and atoll communities.** | |
| 2.1 Sustain the integrity of fishery eco-systems by implementing ridge to reef initiatives covering: | CFDA – coordinated by CCDA |
| (i) support for locally managed marine areas, conservation and management plans, | CFDA – coordinated by CCDA with the participation of province and district administrations and facilitating NGOs |
| (ii) rehabilitate and establish coastal mangrove forests and sago forests in estuarine and coastal environs, | CFDA – coordinated by CCDAwith the participation of province and district administrations and facilitating NGOs |
| (iii) demonstrate aquaculture and mari-culture initiatives in managed reefs to supplement incomes and food sources, | CFDA – coordinated by CCDA with the participation of province and district administrations and facilitating NGOs |
| (iv) restock and protect coral reefs within marine managed areas, and | CFDA – coordinated by CCDA with the participation of province and district administrations and facilitating NGOs |
| (v) replant commercial tree species in the upper | NARI – coordinated by CCDA with the |

| Outputs and Activities | Responsible Agency(ies) |
|---|---|
| reaches of watersheds to reduce run-off and sedimentation loads of drainage waterways. | participation of province and district administrations and facilitating NGOs |
| 2.2 Food security initiatives supported in coastal and island environs including: | NARI – coordinated by CCDA |
| (i) evaluate farming systems in communities to identify periods of food insecurity and other production constraints, | NARI to provide training to NGO and provincial and district personnel to conduct food insecurity assessment and provide technical support to assessment teams. |
| (ii) test alternative cropping options, farming practices and crop varieties to address the food insecure periods, | NARI – in association with provincial and district personnel facilitated by NGOs |
| (iii) support local research and multiplication farms and communities with supplies of appropriate planting material (e.g. drought tolerant taro), | NARI and DAL |
| (iv) introduce new production techniques to prepare communities for anticipated climate extremes (e.g. mulching and composting), and | NARI – in association with provincial and district personnel facilitated by NGOs |
| (v) support initiatives in food processing and marketing to extend the storage shelf life of perishable food items destined for trade with island communities. | NARI – in association with provincial and district personnel facilitated by NGOs |
| 2.3 Recruit NGO support to facilitate the delivery of food security initiatives and build capacities of communities and provincial staff. | CCDA and PMU to recruit and coordinate |
| **3. Enabling framework for climate resilient infrastructure established and communications network extended.** | |
| 3.1 Support policy dialogue for the design and maintenance of port infrastructure. | PNGPCL supported by the PMU |
| 3.2 Develop appropriate engineering standards to accommodate the impact of climate change in infrastructure design. | PNGPCL supported by the PMU |
| 3.3 Build capacities of national and provincial port and wharf design specialists to incorporate economic returns achieved from incorporating climate resilience in feasibility studies. | PNGPCL supported by the PMU |
| 3.4 Develop options for the sustainable financing of port rehabilitation and upgrading taking into account climate change. | PNGPCL supported by the PMU |
| 3.5 Identify locations for optimal network coverage based on exiting towers covering target islands. | CCDA/PMU to procure equipment recommended by telecommunications network operator and arrange installation on existing towers. |
| 3.6 Negotiate arrangements for establishing incremental VHF equipment with the identified tower owner. | CCDA/PMU to procure equipment recommended by telecommunications network operator and arrange installation on existing towers. |
| 3.7 Establish equipment on identified towers and target islands with receivers, transmission equipment and solar panels. | CCDA/PMU to procure equipment recommended by telecommunications network operator and arrange installation on existing towers. |

## IV. COSTS AND FINANCING

44. Investment and Financing Plans. The project is estimated to cost the equivalent of $27.29 million. The Government has requested a grant not exceeding $24.25 million from the Strategic Climate Fund (SCF)-PPCR Grant to help finance the project. ADB will administer the SCF-PPCR grant.[24]

45. The SCF-PPCR Grant is to be fully utilized for implementation of the project including allocations for consulting services, civil works, training, vehicles and equipment and other management and operating expenses. The beneficiary contribution for subprojects financed from the SGF (20% in kind contribution) will promote ownership and sustainability. The Government will contribute an estimated $2.04 million as counterpart funds for project implementation estimated at $752,100 for the Project Management Unit (PMU) operations, $323,200 for seconded government staff and taxes and duties on civil works, equipment, vehicles and national consultant fees estimated at $966,000.

46. For the project, detailed cost estimates, allocation and withdrawal of grant proceeds, fund flow diagrams, and S-curves of contract award and disbursement are in Sections A-G that follow.

47. Note that the government has agreed to exempt project expenses from taxes and duties. In the case of civil works, equipment, and vehicles, the taxes and duties have been recorded as being paid by the government although no such cash payment is anticipated. In the case of workshops, seminars and conferences and operating expenses (vehicle and office expenses) where the item is financed by SCF-PPCR, taxes and duties will be paid by the grant as it is too difficult to separate the taxation element in such expenses. In the case of consultant costs, international consultants are exempt from taxation while national specialists are required to pay tax on income earned. NGO contracts have been assumed to be exempt from taxation as are the consultant support costs – local travel, per diem, and office operating costs.

[24] ADB and ADB-administered funds may finance financing charges during implementation, recurrent costs, transportation, insurance, and bank charges.

## A. Detailed Cost Estimates by Expenditure Category

### Table LD3.2. Detailed Cost Estimate and Expenditure Category

| | (Kina '000) | | | (US$ '000) | | | % Total Base Costs |
|---|---|---|---|---|---|---|---|
| | Local | Foreign | Total | Local | Foreign | Total | |
| **I. Investment Costs** | | | | | | | |
| **A. Civil Works** | **1,020.7** | **3,922.6** | **4,943.3** | **425.3** | **1,634.4** | **2,059.7** | **8** |
| **B. Equipment** | | | | | | | |
| Specialized Equip. | 369.1 | 2,890.1 | 3,259.2 | 153.8 | 1,204.2 | 1,358.0 | 5 |
| Office Equip. | 10.8 | 97.2 | 108.0 | 4.5 | 40.5 | 45.0 | - |
| **Subtotal** | **379.9** | **2,987.3** | **3,367.2** | **158.3** | **1,244.7** | **1,403.0** | **6** |
| **C. Vehicles** | **480.0** | **480.0** | **960.0** | **200.0** | **200.0** | **400.0** | **2** |
| **D. Consulting Services** | | | | | | | |
| International | - | 6,432.0 | 6,432.0 | - | 2,680.0 | 2,680.0 | 11 |
| National | 1,705.2 | 21.4 | 1,726.6 | 710.5 | 8.9 | 719.4 | 3 |
| Consultant Sppt. Costs | 1,808.9 | 2,173.7 | 3,982.6 | 753.7 | 905.7 | 1,659.4 | 7 |
| NGO Contracts | 2,570.4 | 1,821.6 | 4,392.0 | 1,071.0 | 759.0 | 1,830.0 | 7 |
| **Subtotal** | **6,084.5** | **10,448.7** | **16,533.2** | **2,535.2** | **4,353.6** | **6,888.8** | **28** |
| **E. Workshops, Seminars and Conferences** | | | | | | | |
| Communities | 4,557.6 | 4,298.4 | 8,856.0 | 1,899.0 | 1,791.0 | 3,690.0 | 15 |
| Agency Personnel | 270.0 | 390.0 | 660.0 | 112.5 | 162.5 | 275.0 | 1 |
| Local Govt. and NGOs | 330.0 | 330.0 | 660.0 | 137.5 | 137.5 | 275.0 | 1 |
| **Subtotal** | **5,157.6** | **5,018.4** | **10,176.0** | **2,149.0** | **2,091.0** | **4,240.0** | **17** |
| **F. Small Grants Facility** | **2,400.0** | **12,000.0** | **14,400.0** | **1,000.0** | **5,000.0** | **6,000.0** | **24** |
| **G. Operating Expenses** | | | | | | | |
| Vehicle Op. Costs | 792.0 | 792.0 | 1,584.0 | 330.0 | 330.0 | 660.0 | 3 |
| Office Op. Costs | 943.2 | 1,000.8 | 1,944.0 | 393.0 | 417.0 | 810.0 | 3 |
| Personnel | 2,866.6 | 2,866.6 | 5,733.2 | 1,194.4 | 1,194.4 | 2,388.9 | 10 |
| **Subtotal** | **4,601.8** | **4,659.4** | **9,261.2** | **1,917.4** | **1,941.4** | **3,858.9** | **16** |
| **Total BASELINE COSTS** | **20,124.6** | **39,516.3** | **59,640.9** | **8,385.2** | **16,465.1** | **24,850.4** | **100** |
| **Physical Contingencies** | 1,370.9 | 2,134.1 | 3,505.0 | 571.2 | 889.2 | 1,460.4 | 6 |
| **Price Contingencies** | 1,470.2 | 873.9 | 2,344.2 | 612.6 | 364.1 | 976.7 | 4 |
| **Total PROJECT COSTS** | **22,965.7** | **42,524.4** | **65,490.1** | **9,569.0** | **17,718.5** | **27,287.5** | **110** |

## B. Allocation and Withdrawal of Grant Proceeds

**Table LD3.3. Allocation and Withdrawal of Grant Proceeds**

| | Item | Total Amount Allocated for ADB Financing ($) | | Basis for Withdrawal from the Grant Account |
|---|---|---|---|---|
| | | Category | Sub-Category | |
| 01 | Civil Works | 1,853,700 | | 100% of total expenditure* |
| 02 | Equipment | 1,244,700 | | |
| 02A | Specialized Equipment | | 1,204,200 | 100% of total expenditure* |
| 02B | Office Equipment | | 40,500 | 100% of total expenditure* |
| 03 | Vehicles | 200,000 | | 100% of total expenditure* |
| 04 | Consulting Services | 6,816,900 | | |
| 04A | International Specialists** | | 2,680,000 | 100% of total expenditure |
| 04B | National Specialists | | 647,500 | 100% of total expenditure* |
| 04C | Consultant Support Costs | | 1,659,400 | 100% of total expenditure |
| 04D | NGO Facilitation Contracts | | 1,830,000 | 100% of total expenditure |
| 05 | Capacity Building | 4,240,000 | | |
| 05A | Communities | | 3,690,000 | 100% of total expenditure |
| 05B | Agency Personnel | | 275,000 | 100% of total expenditure |
| 05C | Local Govt. and NGOs | | 275,000 | 100% of total expenditure |
| 06 | Operating Costs | 2,705,900 | | |
| 06A | Vehicle Op. Costs | | 480,000 | 100% of total expenditure |
| 06B | Office Op. Costs | | 330,000 | 100% of total expenditure |
| 06C | Personnel (contract) | | 1,895,900 | 100% of total expenditure* |
| 07 | Small Grants Facility | 5,000,000 | | 100% of total expenditure |
| 08 | Unallocated | 2,188,800 | | |
| | **TOTAL** | **24,250,000** | | |

* Exclusive of taxes and duties imposed within the territories of the Recipient.

** Subject to the condition for withdrawal described in paragraph 6 of Schedule 2 of the Grant Agreement.

## C. Detailed Cost Estimates by Financier

### Table LD3.4: Detailed Cost Estimates by Financier

($ '000s)

| | SCF-PPCR Grant [a] | | Beneficiaries [e] | | Government of PNG | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Amount (A) | Financing % of Cost Category (A/F) | Amount (B) | Financing % of Cost Category (B/F) | Amount (Costs) (C) | Amount (Taxes and Duties) (D) | Amount (Total) (C+D=E) | Financing % of Cost Category (E/F) | Total Cost (A+B+E=F) |
| **A. Investment Costs** | | | | | | | | | |
| 1. Civil Works | 1,853.7 | 90% | | | - | 206.0 | 206.0 | 10% | 2,059.7 |
| 2. Equipment | | | | | | | | | |
| Specialized Equip. | 1,204.2 | 89% | | | | 153.8 | 153.8 | 11% | 1,358.0 |
| Office Equipment | 40.5 | 90% | | | | 4.5 | 4.5 | 10% | 45.0 |
| 3. Vehicles | 200.0 | 50% | | | | 200.0 | 200.0 | 50% | 400.0 |
| 4. Consulting Services | | | | | | | | | |
| International | 2,680.0 | 100% | | | | - | - | - | 2,680.0 |
| National | 647.5 | 90% | | | | 71.9 | 71.9 | 10% | 719.4 |
| Consultant Sppt. Costs | 1,659.4 | 100% | | | | - | - | - | 1659.4 |
| NGO Contracts | 1,830.0 | 100% | | | | - | - | - | 1,830.0 |
| 5. W/shops Semin. and Conf. | | | | | | | | | |
| Communities | 3,690.0 | 100% | | | | - | - | - | 3,690.0 |
| Agency Personnel | 275.0 | 100% | | | | - | - | - | 275.0 |
| Local Govt. and NGOs | 275.0 | 100% | | | | - | - | - | 275.0 |
| 6. Small Grants Facility | 5,000.0 | 83% | 1,000.0 | 17% | | | | | 6,000.0 |
| 7. Grant Operating Expenses | | | | | | | | | |
| Vehicle Op. Costs | 480.0 | 100% | | | | | | | 480.0 |
| Office Op. Costs [b] | 330.0 | 100% | | | | | | | 330.0 |
| Personnel | 1,895.9 | 100% | | | | | | | 1,895.9 |
| 8. Govt. Operating Costs | | | | | | | | | |
| Vehicle Op. Costs | | | | | 162.0 | 18.0 | 180.0 | 100% | 180.0 |
| Office Op. Costs [c] | | | | | 432.0 | 48.0 | 480.0 | 100% | 480.0 |
| Personnel [d] | | | | | 254.2 | 238.9 | 493.1 | 100% | 493.1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Subtotal A Total Base Cost** | 22,061.2 | 89% | 1,000.0 | 4% | 848.2 | 941.1 | 1,789.3 | 7% | 24,850.4 |
| **B. Contingencies** | 2,188.8 | 90% | | | 223.6 | 24.8 | 248.4 | 10% | 2,437.2 |
| **Total Project Cost (A+B)** | 24,250.0 | 89% | 1,000.0 | 4% | 1,071.8 | 965.9 | 2,037.7 | 7% | 27,287.5 |

[a] 100% financing (net of taxes and duties on civil works, equipment, vehicles and national consultant fees) under the Pilot Program for Climate Resilience financed by the Strategic Climate Fund and administered by the Asian Development Bank.
[b] The project audit is 100% financed by grant funds included under Office Operating Costs with the audit firm being recruited by LCS procedures.
[c] The government is financing per diems, air and sea transport costs for seconded government and incremental contract staff of the PMU for project related work.
[d] Seconded government staff.
[e] In kind contribution from the beneficiaries.

## D. Detailed Cost Estimates by Outputs/Components

### Table LD3.5: Detailed Cost Estimates by Output

| | Output 1 | | Output 2 | | Output 3 | | Project |
|---|---|---|---|---|---|---|---|
| | Amount | % of Category | Amount | % of Category | Amount | % of Category | Total |
| **I. Investment Costs** | | | | | | | |
| **A. Civil Works** | 2,049.7 | 100% | - | 0% | 10.0 | 0% | 2,059.7 |
| **B. Equipment** | | | | | | | |
| Specialized Equip. | - | 0% | 90.0 | 7% | 1,268.0 | 93% | 1,358.0 |
| Office Equip. | - | 0% | - | 0% | 45.0 | 100% | 45.0 |
| **Subtotal** | - | 0% | 90.0 | 6% | 1,313.0 | 94% | 1,403.0 |
| **C. Vehicles** | - | 0% | 360.0 | 90% | 40.0 | 10% | 400.0 |
| **D. Consulting Services** | | | | | | | |
| International | 220.0 | 8% | 960.0 | 36% | 1,500.0 | 56% | 2,680.0 |
| National | 518.1 | 72% | - | 0% | 201.3 | 28% | 719.4 |
| Consultant Sppt. Costs | 215.6 | 13% | 544.6 | 33% | 899.3 | 54% | 1,659.4 |
| NGO Contracts | 630.0 | 34% | 1,200.0 | 66% | - | 0% | 1,830.0 |
| **Subtotal** | 1,583.7 | 23% | 2,704.6 | 39% | 2,600.6 | 38% | 6,888.8 |
| **E. Workshops, Seminars and Conferences** | | | | | | | |
| Communities | 82.0 | 2% | 3,588.0 | 97% | 20.0 | 1% | 3,690.0 |
| Agency Personnel | 50.0 | 18% | 180.0 | 65% | 45.0 | 16% | 275.0 |
| Local Govt. and NGOs | 275.0 | 100% | - | 0% | - | 0% | 275.0 |
| **Subtotal** | 407.0 | 10% | 3,768.0 | 89% | 65.0 | 2% | 4,240.0 |
| **F. Small Grants Facility** | 6,000.0 | 100% | - | 0% | - | 0% | 6,000.0 |
| **G. Operating Expenses** | | | | | | | |
| Vehicle Op. Costs | - | 0% | 480.0 | 73% | 180.0 | 27% | 660.0 |
| Office Op. Costs | 110.0 | 14% | 120.0 | 15% | 580.0 | 72% | 810.0 |
| Personnel | - | 0% | - | 0% | 2,388.9 | 100% | 2,388.9 |
| **Subtotal** | 110.0 | 3% | 600.0 | 16% | 3,148.9 | 82% | 3,858.9 |
| **Total BASELINE COSTS** | 10,150.4 | 41% | 7,522.6 | 30% | 7,177.4 | 29% | 24,850.4 |
| **Physical Contingencies** | 379.6 | 26% | 657.5 | 45% | 423.3 | 29% | 1,460.4 |
| **Price Contingencies** | | | | | | | |
| **Inflation** | | | | | | | |
| Local | 71.9 | 12% | 315.4 | 51% | 225.3 | 37% | 612.6 |
| Foreign | 101.2 | 28% | 127.6 | 35% | 135.3 | 37% | 364.1 |
| **Subtotal Inflation** | 173.1 | 18% | 443.0 | 45% | 360.7 | 37% | 976.7 |
| **Subtotal Price Contingencies** | 173.1 | 18% | 443.0 | 45% | 360.7 | 37% | 976.7 |
| **Total PROJECT COSTS** | 10,703.2 | 39% | 8,623.0 | 32% | 7,961.3 | 29% | 27,287.5 |

## E. Detailed Cost Estimates by Year

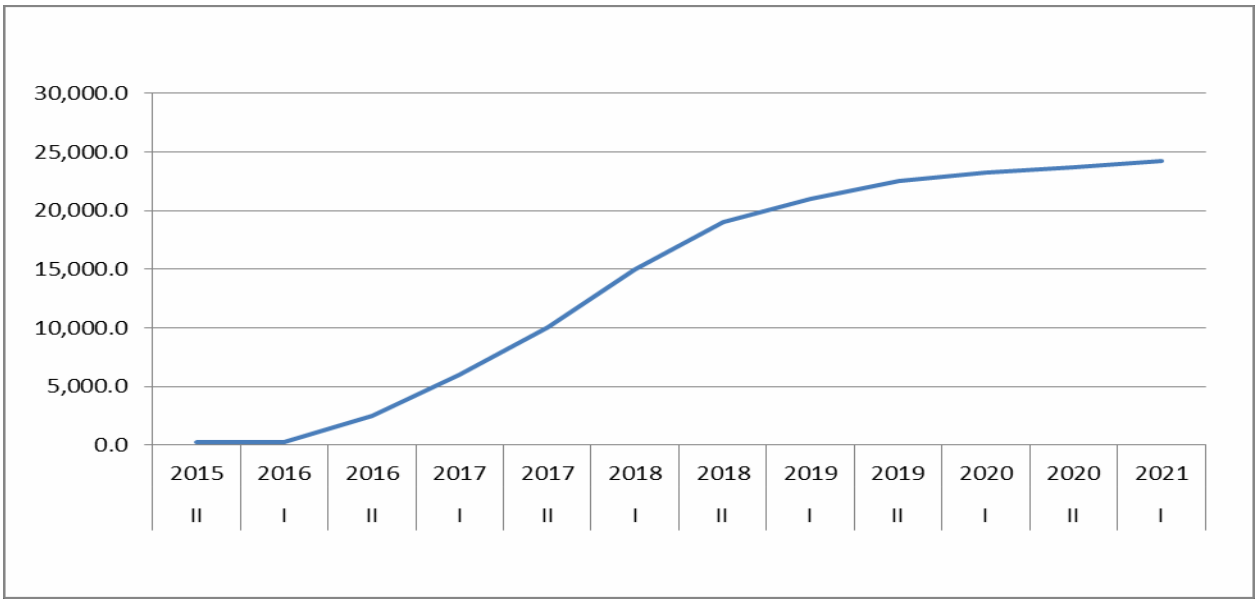
### Table LD3.6: Detailed Cost Estimates by Year

| | Base Cost | | | | | | |
|---|---|---|---|---|---|---|---|
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **Total** |
| **I. Investment Costs** | | | | | | | |
| A. Civil Works | 10.0 | - | 969.0 | 988.0 | 76.0 | 16.7 | 2,059.7 |
| **B. Equipment** | | | | | | | |
| Specialized Equip. | - | 440.0 | 798.0 | 48.0 | 48.0 | 24.0 | 1,358.0 |
| Office Equip. | 45.0 | - | - | - | - | - | 45.0 |
| **Subtotal** | 45.0 | 440.0 | 798.0 | 48.0 | 48.0 | 24.0 | 1,403.0 |
| C. Vehicles | 40.0 | 360.0 | - | - | - | - | 400.0 |
| **D. Consulting Services** | | | | | | | |
| International | 380.0 | 1,100.0 | 840.0 | 200.0 | 100.0 | 60.0 | 2,680.0 |
| National | 29.7 | 247.5 | 211.2 | 132.0 | 69.3 | 29.7 | 719.4 |
| Consultant Sppt. Costs | 224.8 | 647.8 | 517.0 | 150.0 | 76.3 | 43.7 | 1,659.4 |
| NGO Contracts | - | 550.0 | 620.0 | 360.0 | 300.0 | - | 1,830.0 |
| **Subtotal** | 634.5 | 2,545.3 | 2,188.2 | 842.0 | 545.6 | 133.4 | 6,888.8 |
| **E. Workshops, Seminars and Conferences** | | | | | | | |
| Communities | - | 20.0 | 1,540.0 | 1,488.0 | 507.0 | 135.0 | 3,690.0 |
| Agency Personnel | 30.0 | 125.0 | 45.0 | 45.0 | 30.0 | - | 275.0 |
| Local Govt. and NGOs | - | 125.0 | 50.0 | 100.0 | - | - | 275.0 |
| **Subtotal** | 30.0 | 270.0 | 1,635.0 | 1,633.0 | 537.0 | 135.0 | 4,240.0 |
| F. Small Grants Facility | - | 1,000.0 | 1,250.0 | 1,250.0 | 1,750.0 | 750.0 | 6,000.0 |
| **G. Operating Expenses** | | | | | | | |
| Vehicle Op. Costs | 30.0 | 150.0 | 150.0 | 150.0 | 150.0 | 30.0 | 660.0 |
| Office Op. Costs | 80.0 | 100.0 | 160.0 | 160.0 | 160.0 | 150.0 | 810.0 |
| Personnel | 221.4 | 433.5 | 433.5 | 433.5 | 433.5 | 433.5 | 2,388.9 |
| **Subtotal** | 331.4 | 683.5 | 743.5 | 743.5 | 743.5 | 613.5 | 3,858.9 |
| **Total BASELINE COSTS** | 1,090.8 | 5,298.8 | 7,583.7 | 5,504.5 | 3,700.1 | 1,672.6 | 24,850.4 |
| Physical Contingencies | 54.5 | 301.2 | 512.7 | 377.1 | 159.2 | 55.7 | 1,460.4 |
| **Price Contingencies** | | | | | | | |
| **Inflation** | | | | | | | |
| Local | 5.1 | 40.1 | 145.7 | 206.5 | 127.1 | 88.0 | 612.6 |
| Foreign | 3.0 | 32.9 | 114.2 | 121.8 | 56.5 | 35.7 | 364.1 |
| **Subtotal Inflation** | 8.1 | 73.0 | 259.9 | 328.4 | 183.6 | 123.7 | 976.7 |
| Devaluation | - | - | - | - | - | - | - |
| Subtotal Price Contingencies | 8.1 | 73.0 | 259.9 | 328.4 | 183.6 | 123.7 | 976.7 |
| **Total PROJECT COSTS** | 1,153.5 | 5,673.0 | 8,356.2 | 6,209.9 | 4,042.8 | 1,852.0 | 27,287.5 |

## F. Contract and Disbursement S-curve

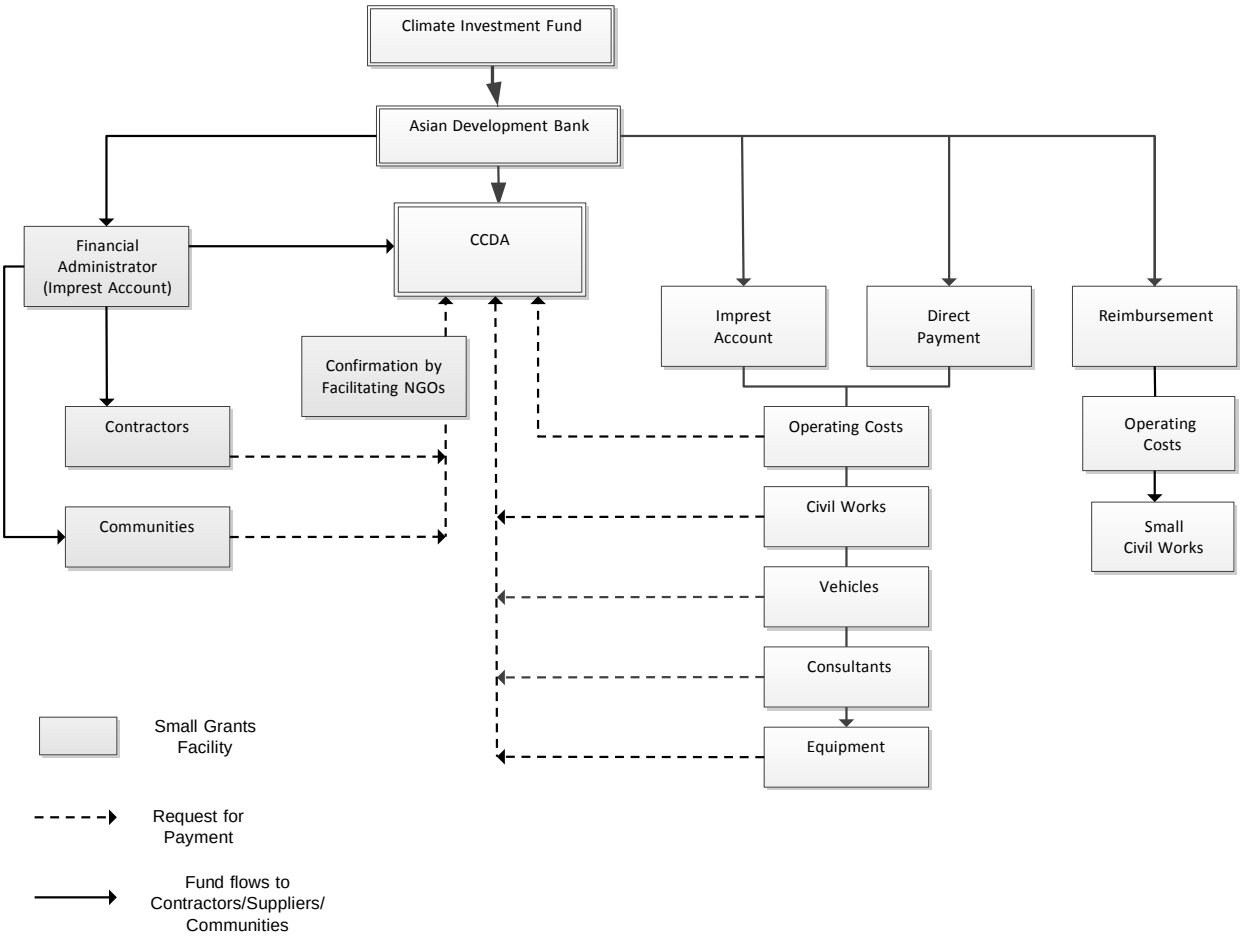
**Figure LD3.3: Estimated Semi-Annual Disbursements**

Disbursement Curve
($ thousand)



## G. Fund Flows

**Figure LD3.4: Funds Flow Diagram**




Payments to contractors from the SGF can be made in respect of civil works where local communities do not have the capacity to undertake works requiring heavy equipment and machinery.

# V. FINANCIAL MANAGEMENT

48. The Project Financial Management Assessment (FMA) was prepared in accordance with "ADB's Guidelines on Financial Management and Analysis of ADB-financed Projects." The assessment concludes that the overall project financial management risk is high.

## A. Country Issues

49. Country issues that impact on the effective financial management of this project are concerned with (i) public financial management, (ii) management and skills capacity, and (iii) country environment.

### 1. Public Financial Management

50. Following a decade of deterioration, PFM arrangements have improved since 2005 albeit from a low base. A March 2009 assessment of public expenditure and financial accountability (PEFA) confirmed progress in several PFM areas.[25] Macroeconomic stability has improved, with budget surpluses achieved since 2004. The debt burden is significantly lower and more balanced. A proportion of the windfall revenue from the commodity price boom during 2005 to 2008 has been set aside for future use. Budget preparation is more orderly, transparent, and consultative. Headway has been made on clearing backlogs of public accounts. The government has adopted International Public Sector Accounting Standards (IPSAS) under Cash Basis.

51. Despite these improvements, PFM remains weak, which impedes the government's ability to control expenditures, disburse the budget as approved, and provide essential services. Fundamental arrangements are in place, but implementation weaknesses mean that the systems and procedures for expenditure and payroll control cannot be relied upon to ensure appropriate accountability. Transparency in budget execution is weak, as the unauthorized diversion of funds, including resources for regional development, undermines budget integrity. Hence, it is difficult to track expenditures to ensure the budget is delivered as approved. Accounts remain open and active long after the end of the financial year. Delays in preparing and releasing public accounts and audit reports have undermined oversight. Statutory authority accountability is particularly weak.

52. **Public Procurement.** The Government of PNG reformed its procurement processes in 2003–2009, which included the creation of the Central Supply and Tender Board (CSTB) to develop and oversee the procurement system. However, capacity limitations within the board and within implementing agencies continue to delay project execution and reduce transparency. Additional concerns exist about project management, supervision, and monitoring, as well as the limited albeit growing capacity of private sector contractors. The main challenge is to ensure that the institutions and staff involved have the capability to put into practice the rules, procedures, and controls that are already in place. This makes the continued development of a professional cadre in public procurement important, as is the need to undertake skills development of frontline staff to properly execute government procedures. Particular vulnerabilities in the procurement system include: (i) low internal audit capability and poor procurement planning in public sector agencies, and (ii) inadequate monitoring of

[25] This summary is based on Government of PNG, Department of Finance. 2008. *2008 Public Expenditure and Financial Accountability (PEFA) report*. Port Moresby.

implementation of procurement decisions and appropriate quality assurance of services provided.

53. **Combating Corruption.** Despite recent attempts to create new anticorruption institutions, the general perception remains that corruption is endemic in PNG.[26] The results of Transparency International's 2013 Corruption Perceptions Index gives PNG a score of 25 (out of 100), placing the country 144 out of 177. This is an improvement on results in previous years (equivalent score 21, rank 154 out of 180 in 2009), but it indicates serious problems persist. Some observers go so far as to say official corruption and the misappropriation/theft of public funds are the country's most significant governance issue.[27]

54. Various cultural factors are difficult for the government or ADB to address in the near term, but legal structures and institutions do exist to improve transparency. The questions turn to implementation capacity. Anticorruption rules suffer from poor enforcement and a culture of impunity, and the limits of political commitment. Accountability institutions exist and have powers to investigate corruption but suffer from limitations in resources, staff, and capacity.

### 2. Management and Skills Capacity

55. Human resource capacity remains a key challenge for PNG at the national, provincial and local government levels. The few qualified and skilled persons available are often lured into private sector employment or into development partners' funded projects that pay a far higher salary than that paid by the public service. Given this scenario, development partners' funded projects have often relied on the use of PMUs to manage and report on funding of public work programs delivered through the different ministries. In an effort to close the skills gap between finance staff employed by the PMUs and those employed in the mainstream ministries, the development partners often include as part of their exit strategies, a training and capacity building component in the funding assistance provided.

### 3. Country Environment

56. **ADB Past Experience.** ADB insists on strong processes to ensure effective procurement and prevent corruption. Analysis of recent project completion reports, including one for a project that lasted for nearly 11 years (2000-2010) determined that in each case executing agencies had broadly complied with ADB governance and anticorruption provisions in bidding documents, contracts, and payment claims. Past internal ADB audits of road project in 2005 and 2006 found no clear indications of fraud or corruption. Similarly, past internal government audits of ADB assistance to PNG found no clear indications of fraud or corruption in its projects. Reviews conducted with the Australian Department of Foreign Affairs and Trade concluded with much the same assessments of procurement across a range of sectors, albeit with isolated cases of potential and identified corruption taking place.

57. These general assessments cannot however be assumed to apply to the complete operations of many different government agencies. The PNG Ombudsman Commission's and the Auditor General's responsibilities, resources, staff and responsibilities only permit limited oversight of procurement practices and PNG suffers from what many perceive as

[26] ADB 2014. *Private Sector Survey: An Assessment of Constraints to Private Sector Investment in PNG*. Port Moresby: Private Sector Development Initiative and Institute of National Affairs.

[27] U4 Anti-Corruption Resource Center. 2013. *Papua New Guinea: Overview of Corruption and Anti-Corruption*. Bergen.

widespread and endemic corruption.[28]

58. ADB's Country Portfolio Review (CPR) 2013 concluded that PNG portfolio performance had significantly improved compared with 2012, with significant increases in contract awards and disbursements while 'actual problem' projects were reduced from five in 2011 to zero in 2012. However, ADB's CPR 2014 concluded that ongoing challenges include: (i) late submission of audited project financial statements by executing agencies, (ii) lengthy government procurement process, and (iii) limited capacity of executing agencies to monitor performance against sector result matrices.

## B. Entity Specific Issues

59. **Mandate and Organizational Structure.** The CCDA is the Executing Agency for the project and also the implementing agency for Output 1 and the radio network coverage extension planned for Output 3 (in each case supported by technical agencies). CCDA is the mandated coordinating entity for all climate change related policy and actions in PNG and the designated National Authority under the United Nations Framework Convention on Climate Change. It was established as a government entity on 1 August 2011, by order of the National Executive Council[29] (NEC) under the Public Finances Management Act (PFMA) of 1995. CCDA is funded through the Consolidated Fund and governed by both the PFMA and Audit Act of 1989.

60. The mandate is derived from NEC decision 54/2010, which specifies:

(i) That the National Climate Change Committee (NCCC) and the CCDA as its secretariat take full and exclusive responsibility to coordinate and facilitate all policies, initiatives and actions under Pillar Five of Vision 2050, particular to climate change;
(ii) CDA engages and involves all stakeholders to build a common vision and pathway on action to tackle climate change; and
(iii) CCDA works in close collaboration with, and in support of, other departments and agencies to achieve these goals.

61. The National Climate Bill was approved by the Parliament on 28 July 2015 converting the former OCCD to an "authority" CCDA. Under the proposed Bill, CCDA will be entitled to collect revenues from sources such as excise duty on sale of fuel, import of motor vehicles and any others to be determined.[30]

62. CCDA is headed by a Managing Director who is appointed by the NEC. CCDA is comprised of three divisions, each headed by a director. There is no dedicated finance department. The organizational structure stipulates that the most financial and administrative functions will be handled by the Prime Minister's Department in conjunction with the Executive Officer.[31] There is an Accountant, Commitment Clerk and the Examiner who reports to the Executive Officer.

---

[28] Government of Papua New Guinea, Central Supply and Tenders Board. 2010. (a) *PNG Procurement Assessment Report*. Annex A, p24.

[29] Government decision making body, i.e. the Cabinet

[30] S.61 titled Funding Levy and Equalization Arrangement proposes an excise levy on sales of diesel 2 toea per litre and on gasoline of 3 toea per litre

[31] http://www.occd.gov.pg/index.php?option=com_content&view=article&id=64&Itemid=82

63. Significant expansion of CCDA is expected due to the inflow on development partner funds. This proposal to increase CCDA staff from 22 to 73 has been recently approved by the Salaries and Condition Monitoring Committee and the positions advertised. Meanwhile, given the acute shortage of experienced staff in finance and accounting, CCDA has contracted the services of a Governance and Statutory Compliance Consultant.

64. With assistance of development partners, the government has recently introduced integrated financial management system (IFMS) across national, provincial and local government levels. However the implementation is far from complete. For example, the CCDA still uses simplified Manage Your Own Business accounting software. The preparation of the financial statements is outsourced to Governance and Compliance Consultant (qualified accountant).

65. PMU will be established in CCDA, headed by a full-time Project Director seconded from CCDA and will be supported by a full-time National Project Coordinator and PISCs. The Project Steering Committee (PSC) composed of representatives from the Department of Treasury, Department of Health, CFDA, National Disaster Centre, PNGPCL, NARI, five participating provinces, with ADB as an observer, will oversee implementation progress. The PMU will initially manage the funds of the proposed project and once proven to be a success it will evolve into an operational unit of CCDA with responsibility to manage all climate change projects.

66. The financial management functions will be performed by the two specialists (international and national) to be appointed so that in the absence of the international specialist, the national specialist will assume responsibility for overall financial management and reporting. Most of the inputs will be provided in the first three years of project implementation after which the demand for such services will diminish because of the on-the-job training impact on local PMU staff members. Candidates engaged for this position should be prepared to mentor local counterpart staff in financial management to build capacities within CCDA.

67. In addition, the financial management arrangements for the proposed project will be significantly stronger than those for previous projects in other sectors implemented by ADB in PNG. Specific measures will include capacity building support and provision of independent accounting support (if needed) to ensure, among other things, timely and rigorous reconciliations, orderly record keeping, and strict adherence to financial management policies and internal controls.

68. **Asset Management and Planning.** There is a need for a comprehensive and accurate Asset Register for all assets purchased or constructed under the project. This register must identify the useful life of the separate significant components of the infrastructure assets in accordance with IPSAS 17: Property Plant and Equipment. The asset register is required to be maintained, updated and reported quarterly as part of project reporting requirements during construction, and will be audited annually. An Asset Management Plan specifying the technical requirements and resourcing to carry out the ongoing maintenance and ultimate replacement of each asset or asset component at the end of its useful life will be prepared by the CCDA.

69. **Internal Auditing.** CCDA does not have an internal auditor. Under the Public Finance Management Act, an internal auditor is required. The position of Internal Auditor has been advertised with the other positions at Grade 15 with an annual compensation of K39,882 ($14,000). To mitigate any risks arising from the absence of an internal audit function within PMU, it will be ensured during planning stage that the internal control environment within the PMU office is strong. In addition, PSC will be consulted, and chartered accounting firm will be

recruited to carry out internal audit functions, particularly focusing on effective operations of internal controls. The internal audit reports will be reviewed by the PMU's Steering Committee and actions taken to address the findings.

70. **External Auditing.** CCDA will subject the detailed consolidated project financial statements to be audited in accordance with International Standards on Auditing by an auditor acceptable to ADB. The audited project financial statements will be submitted in the English language to ADB within 6 months of the end of the fiscal year by CCDA. The CCDA will appoint the external auditors to review the project financial statements. The costs of annual audits to be undertaken by independent auditors will be 100% funded by the project grant. Compliance with project financial reporting and auditing requirements will be monitored by review missions and during implementation, and will be followed up regularly with all concerned.

71. ADB's guidelines require that the borrower and the project executing agency have the required financial statements for each year prepared under an acceptable financial reporting framework audited by an independent auditor acceptable to ADB, and that the audit be conducted in accordance with auditing standards that are also acceptable to ADB.

72. To ensure that ADB is provided with reliable, comprehensive, and timely information, the following is required on an annual basis:

(i) Audited Project Financial Statements (APFS);
(ii) Specific additional audit opinions on:
  a. Use of grant financing - to confirm whether the borrower or executing agency has utilized all proceeds of the grant financing only for purposes of the project;
  b. Whether the appropriate processes have been observed in the preparation and maintenance of financial management and reporting; and
  c. Compliance with financial[32] covenants (where applicable) - to confirm or otherwise, that the borrower or executing agency was in compliance with the financial covenants of the grant agreement.
(iii) Management Letter;
  a. Audited Financial Statements (AFS), at the entity level, in cases, where: (a) the executing (EA) or implementing agencies (IA) are separate legal entities whose annual financial statements are subject to audit under the DMC's statutory or regulatory requirements, and (b) there is a policy basis for requiring these audited financial statements, provided that the expected benefits of such submission will exceed the associated administrative costs. CCDA will manage the single imprest account that will be subject to the annual audits outlined above; and
(iv) Audited Financial Report for the SGF imprest account.

73. The government has been made aware of ADB's policy[33] on delayed submission, and

[32] The auditors are expected to opine solely on financial covenants (for example debt service coverage rate, self - financing ratio, debt:equity ratio), in other words, only when the overall aspects of compliance relate to accounting and financial matters within the scope of the auditor's professional competence.

[33] ADB approach and procedures regarding delayed submission of audited project financial statements (APFS): a) when audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (i) the audit documents are overdue; and (ii) if they are not received within the next six months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed; b) APFS have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new

the requirements for satisfactory and acceptable quality of the audited project financial statements. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

74. **Public Disclosure.** ADB revised Public Communications Policy (2011)[34] requires uploading of audited financial statements in ADB website: (i) subject to government's concurrence, (ii) relevant to project only with audit report, not financial statement of Implementing Agency; (iii) management letter, not disclosed; and (iv) disclosed within 30 calendar days upon receipt by ADB.

75. **Disbursement.** Grant disbursement is a key element in the project cycle. ADB expects that proposed disbursement procedures and fund-flow mechanisms will be suitable for the project. Grant proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time),[35] and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available at: http://wpqr4.adb.org/disbursement_elearning. Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

76. Direct payment, imprest fund, and reimbursement procedures will be used during implementation. The PMU will prepare project disbursement projections (budgets) of counterpart contributions and submit to CCDA for approval and forward the projections to the DNPM for the release of funds in accordance with the government financial management procedures. The government contribution to project costs will be budgeted for in each project year with necessary funds placed in a dedicated project account to be established for the counterpart funds at the beginning of the financial year to cover project expenditures.

77. The PMU will be responsible for accounting the use of the funds in line with project activities and maintaining the documents necessary for supporting reimbursement from the ADB. The PMU will be responsible for preparing and sending the withdrawal applications to ADB.

78. During implementation, the use of imprest fund procedure for payment of expenditures other than the SGF may be requested by the EA on the following conditions: (i) CCDA must have sufficient financial management capabilities to establish adequate internal control, accounting, and auditing procedures to ensure efficient use and operation of the procedure; and (ii) the EA as appropriate, must also have the capability to arrange for periodic and annual independent audits of the imprest fund procedures by auditors acceptable to ADB.

79. The imprest account, if approved, should be established and maintained by CCDA at a commercial bank. The total outstanding advance of the imprest account in aggregate will not at any time exceed the estimated ADB administered co-financier financed expenditures to be paid from the imprest account for the next six months. For every liquidation and replenishment request of the imprest account, the recipient will furnish to ADB: (i) withdrawal application; (ii) summary sheet for full documentation; (iii) bank statement where the imprest account is maintained; and (iv) the Imprest Account Reconciliation Statement (IARS) reconciling the above

---

reimbursement, and issuance of new commitment letters. ADB will (i) inform the EA of ADB's actions; and (ii) advise that the grant may be suspended if the audit documents are not received within the next six months; c) when APFS have not been received within 12 months after the due date, ADB may suspend the grant.

[34] Available at: http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications

[35] Available at: http://www.adb.org/Documents/Handbooks/Loan_Disbursement/loan-disbursement-final.pdf.

mentioned bank statement against the EA's records.[36]

80. Full documentation will be used for reimbursement of eligible expenditures for replenishment/liquidation of advances to the imprest account. The use of SOE procedure may be allowed only after further assessment that CCDA have sufficient administrative and accounting capabilities to use and operate the procedure, subject to the approval by ADB.

81. Before the submission of the first withdrawal application, CCDA should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the recipient, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is $100,000 equivalent. Individual payments below this amount should be paid (i) by the Government and subsequently claimed to ADB through reimbursement, or (ii) through the imprest fund procedure, unless otherwise accepted by ADB.

82. Procedures for the disbursement and liquidation of government funds will follow the Public Finances (Management) Act 1995, the Financial Management Manual and Finance Instructions. The government contribution to project costs will be budgeted for in each project year.

83. An imprest account will also be established for the disbursements of funds under the SGF and will be managed by a financial administrator recruited on a competitive basis by the PMU and ratified by ADB. This entity will be ruled ineligible for participating in any project audit activities. It is unlikely that subprojects will require financing until year 2 by which time, CCDA should have developed the financial management competence under the guidance of the Financial Management Specialist engaged under the PISC.

84. The imprest account is to be used exclusively for ADB's share of eligible expenditures. The CCDA is accountable and responsible for proper use of advances to the imprest account. The total outstanding advance to the imprest account should not exceed the estimate of ADB's share of expenditures to be paid through the imprest account for the forthcoming 6 months. The EA may request for initial and additional advances to the imprest account based on an Estimate of Expenditure Sheet setting out the estimated expenditures to be financed through the account{s} for the forthcoming six (6) months. Supporting documents should be submitted to ADB or retained by the EA in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time) when liquidating or replenishing the imprest account.

85. Accounts for the SGF will be audited annually for both financial controls and process. The PMU shall develop a web site to provide public information on the subproject activities and what subprojects have been funded for what purposes under the facility. Full disclosure of the utilization of the SGF is required under the facility. At each level of approval, full accountability will be maintained to the requesting community providing notice of acceptance and or the reasons for rejection.

86. **Anticorruption.** As has been explained and discussed with the government, ADB will include anticorruption provisions in the grant provisions and the bidding documents of the project, consistent with its commitment to good governance, accountability and transparency. ADB will reserve the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project. The EA will establish a

[36] Follow the format provided in Appendix 10c of the *Loan Disbursement Handbook.*

grievances mechanism and committee to deal with any concerns arising from project implementation. All contracts financed by ADB in connection with the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all contractors, suppliers, consultants, and other service providers as they relate to the project.

## C. Risk Analysis

87. The following assessment of risks is based on the existing public financial management environment in the country and assessment of implementing entity's financial management capacity. The risk-mitigation assessment considers the factors which will significantly reduce or eliminate the risks identified.

## Table LD3.7: Risks and Mitigation Measures

| Risk type | Risk | Risk Description | Risk Mitigation Measures |
|---|---|---|---|
| **Inherent** | | | |
| 1. Country-Specific Risks | **H** | *Management Environment* – while budget execution and reporting standards are generally sound, audit, planning, and transparency issues need further improvement<br><br>*Public Procurement:*<br>(i) low internal audit capability and poor procurement planning in public sector agencies, and<br>(ii) inadequate monitoring of implementation of procurement decisions and appropriate quality assurance of services provided. | Various development partner funded projects include an element of training and capacity building in their project activities which is directed towards upgrading, improving and strengthening the performance of public servants. This project is no exception. The implementation consultants will assist PMU with the day-to-day implementation of this project and training and capacity building.<br>ADB will include anticorruption provisions in the grant provisions and the bidding documents of the project, consistent with its commitment to good governance, accountability and transparency. ADB will reserve the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project. PMU will establish a grievances mechanism and committee to deal with any concerns arising from project implementation.<br>At the project level, ADB will ensure appropriate mechanisms are put in place to address weaknesses in procurement controls: (i) EAs' websites disclose updated and detailed information on project implementation; (ii) timely disclosure of information on selection of consultants and contractors through local media; and (iii) the quantity, quality, and cost of civil works to be independently verified.<br>ADB will also support the CSTB and government agency procurement offices in infrastructure tender preparation, contract management, and record keeping, and support the Government of PNG's efforts to establish a company blacklisting system identifying underperforming contractors. |
| 2. Entity-Specific Risks | **S** | Lack of a Papua New Guinean 'project champion' (high risk for project, but limited impact on project financial management). | These are uncontrollable by the project but have only a moderate impact on the project financial management function. |
| 3. Project-Specific Risks | **H** | ADB has not implemented the project at CCDA before | Improved program design with good links between program components.<br>Program and project managers to have performance based contracts.<br>Use of external support to design and implement a new program accounting system. |
| **Overall Inherent Risk** | **H** | | |

| Risk type | Risk Ass-t | Risk Description | Risk Mitigation Measures |
|---|---|---|---|
| **Control Risk** | | | |
| 1. Implementing Entity | **M** | The project governing body (Project Steering Committee) is not independent from those who are implementing the project.<br>Reporting structure for program management and the various project components needs to be agreed.<br>Financial management duties of program management and component projects need to be clearly defined. | A program audit committee (or equivalent opportunity for independent comment on progress) to be instituted.<br>For program management and project components:<br>• A clear authority and reporting structure to be agreed<br>• Financial management and reporting duties to be clearly defined<br>• Performance measures to be instituted.<br>Introduce PPP models such as Performance Based contracts to utilize the expertise and resources available in private sector to bridge the inefficiencies and lack of capacity within CCDA |
| 2. Funds Flow | **H** | Warrants for government counterpart funds have been issued late or for incorrect amounts.<br>There is a lack of audits checking on the reconciliation of bank accounts.<br>No proper systems of cash-flow analysis or management exist. | CCDA to prepare and submit to ADB quarterly and annual progress reports on project implementation and operation<br>Separate accounts to be maintained for all project components financed by ADB and the Government, and to be audited by an independent auditor<br>External adviser to review execution of disbursements by project staff and improve procedures where needed<br>Develop exception report for project/program management to highlight untimely release of warrants by CCDA for government expenditure. |
| 3. Staffing | **H** | The organizational structure of existing accounts staff in CCDA is not adequate to serve the needs of the project. | PMU will be established.<br>Clear Organizational structure will be prepared; specific terms of reference will be developed for PMU staff and the design and supervision of consultants.<br>The consulting firm will assist and train PMU to ensure that a good financial management system is instituted and that proficient and skilled staff is engaged on the project. They will also ensure that the more rigorous requirements of the ADB and other co-financiers are met.). |
| 4. Accounting Policies and Procedures | **H** | There is no project-specific manual for policies and procedures and no project-specific accounting manual.<br>Project budgeting is carried out in some detail but the details are not used in performance reports.<br>Account and bank reconciliations are not | Introduce project financial management manual.<br>Appropriate reporting to all stakeholders: implementing agency, user agencies, donors, and program and project management.<br>Reports will come directly off the system, not from spreadsheets.<br>Common form of chart of accounts (i.e. the new IFMS chart) to be used for budgeting and accounting for all projects and trust accounts in the program, including |

| Risk type | Risk Ass-t | Risk Description | Risk Mitigation Measures |
|---|---|---|---|
| | | performed in a timely manner, which fundamentally undermines internal controls.<br>On the ADB grant expenditure, checking for available funds before signing a contract has been weak. In addition, contract payments are made without documented checks against contract terms.<br>Leave records have been inadequate for staff paid through trust accounts.<br>The asset register has been allowed to become out of date. No periodic asset checks.<br>There are no documented policies on conflict of interest or related party transactions.<br>Staff have been on a code of ethics course, but there is no project policy of where/how to report fraud, waste, misuse of assets. | economic items (income, expenditure, assets and liabilities), activities and outputs and funding sources.<br>Tighter procedures for contract registration and expenditure control against contracts to be developed.<br>Leave records and asset records to be brought up to date and maintained. Periodic asset checks to be carried out. Procedures for reporting fraud, waste, misuse of assets to be documented.<br>Policy on conflict of interest or related party transactions to be documented. |
| 5. Internal Audit | **H** | No internal audit function within CCDA | To mitigate any risks arising from the absence of an internal audit function within PMU, it will be ensured during planning stage that the internal control environment within the proposed PMU office is strong. In addition, PMU's Steering Committee will be consulted, and chartered accounting firm will be recruited to carry out internal audit functions, particularly focusing on effective operations of internal controls (including review of bank reconciliations). The internal audit reports, to be provided on quarterly basis, will be reviewed by the PMU's Steering Committee and actions taken to address the findings. |
| 6. External Audit | **M** | Extensive delays with submission of audited project financial statements to ADB | The PMU to produce APFS strictly in line with ADB project financial reporting and auditing requirements. The requirements to be part of grant covenant. |

| Risk type | Risk Ass-t | Risk Description | Risk Mitigation Measures |
|---|---|---|---|
| 7. Reporting and Monitoring | **H** | Lack of financial reporting and monitoring | Appropriate reporting to all stakeholders: implementing agency, user agencies, development partners, and program and project management.<br>Reporting to stakeholders will be prompt after the period end. These will include expenditure comparisons of actual with budget, linked to project progress and forecasts of expected outcome, cash flow statements, and asset schedules.<br>CCDA to prepare and submit to ADB quarterly and annual progress reports on project implementation and operation. |
| 8. Information Systems | **S** | Lack of appropriate financial management system | Rapid implementation of IFMS<br>Regular backups of all accounting systems and other appropriate security measures will be taken.<br>Recruitment of qualified IT staff and allocation of adequate resources to IT Branch.<br>The Departments to be loop on the requirements of the IFMS like the standard equipment needed, training strategies etc.<br>The Department needs to be briefed of the problems (if any) and the reasons for long delays. |
| **Overall Control Risk** | **H** | | |
| **Overall Risk** | **H** | | |

# VI. PROCUREMENT AND CONSULTING SERVICES

88. A Procurement Capacity Assessment of the EA has established that procurement capacity remains weak. To address capacity gaps within the EA, the PMU will be supported initially by a Project Implementation Specialist and thereafter by the PISC to assist with the recruitment of consultants,[37] procurement of civil works, equipment, services, etc. In addition a procurement review for effective implementation will be carried out during the project mid-term review.

89. To scale up the EA's procurement capacity, capacity development will be provided through the engagement of an international procurement specialist as part of the PMU team with focus on preparing and evaluating bidding documents under the project.

## A. Advance Contracting and Retroactive Financing

90. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (2015 as amended from time to time) (ADB's Procurement Guidelines)[38] and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).[39] The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The Recipient, Climate Change Development Authority (Executing Agency), the Coastal and Inland Fisheries Development Authority, the National Agricultural Research Institute, PNG Ports Corporation Limited (implementing agencies) have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

91. **Advance contracting.** Advance recruitment of Project Implementation Support consultants has been approved by ADB's Board in order to mobilize the consultants soon after Board approval. Advance action includes the calling for expressions of interest, the short listing of eligible firms, the receipt and evaluation of technical and financial proposals (using QCBS 90:10 procedures), financial evaluation and contract negotiations with the winning bidder. The issuance of requests for proposals under advance contracting will be subject to ADB approval. The contract shall not be signed by the Executing Agency until the Grant has been declared effective. The Government has been advised that approval of the advance contracting does not commit ADB to finance the project.

92. **Retroactive financing.** Retroactive financing has been approved by ADB for the recruitment of a Project Implementation Specialist to assist the PMU in the early stages of project implementation - particularly the recruitment of PISCs. The Government has requested that ADB recruit a suitably qualified specialist (see TOR in Section VI.F) to facilitate early appointment of the specialist estimated to take place in June 2015. The maximum amount of eligible expenditures up to the equivalent of 10% of the total ADB administered grant), incurred before grant effectiveness, but not earlier than 12 months before the signing of the Grant Agreement.

## B. Procurement of Goods, Works

93. All procurement of goods and works to be financed by the SCF-PPCR Grant to be

[37] NGO facilitation contracts are considered consulting services and will be recruited on a QCBS (90:10) basis.
[38] Available at: http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf
[39] Available at: http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf

administered by ADB will be carried out in accordance with ADB's Procurement Guidelines. For civil works contracts valued at $3,000,000 and above, or for goods valued at $500,000 and above, procurement will be carried out following ICB procedures in accordance with ADB's Procurement Guidelines. NCB procedures will be followed for contracts valued at less than $1,000,000 but more than $100,000 for civil works and less than $500,000 but more than $100,000 for goods. Shopping procedures will be followed for contracts valued up to $100,000. For NCB and shopping procedures, the provisions of the government's Standard Procurement Procedures as agreed with ADB will be followed. In case of inconsistency between ADB procedures and the Standard Procurement Procedures, ADB procedures will be applied. The proceeds of the Grant will be disbursed in line with ADB's Loan Disbursement Handbook (July 2012, as amended from time to time).

94. Procurement of civil works packages and goods and services following ICB, NCB and shopping procedures will be carried out by the relevant implementation agency with support and assistance from the PISC. Contracts for simple civil works or for procurement of equipment valued at less than $20,000 may be carried out by community groups following procedures for community participation/shopping in procurement in accordance with ADB's Procurement Guidelines. Procurement of contracts for coastal stabilization valued at less than $50,000 may be procured using Community Participation procedures. All ICB contracts will require prior approval of ADB. The first contract under NCB, shopping and community participation procedures will be subject to ADB prior approval. Subsequent contracts of similar nature will be subject to the ADB post approval. For contracts to be awarded by community participation procedure, the first contract will require prior ADB approval, for subsequent contracts of similar nature the executing agency will maintain documents[40] for post review by ADB. Prior and post review thresholds are included in the procurement plan in Section D below.

95. Before the start of any procurement, ADB and the Government will review the public procurement laws of the national and provincial governments to ensure consistency with ADB's Procurement Guidelines. ADB and the government shall update, within 6 months following the effective date, the procurement plan to reflect necessary modifications.

96. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is in Section C below. It shall be reviewed annually thereafter and updated, as necessary.

## C. Recruitment of Consultants

97. All consultants and non-government organizations (NGOs) will be recruited according to ADB's *Guidelines on the Use of Consultants*.[41] The terms of reference for all consulting services are detailed in Section F below.

98. The PISC will be recruited by the PMU to provide implementation support for the project providing additional resources for the PMU to implement the project as intended. The PMU will recruit and engage an international firm to provide approximately 60 international and 135 national person-months for a total of 195 person-months of consulting inputs to support all project outputs. Consultants will be engaged following QCBS procedures with a standard ratio of 90:10.

99. The PNGPCL Enabling Framework Consultants will be engaged by CCDA for PNGPCL

[40] These include the commune development plan, bid invitation letters, bid opening statements, bid evaluation reports or approval documents, and signed contracts between the commune council and contractors, where applicable.
[41] Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: http://www.adb.org/documents/handbooks/project-implementation/

following QCBS procedures with a standard ratio of 90:10 to assist in the development of an enabling framework that will assist in addressing the variations expected from climate change. Specialists in the technical areas of marine infrastructure, climate change modelling, structural engineering, coastal engineering, ports operations, economics-finance analysis and climate change financing will be recruited under the one package through a firm. A total of 99 person months of inputs is anticipated under the contract comprising 51 person months of international specialists and 48 person months of national specialists.

100. An NGO in association with other local NGOs will be recruited to support the implementation of Outputs 1 and 2 in the 21 priority vulnerable islands. This will provide additional resources to the limited number of provincial administration staff and compensate for their limited capacities in the required areas. The NGOs will facilitate the vulnerability assessments under Output 1 and assist in the implementation of food security and fisheries eco-system interventions proposed under Output 2. They will be responsible for channeling community level support initiatives in view of the relatively weak governance structures found in PNG. They will support local target communities in preparing and implementing development subprojects to address the impacts of climate change to be financed from the SGF. No estimate of the person month input requirements have been made in view of the diversity of the required activities although budgets have been prepared for their engagement for the respective contributions in Outputs 1 and 2.

101. Terms of Reference (TORs) for the Implementation Specialist, PISC, PNGPCL Enabling Framework and NGO facilitation Consultants are detailed in Section F below. TORs for other consulting services (audit services) will be developed with assistance from the PISC to be engaged shortly after loan effectiveness. For expediency, the government has requested ADB to recruit the Project Implementation Specialist to assist in start-up procedures and capacity building. Retroactive financing has been approved so that this individual can be recruited at earliest to assist in early implementation.

## D. Procurement Plan

### 1. Basic Data

| | |
|---|---|
| **Project Name:** Building Climate Resilience in Papua New Guinea | |
| **Country:** Papua New Guinea | **Executing Agency**: Climate Change Development Authority |
| **Grant Amount:** SCF Grant - $24.25 million | **Grant Number:** 0447 |
| **Date of First Procurement Plan:** 1 November 2014 | **Date of this Procurement Plan**: 8 December 2016 |

### 2. Process Thresholds, Review and 18-month Procurement Plan

#### a. Project Procurement Thresholds

102. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

| Method | Threshold |
|---|---|
| International Competitive Bidding for Works | $4,000,000 and above |
| International Competitive Bidding for Goods | $500,000 and above |
| National Competitive Bidding for Works | More than $200,000 but less than $4,000,000 |
| National Competitive Bidding for Goods | More than $100,000 but less than $500,000 |
| Shopping for Works | Up to $200,000 |

| | |
|---|---|
| Shopping for Goods | Up to $100,000 |
| Community Participation in Procurement | Up to $20,000 |

### b. ADB Prior or Post Review

103. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

| Procurement Method | Prior or Post [a/] | Comments |
|---|---|---|
| **Procurement of Goods and Works** | | |
| ICB Works | Prior [b/] | |
| ICB Goods | Prior [b/] | |
| NCB Works | Prior/Post [c/] | |
| NCB Goods | Prior/Post [c/] | |
| Shopping for Works | Prior/Post [c/] | |
| Shopping for Goods | Prior/Post [c/] | |
| **Recruitment of Consulting Firms** | | |
| QCBS (90:10) | Prior | EA/PMU will recruit Community Disaster Response Strategy NGO using (STP) using suport consultants through a firm using a FTP. |
| **Procurement Method** | **Prior or Post [a/]** | **Comments** |
| | | IA/PNGPCL will recruit enabling framework consultants through a firm using a FTP.<br><br>EA/PMU will recruit NGO Facilitation contracts using FTP. |

EA = Executing Agency; FTP= Full Technical Proposal; IA = Implementing Agency; ICB = International Competitive Bidding; NCB = National Competitive Bidding; NGO = non-government organization; PMU = Project Management Unit; PNGPCL = PNG Ports Corporation Limited; and QCBS = Quality- and Cost-Based Selection.

[a/] To be reviewed during implementation based on capacity of the EA.

[b/] The draft English language version of the procurement documents for each type of procurement should be submitted for ADB review and approval regardless of the estimated contract amount. First ADB-approved procurement document should be used as a model for all subsequent procurement of similar work and type of procurement financed by ADB, and need not be subjected to further prior review.

[c/] The first contracts for NCB, shopping, and community procurement regardless of their value will be subject to ADB's prior review and approval, subsequent contracts for similar work will be subject to post-review.

### 3. Goods and Works Contracts Estimated to Cost $1 million and above

104. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

| General Description [a/] | Contract Value ($) | Procurement Method | Prequalification of Bidders (Y/N) | Advertisement Date (quarter/year) | Comments |
|---|---|---|---|---|---|
| Relay equipment on communication towers | $1.18 million | NCB / Direct Contracting | N | Q2 / 2017 | To be procured by EA/PMU with technical support from NDC. |

EA = Executing Agency; ICB = International Competitive Bidding; and NDC = National Disaster Center

### 4. Consulting Services Contracts Estimated to Cost $100,000 and Above

105. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

| General Description | Contract Value ($) | Recruitment Method | International or National Assignment | Advertisement Date (quarter/year) | Comments |
|---|---|---|---|---|---|
| Project Implementation Support Consultants | $1.5 million | QCBS (90:10) | International firm :- 55 pm national and 33.5 pm international | Q1 / 2017 | One contract to be recruited by EA/PMU |
| Enabling Framework for Port Design Consultants | $2.10 million | QCBS (90:10) | International firm :- 48 pm national and 51 pm international | Q1 / 2017 | One contract to be recruited by PNGPCL |
| Project Implementation Specialist | $0.26 million | ICS | International : - 6 pm | Q4/ 2015 | To be recruited by ADB |
| Financial Management Specialist | $.0.33 million | ICS | International -9 pm | Q3/2016 | To be recruited by EA/PMU |
| Procurement Specialist | $0.29 million | ICS | International -9 pm | Q4/2016 | To be recruited by EA/PMU |
| Project Implementation Coordinator | $0.82 million | ICS | International -26 pm | Q1/2017 | To be recruited by EA/PMU |
| NGO Facilitation Contract and Community Disaster Response Strategy NGO | $2.15million | QCBS (90:10) | Established National or Internation al NGOs | Q2 / 2017 | One contract to be recruited by EA/PMU |

ADB = Asian Development Bank; EA = Executing Agency; ICS = Individual Consultant Selection; NGO = non-government organization; PMU = Project Management Unit; PNGPCL = PNG Ports Corporation Limited; QCBS = Quality- and Cost-Based Selection.

## 5. Goods and Works Contracts Estimated to Cost Less than $1 Million and Consulting Services Contracts Less than $100,000

106. The following table groups smaller-value goods, works and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

| General Description | Contract Value ($) | Number of Contracts | Procurement / Recruitment Method | Comments |
|---|---|---|---|---|
| Procurement of office furniture and equipment for the PMU. | $28,700 | 1 | Shopping | Equipment for the PMU to be procured by PMU. |
| Procure civil works to rehabilitate PMU facility | $30,000 | 1 | Shopping | To be procured by PMU |
| Procurement of vehicles 1 for PMU (Five for Facilitating NGOs - one per province procured as provisional sums). | $55,000 | 1 | Shopping | Vehicle for PMU to be procured by EA/PMU. |
| Project baseline study | $50,000 | 1 | CQS | One contract to be recruited by PMU |
| Project annual audit | $20,000 | 1 (first year only) | LCS | To be procured by PMU |
| Downscaled climate projections | $50,000 | 1 | SSS | PMU to contract CSIRO to generate data for vulnerability |
| Water storage and supply facilities | $1,974,000 | Multiple contracts | Community Participation | Under guidance of PMU with DOH technical support |
| Sanitation facilities | $444,000 | Multiple contracts | Community Participation | Under guidance of PMU with DOH technical support |
| Small-scale works under the SGF | Each contract up to $50,000 | Multiple contracts | Community Participation | Usual, customary and reasonable expenses as described under |

CQS=Consultants Qualification Selection; CSIRO = Commonwealth Scientific and Industrial Research Organization; DOH = Department of Health; LCS = Least Cost Selection; NCB = National Competitive Bidding; NGO = Non-government organizations; PMU = Project Management Unit; SSS = Single Source Selection; STP = Simplified Technical Proposal.

### 6. Indicative List of Packages Required Under the Project

107. The following table provides an indicative list of all procurement (goods, works and consulting services) over the life of the project.

| General Description | Estimated Value (cumulative) | Estimated Number of Contracts | Procurement Method | Domestic Preference Applicable | Comments |
|---|---|---|---|---|---|
| **Works** | | | | | |
| Water supply facilities | $1.97 million | Multiple | NCB | N/A | By PMU |
| Sanitation facilities | $444,000 | Multiple | NCB | N/A | By PMU |
| Rehabilitation of PMU | $30,000 | 1 | Shopping | N/A | By PMU |
| **Goods** | | | | | |
| Baseline survey | $50,000 | 1 | Shopping | N/A | By PMU |
| Office equipment and furniture | $50,000 | 2 | Shopping | N/A | By PMU |
| Vehicles | $55,000 | 1 | Shopping | N/A | By PMU |
| Monitoring equip. for LMMAs | $90,000 | 3 | Shopping | N/A | By PMU |
| Repeater station equipment | $1,621,000 | 5 | NCB | N/A | By PMU |
| **Consulting Services** | | | | | |
| Proj. Implementation Support Consultants | $1.5 million | 1 | QCBS (90:10) | N/A | By PMU |
| PNGPCL Enabling Framework Consultants | $2.1 million | 1 | QCBS (90:10) | | By PNGPCL |
| Project Implementation Specialist | $260,000 | 1 | ICS | N/A | By ADB |
| Project Implementation Coordinator | $820,000 | 1 | ICS | N/A | By PMU |
| Financial Management Specialist | $330,000 | 1 | ICS | N/A | By PMU |
| Procurement Specialist | $290,000 | 1 | ICS | N/A | By PMU |
| NGO Facilitation Contracts | $2.15 million | 1 | QCBS (90:10) | N/A | By PMU |

ADB = Asian Development Bank; CQS = Consultant Qualifications Selection; FTP = Full Technical proposal; ICB = international competitive bidding; ICS = individual consultant selection; NCB = national competitive bidding; PNGPCL = PNG Ports Corporation Limited; PMU = Project Management Unit; QCBS = Quality- and Cost-Based Selection; and QBS = Quality Based Selection.

## C. List of Awarded and On-going, and Completed Contracts

The following tables list the awarded and on-going contracts, and completed contracts.

1. Indicative List of Packages already awarded and ongoing under the project

❖ **Consulting Services**

| **Package Number** | **General Description** | **Estimated Value (US$)/Kina** | **Contract Value(US$)** | **Procurement Method** | **Advertisement Date** (quarter/year) | **Date of ADB Approval of Contract Award** | **Comments**[10] |
|---|---|---|---|---|---|---|---|
| ICS001 | Project Implementation Specialist | $260,000.00 | 202,000.00 | ICS | Oct 2015 | April-2016 | Contract Signing Date: April 2016<br><br>Kunhamboo Kannan |
| ICS-002 | Financial Management Specialist (National) | ($75,000) K230,025 | ($66,6623) K205,200 | ICS | June 2016 | Aug- 2016 | Contract signing date 18 March 2015,<br><br>Tony Kabaru |
| ICS03 | Financial Management Specialist (International) | ($332,300) K110,766 | ($262,400) K87,466 | ICS | Jun-2016 | Sept- 2016 | Contract signing date Sept16<br><br>Rodney Rickard |
| ICS-04 | Financial Management Officer | ($285,000) K95,000 | ($35,390) K109,200 | ICS | Jun-2016 | Sept- 2016 | Contract signing date Sept16<br><br>Steven Saleu |

❖ **Goods and Civil Work Contract**

| **Package Number** | **General Description** | **Estimated Value US$** | **Contract Value US$** | **Recruitment Method** | **Advertisement Date** (quarter/ year) | **Date of ADB Approval of Contract Award** | **Comments**[11] |
|---|---|---|---|---|---|---|---|
| Shopping-01 | 15 Seater Van | 55,000,000 | 35,563..30 | Shopping | 07-Aug-16 | 02 Nov - 2016 | Contract Signing Date 8 Dec 2016 |
| Shopping-02 | PMU Office Refurbishment | 30,000 | 32,071.43 | Shopping | 07-Aug-16 | 02-Nov-2016 | Contract Signing Date 15 Dec 16 |

## D. National Competitive Bidding

### 1. General

108. National competitive bidding (NCB) shall conform to the provisions set in the Public Financial Management Act (PFMA) as issued in 1995 and amended in 2003, and the specific procedures prescribed in the Financial Instructions (FIs) issued in 2005, with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of ADB Procurement Guidelines.

### 2. Participation in Bidding

(i) Government-owned enterprises in Papua New Guinea shall be eligible to bid only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the Borrower/Executing Agency/Implementing Agency.
(ii) Foreign bidders shall be eligible to participate in bidding under the same conditions as national bidders.
(iii) Bidding shall not be restricted to preregistered firms and such registration shall not be stated in the bidding documents as a condition for the submission of bids. Where registration is required prior to award of contract, bidders: (i) shall be allowed a reasonable time to complete the registration process; and (ii) shall not be denied registration for reasons unrelated to their capability and resources to successfully perform the contract, which shall be verified through post-qualification.

### 3. Classification of Contractors; Qualification; Post-qualification

(i) Post qualification shall be used unless prequalification is explicitly provided for in the loan agreement/procurement plan.
(ii) Bidding shall not be restricted to any particular class of contractors, and non-classified contractors shall also be eligible to bid. Qualification criteria (in case prequalification was not carried out) shall be stated in the bidding documents, and before contract award, the bidder having submitted the lowest evaluated responsive bid shall be subject to post-qualification.

### 4. Conflict of Interest

109. Bidders may be considered to be in conflict of interest with one or more parties in this bidding process if, including but not limited to:

(i) they have controlling shareholders in common, or
(ii) they receive or have received any direct or indirect subsidy from any of them; or
(iii) they have the same legal representative for purposes of this bid; or
(iv) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid or another Bidder, or influence the decisions of the Employer regarding this bidding process; or
(v) a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or

(vi) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract is the subject of the Bid; or

(vii) a Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the contract.

**5. Preferences**

110. No preference shall be given for domestic bidders and for domestically manufactured goods.

**6. Advertising, time for bid preparation**

(i) Invitations to bid shall be advertised in at least one newspaper of national circulation or freely accessible and well-known website, allowing a minimum of 4 weeks for the preparation and submission of bids, such 4 weeks period to begin with the availability of the bid documents or the advertisement, whichever is later.

(ii) Bidding of NCB contracts estimated at $500,000 or more for goods and related services, or $1,000,000 or more for civil works, shall be advertised on ADB's website via the posting of the Procurement Plan.

**7. Standard Bidding Documents**

111. Until national standard bidding documents approved by ADB are available, bidding documents acceptable to ADB should be used.

**8. Bid Security**

112. If required by the bidding documents, bid security shall be in the form of a bank guarantee from a reputable bank. A bidder's bid security shall apply only to a specific bid.

**9. Bid Opening and Bid Evaluation**

(i) Bidders may deliver bids, at their option, either in person or by courier service or by mail.

(ii) Bidders shall not be allowed to amend their tenders after the closing date and time for submission of bids.

(iii) Bids shall be opened in public, immediately after the deadline for submission of bids. No bid shall be rejected during bid opening. The name of the bidder, the total amount of each bid, and any discounts shall be read aloud and recorded in the minutes of the public bid opening.

(iv) Evaluation of bids shall be made in strict adherence to the Qualifications and Evaluation Criteria stipulated in the bidding documents.

(v) No bidder shall be rejected merely on the basis of a comparison with the employer's estimate and budget ceiling without ADB's prior concurrence.

(vi) The Contract shall be awarded to the technically responsive bidder that offers the lowest evaluated price, and meets the qualifying criteria. In determining the lowest evaluated price, the following are to be considered: (a) bid price, as offered; (b) arithmetical corrections on the bid price, if any; and (c) monetary value of the evaluation criteria that are stated in the bidding document.

### 10. Rejection of Bids

113. Bids shall not be rejected and new bids solicited without ADB's prior concurrence.

### 11. Extension of the Validity of Bids

114. In exceptional circumstances and with prior ADB approval, the procuring entity may, before the expiration of bid validity, request all bidders in writing to extend the validity of their bids. In such a case, bidders shall not be requested nor permitted to amend the price or any other condition of their bid. Bidders shall have the right to refuse to grant such an extension without forfeiting their bid security, but bidders granting such an extension shall be required to provide a corresponding extension of their bid security.

### 12. Disclosure on Contract Awards

115. At the same time that notification on award of contract is given, the Borrower /Executing Agency/Implementing Agency shall publish the following information on contract award on a free and open access website or other means of publication acceptable to ADB: (i) name of each bidder who submitted a bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated price of each bid that was evaluated; (iv) names of bidders whose bids were rejected and the reasons for the rejection; and (v) name of the winning bidder, price it offered as well as the duration and summary scope of the contract awarded. The Executing/Implementing Agency shall respond in writing to unsuccessful bidders who seek explanations on the grounds on which their bids are not selected.

### 13. No Negotiations

116. There shall be no negotiations, even with the lowest evaluated bidder, without ADB's prior concurrence. A bidder shall not be required, as a condition of award, to undertake obligations not specified in the bidding documents, or otherwise, to modify the bid as originally submitted.

### 14. Inspection and Auditing

117. Each contract financed from the proceeds of a Loan/Grant shall provide that the contractor/supplier shall permit ADB, at its request, to inspect their accounts and records relating to the performance of the contract and to have said accounts and records audited by auditors appointed by ADB.

### 15. Member Country Restriction

118. Bidders must be nationals of member countries of ADB, and offered goods must be produced in and supplied from member countries of ADB.

## E. Consultants' Terms of Reference

119. All four packages of consulting services including: (i) Project Implementation Support Consultants (PISCs); (ii) PNGPCL Enabling Framework Consultants (PEFC); (iii) NGO Facilitation Contracts; and (iv) Project Implementation Specialist, will be financed from the SCF-PPCR Grant. All consultants and institutions as well as those to be financed by the Government will be selected and engaged in accordance with the ADB's Guidelines on the Use of Consultants (2010, as amended from time to time). Inputs under the various contracts are estimated and firms are able to re-allocate the inputs between experts to fit the purpose of the project.

120. The PMU will recruit the PISCs from a consulting firm following QCBS(90:10) procedures. PNGPCL will recruit the PEFCs following QCBS (90:10) procedures. The PMU will also recruit the NGO Facilitation consultants using QCBS (90:10) procedures as NGOs are considered as consultants for recruitment purposes. The Government has requested ADB to assist in the recruitment of a project implementation specialist in view of the timeliness for these inputs. TORs for other consultancy assignments that might be needed during implementation will be developed by the PMU with assistance from the PISC after grant effectiveness.

### 1. Project Implementation Support Consultants

121. The PISC will be selected and engaged in accordance with ADB Guidelines on the Use of Consultants. The PMU will recruit the PISC following QCBS procedure with a standard quality to cost ratio of 90:10 The TOR of the PISC are outlined below.

122. The PISC comprise a total of 33.5 person months of international specialists and 82 person months of national specialists - for a total of 115.5 person months of consultant inputs. Advance action for recruitment of PISCs has been approved to facilitate the timely mobilization of consultants. The PISCs will be fielded shortly after grant effectiveness and will provide support and advice to the PMU throughout the 6 year implementation period.

123. The PISC will support the PMU in areas of implementation and project administration. International expertise will be provided in: (i) subproject evaluation; and (ii) monitoring and evaluation. In addition to this project implementation support, technical expertise will be provided in the fields of: (i) climate change; (ii) vulnerability mapping; (iii) disaster management; and (iv) policy development. National specialists will be required in similar areas to facilitate technology transfer from international specialists and to handle the project activities in the absence of the international consultants. The following specialists will be required under the implementation support package.

**Table LD3.8: Proposed Consultant Inputs**

| I. Investment Costs | Unit | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
|---|---|---|---|---|---|---|---|---|
| Project Implementation Support Consultants | | | | | | | | |
| **1. International Consultants** | | | | | | | | |
| Subproject Evaluation Specialist | p-month | | | 2 | 2 | 2 | 2 | 6 |
| Social and Gender Specialist | p-month | | 3 | 1 | 1 | 1 | | 6 |
| Monitoring and Evaluation Specialist | p-month | | 2 | 2 | 2 | 1 | | 9 |
| Climate Change Specialist | p-month | | 2 | | | | | 2 |
| Environment Specialist | p-month | | 1.5 | | | | | 1.5 |
| Vulnerability Mapping Specialist (1) | p-month | | 2 | 1 | | | | 3 |
| Disaster Management Specialist | p-month | | 2 | 1 | | | | 3 |
| Policy Development Specialist (1) | p-month | | 2 | 1 | | | | 3 |
| -Subtotal | | | | | | | | 33.5 |
| **2. National Consultants** | | | | | | | | |
| Deputy T/Leader Subproject Evaluation Specialist (N) | p-month | | 8 | 9 | 8 | 6 | 3 | 44 |
| Social and Gender Specialist | p-month | | 3 | 3 | 3 | 3 | | 15 |
| Climate Change Specialist | p-month | | 4 | | | | | 4 |
| Environment Specialist | p-month | | 3 | | | | | 3 |
| Vulnerability Mapping Specialist | p-month | | 2 | 1 | | | | 3 |
| Disaster Management Specialist | p-month | | 2 | 1 | 1 | 1 | | 5 |
| Policy Development Specialist | p-month | | 4 | 2 | 2 | | | 8 |
| Subtotal | | 4 | 46 | 28 | 14 | 14 | 3 | 82 |
| Total | | | | | | | | 115.5 |

**a. Subproject Evaluation Specialist (International - 6 person-months, National - 44 person-months)**

127. **Background.** Under the project, a Small Grants Facility will be established to finance small scale investment activities initiated by vulnerable communities - subject of the project. These will comprise adaptation measures to address the impacts of climate change and can take the form of small-scale civil works investments to more commercially oriented investments to address food insecurity up to a maximum of about $50,000 equivalent per application. NGOs will be engaged to support these communities in framing their finance applications to the SGF. Subproject evaluation specialists are required to assist CCDA/PMU (the Executing Agency and secretariat for the SGF) in their tasks of receiving, confirming eligibility, evaluating funding applications and monitoring the disbursement of funds through the financial institutions where the trust funds are held.

128. **Qualifications and Experience.** The Subproject Evaluations Specialists will have tertiary qualifications from a recognized tertiary institution with a major in economics, accounting or related field and will be fluent in the English language. The international specialist will have at least 8 years' experience in project evaluations in internationally financed development projects and will have proven financial analytical skills. S/he will also be familiar with the appraisal techniques that can be applied to subproject proposals where benefits can be assigned to each investment proposal so that they can be related to capital investment. The Specialists will have well developed communication skills, both verbal and written, and have proven analytical skills, familiar with Excel and Word software. The national specialist will have tertiary qualifications from a recognized tertiary institution in PNG and have relevant experience in financial analyses. The national specialist will assume responsibility for the evaluation of subproject proposals after the system has been established and tested by the international specialist.

129. **Duties to be Carried Out.** The specialists will undertake the following duties:

(i) Assist the PMU in developing procedures to receive applications for financial support for consideration by the SGF including of ratification of district and provincial authorities confirming support for the development initiative;
(ii) Assist the SGF Secretariat by: (a) confirming conformity with subproject eligibility criteria (b) ensuring ADB social and environmental safeguards have been addressed in preparing the investment proposals; (c) ensuring there are no resettlement issues arising from the investment; and (d) there are no other social issues arising from the investment and that benefits are likely to be enjoyed by the whole community; (e) undertaking evaluations of the subproject proposals; and (f) making recommendations to the SGF regarding the financing of the proposal;
(iii) Assist the PMU through the SGF Secretariat in authorizing the disbursement by identifying the appropriate recipient account or where possible, direct payment to the contractor and beneficiary (LLC);
(iv) Develop a monitoring and reporting mechanism that can provide progress reports at any stage of all SGF financed project and their stage of completion;
(v) Undertake a sample review of completed subprojects to determine if the anticipated benefits have materialized; and
(vi) Prepare quarterly progress reports on disbursement and implementation progress for subprojects financed by SGF.

**b. Social and Gender Specialist (International - 6 person-months, National - 12 person-months)**

130. **Background.** Much of work in Outputs 1 and 2 will be undertaken directly with the 21 vulnerable island communities that will require extensive consultation and due attention to the social safeguards as outlined in ADB's Safeguards Policy Statement (2009). Given the general gender issues that abound in PNG, the application of the project GAP will be critical in terms of achieving equitable development and recognizing the needs of women who are often more heavily impacted from climate change. Whilst national staff will be appointed to the PMU to ensure that social and gender dimensions are followed, their relative inexperience with ADB requirements highlight the need for mentoring of national PMU staff in social and gender matters. With this in mind, short intermittent inputs will be provided by an international specialist supported by longer – but still intermittent under the PISC consulting services contract.

131. **Qualifications and Experience.** The international specialist will have a minimum of a Master's Degree in a relevant field (social sciences, gender, community development) from a recognized tertiary institution and at least six years' experience of working on social / community development, gender, training, poverty reduction and preferably also, climate change adaptation projects, in PNG. The Social and Gender Specialist will be responsible for ensuring the quality and timeliness of project activities related to community assessments, community engagement and mobilization, training and gender activities, to ensure that identified impacts are minimized and mitigating actions undertaken to ensure socially equitable and successful outcomes.

139. The national social and gender specialist will have at least six years' experience in mainstreaming cross cutting issues (e.g. gender, governance, land, community development) with a master's degree or higher in social sciences, or a related area from a tertiary institution in PNG. The Specialist will have experience in community mobilization, training, and implementing gender programs and will be knowledgeable about poverty reduction, community development, and climate change impacts on women.

140. **Duties to be Carried Out.** The international Social and Gender Specialist shall be responsible for:

(i) Take the overall responsibility of social safeguards during the design, implementation and monitoring of the subprojects in accordance with the ADB's Safeguard Policy Statement (SPS) and relevant laws of Papua New Guinea;
(ii) Develop and implement stakeholder consultation and communication programs to ensure the full awareness and participation of affected communities and stakeholder agencies;
(iii) Assist in establishing and implementing the project's grievance redress mechanism;
(iv) Liaise with Department of Land and provincial authorities for their participation in and oversight of safeguards activities and negotiation with landowners for purposes of land access for the subprojects, as needed;
(v) Assist in determination of compensation of any purchased land and property;
(vi) Prepare due diligence reports in compliance with the project's safeguard framework as well as ADB SPS;
(vii) Facilitate disclosure of the due diligence reports to affected communities;
(viii) Together with CCDA and provincial counterparts, supervise and monitor implementation social safeguard activities.
(ix) Provide advice and assistance to project teams to address social safeguard issues

in project implementation and reporting;
(x) Develop and deliver social safeguard training to relevant staff of CCDA, DLPP, provincial government, and other relevant agencies involved in the project;
(xi) Prepare semi-annual monitoring reports on the social safeguards; and
(xii) Coordinate with other specialists and provide safeguard inputs to overall project reports, including quarterly progress reports.

141. The national Social and Gender Specialist shall be responsible for:

(i) Assist in the reviewing the existing initial household survey and community vulnerability assessment instruments, to ensure they result in robust data on which to plan interventions. Make improvements, taking into account the feedback following trials by CCDA;
(ii) Assist with training of CCDA staff and PMU in use of the survey instruments, to conduct initial household assessments and community vulnerability studies for baseline data collection. Oversee all assessments in each province to provide back-up to technical officers and ensure consistency and reliability of data;
(iii) Assist the international Social and Gender Specialist in designing the manual for community engagement, the trialing of materials, and building the capacity of the PMU, CCDA, and PMU in basic community development skills and gender awareness;
(iv) Review the design and implementation of all training and knowledge sharing activities with regard to gender needs and benefits, and provide guidance on their revision where necessary;
(v) Provide guidance for implementation and monitoring of the GAP and ensure that the GAP for the project is effectively implemented and its requirements to ensure participation of women are integrated into the formulation and implementation of climate resilience measures and SGF funded subprojects;
(vi) Assist in prioritizing and implementing gender-equitable adaptation measures;
(vii) Assist in training and knowledge sharing activities, and ensure the broad participation of women though training set-up and arrangements;
(viii) Coordinate with other consultants in identifying areas where gender-inclusive and socially inclusive provisions can be strengthened under the project; and
(ix) Assist the international Social and Gender Specialist in undertaking the mid-term and end-of-project review with pilot communities.

**c. Monitoring and Evaluation Specialist (International - 9 person- months)**

142. **Background.** Project benefit, monitoring and evaluation (PBME) carried out in accordance with the PPCR Results Framework and the guidance provided under the PPCR monitoring and reporting (M&R) Toolkit, is an important aspect of the project to ensure that benefits achieved are as intended and that they are shared by all members of the target communities, particularly by the poor and vulnerable households. To achieve this, there need for baseline studies to be undertaken during early implementation phase against each of the five core indicators and possibly optional indicators, as appropriate, to identify the current conditions of target beneficiaries to assess their vulnerability to the impact from climate change and monitor impact. To ensure that accurate information is collected in the 21 island communities and the nine pilot sites for Output 2 initiatives, it is important to have an experienced PBME specialist to assist in overall base-line survey design and to provide the principles for analyzing the results. In addition, the specialist will be responsible for establishing performance monitoring of the implementation of designed activities and subsequent subprojects financed by SGF to facilitate reporting to the Government and ADB and

PPCR.

143. **Qualifications and Experience.** The specialist will have tertiary qualifications in rural development or a related field from a recognized tertiary educational institution and have at least 10 years' experience as PBME specialists or related area. Ideally, the individual will have a minimum of 5 years' experience in a multilateral agency financed PBME positing within the Pacific region. S/he will be responsible to the consultant Team Leader and be based in the PMU with travel to the target provinces as required. The specialist will be familiar with computer based management information systems and will be an experienced programmer using off the shelf software for the monitoring and evaluation project to be developed.

144. **Duties to be Carried Out.** Duties of the specialists will include the following:

(i) Review the monitoring and evaluation recommendations in the RRP and from the attached PAM (linked document No.4);
(ii) Prepare reports linked to the PPCR M&R toolkit, and regular updates requested by ADB/PPCR Administration Unit;
(iii) Together with the PMU staff and the consultant Team Leader determine the optimum type of monitoring program for project implementation, safeguards and benefits;
(iv) Together with PMU staff, and with reference to the project DMF, design a monitoring system based on measurable inputs, outputs and outcomes;
(v) Together with PMU staff, brief provincial administration officers on their duties and responsibilities under the project monitoring system for the collection of information on indicators specified in the DMF;
(vi) Assist in recruiting a national M&E specialist to the PMU to undertake PBME and impact monitoring;
(vii) Assist the PMU in developing a survey instrument for the baseline survey to be carried out in the 21 vulnerable islands and the nine pilot sites for Output 2 activities.
(viii) Guide the NGO facilitators, concerned line agency and provincial administration office staff in undertaking baseline surveys, developing monitoring parameters and scheduling monitoring activities; and
(ix) Periodically review monitoring activities during project implementation and report any deficiencies, problems, issues or shortcomings to the PMU.

**d. Climate Change Specialist (International - 2 person-months, National - 4 person-months)**

145. **Background** - During the preparation of PNG's SPCR, vulnerable communities were identified in order to assist in reducing the number of locations where interventions were to be piloted under the project. This generated a long list of about 200 islands that were subsequently reduced to a total of 21 islands in the five participating provinces. One of the means for carrying out the initial identification (of the 200 islands) was the climate projections provided by CSIRO.

The project will finance the preparation of downscaled or localized climate predictions against which vulnerability will be re-assessed in order to identify adaptation measures to be financed under the project (through small scale grants). Technical expertise is therefore needed to interpret the downscaled information and to assist in guiding the identification of what might be acceptable adaptation measures. The specialist will therefore need to work with the data provided by CSIRO and make them relevant to each of the 21 vulnerable islands.

146. **Qualifications and Experience** - The international specialist will have tertiary qualifications in environmental science or natural resource/marine management with a focus on climate science or climate change management or the equivalent from a recognized institution and will have more than eight years' experience working in the field of climate change adaptation and mitigation for internationally funded development projects, some of which will have been undertaken in Papua New Guinea or in the Pacific. The national specialist will also have considerable experience in natural resource management and/or climate science and will have experience in internationally funded development projects, preferably related to marine and coastal infrastructure development and climate change adaptation and mitigation options. Training and skills-delivery would also be an advantage to the international specialist.

147. **Duties to be Carried Out** - Duties of the specialist will include the following:

(i) Assist the information office of the PMU to develop the necessary data sets to be retained on vulnerable islands in a database linked to GIS maps to be developed by the project;
(ii) Assist the PMU in designing the survey instrument and procedures based on the material prepared during the project preparation phase and assist in the interpretation of the localized climate change projections used for the vulnerability assessments;
(iii) Assist in the analysis of vulnerability assessments undertaken by the project in the 21 vulnerable islands;
(iv) Assist the PMU, CCDA, NGOs and provincial administration staff in identifying and implementing climate change adaptation and mitigation measures associated with adaptation measure to protect against climate change;
(v) Liaising and working with the social and gender specialists and environmental specialists, and following the project's communications and consultation plan, develop relevant information packages and knowledge products for dissemination and web-posting; and
(vi) Carry out other tasks assigned by the Team Leader, including provision of inputs to the program monitoring and evaluation system.

**d. Environmental Specialist (International – 1.5 person-months, National - 3 person-months)**

148. **Background** - During the preparation of PNG's SPCR, vulnerable communities were identified in order to assist in reducing the number of locations where interventions were to be piloted under the project. This generated a long list of about 200 islands that were subsequently reduced to a total of 21 islands in the five participating provinces. One of the means for carrying out the initial identification (of the 200 islands) was the climate projections provided by CSIRO. The project will finance the preparation of downscaled or localized climate predictions against which vulnerability will be re-assessed in order to identify adaptation measures to be financed under the project (through small scale grants). Technical expertise is therefore needed to interpret the downscaled information and to assist in guiding the identification of what might be acceptable adaptation measures. An environmental assessment and review framework (EARF) has been prepared to establish the procedures for implementation of environmental safeguards to ensure compliance with the environmental laws of PNG and ADB's Safeguard Policy Statement 2009 (SPS).

149. **Qualifications and Experience** - The international specialist will have tertiary qualifications in environmental science or natural resource/marine management or the equivalent

from a recognized institution and will have more than eight years' experience working in the field of environmental assessment and management, for internationally funded development projects. Experience in the Pacific is essential and experience in PNG will be an advantage. The national specialist will also have considerable experience in environmental management and monitoring and will be familiar with the laws of Papua New Guinea associated with the environment as well as experience in internationally funded development projects, preferably related to marine and coastal infrastructure development. Training, mentoring and skills-delivery would also be an advantage to the international specialist.

150. **Duties to be Carried Out -** Duties of the specialists will include the following

(i) Review and update the environmental assessment and review framework (EARF) to reflect the change from Department of Environment and Conservation (DEC) to Conservation and Environmental Protection Authority (CEPA) and amended and new laws;
(ii) Provide awareness sessions, on the requirements of the EARF and processes to be followed by the project, to the PMU, design teams and relevant government agencies;
(iii) Undertake the screening of each subproject/component to clearly identify subsequent due diligence requirements;
(iv) Liaise and consult with CEPA to determine the environmental permit requirements under the laws and regulations of PNG for each subproject/component;
(v) Following EARF requirements, train relevant staff of the PMU, NGOs, national and provincial administrations in participating provinces on environmental procedures and requirements for preparation and implementation of subprojects to be financed by the SGF;
(vi) For category B subprojects/components prepare the environmental assessment as per the EARF and following the initial environmental assessment prepared for the Alotau Wharf subproject as an example. Submit to ADB for comment, and revise accordingly. Following ADB clearance, assist in local disclosure;
(vii) Ensure that the EMP from the cleared environmental assessment is updated based on detailed design and any environmental permit conditions required from CEPA as relevant, and is integrated into the bid documents for the category B subprojects/components;
(viii) Train relevant staff of the PMU, NGOs, national and provincial administrations in participating provinces on environmental procedures and requirements for preparation and implementation of subprojects to be financed by the SGF;
(ix) Assist the PMU, as required, to evaluate the bids and responses from contractors in respect of environmental management provisions and requirements;
(x) Provide support and/or orientation to the successful contractor(s), as required, prior to their preparation of site-specific EMPs (SEMPs). Review and clear the contractor(s) SEMP(s) prior to commencement of physical works;
(xi) Work with the engineers/supervisors and contractor's staff of category B subprojects/components to monitor and report on contractor(s) compliance with the cleared SEMP(s) including grievance redress mechanism;
(xii) Prepare and/or provide inputs to quarterly progress reports and semi-annual safeguards monitoring reports;
(xiii) Liaising and working with the climate change specialists and social and gender specialists, and following the project's communications and consultation plan, develop relevant information packages and knowledge products for dissemination and web-posting; and

(xiv) Carry out other tasks assigned by the Team Leader, including provision of inputs to the program monitoring and evaluation system.

**e. Vulnerability Mapping Specialist (International - 3 person-months, National - 3 person-months)**

151. **Background.** The position above will assist the Government in the development of downscaled climate predictions against which adaptation measures can be contemplated and prioritized by the local community. The design consultants of the project undertook a vulnerability assessment on three separate islands during the course of the design process for which they developed a survey instrument to identify the potential adaptation measures that would be incorporated into local level government, district and ultimately provincial development plans. As the range of information to be collected in this process has increased to accommodate the communications and livelihood activities of the communities, the design will need to be further extended and staff trained in survey procedures. The vulnerability mapping specialists will be needed to revise the design of the survey instrument and to assist in the interpretation of the information collected.

152. **Qualifications and Experience.** The international specialist will have tertiary qualifications in social science or the equivalent from a recognized institution and will have more than 10 years' experience working in the field of socio-economic surveys, some of which were in respect of climate change adaptation and mitigation for internationally funded development projects. Some of this relevant experience will have been undertaken in Papua New Guinea or in the Pacific. The national specialist will also have considerable experience in socio-economic surveys or similar and will be familiar with the cultural diversity found in Papua New Guinea. Preference will be given to those with experience in internationally funded development projects, preferably those related to marine and coastal infrastructure development and climate change adaptation and mitigation options. The national specialist will have demonstrated skills in training and capacity building that will be needed to train local government and NGO staff undertaking this survey work.

153. **Duties to be Carried Out.** Duties of the specialist will include the following:

(i) Review the survey instrument prepared during the preparation studies of the project;
(ii) In consultation with the Climate Change Specialists, design additional questions that will guide local community thinking to identify potential adaptation measures for consideration under the project based on the localized climate change scenarios available;
(iii) In association with CCDA, provide training to the survey teams tasked with undertaking the surveys of vulnerable islands;
(iv) Assist CCDA personnel in interpreting the survey results and in the development of potential investments as adaptation measures against climate change;
(v) Develop an iterative process whereby consultations with local communities will identify priority adaptation measures for incorporating in local level government, district and provincial development plans;
(vi) Assist CCDA commit these vulnerabilities identified and development plans agreed to GIS database formats to assist in future project monitoring activities;
(vii) In association with the monitoring and evaluation specialists, identify indicators that represent the impact from adaptation measures financed under the project and incorporate these into routine project performance monitoring; and
(viii) Assist in identifying indicators in respect of subproject implementation funded by the small grants scheme.

**f. Early Warning and Disaster Management Specialist (International - 3 person-months, National - 5 person-months)**

154. **Background**. The project will finance the installation of communications equipment on existing towers with receiving facilities on the target 21 vulnerable islands. The benefit will not be limited to the inhabitants of these islands - but will have far wider impact - anyone within the coverage area where signals can be received and potentially up to 500,000 individuals. In order to determine what equipment will be needed in each location, the National Disaster Center will provide technical specialists to identify the appropriate equipment in each location. However, with the improved communication facilities provided through the project, the communities will be encouraged to develop disaster response strategies in the event of extreme climate events and other natural disasters. The Center currently provides such assistance on a limited basis through the Red Cross (an NGO operating in Papua New Guinea) that needs to be expanded to assist communities on these vulnerable islands. The consultants will assist the Center in developing capacities of communities to deal with natural disaster and extreme climate events.

155. **Qualifications and Experience.** The international specialist will have tertiary qualifications in social sciences or natural resource management or the equivalent from a recognized institution and will have more than 10 years' experience working in the field of disaster response strategies with isolated and vulnerable communities, some of which were in respect of climate change adaptation and mitigation for internationally funded development projects. Some of this relevant experience will have been undertaken in Papua New Guinea or in the Pacific. The national specialist will also have tertiary qualifications in a related field from a recognized tertiary institution in Papua New Guinea or elsewhere. S/He will have considerable experience in disaster response strategies or related area and will be familiar with the cultural diversity found in Papua New Guinea. Preference will be given to those with experience in internationally funded development projects relating to marine and coastal infrastructure development and climate change adaptation and mitigation options. The national specialist will have demonstrated skills in training and capacity building that will be needed to train local government and NGO staff undertaking this capacity building work.

156. **Duties to be Carried Out.** Duties of the specialist will include the following:

(i) In close association with CCDA and the National Disaster Center, review the training modules prepared by Red Cross to support communities in their development of emergency response strategies;
(ii) In view of the climate vulnerabilities identified in the 21 vulnerable islands, assist in the modification of such training material to adapt it to meet the needs of these communities;
(iii) Train NGOs and local government personnel in community capacity building initiatives;
(iv) Design additional training material to assist communities in their response strategies;
(v) In subsequent inputs, review the performance of staff and other personnel undertaking such training and recommend additional support as identified; and
(vi) Assist the monitoring and evaluation specialist to identify the changes in knowledge, attitude and practice found amongst communities to respond to extreme conditions.

### g. Policy Development Specialist (International - 3 person-months, National - 8 person-months)

157. **Background.** The Executing Agency of BRCC project is CCDA. It will be supported by PISCs for implementation and certain technical areas relating to climate change. CCDA has overall coordination responsibilities for climate change within the PNG Government and is seen as a cross sectoral institution that gives focus to climate change amid the various sectoral institutions. Being recently formed, capacities are developing amongst their staff and already, the organization has been responsible for the development of the initial draft and working papers of the Climate Compatible Development Strategy in accordance with the priorities of Vision 2050. They have a key role to play in policy development associated with climate change and attempts are currently underway to establish CCDA as an authority within Government in recognition of the fund raising initiatives that are likely to come under its management. Throughout this process, there will be a need for policy development and modification and the services of a policy specialist will add international support for policy development work likely to be undertaken in the coming few years.

158. **Qualifications and Experience.** The international specialist will have tertiary qualifications in economics or natural resource management or the equivalent from a recognized institution and will have more than 5 years' experience working in the field of policy development, some of which relating to climate change adaptation and mitigation. Some of this policy development experience will have been undertaken in Papua New Guinea or in the Pacific. The national specialist will also have tertiary qualifications in a related field from a recognized tertiary institution in Papua New Guinea or elsewhere. S/he will have considerable experience in policy development and will be familiar with the cultural diversity of Papua New Guinea. Preference will be given to those with experience in internationally funded development projects relating to marine and coastal infrastructure development and climate change adaptation and mitigation options. The national specialist will have demonstrated skills in facilitation of high level policy development and will be a respected by high level officials within the Government.

159. **Duties to be Carried Out.** Duties of the specialist will include the following:

(i) In close association with CCDA, assist in providing background papers to address policy issues determined by the Government;
(ii) Support CCDA in the conduct of policy development workshops and discussions;
(iii) Provide recommendations for the refinement of policies in response to Government preferred directions outlined at such workshops; and
(iv) Assist CCDA in the drafting of new policy documents for consideration by Government as required.

### 2. PNGPCL Enabling Framework Consultants

160. The PEFC package is intended to support PNGPCL with the development of an enabling framework through which climate change interventions can be incorporated into the routine business activities of those charged with developing and maintaining the coastal assets. The package will be recruited by PNGPCL under the guidance of CCDA as inputs required are of a technical nature. Recruitment of the PEFC package will be supported by the PISCs engaged by the PMU. A summary of proposed inputs are presented in Table LD3.8 while TORs for the various positions are described there-under. Inputs are not expected to be made until year 2 of implementation.

161. PNGPCL will engage a suitably qualified engineering consultant to establish the enabling

framework to strengthen the design, construction, operation, and maintenance of selected ports/wharves/jetties and associated infrastructure in order to improve the resilience of vulnerable social and economic support systems of isolated island communities to climate change impacts while climate proofing existing critical infrastructure. The project will establish the modalities to integrate climate change risk management into the day-to-day operations of PNGPCL and other agencies responsible for operating and maintaining coastal assets. It is also intended that the outcome of this project will become a model to replicated and build-on for other key maritime infrastructure authorities or agencies in Papua New Guinea.

### a. Background

162. PNG is vulnerable to natural hazards such as coastal flooding, inland flooding, landslides, and drought. Significant risks are posed by climate change to the PNG environment, economy and population, including from natural disasters worsened 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. It has been calculated that cost-effective climate change risk management measures could avert 65-85% of these losses.

163. In March 2010, in order to implement key goals outlined in the country national development strategy (Vision 2050), CCDA developed a broad-based consultative process culminating in the CCDS for PNG that outlines key measures that will shape development to be more climate resilient. With the preparation of the CCDS and related strategies and the establishment of the CCDA, substantial progress has been made at the adaptation policy and strategy level, and a commitment has been given to fast-track pilot adaptation programs in the future.

164. Nonetheless, the real task of implementing climate change risk management at the operational level is yet to begin. Climate change risk management is still to be integrated into policy, planning, and budgetary processes. There is limited understanding of climate change risks and a lack of technical capacity to integrate climate risk management into planning processes. Further, there is no evidence of significant training in climate change risk management at national, sectoral, or provincial/local levels to enable PNG to build this capacity.

165. Based on recommendations of an independent Expert Group, PNG was selected as one of the pilot countries and invited to participate in the Pilot Program for Climate Resilience (PPCR) which is part of the Strategic Climate Fund (SCF), a multi-donor Trust Fund within the Climate Investment Funds (CIF). The Pacific PPCR has four components: country activities in three countries (PNG, Samoa and Tonga) and a region-wide component. The PPCR provides financing through the multilateral development banks (MDBs) to support programs in the selected pilot countries.

166. The goal of the PPCR is to help countries transform to a climate resilient development path, consistent with national poverty reduction and sustainable development goals. In its nature as a pilot program and supporting learning-by-doing, PPCR implementation ultimately aims to result in an increased application of knowledge on integration of climate resilience into development. The PPCR complements, and goes beyond, currently available adaptation financing in providing finance for programmatic approaches to upstream climate resilience in development

planning, core development policies, and strategies.

167. With technical support provided by the ADB financed under Phase 1 of PPCR, the Government undertook, through a broad-based consultative process, the design and development of the country's Strategic Program for Climate Resilience (SPCR). The PNG SPCR seeks to achieve transformational change by supporting implementation of PNG national strategies, outlined in its Vision 2050, Development Strategy Plan (DSP), Medium Term Development Plan (MTDP), Public Investment Plan (PIP) and Climate Compatible Development Strategy (CCDS) to make PNG's development investments climate resilient or to facilitate "climate compatible development" on PNG's own terms. The overall outcome of the SPCR will be the enhancement of PNG's resilience to climate change through improved access to resources, knowledge, and tools and climate resilient infrastructure at the national, sector, district, and community levels. These are the prerequisites for effective social development, food security, and overall poverty reduction. In PNG, the SPCR will support achievement of these key pillars for climate resilient development.

168. In seeking this transformation, the SPCR will address key impediments facing PNG's current efforts to implement Vision 2050, DSP, MTDP, PIP, and CCDS. These include: (i) inadequate resources (human, technical, financial) at national, provincial, district, community, and sector levels to mainstream climate change risk management; (ii) inadequate knowledge and tools for mainstreaming climate change risk management in key sectors (food security, health, critical infrastructure) and in the national/provincial/district budget processes; and (iii) poorly designed infrastructure that is susceptible to climate change impacts.

169. The 'Building Resilience to Climate Change in PNG' project implements PNG's SPCR by providing support through four outputs. The outputs will be mutually reinforcing and will together achieve the purpose of the SPCR. First, through support provided under Output 1 (Climate change and vulnerability assessments carried out and adaptation plans developed for target communities), PNG will develop capacity for climate change vulnerability mapping and develop early warning systems and community emergency preparedness training. Output 1 will also establish a climate change financing framework which will support priority climate change risk management interventions in vulnerable communities. Additionally, tools, procedures and capacity for climate change risk management will be developed. Second, through support provided under Output 2 (Sustainable fishery eco-systems and food security investments piloted in nine vulnerable island and atoll communities), PNG will pilot food production, processing, and storage systems and eco-system-based, climate resilient fisheries management in vulnerable island communities. Third, through support provided under Output 3 (Enabling framework for climate resilient infrastructure established and communications network extended), PNG will develop 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. The project will also pilot and demonstrate a strategic risk-based approach to building climate resilience in vulnerable communities/sectors that can be replicated in other vulnerable communities and sectors, and through the Regional SPCR, to other vulnerable Pacific island developing countries.

The implementation of this strategic approach to building climate resilience under the project will provide, for the first time, quantifiable and defensible costs for building climate resilience with which to guide and inform scaled-up investments in climate change adaptation at the community, district, provincial, national and international levels, and provide valuable information to guide international negotiations on climate change financing.

170. PNG has considerable national government resources in the form of a government-financed annual $2.3 billion development program. However, given the significant vulnerabilities and limited knowledge, capacities and tools for utilizing these resources requires a systematic programmatic approach to piloting climate change risk resilience building in the planning and budget processes of government agencies such as PNGPCL.

**Table LD3.9: Summary Inputs for the PEFCs**

| B. Package 2 - PNG PCL Support Consultants | | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
|---|---|---|---|---|---|---|---|
| **International Consultants** | | | | | | | |
| Marine Infrastructure Specialist/Team Leader (I) | p-month | 8 | 6 | 6 | | | 20 |
| Climate Change Modelling Specialist (I) | p-month | 3 | | | | | 3 |
| Structural Engineer (I) | p-month | 4 | 4 | | | | 8 |
| Coastal Engineer (I) | p-month | 3 | 3 | | | | 6 |
| Ports Operation Specialist (I) | p-month | 3 | 3 | | | | 6 |
| Economist-Financial Analyst (I) | p-month | 4 | | | | | 4 |
| Climate Change Financing Specialist (I) | p-month | - | 4 | | | | 4 |
| **Subtotal** | | **25** | **20** | **6** | | | **51** |
| **National Consultants** | | | | | | | |
| Marine Infrastructure Specialist/Deputy Team Leader (N) | p-month | 8 | 6 | 6 | | | 20 |
| Structural Engineer (N) | p-month | 6 | 6 | | | | 12 |
| Civil Engineer | p-month | 6 | 6 | | | | 12 |
| Economist-Financial Analyst (N) | p-month | 4 | | | | | 4 |
| **Subtotal** | | **24** | **18** | **6** | | | **48** |
| **TOTAL** | | **49** | **38** | **12** | | | **99** |

171. The output aims to strengthen design, operations, and maintenance of select vulnerable ports/wharfs/jetties (and associated infrastructure) in order to improve the resilience of vulnerable social and economic support systems to climate change impacts while climate proofing existing critical infrastructure.

### b. Marine Infrastructure Specialist/Team Leader (International - 20 person-months, National/Deputy Team Leader - 20 person-months)

172. **Background.** With over 150 main islands and some 600 smaller uninhabited island/atolls, inter-island transport plays a significant role in economic activity and the distribution of food and other material goods through the 15 major ports, 27 private wharfs, and 30 provincial wharfs and jetties and numerous local fishing jetties. Whilst these facilities are administered by separate government agencies, the technical competence for design and maintenance resides with PNGPCL, yet its institutional capacity remains weak in addressing the impacts from climate change on coastal assets. The current condition of coastal facilities reflects the limited maintenance budgets provided as most are viewed as service facilities to support inter-island trade. Their operations are threatened by the impacts of climate change yet little has been done to address this issue. The existing policy and enabling framework to incorporate adaptation measures against climate change remain under-developed in this marine-based transport

environment with consequent impact on food security and socio- economic growth of the country.

173. **Qualifications and Experience.** The team leader/marine infrastructure specialist shall have tertiary qualifications in engineering from an internationally recognized institution and have at least 15 years' experience in planning and designing of coastal infrastructure projects specifically ports, wharves, jetties and coastal protection works in developing countries including PNG and other countries in the Asia-Pacific region. Experience in climate change adaptation and ADB project preparation in PNG or similar countries in the Asia-Pacific region will be an advantage. The Deputy Team leader shall have tertiary qualifications from a recognized tertiary engineering institution in PNG and will have a minimum of 10 years' experience in the planning and design of marine facilities (ports, wharves and jetties) and coastal protection works in PNG and/or other countries in the Asia-Pacific region. Project implementation experience with an ADB or other development partner financed project in the Asia-Pacific region will be an advantage. S/he will assist the international marine infrastructure specialist/team leader in managing the consultant team, coordinating with counterpart staff, and in the technical aspects of project preparation and design.

174. **Duties to be Carried Out.** The International Team Leader will manage the consultant team, coordinate with counterpart staff, and take the lead in different phases of the project. S/he will also ensure that the project outputs and deliverables include information generation and knowledge management for the benefit of PNG and the wider Pacific region. Detailed TORs are presented below:

(i) Development of climate change risk management policy and strategy for PNGPCL and provincial/district level governments, including drafting legislative changes required to integrate climate change risk management into the operation of ports managed by PNGPCL and provincial administrations;
(ii) Work jointly with the climate change modelling expert to develop district climate change projections and vulnerability assessments to guide the climate proofing of the ports/wharves/jetties and associated assets under the management of the PNGPCL and provincial/district administrations - downscale one or more pilot areas (dependent upon data availability) in order to develop site-specific climate change risk modeling and vulnerability assessments for climate proofing the ports/wharves/jetties and associated infrastructure under the management of the PNGPCL and provincial/district administrations;
(iii) Work jointly with the international port structural engineer, coastal engineer and national consultants (marine infrastructure specialist, port structural engineer and civil engineer) to evaluate building codes and engineering design criteria relevant to the planning, design, building, operation and maintenance of ports/wharves/jetties (and associated infrastructure) and revise to address climate change risks based on site specific climate change projections developed under this output;
(iv) Develop and present training programs to engineers, architects, developers, and planners on the climate proofed building codes relevant to ports/wharves/jetties (and associated infrastructure);
(v) Design and field test a manual for undertaking site specific vulnerability assessment of marine infrastructure and formulation of climate change risk management plans;
(vi) Work jointly with the international and national port operations specialist and national marine infrastructure specialist to train PNGPCL staff and

provincial/district officers responsible for managing wharves and jetties to undertake site specific vulnerability assessment of marine infrastructure and formulation of climate change risk management plans as part of preventative asset maintenance planning;

(vii) Coordinate with the international and national economist/financial analyst in the design and delivery of training programs in climate change risk cost/benefit analysis techniques to PNGPCL staff and provincial/district government officers responsible for wharves and jetties;

(viii) Design and implementation of a comprehensive climate change risk management awareness and education program within PNGPCL and provincial/district administrations, and for contractors, stevedores and private sector port/wharf/jetty workers; and

(ix) Coordinate with the climate change financing specialist on the evaluation of possible sustainable financing mechanisms to sustain climate change risk management activities after SPCR support finishes. Sourcing of innovative and sustainable financing for climate change risk management, and an appropriate financing mechanism – not only to cover internal operational costs but also to support the climate proofing of ports infrastructure on a permanent basis.

175. Responsibilities of the national Marine Engineer and Deputy Team Leader shall include:

(i) Assist the Team Leader in development and adoption of climate change risk management policy and strategy for PNGPCL and provincial/district level governments, including drafting legislative changes required to integrate climate change risk management into the operation of ports managed by PNGPCL and provincial level governments;

(ii) Work jointly with the Team Leader and climate change modelling expert to develop district (or where possible site specific) climate change projections and vulnerability assessments to guide the climate proofing of the ports/wharves/ jetties and associated assets under the management of PNGPCL. and provincial/district governments - develop downscaled projections for one or more pilot areas, including Alotau Provincial Government Wharf (dependent upon data availability) in order to develop site-specific climate change risk modelling and vulnerability assessments for climate proofing the ports/wharves/jetties and associated infrastructure under the management of the PNGPCL and provincial/district governments;

(iii) Work jointly with the Team Leader, international port structural engineer, coastal engineer and national consultants (structural engineer and civil engineer) to evaluate building codes and engineering design criteria relevant to the planning, design, building, operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this project;

(iv) Assist the Team Leader in developing and presenting training programs to engineers, architects, developers, and planners on the climate proofed building codes relevant to ports/wharves/jetties (and associated infrastructure);

(v) Assist the Team Leader in the preparation of design guidelines and field test the manual for undertaking site specific climate change vulnerability assessments of marine infrastructure and formulation of climate change risk management plans;

(vi) Work jointly with the Team Leader and international port operation specialist to train PNGPCL staff and provincial/district officers responsible for managing

wharves and jetties to undertake site specific climate change vulnerability assessment of marine transport infrastructure and formulation of climate change risk management plans as part of preventative asset maintenance planning and day- to-day operations;

(vii) Work jointly with the Team Leader to build capacity at provincial and district levels to assist and support provincial/district officers responsible for managing wharves and jetties to undertake site specific climate change vulnerability assessments of marine infrastructure and formulation/implementation of climate change risk management plans as part of preventative asset maintenance planning; and

(viii) Assist the Team Leader in the design and implementation of a comprehensive climate change risk management awareness and education program within PNGPCL and provincial/district government, and for contractors, stevedores and private sector port/wharf/jetty workers.

**c. Climate Change Modelling Specialist (International - 3 person- months)**

176. **Background.** The climate proofing of a coastal asset can only be entertained if one is aware of the threats faced under the influence of climate change. The detailed designs for the port upgrading must take into account these identified threats. The specialist will be required to use available historic climate data available from the existing facility in Alotau Provincial Government Wharf and apply this historic data to climate change models developed by CSIRO to generate anticipated threats the asset will be expected to endure. The specialist's task will be to generate the anticipated climate extremes and their probabilities for incorporation into engineering designs for upgrading the facility.

177. **Qualifications and Experience.** The international climate change modelling specialist shall have tertiary qualifications from a recognized institution with at least five years' experience in climate change modelling in developing countries including PNG and other countries in the Asia-Pacific region. Prior project preparation experience in ADB financed projects will be an advantage.

178. **Duties to be Carried Out.** The climate change modelling specialist will have the following responsibilities:

(i) Collect and evaluate historical climatic data and other pertinent data in the PNG archipelago and establish distinct climate zones jointly with the coastal engineer;

(ii) Based on earlier climate change projections work undertaken by CSIRO, develop district climate change projections and vulnerability assessments to guide the climate proofing of the port/wharves/jetties and associated assets under the management of the PNGPCL and provincial/district administrations;

(iii) Develop down-scaled climate change projections for one or more pilot areas prioritizing Alotau Provincial Government Wharf area (subject to data availability) in order to develop site-specific climate change risk modelling and vulnerability assessments for climate proofing the ports/wharves/jetties and associated infrastructure.

**d. Structural Engineer (International - 8 person-months, National - 12 person-months)**

179. **Background.** Specialist input in the field of structural engineering is needed to further develop engineering standards that can be used within the profession for all coastal infrastructure. These specialists will assist the Government in the review and upgrading of their engineering

standards for design and will contribute significantly to developing an enabling framework for climate proofing coastal infrastructure.

180. **Qualifications and Experience.** The international structural engineer shall have tertiary qualifications in engineering from a recognized institution and at least 15 years' experience in the design of marine infrastructure facilities, vertical structures and coastal protection works in developing countries including PNG and other countries in the Asia-Pacific region. Experience in climate change adaptation and ADB project preparation in PNG or similar countries in the Asia-Pacific region will be an advantage. The national structural engineer shall have at least 10 years' experience in the design of marine infrastructure facilities (ports, wharves and jetties), vertical structures and coastal protection works in PNG. Prior project experience in ADB projects will be an advantage.

181. **Duties to be Carried Out.** Specific responsibilities of the international structural engineer will include the following:

(i) Collect and evaluate structural codes (and pertinent building codes) for the design, construction, operation and maintenance of marine transport facilities, and associated infrastructure (access roads, utilities, bridges, drainage systems, vertical structures and coastal protection works) adopted or used in PNG;
(ii) Work jointly with the Team Leader, international coastal engineer, and national consultants (marine infrastructure specialist, structural engineer and civil engineer) to evaluate building codes and engineering design criteria relevant to the planning, design, building operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this project;
(iii) Assist the Team Leader in developing and presenting training programs to engineers, architects, developers, and planners on the climate proofed building codes relevant to ports/wharves/jetties (and associated infrastructure); and
(iv) Assist the Team Leader in the preparation of design guidelines and field test the manual for undertaking site specific climate change vulnerability assessments of marine infrastructure and formulation of climate change risk management plans.

182. Responsibilities of the national structural engineer shall include:

(i) Collect and evaluate structural codes (and pertinent building codes) for the design, construction, operation and maintenance of marine transport facilities and associated infrastructure (access roads, utilities, bridges, drainage systems, vertical structures and coastal protection works) adopted or used in PNG;
(ii) Work jointly with the international and national consultants to evaluate building codes and engineering design criteria relevant to the planning, design, building, operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this project;
(iii) Assist the Team Leader in developing and presenting training programs to engineers, architects, developers, and planners on the climate proofed building codes relevant to ports/wharves/jetties (and associated infrastructure); and
(iv) Assist the Team Leader in the preparation of design guidelines and field test the manual for undertaking site specific climate change vulnerability assessments of marine infrastructure and formulation of climate change risk management plans.

183. Responsibilities of the national structural engineer include:

(i) Collect and evaluate structural codes (and pertinent building codes) for the design, construction, operation and maintenance of marine transport facilities and associated infrastructure (access roads, utilities, bridges, drainage systems, vertical structures and coastal protection works) adopted or used in PNG;
(ii) Work jointly with the international and national consultants to evaluate building codes and engineering design criteria relevant to the planning, design, building, operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this project;
(iii) Assist the Team Leader in developing and presenting training programs to engineers, architects, developers, and planners on the climate proofed building codes relevant to ports/wharves/jetties (and associated infrastructure); and
(iv) Assist the Team Leader in the preparation of design guidelines and field test the manual for undertaking site specific climate change vulnerability assessments of marine infrastructure and formulation of climate change risk management plans.

**e. Coastal Engineer (International - 6 person-months) and Civil Engineer (National -12 person-months)**

184. **Background.** Building codes in PNG have been established as a guide for design activities used by consulting engineers. Whilst every attempt has been made to adopt international standards in engineering design, the current standards offer no consideration of potential impacts from climate change. The objective of this input is to have the specialist review the current building codes and where appropriate, to recommend upgrading of the standards so that climate change impacts can be accommodated. The process for upgrading the standards is time consuming given the procedures and dialogue needed to approve such changes. However, the technical aspect of design considerations provide a starting point after which the professional associations resident in PNG can assume responsibility for processing the recommended changes into the building codes.

185. **Qualifications and Experience.** The international coastal engineer shall have tertiary qualifications from a recognized institution majoring in coastal engineering and have at least 10 years' experience in wave and climate analysis, and design of coastal protection works in developing countries including PNG and other countries in the Asia-Pacific region. Experience in climate change adaptation and ADB project implementation in PNG or similar countries in the Asia-Pacific region will be an advantage.

186. **Duties to be Carried Out.** Specific responsibilities of the international coastal engineer will include the following:

(i) Working with the Climate Change Modelling Expert, collect and evaluate historical climatic data (and other pertinent data) for the establishment of distinct climate zones in PNG; and
(ii) Work jointly with the TL, international structural engineer, and national consultants (marine infrastructure specialist, structural engineer and civil engineer) to evaluate building codes and engineering design criteria relevant to the planning, design, building, operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this project.

### f. Ports Operations Specialist (International - 6 person-months)

187. **Background.** Given PNG's dispersed island communities to the east and north of the mainland (where a significant proportion of the population reside), the need for an efficient marine transport system and associated infrastructure cannot be overstated. The country has not been able to maintain the existing facilities and as a consequence, most are in a dilapidated condition and in need of immediate rehabilitation. This comes at a time when there is increasing realization that structures must be strengthened to support the impacts of climate change – increased wave action, king tides, increased precipitation and in the longer term, rising sea level. The volumes of passengers and cargoes however are relatively small with only three port facilities managed by PNGPCL with adequate throughput (and hence port charges) to maintain these facilities. As these are the few sources of operating revenue, port charges are spread throughout the country to maintain other non-viable facilities. Many of these do not charge port fees because of the social obligations of the Government and respective port manager. Further work is needed to identify alternative means of raising operating and maintenance revenues that are needed for sustainable operations. These are not being adequately provided by the respective authorities.

188. **Qualifications and Experience.** The international ports operations specialist shall have engineering qualifications from an internationally recognized tertiary institution at bachelors' level specializing in port and wharf operations. S/he will have at least 10 years' experience in the planning and operation of marine infrastructure in developing countries including PNG and other countries in the Asia-Pacific region. The specialist will be able to demonstrate hands on experience in the operations of small to medium port facilities, preferably in locations where the impacts of climate change have been addressed. Experience in climate change adaptation and international development projects in PNG or similar countries in the Asia-Pacific region will be an advantage.

189. **Duties to be Carried Out.** Specific tasks to be undertaken include the following:

(i) Collect and evaluate data on the system of port operations in PNGPCL managed ports, specifically ports that are considered at high risk to climate extremes;
(ii) Work jointly with the Team Leader, coastal engineer, international structural engineer and national consultants (marine infrastructure specialist, port structural engineer and civil engineer) to evaluate, building codes and engineering design criteria relevant to the planning, design, building, operation, and maintenance of ports/wharves/jetties (and associated infrastructure) and revise as necessary to address climate change risks based on site specific climate change projections developed under this output; and
(iii) Work jointly with the Team Leader and national marine infrastructure specialist to train PNGPCL staff and provincial/district officers responsible for managing wharves and jetties to undertake site specific vulnerability assessment of marine infrastructure, and formulation/implementation of port-specific climate change risk management plans as part of preventative asset maintenance planning and day-to-day operations of ports.

### g. Economist-Financial Analyst (International - 4 person-months, National - 4 person-months)

190. **Background.** Current practices in PNG for the rehabilitation of ports, wharves and jetties do not require an exhaustive economic analysis to be undertaken for coastal infrastructure. Only

on the higher cost and more sophisticated infrastructure are detailed engineering designs prepared as contractors call upon their experience under similar conditions. Rarely is an economic analysis undertaken that assesses the cost against economic benefits to the overall economy. With greater attention now being paid to climate change, there needs to be additional and compelling information that justifies the increase in design standards, the heavier, more costly structures that can withstand the impacts of climate change, and a means of justifying the additional costs that will invariably be incurred in the process. Specialist economics and financial analytical procedures need to be developed and capacities built to provide for such justification. Without an appreciation of the potential benefits from such incremental cost, there is little likelihood that the climate considerations will be incorporated in the design.

191. **Qualifications and Experience.** The international specialist shall have tertiary qualifications at masters' level from a recognized tertiary institution with specialization in economics and the evaluation of internationally funded development projects. S/he will have more than 10 years' experience in the financial and economic analysis of projects, some of which will include the analysis of ports establishment and rehabilitation. The specialist will be familiar with climate change impacts and have worked on at least three evaluations where climate change benefits have been incorporated into the economic analyses conducted. Familiarity with risk analyses will also be an advantage. Experience in the Pacific or other island communities will be a distinct advantage.

192. The national economist/financial analyst shall have tertiary qualifications from a recognized institution in PNG of at least bachelor's level. S/he will have at least 10 years' work experience in a relevant sector and at least 5 years of experience in project preparation in PNG. S/he will work under the guidance of the international Economist/Financial Analyst.

193. **Duties to be Carried Out.** Specific tasks to be undertaken include the following:

(i) Assist the International economist/financial analyst to undertake an analysis of the costs/benefits associated with the implementation of port-specific climate change risk management plans as part of preventative asset maintenance plan and day-to-day operations of ports;
(ii) Assist the international economist/financial analyst in the design and delivery of training programs in climate change risk cost/benefit analysis techniques to PNGPCL staff and provincial/district government officers responsible for development and operation of wharves and jetties.
(iii) Assist the International Climate Change Financing Specialist in undertaking a comprehensive review of climate change risk financing options/modalities for private sector operations/assets; highlighting those that are particularly relevant to PNG in particular, (a) identifying types of instruments, purpose/s, and formats; and (b) reviewing lessons learned from the experiences of the private sector in other countries in accessing risk financing to address climate change risks operations and assets;
(iv) Assist the International Climate Change Financing Specialist in developing an estimate of current and future financing requirements for climate change risk management initiatives by PNGPCL, determine financing gaps, and examine options to finance proposed climate change risks management measures and risk management plans for all ports infrastructure and the integration of climate change risk management into the day-to-day operations of PNGPCL; and
(v) Assist the International Climate Change Financing Specialist in evaluating and identifying possible sustainable financing mechanisms to sustain climate change

risks management activities by PNGPCL. Sources of innovative and sustainable financing for climate change risk management will be explored, and an appropriate financing mechanism will be established - not only to cover internal operational costs but also to support the climate proofing of ports infrastructure on a permanent basis.

### h. Climate Change Financing Specialist (International - 4 person- months)

194. Background. With a significant recent increase of funds available to finance adaptation measures against climate change, these sources need to be fully utilized where other multilateral agency and bilateral development agency funds are progressively shrinking. Significant resources are being made available through the various trust funds, and these need to be accessed in order to finance some of the more immediate climate change challenges.

195. **Qualifications and Experience.** The Climate Change Financing Specialist preferably has an academic background in financial management or economics in natural resources, environment, or related sectors with tertiary qualifications from a recognized institution. The specialist will preferably have at least 10 years of relevant experience in climate change financing work for multilateral banks or international or regional development agencies in developing countries in the Asia-Pacific region. S/he will work with the Team Leader in determining financing needs to manage risks associated with ports infrastructure, and develop appropriate climate change risk financing mechanisms (including insurance, and financing plans to climate proof or implement site specific risk management plans) for ports infrastructure.

196. **Duties to be Carried Out.** Specific tasks to be undertaken include the following:

(i) Conduct a comprehensive review of climate change risk financing options/modalities for private sector operations/assets; highlighting those that are particularly relevant to PNG in particular: (a) identifying types of instruments, purpose/s, and formats; and (b) reviewing lessons learned from the experiences of the private sector in other countries in accessing risk financing to address climate change risks operations and assets;

(ii) Estimate current and future financing requirements for climate change risk management initiatives by PNGPCL, determine financing gaps, and examine options to finance proposed climate change risk management measures and risk management plans for all ports infrastructure and the integration of climate change risk management into the day-to-day operations of PNGPCL; and

(iii) Evaluate and identify possible sustainable financing mechanisms to sustain climate change risks management activities by PNGPCL. Sources of innovative and sustainable financing for climate change risk management will be explored, and an appropriate financing mechanism will be established - not only to cover internal operational costs but also to support the climate proofing of ports infrastructure on a permanent basis.

### 3. NGO Facilitation Contracts

197. **Background.** The BRCC project will build capacities of local communities and local government to respond to the impacts of climate change. Outputs 1 and 2 are of immediate relevance to achieve this result. Existing resources are limited in number, are generally poorly trained to carry out their designated duties and lack the resources to provide services to beneficiary communities - particularly in the outer islands that are geographically dispersed and

where high transport costs prevail. Under these circumstances, it is not possible to rely on the established institutional infrastructure for the delivery of support services (including education and public health services). As the project will pilot a number of new approaches to climate adaptation, fisheries ecosystem management and food security in some 21 vulnerable islands plus an additional three additional Output 2 islands, the delivery mechanism of support services cannot utilize the existing agencies to pilot the new approaches. The project will require the services of a NGO familiar with community development, natural resource management and fisheries ecosystem management to assist in the implementation of the project - but also to provide the necessary capacity building by working closely with existing government structures in the provinces. In this way, communities will benefit from increased frequency and quality of support services in the designated areas of the project.

198. Vulnerability mapping is a means to increase community awareness of the threats from climate change and to assist communities in taking action to protect against such changes. There are typically three stages to a vulnerability assessment (i) the identification of the potential threats from climate change, (ii) the assessment of island assets to determine those items most likely to be damaged from these threats, and (iii) the preparation of prioritized investments and strategic actions that can assist in their protection. This requires an iterative process of community consultation combined with access to the best available knowledge on adaptation measures. Whilst much of the technical expertise resides within the provincial line departments, the lack of resources and limited budgets prevents government personnel from delivering the technical solutions (e.g. water supply and storage systems suited to island communities). Furthermore, for sustainability, identified solutions need to be established by the communities based on their own priorities – and not always those of the technical specialists. Such a consultative approach cannot be entertained under the current support mechanisms. The NGO facilitation contracts are needed to facilitate the proposed approach to vulnerability mapping.

199. Healthy ecosystems stand a better chance of withstanding any fluctuations to conditions in the environment. Communities therefore need to understand that unregulated use of their resources could lead to disturbance to normal ecosystem services that support livelihoods raising vulnerability to loss of livelihood support systems. The activities proposed in this output will support the project to build community capacity in resource management by raising awareness on the condition of their resources and help them take action to ensure better resilience to climate change for livelihood sustenance. The output aim is to assist communities to enjoy the ecosystem services they receive from their environment. This can only be achieved if they understood the condition of their resources, identify and address the negative impacts from human activities and work toward minimizing the impacts and building resilience through an ecosystem-based approach to resource management. The result will be achieved through four main activities (i) build community and local partnerships; (ii) strengthen local capacity to manage local resources; (iii) strengthen appropriate management approaches; and (iv) trial and replicate livelihood and climate change adaptation initiatives.

200. Food security is a daily challenge on remote and isolated island communities where natural resources are often unsuited to food production. The dependence on traded goods between the islands and mainland areas has evolved as a means of strengthening food security but is challenged by access and increasing transport costs. Increased focus is needed on the existing resources in order to maximize what might be possible with improved plant varieties and production techniques. Similarly storage techniques and food processing are other options to address periods of food insecurity. As each of these island resource base differs, a process approach is needed to resolve local food insecurity that includes (i) an assessment of existing production systems, (ii) the identification of periods of food insecurity, (iii) the identification of

production, storage and processing alternatives to address the food insecurity and (iv) the piloting of community confirmed solutions to address food insecurity. The facilitating NGO will assist the implementation of this process with the technical support from NARI and DAL and their provincial and district resource personnel. This again is an iterative process that requires gaining the confidence of communities and their leaders if meaningful pilots are to be trialed in these food insecure areas.

201. Qualifications and Experience. The organization will be able to substantiate significant experience in assisting communities undertake vulnerability assessments, in natural resource management and in food security in response to anticipated impacts from climate change. The organization must be able to demonstrate effectiveness in dealing with remote island communities but also in attending to the middle upper level echelons of government administration. The organization must have worked in the area of community development, in natural resource management and in food security in PNG and site a minimum of four engagements to assist in community and socio-economic development. Experience in the remote PNG islands would be a distinct advantage for any proponent. Ideally, the organization should also have gained some experience in dealing with any of the multi-lateral development agencies and - as an alternative, the bi-lateral development agencies. Evidence of working in the technical area of climate change would be seen as a distinct advantage.

202. **Duties to be carried out** in respect of vulnerability mapping include:

(i) Based on the localized climate projections provided by the project, conduct vulnerability assessments in the 21 target islands in cooperation with the LLG and district government personnel;
(ii) With the support of government personnel, representatives from PACs and other advisors as needed, hold a knowledge sharing workshop to identify a range of feasible solutions to address the vulnerabilities in the target islands;
(iii) Create a multimedia product (e.g. a video) that will help target communities to make informed decisions when selecting intended solutions / investments;
(iv) In consultation with the target communities, prioritize intended investments to address vulnerabilities;
(v) Assist in the development of the CCVAP and its implementation;
(vi) Assist local communities in having their prioritized investments incorporated in LLG and district plans;
(vii) Assist local communities to prepare funding applications for identified investments through either DISP or SGF funding sources;
(viii) Assist communities in the implementation of identified investments; and
(ix) Provide communications and liaison support to the local communities to assist them in dealing with higher echelons of government.

203. Duties to be carried out in respect of fisheries ecosystems include:

(i) Identify the state of the coastal habitats (coral reefs, sea-grass beds and mangrove forest) and fisheries and the existing threats based on existing studies observation of community members and on-site observations of the local staff (baseline status report);
(ii) Interpret the potential climate change hazards (sea level rise, sea water warming and associated coral bleaching, intense storm surge, extended drought) that may affect the site based on existing studies and maps;
(iii) Describe the effects of the changes of coastal habitats and fisheries on the food

supply and livelihood of the people based on their existing patterns of utilization;

(iv) In consultation with the local communities, identify priority areas suited for closer management and monitoring under LMMAs;
(v) Assist the communities in developing management plans for the target areas identified;
(vi) Provide training to local communities in the management of the reef and coastal resources;
(vii) Support community monitoring of the reserved areas and assist in their registration with LLG;
(viii) Pilot income generating initiatives within the reef ecosystem to improve livelihoods and food security; and
(ix) Support the local communities in their representation to higher levels of government to respect the LMMA activities.

204. Duties to be carried out in respect of food security include:

(i) Carry out a resource assessment on target islands for Output 2 initiatives in consultation with NARI, DAL and local LLG and district personnel;
(ii) Based on the farming systems identified, highlight the periods of food insecurity for the local communities;
(iii) In consultation with NARI and DAL, identify proposed solutions to address periods of food insecurity;
(iv) Consult the communities on these options and assist them in developing prioritized list of production, storage and processing interventions deemed technically feasible;
(v) Armed with the prioritized interventions, pilot the implementation of selected techniques in the target islands;
(vi) Promote their broader adoption amongst the communities by conducting exchange visits and field days as appropriate;
(vii) Support local communities in representing their interests with higher echelons of government.

### 4. NGO Disaster Management Emergency Response Training

205. **Background.** Output 1 of the project focuses on building capacities of communities, local partners, and local authorities in emergency planning both at task-specific and more strategic, longer terms measures to minimum the impacts from disasters. As an integral part of the CCVAP, it is envisaged that 21 disaster response strategies will be developed in consultation with local communities and will be based on the status of island improvements and assets, perceived threats in these locations from climate change and extreme climatic events. These will ensure effective and efficient responses to natural disasters in their locality and will have associated investments that can be financed under the SGF established under the project. To assist the development of these emergency response strategies in the vulnerable island communities, the services of an experienced disaster management organization is required to work in close association with PNG's natural disaster center and the beneficiary communities.

206. **Qualifications and Experience.** The organization will be able to substantiate significant experience in assisting communities undertake disaster preparedness and in emergency response practices. The organization must be able to provide evidence of participation in other disaster management activities associated with natural disasters including tsunamis, volcanic action, typhoons, and or flooding. The organization must be able to demonstrate effectiveness in dealing

with remote island communities but also in attending to the middle upper level echelons of government administration. The organization must have worked in the area of disaster management in Papua New Guinea and site a minimum of four engagements to assist in emergency response strategy development.

207. **Duties to be carried out** include the following:-

(i) As inputs to the CCVAP: (a) define the potential natural disasters and emergencies that could affect the local communities of the vulnerable islands; and (b) conduct an assessment of the risk of occurrence and the potential impact of a hazard on people and property within their location;
(ii) Through a process of consultation and collective learning, assist the communities in developing an emergency response strategy against identified threats;
(iii) Establish procedures for review and revision of local emergency responses and plans;
(iv) Conduct training and exercises for all emergency response staff and community leaders (down to clan level);
(v) Identify procedures for obtaining emergency resources, including personnel, equipment, facilities and financial resources;
(vi) Establish procedures by which the local emergency plan is to be implemented;
(vii) Develop procedures for notifying persons threatened by emergencies;
(viii) Coordinate response plans that address the provision of food, clothing, shelter, transportation, and medical services to victims of emergencies;
(ix) Establish priorities for restoring essential services;
(x) Capture and share progress of stakeholders in workshops, meetings and other channels on disaster management planning at island and LLG levels.
(xi) Provide an analysis for future work in the field of disaster management planning at LLG and district levels.

**5. Project Implementation Specialist**

**a. Project Implementation Specialist (International - 6 person-months)**

208. **Background.** As CCDA has limited experience in the implementation of internationally financed development projects and has limited human resources to prepare itself for the implementation of the project, it is proposed to provide an international project implementation specialist to undertake essential start-up activities including administrative procedures associated with imprest accounts, procurement of goods and works and the recruitment consulting services. The TOR described below will be performed by the one international project implementation specialist to be recruited by ADB (at the request of the Government) during an input of 6 person months - intermittent. In addition, the individual's expertise will also be made available to PNGPCL in its recruitment of PNGPCL Enabling Framework Consultants to be recruited through a firm. Inputs will be provided full time initially with part time inputs following during the latter phase of the contract after which the demand for such services will be taken over by the PISCs that the project implementation specialist will assist in their recruitment. The candidate engaged for this position should be prepared to mentor local counterpart staff in management and administration procedures to build capacities within CCDA.

209. **Qualifications and Experience.** The project implementation specialist will have graduate qualifications in business administration, engineering or other related fields and at least 10 years' experience in project implementation, procurement, preparation of tender and contract documents,

evaluation of bids, and contracts managements. The candidate will be fully conversant with ADB Procurement Guidelines (2015) and the Guidelines on the Use of Consultants (2013). The specialist will have demonstrated ability to work in a multidisciplinary team and possess excellent communication (written and oral) skills in English. Familiarity with PNG government procurement practices will be considered an advantage.

210. **Duties to be Carried Out.** The International Project Implementation Specialist will:

(i) Review the PAM as developed during the grant processing by ADB and the Government and provide guidance to the PMU regarding the use of, and required regular updating of the PAM.

(ii) In consultation with the PMU, assist in the preparation of the opening the imprest account for the project (one to be located in the PMU) and initial advance payment into the account through a withdrawal application.

(iii) Assist the PMU in establishing the PMU office and staff appointments both from Government sources and commercially engaged contracts appointed from the open market ensuring they have appropriate qualifications and experience to undertake the work as detailed in a duty statement for each position (also to be prepared).

(iv) Provide support to the PMU for the procurement of goods and consulting services in accordance with the Procurement Plan available in the PAM. These will include:

1. Assist the PMU in the preparation of short listing criteria for the selection of Project Implementation Support Consultants (PISC);
2. Assist the PMU in the preparation of QCBS documents for selection of PISC short list for the Contract;
3. Assist the PMU in the shortlisting of suitable PISCs;
4. Assist the PMU in the preparation of standard contracts for consulting services using ADB standard contract document templates;
5. Assist the PMU in the preparation of the documentation necessary for the procurement of office equipment, office upgrading, and vehicles;
6. Assist the PMU in the preparation of standard bidding documents for Civil Works Contracts using ADB standard bidding document templates;
7. Assist the PMU in the preparation of bidding documents and contracts for the first civil works contract;
8. Assist the PMU in the preparation of documents for the recruitment NGO Facilitation Contracts to assist in project implementation;

(v) Capacity Building

1. Carry out briefings for the PMU staff focusing as required on project management, ADB requirements and procedures for procurement, disbursement, reporting, M&E, and anticorruption;
2. Assist the PMU in carrying out workshops at provincial level to build capacity of the potential NGOs wishing to bid on the NGO Facilitation contracts;
3. Assist the PMU in carrying out workshops at the provincial level for provincial administrator representatives to familiarize them and build capacity relating to ADB procedures and regulations including for procurement, safeguards, and anticorruption and other project objectives and activities;
4. Provide advice on good project administration office procedures such as tracking correspondence and filing; and

5. Prepare standard formats for Quarterly and Annual Progress Reports, as well as draft format for Project Completion Report ensuring that monitoring criteria identified to measure project performance are collected at subproject start-up.

**b. Project Implementation Coordinator (International - 26 person-months)**

211. **Background.** The project requires an advanced level of competency in project implementation and management given the diversity of activities, the wide geographic coverage for implementation and the nature of proposed interventions that focus on building capacities in public and private institutions to plan for and mitigate the impacts of climate change and variation. The specialists will be required to assist the Executing Agency (CCDA) of the Government of PNG to implement the project where a capacity assessment has identified limitations in experience and also in human resources to undertake the tasks at hand. The international and national specialists will provide incremental resources to CCDA to plan and implement the project in accordance with the requirements of ADB and PPCR. Whilst no technical skills are considered necessary for these positions, familiarity with climate change, atoll island communities of the Pacific and ADB procedures in financial management and procurement will be a distinct advantage.

212. **Qualifications and Experience.** The Consultant will have at least 15 years' experience in management roles in internationally financed development projects and will have proven project management skills. S/he will have tertiary qualifications from an established and recognized institution, and will be fluent in the English language. S/he must also be familiar with the financial, reporting requirements and procurement procedures required by international development organizations. The Specialists will have well developed communication skills, both verbal and written, and have proven management skills to lead a team of international and local specialists.

213. **Duties to be Carried Out.** The Consultant will supervise the international and national consultants appointed to the PISC. Responsibilities include the following:

(i) The coordination of consultant inputs and be responsible for deliverables under the Project Implementation Support Consultant contract;
(ii) Provide routine progress reports to the National Project Director, the EA, ADB and PPCR on the progress of implementation outlining any issues that require consideration by higher authorities;
(iii) Support the EA in their development of annual work plans and budgets for the implementation of the project;
(iv) Develop a capacity building plan with orientation towards climate adaptation for CCDA and implementing agencies covering all sectors;
(v) Assist the PMU in coordinating the activities of the national implementing agencies and provincial administration staff;
(vi) Assist the PMU in attending to all social and environmental safeguards associated with project implementation;
(vii) Assist the PMU in managing the imprest accounts, financial management and reporting and in the replenishment of imprest accounts;
(viii) Assist in maintaining performance monitoring information as to implementation progress as well as routine impact monitoring through annual surveys managed by the PMU;

(ix) Assist the PMU in maintaining timely reporting of implementation progress to the financiers and the government through the management structures of the project;
(x) Provide guidance to various team members in the development of information packages and knowledge products for dissemination and web-posting; and
(xi) Maintain rigorous surveillance of the quality controls in the construction of coastal civil works financed under the project.

**c. Financial Management Specialists (International - 10 person-months, National 53 person-months)**

214. **Background.** As CCDA has limited experience in the implementation of internationally financed development projects and has limited human resources to assign to the tasks of financial management from within their organization, it is proposed to provide a significant input of international and national specialists to establish the financial management mechanisms and operate same for the PPCR financed project. The TOR described below will be performed by the two specialists to be appointed so that in the absence of the international specialist, the national specialist will assume responsibility for overall financial management and reporting. Most of the inputs will be provided in the first three years of project implementation after which the demand for such services will diminish because of the on-the-job training impact on local PMU staff members. Candidates engaged for this position should be prepared to mentor local counterpart staff in financial management procedures to build capacities within CCDA.

215. **Qualifications and Experience.** The international Financial Management Specialist will hold a Masters' degree in accounting, finance, and professional certification as a 'Certified Accountant' or 'Certified Practicing Accountant.' S/he will have at least 15 years professional experience in government or the private sector and ideally have experience working on development partners' funded projects. The specialist must be able to demonstrate the necessary skills used to establish project accounts to an international standard with the chart of accounts in accordance with the government's accounting system, operated on an approved international accounting package with double entry procedures.

(i) Prepare and maintain a detailed project implementation schedule for all project activities, and identify key milestones to be achieved, in accordance with the Project Administration Manual and grant agreements;
(ii) Review and design sound project financial management manual, which includes acceptable accounting standards, policies, and procedures. In designing accounting standards, policies, and procedures the expert should ensure that they lead to the production of: relevant; reliable; neutral; and comparable financial information for the users of financial statements;
(iii) Design the form and content of the key financial reports and statements; in setting up accounting system with Chart and Code of Accounts accommodate all categories outlined in Schedule III of the Grant Agreement in accordance with International Accounting Standards, IPSAS, or the equivalent national standards;
(iv) With assistance of the local IT specialist, install the new systems and procedures in CCDA and test the systems reliability, accuracy and integrity. Develop a strategy for longer term computerizing of the systems in CCDA.
(v) Develop and submit PMU's budget to input into CCDA's overall budget;
(vi) Develop new standard procedures for procurement and control of finances; develop payroll systems and capability;
(vii) Monitor the effectiveness of implementation of the tariff of levies, fees and charges, and ensuring that the potential for revenue collection set in place;

(viii) Develop recommendations in the areas of organizational structuring, management responsibilities (staffing, budgets, strategic planning, etc.), addressing staffing issues, expanding the management information system, developing and documenting internal operating procedures and establishing an internal training, and procedures;
(ix) Develop an in-depth financial management training programs for CCDA staff to ensure that accounting staff understand the procedures and practices of the new project financial management system;
(x) Conduct training sessions on government financial legislation and on application of the accounting policies and procedures manuals, including international accounting standards;
(xi) Prepare a training manual for continual training by the Accounting Department on the new accounting procedures. The manual should include the topics and contents to be covered as well as a schedule for regular, ongoing training programs to be conducted by the Accounting Department in association with the Office of the Auditor General on accounting and auditing issues for public entity staff.
(xii) Ensure that the systems and procedures set up for role definition, training analysis and staff development and succession are operating and can be sustained after TA completion.
(xiii) Prepare year end project financial statements and ensure timely recruitment of independent audit firm and submission of audited project financial statements to ADB within required period of time.
(xiv) Ensure that all recommendations reflected in management letters by the auditors are implemented, monitor and ensure integrity of financial management information on daily basis.

216. The national Financial Management Specialist will hold at least a bachelor's degree in finance, management or public administration and also hold professional membership of a recognized accounting body. He/she will have at least 10 years professional experience in government or the private sector and ideally have experience working on development partners' funded projects. S/he should have experience in computerized financial management packages.

217. The national consultant will support CCDA in administering the project, through the following activities:

(i) Assist in the preparation of project financial management manual. This will include project financial reporting and audit requirements for ADB and PNG government, annual budgeting timeline and formats, accounting treatment of major transactions, internal control system, chart and code of accounts to properly recognize assets, liabilities, income and expenditure and monthly, quarterly and annual reporting formats, terms of reference for external auditors;
(ii) Ensure that the project is implemented in accordance with these terms of reference, the laws of PNG, the terms and conditions specified in the grant agreement between the government and ADB;
(iii) Exercise efficient and effective implementation methodologies to ensure that the specified assurances under the control of CCDA are met;
(iv) Prepare and maintain a detailed project implementation schedule for all project activities, and identify key milestones to be achieved, in accordance with the Project Administration Manual and grant agreements;
(v) Manage and facilitate the timely disbursement of project funds in accordance with

ADB's Loan Disbursement Handbook;

(vi) Report regularly on the project accounts to the project steering committee;

(vii) Prepare project financial statements for auditors and submit the audited reports and financial statements to ADB before their due dates, ensuring the financial covenants under the project are complied with;

(viii) Assist the project manager in the providing quarterly disbursements against the projected target disbursement for the quarter; and

(ix) Other duties as required by the team leader.

**d. Procurement Specialists (International - 9 person-months, National - 25 person-months)**

218. **Background.** As CCDA has limited experience in the implementation of internationally financed development projects and has limited human resources to assign to the task of procurement from within their organization, it is proposed to provide a significant input of international and national specialists to undertake procurement of goods and works and the recruitment consulting services. The TOR described below will be performed by the two specialists to be appointed so that in the absence of the international specialist, the national specialist will assume responsibility for overall procurement under the project. In addition, their expertise will also be made available to PNGPCL in its recruitment of consulting services under the design and build contract to upgrade Alotau Provincial Government Wharf as well as in the recruitment of PNGPCL Support Consultants to be recruited through a firm. Most of the inputs will be provided in the first three years of project implementation after which the demand for such services will diminish significantly. Candidates engaged for this position should be prepared to mentor local counterpart staff in procurement procedures to build capacities within CCDA.

219. **Qualifications and Experience.** The procurement specialist will have graduate qualifications in business administration, engineering or other related fields and at least 10 years' experience in procurement, preparation of tender and contract documents, evaluation of bids, and contracts managements. The candidate will be fully conversant with ADB Procurement Guidelines (2015) and the Guidelines on the Use of Consultants (2010). The specialist will have demonstrated ability to work in a multidisciplinary team and possess excellent communication (written and oral) skills in English. Familiarity with PNG government procurement practices will be considered an advantage.

220. **Duties to be Carried Out.** The consultant will assist the Executing Agency (EA) to undertake procurement activities following ADB's Guidelines and those specified by the Government of PNG; the Procurement Plan; and the PAM. In particular, the specialists will:

(i) Review and update the Procurement Plan included in the PAM;

(ii) Assist in preparation of efficient packaging for the procurement of goods and works;

(iii) Prepare bidding documents for procurement of goods and works following ICB, NCB and shopping procedures based on the threshold indicated in the procurement plan;

(iv) Assist in the issuance and opening of bids for procurement of goods and works;

(v) Assist in the evaluation of bids, the preparation contracts and negotiations with contractors and suppliers;

(vi) Assist in the preparation of invitation for expressions of interest for recruitment of consulting packages;

(vii) Assist in the preparation of shortlist, Request for Proposals and evaluation of proposals for consulting services following QCBS or other procedures based on threshold set up in the Procurement Plan;
(viii) Assist in the preparation of contract and negotiations with consulting firms; and
(ix) Train and build capacity of EA staff in procurement of goods, works and consulting services in accordance with ADB's procedures.

### 6. Project Auditor (including SGF Audit)

221. **Background.** With the completion of the prioritized climate adaptation investments (representing potential subprojects), communities can either request financing through the SGF. Communities will be supported to prepare funding applications for financing by the SGF to be established under the project. Once approved, (in accordance with SGF eligibility criteria and evaluation procedures - Supplementary Document No. 13 to the RRP), funds will be released to implement priority climate change adaptation measures on the 21 target islands.

222. The SGF will be established under the project to finance as yet unidentified subprojects that conform with agreed eligibility criteria.[42] Funding for the SGF is comprised of grant financing from the project ($5 million) and 20% contributions in kind (the equivalent of $1 million) from the beneficiary communities (made up of labor to assist in construction of works and installation of equipment or local materials). The SGF will operate for the duration of the project. In view of the limited capacity of the Executing Agency in managing and administering such funds, the SGF will be administered by an independent financial administrator recruited by the PMU[43] and will be subject to annual audit of financial transactions and physical implementation performance to ensure the funds are used for their intended purpose.

223. Subproject applications for building climate resilience within the community will be prepared with the support of the facilitating NGOs and can include both hardware measures such as coastal stabilization facilities (biological and structural) and software measures such as income generation initiatives in response to climate change. Applications will be ratified by LLG, district and provincial administrations as being consistent with development plans then forwarded to the PMU/CCDA for evaluation (assisted by the subproject evaluation specialists). Conforming applications will be recommended to the Project Steering Committee for funding approval. Funds will be disbursed by the financial administrator (procured on a competitive basis) under instruction from the Steering Committee either to the community or the contractor engaged by the community subject to satisfactory confirmation of completion of the works (to be confirmed by the facilitating NGO). The provision of a financial administrator to disburse project funds is seen as a valuable capacity building exercise for CCDA staff whilst it reduced the fiduciary risk of the activity, ensuring that the funds will be applied to their intended purpose.

224. **Qualifications and Experience.** The firm to be engaged as the auditor will be registered as accounting firm in PNG and will be staffed with experienced and qualified accountants from recognized tertiary institutions, each with CA or CPA certifications. The firm shall have a minimum of 10 years' experience as a financial administrator/accountant in PNG and be experienced in the management of trust accounts. The firm shall be able to demonstrate familiarity with the financial management reporting requirements of the multilateral development agencies in particular the

[42] Eligibility criteria for subprojects for SGF financing are available in Supplementary Document No.13 of Annex 2 to the RRP.
[43] Terms of reference for the appointment are included in Section 6 of the PAM.

ADB.

225. **Objective.** The objective of the audit is to obtain a professional opinion on the financial management of SGF and on the PPCR funds received and expenditures made during the period from xx Month 2016 to xx Month 2017 with regard to goals and purposes in the SGF and PPCR Grant Agreement, and in accordance with the physical work plans for the subprojects and sound financial principles.

226. **Scope.** The audit will be carried out in accordance with the International Standards on Auditing and will include such test of transactions and the existence of the SGF assets as the auditor considers necessary under the particular circumstances. The auditor shall obtain an understanding of the accounting and internal financial control systems to the extent necessary in order to consider their suitability as a basis for the preparation of the SGF financial statements and to establish whether proper accounting records have been maintained by the Financial Administrator.

227. The auditor shall expect to obtain such appropriate evidence which the auditor considers sufficient to enable the auditor to draw reasonable conclusions there from. The nature and extent of the auditor's procedures will vary according to the auditor's assessment of the Financial Administrator's accounting system and the internal financial control system and may cover any aspect of the SGF operations. The audit will include both a financial and process audit. The audit shall analyze the problems observed in order to be able to submit concrete and operational proposals and recommendations.

228. The audit shall present amounts in both PNG Kina and USD and translation rates shall be clearly explained. Duties of the auditor include the following:

i. **General**

a. Comparing the use of funding with the terms of the Specific Agreement regulating their uses and reporting any deviation from the terms of the Specific Agreement;
b. Documenting the disbursement routines for the funding and assessing their reliability
c. Documenting the procedures surrounding procurement, reception of consignments and good payment routines
d. Analyzing the utilization of the funds in relation to the agreed work plans and commenting on deviations and their causes.
e. Identifying possible weaknesses creating opportunities for misappropriation of funds and suggesting remedies.

ii. **Expenditure**

a. Reviewing the financial reporting and its consistency with the accounting records;
b. Reviewing the routines and systems for budget follow up; and
c. Checking the procedures for payment of subprojects against contracts.

iii. **Risk Control**

a. Keeping watch for signs of double invoicing, maintaining of parallel accounts,

accounting to more than one funding source for the purchase of the same item etc. and

b. Assessing the capacity and competence of staff responsible for accounting and procurement.

iv. **Management Letter** - The audit is not designed to identify all significant weakness in the Project's system of internal financial controls. However, the auditor shall report to the Project Steering Committee and the ADB in writing following the audit visit those significant weaknesses in the systems or other business matters which come to its notice during the course of its normal audit work and which, in its view, require management's attention. The management letter should provide details of:

a. Any material weakness in the accounting and internal control systems which were identified during the audit;
b. Recommendations to rectify weakness so identified;
c. Any other matters, which the auditor considers, should be brought to the attention of the project's management and ADB; and

v. **Audit opinion** on the use of the imprest account procedures.

229. The written report shall be in English and shall include an executive summary which should be self-explanatory and self-contained and should include a summary of findings, conclusions and recommendation. Effort shall be given to ensure that the report is readable and self-explanatory, so that persons without an accounting/auditing background can read and understand it.

### 7. SGF Financial Administrator

230. **Background.** With the completion of the prioritized climate adaptation investments (representing potential subprojects), communities can request subproject financing through the SGF. Communities will be supported by facilitating NGOs to prepare funding applications for consideration by the PMU and Project Steering Committee. Once approved, (in accordance with SGF eligibility criteria and evaluation procedures in Annex 1), funds will be released to implement priority climate change adaptation measures on the 21 target islands.

231. The SGF will be established under the project to finance as yet unidentified subprojects that conform with agreed eligibility criteria. Funding for the SGF is comprised of grant financing from the project ($5 million) and 20% contributions in kind (the equivalent of $1 million) from the beneficiary communities (made up of labor to assist in construction of works and installation of equipment or local materials). The SGF will operate for the duration of the project. In view of the limited capacity of the Executing Agency in managing and administering such funds, the SGF will be administered by an independent financial administrator recruited by the PMU[44] and will be subject to annual audit of financial transactions and physical implementation performance to ensure the funds are used for their intended purpose.

232. Applications can include both 'hardware' measures such as coastal stabilization facilities (biological and structural) and 'software' measures such as income generation initiatives in response to climate change. Applications will be ratified by LLG, district and provincial administrations as being consistent with development plans then forwarded to the PMU/CCDA for

[44] Terms of reference for the appointment are included in Section 6 of the PAM.

evaluation (assisted by the subproject evaluation specialists). Conforming applications will be recommended to the Project Steering Committee for funding approval. Funds will be disbursed by the financial administrator (recruited on a competitive basis) under instruction from the Project Steering Committee either to the community or the contractor engaged by the community subject to satisfactory confirmation of completion of the works (to be confirmed by the facilitating NGO). The provision of a financial administrator to disburse project funds is seen as a valuable capacity building exercise for CCDA staff whilst it reduced the fiduciary risk of the activity, ensuring that the funds will be applied to their intended purpose.

233. **Qualifications and Experience.** The entity to be engaged as the financial administrator will be staffed with experienced and qualified accountants with tertiary qualifications from recognized tertiary institutions. The entity shall have a minimum of 5 years' experience as a financial administrator/accountant in PNG and be experienced in the management of trust funds. The public accountancy firm shall be able to demonstrate familiarity with the financial management reporting requirements of the multilateral development agencies, in particular the ADB. It should be noted that the firm appointed as project auditor will be ineligible to provide professional services under the SGF Financial Administrator.

234. **Objective.** The objective is to provide financial management services to the project for the purpose of disbursement of the SGF under the direction of the Project Steering Committee and providing routine financial management reports on the sources and uses of resources of the facility.

235. **Scope of Services.** The financial administrator shall be responsible for establishing an appropriate chart of accounts to administer the funds provided through ADB for the purpose of financing SGF and for administration of same. The administrator will provide accounting services, bookkeeping based on primary documentation provided by CCDA, and preparation and delivery of accounting reports. The financial administrator will, in consultation with the financial management specialist appointed under the PISC services contract, develop procedures for the disbursement of approved sums to either target communities or contractors engaged to carry out works under approved subprojects. The financial management specialist will produce monthly financial statements to the PMU and ADB that reports (i) disbursements from the facility, (ii) receipts from ADB and (iii) the cost for administering the facility. The operations of the SGF will be subject of an annual audit that will review accuracy of financial statements and review the processes adopted in the preparation of financial reports (process). The financial administrator will undertake the following:

i. Provide accounting services to comply with Government and ADB requirements based on international standards;
ii. With the assistance of the Subproject Evaluation Specialist and the Financial Management Specialist of the PISC, develop the necessary proforma application forms for subproject financing to be funded under the SGF;
iii. Develop procedures for the disbursement of funds against approved climate adaptation subprojects, including application form for payment, supporting document for the claim, and estimated processing time of five working days;
iv. Establish a chart of accounts that adequately describes the activities under the facility in accordance with PNG's financial reporting requirements;
v. Be responsible for the safety of all primary records during project implementation;
vi. Receive advance funds from, ADB with the initial advance being in 2017;
vii. Based on funding application approvals provided by the Project Steering Committee, disburse funds to the nominated recipient contained in the funding application;

viii. Maintain current financial statements of the account and provide monthly financial reports including statement of claims (accepted and rejected claims) to CCDA's PMU on the utilization of funds advanced by ADB within five to seven working days after end of the calendar month;

ix. In cooperation with CCDA's PMU, prepare 12 monthly projections of the requirements of the facility based on the anticipated flow of subproject applications;
x. Assist the PISC in the preparation of the funding requirements of the SGF for the following 12 months;
xi. Assist the PMU by preparing draft withdrawal applications for consideration by the Department of Treasury prior to submission to ADB;
xii. Provide the necessary support (cooperation and evidence of transactions) to the project auditor to facilitate the annual project audit that shall include the SGF; and
xiii. Other appropriate activities at the request of the National Project Director.

## VII. SAFEGUARDS

### A. Resettlement

236. Of the four project outputs, only Output 1 may possibly involve resettlement issues related to the construction or rehabilitation of infrastructure in the target vulnerable islands. These are likely to be financed under the SGF and may include coastal protection initiatives to protect the inhabitants and the island assets from the effects of climate change and variability. These may result in minor damage to structures, crops and trees, and temporary loss or disruption of the use of land or other assets caused by construction works and the movement of construction plant and materials to and from work sites. No impacts on businesses are expected and no households will be resettled.

237. Should subproject affected households require compensation for the loss of assets, this will be provided, according to Voluntary Land-use and Negotiated Settlement Framework (VLNSF),[45] and compensation related requirements of both ADB and the Government.

238. To minimize the potential resettlement impacts from project activities, implementing agencies will:

(i) consider design alternatives, favoring those which meet technical and financial requirements as well as other criteria;
(ii) where resettlement impacts are unavoidable, provide the financial and technical assistance to households as prescribed in the VLNSF; and
(iii) ensure adequate supervision of construction activities to ensure adherence to approved designs, and the EMP for each subproject.

239. A VLNSF for the project has been prepared to meet the requirements for implementation consistent with ADB's social and environmental safeguards. The VLNSF will be applied to all subprojects where there will be resettlement implications triggered. The VLNSF presents the specific policies and guidelines to guide the project's process for voluntary land use and resettlement. It can be applied to the marine ecosystems where local communities have ownership rights to the marine area. The establishment of LMMAs will facilitate the implementation of fisheries ecosystems activities whilst observing the requirements of the VLNSF.

45

240. Investment proposals for all subprojects in participating provinces will be assisted by facilitating NGOs and, where appropriate, will include a voluntary land-use plan for those subprojects with potential resettlement implications. In addition socio-economic baseline surveys (in effect the vulnerability assessments) shall be conducted for each target community and their findings and results about the subproject area documented in separate stand-alone reports. An independent socio-economic survey of all potentially affected household will be also be prepared and incorporated in where needed. These above activities will be carried out by CCDA and the PMU under the guidance of the social specialist recruited through the PISCs.

241. **Indigenous Peoples.** The Project is not expected to impact on any vulnerable group of indigenous peoples as defined under ADB's SPS. The project beneficiaries are part of mainstream Melanesian society and their institutions are not separate from mainstream society. They are not discriminated against (either in practice or law) based on ethnicity and are not vulnerable because they are the dominant groups locally and the main beneficiaries in the project context. The subprojects will benefit local communities, without any disproportionate risks against particular groups, and they will be implemented in a participatory manner.

242. The PMU at CCDA will be responsible to implement safeguard activities. The project will provide inputs of safeguards specialists (a full time national and a part-time international) to support the PMU in implementation of safeguards. CCDA will appoint a safeguards officer among its counterpart staff. The PMU will coordinate with other relevant line agencies such as Department of Lands and provincial authorities for survey, due diligence and implementation of required safeguard activities.

243. While differences exist across the many different cultural and language groups in PNG, Papua New Guineans are seen as diverse, but equal in terms of rights. There are no distinct ethnic or cultural minorities subject to discrimination or exclusion on the basis of ethnicity, and therefore they do not meet the ADB criteria for vulnerable groups requiring special protection. No ethnic groups will be affected by the project in specific ways. The program is therefore assessed as Category C for Indigenous Peoples.

## B. Environment

244. An initial environmental examination (IEE) was conducted for the overall project including activities proposed under each of the four outputs. Under Output 1, the only area of potential environmental impact may arise from the subprojects to be financed by the SGF. Given the initial vulnerability assessments conducted in Bougainville and Milne Bay during preparation, the most likely demand for subprojects is likely to come from water collection and storage facilities and also from coastal stabilization initiatives to prevent the impact from extreme weather events. The proposed investments are not likely to cause significant adverse environmental impacts as interventions are small in nature and can be readily mitigated by choosing the appropriate sources of materials to stabilize the coastal areas. NGOs will assist local communities in preparing their applications for funding and these recruited NGOs will be trained in the procedures needed to avoid environmental impacts. The prescreening of subprojects against environmental criteria will also minimized the risk for negative environmental impact. Subprojects will follow environmental assessment procedures stipulated in the environmental assessment and review framework.[46]

245. Activities under Output 2 are directed at environmental sustainability with the management of marine environs surrounding islands, replanting trees in the upper reaches of watersheds to minimize erosion, demonstrate the impact from vegetative strips along drainage lines and coast

46

lines to minimize the suspended matter deposition in reef areas. Income generating initiatives from the marine environment will only be entertained if it can be demonstrated to have no environmental impact in the immediate or long term. Similarly, the food productivity initiatives do not involve the addition of chemicals of fertilizers to the production systems but seek to improve organic content of soils and improve water utilization efficiency. New varieties of drought tolerant species are unlikely to create environmental impact.

246. Activities under Output 3 are largely capacity building except for the installation of transmitting equipment and if successful in the grant application, the upgrading of Alotau Provincial Government Wharf in Milne Bay. Apart from some noise pollution issues during installation, these are unlikely to have environmental impacts as the equipment will be delivered and installed using helicopters in the case of towers while for the rehabilitation of the wharf, pre-formed concrete slabs will be used to minimize environmental impacts. Project management initiatives are environment neutral. The project is classified as B for environment as defined in the ADB Safeguard Policy Statement (June 2009).

247. Pursuant to ADB's Safeguard Policy Statement (2009) (SPS),47 ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the SPS. All financial institutions will ensure that their investments are in compliance with applicable national laws and regulations and will apply the prohibited investment activities list (Appendix 5) to subprojects financed by ADB.

## VIII. GENDER AND SOCIAL DIMENSIONS

248. Although women have equal rights under the constitution and PNG is a signatory to the Convention on the Elimination of Discrimination Against Women, gender inequality remains a severe impediment to poverty reduction and development. Women have lower levels of educational attainment and literacy; there is a significant gender gap (56% of women are literate compared to 64% of men) and only 6.1% of girls are enrolled at upper secondary school level. In remote rural areas, students often have to travel long distances to school by canoe, dinghy or ship. Since secondary schools are located further away than primary schools, a significant barrier to girls' education exists, as parents fear for their safety and security and thus discourage girls from continuing their education and lowering retention rates.

249. High rates of gender-based violence exacerbate the generalized HIV/AIDS epidemic putting women at greater risk than men of contracting the virus. Women experience disproportionate disadvantage from the effects of climate change since they are the main providers and users of household water, provide most of the food from subsistence crops, and do much of the fishing. Women are frequently drivers of community development initiatives, and ensuring women benefit from the project activities, will be an important means of empowering women and improving their access to resources and assets, and participation in decision making. The Summary Poverty Reduction and Social Strategy describes the gender and social dimensions.[47]

### A. Design Features to Ensure Tangible Benefits to Women

250. The design features are gender responsive and take into account local aspirations as identified during participatory enquires. Rather than setting gender equity targets, the project will focus on gender empowerment as women have expressed the desire to be trained, to be kept up to date with community developments, to participate in planning and decision making and to be consulted on subproject design in regards to community and their specific needs (e.g.

47

women are the most frequent users of latrines over the sea largely due to cultural reasons and the relocation of pit latrines will require significant consultation with women on their siting). Gender based targets outlined in the Gender Action Plan include:

(i) Full consultation of women in the conduct of vulnerability assessments on the 21 vulnerable islands;
(ii) Full participation of women in determining priority investments for the SGF;
(iii) Full consultation for women in determining the marine ecosystems interventions to be piloted and agricultural farming systems to be upgraded under Output 2 of the project;
(iv) Full consultation with women on design and implementation of activities;
(v) Female membership of climate change committees that might be needed to inform project activities;
(vi) Guaranteed women's access to funding as a portion of the SGF will be reserved for use by women, youth and vulnerable segments of society;
(vii) Involvement of both women and men in training;
(viii) The requirement for a minimum of 30% of facilitating NGO staff to be women under the facilitation contracts; and
(ix) Strengthening of the capacity CCDA to mainstream gender and protect people from HIV/AIDS.

### B. Implementation Arrangements

251. For project implementation and monitoring, the PMU established in CCDA will hire one social/gender and community development specialist who will be primarily responsible for implementation of the Gender Action Plan (GAP) and for working with CCDA to ensure the Consultation and Participation Strategy and gender measures are fully incorporated in the activities of the PMU. The specialist will ensure that project activities conform with the social safeguards designed for the project. More specifically, the specialists will:

(i) Support the PMU in the implementation of the Gender Action Plan and other social guidelines prescribed for the project;
(ii) Assist in the training of vulnerability assessment teams prior to their investigations in the 21 vulnerable islands;
(iii) Ensure that facilitating NGOs have the appropriately skilled members to be able to give effect to the Gender Action Plan and the Consultation and Participation Strategy;
(iv) Undertake regular review visits to project locations to ensure the NGOs and provincial staff are applying the social obligations with respect to gender and participation; and
(v) Ensure that the CCDA and PMU staff have the required communication skills and familiarity with the social safeguards to give effect to the gender empowerment objectives of the project.

252. The PMU will have resident community development, gender and social safeguards expertise engaged for the project to ensure that gender issues are addressed during project implementation. Resources have been allocated within the operations of the PMU for such an appointment as have budgets for their intended training activities of project implementation staff and for regular monitoring visits to beneficiary island communities. The Gender Action Plan is presented in Linked Document No.9 where the gender related requirements are specified.

Monitoring of gender indicators has been included in the DMF[48] and the Monitoring and Evaluation specialist from the PISC will ensure that gender disaggregated data is collected throughout all project activities.

[48] Design and Monitoring Framework presented below in Section IX.

## Table LD3.9: Gender Action Plan

| Outputs | Activities and performance targets | Responsibilities |
|---|---|---|
| **A. Project implementation overall** | | |
| Increase gender awareness and empower women to participate equally during project design, implementation and monitoring | • During design, implementation, and monitoring all community consultations will have a target of 40% female participation, and provision also made for separate men's and women's meetings.<br>• Provide training on gender equality and HIV/AIDS to the PMU, government staff involved in implementing the Project, and pilot communities, to improve understanding and capacity to implement the GAP. (Training to include prevention of violence against women). Target: at least one training workshop, tailored to the specific audiences, including one for staff in each of the five provinces and one for each pilot community.<br>• Establish a gender balance in hiring PMU and SGF staff, and ensure PMU has adequate gender | PMU<br><br>PMU, CCDA; BAHA<br><br>HRD CCDA |
| **B. Specific activities and targets for individual outputs** | | |
| **Output 1. Climate responsive investment approaches identified and implemented by vulnerable** | | |
| Community climate responsive investment approaches identified and implemented | • Vulnerability assessments and household surveys to collect sex-disaggregated data will include gender analysis to identify differentiated impacts of climate change on men and women. All questionnaires and assessment methodologies are to be standardized, trialed, and reviewed by the Social Development specialists, to ensure questions are gender sensitive and assessment teams are trained to capture both women's and men's views.<br>• Develop a training manual for Output 1, drawing on existing materials used by NDC, IOM and others. This will contain guidelines to ensure women are consulted on the design, and implementation of community disaster risk management plans, the establishment of emergency shelters (where appropriate), and the provision of emergency equipment for such shelters, as well as the location, and maintenance of water supplies, sanitation, and other facilities. Separate sanitation / hygiene facilities to be constructed for men and women.<br>• Arrange for all Climate Change Committees or other relevant community bodies (e.g. WASH committee/disaster management group) to include 50% women, and to receive training in their roles and responsibilities, emergency preparedness, and community development planning for small scale projects.<br>• Ensure that selection criteria for subprojects consider women's and girl's access to services such as education, health facilities, and, markets. Indicator: Relevant criteria included in SGF guidelines, and 20% of adaptation funding to be earmarked for use for women's or girl's chosen activities (to be decided by women themselves). | PMU, CCDA<br><br>Training providers<br><br>PMU, DCD, NDOH, DHO<br><br>PMU, DCD, training providers, and CCC<br><br>PMU and SGF<br><br>NDC, PMU, CCDA |

| | | |
|---|---|---|
| | Early warning systems and emergency /disaster management planning consider the special vulnerabilities of women, children, elderly and disabled community members. | PMU |
| **Output 2. Sustainable fishery eco-systems and food security investments piloted in nine vulnerable islands and atoll** | | |
| Sustainable fishery eco-systems and food security investments piloted in nine vulnerable island and atoll communities. | • Household surveys and community vulnerability surveys have specific questions on food security and access to resources for men and women, in order to inform interventions e.g. land tenure and use by gender; gender division of labor; fertility level and decision-making, food allocation and nutrition levels within households etc. Surveys to be conducted by joint teams of CCDA, PMU staff, and NGOs trained in survey data collection / enumeration by Social Development Specialists.<br>• Fishery eco-systems management and adaptation plans include both male and female specific fishing and marine gathering domains and activities.<br>• Food production, processing, preservation, and storage training courses have approximately 50:50 male/female participation.<br>• Implementation teams provide equal access to resources (agricultural and fisheries information, tools, techniques, training, marketing advice, and improved cultivars, and planting materials) for both men and women. | PMU, CCDA, NGOs<br>CFD<br>A,<br>PM |
| **Output 3. Enabling framework for climate resilient infrastructure established and communication network** | | |
| Enabling framework for climate resilient infrastructure established and communications network extended. | • Climate change risk management, building codes, and design standards for PNG Ports and Provincial/District Governments, demonstrate that needs of women and children are provided for.<br>• Climate change training materials for engineers, architects, developers and planners, include the specific needs of women and men. | PMU, CCDA<br>PNG<br>Port |
| **Implementation Arrangements**<br>The Gender Action Plan will be implemented by the PMU in CCDA, which will include two Social/Gender Specialists (one national and one international) to be located in the PMU, supervised by the PMU Director. They will be responsible for the community development, and gender aspects of the Project. These specialists will be responsible for incorporating the GAP into project planning, implementation, and monitoring frameworks including community consultations, awareness training, capacity building and establishment of sex-disaggregated indicators for project performance and monitoring. The PMU will report progress on GAP | | |

BAHA = Business Coalition against HIV and Aids; CCA and DRM = climate change adaptation and disaster risk management; CCC = Climate Change Committee; CFDA = Coastal and Inland Fisheries Development Agency; DAL = Department of Agriculture and Livestock; DCD = Department of Community Development; DMF = Design and Monitoring Framework; DHO = District Health Office; GAP = Gender Action Plan; HRD = Human Resource Department; IA = Implementing Agency; NARI = National Agricultural Research Institute; NDC = National Disaster Centre; NDOH = National Department of Health; NGO = non government organization; CCDA = Climate Change Development Authority; PMU = Project Management Unit; WASH = water, sanitation and hygiene projects; WDC = Ward Development Committee.

# IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

## A. Project Design and Monitoring Framework

**Impact**

| The project impact is increased resilience to the impacts of climate variability and climate change. | | | |
|---|---|---|---|
| **Project Results Chain** | **Performance Indicators with Targets and Baselines** | **Data Sources and Reporting** | **Risks** |
| **Outcome**<br>Improved capacities of communities (in vulnerable atolls and islands), government agencies, and civil society to plan and respond to the impacts of climate change. | By 2021<br>a. Gender responsive CCVAPs prepared under the project used in formulating LGL, district and provincial development plans for CC adaptation.<br>b. 50% reduction in the incidence of waterborne and water-related diseases in target communities.<br>c. Fish populations increased by 20% in target LMMAs and food insecurity reduced by 20% from baseline figures.<br>d. Pilot marine ecosystem and food security approaches developed under the project applied in locations outside the immediate project area.<br>e. Early warning messages broadcast and emergency responses coordinated increased from 0 to 10 and 100 per year respectively in the coverage area by 2021. | a. KAP surveys of planning staff at respective levels compared to baseline.<br>b. Gender-disaggregated DOH database reports<br>c. LMMA monitoring reports.<br>b. CFDA annual work plans and budget requests: DAL annual work plans and budget requests.<br>e. National Disaster Centre annual reports. | Resources under the SGF will not be applied to the intended purpose.<br>Capacity building proposed in the design will not be extended to all intended beneficiaries/recipients. |
| **Outputs**<br>1. Climate change and vulnerability assessments carried out and adaptation plans developed for target communities. | By 2021<br>1a. Twenty one vulnerable island communities with CCVAP, climate resilient development plans incorporated into LLG, district and provincial plans.<br>1b. Gender responsive disaster response strategies developed in 21 vulnerable island communities. | 1a. Provincial development plans in provincial administrator's office.<br>1b. NDC disaster reports. | Capacities of provincial staff prevent the program from being properly implemented.<br>Sanitation facilities are not a priority for local communities.<br>Motivation of provincial staff is low because resources are |

| Project Results Chain | Performance Indicators with Targets and Baselines | Data Sources and Reporting | Risks |
|---|---|---|---|
| | 1c. Provincial (50) and NGOs (50) staff (30% being women) trained in adaptation to climate change. | 1c. PMR and training evaluation reports. | channeled through NGOs. |
| 2. Sustainable fishery eco-systems and food security investments piloted in nine vulnerable island and atoll communities. | By 2021<br>2a. Nine LMMAs established, registered and operational with approved management plans being implemented.<br><br>2b. Adaptation measures against climate change in home gardens demonstrated in nine target communities.<br><br>2c. Nine mangrove forest rehabilitation demonstrated.<br><br>2d. Three watershed rehabilitation demonstrated in communities adjoining target vulnerable islands.<br><br>2e. Food processing and preservation initiatives piloted in nine island communities (50% women). | 2a. PMR<br><br>2b. PMR<br><br>2c. PMR<br><br>2d. PMR<br><br>2e. PMR | Capacities of villagers to participate in marketing and food processing initiatives. |
| 3. Enabling framework for climate resilient infrastructure established and communications network extended. | By 2021<br>3a. Upgraded engineering design standards for coastal structures used in port, wharf and jetty design.<br><br>3b. Building codes and design standards upgraded to incorporate climate change considerations.<br><br>3c. Climate risk management policy developed and adopted by PNGPCL.<br><br>3d. PNGPCL, national and provincial staff (30% being | 3a. KAP surveys of design engineers (both government and private) c.f. baseline.<br><br>3b. Confirmation by professional institution.<br><br>3c. National policy statement prepared.<br><br>3d. PMR and training evaluation reports. | Tower owners will not allow the project to access the towers for installation of equipment.<br><br>Counterpart funding will not be allocated to allow the PMU to operate efficiently. |

| Project Results Chain | Performance Indicators with Targets and Baselines | Data Sources and Reporting | Risks |
|---|---|---|---|
| | women) trained in the incorporation of risks from climate change in coastal port/jetty operations. | | |
| | 3e. By 2018, five VHF repeater stations established on existing towers and receiving substations established in 21 target islands | 3e. PMR | |
| | 3f. By 2016, PMU established, staffed and equipped and monitoring systems developed. | 3f. PMR | |
| | 3g. By 2016, project activities and performance posted on project website. | 3g. Website inspection. | |

**Key Activities with Milestones**

1. Climate change vulnerability assessments carried out and adaptation plans developed for target communities.

1.1 Prepare localized projections of climate change in 21 target islands by Q1 2017.

1.2 Undertake CCVAP mapping in 21 vulnerable islands by Q1 2017.

1.3 Develop CCVAP for endorsement of the community and integration into the district development plans by Q2 in 2017

1.4- Establish SGF to finance investments identified during CCVAP by Q3 2017.

1.5- Supply and install 200 water supply and 100 sanitation facilities in target islands by Q4 2018.

1.6- Develop emergency response strategies and train inhabitants of target islands by Q4 2018.

2. Sustainable fishery ecosystems and food security investments piloted in nine vulnerable island and atoll communities.

2.1 Sustain the integrity of fishery ecosystems by piloting a ridge to reef approach in target communities by Q4 2019.

2.2 Pilot food security initiatives (production, processing and storage) in target locations by Q4 2019.

2.3 Provide NGO support to facilitate delivery of fisheries ecosystems and food security initiatives and build capacities of communities and provincial/district staff by Q2 2017.

3. Enabling framework for climate resilient infrastructure established and communications network extended.

3.1- Support policy dialogue for the design and maintenance of port infrastructure by end 2018.

3.2- Revise appropriate engineering standards to accommodate the impact of climate change in infrastructure design by end 2018.

3.3- Build capacities of national and provincial port and wharf design specialists to incorporate economic returns achieved from incorporating climate resilience in feasibility studies by end 2019.

| **Key Activities with Milestones** |
|---|
| 3.4- Develop options for the sustainable financing of port rehabilitation and upgrading taking into account climate change by end 2018.<br><br>3.5- Expand communications network in five provinces through radio repeater stations and island receivers by Q4 2017.<br><br>3.6- Train CCDA staff in procurement, financial management, and implementation coordination, among others.<br><br>3.7- Maintain the project performance and management systems designed by the PISC throughout implementation.<br><br>**Project Management Activities**<br><br>Establish PMU, appoint incremental staff, second Govt. employees to the PMU by end 2016.<br><br>Train CCDA staff in procurement, financial management, and implementation coordination, among others. Recruit implementation support consultants by Q4 2016.<br><br>Establish project performance and financial management systems for project and SGF by Q4 2016. Complete monthly, quarterly and annual progress and financial reporting to the Government and ADB - ongoing.<br><br>Participate in Mid Term by end 2018 and Project Completion Reviews by end 2021. |
| **Inputs**<br><br>CIF-PPCR Grant: $24.25 million<br><br>Government: $2.04 million<br><br>Beneficiaries: $1.00 million |
| **Assumptions for Partner Financing**<br><br>Not Applicable |

ADB = Asian Development Bank; CIF = Climate Investment Fund, CCVAP = Climate Change Vulnerability Adaptation Plans; CFDA = Coastal and Inland Fisheries Development Agency; DAL = Department of Agriculture and Livestock; DOH = Department of Health; KAP = knowledge attitude and practice; LLG = local level government; LMMA = local marine management association; NDC = National Disaster Center; NGO = non-government organization; CCDA = Climate Change Development Authority; PISC = Project Implementation Support Consultant; PMR = project monitoring reports, PMU = Project Management Unit; PNGPCL = PNG Ports Corporation Ltd.; PPCR = Pilot Program for Climate Resilience; SGF = Small Grants Facility; VHF = very high frequency.

Source: Asian Development Bank.

## B. Monitoring

### 1. Project Performance Monitoring System

253. The guiding documentation for the establishment and operational aspects of the PPMS is the PPCR Results Framework and the PPCR M&R toolkit defining the five core indicators.[49] The PPCR results framework establishes a basis for future monitoring and evaluation of the impact, outcomes and outputs of PPCR-funded activities, and ensures that PPCR-relevant results and indicators are integrated in the country's own M&E systems at the project/program.

254. The PPMS that will be developed will record the overall technical performance; evaluate delivery of activities and facilities; assess achievement of the project's objectives; and measure its social, economic, financial and institutional impacts. The PMU will be responsible for developing and operating the PPMS with assistance from the PISC and information provided by the implementation agencies and the provincial administrations, and will report quarterly to ADB and the government. Progress monitoring, safeguard monitoring and benefit monitoring and evaluation will be carried out regularly during project implementation. Post-evaluation will be carried out three years after project completion. A baseline survey covering both target and control groups, and periodic surveys will be carried out by collecting data disaggregated by income group, sex, and other characteristics as appropriate. The EA will maintain a project- specific web-page, in English and Pidgin, on its official web-site, for wider dissemination of procurement and distribution related information, and to provide a feedback mechanism.

### 2. Compliance Monitoring

255. A number of assurances have been given by the Government to ensure the smooth implementation of the project. Those are subject to Grant covenants (Grant Agreement - Schedule 5). The ADB will monitor compliance with those covenants throughout project effectiveness and implementation via regular review missions, quarterly progress reports submitted by the PMU, and review of project accounts and procurement procedures.

### 3. Safeguards, Gender and Social Monitoring

256. CCDA/PMU will monitor all activities associated with safeguards. The monitoring will include reporting on progress of activities in the implementation schedule with particular focus on public consultations and safeguards. CCDA/PMU will prepare and submit semi-annual safeguards monitoring reports to ADB. The project's safeguard frameworks specify detailed arrangements for monitoring and reporting.

257. The safeguard specialists at PMU will assist CCDA in monitoring of safeguard activities and preparation, review and disclosure of safeguard monitoring reports. The outline of safeguard monitoring reports are provided below.

[49] The five PPCR core indicators are: (1) Degree of Integration of climate change in national, including sector, planning; (2) Evidence of strengthened government capacity and coordination mechanism to mainstream climate resilience; (3) Quality and extent to which climate responsive instruments/investment models are developed and tested; (4) Extent to which vulnerable households, communities, businesses and public sector services use improved PPCR supported tools, instruments, strategies and activities to respond to climate variability or climate change; and (5)**.** Number of people supported by the PPCR to cope with the effects of climate change. (https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/PPCR_Monitoring_and_Reporting_Toolkit_March2015.pdf)

## Contents of Resettlement Monitoring Report

| Heading/Section | Contents |
|---|---|
| Introduction | Brief background on the project/subproject and progress status;<br>The project's category and planning documents (original, updated or new plans) on resettlement impacts;<br>Institutional arrangements and budget allocation for resettlement/social management;<br>Arrangement for the monitoring. |
| Monitoring Activities | Methodology for monitoring (whether checklists prepared etc.);<br>What period the monitoring covers;<br>Main activities - site visits, consultations, survey etc. |
| Monitoring Results and Actions Required | Progress and performance in implementation of safeguards (how they were implemented, what are the outputs, etc.);<br>Results on consultations, disclosure and grievance redress (whether they have been effective);<br>Whether the implementation comply with the project's safeguard framework;<br>Results on safeguards outcome;<br>Compliance on monitoring and disclosure (whether reports have been submitted, posted on website);<br>Whether any issues and corrective measures identified to achieve safeguards objective. If yes, actions with target dates and responsible agency/person);<br>Follow-up item/plan for next report. |
| Summary and Conclusions | Summary of main findings;<br>Main issues identified and corrective actions noted;<br>A table on follow-up action which can be updated each period to track completion of actions required. |
| Attachments | Monitoring checklist;<br>Photographs;<br>Additional information as required. |

## Contents of Environmental Monitoring Report

| Heading/Section | Contents |
|---|---|
| Introduction | Brief background on the project and subproject;<br>Institutional arrangements for project management and environmental management. |
| Monitoring Activities | Who participated in the monitoring;<br>Methodology for monitoring (whether checklists prepared etc.); |

| Heading/Section | Contents |
|---|---|
| | When the monitoring was undertaken and what period it covers;<br>Summary of other monitoring undertaken in the period (i.e. form contractor's monthly reports and if any survey/sample monitoring undertaken);<br>Main activities - observations/inspections, consultations, interviews with contractor staff etc. |
| Works in Progress | Details of the works being undertaken, (with photographs);<br>Include whether any environmental training/awareness has been provided to contractor staff in the period (what, by whom etc.). |
| Monitoring Results and Actions Required | Whether works and measures comply with the approved EMP/CEMP;<br>Should follow sequence of items identified in EMP/CEMP and verify that all mitigations measures noted are being implemented;<br>Corrective actions cited (date to be resolved and person responsible on contractor team and verification by IA/PMU). |
| Summary and Conclusions | Summary of main findings;<br>Main issues identified and corrective actions noted;<br>Can include summary table which can be updated each period to track completion of actions required. |
| Attachments | Monitoring checklist (based on items identified in the EMP/CEMP) refer annex 1;<br>Additional photographs;<br>Additional information as required. |

### 4. Evaluation

258. ADB will conduct regular (at least twice per year) reviews throughout project implementation to review and assess implementation performance and achievement of project outcomes and objectives; examine financial progress; and identify issues and constraints affecting the project and work out time-bound action plans for their resolution.

259. Apart from regular reviews, a comprehensive mid-term review will be jointly undertaken by the Government and ADB within 36 months of the effectiveness to identify implementation problems and to revise the PAM and other arrangements as necessary to resolve problems identified. These reviews will include a comprehensive evaluation of project implementation arrangements, detailed evaluation of the scope and implementation process and progress of subprojects, feedback from the PPMS, performance of consultants, capacity building progress, and possible reallocation of loan proceeds. During this more significant review, the impact from the climate mitigating initiatives linked to infrastructure development will be assessed as will the allocation by local administrations for the maintenance of the infrastructure developed under the project. Remedial action will be instituted as required.

260. Within six months of physical completion CCDA will submit a project completion report to ADB.[50] In turn, the ADB will conduct a project completion mission to carry out a preliminary assessment of the success of the project to achieve its physical, and socio- economic developmental objectives, as well as to review compliance with ADB requirements and grant covenants.

### 5. Reporting

261. The PMU will prepare and submit to CCDA and ADB within 30 days of the end of each calendar quarter, consolidated quarterly progress reports in a format consistent with ADB's project performance reporting system. These progress reports are designed to allow ADB staff to readily capture key information to record in ADB's project reporting system.

262. In addition to these quarterly progress reports, the PMU will prepare consolidated annual reports, which will include (i) progress achieved by output as measured through the indicator's performance targets, (ii) key implementation issues and solutions; (iii) an updated procurement plan; and (iv) an updated implementation plan for the next 12 months. To ensure the project continues to be both viable and sustainable, project accounts and the executing agency annual financial statements, together with the associated auditor's report, should be adequately reviewed. The PMU will also prepare a report on the progress of the core indicators following the PPCR M&R toolkit. The report should be submitted annually to the CIF Administrative Unit not later than 30 June of every year. The reporting period is for 12 months from 1 January to 31 December.

263. Within six months of physical completion of the project, the PMU will submit to ADB a completion report that describes the physical achievements of the project, actual costs incurred in relation to cost estimates, the results of project activities, a preliminary assessment of achieved benefits, and other relevant project implementation matters requested by ADB. [51]

## C. Stakeholder Communication Strategy

### 1. Community Consultation

264. A number of consultations with stakeholders have taken place during the project design. During implementation, the process of consultation will continue throughout the identification and design for each subproject to afford community groups the opportunity to voice their views on how the subproject is to be designed, implemented and operated. This will be accomplished through a series of community consultation meetings at community/island level as well at the local level government level. The community consultation meetings will be carried out by the facilitating NGOs, consultants and provincial staff as appropriate. It will include the participation of representatives from the local government and mass organizations where appropriate. The communities will be briefed on all aspects of the subproject including safeguard issues of environment and resettlement. Women will be particularly encouraged to actively participate in the consultation meetings and voice their opinions and views about the subproject design and implementation arrangements.

264. The community will also be informed of the operation and maintenance requirements for

[50] Project completion report format is available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar

[51] Project completion report format available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar

subprojects to be financed under the SGF and their expected participation in kind or otherwise in this aspect of the work. They will be encouraged to provide ideas and feedback to the design team and raise their concerns regarding potential negative impacts of the subproject design on the environment and the welfare of the community. The process of consultation is expected to build ownership of the subprojects by the community and hence foster better sustainability of the investment. Communities will be responsible for identifying priority investments from the list of potential climate adaptation investments proposed by the team carrying out the vulnerability assessments. Only once the communities have confirmed them as priority investments will the application for financing under the trust fund be considered.

**2. Community Participation**

265. Communities will actively participate in the initial vulnerability assessments carried out by the assessment teams visiting the target 21 vulnerable islands in the early stages of implementation. The facilitating NGOs and other members of the assessment team will be trained not only in assessment procedures but also in methods for obtaining information from all segments of the local community, particularly including women and the economically disadvantaged in the community. Training will be provided to ensure that local clans have equal access to project benefits during the vulnerability assessments.

266. It is anticipated that the community will be mobilized in a number of different ways during subproject design, implementation and operation. Since a number of the subprojects are expected to involve the establishment of coastal infrastructure, there is scope for the community to participate in the selection of the site and provide their labor during construction. Communities may also wish to assist with local materials such as timber, sand and rocks although the further use of corals would be discouraged.

267. During the construction phase, a significant opportunity for active participation, and for many local and possibly poor households to benefit from the subproject, is in providing wage labor. This will be encouraged through the bidding documents which will request the contractors to investigate this option whenever possible. Women and men will be employed on the basis of “equal pay for equal work”. No child shall be employed by any contractor or Government agency for this project. The community will also be required to participate in the operation and maintenance of the completed infrastructure whenever possible through provision of labor or in some cases, funds.

**3. Community Awareness**

268. Experience has demonstrated the importance of community participation in achieving sustainable development including appropriate and well-designed infrastructure and other potential income generating opportunities. To ensure adequate participation of the community, it must first be well-informed and there must be adequate opportunities for everyone to participate if they wish.

269. Information about the project and the subprojects in particular, including the objectives, potential environmental impact, implementation arrangements, resettlement and compensation matters, and gender issues will provided to beneficiaries. The facilitating NGOs and provincial staff will design a community awareness program for each subproject and each community and will make this information available to the villagers in Pidgin language.270. Awareness programs will take advantage of existing social development systems such as clan and village meetings and announcements on loud speaker systems where they exist, but may also include different and

more innovative approaches. The community will be fully informed of issues such as their right to participate in subprojects and to be compensated for any loss of property including productive land and/or assets; as well as gender equity and other relevant policies. The community and particularly the affected households will be provided with detailed guidance and procedures regarding compensation.

## X. ANTICORRUPTION POLICY

271. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.[52] All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.[53]

272. To support these efforts, relevant provisions of ADB's Anticorruption Policy are included in the loan regulations and the bidding documents for the project. In particular, all contracts financed by ADB in connection with the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of CCDA, PMU, PNG Ports Corporation Limited, CIFDA and NARI, all contractors, suppliers, consultants, and other service providers as they relate to the project. The project design and implementation arrangements provide for mitigation of corruption risks. Risks associated with project management, including procurement and disbursement, will be mitigated by (i) engaging international and national consultants to advise and assist in the procurement of goods and services, procurement and supervision of civil works, and the engagement of other consultants; (ii) introducing a dual signing system in which the civil works contractor awarded the contract will also sign an anticorruption contract with the employer; and (iii) periodic inspection by the PMU of the contractor's activities relating to fund withdrawals and settlements. The project will also establish a website in which it will disclose implementation progress; bid notifications and their results; and provides grievance mechanism against any corrupt practice. References on ADB's Anticorruption Policy can be accessed through the following link: http://www.adb.org/Integrity/.

## XI. ACCOUNTABILITY MECHANISM

273. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.[54]

## XII. RECORD OF PAM CHANGES

274. The original PAM was prepared and uploaded to ADB's project website in 2015. This is the first revision of the PAM. The record of changes made in this revision is in the below table.

[52] Available at: http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf
[53] ADB's Integrity Office web site is available at: http://www.adb.org/integrity/unit.asp
[54] For further information see: http://www.adb.org/Accountability-Mechanism/default.asp.

**Record of PAM changes**

| Details of Changes | Date Proposed | Date Accepted |
|---|---|---|
| • Changes to the proposed dates in the Implementation plans.<br>• Pages 12-15 | 9 Dec 2016 | 15 Dec 2016 |
| • Revised Project Organization Structure<br>• Page 21 | 9 Dec 2016 | 15 Dec 2016 |
| • Revised Project Management Unit Structure<br>• Page 23 | 9 Dec 2016 | 15 Dec 2016 |
| • Recruitment using ICS of Fin. Management, Procurement, and Implementation Coordinator , reflected in pages 51 | 9 Dec 2016 | 15 Dec 2016 |
| • Addition of tables that list awarded and on-going completed contracts<br>• Pages 54-55 | 9 Dec 2016 | 15 Dec 2016 |
| • Changes is the PISC package<br>• Addition of ToR for Climate Change Specialist<br>• Pages 64-65 | 9 Dec 2016 | 15 Dec 2016 |
| • Addition of ToR for Environmental Specialist<br>• Page 71 | 9 Dec 2016 | 15 Dec 2016 |
| • Changes to dates of Key activities with milestones<br>• Page 102-104 | 9 Dec 2016 | 15 Dec 2016 |
| • Change PNG Ports Ltd acronym from PPCL to PNGPCL | 9 Dec 2016 | 15 Dec 2016 |

## Annex 1: Operational Procedures for the Small Grants Facility

### A. The Small Grants Facility (SGF)

1. The SGF will provide grant finance to eligible beneficiaries for eligible subprojects that support activities aimed at increasing climate resilience of vulnerable island and atoll communities, as identified in the climate change vulnerability assessment and adaptation plans (CCVAP). Since the subprojects in the CCVAP may also be funded under the national, provincial, or the district budget, the SGF will fund only those subprojects that meet the eligibility criteria as described below. Individual subproject financing shall generally range from $20,000 to $30,000. However, a maximum amount of $50,000 can be considered as long it can be justified, especially in areas where cost of construction material is high due to importation cost/logistics.

2. The objectives of the (SGF) are to:

(i) provide grant funds for eligible subprojects that address the impacts of climate change in vulnerable communities located in the 21 target islands of the Project in accordance with the CCVAP[55] developed under the project; and
(ii) support at least 30% of women and other disadvantaged groups.

### B. Eligible Beneficiaries of SGF

3. Eligible beneficiaries are the local communities in the 21 islands/atolls in the provinces of Manus, East New Britain, Milne Bay, Morobe, and Bougainville. Individual households are not eligible for SGF financing. Eligible beneficiaries will be mobilized and have an established local level committee (LLC) - an elected body of seven members including a chairperson with representation of women and other disadvantaged groups. At least 30% of the eligible beneficiaries will be women.

4. Eligible beneficiaries can submit funding requests to the SGF to support an eligible subproject. If the funding request is approved, the eligible beneficiary becomes a participating beneficiary.

### C. Eligible Subprojects

5. The SGF will support a range of subprojects, including capacity building, the introduction of innovative technologies to support climate change adaptation, activities that promote awareness related to climate change adaptation, develop the capacities of the communities and provide a mechanism to demonstrate and share best practices in reducing climate risks within vulnerable communities. The subprojects will result in climate change adaptation solutions that can be replicated and expanded to the benefit of the national and the global community.

6. Assistance will be provided to vulnerable project atoll/island communities in accessing small grant funding for priority subprojects that are identified in the CCVAPs prepared under Output 1 and that are not supported by other outputs).

[55] The CCVAPs will be developed with the assistance of consultants and facilitating national NGOs and based on localized projections of climate change and vulnerability mapping in 21 target island groups to identify priority investments that address climate change impacts and prepared in consultation with the affected communities.

7. In order to receive SGF support, a subproject must meet the following criteria:

(a) **Preliminary screening criteria**

(i) be aligned with the CCVAP developed under the project;
(ii) be supported by the eligible beneficiary with in kind contribution totaling 20% of the SGF funding request, such as provision of labor and/or material;
(ii) will not require recurring costs to operate, such as vehicles and generators, unless cost recovery mechanisms are built in to the subprojects;
(iv) will demonstrate that implementation by the community is the most practical solution; and
(v) be endorsed by a community organization, or a nominated representative, that is authorized legally to sign the agreement with the EA. A realistic implementation plan should be prepared and approved by all concerned parties.

(b) **Technical criteria**

(i) The proposed subproject must address projected adverse impacts of climate change as highlighted in the community based CCVAP;
(ii) The technical feasibility of the subproject shall have been evaluated by the SGF Secretariat;
(iii) The estimated cost of the subproject should be within a range of $10,000 to $30,000. However, a workable higher ceiling can also be considered in project areas where the cost of construction material is high due to transport costs;
(iv) Construction methods should be labor intensive; and
(v) The eligible beneficiary should demonstrate adequate capacity to execute or supervise the subproject. If not, acceptable arrangements should exist to appoint a capable qualified service provider.

(c) **Environmental Criteria**

(i) Only subprojects that have a minor environmental impact (based on ADB Category B for the environment) will be eligible for financing under the SGFThe financing will only be provided if site specific mitigating measures are adopted during the construction and operational stages of the subproject.
(ii) No proposed subproject shall be eligible if it involves:
  a) the use of any toxic or harmful substances;
  b) the removal of trees (including mangroves) or natural vegetation of any area in excess on half an acre;
  c) construction of any building, road, wharf, barrage, embankment, or levee that will affect the flow of tidal waters;
  d) the removal of sand exceeding 10 cubic meters;
  e) the use of any plant or animal species that is not compatible with local ecological conditions (e.g., native species or ones already present); and
  f) the release of waste material (e.g. from processing) into coastal environs.

(d) **Resettlement and Social Criteria**

(i) No proposed subproject shall be eligible if it involves:
  a) any acquisition of land;
  b) forced relocation of any person; and

c) any activity that results in a negative impact on women, children, or any disadvantaged member of society;

(ii) Where the subproject raises resettlement issues, the claims of affected persons must be satisfied and paid in full prior to the commencement of any works.

(e) **Other Eligibility Criteria**

(i) The subprojects do not duplicate or overlap with any similar ongoing or planned project or activity at the subproject site.

## D. Administration of the SGF

8. The EA will be assisted by the SGF Secretariat to receive, screen for eligibility of beneficiaries and subprojects, and assess funding requests. The Secretariat will also support the EA in monitoring the implementation of the subprojects and the disbursement of funds. Appropriately qualified NGOs will be engaged to support the eligible beneficiaries in preparing subproject applications for funding under the SGF. The SGF Secretariat will be assisted by an independent international financial administrator.

9. The independent financial administrator shall be responsible for establishing an appropriate chart of accounts to administer the funds provided through ADB for the purpose of financing SGF and for administration of same. The administrator will provide accounting services, bookkeeping based on primary documentation provided by CCDA and preparation and delivery of accounting reports. The financial administrator will, in consultation with the financial management specialist appointed under the PISC services contract, develop procedures for the disbursement of approved sums to either target communities or contractors engaged to carry out works under approved subprojects.

## E. Subproject Implementation

10. The eligible beneficiary becomes a participating beneficiary when the funding request is approved. The participating beneficiary will be responsible for the implementation of the subproject including supervision of contractors' performances, wherever applicable. Wherever required, the participating beneficiary shall nominate a subproject supervisor either among its own members or appoint a local specialist to oversee the day-to-day supervision of the subproject. The participating beneficiary will submit a midterm progress report and a final report upon completion of the subproject to the SGF Secretariat). The participating beneficiary should also apprise the community on the status of project implementation either by way of general meetings, posting on notice boards or both.

11. **Consistency with Social and Environmental Safeguards** - The eligibility criteria outlined above (Section C) will preclude the financing of any subprojects under the SGF with significant negative social (including resettlement) impacts or Category A subprojects according to ADB's environmental categorization. To ensure consistency with the project's social and environmental safeguard requirements as specified in the linked documents, each subproject will require a social assessment and an initial environmental examination that shall be prepared as part of the subproject funding request. Supporting documents can be prepared by the facilitating NGO under the guidance of the PMO's social and environmental officers supported by the PISC social and environmental consultants. The subproject's financing application attachments must be consistent with the overall project's Voluntary Land Use/Negotiated Settlement Framework (linked document No.11) and the project's Environmental Assessment and Review Framework (linked document No.10).

12. It is possible that some subprojects may be located in remote areas, which do not have adequate banking facilities. In such situations, the financial administrator will handle the project finances and arrange to pay the contractors directly (if applicable).

## F. SGF Procurement Arrangements

13. Procurement of goods and services financed under the SGF will follow the principles of economy and efficiency as the price of the goods/services cannot be determined on a fully competitive basis in view of the limited number of contractors that are capable of providing the services in these remote locations. Usual, customary and reasonable charges will be agreed between the beneficiary community and the supplier based on the contractor's fee most frequently charged for similar services and goods as modified by the site conditions and the location of the island with an allowance for unusual circumstances that might be encountered during construction.

## G. Fund Flow, Reporting and Auditing

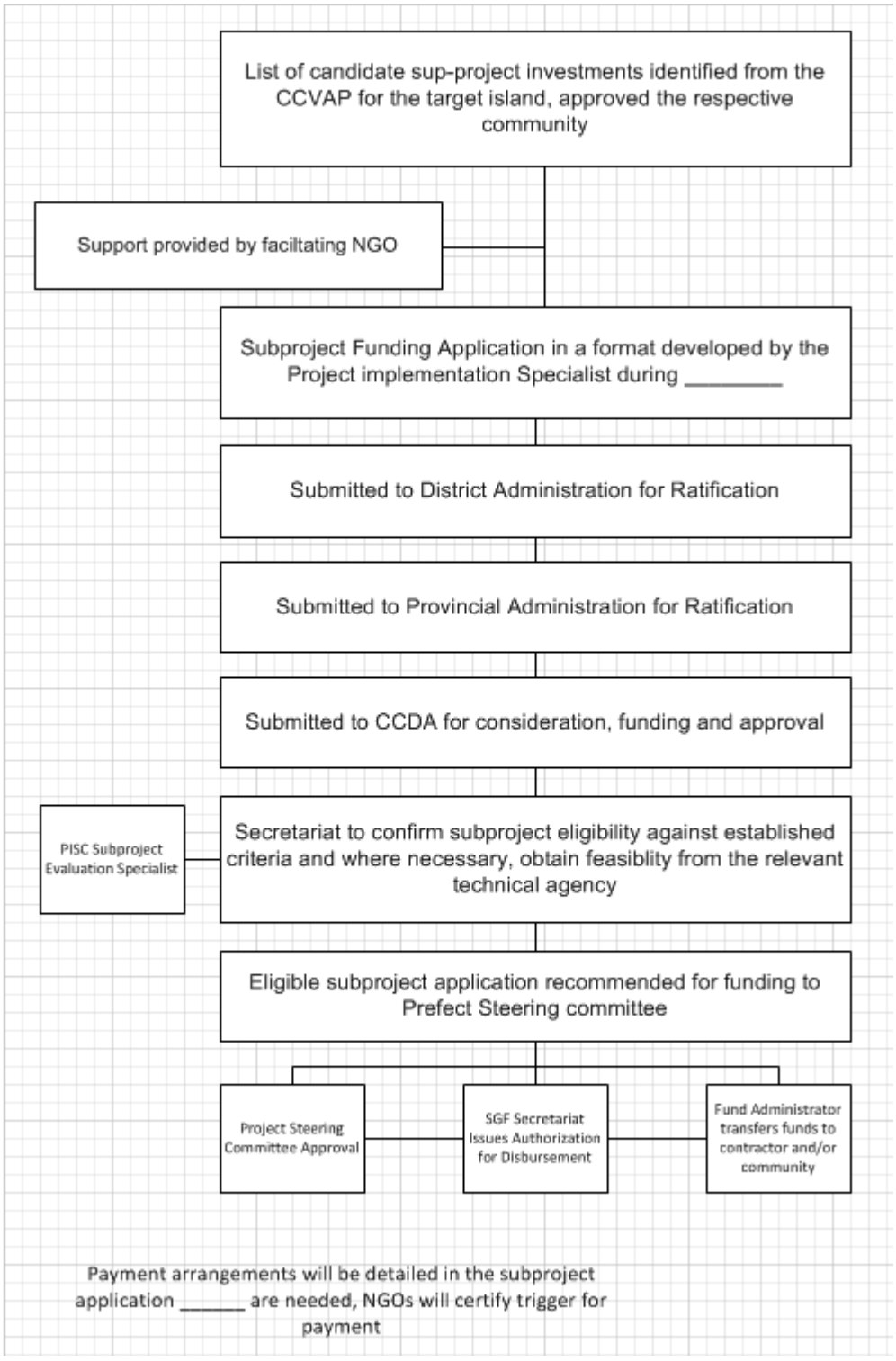
14. The SGF will be established with an initial advance equivalent to 6-months of estimated SGF eligible subproject expenditures in year 2 that will be replenished thereafter based on disbursements and a 6 monthly estimate of expenditure for eligible subprojects using standard ADB procedures. About 100 to 200 subprojects are expected to be financed under the project within the 21 target islands.

15. The SGF financial administrator shall be responsible for establishing an appropriate chart of accounts to administer the funds provided through ADB for the purpose of financing and administration of the SGF. The administrator will provide accounting services, bookkeeping based on primary documentation provided by the EA, and preparation and delivery of accounting reports. The financial administrator will, in consultation with relevant project consultants develop specific procedures for the disbursement of approved sums to the participating beneficiary.

16. The financial administrator will produce monthly financial statements for submission to the EA and ADB that reports: (i) disbursements from the facility; (ii) receipts from ADB; and (iii) subproject implementation status reports. The cost for administering the facility will be provided by the project. The operations of the SGF will be subject of an annual audit that will review accuracy of financial statements and review the processes adopted in the preparation of financial reports (process). A flowchart illustrating the Subproject Processing and Approval Process is presented below.

17. On completion of the subproject, the participating beneficiary will advise the SGF Secretariat and EA. The EA will depute a representative for inspection, to be conducted jointly with members of the participating facility and the service provider (if applicable). If the inspection team concludes that a project has been implemented satisfactorily, a completion certificate will be prepared by the participating beneficiary and submitted to the SGF Secretariat. On final acceptance of the completion report by the SGF Secretariat, final payments will be released.

Figure LD3.5: Subproject Application and ApprovalProcess



## Annex 2: Vulnerability Assessment Procedures and Sample Output

# I. BACKGROUND

## A Introduction

1. This brief gives an overview of the field visit carried out into two island communities of Kwaraiwi and Wialoki, East Cape in the Milne Bay Province. The field visit to these communities were a direct result of the overall discussions and planning done by the Climate Change Development Authority (CCDA) on a partnership arrangements with the PPTA team contracted by the Asian Development Bank (ADB). In the earlier discussions the team and with regards to support on climate change in PNG, the main maritime provinces such as Milne Bay, Morobe, Autonomous Region of Bougainville, East New Britain, Manus and New Ireland were selected as provinces with the most vulnerable island and atolls and where service delivery was not reaching out to due to lack of capacity in planning and much more so because of the distances and isolation.

## B. Team

2. The design team consisting of CCDA staff, international and national consultants totaling 12 people, armed with a set of household climate change risk profile survey questionnaires, focus group guide and mapping equipment left for the Milne Bay Province on the 5th of September 2013. The team's final destination was Kwaraiwa and Wyaloki Islands in the Samarai District.

3. Initial consultations were held at the provincial headquarters in Alotau with the Provincial Administrator Mr. Michael Kape, after which the team drove on to the East Cape to overnight. People from Kwaraiwa were waiting at East Cape to take the team to the Island at 5:00 am the next day.

4. The Provincial Administrator requested a follow up meeting between the CCDA and the Provincial Management Team (PMT) which comprises of the heads of the specialist sectors, such as Agriculture, Fisheries, Business Development, etc.

## D. Purpose

5. The purpose of the field trip are to:

(i) Assess the parameters and costs for undertaking intervention with vulnerable communities to guide the detail design of the Strategic Program for Climate Resilience (SPCR);
(ii) Undertake household and community vulnerability assessments and test the household climate risk profile questionnaires;
(iii) Train CCDA staff to prepare a sample climate change vulnerability map of the island and community adaptation plan to be replicated in other communities;
(iv) Conduct a capacity assessment of the community to meet climate change challenges; and
(iv) Define other experiences and lessons learned that would assist in the design of SPCR.

## E. Expectations

6. The team expected that at the end of the 4-day field trip the following would be achieved:

(i) a climate change map of the island/village would be developed highlighting risk and vulnerability;
(ii) an understanding of the communities' ability to cope with CC impact;
(iii) a set of household climate change risk profile surveys covering a significant portion of the households on the island which would provide the basis for site specific climate change vulnerability assessment;
(iv) providing awareness and training to the community on the SPCR program, climate change, its impact on their livelihoods, and possible adaptation options;
(v) an initial list of priority adaptation interventions that will assist the community to be more resilient; and
(vi) a general understanding of what it will take to implement the SPCR project in remote island communities.

## F. Field Work Methodology

7. The team arrived on Wyaloki Island around 8:30am and moved on to the main island of Kwaraiwa at 10:00 am for the initial village meeting. The meeting was attended by part of the village since most people had already gone either gardening or fishing. The village councilor had gone to Alotau but the village recorder, school principle, sister-in-charge of the Health Center and other prominent people attended the meeting. In the meeting the CCDA team:

(i) introduced themselves to the community; stated the purpose for being on the island;
(ii) what outcomes were expected; and
(iii) what participation they expected from the community and leaders; and asked permission to stay and work on the island.

### 1. General Observation

8. After the big group meeting, different teams went to different parts of the island or undertook different tasks according to the allocated work plan for the field visit. However, everyone conducted general observations to get a general understanding of the village and its situation in terms of CC impact on the island the people.

### 2. Household Profiling

9. The household profile questionnaires (attached hereto) were distributed to the team members to interview member of households they visited and small gifts were given to those families who participated as a token of appreciation because the question were many (123). Grades 7 and 8 students from the school were given a questionnaire each to take home and interview their parents. Time was taken to explain to the student what the questions were, and why it was important to complete each question.

### 3. Capacity Assessment

10. Through the focus group discussions, interviews and observations, the team completed a climate change capacity assessment which defined whether the community had:

(i) adequate knowledge of climate change and its impacts on their livelihoods;
(ii) the resources to deal with, overcome and or absorb the changes in their environment; and
(iii) the ability to mobilize and do something to build resilience.

### 4. Focus Group Discussions

11. Different focus group meetings were conducted by different members of the group. The focus groups included, women, fishermen/fisherwomen, teacher, church elders, etc.

### 5. Mapping

12. Members of the team walked around with GPS equipment and plotted houses, water-logged areas, different service areas, areas deemed to be susceptible to climate change impact and other situations of interest.

## II. SITUATION - KWARAIWA AND WYALOKI ISLANDS/VILLAGES

13. These two Island villages lie $10^{o}$ south and $151^{o}$ east and are part of the Samarai-Murua electorate in the Milne Bay province. The island can be reached by 40HP OBM in two hours from the East Cape or four hour from the provincial capital of Alotau.

14. Kwaraiwa is the main Island and has a School (Grade 8), Health Centre that serves six surrounding Islands as well, a church (United Church) and a trade-store. The local Government councilor of Bwanabwana local level government (LLG) is also from this island. Wyaloki is the smaller Island and has only one extended family residing on it. The combined population of the two islands is estimated to be between 300 and 400.

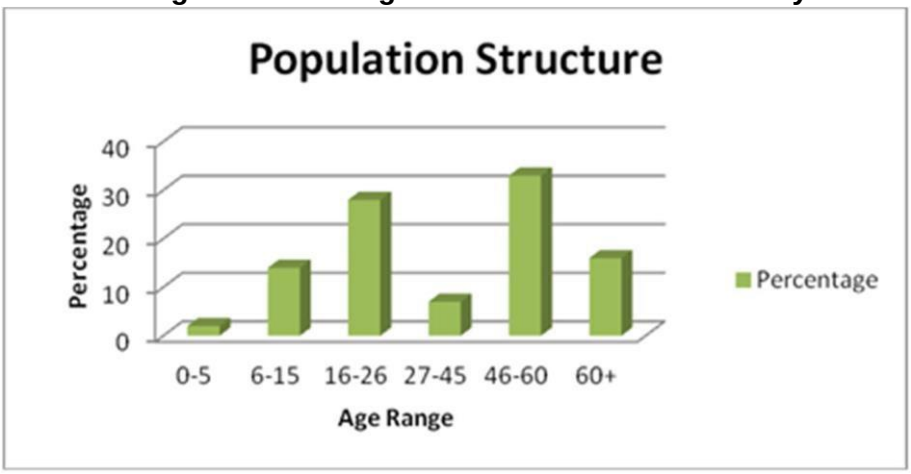
15. There are 10 government workers on the island of which four are health workers (one x nursing officer, three x community health workers and six x teachers at the primary school. The United Church has a resident pastor and Conservation International has one local volunteer living on the island.

## A. Households

### 1. Gender

16. The CCDA project formulation team conducted a household profile survey of 17 households and the preliminary figures show equal number of males and female living on the islands. The age range of the population is shown below in Figure SD14.1.

**Figure SD14.1: Age Structure of the Community**



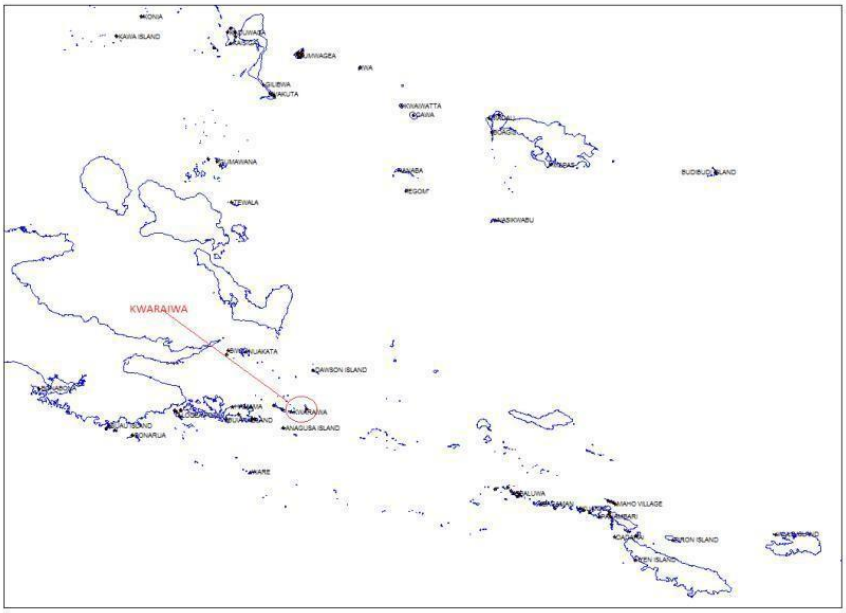

## 2. Occupation

17. According to the household survey, occupation is dominated by, fishing, gardening, and to lesser extent house building for the men. At the time of the CCDA visit it was yam planting season and most of the activities were centered on clearing land and planting yams. All the children aged between 7-13 years are in the primary school except for the few (one) who suffer from mental or physical disabilities and are not able to attend school.

## 3. Education

18. Education levels in the village as per the sample show that 55% of the population has primary level education while 27% have no education at all. Only 7% have university level education, 9% have high school level education and 2% have technical vocational training.

**Map SD14.1: Milne Bay East: Survey Site Circled**



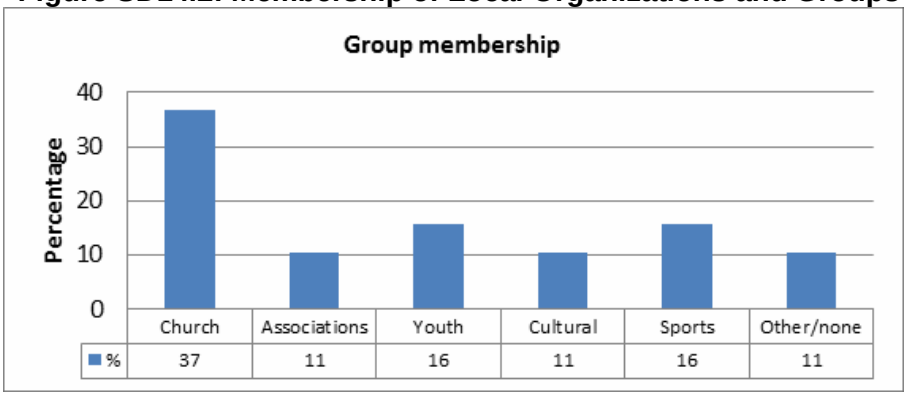
### 4. Residency

19. Almost all (74%) the residents have lived on the Island all their lives but a few have migrated here from either the other islands or the mainland. One household moved to this island 30 years ago while another returned from another location some 7 years ago. Most regard the time they spend elsewhere for education or employment purposes as temporary absence.

### 5. Associations

20. A majority (89%) of the population on the island belong to one Community Based Organization (CBO) or another, while many belong to more than on CBO. The largest is the Church group to which 37% of respondents belong.

**Figure SD14.2: Membership of Local Organizations and Groups**




## B. Housing

21. The majority of the houses on the island (xx%) are of traditional construction using locally available materials, such as coconut, sago, hardwoods. Others are made of a mixture of local material, processed or milled timber, corrugated iron roof and other manufactured hardware products.

### 1. Ownership

22. Of the households surveyed, 72% owned their own houses while 14% said they were renting and the other 14% indicated other arrangements, such has the staff of the health center were livening in government housing for free.

### 2. Quality and Condition of Housing

23. On the average, the houses were approximately 8 years old where the oldest was estimated to be 13 years old while the newest was said to be 2 years old. The roofing on the houses are predominantly sago or coconut palm thatch. Some of the houses (xx%) have a few corrugated iron sheets on either part of the roof for the purpose of catching rain water. The mapping team counted a total of 25 houses with roofs made completely of corrugated sheets. All the thatch roofs were in various stages of decay and none of them were new or in good condition (except on that was 2 years old with iron roof). In addition, none of the houses with iron roof had cyclone ties. The only building on the island that had some chance of withstanding a cyclone is the church building that is made of concrete blocks and a very strongly nailed down steep roof.

24. It was apparent that the majority of the homes (xx%) need to be rebuilt or at least have the roof thatch replaced but in our group discussions and focus group meeting it was indicated that roofing and some building material had to be purchased and transported from other island since there was a shortage on Kwaraiwa. Coconuts trees are currently being chopped and milled for house construction due to the shortage of building material creating a shortage of coconuts for food, and in one village a large tree washed up after a storm on the mainland was being cut into planks to construct a house.

### 3. Material and Construction Quality

25. All the traditionally built houses are constructed by village artisans who in our survey are regarded as amateurs while permanent or semi-permanent building like classrooms, Health Centre housing and teachers houses are built by what we call in the survey professionals. These professionals are either tradesmen with formal qualifications, or technicians with experience or certificates. In the survey, it was determined that there are two people who have vocational training. Many education and health center building project used skilled professionals from the mainland and semi-skilled and unskilled labor was provided by the people on the island.

26. In the focus group discussion with the church elders, the team was advised that many island families and professionals working and living in Alotau and Port Moresby actually came out voluntarily with material (electrical and plumbing) to help complete the church building.

27. The type of building material used seems to determine the type of skilled person needed, bush material houses are built by village artisan while permanent or semi-permanent houses are built by trained people or professionals. In the large group meeting, many households indicated preference for houses built of concrete and time roofs, while recognizing that these are expensive and out of reach for most of the households living on the islands. It was also recognized that traditionally constructed houses would be easier and less costly to rebuild if damaged by cyclone activity.

### 4. Size of Housing

28. The average size of homes on the island (based on the survey sample) is 110 square meters. Most home sizes are dependent on a combination of factors:

(i) availability of building materials;
(ii) the need for warmth or ventilation;
(iii) the size of the family (nuclear or extended);
(iv) the social or economic status of the household head;
(v) cultural limitation' e.g. one can't build a bigger or better house that the village chief; and
(vi) location and size of land.

29. In the case of Kwaraiwa village, any of the above factors could dictate the eventual size of the house.

### 5. Value of Housing

30. The value of housing based of the survey sample averages at K1,988. This figure could be misleading for the following reason:

(i) the estimator is the survey respondents;
(ii) there are no established costs for local building materials;
(iii) most of the cost estimates stated are for local construction; and
(iv) transportation cost of building material from other islands is not included.

## III. FOOD - AGRICULTURE/LIVESTOCK A. Type and Range of

### A. Food Products

31. The survey recorded a total of 28 food types and categorized accordingly.

**1.1. Garden Produce**
Root crops - 5
Tree crops - 7
Leafy greens - various
Fruit and nuts - 2

**1.2. Trade-store or Imported Foods**
Proteins - 3
Energy - 4
Stimulants - 2

**1.3. Marine Products**
Fish
Collectable (shells)

32. The above list is not exhaustive, because the responses were based on the list and name provided by the recorder, especially the names of fish. Local names are not known by the recorder while the respondent would not understand /know the scientific or English or pidgin names of fish. Future survey will include a poster showing the types of fish found in PNG coastal waters.

### B. Livestock Range, Quantity and Value

33. It was apparent that not many households kept livestock but of the households interviewed, 50% said they kept livestock around their homes and mentioned chicken (>30), pigs and goats as the main types of animals. The sampling is too small to put money values on the livestock on the island but one family indicated K500 as the value of their livestock.

### C. Availability and Source

34. The survey identified about 28 different food sources on the island and the most important foods as the following, in terms of availability over 12 months period based on the number of times mentioned by the respondents:

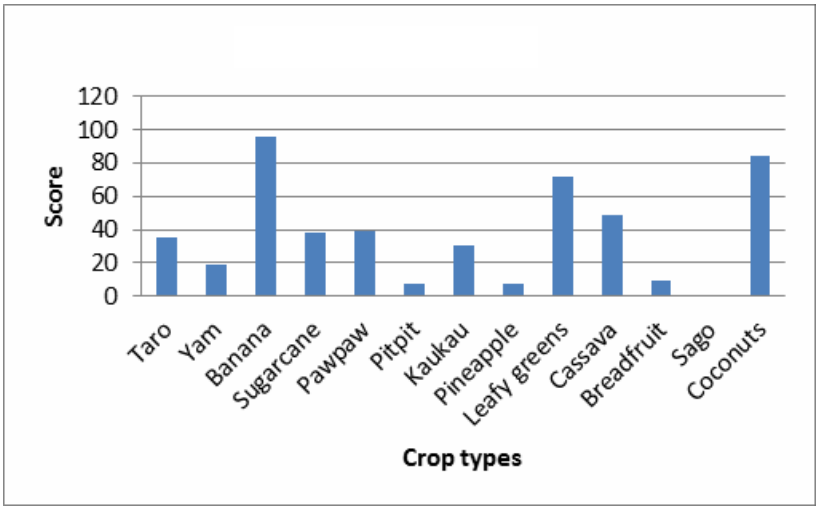
A. Garden produce:
1. Banana;
2. Cassava;

3. Yam;
4. Coconut.

B. Trade store foods (most sought after):
1. Flour;
2. Tea and coffee;
3. Oil;
4. Salt.

C. Marine products:
1. Parrot fish;
2. Octopus;
3. Squid;
4. Red Emperor, Clam, Tuna and Kingfish.

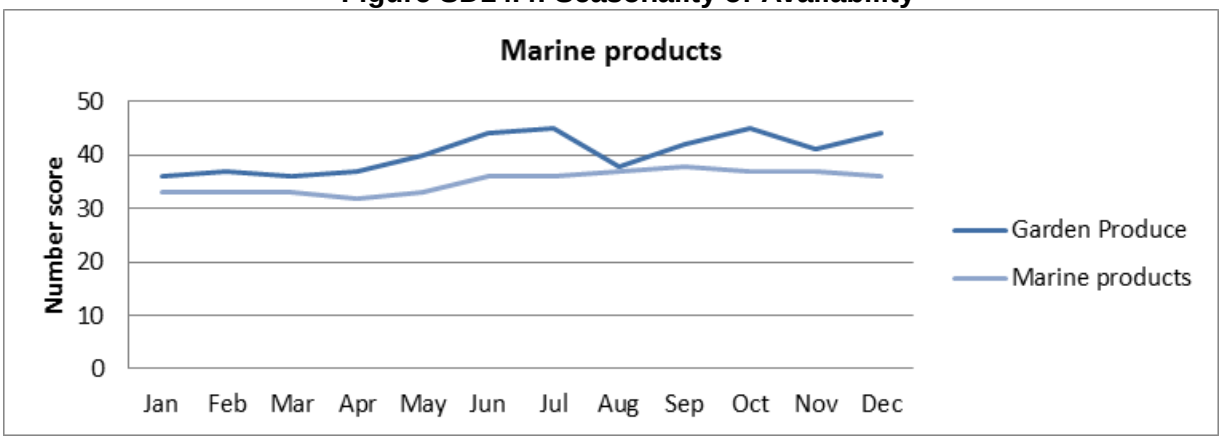
**Figure SD14.3: Availability of Food**




## D. Seasonality

35. The survey asked respondents when different types of foods were available throughout the island during a 12 months period. The response is represented below:-

**Figure SD14.4: Seasonality of Availability**



Note: Score is the number of times the respondents mention the products availability

35. The big dip in August in agriculture products probably represents reduction in yam and other food supplies since August and September are yam planting months. December and January seem to be the months of shortage in garden products since these are the months when the yam houses are depleted and other festive activities take place. The answers derived from the household survey more probably reflect people's choices as opposed to actual seasonality.

### E. Shortages

36. Fifty percent of the people asked if they had ever experienced food shortages said 'yes' and the other 50% said 'no'. When asked what they thought caused the shortage, all of them (100% of the people who said yes to the first question) said that it was due to drought. Many remember a long drought period in 1994 when they had called on the government for relief supplies and water.

37. The drought periods are said to extend for a period between 3 to 4 months in which garden foods are generally short and acute water shortages are experienced. During these times well water is used for everything and some even mentioned that they do boil well water before drinking.

### F. Preparation, Storage and Preservation

38. The types of food that people say they preserve include banana, fish, cassava and yam. The preservation methods used are baking, drying, and smoking and well ventilated yam houses. There is no refrigeration on the island and no other methods known or mentioned by the islanders.

39. Energy required of food preservation and general use is entirely firewood or drift wood. Kerosene is used for lighting and some solar lighting.

### G. Access to Alternatives

40. The island is remote and access to alternatives in dealing with food shortages, hazards and emergencies seem to be limited. Alternatives that are operating at this stage include:

(i) barter with other islanders;
(ii) remittances from relatives working or living in other parts of the country; calling on the government; and
(iii) access to land and other resources on the mainland or other bigger islands through the kinship network.

## IV. FISH AND MARINE RESOURCES

### A. Product Range, Quantity and Seasonality

41. The survey recorded a total of 17 different types of fish and shellfish mentioned by the people. As stated in section on 'Food, agriculture and livestock', the list is incomplete due to the language barrier and inability to identify individual fish species. The respondent indicated that fish numbers vary in different months but some fish are constantly available throughout the year. These include Clam shell, Parrot fish, octopus, squid, Red Emperor, Tuna and kingfisher. As

indicated in Figure SD14.4, the best fishing months seem to be between June and October. The dip in the graph indicated the planting period when fishing activities are reduced.

### B. By-products

42. The respondents did not mention the presence of by products from the marine resources but turtle shell implements like knives and 'kambang' or lime for bitternut was seen in use on the island.

### C. Usage

43. The marine resources are a source of food, as well as to trade commodities used in barter for other goods and services between islands, and cash from sales in Alotau, Port Moresby or to buyers who visit the island.

### D. Fishing Activities

44. Fishing activities take on the average 4 hours travelling to and back from fishing grounds and about 2 hours actual fishing. This works out to 6 hours on the average for any fishing trip and the respondents say they go fishing (average) 14 times a month. In other words, people spend half the year or half their adult life on fishing activities. Sixty percent say they go out fishing at any time of the day or night and all of them say that they never go fishing alone but always with someone either from the village or a member of their own household.

### E. Related Goods and Services

45. The catch from fishing is used in a combination of ways depending on the size/amount of catch:

(v) consumption in the fisherpersons on household (20%);
(vi) shared among relatives and friends;
(iii) sell fresh to buyers from Alotau or smoked and sold in Alotau (30%);
(iv) smoked and kept for later use (10%);
(iv) used to barter for other goods; and
(v) all of the above (40%).

46. Island people living in Alotau come out to the Island occasionally and purchase fish from the villagers to take back to Alotau for resale. The price they pay for average size fish is K2.50 to K4.00.

## V. HEALTH - WATER AND SANITATION

### A. Water Supply Type and Quality

47. The people on the island rely on collected rain water and wells for drinking and washing. Generally people prefer rainwater for drinking and cooking and use well water for washing. Well water is used for everything when there is no rain or tanks and storage containers are depleted. The tanks and container are mostly made plastic or fiber glass and the water tanks visible at the Health Center and school were 9,000 liters and 5,000 liters in size. Site inspections by the team determined that the majority of wells on the island were located in close proximity to pit latrines, which rendered the water unsafe for human consumption unless boiled.

48. Only 25% of the respondents say they have water tanks attached to their house while 75% rely only on well water. There are 25 houses on the island with corrugated roofing capable of catching rain water but have no tanks and or incomplete guttering.

**B. Water System Ownership**

49. All the water sources in the village are either communal or shared among several households. The water tank at the primary school is said to be used by everybody and usually runs out very quickly.

**C. Water Shortage, Mitigation and Alternatives**

50. Ninety percent of the respondents indicated that they have experienced water shortages. The worst of them seem to be the 1994 drought where water had to be supplied by the government. During dry periods people rely entirely on well water. Some say they boil the well water before drinking and one of the teachers said that the water tank at the school is restricted for use by teaching staff only.

51. The mapping team walking around the island noticed that most, if not all, the wells are downhill and within less than 30 meters from the pit latrines. Almost all the respondents say that they do not reuse water except one who indicated that waste water is used to water vegetable gardens around or near the house.

**D. Toilets and waste management**

52. Sixty three percent of the households use long drop pit latrines, 25% use the sea or beach, while 12% use the bushes. Waste water is disposed openly and there is no evidence that people practiced improved waste water management. The health center has a septic tank that is located in close proximity of the well that is used for mothers in the maternity ward.

53. Only 20% of the respondents said that they dispose of household rubbish in a hole and the rest use a combination of methods including burning or dumping in the bushes or sea.

**E. Diseases**

54. Only 25% of the respondents indicated that there were standing water bodies in the vicinity of their house. Standing water is a breeding ground for malaria spreading mosquitoes. The nurse at the Health Centre said that the most common dieses on the island were; Malaria, Tuberculosis, Asthma, Pneumonia, Diarrhea, followed by respiratory diseases.

55. When asked if members of their household had been sick with malaria or dengue fever, 50% answered ‘yes.’ However, all respondents said that none of their household members were sick at the time of the interview.

## HAZARDS

(Note: data incomplete since many questions not completed)

### A. Hazard Knowledge, History and Response

56. All the respondents indicated that they have experienced all or a number of hazards ranging form, cyclone, strong winds, drought, sea level rise, beach erosion, dying coral reef, saltwater intrusions, flooding and extreme temperatures. All of them agree that these hazard conditions are increasing in frequency and intensity. They all said that these were caused by climate change (this could be biased or based on the fact that the CCDA team actually provided an introductory session on climate change) but one person said that it was also due to careless use and management of the resources, especially the reefs.

57. Respondents generally agree that vegetation has changes where much of the shoreline vegetation has been eroded by the sea and since the 1997 cyclone other strange weeds and plants have appeared on the island. They also said that some of the reefs are being invaded by sand and strange sea grass.

### C. Early Warning

58. Ninety percent of the respondents agree that there are no early warning systems and there are no systems in place to deal with hazards. However, they acknowledge that they do get information from radio Milne Bay (weather forecast), from the nurse at the health center who has a VHF radio (now broken down) and sometimes messages from the Samarai district headquarters.

59. They also know that they have to weigh down their thatch roofs with additional coconut prongs, pull canoes of the beach and tie down belongings and move into stronger housed such as the church building in the event of a cyclone.

### D. Resources Availability

60. The resources available on the island to deal with hazards are:

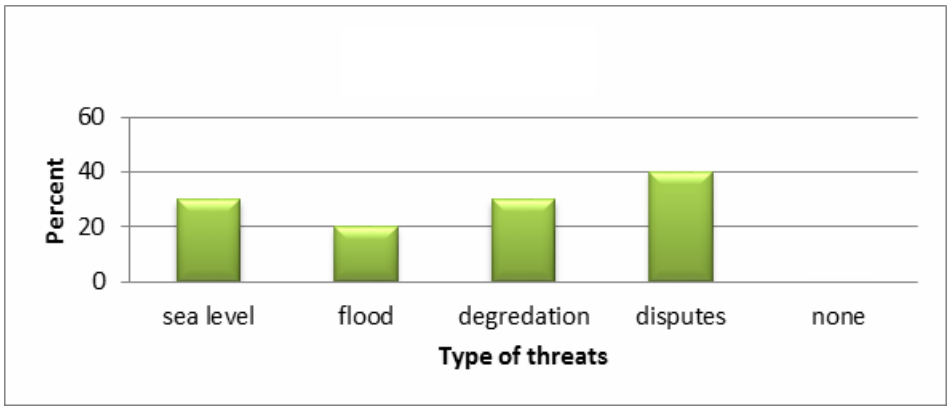
(i) local knowledge;
(ii) experience of living through hazards in the past;
(iii) mobile communication;
(iv) VHF radio, transistor radios;
(v) educated leaders like the school principle;
(vi) health center with nurses, drugs and equipment;
(vii) church building;
(viii) the church network; and
(ix) extended family network.

# VII. LAND

## A. Availability & Access

61. Everyone (100%) on the island has land despite that fact that there are non-Kwaraiwa people living on the island. In addition, 70% of the respondents said they have access to land on either islands or the mainland.

**Figure SD14.5: Threats to Land Ownership**




## B. Type of Threats

62. When asked if any of their land was threatened, all of them said 'yes' where disputes over ownerships seem to be the biggest threat.

## C. Quantity and Quality

63. Sea level rise and beach erosion seem to have forced the people to move to steeper slopes for gardening. The clear-cut removal of vegetation on steep slopes in several locations exposes several households to risks from landslides and increased erosion during heavy rains. In addition, these clearings are exposed to strong winds that could remove the top soil away especially during dry weather. Either ways, these steep slopes are obviously the most susceptible to rapid degradation. Several low-lying areas used for gardening are at risk because of sea level rise, storm surge and the eroding of low lying land forcing them to seek higher ground for gardening. In addition, sea sprays continues to affect the plants that are grown.

## D. Ownership

64. Land on the island is entirely freehold except for the church lease on which the church, school and Health Centre are located.

## E. Squatters or Landless

65. Seventy one percent of the respondents acknowledge that there are squatters on the island while the other 29% have no knowledge. These squatters are most likely relatives from other island or the mainland.

# VIII. INCOME

## A. Source, Value and Frequency

66. Only 28% of the respondents say they earn money fortnightly while 36% indicate earning money on a monthly basis, and the other 36% say they earn money occasionally. The main sources of income stated are: government wages, copra, fish and garden produce, business earnings, copra and remittances.

## B. Savings and Investment

67. The survey asked three questions about savings and investment and only 36% of the respondents indicated that they have some saving in the banks in Alotau while the rest have no savings or investment. When asked about community savings or investments there is none on the island and the only communal banking is carried by the school and Health Centre.

## C. Banking Services

68. The nearest banking facilities are in Alotau.

## D. External Development Funding, Access, Amount, Purpose

69. When asked about external funding sources that the community could access for project in the village, 22% indicated no knowledge while 78% knew about the District Services Improvement Program (DSIP) funds and the Functional Grants available to Local Level Government (LLG). However, none indicated any knowledge of international donor funding.

70. In addition there are no skilled people on the island to prepare project proposals to access external funding. They (100%) therefore agreed that training on project proposal writing and reporting on implementation is a high priority for them.

71. A number of health and education projects were funded through the DSIP and implemented on the island mostly through the efforts of the councilor. Total funding received for these projects were:

(i) Classroom – K70,000; (ii) Water tank – K10,000;
(ii) Health Center general ward – K100,000; and
(iii) Sea ambulance and other buildings maintenance – K60,000.

72. All the respondents said the projects were completed successfully and were happy with the outcomes. However, they were concerned that they were not involved in the planning and decision making for these projects. Additionally, the water tanks were perceived to be owned by the government, and since no-one in the community was responsible for maintenance, the tanks readily fell into dis-repair.

73. However, when asked to nominate their preference on who they would entrust management responsibility for external funding (including the small grants facility for projects in the village), the councilor received 83% of the votes. Projects nominated by the respondents for funding under the small grants facility include:

(i) agriculture training; fish arming;
(ii) water supply; water tanks;
(iii) reliable inter-island transport system; pig and chicken wire;
(iv) sea wall; and
(v) health and education.

74. The community with the help of the CCDA team agreed on five priority project to build climate resilience. The prioritized list of projects the islanders came up with in the big group meeting are:

(i) Water and sanitation;
(ii) Stagnant water that give rise to vector borne diseases;
(iii) Land lost from erosion;
(iv) Early warning system (HF radio and decoder not operational);
(v) Replenishment of coral reefs that are depleted and bleached; and
(vi) Farming of beche de mer and clam shells.

# IX. TRANSPORT AND COMMUNICATIONS

## A. Communication Type and Availability

75. The VHF radio located at the Health Centre is currently not functional and in need of immediate repairs. None of the respondents indicated owning transistor radios but other said that there were some on the island. One respondent indicated owning a mobile phone and mentioned that there were also others on the island with mobile phones.

## B. Transport Type, Availability, Access and Cost

76. The Island has a number of private motorized fiberglass dinghies that charge K100 for return trip to Alotau or K50 for a round trip to East Cape. The sea ambulance with its 30HP motor takes 5 hours to reach Alotau. The team was advised that there were two private sea going boats based on the Island but were not able to gather any detail about them.

77. Thirty six percent of the respondents said that they did not own any form of transport (canoe, boat) while one respondent owns a range of them (boat, canoe, OBM and dinghy).

# X. CULTURAL ISSUES

## A. Cultural Resources

78. A cultural method of conservation where certain reef and fishing ground are “taboo” for certain period is seen as a good way for managing marine resources.

## B. Cultural Impediments/limitations

79. None of the respondents and other people approached were forthcoming on the issue of what might be some traditional or customary practices that could create problems or provide solutions for resilience building.

## XI. COMMENTS ON GENDER ISSUES

80. Community mapping and capacity assessment in Wailoki illustrated several major impediments to building resilience of the island people due to the remote distance, lack of planning on development projects and service delivery, but most importantly, there are no early warning systems on the islands which can warn the islanders of the dangers they are being faced should anything eventuate.

81. The focus group discussions provided avenues and promoted participation by women in the discussions involving climate change and how women perceive the changes and impacts on their lives; especially with clean accessible drinking water, health and sanitation and the issue of deforestation with excessive cutting down of trees, especially coconut trees. There has been no replanting of coconut trees felled due to oil making for cooking and used for fragrances and for beautifying the body.

82. Women in Kwaraiwi and Wialoki have traditional skills in identifying when the storms and king tides will come but with changes in climate, it is now an uncertain feeling within them as to whether the impacts of climate change are more frequent.

83. Women have knowledge of preserving yams only but no skills in preserving other food items like bread fruit, taro and bananas that grow on the island but which could be used in times of food shortage.

84. Women are willing to learn from other women who have skills in food preservation, which could be organized through women's groups in Alotau, in other PNG Provinces and even internationally through Women's Exchanges and learning programs.

85. With regards to fishing and farming of marine resources, there is concern of the depletion of fish stocks and marine resources like giant clamshells, therefore women expressed the need for suitably qualified personnel to provide some hands on skills to enable women to farm marine resources such as giant clamshells and beche-de-mer so that women do family farms to sustain their livelihood.

86. Trees that can withstand the salt and intrusion of the salt water, women expressed the need to plant more of the shoreline trees as buffer for the strong winds and frequent storm surges that continue to erode the shorelines further inland making it inhabitable for the islanders and forces them to move further up into the hills.

87. Mangroves do not grow well and that is why the islanders have not been encouraged to replant mangroves seedlings. However, training needs to be provided and mangrove seedling nurseries created with interested families willing to replant seedlings in front of their homes so that they can own and manage their blocks for their children and future generation. Mangroves also provide a habitat for fish breeding and other marine resources such as crabs.

88. The main constraints discussed by the Women's Focus Group Discussion ranged from issues to do with household impediments, gardening, fishing and water borne diseases. Some of the discussions by the women were:

(i) The women raised a concern that clean and fresh water was a huge problem on the island as there was only one water tank servicing 200 students of the Kwaraiwi

elementary and primary school. This is an on-going issue with the women population on the island.

(ii) The Health personnel in the group also raised the concern of the island community having a high rate of under nourished children as advised by the health authorities from Alotau.

(iii) Women also raised the issue of longer periods of the dry seasons coupled with longer periods of raising seasons which creates flooding in lots of areas on the island. With the wet seasons, there is an increased number of patients that turn up at the Health clinic.

(iv) The newly introduced weed probably blown over from the mainland by the strong winds is spreading through the islands forest and gardens really fast. The women on the island call it the "7th Day Weed". These weeds mostly affects bananas and yams and creates more work for women as they have to continuously water over and maintain the gardens to tend and manage their produce's for their families.

(v) With the change in climate and weather as the women have witnessed, there is less produce now from family food crops. Even the untrained eye can clearly see that the leaves of the palms and trees are not healthy due to strong winds continuously affecting the leaves. Additionally, women reported an increase to the number of caterpillars that have attacked local leafy green vegetable (aibika) and kumara leaves making these unhealthy and as a result less produce is harvested for family sustenance.

(vi) Furthermore, the nut trees and fruit trees on the island are bearing less and less produce and some nut trees which also formed the daily food of the islanders hardly bear any nuts at all, which then makes women rely heavily on yam and banana for family food sustainability.

(vii) Also an issue expressed by the women is the increased in the number of people coming to the island due to inter-marriages, where extended families also accompany their relatives married to the island which to the women places a burden on the families as they have to increase their meals in a very carefully planned daily meal intake to save food for a much longer period.

(viii) Lastly, the women expressed also that perhaps the only solid buffer for the island could be the building of stone walls alongside the beach fronts to protect the shorelines from sea erosion, although this could prove highly complicated and very expensive.

**A. Action Required by Women to Effect Change and Build Resilience**

(i) Report of Community Climate Change Vulnerability Assessment to be presented in pictorial form to the islanders – the Kwaraiwi Island community will feel ownership of the report when they see and understand the report with pictures they can identify. Interest is always re-generated into action when rural communities can refer to the report through recognition of familiar surroundings of their own community. This report will indirectly encourage the Alotau Administration to focus their local and national planning to include isolated communities in mapping out their vulnerabilities and capacities needing positive change and in addressing the PNG's MGD's, regionally, provincially and locally.

(ii) Capacity Building for women, youth and men on Kwaraiwi and Kwaloki Islands – there was a clear need to provide training and capacity building for women in the community. Perhaps the only islanders who often venture out of the island are the

teachers, the health workers and the local level government leaders. Island women need more capacity building and life skills trainings to equip them with relevant skills to better run and manage their homes, families and livelihoods, and address risks from climate change. Climate change is a cross-cutting issue so the capacity of women and the young people need to be strengthened to cater for changes especially suitable adaption options. Project design and management will become handy for these island women which must culminate in project sustainability.

(iii) Learning Exchange Visits organized for women – the island women in their focus group were eager to learn new skills and have requested for such exchanges amongst other women's groups in Alotau or other provinces who may have the skills on food preservation, farming and gardening skills which are not know to the islanders to be encouraged to share their skills with the island women.

(iv) Source NARI and other Government agencies on new gardening methods – it seems that NARI is experimenting and researching new food crops that are suitable for the islands and atolls. Agricultural Officers in Alotau or other provincial capitals in PNG do need to be mobile to reach out to these most isolated island communities to teach them how to grow and preserve more climate resilient food crops that are resilient to sustain the lives of the most vulnerable island communities.

(v) Develop User Friendly systems to detect Early Warnings of climate related disasters – all women in the group when asked about having knowledge of any systems to give warnings if strong winds or cyclones was approaching the island, commented that they knew nothing of that sort existed in the area. It seems there is a lot of anxiety on the island as they struggle daily and when storms come the anxiety builds upon the many daily responsibilities they are already facing. Kwaraiwa is an isolated island community similar to other island communities in PNG and in the Pacific, but the difference is that they are willing to learn new things and if there was a system to give some form of warning to them about disasters approaching volunteers listed themselves to undergo some training to learn these skills.

**B. Lessons Learned**

(i) More Posters on the causes of climate change – In PNG literacy and illiteracy rates vary from province to province. In Kwaraiwa, spoken English was good and women were able to communicate and express themselves clearly which made the discussions lively and interesting. However, when the CCDA team was explaining the different aspects of climate change and its causes the women were able to understand and relate to the pictures as they see it on their island. More effort to be placed in simplifying the English version of the introductions to climate change, illustrate the causes of climate change and use these as regularly in CCDA future work with the communities that will be partners in this project.

(ii) Food Security Programs – There is a big need for the Provincial Agricultural officers and NARI to visit the islands and atolls tom provide education and training on food production, preservation and storage to enable island households to sustain their livelihoods and continue to live and adapt to the changing environments.

**ANNEX 3: Questionnaire for Household and Community Climate Change Vulnerability Assessment**

## 1. Introduction

Based on recommendations of an independent Expert Group, Papua New Guinea has been selected as one of the countries to participate in the Pilot Program for Climate Resilience (PPCR) which is part of the Strategic Climate Fund (SCF), a multi-donor Trust Fund within the Climate Investment Funds (CIF). The goal of the Pilot Program for Climate Resilience (PPCR) is to help countries transform to a climate resilient development path, consistent with national poverty reduction and sustainable development goals.

This survey to evaluate and map household vulnerability to climate change impacts is being undertaken as part of the process to design the Strategic Program for Climate Resilience (SPCR) in Papua New Guinea with support provided by the Asian Development Bank. The survey will provide information that will assist in the design and implementation of priority risk management measures that will help individual households and vulnerable communities respond to climate change risks, including the following:

(i) an anticipated 1m rise in sea-level, which when combined with storm surge will result in coastal areas being inundated;
(ii) increase in extreme events (droughts, flooding);
(iii) increase in cyclone intensity (i.e. more category 4 and 5 cyclones); changes in weather patterns; and
(iv) increased episodes of high temperatures.

## 2. Sections of the Survey

(i) Identification and Household Data
(ii) Housing
(iii) Food and Agriculture/Livestock
(iv) Fish and Marine Resources
(v) Food Security/Food Shortage/Food storage
(vi) Health - Water and Sanitation
(vii) Early Warning and Hazard Knowledge (Storms/Flooding)
(viii) Land Availability and Access
(ix) Household Income
(x) Transport and Communications
(xi) Cultural Issues
(xii) Funding Sources

## 3. Verbal Consent

My name is ---------- and I am from the CCDA. We are conducting an assessment of your village to better understand current knowledge, understanding of CC and the practices in the village on response to hazards, the capacity there is in the community to respond and to help identify how CCDA can help to enhance adaptation to CC.

I have over 100 questions to ask you and your family and it will take a long time. Please it is important that you are patient with me and answer all the questions as well as you can. You answers will help CCDA to understand your family and your community better and will make it easier for CCDA to make good decisions on how CCDA can help you deal with CC.

Do you have any questions to ask me before we start on my questions? (Give time for the respondent to ask questions even while you are in the middle of your questioning).

**Section A: Identification and Household Data**

Questionnaire Administrator ……. Questionnaire completed by: …….

Date: ___/___/20XX House location: _____ (give map reference)

Province: ……. District: …… Village: ……..

---

**Household Questions**

1. Name of Informant(s):
2. Number of Occupants:
3. Household data (start with eldest)

| Name | Gender (M, F) | Age: 5=60+, 4=46-60, 3=27-45, 2=16-26 1= 5-15 0=0-5 | Education level achieved: 1=0, 2=1-8, 3=9-12, 4= Technical College 5= University, 6=others | Occupation (1= wage employment, 2= own business, 3= market gardening, 4= fishing venture, 5= cash crops farming, 6= subsistence farmer,) 7=other | Current location (1=village, 2=district, 3=province, 4=POM, 5=PNG, 6=Other |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

4. How many years have you lived in this community? Years or Whole Life

**Section B: Questions about Buildings/House**

5. Do you own or rent the house? Own Rent Other
6. Age of building/structure (years)

7. Current condition of building and roof

Tick box and condition of the house and roof

| | Excellent | Good | Fair | Bad |
|---|---|---|---|---|
| Roof Condition | | | | |
| Building Condition | | | | |

8. Prone to flooding Yes/No

9. Is the house raised above the ground? Yes/No?

10. Approx. how many meters above the ground is it raised? …… (m)

11. What method has been used to raise the house above the ground: (tick box)

Piles
Raised foundation
Other methods

Describe:……
……
……

12. What is the house made of:

| Building | Tick box and indicate % of materials used in the construction | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Concrete % | Concrete Block % | Wood % | Plywood % | Metal or Tin % | Thatch % | Coral/Lime % | Others (indicate) |
| Roof Type | | | | | | | | |
| Outside Walls | | | | | | | | |
| Main Dwelling (inside walls, ceiling, etc.) | | | | | | | | |
| Floor, Foundation type | | | | | | | | |

13. Quality of Construction

| | Tick box and indicate how structure was built | | | |
|---|---|---|---|---|
| | Professional | Amateur | Informal | Other |
| | | | | |
| Does Roof have Cyclone Ties | | | | |
| | Yes | | No | |

14. Number of Rooms

15. Size of main building (dwelling): _____m x _____m

16. Estimated value of the main building: K_____

17. Is your house (building) insured? Yes_____ No _____
    If yes state the value K

18. Do you have other buildings? If yes, what size?

19. Size of other buildings on land: 1. _____m x _____m
    2. _____m x _____m

20. Use of other buildings on land:
    1.
    2.

21. Value of other buildings on land:
    1. K _____
    2. K _____

**Section C: Food and Agriculture 22. What are your main foods (list)?**

| Crop type | Plenty | Enough | Short | Grow | Buy | Sea Food | Plenty | Enough | Short What months | Catch | Buy what month |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Taro | | | | | | Reef Fish | | | | | |
| Yam | | | | | | Shells (Clam) | | | | | |
| Banana | | | | | | Crab | | | | | |
| Sugarcane | | | | | | Prawns | | | | | |
| Pawpaw | | | | | | River fish | | | | | |
| Pitpit | | | | | | Crayfish | | | | | |
| Kaukau | | | | | | Octopus | | | | | |
| Sago | | | | | | Squid | | | | | |
| Leafy greens | | | | | | Seaweed | | | | | |
| Cassava | | | | | | Coral trout | | | | | |
| Breadfruit | | | | | | Parrot | | | | | |
| Pineapple | | | | | | Sweet lips | | | | | |
| Coconuts | | | | | | Mallet | | | | | |
| | | | | | | Tuna | | | | | |
| Rice | | | | | | eel | | | | | |
| Oil | | | | | | kingfisher | | | | | |
| Salt | | | | | | Dorado | | | | | |
| Sugar | | | | | | Barracuda | | | | | |
| Chicken | | | | | | Red emperor | | | | | |
| Pork | | | | | | | | | | | |
| Beef | | | | | | | | | | | |
| Tea/coffee | | | | | | | | | | | |
| Flour | | | | | | | | | | | |
| Other | | | | | | | | | | | |

22. Food seasonality

23. What month of the year is harvest?

| Name | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Taro | | | | | | | | | | | | |
| Yam | | | | | | | | | | | | |
| Banana | | | | | | | | | | | | |
| Sugarcane | | | | | | | | | | | | |
| Pawpaw | | | | | | | | | | | | |
| Pitpit | | | | | | | | | | | | |
| Kaukau | | | | | | | | | | | | |
| Sago | | | | | | | | | | | | |
| Leafy greens | | | | | | | | | | | | |
| Cassava | | | | | | | | | | | | |
| Breadfruit | | | | | | | | | | | | |
| Pineapple | | | | | | | | | | | | |
| Coconuts | | | | | | | | | | | | |

| Shells (Clam) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crab | | | | | | | | | | | | |
| Prawns | | | | | | | | | | | | |
| River fish | | | | | | | | | | | | |
| Crayfish | | | | | | | | | | | | |
| Octopus | | | | | | | | | | | | |
| Squid | | | | | | | | | | | | |
| Seaweed | | | | | | | | | | | | |
| Coral trout | | | | | | | | | | | | |
| Parrot | | | | | | | | | | | | |
| Sweet lips | | | | | | | | | | | | |
| Mallet | | | | | | | | | | | | |
| Tuna | | | | | | | | | | | | |
| eel | | | | | | | | | | | | |
| kingfish | | | | | | | | | | | | |
| Dorado | | | | | | | | | | | | |
| Barracuda | | | | | | | | | | | | |
| Red emperor | | | | | | | | | | | | |

**Section D Fish and Marine resources**

24. Are members of your household engaged in any coastal and marine activities (fishing)? Yes No

25. If yes, who is involved?

    a. Mostly men
    b. Mostly women
    c. Both men and women

d. No one
e. Other

26. What type of activity do they do?

a. Diving
b. Netting
c. Spearing
d. Collecting of shells
e. Farming
f. Bombing
g. Other

27. Where is the location where these coastal and marine activities are carried out? (location of fishing grounds/ mangrove harvest) Do sketch map at the back of this page)

28. How far is the location/ site from your house? _km/ or time to get there ----------

29. How often in a week do you or your family go fishing?

30. What do you do with the catch? (List the types of marine products do you harvest? Refer to Q 22)

Eat
Give away
Sell
Barter for other things process and store
Other

31. Do you make artifices and other things using marine products? Yes/No
If yes, what do with?

32. Where do you spend most of your time harvesting/fishing for marine and coastal resources? Please mark on map and describe area (type of habitat, size, and species found there, ownership)?

33. How long have you or your family been fishing there?

34. How long do you or your family members usually spend:

a. getting to each identified area and back
b. actually catching/harvesting resources

35. Who do you go with to this fish this area?

a. Myself
b. Other members of the household
c. Village people
d. Other

36. What time of the day do you go fishing in this area?

a. High tide
b. Low tide
c. Changing tide
d. Any time of the day
e. Any time of the night

37. Types of Coastal and marine activities

1. Identify all use of coastal & marine resources by the household (i.e. fishing, protected areas, tourism, etc.).
2. Identify all goods & services produced from each coastal and marine activity for the household.
3. Identify the specific method or development being used for each coastal and marine goods and services.
4. Where is the primary market in which the marine goods & service is sold? (International, national or local).
5. Identify the primary house hold use for each good or service (own consumption, leisure or sale).

| **1. Types Activities or uses** | **2. Goods & Services produced by each activity** | **3. Types of Household use** | **4. Where are these goods and services sold? (local, national, international** | **5. Household uses of each product/service** |
|---|---|---|---|---|
| | | | | |
| | | | | |

38. How would you describe current conditions of coastal or marine resource which you use, e.g. seagrass beds, mangroves, coral reefs, turtle populations, dugong populations, commercial species of shellfish, beche-de-mer, groupers, sharks, tuna etc.?

| Name of resources | Status | | | | | |
|---|---|---|---|---|---|---|
| | Very Good | Good | Satisfactory | Bad | Very Bad | Other |
| Seagrass bed | | | | | | |
| Mangroves | | | | | | |
| Coral reefs | | | | | | |
| Turtles populations | | | | | | |
| Dugong populations | | | | | | |
| Commercial species of shellfish Beech-der-mer | | | | | | |
| Groupers | | | | | | |
| Sharks | | | | | | |
| Tuna | | | | | | |
| | | | | | | |
| | | | | | | |

**Section E: Food Security/Food shortage**

39. Have you ever had a food shortage or shortage of certain types of food? Yes __ No __

40. Fill in the table below the required data for the three most recent food shortages

| | Shortage 1 | Shortage 2 | Shortage 3 |
|---|---|---|---|
| Date (Month and Year) | | | |
| Caused by e.g. no ship, cyclone destroyed crops /bad weather, poor environmental conditions | | | |
| Length of shortage | | | |
| Type of food that was in short supply | | | |
| Action taken to deal with shortage | | | |

41. Do you preserve any foods? Yes ___ No ___

42. If yes, what foods (list)?

43. Describe how you preserve food/fish/meat (e.g. traditional, modern, drying, salting, recovery and preserving before and after cyclone damage to crop)?

**Food Storage/stocks (Imported or produced locally)**

How and where do you store food?

| Food Storage | % | Number of appliances |
|---|---|---|
| Refrigerator | | |
| Freezer | | |
| Dried/Canned | | |
| Smoked | | |
| Other | | |

44. Questions about Food Preparation

| Main Cooking Fuel | % | Cost |
|---|---|---|
| Firewood/Driftwood | | |
| Gas | | |
| Electric | | |
| Other | | |
| Kerosene | | |

Renewable sources (solar, wind, bio-mass)

_____

45. Questions about Farming and Livestock

| Livestock and Farming types/Activities | % | Estimate number |
|---|---|---|
| Poultry | | |
| Piggery | | |
| Goatds | | |
| Other Crops | | |
| Subsistence/Domestic | | |
| Commercial | | |
| Other | | |
| Crop list (refer to question 22) | | |

46. How much livestock/produce are bartered or sold? _____% _____

47. Value of farm ( if applicable) K_____ Size of Garden Farm (Sq.M.) ____

48. Where is your livestock activity:

Close to household_____ Away from household _____

49. Where is your livestock activity?

Close to Household_____ Away from household _____

50. How big is your land? Garden area _____sq.m House area _____sq.m

**Section F: Health - Water Supply/Sanitation**

51. Do you have piped water? Yes _____ No _____

52. Do you have a water tank/s? Yes _____ No _____
Communal household_____ or Shared _____

53. River Reservoir

54. Bore or Well

55. What material is your water storage made off?

| Plastic | Metal | Concrete | Other (specify) |
|---|---|---|---|
| | | | |

56. Does your roof catch rain? Yes _____ No _____

57. If yes, how extensive is the guttering to catch the rain?
    (a) All around the house
    (b) Half of the house
    (c) A single spout (guttering-piece)
    (d) Pump from tank to house

58. Main source of Drinking Water

59. Has there been any water shortages? If yes when _____ How long?

60. What actions do you take to cope with water shortages?_____
    _____

61. Do you reuse any water, e.g. from washing machine, shower, cooking, etc.? Yes/ No

62. If yes, what do you use this water for? _____

63. Energy sources and usage

| Energy Source | % |
|---|---|
| Mains connected | |
| Own Generator | |
| Other Power Source (Type_____) | |
| none | |

Do you have water heating (tick box)?

| Solar | Gas | Electric | None |
|---|---|---|---|
| | | | |

64. Does your house have natural ventilation and/or shade on the north side? Yes No

65. Do you have air conditioning or fans for cooling the house? Yes No

**Questions about Waste**

66. What type of toilet (s) do you have

| Type | How many | Location In/Out |
|---|---|---|
| Pour Flush | | |
| Flush | | |
| Long Drop | | |
| Composting | | |
| Sea/river | | |
| Bush | | |
| Other | | |

67. What happens to wastewater?

| Tick box and indicate what happens to waste water | | | | |
|---|---|---|---|---|
| Waste Water Disposal | Septic Tank | Open | Waste Treatment System (Type) | None |
| | | | | |

68. Do you have separate soak pit for gray water? Yes ____ No ____

69. How do you get rid of your rubbish?

| Waste Disposal | % |
|---|---|
| Hole | |
| Collected | |
| Open burning | |
| Bush | |
| Other (Sea/River) | |

70. Do you have any areas of standing water (e.g. plastic or metal containers that collect water, broken or blocked drainpipes, and unused boats, billabongs, fishponds) around your house? Yes _____ No _____

71. Does anyone in your house suffer from asthma or other respiratory ailments?
Yes _____ No _____

72. Has anyone in your house ever suffered from dengue fever or malaria? Yes No

73. Do you have anyone in your house that is infirm/sick or needs assistance to undertake daily chores? Yes _____ No _____

**Section G: Early Warning & hazard Knowledge (Storms/Flooding)**

74. Have you ever had a storm surge or flood? Yes _____No

Fill in the table below the required data for the three most recent floods or storm surges.

| Tick if household experienced | Event/Hazard | Frequency | | | Impact | | |
|---|---|---|---|---|---|---|---|
| | | Increasing | No change | Decreasing | Increasing | No change | Decreasing |
| | Drought | | | | | | |
| | Flooding | | | | | | |
| | Saltwater intrusion into gardens | | | | | | |
| | Saltwater intrusion into wells | | | | | | |
| | Sea Level Rise | | | | | | |
| | Coral Bleaching | | | | | | |
| | Changes in weather (i.e., changes in rainy season, dry periods, wind patterns, etc. leading to changes in | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | planting season, etc.) | | | | | | |
| | Extreme storms or cyclones | | | | | | |
| | Landslides | | | | | | |
| | Beach erosion | | | | | | |
| | Hotter climate | | | | | | |
| | Cooler climate | | | | | | |
| | Bush Fires | | | | | | |
| | Sickness from insects (i.e., malaria) | | | | | | |
| | Others (please state) | | | | | | |

75. What do you think caused these changes?

76. What do you think caused these changes?

77. What actions have been taken by the household to prevent flooding?
(i) ……..…
(ii) ……..……
(iii) ……..…
(iv) ……
(v) ……..…

78. Have you ever considered moving your house to a place less vulnerable to flooding or building up on pillars? Yes _____ No _____

If yes, why have you not moved or built up on pillars?
79. If yes and have moved, where is this place, i.e. location? Mark location on map and describe?
……..……

80. Has the vegetation changed over time? Yes _____ No _____

If yes, is it more vegetated now than 10 or 20 years back? _____

81. How has the shoreline, lagoon or coral reef changed over the years?
……
……
……
……

82. What caused these changes?
……
……
……
……

83. Have you noticed any changes to your livelihood after changes to the shoreline, lagoon or coral reef? What have been these changes?
……
……

84. Have you experienced any major disasters (sea surge, rain & flooding, etc.)? If yes what type of damage did these disasters cause?

| | |
|---|---|
| a) Destroyed my home | e) Family member died/injured |
| b) Damaged my food gardens | f) Have affected the water catchment areas |
| c) Destroyed my livestock | g) no effects experienced |
| d) Destroyed infrastructure | h) others (specify) |

85. Please describe the three most recent disaster events.

| | **Hazard 1** | **Hazard 2** | **Hazard 3** |
|---|---|---|---|
| Date (Month and Year) | | | |
| Duration of the event? ( How long did the event go for? Days? Hours? etc. | | | |
| Did your household experience any of the following? | | | |
| Family member died? | | | |
| Family member injured? | | | |
| Family member (a) got sick? (b)What illness, (c) how long) | (a)_____ (b) _____ | (a)_____ (b)_____ (c)_____ | (a)_____ (b) _____ (c))_____ |
| | **Hazard 1** | **Hazard 2** | **Hazard 3** |
| Was there damage to house and property? Describe.. | | | |
| Estimated value of damage to your house and buildings? | K | K | K |
| Estimated value of Damage to building contents? | K | K | K |
| Damage to other possessions e.g. cars? Boat? | K | K | K |
| Affected water catchment areas? | | | |
| Damage to food garden? | K | K | K |
| Damage to livestock? | K | K | K |

| | | | |
|---|---|---|---|
| IF event is storm surge or rain flood, what was the depth (in meters) of the flooding inside the house? | | | |

86. Did you receive any warning prior to the disaster? If Yes, how? ----------

87. What did you do before, during, and after the disaster?

a. Before:_____
b. During:_____
c. After:_____

Any key challenges/problems/issues of doing the above 4:

88. What kind of Disaster Risk Reduction (DRR) activities does your community involve in?

a. Preparedness
b. Prevention
c. Recovery
d. Rehabilitation & Development
e. Don't Know
f. No Response
g. Response
h. Mitigation

89. What type of activities does your community involve relating to any of the DRR activities listed above either with government or partners?

| | |
|---|---|
| a) Conducting Sustainable livelihood improvement program/projects (like fish farming, poultry) | e) Preparing and responding to major hydro meteorological hazards (e.g., flood) |
| b) Conducting hazards mapping, vulnerability and Capacity Assessments of vulnerable communities | f) others (specify)_____ |
| c) Establishing early warning systems for vulnerable communities | g) Don't Know |
| d) Producing disaster risk management plans | h) No Response |

90. Is anyone in your household responsible for disaster preparedness? (Who is in charge of hazard response in your household?)

91. Has this person had any training in Hazard Response? Yes ___ No ___

92. Do you know where to get disaster and CC information? Yes ___ No ___
If yes, where? _____

93. Do you know which areas on your Island or in your village are like to be affected by storm surges or flooding? Yes No If yes, can you point them out on the map? (let the respondent point to the map & mark it)

94. Do you have a warning system for hazards (storms, flooding)? Yes ___ No ___

95. Has your family got a safe place to go to during hazards? Yes ___ No ___
If yes, where?

96. How can your household prepare to respond to Hazards?

**Section H: Land availability and access**

97. Have you got land? Yes _____ No _____

98. Who owns the land? Freehold ___Communal ___Rented ___(how much, type of ownership)

99. Where is your land located? Near the village ___ Away from village ___

100. Have you got land on the mainland or other islands? Yes ___ No ___

101. Can you get more land if you need more? Yes No If yes, how and where?

……
……

102. Is any of your land threatened by, sea level rise, flooding, degradation, ownership disputes? Yes ___ No ___

If yes, what is threatening it?
Sea level rising Flooding Degrading Ownership disputes Other

104. Are there any squatters in your village/island? If yes, who are they and where they come from?
……

**Section I: Household Cash Income**

105. What are the three largest sources of your household's cash income?

| Type of Income | Source | Amount | Frequency (1=daily, 2=weekly, 3=Monthly, 4=occasionally |
|---|---|---|---|
| Salary & Wages | Government | | |
| Salary & Wages | Company | | |
| Wages | Own business | | |
| Wages | Casual employment | | |
| Earnings | Marketing (garden produce & fish sales) | | |
| Earnings | Crafts | | |

| | | | |
|---|---|---|---|
| Remittances & gifts | Relatives & friends | | |
| Entitlement | Welfare & Pensions | | |
| Resource Extractions Benefits | Mining, forest, fish, land | | |
| Other income | | | |

106. Do you have savings or investments? Yes No

107. Do you have a community savings or investment or insurance scheme? Yes No

108. Do you keep your money in the bank? Yes No

109. Where is the bank located? ----------

110. Are there anyone in your household who are members of an organized group? If yes, what group?

(i) Church Group Business group Association
(ii) Youth Group
(iii) Culture Group
(iv) Cooperative Sports Group
(v) Savings Group
(vi) Other

**Section J: Transport and Communications**

111. What communication system exists in your household?

(i) HF/VHF Radio
(ii) AM/FM Radio
(iii) Television
(iv) Mobile Phone
(v) Internet
(vi) others specify)

112. Does your household own any of the following types of transportation? (tick)

**Section K: Cultural Considerations**

113. What do you consider in your custom/culture that will help you survive in a hazard situation or help reduce CC impacts? (fish conservation, forest & nature taboos, extended family, wantok, etc.) Please list:

_____

_____

_____

114. What do you consider in your custom that will not help you in a hazard situation or make CC impact worse? Please list:

_____
_____
_____

**Section L: Funding Sources**

115. Do you know of any funding sources that are available in the district, province and country? If yes, which ones?

| Name of Source | Tick |
|---|---|
| Function Grants | |
| LLG Grants | |
| District Support Improvement Program (JDPBPC) | |
| Donor Support (GEF, ASG Scheme, NZ ODA, JICA, KOICA | |
| NGO Support (International NGOs, Local NGOs, Churches) | |
| Community Support (Association, Community Contributions) | |
| Any other support (Private Sector, Relatives) | |

116. How and why are you familiar with the source(s) you have indicated? Please explain.

_____
_____
_____

Where do you get the information on the funding sources?

Media Friends
Government Officials Others

117. Has your household and or village received funding from the Joint District Planning and Budget Priorities Committee for projects? If yes, how much and for what purpose?

_____
_____
_____

118. Were these projects completed successfully? Yes _____ No _____

What lessons have we learned from that (failure/successful) experience? List 3 of the main ones

1. _____
2. _____
3. _____

119. Did you or someone in the village prepare a project document to submit for the project funding? If yes, who?

Educated relatives
Government Officials
Development Partners

NGOs/CBOs
Other

**Climate Change Adaptation Special Grants Facility)**

120. Are there any community projects for the island that you would like SGF to finance, and if many list them in order of priority?

Whom would you nominate as the ideal contact person form the community to deal with projects and funding?

Church Elder Councilor
A Public Servant
District Administrator LLG Clerk
Women's representative Others

Is there a need to train community project development officers? Yes No

Please explain your answer

# RESULTS OF VULNERABILITY MAPPING AND EXAMPLE OF CLIMATE CHANGE ADAPTATION PLAN FOR KWARAIWA

## KWARAIWA Vulnerability Map and Climate Change Adaptation Plan

Strategic Program for Climate Resilience (SPCR)

| DESCRIPTION | | |
|---|---|---|
| 1. | *Location* | Milne Bay Province Latitude: 151° 17' 23.76096" Longitude: 10° 37' 23.698272" |
| 2. | *Population* | 400 permanent residence (600 with school children) |
| 3. | *Economic Activities* | Fishing and Subsistence Farming |
| 4. | *Natural, Physical, cultural, historical asset and resources* | Taboo fishing sites, Cemetery, Land, School, Church, Rich Culture and Heritage |
| 5. | *Climate Change Risks* | Sea level rise, Increased incidents of extreme events (floods, droughts, category 4 and 5 cyclones), Increase in temperature, changes in rainfall patterns and intensity, changes in seasons. |
| 6. | *Key resource problems/ vulnerabilities* | Bleaching of Coral Reefs, depletion of fishery resources, coastal erosion, shortage of arable land threatens food security , flooding risks from sea level rise and storm surge, water shortage (25 house-holds with roofing iron but without water tanks and gutters), limited sources of electricity for emergency response, limited access to building materials, no early warning systems or emergency response plan. |
| 7. | *Communities Future Vision and Goals* | A climate-resilient traditional community sustained by the natural resources of the island. |
| 8. | *Key Activity* | Fostering greater self-reliance through awareness and action on climate change and disaster preparedness. |

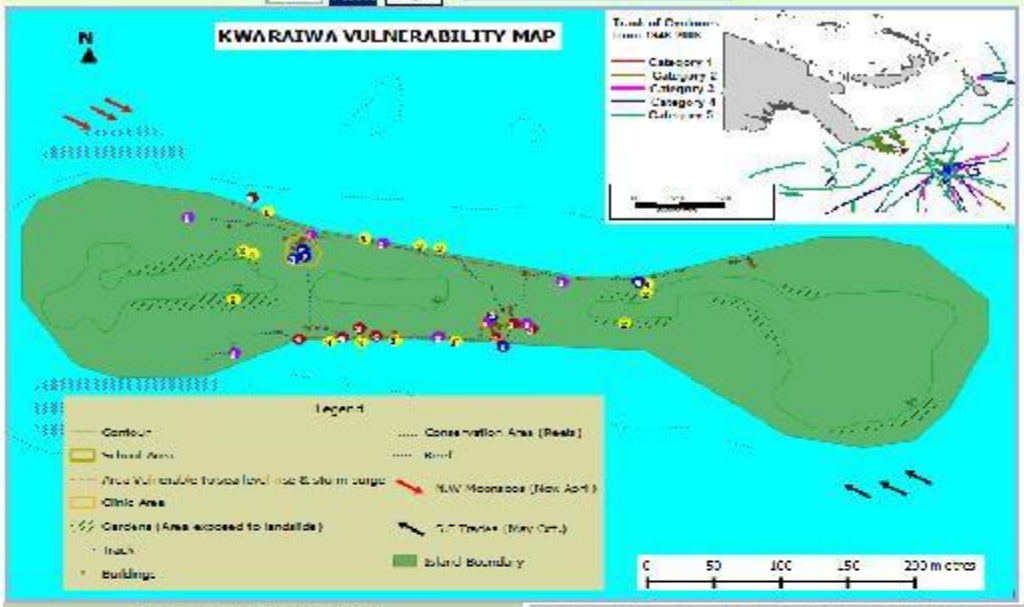
### RESOURCES AT RISK

**Risk 1: Area and community assets vulnerable to inundation from sea level rise and storm surge (up to 3 metres above mean sea level)**


**Risk 2: Area and community assets causing pollution or having an impact on human health**


**Risk 3: Area and community assets causing vector borne disease**


**Risk 4: Area and community assets vulnerable to erosion and landslide**


| COMMUNITY CLIMATE CHANGE RESPONSE PLAN | |
|---|---|
| *Sea level Rise & Storm Surge* | • Training to be provided to build coastal defenses (hard and soft options), relocate vulnerable homes and community infrastructure. |
| *Intense rainfall causing land-slides, flooding, pollution and increase in water –borne diseases* | • NARI to conduct community awareness on agricultural practices on hilltops /steep slopes i.e. terracing appropriate crops /plants for soil stabilization<br>• Community Climate Change Committee to ensure the clearing of land on steep hills is avoided and vegetation cover is restored and maintained.<br>• Climate Change committee to encourage community members to install drainage for stagnant pools, with drain pipes provided by the District or Provincial Administrators.<br>• Provincial District to install culverts in affected areas, provide mosquito spray and nets, and train community in the use of biological control methods for mosquitoes. |
| *Water quality and availability* | • Eda Ranu and Provincial Health Department to train community members to undertake regular water testing and Provincial District to promote/provide rain harvesting techniques and storage facilities<br>• Council to protect water catchment area such as wells |
| *Food Security* | • DAL and NARI to promote education and awareness on food production, food preservation, food shortage, support sound farming practices, soil conservation techniques on slopes and hills.<br>• Climate change projects from the Office of Climate Change and Development to promote subsistence and commercial farming in the community |
| *Biodiversity and marine resources affected by rise in sea surface temperature and pollution* | • Council, Office of Climate Change and Development and National Fisheries Authority to map coral reefs and marine resources, identify hotspots and develop management plans and strategies.<br>• National Fisheries Authority to provide education and assistance to develop fish farming and establish coral reef nursery to repopulate loss species/stock. |

| Climate Change Risks/Impacts | Climate Change Adaptation Plan (2013—2017) |
|---|---|
| *Increase in temperature*<br>Coral reef and fishing resources depleted as a result of coral bleaching | • Community to establish coral nursery in 2 pilot sites preferably the two existing conservation sites, introduce aquaculture farming to repopulate fish resource and NFA to train community members on fish/clam farming |
| *Water and Vector Borne Disease*<br>Stagnant water from rain and sea level rise that give rise to vector borne diseases affecting Human Health | • Install culverts in stagnant pools, provide mosquito spray and nets, and train community in use of biological control techniques for mosquitoes |
| *Emergency Preparedness*<br>No early warning system nor a disaster Centre | • Establish community early warning system, train community in response procedures, establish disaster centre at the church and secure emergency supplies and equipment for disaster centre |
| *Water and Sanitation*<br>Water quality affected by pit toilets on higher ground just above uncovered wells also exposed to pollution, water availability from less tanks and gutters | • Install 25 water tanks to households with metal roofs (5, 000 litre capacity) with gutter and pipes. Large gravity fed tanks to be installed at the school, church and clinic. Relocate pit toilets away from wells or install composting toilets |
| *Food Security*<br>Food security from increase in invasive species, shortage of land and limited food production, storage and preservation options | • NARI and DAL to provide training on food production, preservation and storage, improved land use options. |
| *Coastal Erosion* | • Communities to be trained in coastal monitoring and maintenance of coastal defences (Hard and soft engineering options including mangrove replanting) |