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Report No: PAD2849

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT AND RESTRUCTURING

IN THE AMOUNT OF SDR 10.6 MILLION
(US\$14.95 MILLION EQUIVALENT)

AND AN

ADDITIONAL GRANT FROM THE AUSTRALIA-PACIFIC ISLANDS PARTNERSHIP TRUST FUND

IN THE AMOUNT OF US\$1.96 MILLION

TO THE KINGDOM OF TONGA

FOR THE

PACIFIC RESILIENCE PROJECT

UNDER THE PACIFIC RESILIENCE PROGRAM

June 25, 2018

Social, Urban, Rural And Resilience Global Practice
East Asia And Pacific Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2018)

Currency Unit = Pa'anga (TOP)

TOP 2.22 = US\$1

US\$ 1.42 = SDR 1

FISCAL YEAR

July 1 - June 30

Regional Vice President: Victoria Kwakwa

Country Director: Michel Kerf

Senior Global Practice Director: Ede Jorge Ijjasz-Vasquez

Practice Manager: Abhas Kumar Jha

Task Team Leader(s): Keiko Saito, Simone Lillian Esler

ABBREVIATIONS AND ACRONYMS

| | |
|---------|---|
| AF | Additional Financing |
| CF | Conversion Factor |
| CCSA | Cross Cutting Solution Area |
| CERC | Contingency Emergency Response Component |
| CPS | Country Partnership Strategy |
| CRW | Crisis Response Window |
| CSU | Central Services Unit |
| DA | Designated Account |
| DFAT | Department of Foreign Affairs and Trade |
| DRM | Disaster Risk Management |
| EA | Environmental Assessment |
| ECOP | Environmental Codes of Practice |
| ERM | Emergency Response Manual |
| ERR | Economic Rate of Return |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| FM | Financial Management |
| FS | Feasibility Study |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GFDRR | Global Facility for Disaster Reduction and Recovery |
| GoT | Government of Tonga |
| GP | Global Practice |
| GRM | Grievance Redress Mechanism |
| GRS | Grievance Redress Service |
| IBRD | International Bank for Reconstruction and Development |
| IDA | International Development Association |
| IPF | Investment Project Financing |
| IFR | Interim Financial Report |
| ISP | Implementation Support Plan |
| M&E | Monitoring and Evaluation |
| MEIDECC | Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications |
| MOET | Ministry of Education and Training |
| MOFNP | Ministry of Finance and National Planning |
| NPV | Net Present Value |
| ODA | Official Development Assistance |
| O&M | Operations and Maintenance |
| OP | Operations Policy |
| OPCS | Operations Policy and Country Services |
| PCRAFI | Pacific Catastrophe Risk Assessment and Financing Initiative |
| PCRIC | Pacific Catastrophe Risk Insurance Company |
| PMU | Project Management Unit |

| | |
|------|---|
| POM | Project Operations Manual |
| PPSD | Project Procurement Strategy for Development |
| PREP | Pacific Resilience Program |
| RAC | Regional Advisory Committee |
| RAP | Resettlement Action Plan |
| RPF | Resettlement Policy Framework |
| SA | Social Assessment |
| SPC | South Pacific Community |
| STEP | Systematic Tracking of Exchanges in Procurement |
| TC | Tropical Cyclone |
| TTL | Task Team Leader |
| WASH | Water, Sanitation and Hygiene |

BASIC INFORMATION – PARENT (PACIFIC RESILIENCE PROJECT UNDER PACIFIC RESILIENCE PROGRAM - P154840)

| | | | | |
|-----------------------|--|--|------------------------|---|
| Country Tonga | Product Line IBRD/IDA | Team Leader(s) Simone Lillian Esler | | |
| Project ID P154840 | Financing Instrument Investment Project Financing | Resp CC GSU08 (9349) | Req CC EACNF (6680) | Practice Area (Lead) Social, Urban, Rural and Resilience Global Practice |

Implementing Agency: Ministry of Finance and National Planning, Ministry of Environment, Energy, Climate Change, Disaster Mgmt, Meteorology, Information and Comms

| | |
|--|--|
| Is this a regionally tagged project? No | |
|--|--|

| | |
|----------------------------------|--|
| Bank/IFC Collaboration No | |
|----------------------------------|--|

| | | | |
|------------------------------|-----------------------------|--|---|
| Approval Date 19-Jun-2015 | Closing Date 30-Nov-2020 | Original Environmental Assessment Category Partial Assessment (B) | Current EA Category Partial Assessment (B) |
|------------------------------|-----------------------------|--|---|

| | |
|--|--|
| <input type="checkbox"/> Situations of Urgent Need or Capacity Constraints | <input type="checkbox"/> Financial Intermediaries (FI) |
| <input type="checkbox"/> Series of Projects (SOP) | <input type="checkbox"/> Project-Based Guarantees |

Development Objective(s)

The objective of the Project is to strengthen early warning, resilient investments and financial protection of Tonga.

Ratings (from Parent ISR)

| | Implementation | | | | | Latest ISR |
|--------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|
| | 20-Nov-2015 | 29-May-2016 | 01-Dec-2016 | 25-Jun-2017 | 01-Nov-2017 | 04-Jun-2018 |
| Progress towards achievement of PDO | S | S | S | S | S | S |
| Overall Implementation Progress (IP) | S | MS | S | MS | MS | MS |
| Overall Safeguards Rating | S | S | S | S | MS | MS |
| Overall Risk | S | S | S | S | S | S |

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing for the Pacific Resilience Project under the Pacific Resilience Program - P167166)

| | | | |
|---|--|--|--|
| Project ID P167166 | Project Name Additional Financing for the Pacific Resilience Project under the Pacific Resilience Program | Additional Financing Type Restructuring, Scale Up | Urgent Need or Capacity Constraints Yes |
| Financing instrument Investment Project Financing | Product line IBRD/IDA | Approval Date 17-Jul-2018 | |
| Projected Date of Full Disbursement 31-May-2023 | Bank/IFC Collaboration No | | |
| Is this a regionally tagged project? No | | | |
| <input checked="" type="checkbox"/> Situations of Urgent Need or Capacity Constraints | | <input type="checkbox"/> Financial Intermediaries (FI) | |
| <input checked="" type="checkbox"/> Series of Projects (SOP) | | <input type="checkbox"/> Project-Based Guarantees | |

| | |
|---|---|
| <input type="checkbox"/> Disbursement-linked Indicators (DLIs) | <input type="checkbox"/> Contingent Emergency Response Component (CERC) |
| <input type="checkbox"/> Alternative Procurement Arrangements (APA) | |

Disbursement Summary (from Parent ISR)

| Source of Funds | Net Commitments | Total Disbursed | Remaining Balance | Disbursed | |
|-----------------|-----------------|-----------------|-------------------|-----------|------|
| IBRD | | | | | 0 % |
| IDA | 10.50 | 3.09 | 7.97 | | 28 % |
| Grants | 6.08 | 0.72 | 5.36 | | 12 % |

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing for the Pacific Resilience Project under the Pacific Resilience Program - P167166)

FINANCING DATA (US\$, Millions)

SUMMARY

| | |
|---------------------------|-------|
| Total Project Cost | 17.31 |
| Total Financing | 17.31 |
| of which IBRD/IDA | 14.95 |
| Financing Gap | 0.00 |

DETAILS

World Bank Group Financing

| | |
|---|-------|
| International Development Association (IDA) | 14.95 |
| IDA Grant | 14.95 |

Non-World Bank Group Financing

| | |
|---------------------|------|
| Counterpart Funding | 0.40 |
| Borrower | 0.40 |
| Other Sources | 1.96 |

| | |
|--------------------------|------|
| AUSTRALIA, Government of | 1.96 |
|--------------------------|------|

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any other Policy waiver(s)?

Yes No

INSTITUTIONAL DATA

Practice Area (Lead)

Social, Urban, Rural and Resilience Global Practice

Contributing Practice Areas

Finance, Competitiveness and Innovation

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

PROJECT TEAM

Bank Staff

| Name | Role | Specialization | Unit |
|-------------------------------|--|----------------|-------|
| Keiko Saito | Team Leader (ADM Responsible) | | GSU08 |
| Simone Lillian Esler | Team Leader | | GSU08 |
| Cristiano Costa e Silva Nunes | Procurement Specialist (ADM Responsible) | | GGOPG |
| Stephen Paul Hartung | Financial Management Specialist | | GGOEP |
| Andrew James Hurley | Team Member | | GSU08 |
| Duangrat Laohapakakul | Counsel | | LEGES |
| Felix Peter Taaffe | Environmental Safeguards Specialist | | GEN2A |
| Habiba Gitay | Team Member | | GSU08 |
| Loren Jayne Atkins | Counsel | | LEGES |
| Michael Bonte-Grapentin | Team Member | | GSU08 |
| Nathan Hale | Team Member | | EACNF |
| Ross James Butler | Social Safeguards Specialist | | GSU02 |
| Samantha Jane Cook | Team Member | | GFCCR |
| Saskai Mohammad Amin | Team Member | | EACNF |
| Satish Kumar Shivakumar | Team Member | | WFACS |
| Thomas John Callander | Social Safeguards Specialist | | GSU02 |
| Toufiq Ahmed | Team Member | | EACNF |
| Wolfhart Pohl | Environmental Safeguards Specialist | | GEN2A |

Extended Team

| Name | Title | Organization | Location |
|------|-------|--------------|----------|
|------|-------|--------------|----------|



TONGA

TONGA – ADDITIONAL FINANCING TO PACIFIC RESILIENCE PROJECT UNDER PACIFIC RESILIENCE PROGRAM

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I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

1. This Project Paper seeks the approval of the Executive Directors to provide an additional IDA grant in the amount of SDR 10.6 million (equivalent to US\$14.95 million¹) to the Pacific Resilience Project (PREP, P154840) in Tonga under the Pacific Resilience Program. This includes SDR 7.1 million (US\$10 million equivalent) from the International Development Association (IDA) Crisis Response Window (CRW). The CRW funds would support the Government of Tonga (GoT) in responding to Tropical Cyclone Gita (TC Gita), which struck the Kingdom of Tonga on February 12, 2018 as a Category 4 Tropical Cyclone. TC Gita caused extensive damage and loss totaling US\$164.2 million, which is equivalent to around 38 percent of Tonga's annual gross domestic product. Recovery needs exceed the existing resources of the government, and consequently, the Government of Tonga has requested additional financing for the Project from the World Bank for education sector recovery activities and resilience strengthening in schools and selected public assets. The proposed Additional Financing (AF) will scale up activities initiated under the parent project. Grant contribution from the Australia-Pacific Islands Partnership Trust Fund will be provided to co-finance certain activities under the scaled-up project. Paragraph 12, section III of the Investment Policy Financing (IPF) policy on *Projects in Situations of Urgent Need of Assistance or Capacity Constraints* has been triggered, under which the condensed timeline arrangements and deferred procurement are applied. Formal approval by the Board of Executive Directors for the use of CRW funding is requested.

2. The project will also require a Level II restructuring to: (i) extend the Closing Date of the original IDA financing (IDA Credit Number 5689-TO and IDA Grant Number D078-TO) from November 30, 2020 to October 31, 2023, to align with the Closing Date of the additional financing; (ii) revise the institutional arrangements under the project; (iii) revise the procurement arrangements to apply the Procurement Regulations to procurement activities under the project; (iv) revise the results framework for the project; and (v) revise the description of Component 2: Risk Reduction and Resilient Investment of the project to reflect the revised and scaled up resilient investment activities proposed under the additional financing.

3. **Background.** Tonga consists of 169 islands with a total population of around 104,000. Situated in the South Pacific, the country stretches across 800 kilometers from north to south, with land area of approximately 800 square kilometers. The population is primarily Polynesian, with a literacy rate close to 99 percent and a relatively low incidence of poverty. However, its small size, geographic dispersion and isolation, and limited natural resources, provide a narrow economic base. Agriculture, fishing and tourism account for most export earnings. There is a high dependency on external aid (approximately 15 percent of Gross National Income, GNI). Remittances from an estimated 100,000 Tongans abroad have historically been equivalent to about 30 percent of GNI.

4. In recent years, Tonga has been hard-hit by a number of economic and natural shocks, which have eroded its fiscal buffers and capacity to respond to further shocks. Tonga was negatively impacted by the Global Economic Crisis through a substantial and prolonged decline in remittances and tourism receipts, as well as price spikes in imported food and fuel.

5. **Summary information on the Parent Project.** The Pacific Resilience Program is a 'Series of Projects'. The regional approach of the Program is helping Pacific Island Countries (PIC) to: (i) strengthen early warning and preparedness; (ii) create a framework for stronger and prioritized investments in resilience and retrofitting of key-public

¹ Comprising US\$1.85million in regional IDA, US\$10 million through the Crisis Response Window and US\$3.1 million of National IDA.

assets to meet internationally recognized resilience standards; and (iii) improve the post-disaster response capacity of the countries through strengthened financial resilience to disaster events. The IDA grant for the Project in Tonga is a part of the first phase PREP. The grant was approved on June 19, 2015, became effective on November 16, 2015, and has a closing date of November 30, 2020. The PREP funding totals US\$16.25 million (US\$4.5 million national IDA (grant) financing, US\$6.0 million national IDA (credit) financing, US\$1.5 million GFDRR financing, US\$4.58 million GEF financing, and US\$0.16 million government contribution), of which 22 percent is disbursed.

6. The PREP was restructured in October 2017 to facilitate payment of the final insurance premia under Component 3 of the original project directly to an eligible insurer which was the Pacific Catastrophe Risk Insurance Company (PCRIC), rather than through the World Bank Treasury, as requested by the countries in PREP 1 (Vanuatu, Tonga, Samoa and Republic of Marshall Islands). In early 2018, the Government of Tonga (as well as the three other countries in PREP 1) requested that the current arrangement of the payment of the premia continue through the original project supported through IDA.

7. The original project development objective (PDO) of the PREP is to strengthen early warning, resilient investments and financial protection in Tonga. The PDO remains unchanged, and continues to remain closely aligned with the objectives of the broader program. Progress towards achievement of the PDO is currently Satisfactory, while Implementation Progress is Moderately Satisfactory with progress for Component 1 and Component 3 listed as Moderately Satisfactory and progress for Component 2 and 4 listed as Satisfactory. The grant disbursement has been slow at 22 percent; however, there has been good progress with preparatory work. A key contract for implementation of technical assistance under Component 1 has been signed, and bidding packages for Component 2 are well advanced (including the bidding package for the new combined Tonga Meteorological Division and National Emergency Operating Centre headquarters, the cost estimate of which equates to approximately 25 percent of the total budget for the original project). Key achievements to date include the installation of an AM transmitter, procurement of emergency response equipment for the National Emergency Management Office (NEMO), and preparation of bidding documents for a new joint Tonga Meteorology Division/NEMO facility in Nuku'alofa.

8. It is considered likely that the PDO will be achieved within the timeframe of the extended closing date. Safeguards is rated as moderately satisfactory, due in part to delays with the recruitment of a Safeguard Officer and establishment of a Grievance Redress Mechanism (GRM). The GRM is now in place, and recruitment for a Safeguard Officer has commenced; it is envisaged that the safeguards rating can be upgraded once the Safeguard Officer is operational. In May 2018, Financial Management (FM) was upgraded from Moderately Unsatisfactory to Moderately Satisfactory following adherence to an action plan put in place during the previous FM review. The Project is in compliance with all legal covenants, as well as Bank fiduciary and safeguard policies. There are currently no overdue audit reports.

9. **Rationale for Additional Financing.** TC Gita has highlighted the vulnerability of school infrastructure within Tonga. School buildings were affected disproportionately, with the rapid assessment estimating approximately 75 percent of the 150 schools on the main island of Tongatapu as damaged, compared to 25 percent of all residential buildings. Damage and losses to the education sector are estimated in excess of US\$10.2 million, with many classrooms and Water, Sanitation and Hygiene (WASH) facilities in need of repair, retrofitting and reconstruction to higher engineering and more resilient standards. Almost three months after TC Gita struck, nearly 1,200 students continue to attend classes in tents, which in some cases are situated on inundated areas. Many schools are operating with inadequate WASH facilities. Urgent reconstruction and repairs are needed to move the students back to a more stable learning environment.

10. TC Gita also caused damage and losses to public buildings, including health facilities, totalling US\$3.3 million, and there is a need to support the associated recovery activities. In addition to the school facilities and selected public assets that were damaged by the cyclone, TC Gita has highlighted the need to improve the resilience of building stock in Tonga more broadly, in order to avoid similar impacts to education and public facilities in the future.

11. As a Pacific island state, Tonga is particularly vulnerable to climate change and natural hazards. Catastrophic risk modeling by the World Bank indicates that Tonga is expected to incur, on average, US\$15.5 million per year in losses due to earthquakes and tropical cyclones and losses of up to 14 percent of GDP in years affected by specific disasters. In the next 50 years, Tonga has a 50 percent chance of experiencing a loss exceeding US\$175 million and casualties higher than 440 people, and a 10 percent chance of experiencing a loss exceeding US\$430 million and casualties higher than 1,700 people. According to the World Risk Report 2012, globally Tonga is the second most at risk country from disasters out of 173 countries surveyed. Financial resilience through a suite of tools, including disaster insurance, will be imperative to mitigate disaster risks for Tonga.

12. Accordingly, the Additional Financing will be used to support climate and disaster resilient recovery of schools and selected public assets in Tonga that were impacted by TC Gita and strengthen the climate and disaster resilience of public facilities (such as schools and health facilities) to better withstand future disaster events. Recovery activities will give consideration of specific gender equality and universal access requirements for people with disabilities (i.e., for WASH facilities). The Additional Financing will also extend the duration of disaster risk insurance premiums from three years of coverage to a total of eight years of coverage.

13. **Higher level objectives to which the Project contributes.** This project scale-up is consistent with the World Bank Group's Pacific Islands Regional Partnership Framework (RPF) for Nine Pacific Island Countries FY2017-FY2021: Kiribati, the Republic of the Marshall Islands (RMI), Federated States of Micronesia (FSM), Republic of Nauru, Republic of Palau, Independent State of Samoa, Kingdom of Tonga, Tuvalu, and Vanuatu (Report #120479). In particular, it is in line with *Focus Area 3: Protecting incomes and livelihoods*, through its contribution to the achievement of *Objective 3.1: Strengthened resilience to natural disasters and climate change*.

14. The project will contribute to the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. Tonga is one of the most disaster-affected countries in the world. While disasters impact whole societies, when they strike, the poor and vulnerable (including women, children, the elderly, and people with disabilities) are hit the hardest. The project scale-up will benefit the most vulnerable and impoverished communities by strengthening the resilience of school buildings and other selected public assets in a manner which is gender inclusive and gives consideration to the access needs of people with disabilities, as well as supporting the financial capacity of the government to respond and rebuild in a timely manner following a disaster.

15. Beneficiaries from the AF will include: communities in Tonga that are particularly vulnerable to climate and disaster risk, including girls and children with disabilities; and government agencies in charge of disaster and climate resilient planning and response, resilient investment and disaster risk financing. Direct beneficiaries will be increased to include school children who attend schools that are repaired, retrofitted or rebuilt under the AF. Consideration will be given to the access needs of beneficiaries with disabilities, and the gender specific needs of school children. The Ministry of Education and Training and the Ministry of Infrastructure will directly benefit from the activities that are scaled up under Component 2. Stakeholders of non-government schools that are repaired, retrofitted or rebuilt under the Additional Financing will also benefit.

16. **Lessons learned from previous projects.** The AF will draw on lessons from the parent project, other World Bank financed projects in Tonga portfolio, specifically the previous reconstruction projects, and the Tonga Portfolio Review of the World Bank in July 2017. The parent project, other projects of Tonga portfolio, and the Portfolio Review have revealed similar issues that affect projects' performance. Delays in making procurement decisions, in particular for the recruitment of technical assistance, have been identified as a major factor contributing to procurement delays. Audit delays and poor contract management have also impacted implementation performance. Issues related to land tenure, shortcomings in consultations and citizen engagement and with implementation of environmental management strategies have also impacted projects in the portfolio.

17. Lessons learnt from previous emergency reconstruction projects in Tonga have indicated the need to consider land ownership from the outset. Accordingly, land ownership and the lease period of school locations are being clarified during project preparation to the extent possible to avoid land tenure issues during implementation. Consideration of land availability will be a part of the screening process for the prioritization of schools. Lessons from reconstruction projects in Tonga and globally also indicate that procurement delays, contract management and environmental management requires additional risk mitigation measures. Accordingly, the project is going to receive additional support on procurement, financial management, safeguards and monitoring & evaluation from the staff of Central Services Unit under the MOFNP. In addition, the design and supervision contract for the AF has been prioritized as part of project preparation, firms have been shortlisted, and the terms of reference has been finalized in order to support project readiness and minimize delays with procurement of this key activity. The terms of reference for the design and supervision contract includes the responsibilities of the firm which are to carry out contract management, reporting of school construction contract progress, contractor market analysis, and the hiring of an environment specialist to ensure all environmental and social safeguards requirements are in full compliance.

II. DESCRIPTION OF ADDITIONAL FINANCING

18. The original design of the Project included the following components: Component 1: Strengthening Early Warning and Preparedness; Component 2: Risk Reduction and Resilient Investments; Component 3: Disaster Risk Financing; and Component 4: Project Management. These components would remain, although the scope of Component 2 would be broadened to include the repair, retrofitting and rebuilding of schools damaged by Tropical Cyclone Gita and strengthen the resilience of buildings and related infrastructure (particularly for schools and health facilities). Insurance premiums under Sub-component 3.1.2 would be financed for an additional five years. Additional financing will also be provided to further support the Recipient's capacity to manage and implement the scaled-up project activities under Component 4 of the Project. There are no changes being suggested to Component 1 – Strengthening Early Warning and Preparedness, Sub-component 3.1.1 – Contingency Emergency Response and Sub-component 3.1.3 – Capacity Building for Disaster Risk Financing of the project, and the AF will not be used to finance activities under such components/sub-components.

Component 2: Risk Reduction and Resilient Investments (estimated cost including contingencies: US\$13.81 million)

19. The proposed Additional Financing will broaden the scope of the original project to move beyond entry level investments, and instead implement a program of resilient planning, reconstruction and resilience building for selected public assets, primary focus being schools impacted by TC Gita, with a secondary focus on public buildings including

health facilities. In addition to the investments under the ongoing original plan that include selected retrofitting of public buildings in Vava'u, the suggested change is to scale up Component 2 through climate and disaster resilient retrofitting, repairs and reconstruction of schools that were heavily damaged and destroyed by TC Gita, and strengthening the climate and disaster resilience of school buildings and other key public infrastructure assets (such as health facilities) to ensure that the country is better equipped to withstand future disaster events through adaptation. All design and works for infrastructure that is repaired, retrofitted and rebuilt under the project will take into account climate and other natural hazard risk, as well as specific gender based requirements, and access needs for people with disabilities.

20. To accommodate the scale up of Component 2 activities and to reflect the nature of the investments under the Additional Financing, it is proposed to amend Component 2 to:

- (a) Sub-component 2.1.1. Investment planning and preparation; and
- (b) Sub-component 2.1.2. Resilient investments and reconstruction.

21. For component 2, the component descriptions of the original financing will be updated and aligned to the description of the additional financing. Component 2.1.1 will be scaled up to cater to the needs of the increased scope of component 2.1.2 (Resilient Investments and Reconstruction), for the reconstruction, repair and retrofitting activities of school and other public buildings.

22. The Ministry of Infrastructure's standard school designs will be upgraded to include strengthened climate and disaster resilience standards (including wind and seismic resilience), universal accessibility and gender considerations, and will be used for all school buildings which will be reconstructed under the project. These standard designs will be used for the resilient reconstruction of approximately 40 single story school buildings, including classrooms, staff housing, toilets and multifunctional facilities. One additional school building has been identified for reconstruction that will require a unique, two storied design. All school and public assets to be repaired or retrofitted under the Project will be inspected by qualified structural engineers to determine the best approach for repairing/retrofitting the building to higher resilience and structural safety standards.

23. Schools that meet the criteria listed below will be considered priorities for reconstruction under the project. However, schools that do not meet all of the following criteria will not automatically be ruled out of the project; instead, they will be listed as a lower priority in terms of the timing of interventions. Public assets will be identified and prioritized subject to available funding subsequent to the prioritization of schools. The process for prioritization of schools and public assets will be documented in the Project Operations Manual (POM). Prioritized schools will have:

- (a) Registration with the Ministry of Education as a recognized school facility.
- (b) Suffered damage or destruction from TC Gita.
- (c) Documented and undisputed land ownership and lease arrangements.
- (d) No plans for government to relocate the school to a new location.
- (e) A clear ongoing need, as identified by the government for the school facility in the foreseeable future.
- (f) Suitable site location with acceptable hazard exposure levels. For schools in high-hazard areas, there should be flexibility within the school land envelope to accommodate resilient investments away from high hazard areas (i.e., investment options which are at acceptable distances from the high tide mark for coastal schools).

Sub-Component 3.1.2: Premiums Financing (estimated cost including contingencies US\$ 2.9 million)

24. Additional financing of US\$2.5 million will cover the payment for insurance premiums for a further five years and will ensure that Tonga continues to have access to disaster risk insurance as part of strengthening financial protection against natural disasters until October 2023. The AF consists of national IDA of US\$ 0.65 million and regional IDA of US\$ 1.85 million. The Government of Tonga will provide counterpart funding to support the premia payment in each year as follows: US\$60,000 in year 1, US\$70,000 in year 2, US\$80,000 in year 3, US\$90,000 in year 4, and US\$100,000 in year 5. These premia will be paid by the Government of Tonga directly to an eligible insurer, such as the Pacific Catastrophe Risk Insurance Company (PCRIC) as was the case for the 2017 premium.

Component 4: Project Management (estimate cost including contingencies: US\$0.6 million)

25. Additional Financing will be used to strengthen the capacity of the Project Management Unit (PMU) and cover the incremental cost of financing the PMU from the initial closing date to cover the extended project time frame.

26. A Central Services Unit (CSU) is being established under the Ministry of Finance and National Planning (MFNP). This Unit will be jointly financed by the Department of Foreign Affairs and Trade (DFAT) and the World Bank (through the forthcoming Skills and Employment for Tongans Project). The CSU will provide services related to: (i) project preparation and implementation, and (ii) capacity building. For project preparation and implementation, the role of the CSU would be to provide both implementation and advisory services in the common fiduciary functions such as Procurement, Financial Management (FM), Safeguards, Monitoring and Evaluation (M&E) and contract management. The CSU would be staffed with full-time international experts in procurement, financial management, monitoring and evaluation, and safeguards. In addition, a Program Manager/ Coordinator would be hired to assist with overall coordination of the CSU's activities, performance management of CSU staff, facilitate coordination with the various implementing agencies, and ministries of World Bank financed projects. Additional consultants may be recruited by the CSU to provide surge support as needed to maintain service quality during peak times. To ensure capacity building, national staff undertaking fiduciary and monitoring and evaluation functions for the PREP AF project management unit will be twinned with the relevant international specialist from the CSU. The full-time international staff positions may be gradually phased out once sufficient national capacity has been built to staff the CSU. The PMU staff will closely liaise with the CSU and share information related to project implementation with CSU staff/ consultants.

27. The Pacific Islands Forum Secretariat (PIFS) and the Pacific Community (SPC) will continue to provide support to the PREP Tonga original financing (OF) until the original OF closing date of November 30, 2020.

28. **Financing.** A summary of financing by component, IDA financing, and percentage is presented in Table 1. IDA additional financing will be used to retroactively finance payments made on or after February 13, 2018 for activities under component 2 and 4 of the project that qualify under World Bank policies and procedures, and Tongan requirements for repairs retrofitting and reconstructions to public buildings. There would be multiple sources of financing under the project. Parallel co-financing arrangements would be followed with the contracts under each source of financing in the procurement plan and as per the Annual Work Plan.

Table 1. Project Cost and Financing

| | PREP OF (US\$M) | PREP AF (US\$M) | | | | | | PREP Total (US\$M) |
|--|-----------------|-----------------|--------------|------------|-------------|------------|-----------------------|--------------------|
| | | National IDA | Regional IDA | CRW | DFAT | GoT | PREP AF Total (US\$M) | |
| 1. Strengthening Early Warning and Preparedness | 11.49 | | | | | | | 11.49 |
| 1.1. Investments in early warning and preparedness | 11.49 | | | | | | | 11.49 |
| 2. Risk Reduction and Resilient Investments | 1.69 | 2.05 | | 9.8 | 1.96 | | 13.81 | 15.5 |
| 2.1.1. Investment planning and preparation | 0.54 | 1.00 | | 0.3 | 0.3 | | 1.60 | 2.14 |
| 2.1.2. Resilient investments and Reconstruction | 1.15 | 1.05 | | 9.5 | 1.66 | | 12.21 | 13.468 |
| 3. Disaster Risk Financing | 2.50 | 0.65 | 1.85 | | | 0.4 | 2.90 | 5.40 |
| 3.1.1. Contingency Emergency Response Sub-Component | 0.50 | | | | | | | 0.50 |
| 3.1.2. Premium Financing | 1.50 | 0.65 | 1.85 | | | 0.4 | 2.90 | 4.40 |
| 3.1.3. Capacity Building in DRFI | 0.50 | | | | | | | 0.50 |
| 4. Project and Program Management | 0.90 | 0.4 | | 0.2 | | | 0.60 | 1.50 |
| 4.1.1 Project Management (MEIDECC PMU) | 0.90 | 0.4 | | 0.2 | | | 0.60 | 1.50 |
| TOTAL COSTS | 16.58 | 3.1 | 1.85 | 10 | 1.96 | 0.4 | 17.31 | 33.89 |

29. **Implementation Arrangements:** The PMU will continue to be housed within the Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change and Communications (MEIDECC) where MEIDECC will also continue to be the Implementing Agency. However, for the school reconstruction and repairs, the Ministry of Education is also a key stakeholder while Ministry of Infrastructure is instrumental in terms of construction standards oversight

and sign off. To reflect the importance of coordination between the four ministries for effective decision making, the implementation arrangements will include the Ministry of Education and Ministry of Infrastructure in the national steering committee of the PREP project as well as in the technical committee. Fiduciary, safeguard and engineering support will be provided to the PMU through the CSU, as needed.

30. Changes to the institutional arrangements under the OF include:
- (i) Revise the name of the Regional Steering Committee to Regional Advisory Committee (RAC).
 - (ii) The RAC will be maintained until November 30, 2020, and by not later than January 31, 2020, the relevant parties will agree on a successor committee to undertake the roles and responsibilities of the RAC from November 30, 2020 until the end of the Project implementation period.
 - (iii) The Program Support Unit through SPC will be maintained until November 30, 2020, and the Recipient will amend its existing Service Agreement with SPC by December 31, 2018 to reflect such time bound limited support and the specific activities to be supported by SPC under the project. In the event SPC's support will be continued, the Recipient and SPC will amend its Service Agreement by November 30, 2020 to reflect the continued support until the end of the Project implementation period.
31. Institutional arrangements proposed under the AF are:
- (i) RAC arrangement will be the same as described under the original financing;
 - (ii) SPC (through Program Support Unit) will not be providing support to activities financed under the AF;
 - (iii) National Steering Committee (NSC) will continue as the main platform for key decision making for both OF and AF, with representatives of Ministry of Education and Training (MoET) and Infrastructure (MoI) participating in addition to continued participation from MOFNP and MEIDECC;
 - (iv) Day to day implementation of Component 3.1.2 will continue to be carried out by MOFNP;
 - (v) PMU will continue under MEIDECC for Additional Financing;
 - (vi) CSU will provide support on the implementation of activities to be financed under the Additional Financing as needed and as satisfactory to the Bank.
32. **Closing Date.** The closing date for the proposed AF is October 31, 2023. The original project is financed by: (i) IDA financing (Credit Number 5689-TO and Grant Number D078-TO), with closing date of November 30, 2020; (ii) grant from the Global Environment Facility Special Climate Change Fund (GEF/SCCF Grant Number TFOA0900), with closing date of November 30, 2020; and (iii) grant from the Global Facility for Disaster Reduction and Recovery (GFDRR

Grant Number TF0A1232), with closing date of June 30, 2020. Through this restructuring, the closing date of the IDA financing under the original project to extended to October 31, 2023. No revision is proposed to the current closing dates of the GEF/SCCF grant and the GFDRR grant.

33. The main changes to the results framework include: for the PDO indicators (i) the duplicated indicator on direct beneficiaries under the original financing is now consolidated following GEF simplification; (ii) “time to receive the Contingency Emergency Response Component (CERC) funds” has been replaced with “time taken to trigger the CERC”; (iii) the number of school children to benefit from increased resilience to their school has been added as a new PDO indicator to reflect the focus on school reconstruction and repairs; and (iv) “Percentage of short term priority projects of the resilient investment plan developed under the Program included in the Medium Term Expenditure Framework” has been marked for deletion. For Intermediate results indicators, (i) “Multi-sectoral Resilient Investment Plan developed/updated base on the tools developed under Component 2.2” has been marked for deletion; (ii) Four new indicators have been added to reflect the scale up of investments in the school buildings including “Number of school buildings rebuilt to improved resilience standards”, “Number of school buildings repaired or retrofitted to improved resilience standards”, “Schools with gender appropriate resilient WASH facilities”, and “Beneficiaries of school repairs, retrofitting, and rebuilding that feel project investments reflect their needs”. The end date for remaining PDO and intermediate indicators has been extended to reflect the extension of the Project closing date.

34. **Climate Change and Extreme Weather Events.** Tonga is highly exposed to several natural hazards, including cyclones, earthquakes, tsunamis and flooding. The primary focus of the project is on climate-related disaster risk management, and the project will generate climate change adaptation co-benefits (Refer to Annex 1). The parent project will provide structural and nonstructural solutions to better manage future climate and disaster risks by: improving early warning and preparedness institutional capacity, systems and infrastructure; implementing entry level investments in resilient school and hospital infrastructure; and strengthening financial resilience through the CERC, improved institutional capacity for disaster risk financing and through disaster risk insurance. The AF will also provide structural and non-structural solutions to better manage future climate and disaster risks by rebuilding school infrastructure damaged or destroyed by TC Gita to improved resilience standards, and through resilient building activities for schools and other infrastructure, and by supporting the continuation of the disaster risk financing insurance for Tonga.

35. **Climate Co-Benefits.** Climate adaptation and mitigation co-benefits for this project will be calculated using the joint-MDB Climate Finance Tracking Methodology² following Board approval of the AF under the conditions that (i) only IDA financing (for Components 2 and 3) is considered for adaptation and mitigation co-benefits, and (b) for Component 4 (project management) co-benefits will be pro-rated.

III. KEY RISKS

36. The overall risk rating and the ratings of each risk category in the SORT table remain unchanged from the Parent Project; the overall risk rating is Substantial. The main risks that have been rated as substantial are briefly discussed below.

37. **Sector Strategy and Policies.** There is currently minimal long term strategic planning for the education sector

² 2015 Joint Report on Multilateral Development Bank’s Climate Finance, August 2016

within Tonga. A future strategy for rationalization of school infrastructure across the country is lacking in Tonga. To manage this risk, the project will first prioritize retrofitting and rebuilding of schools for which a long-term need is clear. While climate and disaster resilience is being increasingly recognized as a key development challenge in PICs, integration of risk sensitive approaches into sectoral policies is still widely lacking. The sectoral context is complex because: (i) the resilience agenda cuts across multiple sectors; (ii) coordination across sectors is in early stages; and (iii) the capacity of DRM/climate resilience institutions is generally weak and lacks political support. To manage this risk, the Program recognizes the key role of the Ministry of Finance and National Planning (MFNP) and aims to strengthen the interface between MOFNP, MEIDECC and MoET.

38. **Technical Design of Project or Program.** Coordination between the four stakeholder ministries will be key to smooth decision making. The PMU will continue to be housed within the Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change and Communications (MEIDECC). MEIDECC will also continue to be the Implementing Agency, while Ministry of Education is a key stakeholder for schools. Ministry of Infrastructure oversees construction standards, whereas the Ministry of Finance and National Planning (MOFNP) is the Executing Agency. To reflect the importance of coordination between the four ministries, the implementation arrangements will be modified to include the Ministry of Education and Ministry of Infrastructure in the PREP national steering committee, as well as in the technical committee.

39. **Institutional Capacity for Implementation and Sustainability:** There is relatively weak implementation capacity in some of the implementation agencies of PREP, particularly due to limited human resources. This risk will be mitigated by both strengthening the PMU and through the services of the CSU under the supervision of MFNP. The role of the CSU would be to provide both implementation and supervision support as necessary for the PREP AF in the areas of common functions i.e. procurement, financial management, safeguards, monitoring and evaluation (M&E) and engineering. The World Bank will provide intensive implementation support. The risk of weak delivery capacity of local contractors will be mitigated through a market analysis which will inform the procurement strategy and packaging of construction activities.

40. **Fiduciary.** The implementation agencies have relatively weak fiduciary capacity. Mitigation measures agreed as a result of the FM and procurement assessments will be implemented, including provision of technical assistance, implementation of strong internal financial controls, and regular independent audits. The World Bank will conduct implementation support missions to review compliance with Bank fiduciary requirements.

41. **Other (external shocks, such as disasters).** The Pacific region is hazard-prone and renowned for the frequent occurrence of disasters as was the case with TC Gita, on February 12, 2018). There is the potential for further disasters to impact Tonga during the extended life of the project. In such a situation the attention of the implementing agencies could easily be diverted from the long-term resilience agenda advocated by the PREP, to the immediate disaster response and recovery needs of the country. A Contingency Emergency Response Component (CERC) has therefore been incorporated in the design of the parent project. It was triggered following TC Gita to support immediate recovery needs, and will remain in place during the AF. Furthermore, the ex-ante disaster risk financing and insurance mechanism supported by the PREP is being extended to cover a further five years of premiums financing.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analysis

42. **Component 2.** An indicative cost-benefit analysis of the school repair and reconstruction activities to be undertaken through this project suggests high internal rates of return, even under relatively conservative assumptions. The economic benefits quantified in this analysis are solely based on the additional lifetime earnings that are estimated to accrue to enrolled students due to the improved quality of education they will receive as a result of the works supported by this project (relative to the status quo of damaged or destroyed classrooms and facilities). Taking a broader perspective on the social benefits of education – not only to the recipients, but to their families and to the community at large – would imply still higher benefit to cost ratios.

43. Given data on school enrollments, estimates of the value of a year of education (in terms of lifetime earnings), estimates of the proportion of damages sustained by each school covered by the project, and an assumption about the extent to which damages would affect education quality (and therefore lifetime earnings), we can estimate the economic benefits of the project as the reduction in lifetime earnings that would be avoided due to the supported repair and reconstruction work.

44. We use a parameter to link the estimated damage sustained by each school to the reduction in the quality of a year of education provided by that school. Initially the “damage to quality” parameter is set at 10 percent. As an example, this means that for a school sustaining 50 percent damage, and in the absence of any repair work, the quality of a year of education received by each enrolled student (and therefore the value of that education-year in terms of their lifetime earnings) would be assumed to decline by $10\% \times 50\% = 5\%$. This reduction in quality could be attributable to loss of access to facilities, overcrowding of students in the remaining classrooms, and possibly the need to enroll in a different school – which could entail adjustment costs, including longer travel time and social dislocation, as well as a reduction in the per-student availability of classrooms and other facilities.

45. It is then possible to estimate the economic benefits (i.e., total avoided losses in student lifetime earnings) associated with the project works at each school were first estimated and were then aggregated across the 30 schools (28 schools damaged/destroyed by TC Gita, plus two schools that were included as entry level investments under the original project). These benefits then compared with the total estimated costs of the works (US\$8.0 million). At a 12 percent discount rate, the repair and reconstruction works are associated with economic benefits of US\$11.3 million, resulting in a positive net present value of US\$3.3 million. Similarly, the works have an estimated internal rate of return of 13.6 percent.

46. The estimate of returns is critically dependent on the assumption about the extent to which damages would affect education quality. A sensitivity analysis for a range of values of the “damage to quality” parameter indicates that the internal rates of return are greater than 4 percent for any reasonable assumption on the extent to which school damages would affect education quality and future earnings outcomes, in the absence of remedial action. The results of the sensitivity analysis are provided in the table below.

Table 2. Results of Sensitivity Analysis

| Damage to quality parameter | Economic benefits (a) (US\$ m) | NPV (a) (b) (US\$ m) | IRR (%) |
|-----------------------------|--------------------------------|----------------------|---------|
| 0.01 | 1.1 | -6.9 | 4.9 |
| 0.05 | 5.7 | -2.4 | 10.5 |
| 0.1 | 11.3 | 3.3 | 13.6 |
| 0.2 | 22.7 | 14.7 | 17.5 |
| 0.5 | 56.7 | 48.7 | 24.2 |

(a) At discount rate of 12 percent. (b) Estimated cost of works = US\$8.0 million.

47. **Component 3.** Disasters resulting from natural events represent a significant contingent liability for PICs and are often associated with large fiscal consequences. Governments serve as a (re)insurer of last resort, often with limited knowledge of the level of disaster risk exposure. Sovereign disaster risk financing and insurance can protect against sudden macroeconomic shocks that negatively impact fiscal performance and a country's long-term economic development. Catastrophe risk pooling, at the regional level, aggregates risk into larger, more diversified portfolios, with participants benefitting from cost savings and access to international markets. The cost of risk transfer to international markets depends on many factors, including the risk level of the portfolio as a fraction of the size of the portfolio. The pooling of risks generates diversification benefits that are reflected in reduced insurance premiums. The real price of insurance coverage (insurance premium rate) accessed under the project through the PCRAFI insurance program has resulted in 50 percent savings on average, compared to the simulated market price that Tonga would have been able to obtain if it had secured disaster insurance individually.

B. Technical

48. Recovery needs and activities were identified based on priorities of the Government's post-disaster rapid assessment and disaster recovery framework following Tropical Cyclone Gia. A screening is being undertaken by the government to prioritize inclusion of schools within the project and scheduling of works. Screening and inclusion of public assets will be undertaken subject to available funding following the prioritization of schools.

49. The Ministry of Infrastructure's standard designs for schools will be used to minimize risks associated with design, supervision and construction of school buildings under the project. One additional school building that has been identified for reconstruction will likely require a unique, two storied design. These designs will undergo detailed engineering review and will be updated and certified by the Design and Supervision Consultant to improved seismic and cyclone resilient standards prior to the procurement of any works packages. Building design and material selection will also take into account relevant local hazards to minimize ongoing maintenance requirements for the infrastructure.

50. All school buildings and public assets to be retrofitted³ will be inspected by qualified structural engineers to determine the best approach for retrofitting the building to higher structural safety standards (based on the

³ Approximately 55 school buildings will be retrofitted under the project (33 major works, 22 minor works). The number of public buildings is yet to be determined and will be dependent on available funding following the prioritization of schools.

information available at appraisal, for school buildings this is likely to typically be new or replacement roof and framing timber, steel tie-downs and strapping). Recognizing the challenge of ensuring compliance with relevant design standards for existing structures which were not originally built to the resilience standards of the updated standard designs, retrofitted buildings would demonstrate “significantly improved” structural and resilience capacity, where all new retrofitted elements comply with requirements of these design standards. Construction will be carried out by experienced national contractors.

51. All works would be supervised by trained inspectors and qualified engineers, and final acceptance and handover to GoT would be subject to defects liability periods.

C. Financial Management

52. The original financial management assessment conducted in 2015 was carried out in accordance with the “Financial Management Practices in World Bank-Financed Investment Operations”, issued by the Financial Management Sector Board on November 3, 2005 and further rationalized in the “Principles Based Financial Management Practice Manual” issued by the Board on March 1, 2010. Under the Bank’s OP/BP10.00 with respect to projects financed by the Bank, the borrower and implementing agency are required to maintain financial management systems – including accounting, financial reporting, and auditing systems adequate to ensure they can provide the Bank with accurate and timely information regarding the project resources and expenditures.

53. The identified mitigating measures during the review were: (1) employment of a Project Accountant dedicated to maintaining the day to day records of the project; and (2) maintaining the project accounts on an accounting package. The Project Accountant was subsequently employed however it was decided by government, and supported by the Bank, that instead of purchasing an off the shelf accounting package, the PREP accounts would use Sun Systems which is the financial information system used by the government of Tonga. Hence the project enters transactions directly into Sun Systems and the project accounts are segregated through the chart of accounts. The project internal controls systems and authorizations are consistent with those of the government. The current arrangements are adequate and no changes to the Financial Management arrangements are envisaged for the additional financing. The most recent Financial Management implementation review in May 2018 confirmed the Financial Management rating as Moderately Satisfactory.

54. The additional financing will increase the workload of the Project Accountant and require high level skills for monitoring financial aspects of the additional contracts for the retrofitting of the schools. The MEIDECC and MFNP would engage in continuous dialogue to evaluate fiduciary performance, and agree with the Bank on appropriate staffing requirement for both the CSU and the PMU. The CSU will provide additional FM support to the project.

55. The Mandatory Direct Payment Pilot is applicable for the IDA component of the Additional Financing, since paragraph 12, section III of the IPF policy has been triggered. Disbursement of AF under contracts for goods, works, non-consulting services and consulting services procured through international open or limited competition procurement (as well as Direct selection procurement above an agreed minimum application size mentioned in the Disbursement and Financial Information Letter per tranche payment amount) will be subject to direct payment disbursement method unless Special Commitment Disbursement has been selected. Arrangements will be in place in the PMU to ensure that such payments are not made from the Designated Account.

56. Working in remote areas away from the PMU always increases the potential of additional oversight required from FM to ensure funds are used for the intended purposes however based on the current proposed uses of the additional financing, no additional mitigating measures are required.
57. The additional financing requires some changes to the POM. The existing POM under the project will be updated to reflect the activities and arrangements proposed under the AF. The updated POM, as satisfactory to the Bank, will be adopted by the Recipient by no later than October 31, 2018.
58. Segregated accounts will be opened to simplify the disbursement process. Separate accounts will be maintained for the original financing and additional financing.

D. Procurement

59. Procurement under the AF will follow the procurement procedures specified in the World Bank Procurement Regulations for IPF Borrowers (July 2016, revised in November 2017) (Procurement Regulations) and the provisions stipulated in the Financing Agreement. As part of the restructuring, it is also proposed for procurement under the original parent project to follow the Procurement Regulations, so that same the procurement rules would apply to the project moving forward. In the case of procurement activities under the project for which the invitation to bid or the request for expressions of interest was issued prior to the effectiveness of the AF legal agreement, procurement will be carried out in accordance with the Bank’s “Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers,” dated January 2011, and revised July 2014 (“Procurement Guidelines”), and “Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers” dated January 2011 and revised July 2014 (“Consultant Guidelines”).
60. MEIDECC is currently preparing the Project Procurement Strategy Document (PPSD) expected to be completed before October 31, 2018. MEIDECC has, nonetheless, a realistic understanding of its most immediate needs, which is reflected in its current procurement plan updated as of May 22, 2018. Because of the limited capacity of the local contracting industry, the PPSD will focus on assessing the market conditions and recommending suitable contracts’ sizes and scheduling.
61. The following risks and mitigation measures have been identified during routine supervision by the Bank.

| Risk Identified | Mitigation Measures |
|--|--|
| Unclear roles and responsibilities (relating to the Project Manager and Program’s Procurement Advisor) may cause poor or delayed decisions by MEIDECC. | The project’s operational manual should be updated to define the protocols within the PMU and between the PMU and the Ministry and the PSU. The Project Manager should coordinate all the interaction with the Program’s Procurement Advisor and ensure that all key procurement decisions to be made by MEIDECC are proactively supported by the Procurement Advisor. |
| Weak procurement monitoring and reporting may cause MEIDECC to spend time and resources on | To increase the impact of the project’s procurement quarterly report, and leveraging STEP that is now in use, the |

| | |
|--|---|
| lower value and/or less strategic procurement activities. | Procurement Advisor shall immediately put in place a credible system to monitor procurement and establish key Performance Indicators to better target use of the human resources available for procurement to focus on higher value and/or more strategic activities. |
| Data shows finalization of TOR/Specification is a key bottleneck in MEDICECC for undertaking efficient procurement | To increase resource allocation for timely preparation of TOR/Specification. |

62. MEIDECC’s current procurement plan has 10 procurement activities amounting to US\$6.2 million. New procurement activities will be included in the plan once the needs are defined and the procurement plan will be updated accordingly. The procurement activity PREPCER-S1 / CONSULTANCY SERVICES FOR INFRASTRUCTURE DAMAGE ASSESSMENT, E&S ASSESSMENT, ENGINEERING DESIGN, MATERIALS (US\$1.5 million) is in the critical path for implementation. MEIDECC has sought expressions of interest from consulting firms to undertake this assignment. MEIDECC has prepared the draft TOR and a detailed cost estimate for this assignment. MEIDECC plans to complete this procurement by no later than October 2018.

E. Social (including Safeguards)

63. The World Bank’s safeguards policy on Involuntary Resettlement (OP/BP 4.12) has been triggered and is relevant for the parent project⁴. Due diligence for OP/BP 4.12 will be conducted by safeguards specialists during the planning for the proposed sub-projects under the AF.

64. The reconstruction, repair and retrofitting of schools is expected to lead to long-term education benefits for communities in Tongatapu and Eua, through the provision of climate resilience of buildings and functionality improvements, including gender sensitive design and universal access. Key social risks associated with the project include community expectations related to the timing of reconstruction and interim arrangements, potential relocation of a limited number of schools to other government sites, and community health and safety associated with labor influx and construction on school sites. No involuntary land acquisition is expected under AF activities.

65. Social risks and potential impacts are similar to those currently managed under the parent project and can be readily managed through standard mitigation measures. The parent project’s ESMF, which includes the RPF, have been revised to cover the scope of activities proposed, and the implementation arrangements have been reviewed and updated. Both the ESMF and RFP were disclosed on May 21, 2018 in country and on the World Bank website.

66. The World Banks’s Systematic Country Diagnostic for Pacific Island Countries highlights that unequal gender roles, lack of voice and political participation, and violence against women in Tonga and other PICs, perpetuate poverty and exacerbate women’s hardship. As a result, women and other vulnerable groups (i.e., children and people with disabilities) often face disproportionate risks during and after natural disasters; and post-disaster recovery activities are less likely to address their needs.

⁴ OP/BP 4.10 on Indigenous Peoples, while triggered for PREP in other countries, is not relevant to Tonga PREP as the ethnic structure in Tonga is predominately ethnic Tongan or part Tongan (97.5 percent).

67. The lack of adequate WASH facilities in Tongan schools has been identified as a key gender gap during the preparation of this AF. As highlighted by UNICEF, gender appropriate WASH facilities in schools can contribute to progress towards gender equality and WASH results, advancing girls' education and helping to reduce the risk of gender based violence (GBV) in emergencies⁵. Recent studies in the Pacific have shown that inadequate WASH facilities can disproportionately affect female teachers and students to feelings of shame and discomfort and impacting education, health and safety⁶. Potential gender issues associated with poor WASH facilities at schools include: i) unhygienic menstrual management practices – i.e. improper disposal affecting cleanliness and the functioning of septic systems, and extended delays in changing sanitary materials increasing risk of infection; and ii) poor knowledge and stigma about menstrual cycles affecting emotional well-being of girls at school, the learning environment and contributing to restricting behavior - i.e. temporary absenteeism. The lack of adequate facilities may also affect female teacher recruitment and retention, especially where teacher's accommodation facilities are located on school grounds. Further, many schools in Tonga are used as evacuation centers during disasters. A recent post Cyclone Gita gender analysis found that the lack of adequate WASH facilities including the lack of locks and insufficient lighting contributed to increased GBV/safety risks for women and girls at these centers.⁷

68. The AF will ensure that gender dimensions of school reconstruction are considered during the design process, including factors such as provision of adequate separate male and female WASH facilities, location of WASH facilities, lighting etc. (specific needs for each school would be determined during the design phase). The AF will commission an analytical study on the gendered needs of WASH facilities in Tongan schools to gather more nuanced information on the potential issues and to inform project implementation. The detailed design and the ESIA process for AF school reconstruction activities will ensure that gender dimensions are analyzed and both male and female beneficiaries are adequately consulted and have the opportunity to inform the design process. Gender considerations will be incorporated into standard designs and in the siting of school WASH facilities. The detailed design process will also ensure the provision of an adequate number of WASH facilities for female and male students and teachers.

69. The project has included two additional immediate results indicators to monitor the implementation of the proposed activities: "Number of schools with gender appropriate Resilient WASH facilities" and "Beneficiaries that feel project investments reflect their needs".

70. **Labor Influx.** Gender-based violence is prevalent in Tonga. Reported rates of sexual violence and child sex abuse are 11 and 2 percent respectively⁸. GBV risks associated with the project are considered high, given that construction will occur on school grounds and in close proximity to children. Risks associated with labor influx are potentially high on 'Eua island, where few/no contractors are present and it is likely that project contractors will need to establish work camps for personnel. The ESIA for AF school reconstruction activities will assess the potential impacts of labor influx, including the need for housing, food supply, merchandize, transport, health care, entertainment, and social interaction as well as Gender Based Violence and any related mitigation actions. Training of the workforce for the parent project (including AF activities), as well as a Worker Code of Conduct together with sanctions for non-compliance, will be included in the contract. The PMU will ensure effective management of these aspects of the

⁵ UNICEF, 2017, Gender-Responsive Water, Sanitation and Hygiene: Key elements for effective WASH programming, March 2017

⁶ Burnet Institute, WaterAid and IWDA 2017, The Last Taboo – Research on menstrual hygiene management in the Pacific: Solomon Islands, Fiji and PNG, Supported by DFAT, September 2017

⁷ CARE 2017, Rapid Gender Analysis, Sub-focus on shelter and food security and livelihoods, Tropical Cyclone Gita, Kingdom of Tonga, Feb 2017

⁸ World Bank, 2016, "Gender Based Violence in the Pacific: Pacific Island Countries, October 2017.

contract through careful supervision throughout construction.

71. **Citizen Engagement.** The project's communication and outreach strategy will be the key tool for citizen engagement. The ESMF update has included consultation with key project stakeholders to provide information on the proposed project, the potential social and environmental risks and source their contribution to overall project design. PREP AF will continue to ensure effective citizen engagement during project implementation. The revised ESMF includes an updated stakeholder consultation plan and feedback mechanism is updated for AF activities. The parent project's grievance redress mechanism is updated for AF activities. PREP AF also includes an intermediate results indicator to monitor "Beneficiaries that feel project investments reflect their needs" to monitor beneficiary satisfaction. Satisfaction surveys will be conducted at key intervals, targeting female and male teachers and parents (as representatives of student beneficiaries) to ensure whether project investments are meeting the needs of project beneficiaries.

F. Environment (including Safeguards)

72. The AF triggers the same environmental safeguard policies as the existing project, i.e., Environmental Assessment (OP/BP 4.01), Natural Habitats (OP 4.04), Forests (OP/BP 4.36), and Physical Cultural Resources (OP/BP 4.11). For the existing project, an Environmental and Social Management Framework (ESMF), acceptable to the Bank, was prepared and disclosed. Implementation of ESMF during the project has been limited; the PMU Safeguards Officer not yet hired and environmental assessment for some planned activities has been weak. However, no significant civil works have begun, and the safeguards position is currently in the process of being filled.

73. The AF activities are not substantially different from those of the existing project and will not change the project category (Category B). The reconstruction, repair and retrofitting of schools in Tongatapu and 'Eua and resilient building activities will involve construction works, including the demolition of buildings, replacement and/or strengthening of structural elements, new roofs, and construction of new 1-2 story buildings (including toilets). Construction-related environmental risks include sedimentation of watercourses, poor waste management, and impacted air quality from dust and emissions. These activities will involve removal and disposal of significant volumes of demolition waste, which is expected to be handled by the recently built Tapuhia Solid Waste Management Facility, a sanitary landfill on Tongatapu. School reconstruction will be on cleared land and will not involve clearing of vegetated areas.

74. The potential impacts are limited, and will be of similar nature to those currently managed on PREP. The program ESMF has been revised to cover the scope of activities proposed, and implementation arrangements have been reviewed and updated. The Design and Supervision Consultant will have significant responsibility to ensure adherence to Bank safeguards requirements, including the preparation of ESIA/ESMP and supervision of its implementation.

WORLD BANK GRIEVANCE REDRESS

Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel

which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org



VI. SUMMARY TABLE OF CHANGES

| | Changed | Not Changed |
|--|---------|-------------|
| Change in Results Framework | ✓ | |
| Change in Components and Cost | ✓ | |
| Change in Loan Closing Date(s) | ✓ | |
| Change in Disbursements Arrangements | ✓ | |
| Change in Legal Covenants | ✓ | |
| Change in Procurement | ✓ | |
| Change in Implementing Agency | | ✓ |
| Change in Project's Development Objectives | | ✓ |
| Cancellations Proposed | | ✓ |
| Reallocation between Disbursement Categories | | ✓ |
| Change in Safeguard Policies Triggered | | ✓ |
| Change of EA category | | ✓ |
| Change in Financial Management | | ✓ |
| Change in APA Reliance | | ✓ |
| Other Change(s) | | ✓ |

VII. DETAILED CHANGE(S)

RESULTS FRAMEWORK

Project Development Objective Indicators

| | | | | |
|---|-----------|------------------|------------|---------|
| Direct project beneficiaries Unit of Measure: Number Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 24,000.00 | 24,000.00 | 60,000.00 | Revised |



| | | | | |
|--|-------------|------------------|-------------|---------------------|
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| Female beneficiaries (as a subset of the total number of beneficiaries) | | | | |
| Unit of Measure: Number | | | | |
| Indicator Type: Custom Breakdown | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 9,600.00 | 9,600.00 | 24,000.00 | Revised |
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| Direct project beneficiaries | | | | |
| Unit of Measure: Number | | | | |
| Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 24,000.00 | 24,000.00 | 60,000.00 | Marked for Deletion |
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| Female beneficiaries | | | | |
| Unit of Measure: Percentage | | | | |
| Indicator Type: Custom Supplement | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 40.00 | 40.00 | 40.00 | Marked for Deletion |
| Increased coverage of hazard forecast and warning messages to population at risk | | | | |
| Unit of Measure: Percentage | | | | |
| Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 30.00 | 30.00 | 70.00 | Revised |
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| Percentage of short term priority projects of the resilient investment plan developed under the Program included in the Medium Term Expenditure Framework | | | | |
| Unit of Measure: Percentage | | | | |
| Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |



| | | | | |
|--|-------------|------------------|-------------|---------------------|
| Value | 0.00 | 0.00 | 40.00 | Marked for Deletion |
| Date | 19-Jun-2015 | 17-May-2018 | 30-Nov-2020 | |
| Participating PICs have received payment within a month of the occurrence of a covered (insurance) event. Unit of Measure: Percentage Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 100.00 | 100.00 | Revised |
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| Time taken to trigger the contingency emergency response component (CERC) for an eligible emergency Unit of Measure: Weeks Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 6.00 | 4.00 | Revised |
| Date | 19-Jun-2015 | 17-May-2018 | 31-Oct-2023 | |
| School children to benefit from increased resilience to their school Unit of Measure: Number Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 0.00 | 9,000.00 | New |
| Date | 12-Feb-2018 | 01-May-2018 | 31-Oct-2023 | |

Intermediate Indicators

| | | | | |
|---|-------------|------------------|-------------|---------|
| Improved status of hazards observational network (Hydro, Meteorological and Seismic) Unit of Measure: Percentage Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 20.00 | 20.00 | 50.00 | Revised |
| Date | 06-Aug-2015 | 01-May-2017 | 31-Oct-2023 | |
| Multi Hazard Early warning systems are established and operating Unit of Measure: Yes/No Indicator Type: Custom | | | | |



| | Baseline | Actual (Current) | End Target | Action |
|---|-------------|------------------|-------------|---------------------|
| Value | No | No | Yes | Revised |
| Date | 06-Aug-2015 | 17-May-2018 | 31-Oct-2023 | |
| Mult-sectoral Resilient Investment Plan developed/updated base on the tools developed under Component 2.2 Unit of Measure: Yes/No Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | No | No | Yes | Marked for Deletion |
| Date | 06-Aug-2015 | 17-May-2018 | 30-Nov-2019 | |
| Number of school buildings rebuilt to improved resilience standards Unit of Measure: Number Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 0.00 | 30.00 | New |
| Date | 12-Feb-2018 | 01-May-2018 | 31-Oct-2023 | |
| Number of school buildings repaired or retrofitted to improved resilience standards Unit of Measure: Number Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 0.00 | 20.00 | New |
| Date | 12-Feb-2018 | 01-May-2018 | 31-Oct-2023 | |
| Schools with gender appropriate resilient WASH facilities Unit of Measure: Percentage Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 0.00 | 100.00 | New |
| Date | 12-Feb-2018 | 01-May-2018 | 31-Oct-2023 | |
| Beneficiaries of school repairs, retrofitting, and rebuilding that feel project investments reflect their needs (of which 50% are female) Unit of Measure: Percentage | | | | |



| | | | | |
|--|-------------|------------------|-------------|---------|
| Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | 0.00 | 0.00 | 80.00 | New |
| Date | 12-Feb-2018 | 01-May-2018 | 31-Oct-2023 | |
| The premiums are lower than the simulated price for a comparable coverage purchased individually in the market | | | | |
| Unit of Measure: Yes/No | | | | |
| Indicator Type: Custom | | | | |
| | Baseline | Actual (Current) | End Target | Action |
| Value | No | Yes | Yes | Revised |
| Date | 06-Aug-2015 | 17-May-2018 | 31-Oct-2023 | |

COMPONENTS

| Current Component Name | Current Cost (US\$, millions) | Action | Proposed Component Name | Proposed Cost (US\$, millions) |
|---|-------------------------------|-----------|---|--------------------------------|
| Component 1: Strengthening Early Warning and Preparedness | 11.49 | No Change | Component 1: Strengthening Early Warning and Preparedness | 11.49 |
| Component 2: Risk Reduction and Resilient Investments | 1.69 | Revised | Component 2: Risk Reduction and Resilient Investments | 15.50 |
| Component 3: Disaster Risk Financing | 2.50 | Revised | Component 3: Disaster Risk Financing | 5.40 |
| Component 4: Project and Program Management | 0.90 | Revised | Component 4: Project and Program Management | 1.50 |
| TOTAL | 16.58 | | | 33.89 |

LOAN CLOSING DATE(S)

| Ln/Cr/Tf | Status | Original Closing | Current Closing(s) | Proposed Closing | Proposed Deadline for Withdrawal Applications |
|-----------|-----------|------------------|--------------------|------------------|---|
| IDA-56890 | Effective | 30-Nov-2020 | 30-Nov-2020 | 31-Oct-2023 | 29-Feb-2024 |
| IDA-D0780 | Effective | 30-Nov-2020 | 30-Nov-2020 | 31-Oct-2023 | 29-Feb-2024 |



| | | | | | |
|----------|-----------|-------------|-------------|-------------|-------------|
| TF-A1232 | Effective | 30-Jun-2020 | 30-Jun-2020 | 31-Oct-2023 | 29-Feb-2024 |
|----------|-----------|-------------|-------------|-------------|-------------|

DISBURSEMENT ARRANGEMENTS

Change in Disbursement Arrangements

Yes

Expected Disbursements (in US\$)

| Fiscal Year | Annual | Cumulative |
|-------------|--------------|---------------|
| 2015 | 0.00 | 0.00 |
| 2016 | 1,000,000.00 | 1,000,000.00 |
| 2017 | 625,122.62 | 1,625,122.62 |
| 2018 | 1,161,495.56 | 2,786,618.18 |
| 2019 | 5,000,000.00 | 7,786,618.18 |
| 2020 | 8,500,000.00 | 16,286,618.18 |
| 2021 | 8,500,000.00 | 24,786,618.18 |
| 2022 | 7,500,000.00 | 32,286,618.18 |
| 2023 | 1,603,382.00 | 33,890,000.18 |
| 2024 | 0.00 | 33,890,000.18 |

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

| Risk Category | Latest ISR Rating | Current Rating |
|--|-------------------|----------------|
| Political and Governance | ● Moderate | ● Moderate |
| Macroeconomic | ● Moderate | ● Moderate |
| Sector Strategies and Policies | ● Substantial | ● Substantial |
| Technical Design of Project or Program | ● Substantial | ● Substantial |
| Institutional Capacity for Implementation and Sustainability | ● Substantial | ● Substantial |
| Fiduciary | ● Substantial | ● Substantial |
| Environment and Social | ● Moderate | ● Moderate |



| | | |
|--------------|---------------|---------------|
| Stakeholders | ● Moderate | ● Moderate |
| Other | ● Substantial | ● Substantial |
| Overall | ● Substantial | ● Substantial |

LEGAL COVENANTS – PACIFIC RESILIENCE PROJECT UNDER PACIFIC RESILIENCE PROGRAM (P154840)

| Loan/Credit/TF | Description | Status | Action |
|----------------|---|---------------|-----------|
| IDA-56890 | Allocate adequate funds, on an annual basis, to cover the operation and maintenance costs of the multi-hazard early warning systems in amounts which the Association agrees are adequate for said purpose. Frequency :Yearly | Complied with | No Change |
| IDA-56890 | The Recipient shall enter into and thereafter maintain, throughout the Project implementation period, a service agreement (“Service Agreement”) with the Secretariat of the Pacific Community Due Date :29-Feb-2016 | Complied with | No Change |
| IDA-56890 | A Project Operational Manual is to be prepared and adopted no later than 4 months after effectiveness Due Date :29-Feb-2016 | Complied with | No Change |
| IDA-D0780 | In carrying out activities under Part 3(b) of the Project, the Recipient shall enter into an Insurance Contract with an Eligible Insurer under terms and conditions acceptable to the Association. | Complied with | No Change |
| IDA-56890 | The Recipient shall take all necessary measures on its part to ensure that, by not later than December 31, 2018, the Service Agreement with SPC is amended to reflect the revised support to be provided by SPC, and thereafter maintain such amended Service Agreement until November 30, 2020. In the event the Recipient agrees with SPC and the Association that SPC shall continue providing support under | Not yet due | New |



LEGAL COVENANTS – Additional Financing for the Pacific Resilience Project under the Pacific Resilience Program (P167166)

Sections and Description

(Section I.A.1 of the Schedule 2 to the FA and Section 2.03 of the Annex to the GA) The Recipient shall, in collaboration with SPC, PIFS and the other Participating Countries, take all necessary measures on its part to ensure that: (i) from Effective Date to November 30, 2020, a Regional Advisory Committee is maintained within PIFS; and (ii) by not later than January 31, 2020, a successor committee is established to assume the roles and responsibilities of the Regional Advisory Committee under the Program, and such successor committee is thereafter maintained from November 30, 2020 to the end of the Project implementation period.

(Section I.B.1 of Schedule 2 to the FA and Section 2.03 of the Annex to the GA) The Recipient shall, by not later than October 31, 2018, update and adopt the updated POM as accepted by the Association.

(Section I.C of Schedule 2 to the FA and Section 2.03 of the Annex to the GA) The Recipient shall prepare and furnish to the Association, not later than September 30 of each year (beginning from September 30, 2018), during the implementation of the Project (or such later date as the Association may agree), for the Association’s no-objection, an Annual Work Plan and Budget proposed to be included in the Project in the following calendar year. The Recipient shall ensure that the Project is implemented in accordance with the Annual Work Plan and Budget accepted by the Association for the respective calendar year.

(Section IV.1 of Schedule 2 to the FA) The Recipient shall provide its counterpart funding to partially finance the Premia under Part 3(b) of the Project, on an annual basis, in the amounts and within the timeframe specified in Section IV.1 of Schedule 2 to the FA.

(Section IV.2 of Schedule 2 to the FA) The Recipient shall, by no later than October 31, 2018, develop a PPSD for the Project, in form and substance satisfactory to the Association.

Conditions

| Type | Description |
|---------------|--|
| Effectiveness | The Financing Agreement and Grant Agreement have been executed and delivered and all conditions precedence to their effectiveness have been fulfilled. |



VIII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY : Tonga

Additional Financing for the Pacific Resilience Project under the Pacific Resilience Program

Project Development Objectives

The objective of the Project is to strengthen early warning, resilient investments and financial protection of Tonga.

Project Development Objective Indicators

| Action | Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source / Methodology | Responsibility for Data Collection |
|---------|---|------|-----------------|-----------|------------|-----------|---------------------------|------------------------------------|
| Revised | Name: Direct project beneficiaries | | Number | 24,000.00 | 60,000.00 | Annually | Survey | MEIDECC/PMU |
| Revised | Female beneficiaries (as a subset of the total number of beneficiaries) | | Number | 9,600.00 | 24,000.00 | Annually | Survey | MEIDECC/PMU |



Description: Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.

| | | | | | | | |
|---------|---|------------|-------|-------|----------|--------|-----|
| Revised | Name: Increased coverage of hazard forecast and warning messages to population at risk | Percentage | 30.00 | 70.00 | Annually | Survey | PMU |
|---------|---|------------|-------|-------|----------|--------|-----|

Description: Coverage refers to the people who can receive hazard forecast and warning messages through a modernized warning system

| | | | | | | | |
|---------|--|------------|------|--------|----------|-------------------------|---|
| Revised | Name: Participating PICs have received payment within a month of the occurrence of a covered (insurance) event. | Percentage | 0.00 | 100.00 | Annually | Project progress report | Ministry of Finance and National Planning/PMU |
|---------|--|------------|------|--------|----------|-------------------------|---|

Description: Percentage of policy-triggering disaster events for which payouts have been provided within a month of the occurrence

| | | | | | | | |
|---------|--|-------|------|------|--------|-------------------------|---|
| Revised | Name: Time taken to trigger the contingency emergency response component (CERC) for an eligible emergency | Weeks | 0.00 | 4.00 | Annual | Project Progress report | Ministry of Finance and National Planning/PMU |
|---------|--|-------|------|------|--------|-------------------------|---|

Description: Funds will be used: (i) for quick disbursements to meet immediate liquidity needs following a disaster event in order to finance critical



imports; and/or (ii) to finance emergency recovery and reconstruction works and associated services

| | | | | | | | | |
|-----|---|--|--------|------|----------|--------|--------------------------|--|
| New | Name: School children to benefit from increased resilience to their school | | Number | 0.00 | 9,000.00 | Annual | Survey/project reporting | Ministry of Education and Training/PMU |
|-----|---|--|--------|------|----------|--------|--------------------------|--|

Description:



Intermediate Results Indicators

| Action | Indicator Name | Core | Unit of Measure | Baseline | End Target | Frequency | Data Source / Methodology | Responsibility for Data Collection |
|---|---|------|-----------------|----------|------------|-----------|---------------------------|------------------------------------|
| Revised | Name: Improved status of hazards observational network (Hydro, Meteorological and Seismic) | | Percentage | 20.00 | 50.00 | Annually | Survey | MEIDECC/PMU |
| Description: | | | | | | | | |
| Revised | Name: Multi Hazard Early warning systems are established and operating | | Yes/No | No | Yes | Annually | Survey/project reports | MEIDECC/PMU |
| Description: Existing hazard observing and warning systems are integrated into fully operational multi-hazard early warning platforms | | | | | | | | |
| New | Name: Number of school buildings rebuilt to improved resilience standards | | Number | 0.00 | 30.00 | Annually | Survey/project reports | MoET/PMU |
| Description: | | | | | | | | |
| New | Name: Number of school buildings repaired or retrofitted to improved resilience | | Number | 0.00 | 20.00 | Annually | Survey/project reports | MoET/PMU |



| | | | | | | | | |
|--|--|--|------------|------|--------|----------|------------------------|----------|
| | standards | | | | | | | |
| Description: | | | | | | | | |
| New | Name: Schools with gender appropriate resilient WASH facilities | | Percentage | 0.00 | 100.00 | Annually | Survey/project reports | MoET/PMU |
| Description: | | | | | | | | |
| New | Name: Beneficiaries of school repairs, retrofitting, and rebuilding that feel project investments reflect their needs (of which 50% are female) | | Percentage | 0.00 | 80.00 | Annually | Survey | MoET/PMU |
| Description: | | | | | | | | |
| Revised | Name: The premiums are lower than the simulated price for a comparable coverage purchased individually in the market | | Yes/No | No | Yes | Annually | Project reporting | MFNP/PMU |
| Description: Percentage of savings, defined as the simulated individual market (obtained through the World Bank), vs the real price under the PREP | | | | | | | | |



Target Values

Project Development Objective Indicators

| Action | Indicator Name | Baseline | YR1 | YR2 | YR3 | YR4 | YR5 | YR6 | YR7 | YR8 | YR9 | End Target |
|---------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------|---------------|---------------|---------------|
| Revised | Direct project beneficiaries | 24,000.0 0 | 24,000.0 0 | 24,000.0 0 | 24,000.0 0 | 24,000.0 0 | 36,000.0 0 | 48,000.0 0 | 60,000.00 | 60,000.0 0 | 60,000.0 0 | 60,000.0 0 |
| Revised | Female beneficiaries (as a subset of the total number of beneficiaries) | 9,600.00 | 24,000.0 0 | 24,000.0 0 | 24,000.0 0 | 24,000.0 0 | 36,000.0 0 | 48,000.0 0 | 60,000.00 | 60,000.0 0 | 60,000.0 0 | 24,000.0 0 |
| Revised | Increased coverage of hazard forecast and warning messages to population at risk | 30.00 | 30.00 | 30.00 | 30.00 | 40.00 | 50.00 | 60.00 | 70.00 | 70.00 | 70.00 | 70.00 |
| Revised | Participating PICs have recieved payment within a month of the occurrence of a covered (insurance) event. | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Revised | Time taken to | 0.00 | 6.00 | 5.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |



| | | | | | | | | | | | | |
|-----|---|------|--|--|--|--|--|--|--|--|--|----------|
| | trigger the contingency emergency response component (CERC) for an eligible emergency | | | | | | | | | | | |
| New | School children to benefit from increased resilience to their school | 0.00 | | | | | | | | | | 9,000.00 |

Intermediate Results Indicators

| Action | Indicator Name | Baseline | YR1 | YR2 | YR3 | YR4 | YR5 | YR6 | YR7 | YR8 | YR9 | End Target |
|---------|--|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------|
| Revised | Improved status of hazards observational network (Hydro, Meteorological and Seismic) | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 30.00 | 40.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| Revised | Multi Hazard Early warning systems are established and operating | No | N | N | N | N | N | N | Y | Y | Y | Y |
| New | Number of school | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | 10.00 | 30.00 | 30.00 | 30.00 | 30.00 |



| | | | | | | | | | | | | | |
|---------|---|------|------|------|------|------|--------|--------|--------|--------|--------|--------|--------|
| | buildings rebuilt to improved resilience standards | | | | | | | | | | | | |
| New | Number of school buildings repaired or retrofitted to improved resilience standards | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | 10.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 |
| New | Schools with gender appropriate resilient WASH facilities | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| New | Beneficiaries of school repairs, retrofitting, and rebuilding that feel project investments reflect their needs (of which 50% are female) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 80.00 | 80.00 | 80.00 | 80.00 | 80.00 | 80.00 | 80.00 |
| Revised | The premiums are lower than the simulated price for a comparable coverage purchased individually in the market | No | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

ANNEX 1. NATURAL HAZARDS AND CLIMATE CHANGE CONTEXT

Natural Hazards

1. Tonga is exposed to a range of natural hazards and is frequently impacted by severe weather. It is ranked second (behind Vanuatu) as most disaster-prone country in the world, according to the 2016 World Risk Index⁹ The country is located in an area known for the occurrence of frequent tropical cyclones with damaging winds, rain, and storm surge.
2. Tonga is located south of the equator in an area known for the frequent occurrence of tropical cyclones with damaging winds, rains and storm surge between the months of October and May. In the South Pacific region from the equator to New Zealand in latitude and from Indonesia to east of Hawaii in longitude almost 1,000 tropical cyclones with hurricane force winds spawned in the last 60 years, with an average of about 16-20 tropical storms per year.
3. Tonga has been affected by multiple devastating disasters in the last few decades. Prior to TC Gita in 2018, Tropical Cyclone Ian in 2014 affected almost 1,000 homes and buildings in the Ha'apai island group. Tropical cyclones Isaac and Waka, in 1982 and in 2001, caused 7 fatalities, destroyed the shelters of tens of thousands of people as well as much of the nation's agriculture crops and caused about US\$75 million in losses that crippled the local economy. The effects of natural hazards in Tonga are far-reaching and pose a threat to (among other things) social infrastructure and well-being, agriculture, housing, transport infrastructure, public utilities, and tourism.

⁹ This index uses "globally available data" to measure every country's exposure and susceptibility to natural disasters, together with their coping and adaptive capacities. Available at <http://weltrisikobericht.de/wp-content/uploads/2016/08/WorldRiskReport2016.pdf>.

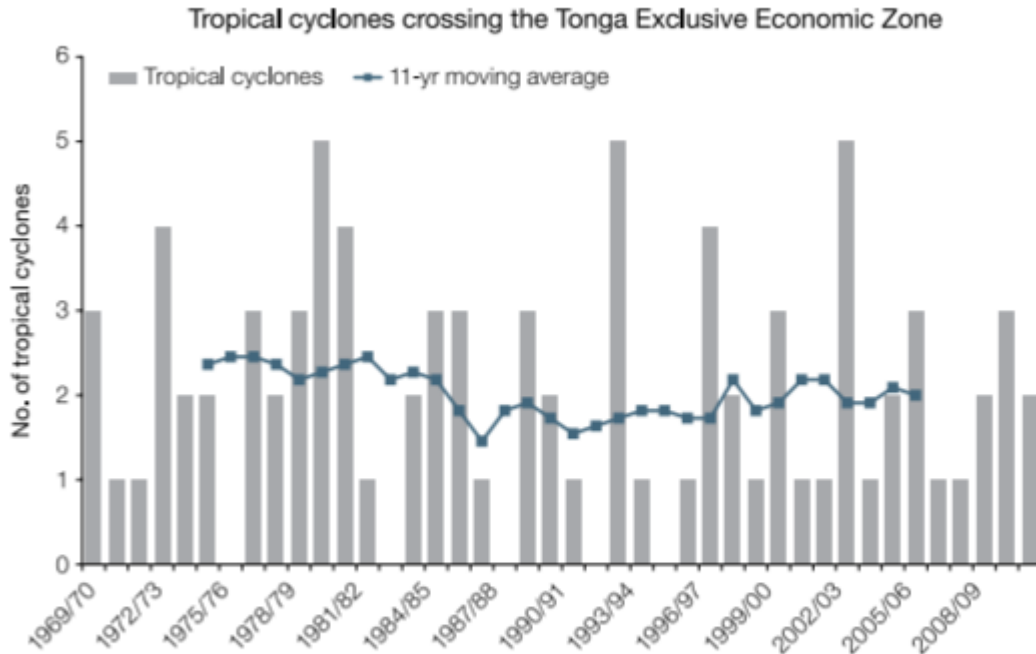


Figure 3: Number of tropical cyclones developing within and crossing the Tonga Exclusive Economic Zone per season. The 11-year moving average is in blue.

(Geoscience Australia, 2015)

4. Tonga is expected to incur, on average, US\$15.5 million per year in losses due to earthquakes and tropical cyclones. In the next 50 years, Tonga has a 50 percent chance of experiencing a loss exceeding US\$175 million and more than 440 casualties, and a 10 percent chance of experiencing a loss exceeding US\$430 million and more than 1,700 casualties (World Bank 2011). These figures could increase if the impacts of climate change are taken into account.

Climate Change Projection

5. Tonga’s climate varies considerably from year to year, due to the El Nino Southern Oscillation. This is a natural climate patters that occurs across the tropical Pacific Ocean. El Nino brings cooler, dry conditions whereas La Nina events bring wetter than normal conditions.

6. Since 1949, annual wet season mean and minimum temperatures have increased in Nuku’alofa. The rate of increase (0.15deg per decade for wet season maximum) is in line with the global pattern of warming.



7. There are no clear trends on rainfall patterns. There has been little change in extreme daily rainfall since 1949. Satellite data has indicated that the sea level has risen near Tonga by around 6mm per year since 1993, a larger increase than the global average. This increase is attributed to natural fluctuations that take place year to year or decade to decade caused by El Nino southern oscillation.

8. In terms of Tonga’s future climate, although current analysis indicates that temperature and sea level will continue to rise at the current rate, there is no consensus on whether rainfall will increase or decrease. Tropical Cyclones are likely to be less frequent, but more intense¹⁰.

Table 2: Sea-level rise projections for Tonga. Values represent 90% of the range of model results and are relative to the period 1986–2005.

| | 2030 (cm) | 2050 (cm) | 2070 (cm) | 2090 (cm) |
|------------------------------|--------------|--------------|--------------|--------------|
| Very low emissions scenario | 8–18 | 14–30 | 19–43 | 23–58 |
| Low emissions scenario | 8–18 | 15–31 | 22–48 | 29–66 |
| Medium emissions scenario | 7–17 | 14–31 | 21–47 | 30–67 |
| Very high emissions scenario | 8–18 | 17–35 | 28–58 | 41–88 |

Reducing the vulnerability of public buildings (including school buildings) from Climate Change and Natural Disasters

9. A study undertaken in 2016¹¹ analyzed options to reduce the vulnerability of the public buildings from Tropical Cyclone winds for Tonga. Scenarios considered were current conditions and future climate scenarios (low emission and high emission) up to 2050. The options considered were national level options that can include combination of: i) retrofitting (upgrading) existing buildings to increase their wind resistance and ii) progressive replacement of the building stock using enhanced design standards that take account of increased wind speeds due to likely climate change conditions.

10. Complementary analysis of progressive adjustment in design standards required to take account of changes in average temperatures, precipitation and humidity which affect the service life and habitability of buildings is presented in Section 3.5 and Annex 5 of Pacific Possible (2016) background paper no.6.

11. The PCRAFI modelling components were used to analyze the impacts of both climate change scenarios and strengthening measures for the building stock due to retrofitting and application of stringent building codes. The PCRAFI study developed a probabilistic risk model to estimate losses caused by tropical cyclones under historical climate conditions. Generally, the intensity of tropical cyclones is

¹⁰ Geoscience Australia 2015, Pacific Climate Change Science

¹¹ World Bank, 2016, Pacific Possible, Background paper no.6, Chapter 3.5



likely to increase by 3–5 percent per 1°C rise in sea surface temperature. This forms the basis of distributing changes in cyclone intensity as measured by the projected 1 in100 years wind speed for 2050 under historical climate, low and high-emission scenarios (Table 1)¹².

Table 1. Estimated increase in Cyclone Wind Intensity up to 2050

| | Likely wind speed with mean return period of 100 years (km/h sustained over 1 min) | | |
|-------|--|-----------------------|------------------------|
| | Historical climate | Low emission scenario | High emission scenario |
| Tonga | 152 | 158 | 165 |

12. The analysis demonstrated that a strategy of implementing light retrofitting for public and residential building types of buildings is predicted to decrease average annual damages by about 35 percent for Tonga. Implementing heavy retrofitting for public buildings is expected to result in about 50 percent reduction in average annual damages. These are quite significant numbers, and suggest that retrofitting is an effective tool for reducing cyclone damages.

13. The reconstruction and repairs to take place will apply the updated standards for schools, which will be more in line with the heavy retrofitting option. The repairs align more with the light retrofitting option.

14. For the schools reconstruction, the schools' likely exposure to sea level rise at its' current location will be considered as part of the rationalization process of prioritization for the repair and reconstruction of the schools. Those school assessed to have high exposure will be considered for relocation within the school premise, or in extreme cases, outside.

¹² Details of the climate models and assumptions can be found in World Bank 2016, Pacific Possible Background paper no.6, Chapter 3.5 and Annex 1