

Project Administration Manual

Project Number: 49450-012
March 2019

Proposed Grant and Administration of Grants for
Kingdom of Tonga: Tonga Renewable Energy
Project

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Project Administration Manual Purpose and Process

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

The government through the Ministry of Finance and National Planning (MFNP), and Tonga Power Limited (TPL) are wholly responsible for the execution of ADB financed projects, as agreed jointly between the recipient and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by MFNP and TPL of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At Grant Negotiations, the recipient and ADB shall agree to the PAM and ensure consistency with the grant agreements. Such agreement shall be reflected in the minutes of grant negotiations. In the event of any discrepancy or contradiction between the PAM and the government, the provisions of the Grant Agreements shall prevail.

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

ABBREVIATIONS

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
AFS	–	audited financial statements
AG	–	auditor general
AMA	–	accreditation master agreement
AusAID	–	Australian Agency for International Development
BESS	–	battery energy storage system
CEO	–	chief executive officer
CPD	–	client portal for disbursements
DFAT	–	Department of Foreign Affairs and Trade (Australia)
DMF	–	design and monitoring framework
EA	–	executing agency
EMP	–	environmental management plan
FAA	–	funded activity agreement
FMA	–	financial management assessment
FMAQ	–	financial management assessment questionnaire
GAAP	–	generally accepted accounting practices
GAP	–	gender action plan
GCF	–	Green Climate Fund
GOT	–	Government of Tonga
IAs	–	implementing agencies
IEEE	–	Institute of Electrical and Electronics engineers
IPP	–	independent power producers
IPSAS	–	international public-sector accounting standards
MEIDECC	–	Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment and Communications
MFNP	–	Ministry of Finance and National Planning
MPE	–	Ministry of Public Enterprises
NDC	–	nationally determined contributions
O&M	–	operation and maintenance
PAM	–	project administration manual
PEFA	–	public expenditure and financial accountability
PFM	–	public financial management
PMC	–	project management consultant
PMU	–	project management unit
PSC	–	project steering committee
PV	–	photovoltaic
RE	–	renewable energy
SHS	–	solar home system
SPS	–	safeguards policy statement
TA	–	technical assistance
TERM	–	Tonga Energy Road Map
TERM-IU	–	Tonga Energy Road Map Implementation Unit
TPL	–	Tonga Power Limited
TREP	–	Tonga Renewable Energy Project

WEIGHTS AND MEASURES

kW	–	kilowatt
kWh	–	kilowatt-hour
kWp	–	kilowatt- peak
MW	–	megawatt
MWh	–	megawatt-hour
MWp	–	megawatt-peak

NOTES

In this report, "\$" refers to US dollars.

I. PROJECT DESCRIPTION

1. **Project Rationale.** The Kingdom of Tonga (Tonga) is a small island developing state consisting of 177 islands with a total area of 748 km². Tonga's population is approximately 103,000, of which almost three-quarters live in the island of Tongatapu. Tonga is extremely remote from all markets and most resources. Until recently, Tonga depended almost entirely on imported diesel (around 90%) to generate its electricity. This led to climate change concerns and also created a high dependency on imported fuels, which caused limited electricity consumption because of high electricity costs. Tonga has a large potential for renewable energy, notably from solar, wind and biomass. However, financial, technical and other barriers have constrained the development of renewable energies. In response, the Government of Tonga (GOT) issued the Renewable Energy Act in 2008 and then formulated the Tonga Energy Road Map, 2010 – 2020 (TERM). Tonga's Nationally Determined Contributions (NDC) include the following generation (supply side) targets: (i) by 2020, 50% of all electricity to be generated from renewables; and (ii) by 2030, 70% of all electricity to be generated from renewables.

2. **Impact, Outcome and Outputs.** The impact of TREP will be reduced Tonga's dependency on imported fossil fuel for power generation. TREP's outcome is expanded access to clean, resilient and affordable energy for the population in Tonga at a lower cost. TREP will have four outputs:

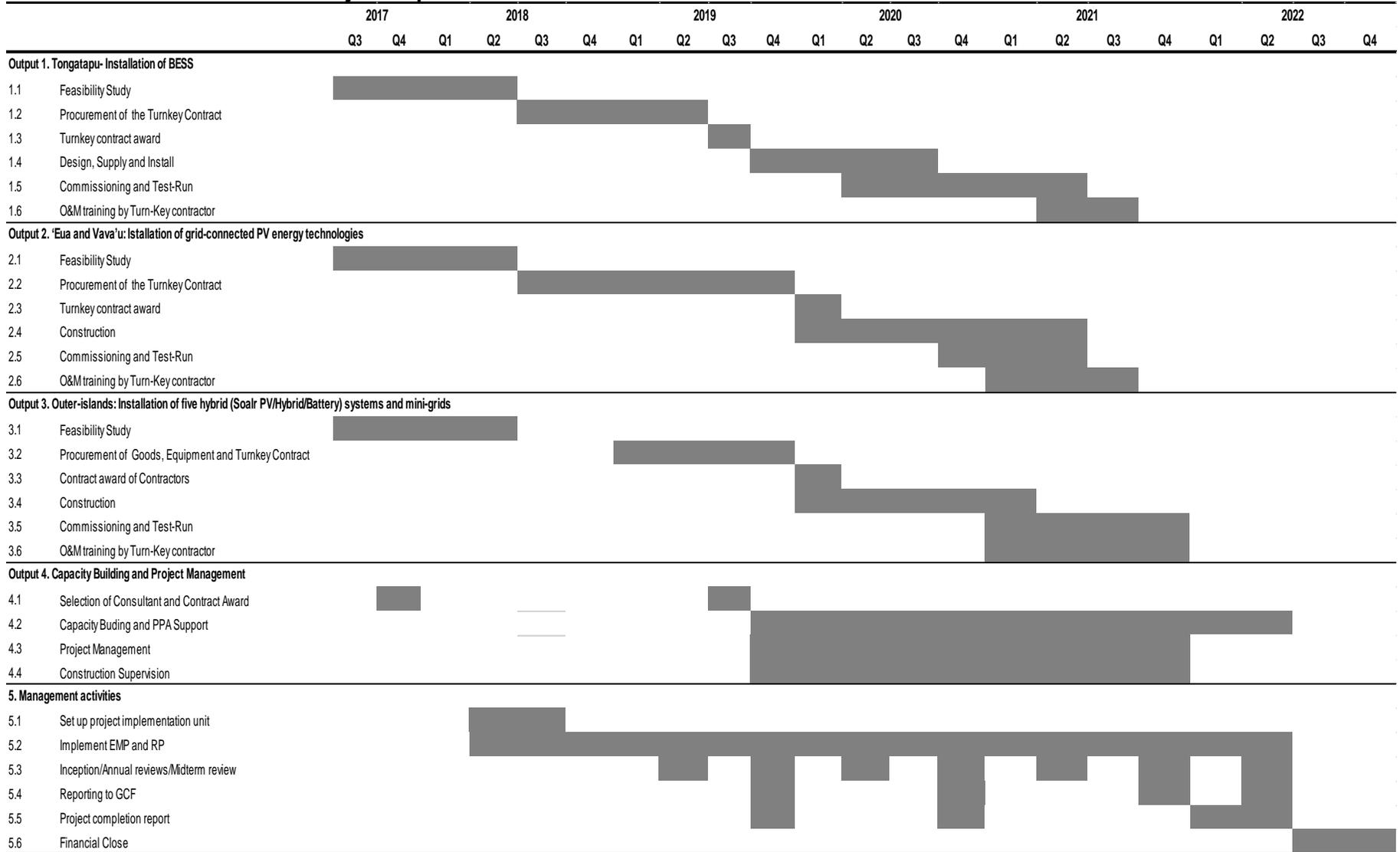
- **Output 1: BESS on Tongatapu** – Installing multiple units of BESS with a total installed capacity of 10.1 MW / 19.9 MWh, consisting of (i) the grid stability BESS of 5.1 MW / 2.5 MWh; and (ii) load-shifting BESS of 5.0 MW / 17.4 MWh, to complement the renewable energy systems;¹³
- **Output 2: Grid-connected renewable energy generation on 'Eua and Vava'u islands** – Installing the on-grid solar PV plants with total capacity of 650 kW, coupled with small BESS with total capacity of 1.3 MW / 1.4 MWh on 'Eua and Vava'u;
- **Output 3: Renewable-based hybrid systems and mini-grids on outer-Islands** – Installing mini-grid renewable-based hybrid systems consisting of 501 kW solar PV coupled with 4.3 MWh BESS in total in five outer islands (O'ua, Tungua, Kotu, Mo'unga'one and Niuafou'u,) which includes installation of the mini-grid; and
- **Output 4: Strengthening of capacity building and project management** – (i) improving capacity to assess renewable energy technologies and set off-take tariffs; (ii) preparing for power purchase agreements for private sector funded investments; (iii) enhancing capacity of executing entities and communities (including women) to manage assets and undertake operations and maintenance and improve community engagement; (iv) providing experts' support on both design and procurement activities, construction supervision, and development of operations and maintenance manuals; and (v) delivering specific trainings aimed at addressing gender inequality and sexual harassment.

II. IMPLEMENTATION PLANS

A. Project Program Milestone

Expected approval from ADB's President (if applicable)	19/04/2019
Expected financial close (if applicable)	30/04/2023
Estimated implementation start and end date	Start: 01/06/2019 End: 30/10/2022
Project/program lifespan	25 years

B. Project Implementation Plan



III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations – Roles and Responsibilities

Agency	Roles
Project Steering Committee (PSC)	<ul style="list-style-type: none"> • Oversees project implementation and make key decisions such as the selection of turnkey contractors and consultants as well as approval of key documents such as operations and maintenance manuals, etc.; • Monitors project progress; • Resolves any obstacles or impediments to implementation; • Guides the executing entities (MFNP, MEIDECC and TPL); and • Provides coordination on policy issues.
Executing Agency (MFNP)	<ul style="list-style-type: none"> • Enters into a Grant (subsidiary) Agreement (GA) with ADB; • Represents the government as a grant recipient as per the GA between GOT and ADB; • Facilitates negotiation, signing, and execution of the project financing agreements with ADB and other co-financier (Government of Australia); • Reviews and approves the project's procurement actions, in coordination with two executing entities - MEIDECC and TPL; • Submits withdrawal applications to ADB; and • Expedites implementation and minimizes cost by ensuring necessary counterpart funds are available on time; reviewing invoices and payments to contractors, consultants, and other service providers; and monitoring project progress and instructing MEIDECC and TPL to take corrective actions to prevent significant variations and deviations from schedules and budgets.
Implementing Agencies- (TPL and MEIDECC): <ul style="list-style-type: none"> • TPL for Outputs 1 and 2 • MEIDECC for Output 3 • TPL and MEIDECC jointly for Output 4 	<ul style="list-style-type: none"> • Enters into a Project (subsidiary) Agreement (PA) with ADB;¹ • Coordinates with ADB on all project management activities (including community engagements); • With the support of the PMU, manages and monitors project implementation activities, ensuring compliance with the government and ADB's requirements, especially ADB's Procurement Guidelines and Safeguards Statements; • Manage contractors, consultants and suppliers; • arrange PSC meetings as necessary and at least quarterly; • Reviews monthly progress reports that PMU prepares and endorses and submits to the PSC; • Supervises PMU in providing government counterpart assistance; • With the support of PMU, coordinates with and supervises design and supervision consultants; • Facilitates the coordination with government agencies necessary to prepare and implement the project; • Oversees reporting and monitoring of project performance, including preparation of monthly and quarterly project progress reports; • Review operation and maintenance manuals prepared by turnkey contractors and submit those manuals to PSC. • Oversees and approves, for submission to higher authorities, all contract administration matters, in close coordination with PMU; and • Assists ADB during project review missions.
Project Management Unit	<ul style="list-style-type: none"> • Perform day-to-day management work during project preparation, implementation and supervision periods; • Coordinate with government agencies and other involved parties for project implementation; • Communicate and coordinate with ADB for project management and implementation; • Report project implementation progress and compliance monitoring to ADB; • Engage project management consulting services; • Engage external resettlement, environmental and social monitors;

¹ ADB shall enter into a Project Agreement only with TPL for the implementation of the project. No agreement will be concluded between ADB and MEIDECC, as MEIDECC is a government agency.

- On behalf of the executing entities, review and submit bidding documents, bid evaluation reports, and other necessary documentation for ADB approval;
- Submit withdrawal applications to the MFNP;
- Submit required annual audit reports and financial statements of project account to ADB complying with international accounting standards;
- Ensure compliance with ADB safeguard policies;
- Carry-out the procurement for infrastructure, social housing, public space; and
- Undertake day-to-day construction supervision.

**Accredited Entity:
ADB**

- Carry out the obligations set out in the AMA and the FAA for TREP;
- Oversees the project (preparation and implementation) as per both GA and PA signed between GOT and ADB (GA) and TPL and ADB (PA);
- Administers grants from GCF and DFAT to GOT;
- Administers the co-finance resources from DFAT in accordance with the pertinent co-financing agreement;
- Administers the co-finance resources from the GCF in accordance with the FAA;
- Monitors project implementation arrangements, disbursement, procurement, consultant selection, and reporting;
- Monitors schedules of activities, including funds flow;
- Reviews compliance with agreed procurement procedures;
- Reviews compliance with grant covenants;
- Monitors effectiveness of safeguard procedures;
- Analyses the outcome of the capacity building and training programs;
- Monitors conformity with ADB anti-corruption policies;
- Undertakes periodic review missions;
- Undertakes a joint midterm review mission;
- Undertakes project completion report; and
- Independent Evaluation Department (of ADB) validates project completion report and has option to conduct an evaluation.

ADB = Asian Development Bank, AMA = accreditation master agreement, DFAT = Department of Foreign Affairs and Trade (Australia), FAA = funded activity agreement, GA = grant agreement, GCF = Green Climate Fund, GOT = Government of Tonga, MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications, MFNP = Ministry of Finance and National Planning, PA = project agreement, PMU = project management unit; PSC = project steering committee, TPL = Tonga Power Limited, TREP = Tonga Renewable Energy Project.

Source: Asian Development Bank estimates.

B. Key Persons Involved in Implementation

Executing Agency

Government of the Kingdom of Tonga through its Ministry of Finance and National Planning
Officer's Name: Ms. Pilimilose Balwyn Fa'otusia
Position: Chief Executive Officer
Telephone: +676 23066
Email address: bfaotusia@finance.gov.to

Implementing Agency

Energy Department under Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications
Officer's Name: Mr. Tevita Tukunga
Position: Director
Telephone: +676 8880005
Email address: ttukunga@gmail.com

Implementing Agency

Tonga Power Limited
Officer's Name: Mr. Seti Chen
Position: Chief Executive Officer
Telephone: +676 7863202
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ADB

Energy Division (PAEN)
 Pacific Department
 Staff Name: Olly Norojono
 Position: Director
 Telephone No.: +63 2 632 4444
 Email address: onorojono@adb.org

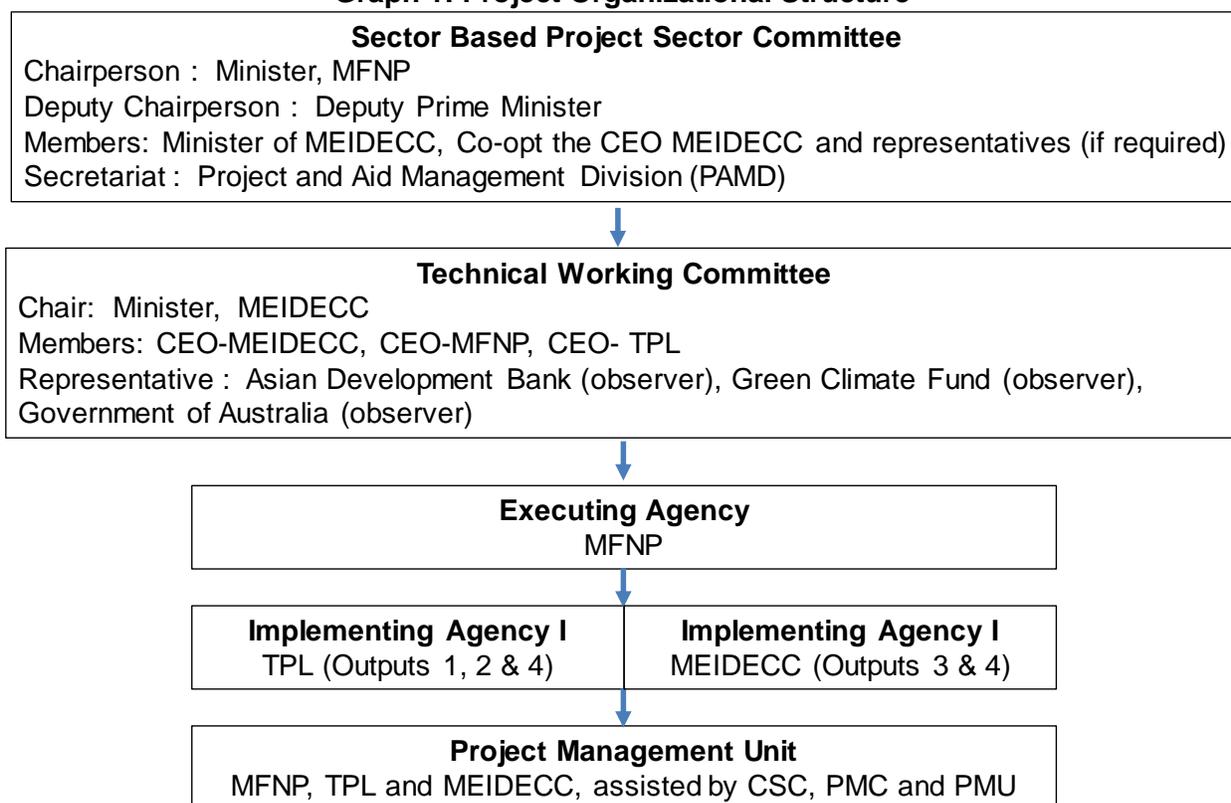
Mission Leader

Staff Name: Woo Yul Lee
 Position: Senior Energy Specialist
 Telephone No.: +63 2 632 4444
 Email address: wylee@adb.org

C. Project Organization Structure

3. The Government of Tonga will be the grant beneficiary, represented by the Ministry of Finance and National Planning (MFNP). A Project Steering Committee (PSC) will be established. The Minister of the MFNP will chair the PSC. The PSC members are as shown in Graph 1.

4. The project executing entities will be (i) the MFNP for the overall project implementation, especially for disbursement of funds; (ii) Tonga Power Limited (TPL) for Outputs 1 and 2; (iii) and the Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment and Communications (MEIDECC) for Output 3. TPL and MEIDECC will be joint executing entities for Output 4 (Project Management Capacity Building). The PMU will be established in MEIDECC. Graph 1 illustrates the project organizational arrangements.

Graph 1: Project Organizational Structure

CEO = chief executive officer, CSC = construction supervision consultant, MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment and Communications, MFNP = Ministry of Finance and National Planning, PMC = Project Management Consultants, PMU = Project Management Unit, TPL = Tonga Power Limited.

IV. COSTS AND FINANCING

5. As per the Electricity Amendment Act 2010 dated 24 September 2010, all plant and machinery required for setting up a power plant in Tonga is exempted from all kinds of taxes and duties. The exact verbatim is as follows: "All plant, machinery, mechanical appliances, iron and steel works, cement, concrete, engines, boilers, dynamos, motors, generator sets, conductor cables, transformers, poles, insulators, inverters, photovoltaic modules, metering equipment and all materials, apparatus and equipment (including related parts) of any kind whatsoever imported into the Kingdom by, or on behalf of, a concessionaire or a person carrying on an activity referred to in section 19(2)(c) {Extract of Section 19(2)(c) - "any generation, distribution or supply of electricity for the purpose of supplying electricity to a concessionaire"}, and in either case imported into the Kingdom for the purpose of generating, distributing or supplying electricity in the Kingdom, shall be free of all customs duties, excise duties and any other taxes imposed by any Act in relation to the importation of those goods."

6. As presented in Table 1, the proposed financing is a combination of grants from the Green Climate Fund (GCF), ADB and the Government of Australia, and contributions from Tonga Power Limited (TPL) and GOT. The indicative financing plan for TREP is presented in Table 1:

Table 1: Indicative Financing Plan

Source	Net Amount (\$ million)	%
Green Climate Fund (Grant) ^a	29.90	56.2
Asian Development Bank (Grant)	12.20	23.0
Government of Australia (Grant) ^b	2.50	4.7
Tonga Power Limited ^c	3.00	5.6
Government of Tonga ^d	5.60	10.5
Total	53.20	100.0

^a Administered by the Asian Development Bank (ADB). This amount will not be used to cover ADB's administration fee, audit cost or bank charges.

^b Administered by ADB. This amount includes ADB's administration fee, audit cost, and bank charges to the extent that these items are not covered by the interest and investment income earned on this grant, or any additional grant contribution by the Government of Australia.

^c Tonga Power Limited will pay for land acquisitions including compensation to land owners for Outputs 1-2, and other project management and administrative costs.

^d The Government of Tonga will bear duties and taxes (non-cash contribution).

Source: ADB estimates.

A. Project Financing Plan

7. The indicative investment plan is Table 2.

Table 2: Project Investment Plan

Components	RE Capacity	BESS Capacity	Amount (\$ million)
A. Base Cost^a			
1. Output 1: BESS on Tongatapu			
a. Grid-Stability BESS (BESS I)		5.1 MW/2.5 MWh	5.06
b. Load Shifting BESS (BESS II)		5.0 MW/17.4 MWh	14.48
2. Output 2: Grid-connected RE Generation on 'Eua and Vava'u islands			
a. Solar PV Farm with BESS in 'Eua	0.35 MW	0.4 MW/0.9 MWh	2.74
b. Solar PV Farm with BESS in Vava'u	0.3 MW	0.9 MW/0.45 MWh	2.33
3. Output 3: RE-Based Hybrid Systems and Mini-Grids on Outer-Islands			
a. O'ua	59 kW	471 kWh	1.32
b. Tungua	71 kW	580 kWh	1.35
c. Kotu	71 kW	580 kWh	1.35
d. Mo'unga'one	50 kW	390 kWh	1.10
e. Niuafu'u	0.25 MW	2.275 MW	5.79
4. Output 4: Capacity Building and Project Management Support			
a. Construction Supervision and Capacity Building			2.00
b. Project Management Support			1.15
Subtotal (A)			38.67
B. Land Acquisitions and Other Costs^b			3.00
C. Contingencies^c			5.80
D. Taxes and Duties^d			5.60
E. Financial Charges During Implementation			0.13
Total (A+B+C+D+E)			53.20

BESS = battery energy storage system, kW = kilowatt, kWh = kilowatt-hour, MW = megawatt, MWh = megawatt-hour, PV = photovoltaic, RE = renewable energy.

^a In late-2018 prices.

^b TPL will pay it for land acquisition including compensation to land owners, and other project management and administrative costs including project management, land clearance and road access, and integration support for Outputs 1-2.

^c Physical contingencies computed at 5.0% for civil works (turnkey contracts) and consulting services. Price contingencies including purchasing power parity computed at average of 10.0%.

^d The government will bear taxes and duties of \$5.60 million (non-cash contribution).

Source: ADB estimates.

B. Allocation and Withdrawal of Grant Proceeds

a) Asian Development Bank Grant

Category			ADB-ADF Financing
No.	Item	Total amount allocated for ADB financing (Million \$)	Percentages for withdrawal from the Grant Account
1	Works (BESS I)**	5,060,000	100.0% of total expenditure claimed*
2	Works (renewable-based hybrid systems and mini-grids)**	3,430,000	31.4% of total expenditure claimed*
3	Consulting Services**	780,000	24.8% of total expenditure claimed*
4	Unallocated	2,930,000	-
	Total	12,200,000	

ADB = Asian Development Bank, ADF = Asian Development Fund.

* Excluding taxes and duties imposed within the territory of the Recipient.

** Subject to the condition for withdrawal described in paragraph 5 of Schedule 2.

Source: Asian Development Bank.

b) COFINANCIER Grant* (Government of Australia through AusAID)

Category			Cofinancing
No.	Item	Total amount allocated for cofinancing (Million \$)	Percentages for withdrawal from the Grant Account
1	Consulting Services ***	2,370,000	75.2% of total expenditure claimed*
2	Unallocated**	130,000	-
	Total	2,500,000	

AusAID = Australian Agency for International Development.

* Excluding taxes and duties imposed within the territory of the Recipient.

** Administered by the Asian Development Bank. This amount includes a provision of 5% of ADB's administration fee, audit costs, bank charges, and a provision for foreign exchange fluctuations (if any), to the extent that these items are not covered by the interest and investment income earned on this grant, or any additional grant from the Government of Australia.

*** Subject to the condition for withdrawal described in paragraph 5 of this Schedule.

Source: Asian Development Bank estimates.

c) COFINANCIER Grant* (Green Climate Fund)

Category			Cofinancing
No.	Item	Total amount allocated for cofinancing (Million \$)	Percentages for withdrawal from the Grant Account
1	Works (BESS II)**	14,480,000	100.0% of total expenditure claimed*
2	Works (grid-connected renewable energy generation)**	5,070,000	100.0% of total expenditure claimed*
3	Works (renewable-based hybrid systems and mini-grids)**	7,480,000	68.6% of total expenditure claimed*
4	Unallocated	2,870,000	-
	Total	29,900,000	

BESS = battery energy storage system.

* Excluding taxes and duties imposed within the territory of the Recipient.

** Subject to the condition for withdrawal described in paragraph 5 of Schedule 1.

Source: Asian Development Bank estimates.

C. Detailed Cost Estimates by Category

	Million \$			% of Total Base Cost
	Foreign Currency	Local Currency	Total Cost	
Output 1: BESS on Tongatapu				
1. Grid-Stability BESS	5.06		5.06	9.5%
2. Load-Shifting BESS	14.48		14.48	27.2%
Output 2: Grid-connected Renewable Energy Generation on 'Eua and Vava'u islands				
3. Solar PV Farm with BESS in 'Eua	2.74		2.74	5.2%
4. Solar PV Farm with BESS in Vava'u	2.33		2.33	4.4%
Output 3: Renewable-Based Hybrid Systems and Mini-Grids on Outer-Islands				
5. O'ua	1.32		1.32	2.5%
6. Tungua	1.35		1.35	2.5%
7. Kotu	1.35		1.35	2.5%
8. Mo'unga'one	1.10		1.10	2.1%
9. Niuafu'ou	5.79		5.79	10.9%
Output 4: Capacity Building and Project Management Support				
10. Construction Supervision and Capacity Building	2.00		2.00	3.8%
11. Project Management Support	1.15		1.15	2.2%
Taxes and Duties		5.60		
Subtotal (A)	38.67	5.60	44.27	83.2%
Other Costs b		3.00	3.00	5.6%
Subtotal (B)	-	3.00	3.00	5.6%
Contingencies				
Unallocated	5.80		5.80	10.9%
Subtotal (C)	5.80	-	5.80	10.9%
D. Financing Changes				
Co-financing Administration Fee	0.13		0.13	0.2%
Subtotal (D)	0.13	-	0.13	0.2%
Total Project Cost (A+B+C+D)	44.60	8.60	53.20	100.0%

D. Detailed Cost Estimates by Financier

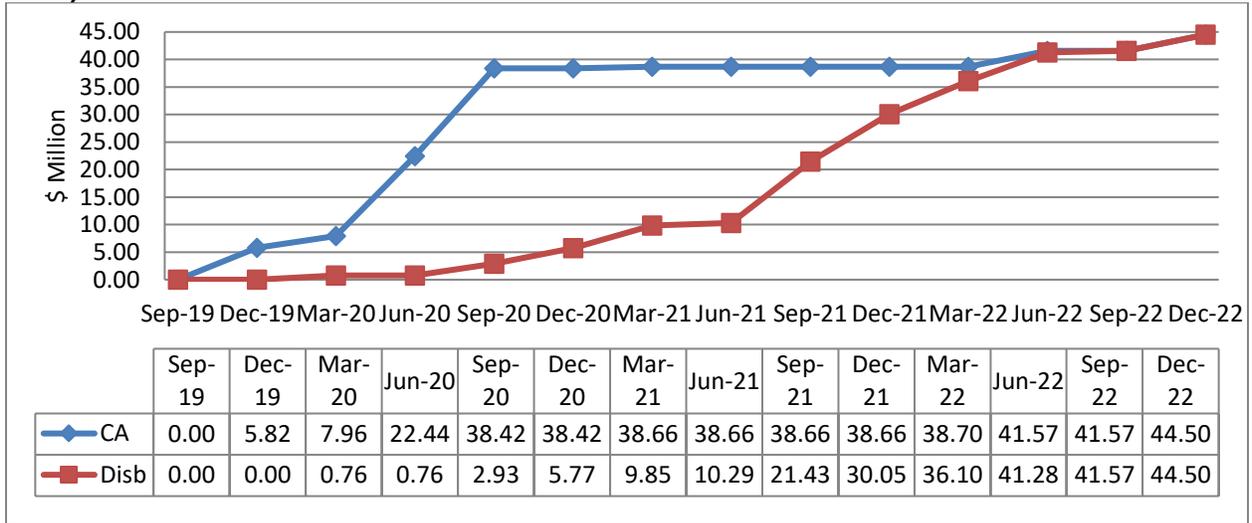
	Total Cost	ADB ADF Grant		GCF Grant		Government of Australia		TPL		Government of Tonga		Total	
	Million \$	Million \$	% of cost category	Million \$	% of cost category	Million \$	% of cost category	Million \$	% of cost category	Million \$	% of cost category	Million \$	% of cost category
Output 1: BESS on Tongatapu													
1. Grid-Stability BESS	5.06	5.06	100.0%		0.0%							5.06	100.0%
2. Load-Shifting BESS	14.48		0.0%	14.48	100.0%							14.48	100.0%
Output 2: Grid-connected Renewable Energy Generation on 'Eua and Vava'u islands													
3. Solar PV Farm with BESS in 'Eua	2.74	-	0.0%	2.74	100.0%							2.74	100.0%
4. Solar PV Farm with BESS in Vava'u	2.33	-	0.0%	2.33	100.0%							2.33	100.0%
Output 3: Renewable-Based Hybrid Systems and Mini-Grids on Outer-Islands													
5. O'ua	1.32	0.41	31.4%	0.91	68.6%							1.32	100.0%
6. Tungua	1.35	0.42	31.4%	0.93	68.6%							1.35	100.0%
7. Kotu	1.35	0.42	31.4%	0.93	68.6%							1.35	100.0%
8. Mo'unga'one	1.10	0.35	31.4%	0.75	68.6%							1.10	100.0%
9. Niuafo'ou	5.79	1.82	31.4%	3.97	68.6%		0.0%					5.79	100.0%
Output 4: Capacity Building and Project Management Support													
10. Construction Supervision and Capacity Building	2.00	0.50	24.8%		0.0%	1.50	75.2%					2.00	100.0%
11. Project Management Support	1.15	0.28	24.8%		0.0%	0.87	75.2%		0.0%		0.0%	1.15	100.0%
Taxes and Duties	5.60									5.60	100.0%	5.60	100.0%
Subtotal (A)	44.27	9.27	20.9%	27.03	61.1%	2.37	5.4%	-	0.0%	5.60	12.6%	44.27	100.0%
Other Costs b	3.00		0.0%	-	0.0%			3.00	100.0%			-	0.0%
Subtotal (B)	3.00	-	-	-	-	-	-	3.00	-	-	-	3.00	100.0%
Contingencies													
Unallocated	5.80	2.93	50.5%	2.87	49.5%		0.0%				0.0%	5.80	100.0%
Subtotal (C)	5.80	2.93	50.5%	2.87	49.5%	-	0.0%	-	-	-	0.0%	5.80	100.0%
D. Financing Changes													
Co-financing Administration Fee	0.13					0.13	100.0%					0.13	100.0%
Subtotal (D)	0.13	-	-	-	-	0.13	100.0%	-	-	-	-	0.13	100.0%
Total Project Cost (A+B+C+D)	53.20	12.20	22.9%	29.90	56.2%	2.50	4.7%	3.00	5.6%	5.60	10.5%	53.20	100.0%

E. Detailed Cost Estimates by Year

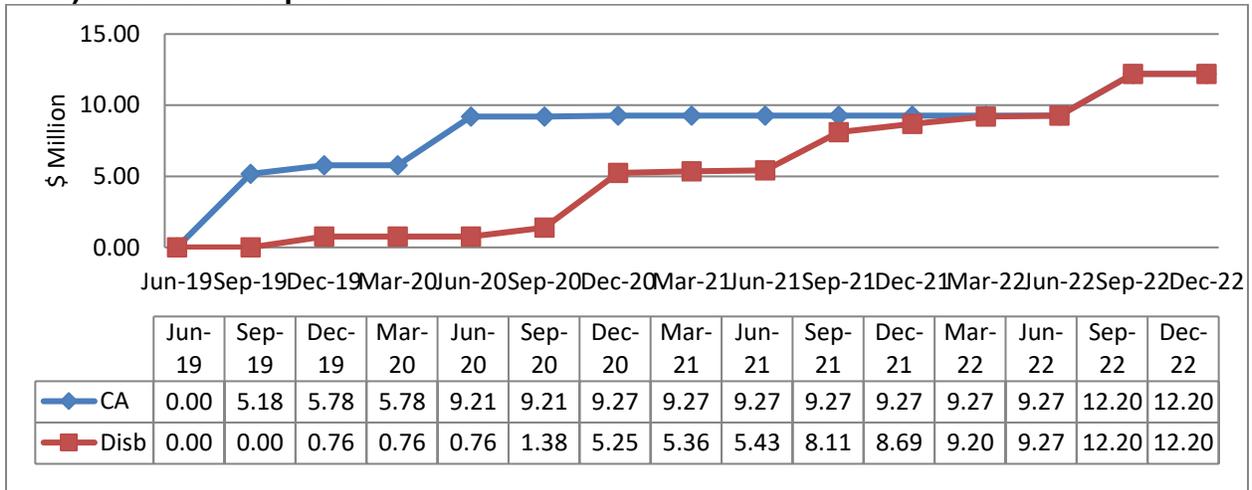
	Million \$	2019	2020	2021	2022	Total
Output 1: BESS on Tongatapu						
1. Grid-Stability BESS	5.06	0.76	3.80	0.51		5.06
2. Load-Shifting BESS	14.48		2.17	10.86	1.45	14.48
Output 2: Grid-connected Renewable Energy Generation on 'Eua and Vava'u islands						
3. Solar PV Farm with BESS in 'Eua	2.74		0.41	2.06	0.27	2.74
4. Solar PV Farm with BESS in Vava'u	2.33		0.35	1.75	0.23	2.33
Output 3: Renewable-Based Hybrid Systems and Mini-Grids on Outer-Islands						
5. O'ua	1.32		0.20	0.99	0.13	1.32
6. Tungua	1.35		0.20	1.01	0.14	1.35
7. Kotu	1.35		0.20	1.01	0.14	1.35
8. Mo'unga'one	1.10		0.17	0.83	0.11	1.10
9. Niuafu'ou	5.79		0.87	4.34	0.58	5.79
Output 4: Capacity Building and Project Management Support						
10. Construction Supervision and Capacity Building	2.00	0.50	0.50	0.50	0.50	2.00
11. Project Management Support	1.15	0.29	0.29	0.29	0.29	1.15
Taxes and Duties	5.60	1.40	1.40	1.40	1.40	5.60
Subtotal (A)	44.27	2.95	10.55	25.54	5.23	44.27
Other Costs b	3.00	0.75	0.75	0.75	0.75	3.00
Subtotal (B)	3.00	0.75	0.75	0.75	0.75	3.00
Contingencies						
Unallocated	5.80				5.80	5.80
Subtotal (C)	5.80	-	-	-	5.80	5.80
D. Financing Changes						
Co-financing Administration Fee	0.13	0.03	0.03	0.03	0.03	0.13
Subtotal (D)	0.13	0.03	0.03	0.03	0.03	0.13
Total Project Cost (A+B+C+D)	53.20	3.73	11.33	26.32	11.82	53.20

F. Contract and Disbursement S-curve

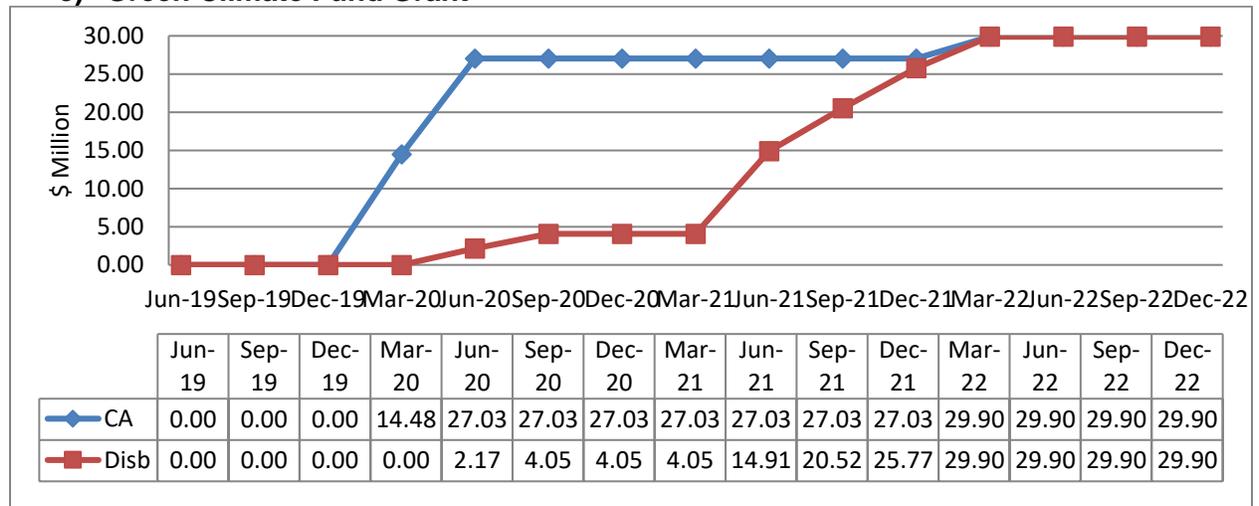
a) Total



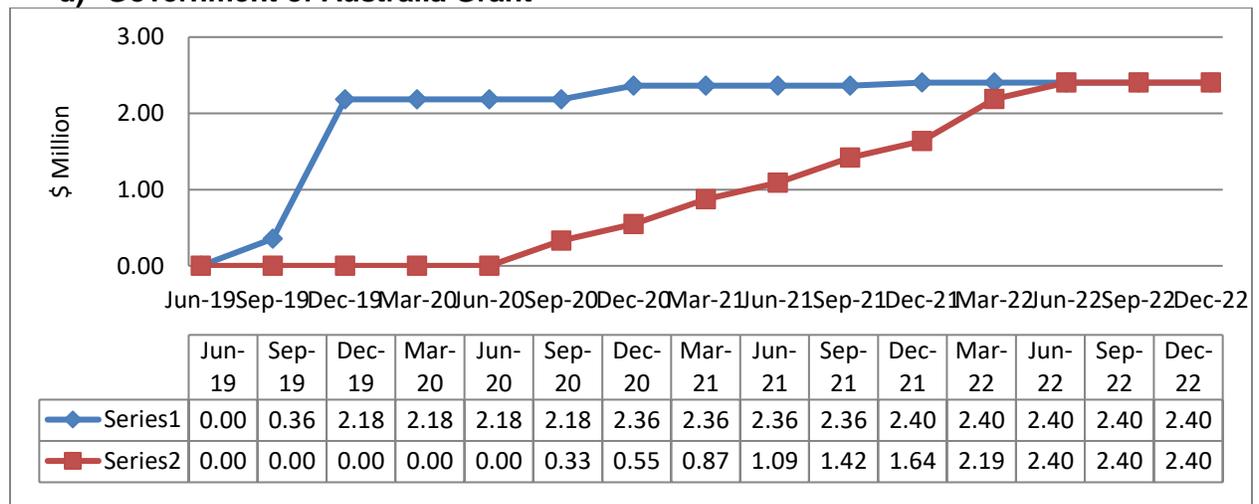
b) Asian Development Bank Grant



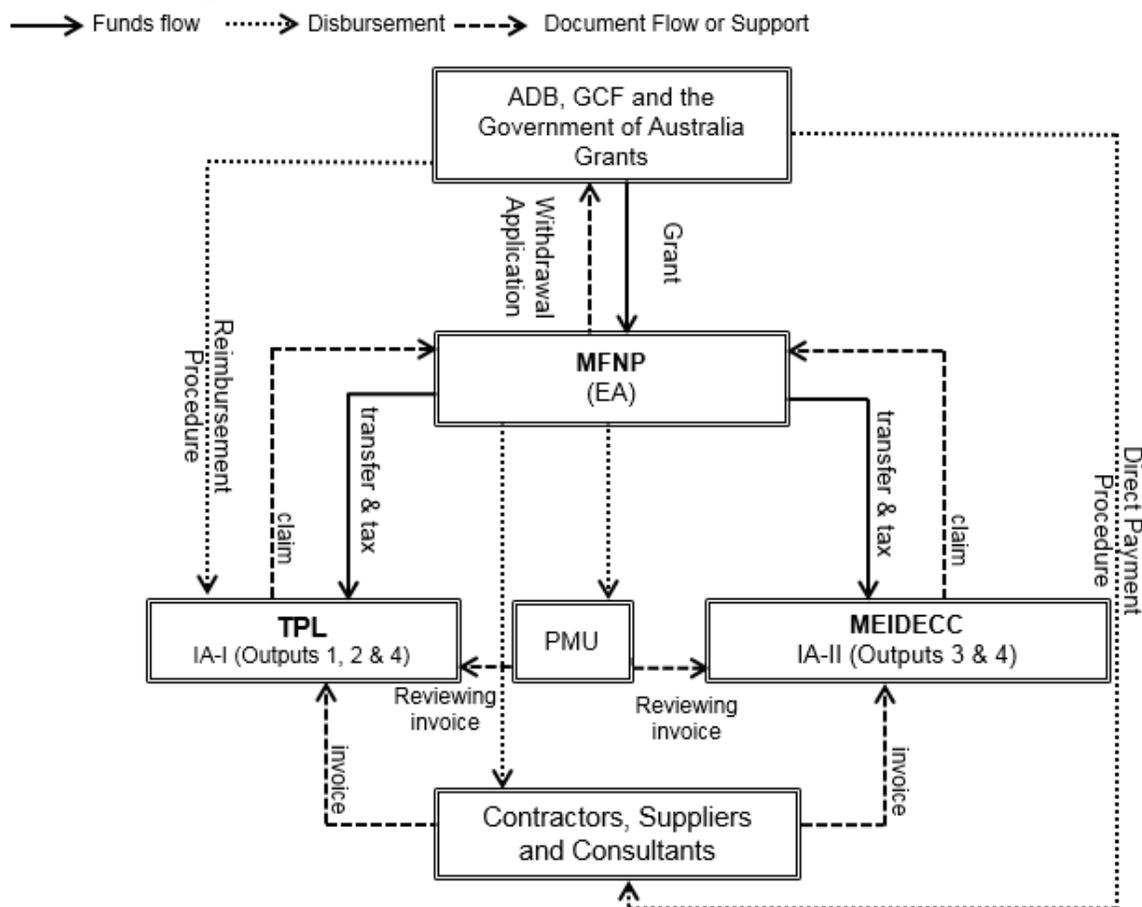
c) Green Climate Fund Grant



d) Government of Australia Grant



Fund Flow Diagram



ADB = Asian Development Bank, EA = executing agency, GCF = global climate fund, IA = implementing agency, MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment and Communications, MFNP = Ministry of Finance and National Planning, PMU = project management unit, TPL = Tonga Power Limited.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

8. A financial management assessment (FMA) was carried out in TPL and MEIDECC according to ADB's *Financial Management and Analysis of Projects (The Guidelines)* (2005).² The financial management capacity of individual implementing agencies, TPL and MEIDECC, has been newly assessed³ and found to be adequate to ensure that grant funds are utilized for intended purposes.

9. Tonga has made solid progress in improving public financial management since achieving internal self-governance in 1984, particularly in government financial accounting and reporting. Public finance legislative frameworks are judged to be reasonably sound. Public financial management (PFM) in Tonga is legislated under the Public Financial Management Act of 2002

² It was conducted when the original project was processed.

³ In accordance with ADB. 2005. *Financial Management and Analysis of Projects*. Manila; and ADB. 2009. *Financial Due Diligence A Methodology Note*. Manila.

where the Minister of Finance is responsible for management of public finance and preparation of expenditure estimates and statements of anticipated revenue. The Public Audit Act 2007 established the position of Auditor General (AG) to audit Ministries, government agencies and public enterprises, Under the Act, the AG submits his report nine months after the end of the financial year, i.e. 31 March to the Speaker and the Prime Minister.

10. The Public Expenditure and Financial Accountability (PEFA) assessment concluded that Tonga had a solid legal and regulatory framework setting out budgeting, expenditure and accountability structures with oversight by the Legislative Assembly. The PEFA report concluded that Tonga had a solid legal and regulatory framework setting out budgeting, expenditure and accountability structures with oversight by the Legislative Assembly. The conclusions are as follows: **(i) Budget credibility** received an 'A' rating up from a 'C' rating except for the expenditure outturn which received a 'C' rating due to significant variances and the use of the Contingency Fund rather than formal supplementary estimates. The budget is the mechanism for controlling expenditure and estimating income and implementing the budget as planned is important in delivering the government's policy objectives; **(ii) Comprehensiveness and transparency.** PEFA noted that budget documentation and fiscal information was generally clear but financial information on public enterprises and auditing need to be strengthened; **(iii) Multi-year budgeting to be improved.** At the time of the PEFA, the capacity of government ministries and departments in preparing multi-year Corporate Plans were built and at the time of writing, Corporate Plans were well developed; **(iv) Controls in execution of the budget.** PEFA noted that the system of tax administration was operating properly. Expenditure controls for salary and non-salary expenses were effective but that auditing needed to be improved although it was legislated under the Public Finance Management Act and Audit Act. The last audited GOT financial statements for FY15/16, included a statement of receipts and payments, income and expenditure, changes in fund balance and assets and liabilities. These were prepared on a cash basis, in accordance with International Public-Sector Accounting Standards (IPSAS), and not accrual basis; **(v) External scrutiny and audit.** PEFA noted that there were long lags in auditing which has since improved with only one-year delay in auditing.

11. The financial management assessment (FMA) was carried out for individual implementing agencies. TPL and MEIDECC have been assessed.⁴ The FMA was undertaken as follows: (i) ADB's Financial Management Assessment Questionnaire (FMAQ) was administered to elicit information and responses; (ii) the responses and information were analyzed, and potential risks identified; (iii) identified ways of mitigating any risks.

12. PMU, with assistance from PMC, will (i) carry out all project implementation activities and will be responsible for the project implementation; (ii) submit a quarterly progress report to facilitate the monitoring of the physical progress of the project.

B. Summary of Financial Management Assessment of TPL and MEIDECC

13. Key findings of the financial management assessment undertaken for the TPL are as described in Table 3:

Table 3: Summary of Financial Management Assessment of TPL

⁴ In accordance with ADB. 2005. *Financial Management and Analysis of Projects*. Manila; and ADB. 2009. *Financial Due Diligence A Methodology Note*. Manila.

Particulars	Conclusion
A. Funds Flow Arrangement	Funds flow arrangements are reliable, predictable and secure. TPL and MEIDECC have enough capability to smoothly work under the proposed investment program.
B. Staffing	TPL/MEIDECC delegates will compose the PMU to conduct all project relevant activities. PMC will assist the PMU at all times. TPL have financial staff to manage projects according to ADB financial management procedures. MEIDECC has limited technical staff in remote islands.
C. Accounting Policies and Procedures	The TPL's accounting policy is based on IFRS and MEIDECC uses IPSAS.
D. Internal and External Audits	There is no internal audit function at TPL or MEIDECC, but there is an internal audit and risk committee within the TPL. As per the recommendation of the audit and risk committee, the Board outsources internal audit to different auditing firms depending on scope and expertise. The TPL was externally audited by KPMG. TPL has been issued with an unqualified opinion. There is no internal or external auditing on behalf of MEIDECC. MEIDECC is part of the Government of Tonga where the consolidated government financial statements are audited by the AG of Tonga.
E. Reporting and Monitoring	Financial statements are prepared for the entity in accordance with IFRS, Company Act, 1995 and Public Enterprises Act, 2002.
F. Information systems	At TPL, the financial management system is computerized, which suits well with the project requirements and procedures.

AG = auditor general, IFRS = International Financial Reporting Standards, IPSAS = International Public-Sector Accounting Standards, KPMG = international auditing firm, MEIDECC = Ministry of Energy, Information, Disaster Management, Climate Change and Communications, PMU = project management unit, TPL = Tonga Power Limited.

14. Actions required to be taken by MEIDECC and TPL are as follows:

- (i) MEIDECC and TPL specialists as well as financial staff must undergo training on ADB financial management and disbursement procedures to further strengthen capacity;
- (ii) MEIDECC and TPL should maintain separate accounts for each of the projects in the outer islands under the investment program and have such accounts audited annually, in accordance with appropriate auditing standards consistently applied by independent auditors whose qualifications, experience, and terms of reference are acceptable to ADB.

C. Financial Management Internal Control and Risk Assessment

15. The results of the financial management, internal control and risk assessment, and the financial management action plan are summarized in Tables 4 and 5. Financial management risks shall need to be considered and updated throughout the life of the investment program. Risk mitigation measures shall also be updated accordingly.

Table 4: Financial Management Internal Control and Risk and Financial Management Action Plan

Risk Type	Risk Assessment Rating	Risk Description	Mitigation Measures
Inherent Risk			
1. Country-specific Risks	High	The PEFA assessment has shown improvement from the past. The weakness has been significant variances in expenditure. The audits are also done on a timely manner.	GOT has taken action for prudent financial management including containing the public-sector wage bill.

Risk Type	Risk Assessment Rating	Risk Description	Mitigation Measures
		The high-risk rating is due to debt distress and expenditure which can be caused by natural disasters.	
2. Entity-specific Risks	Substantial	There is no internal audit function at TPL.	Keep outsourcing internal audit to different auditing firms depending on scope and expertise.
Overall Inherent Risk	Moderate		
Project Risk			
1. Implementing Entity	Low	TPL is a state-owned enterprise and MEIDECC is a government ministry.	
2. Funds Flow	Low	A direct payment method has been used.	
3. Staffing	Moderate	TPL is generally well staffed but MEIDECC has limited technical staff in remote islands.	The current project finances both project supervision consultants and project management unit manager.
4. Accounting Policies and Procedures	Low	TPL and MEIDECC use international standards; TPL uses IFRS and MEIDECC uses IPSAS.	
5. Internal Audit	Substantial	There is no internal audit function at TPL.	Keep outsourcing internal audit to different auditing firms depending on scope and expertise.
6. External Audit	Low	Financial statements of all entities are up to date and audited. TPL has been issued with an unqualified opinion whereas MEIDECC is part of GOT finances.	
7. Reporting and Monitoring	Low	Financial statement production is on time and monthly reporting to the Board on time. MEIDECC report, though limited, is also on time.	
8. Information systems	Low	Automated systems are functioning well at TPL and MEIDECC.	
9. High dependency of the government on the funding transfer from development partners	Substantial		Tariffs levels will be set according to the formula in the PAM that ensures sufficient recovery of operation and maintenance costs.
Overall Project Risk	Moderate		

Risk Type	Risk Assessment Rating	Risk Description	Mitigation Measures
Overall (Combined) Risk	Moderate		

GOT = Government of Tonga, IFRS = International Financial Reporting Standards, IPSAS = International Public-Sector Accounting Standards, MEIDECC = Ministry of Energy, Information, Disaster Management, Climate Change and Communications, PEFA = Public Expenditure and Financial Accountability, TPL = Tonga Power Limited.
Source: Asian Development Bank estimates.

Table 5: Financial Management Action Plan

Weakness	Mitigation Actions	Responsibility	Timeframe
There is no internal audit function at TPL	Outsourcing internal audit to different auditing firms depending on scope and expertise.	TPL	Within 3 months from the Grant effectiveness Date or within 3 months from each fiscal year end
MEIDECC projects are more difficult to manage due to remoteness and lack of technical skills	Both project management unit manager and project accountant will be recruited.	MEIDECC	Within 3 months from the Grant effectiveness Date
TPL is generally well staffed but MEIDECC has limited technical staff in remote islands.	Both project management unit manager and project accountant will be recruited.	MEIDECC	Within 3 months from the Grant effectiveness Date

MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment and Communications, TPL = Tonga Power Limited.
Source: Asian Development Bank estimates.

16. Actions required to be taken by MEIDECC are as follows:

- (i) MEIDECC shall calculate and enact an appropriate fee for electricity services as per the methodology shown below, within 6 months of commencement of commercial operations of the solar PV generation facilities on each of the islands of O'ua, Tungua, Kotu, Mo'unga'one, and Niufo'ou;
- A fixed, monthly, pre-paid, per-customer electricity access charge shall be set. The charge shall be such that it is equal to MEIDECC's contractor fees for centralized asset management⁵, divided by the number of possible customers⁶. MEIDECC may elect to make this calculation on the average of total fees and customers, or on an island by island basis. This charge shall be reviewed on an annual basis and readjusted if contractor fees change.
 - A variable (per unit), pre-paid, per customer electricity tariff shall be set. The tariff shall be such that the total revenue collected, assuming demand as estimated in the Feasibility Report, is equal to the wages (plus any reasonable overhead) of electricity staff operating the electricity system on the islands where the system is installed. MEIDECC may elect to make this calculation on

⁵ including spare parts and consumables management, data archiving, annual service, and fault rectification.

⁶ In the absence of more reliable information, this will be based on the most recent census of households, plus number of schools and churches.

the average of total fees and customers, or on an island by island basis. This charge shall be reviewed on an annual basis and reset as follows:

- No change if the revenue collected for this variable charge is within +/- 20% of forecast
- Otherwise: $(1 - \text{revenue collected} / \text{forecast revenue}) \times \text{previous tariff}$, with a maximum change in tariff of +/- 10% per year.
- After 2 years of operation, MEIDECC may adjust the portion of revenue from the fixed and variable components if necessary, to encourage greater electricity access and / or consumption in line with forecast.

D. Disbursement

17. The grant proceeds including ADB administered funds from the Government of Australia and the GCF will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available at: http://wpqr4.adb.org/disbursement_elearning. Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

18. To facilitate cash flow during project implementation, MFNP, the executing agency, will approve withdrawal applications coming from the PMU and submit them to ADB for direct payment and/or reimbursement for all goods, works and consultancy services of the project. Disbursements of grant funds under the project will procure goods, works, and related services.

19. Before submission of the first withdrawal application, the executing agency should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the executing agency, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is in accordance with the Loan Disbursement Handbook. Individual payments below this amount should be paid by the EA/IA and subsequently claimed to ADB through reimbursement, unless otherwise accepted by ADB. The recipient should ensure sufficient category and contract balances before requesting disbursements. Use of ADB's Client Portal for Disbursements (CPD) system is encouraged for submission of withdrawal applications to ADB.

20. All disbursements under government financing will be carried out in accordance with regulations of the government and ADB.

E. Accounting

21. The TPL/PMU, in coordination with MFNP and assisted by the PMC, will maintain separate project accounts and records by funding source for all expenditures incurred on the project. Project accounts will follow international accounting principles and practices of International Financial Reporting Standards (IFRS) under TPL, and International Public Sector Accounting Standards (IPSAS) under MNFP, and adhere to sound financial management requirements during the implementation of the proposed project. The TPL/PMU will maintain separate project records and accounts adequate to identify the: (i) goods and services financed from grant proceeds; (ii) financing resources received; (iii) expenditures incurred on the components of each project component; and (iv) counterpart and co-financer funds received and expended.

F. Auditing

22. The TPL and MEIDECC will prepare separate project financial statements from each implementing agency to be audited in accordance with International Standards on Auditing and in accordance with the government's audit regulations by an auditor acceptable to ADB. The PMU will assist TPL and MEIDECC in compiling both audited project statements for submission to ADB.

23. The audited accounts, certified copies of such audited project accounts and the report of the auditors relating thereto (including the auditors' separate opinions on the use of the grant proceeds and compliance with the financial covenants of the financing agreements and the grant agreement), will be submitted by the PMU assisted by the PMC in English language to ADB in any event not later than 6 months after the end of each related fiscal year (year ending June 30).

24. The MFNP, MEIDECC, TPL, and PMU will provide ADB all information concerning project auditing as requested, in accordance with ADB's policies and procedures. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

25. The Government, MFNP, MEIDECC, TPL, and PMU have been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.⁷ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

26. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy (2011). After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 14 days of the date of their receipt by posting them on ADB's website. The Audit Management Letter will not be disclosed.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Procurement of Goods, Works and Consulting Services

27. Procurement of goods, works, and related services under TREP will be carried out by TPL and MEIDECC. Both implementing agencies will be assisted by the Consultant and have extensive experience in procuring all project goods, works, and services in accordance with ADB's

⁷ ADB Policy on delayed submission of audited project financial statements:

- When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (i) the audit documents are overdue; and (ii) if they are not received within the next six months, requests for new contract awards and disbursement such as processing of new reimbursement, and issuance of new commitment letters will not be processed.
- When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as processing of new reimbursement and issuance of new commitment letters. ADB will (i) inform the executing agency of ADB's actions; and (ii) advise that grants may be suspended if the audit documents are not received within the next six months.
- When audited project financial statements have not been received within 12 months after the due date, ADB may suspend grants.

Procurement Guidelines (2015, as amended from time to time), and consulting services in accordance with the ADB Guidelines on the use of Consultants (2013, as amended from time to time). A procurement project risk assessment has been undertaken. The major risks associated with TREP are found to be effectively mitigated by the selected procurement strategy as follows:

- Implementation agencies were identified as having insufficient qualified staff. Given the complexity of multiple implementing agency, TPL and MEIDECC have made a request for the delegation of CSC and PMU consultants recruitment under the Project to ADB;
- Compliance with existing regulations was identified to be inconsistent. The appointment of the CSC and PMU to monitor delivery of procurement addresses this risk; and
- Risks around delayed payment processing will be mitigated via the engagement of the PMU and direct payments from ADB to contractors.

B. Advance Contracting and Retroactive Financing

28. Advance contracting for some packages using an international competitive bidding method will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time), and consulting services in accordance with the ADB Guidelines on the use of Consultants (2013, as amended from time to time). Retroactive financing will apply for procurement of civil works (1st unit of BESS contract) and consultancy contract (construction supervision). The amount to be retroactively financed will not exceed 20% of the ADB grant and the DFAT grant and may finance costs incurred prior to grant effectiveness, but not later than 12 months before the signing date of the grant agreements. The executing agency and implementing agencies have been advised that advance contracting and retroactive financing does not commit ADB to finance the project.

C. Procurement Plan

Basic Data

Project Name: Renewable Energy Project	
Project Number:	Approval Number:
Country: Kingdom of Tonga	Executing Agency: Ministry of Finance and National Planning
Project Procurement Classification: B	Implementing Agency: Tonga Power Limited and Ministry of Energy, Information, Disaster Management, Climate Change and Communications
Procurement Risk: Moderate	
Project Financing Amount: \$ 44.6 million ADB Financing: \$12.2 million Cofinancing (ADB Administered): \$32.4 million	Project Closing Date: 30 April 2023
Date of First Procurement Plan:	Date of this Procurement Plan: 08 / 01 / 2019

1. Process Thresholds, Review and 18-month Procurement Plan

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

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding (ICB) for Works	Above \$3,000,000	

International Competitive Bidding for Goods	Above \$1,000,000	
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works	
National Competitive Bidding for Goods	Beneath that stated for ICB, Goods	
Shopping for Works / Goods	Below or equal to \$300,000	

2. ADB Prior and Post Review

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

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
International Competitive Bidding Works	Prior	
International Competitive Bidding Goods	Prior	
Shopping for Works	Post	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection	Prior	

3. Goods and Works Contracts Estimated to Cost More than \$1 Million

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

Package Number	General Description	Estimated Value (\$m)	Procurement Method	Review [Prior / Post/Post]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
TREP-01	Turnkey (BESS I): Grid Stability	5.06	ICB	Prior	1S1E	Q3 2018	PQB: No DPA: No AC: Yes BD: Plant On Tongatapu
TREP-02	Turnkey (BESS II): Load Shifting	14.59	ICB	Prior	1S1E	Q1 2019	PQB: No DPA: No AC: No BD: Plant On Tongatapu
TREP-03	Lot 1 RE Turnkey – 'Eua & Vava'u Lot 2 RE Turnkey – Outer Islands RE + Mini-grids	15.98	ICB	Prior	1S1E	Q1 2019	PQB: No DPA: No AC: No BD: Plant On 'Eua & Vava'u, O'ua, Tungua, Kotu, Mo'unga'on e and Niuafou'ou

AC = Advance Contracting, BESS = battery energy storage system, BD = Bidding Document, DPA = Domestic Preference Applicable, ICB = international competitive bidding, PQB = Prequalification of Bidders, Q = Quarter, RE = renewable energy, TREP = Tonga Renewable Energy Project.

4. Consulting Services Contracts to Cost \$100,000 or More

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

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
05 06 07 08	4 individual consultants under the PMU 1 PMU manager, 1 finance specialist, 1 gender specialist, 1 O&M specialist	0.90	ICS	Prior	Q2 2019	-	Assignment: Individual Advertising: International
09	Construction supervision and capacity building consultant (firm)	1.15	QCBS	Prior	Q3 2018	FTP	Assignment: Firm Advertising: International AC: Yes Quality Cost Ratio 80:20 / time-based
10	IPP Transaction Advisory Service (2 individuals)	0.85	ICS	Prior	Q2 2019	-	Assignment: Individual AC: Yes Advertising: International
11	1 individual grid operating consultant ^a	0.25	ICS	Prior	Q4 2019	-	Assignment: Individual Advertising: International

AC = Advance Contracting, FTP = Full Technical Proposal, ICS = Individual Consultant Selection, IPP = independent power producers, O&M = operations and maintenance, PMU = project management unit, Q = Quarter, QCBS = quality- and cost-based selection.

^a To be developed during implementation.

5. Terms of References (TOR)

A. 7 Individual Consultants

33. **PMU Manager** (International – 36 person-months). The expert should have tertiary qualifications in environmental science or natural resource/marine management or equivalent from a recognized institution and should have at least 10 years of relevant experience. Duties of the expert will include the following:

- (i) Lead the PMU who is accountable to the Project Steering Group (PSG);
- (ii) Work together with both project management consultant and construction supervision consultant to progress the implementation of TREP;
- (iii) Manage procurement of contractors to implement all the sub-projects under TREP;
- (iv) Manage, supervise, and oversee all the goods, works and turnkey contracts;
- (v) Regularly visit the project sites to ensure timely implementation of project activities;
- (vi) Communicate with all stakeholders including the cooperative and in-cooperated solar societies to ensure community support and acceptability of project implementation;
- (vii) Coordinate between development partners, government authorities, and executing entities to achieve the project outcomes as stated in the expected project outputs;
- (viii) Develop project implementation schedule based on the project management strategy and monitor the progress, reporting regularly on action necessary to mitigate potential delays in project implementation;
- (ix) In consultation with ADB, update the project administration manual regularly;
- (x) Coordinate the disbursement of project funds;
- (xi) Prepare with assistance from MFNP, MEIDECC and TPL, project audit reports, and corporate audit reports as required by ADB;
- (xii) Provide management, financial, and administrative support to ensure that contractual requirements are met;
- (xiii) Lead all procurement and contracting activities and supervise and oversee the contractors, suppliers for construction and commissioning of solar facilities and mini-grid works;
- (xiv) Management of construction phases including sending letters of acceptance and notices to proceed, implementing and monitoring contractors' quality assurance plans and environmental management plans, monitoring consultant / contractor programs and progress, processing progress claims, reviewing change of orders and extensions of time, providing employer / owner sign-off at hold points, reviewing contractors' construction drawings for compliance with the design intent and specifications, coordinating environmental and social safeguard (land acquisition and resettlement) activities, overview commissioning, and providing oversight of contract completion and administration activities;
- (xv) Report and provide secretariat support to the PSC that will be comprised by officials of the Government of Tonga, TPL, DFAT, and Asian Development Bank (ADB) representative;
- (xvi) Prepare quarterly progress reports and semi-annual safeguard monitoring reports as well as project completion reports as required by ADB;
- (xvii) Liaison with Government, TPL, private sector, civil society and donor agencies; and
- (xviii) Coordinate and actively manage and participate in training activities of the project for counterparts assigned to the project.

34. **Project Accountant** (national, 24 person-months over 36 months, intermittent). The Project Accountant will be responsible to the Project Director(s) for the compilation and security of all records of receipts and payments, and records management. The expert will process all project payments, in accordance with the guidelines under the Asian Development Bank's (ADB) Loan Disbursement Guidelines, for approval by the approved Authorizing Officer and will also be responsible for the preparation and balancing of project accounts and periodic reporting. Duties of the expert will include the following:

- (i) Provide management, financial and administrative support to ensure contractual requirements are met, with the following deliverables;
- (ii) Prepare and maintain project account ledgers and monthly bank reconciliations for ADB and Government project accounts in a timely manner;
- (iii) Prepare and maintain contract logs/monitoring for consultants and civil works contractors;
- (iv) Prepare and maintain project account ledgers for each grant category in a timely manner;
- (v) Prepare withdrawal applications and the necessary documentation required for direct payment and reimbursement disbursement procedures, as per ADB Guidelines;
- (vi) Monitor and report on withdrawal application processing periods.
- (vii) Prepare and maintain adequate accounting records, proper internal control systems, and ensure timely reporting to management;
- (viii) Prepare monthly, quarterly and annual project financial reports; Assist the Implementing agencies (IAs) and MFNP in their preparation of annual audits in compliance with the relevant Project agreements and consistent with ADB guidelines; and
- (ix) Other duties as may be required by the Project Director, the Program Coordinator, the Project Manager or the respective ADB project officer.

35. **O&M Contract Preparation Consulting Services Expert** (International, 7 person-months, intermittent).

- **Phase 1 Scoping**

- (i) **Review conclusions from July 2015 DFAT report.** Undertake discussions with Tonga Power Limited (TPL), Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDECC), Ministry of Commerce and Labour (MCL), Ministry of Public Enterprises (MPE) and representatives of island community groups ⁸ to determine whether the observations concerning O&M and status of power infrastructure on outer islands is still valid and whether there has been any material change;
- (ii) **Provide status update;**
- (iii) **Recognising that there are 4 different configurations** – a) TPL on grid⁹; (b) Diesel mini-grid supported by Co-operative Societies O&M; (c) Solar Home Systems (SHS) supported by Incorporated Societies O&M; and (d) SHSs not supported by community-based O&M and drawing upon the findings of the July 2015 study and update discussions, outline options for O&M support for each configuration and discuss options with stakeholders identified in (i);
- (iv) **Provide recommendations on options to support governance and fund operational and maintenance costs** to ensure the infrastructure is adequately maintained and operated within an appropriate governance structure to maximise the useful life of the assets and provide safe and reliable power to the customer communities; and

⁸ Where Island community group representatives are not available, through Island Group Governors and representative Members of Parliament.

⁹ This configuration is included as July 2015 report notes that Tonga Power Limited's concession contract may not cover the O&M costs of these assets and a community service obligation contract may be required to cover any funding gap.

- (v) **Provide outline of how recommendations can be implemented**, through community service obligation or other arrangement, and identify any barriers to implementation.

- **Phase 2 Design and implementation**

- (i) Detailed design of support arrangements addressing governance, operations and maintenance for each of the 4 configurations and taking into consideration planned capital investments to ensure design is optimised for current assets and planned investments. The design should also focus on how to develop a fair and sustainable user pay structure for each configuration;
- (ii) Undertake initial high-level costing of each design outcome from (i);
- (iii) Stakeholder discussion on design for each configuration including consultation visits to outer island communities to discuss how the design outcome will operate in practice. Seek stakeholder input;
- (iv) Design adjustment as required;
- (v) Detailed costing of preferred support arrangement;
- (vi) Develop performance-based contracts to implement support arrangements (would include development of community service obligation contract, may also include contracts with private sector providers);
- (vii) Government confirm funding to support contracts developed in (vi); and
- (viii) Contracts – preferably multi-year – executed. Contracts may include remedial support as required.

36. **Social Safeguards Specialist (gender and community development)** (national, 24 person- months over 36 months, intermittent). The expert should have substantial and demonstrated experience working in developing-country environments, with a degree in social science and relevant experience ideally in projects funded by the international development community. The activities to be undertaken will include but not limited to the following:

- (i) Assist the PMU manager to **prepare quarterly progress reports and semi-annual safeguard monitoring reports** as well as project completion reports as required by ADB;
- (ii) Assist in the **implementation of project GAP** including all **trainings and knowledge sharing activities with regard to gender needs and benefits, and provide guidance on their revision if needed;**
- (iii) **Lead in the development and delivery of effective community consultations and meetings during implementation and ensure the broad participation of women;**
- (iv) **Assist in monitoring the contractor's compliance with their responsibilities under the GAP;**
- (v) Assist in **monitoring grievances particularly relevant to women and measures to address the grievances in a timely and appropriate manner;**
- (vi) **Lead and manage the development of comprehensive documentation to enable robust monitoring of gender indicators and results on the TREP based on the Design and Monitoring Framework (DMF) and Gender Action Plan (GAP), in collaboration with respective PMU members;**
- (vii) **Coordinate with other project team members in MEIDECC and MLSNR to identify areas where gender-inclusive and socially inclusive provisions can be strengthened under the TREP;**
- (viii) Assist the revision of **TREP project component's involuntary resettlement and environment safeguard activities as deemed appropriate for proposed works**

- including the compilation of safeguard due diligence reports in line with ADB's Safeguard Policy Statement (SPS) 2009;
- (ix) Facilitate disclosure of relevant information to APs and local stakeholders on grievance redress mechanism; and
- (x) Recommend necessary inputs, if needed, to other project implementation documents (e.g. bidding documents) on resettlement aspects.

37. **Renewable energy control integration Expert** (International, 6 person-months, for 12 months, intermittent). Qualified expert with a degree in related field, and at least 7 years of relevant working experience in high penetration renewable energy integration in existing networks. The consultant with previous experience in developing countries in the Pacific region is desirable. The expert is expected to spend at least 4 months in country. The key tasks are to:

- (i) Review and become fully versant with the capabilities of the installed RE control system associated with the BESS at the Popua Power Station;
- (ii) Work closely at all times with TPL nominated staff to ensure capacity building so that TPL staff are capable to operate the system in the long term, including modifications to the control programming and hardware as necessary to introduce new plant connected in the system;
- (iii) Identify any capability, qualification or training constraints within TPL nominated staff and make recommendations to TPL for actions to mitigate;
- (iv) Work with TPL to establish secure, remote SCADA access to allow remote monitoring and assistance;
- (v) Review the generation data, develop and implement metrics to measure renewable energy contribution, estimate optimal performance for the current RE installed, curtailment, and margin for improvement;
- (vi) With adequate safety precautions in place, explore opportunities to improve system performance through improved reliability or use of renewable generation;
- (vii) Where a fault occurs that is the responsibility of the BESS and RE controller supplier, work with TPL to assist them in discussions with the BESS and RE controller supplier to achieve a resolution;
- (viii) If new renewable generators, other BESS or enablers are connected to the system, or if the diesel generator configuration changes, assist TPL to update the RE controller and SCADA accordingly to absorb the changes; and
- (ix) Advise TPL on long term system maintenance, versioning control, and capacity building it should undertake to ensure best long-term system performance.

38. **2 (1 technical and 1 commercial) Renewable Energy Transaction Advisors** (international, 12 person-months [each]), intermittent). The expert should have a graduate degree in engineering or other relevant field, and about 10 years of experience in technical and/or commercial aspects of renewable energy independent power producer (IPP) transaction advisory service, or a combination of undergraduate degree and directly relevant professional experience. The activities to be undertaken will include but not limited to the following:

- (i) The expert will provide technical and commercial inputs to prepare and tender up to multiple renewable energy generation (solar PV and/or wind power) contracts on an independent power producer (IPP) basis;
- (ii) The expert will draw from current international market data to identify suitable renewable energy generation (solar PV and/or wind power) technologies for the target IPPs, review and assess land/space requirements for the target IPPs,

- support the preparation of bid documents and evaluate the technical and cost provisions of the bids received;
- (iii) The expert will prepare financial and technical pre-feasibility reports outlining the business case for multiple renewable energy (solar PV and/or wind power) farms of up to xx MW in Tongatapu, structured on an IPP basis. Battery storage may also be assessed for its technical and financial merits and included if it improves the overall business case;
 - (iv) The expert will review the tender process to be launched by Tonga Power Ltd (TPL), including Request for Proposal (RFPs), power purchase agreement (PPAs), other documents issued, responses received and shortlisting results. Based on this review, the expert will advise whether and how the tender process can be completed in compliance with Tonga's procurement regulations and international good practice;
 - (v) Prepare summary reports assessing the proposals received against current industry cost benchmarks and technology;
 - (vi) Support marketing of the IPP opportunity, by identifying potential bidders and suitable advertising channels (no road show);
 - (vii) Conduct site visits to Tonga and review all relevant documentation (bid documents, RFP, responses received, evaluation criteria and results, draft PPA, communications with all bidders) for renewable energy (solar PV and/or wind power) IPP tenders;
 - (viii) Meet with Tonga Power (TPL) officials overseeing the tender process to discuss potential improvements to the draft PPA, results of evaluation and additional information which should be sought from shortlisted bidders before negotiations;
 - (ix) Discuss options for completing the tender with TPL and Ministry of Public Enterprises, including high-level timeline and needed legal inputs; and
 - (x) Prepare reports summarizing (i) recommended improvements to the draft PPAs renewable energy (solar PV and/or wind power) IPPs, (ii) technical evaluation of the submissions received from the four shortlisted bidders, (iii) review of the rationale for rejecting the 6 other submissions and (iv) any issues with the process undertaken that may compromise the integrity of the tender and result in a suboptimal outcome for bidders and/or TPL.

B. Outline Term of Reference for Construction Supervision Consultant (CSC) (Firm)

39. The tasks assigned shall be as outlined below. Notwithstanding this, the CSC shall support other reasonable requests by the PMU throughout the project duration.

40. Project Outputs 1, 2 and 3: The CSC shall support the PMU in the site supervision of the contracts entered into under the project. The tasks for which the CSC shall be responsible include, but are not limited to, the following:

- (i) Responsible of all site supervision activities and coordination of third party inputs necessary for successful completion of each contract on behalf of the Employer, under the relevant contracts.
- (ii) Review each contractor's project implementation schedule and assess its technical risks. Recommend necessary updates or adjustments to the schedule to both PMU manager and contractors.
- (iii) Review the contractors' basic designs, detailed designs and drawings for the sub-projects to ensure that they meet the relevant international standards and conforms to the Employer's Requirements;

- (iv) Review the equipment selection and manpower allocations of the contractors;
- (v) Review material submittals provided by the contractors. Attend and review tests of construction materials prior to their use;
- (vi) Attend the inspection and witnessing of the testing of electrical plant, equipment and civil structures;
- (vii) Assess the testing and commissioning process and documentations provided by contractors and attend the testing and commissioning phase;
- (viii) Review and comment on the contractors' operation and maintenance (O&M) program and manuals. Finalize and submit the O&M program/plan and manuals and supervise and assist the implementing agencies in the initial O&M implementation.
- (ix) Assist the PMU manager in the assessment of contractual claims submitted by the contractors;
- (x) Prepare regular analysis and progress reports after site visits as required, and no less than on a monthly basis; and
- (xi) Other activities reasonably requested by the PMU Manager that are related to the supervision of the contracts.

41. Project Output 4

- (i) Lead in the delivery of outputs required under Output 4, including but not limited to the following:
 - a. Assist, train and support implementing agencies in providing project management in line with international standards and best-practices;
 - b. Develop (a) common technical standard and asset register for solar photovoltaic mini-grid system, and (b) operation and maintenance (O&M) strategy including supporting scheme to the outer islands;
 - c. Assist the PMU/TPL/MEIDECC to review and approve O&M training program and O&M procedure manual (to be submitted by turnkey contractors) and to assess completeness of the O&M training program for invoice processing;
 - d. Develop project performance monitoring system incorporating all subprojects' implementation progress, contract award and disbursement, project performance management system, and compliance with grant covenants to comprehensively monitor all subprojects performances and identify eminent and potential bottlenecks for implementation. These data and findings in the performance monitoring system are migrated into quarterly progress report and project completion report to be submitted to ADB;
 - e. Provide expert advice and support on design, procurement, and construction supervision activities;
 - f. Enhance the operations and maintenance (O&M) programs developed by the contractors and assist the executing agency and implementing agencies in implementing the O&M program in the initial stages; and
 - g. Organize, conduct and deliver the capacity building program for the executing and implementing agencies and other relevant stakeholders as outlined below through classroom training, hands-on workshops, and seminars. Coordinate with individual consultants under the PMU on related capacity building tasks and deliverables under their TORs and incorporate into the program:
 - (i) assessing renewable energy technologies and setting off-take tariffs; financial and economic viability of projects
 - (ii) technical and financing management of assets
 - (iii) improving community engagement;

- (iv) climate impacts, environmental and social safeguards assessment and monitoring
 - (v) workshop on operations and maintenance (O&M) and project management and supervision; and
 - (vi) encouraging private sector investments including developing power purchase agreements and other model transaction documents (to be led by PMU individual consultant)
 - (vii) mainstreaming gender (to be led by PMU individual consultant)
- (ii) Provide capacity building to the PMU/TPL/MEIDECC in O&M and safeguards matters and raise awareness in the PMU and contractors on all aspects of the statutory and policy requirements for environmental assessment and management as required by the government and ADB.

42. Other Activities:

- (i) Prepare a detailed work program and implementation schedule for the project output activities, to the satisfaction of the PMU manager;
- (ii) Ensure compliance with the ADB's Safeguard Policy Statement (2009) and project safeguards documents, including the Initial Environmental Examinations (IEEs) and corresponding Environmental Management Plans, and the land acquisition and resettlement plan (RP), as needed; and ensure compliance of project implementation with the government's laws, environmental policy and procedures;
- (iii) Assist the PMU Manager in assessing changes necessary to the project design in order to fulfil the project requirements and support the preparation of consequent variations to the relevant contracts;
- (iv) Assist the PMU Manager with financial management including:
 - a. monitoring the financial performance of the Project including managing and reviewing budget, assessing contractors' payment claims and other various claims;
 - b. providing inputs to project audit reports;
- (v) Assist the PMU Manager in preparing project performance monitoring and assessment procedures within PMU/TPL/MEIDECC requirements during implementation; include monitoring of climate components and performance indicators.
- (vi) Assist the PMU in preparing quarterly progress reports; semi-annual safeguards monitoring reports; any required updates to safeguards documents (IEE, RP, Gender Action Plan, and others, as appropriate), climate risk assessments and monitoring;
- (vii) Develop and implement stakeholder consultation and communication programs to ensure the full awareness and participation of affected communities and stakeholders;
- (viii) Support the PMU/TPL/MEIDECC in the development, implementation and monitoring of a Stakeholder Communication Strategy;
- (ix) Develop HIV/AIDS training program for community near the project construction sites, who may be impacted by temporary influx of construction workers, and coordinate with local health authorities and the PMU for its implementation;
- (x) Assist and provide inputs to ADB missions; and
- (xi) Where requested by the PMU Manager, review and input to the creation of terms of reference for individual consultants to be engaged under the Project

43. An estimated 29.5 person-months of international consulting services and 10 person-months of national consulting services for a period of 41 months to be allocated as part of the time-based CSC firm contract are required to (i) facilitate construction supervision; and (ii) provide

an O&M program (including gender aspects), strengthen the operational capacity of TPL, MEIDECC and other beneficiaries, and provide knowledge transfer. A summary is presented below:

International Specialists	Person-months
Solar Energy Expert [Team Leader]	10
Solar PV Power Engineer	8
Battery Storage and Integration Specialist	3
Financial Specialist	1.5
Climate Change Expert	2
Environment Specialist	3
Social Safeguards Specialist	2
Total	29.5
National Specialists	Person-months
Project Engineer	10

Source: Asian Development Bank estimates.

44. **Solar Energy Expert [Team Leader]** (international, 10 person-months, intermittent). The expert should have a graduate degree in engineering or other relevant field, and about 10 years of experience in renewable energy (e.g. solar photovoltaic) engineering with the design, specification and installation of grid connected solar photovoltaic system, and in power electric engineering with the design, specification, and implementation of middle and low voltage systems, or a combination of undergraduate degree and directly relevant professional experience. Familiarity with ADB's procurement, disbursements, and project monitoring requirements is highly preferable. The activities to be undertaken will include but not limited to the following:

- (i) As a Team Leader, prepare the detailed work program and implementation schedule for the project and Project Completion Report;
- (ii) Provide high level advice to the project management unit (PMU) Manager regarding management issues;
- (iii) Assist the PMU Manager with monitoring the financial performance of the project including managing and reviewing budget, assessing Contractor's claims and other various claims;
- (iv) Assist the PMU Manager in managing project staff, including monitoring of staff performance, satisfaction and training needs and making recommendations for actions by the PMU to maintain competent staff;
- (v) Assist the PMU Manager with risk management of the project, ensuring compliance with legal requirement, occupational health and safety requirement;
- (vi) Coordinate the input and activities of the international specialists and ensure coordination with the national specialist and Contractor;
- (vii) Review Contractors' project implementation schedules and assess the plan's technical risks and carry out sensitivity analysis to check project viability under these risks. Prepare terms of reference, expertise requirements, and person-month and cost estimates for additional consulting services, if required;
- (viii) In conjunction with the PMU Manager establish and support the planning objectives for the PMU and provide high level advice to the PMU Manager regarding management issues;
- (ix) Prepare monitoring assessment procedures within PMU/MEIDECC/TPL and the necessary guidelines for staff guidance during project preparation and implementation. Assist in the development and monitoring of the project and sub-project programs;

- (x) Assist the PMU Manager in developing detailed budgets for the project and subprojects. Assist in controlling sub-project budgets. Provide advice to the PMU Manager to mitigate the effects of cost over-runs. Assist the PMU Manager in developing and implementing cost control mechanism for the project and for project management;
- (xi) Provide high level advice to other national and international consultants as required to ensure adequate coordination occurs between all disciplines and with the National Specialists;
- (xii) Assist the PMU Manager in preparing monitoring assessment procedures within PMU/MEIDECC/TPL and the necessary guidelines for staff guidance during project preparation and implementation. Prepare progress reports after site visits to assist the PMU Manager in monitoring the project progress;
- (xiii) Review the contractors design, documentation, equipment selection and test program;
- (xiv) Review the proposed material by the Contractors used in construction/fabrication work and ensure that they comply to the requisite standards and Employer's Requirements;
- (xv) Inspect and witnessing of testing of mechanical plant and equipment;
- (xvi) Lead the team and assist the PMU/TPL/MEIDECC in the supervision of construction of the Project (Outputs 1-3) and their commissioning, which includes cost oversight including variation order, bill of quantity check, and invoice check processing;
- (xvii) Undertake site visits to establish the project progress and effectively monitor the project progress and assess the contractor's claims. Provide advice to the PMU Manager on the necessary measures to effectively mitigate project issues;
- (xviii) Assist the PMU Manager in assessing changes to the project design, project requirements and any consequent variation claims;
- (xix) Assist PMU/MEIDECC/TPL in strengthening the technical and safeguard management of the Project by undertaking the necessary training for the PMU/MEIDECC/TPL's national specialists in technical assessment procedure and techniques, construction supervision and monitoring, and reporting. Involve the national specialists through on-the-job training, affecting transfer of knowledge and skills, in project management and monitoring of the projects, and develop staff capability in handling the technical management of the projects;
- (xx) Review existing documents and data relating to all subprojects;
- (xxi) Assist the PMU/TPL/MEIDECC review the engineering design (to be submitted by turnkey contractors) for all subprojects which includes validating technical specification and performance, and reviewing geotechnical assessment, electrical interfaces, materials, control interfacing, and foundation design. Assist the PMU/TPL/MEIDECC to guide and instruct the turnkey contractors for corrective actions or design and drawings revision where necessary;
- (xxii) Assist the PMU/TPL/MEIDECC to review control and construction documents (to be prepared by turnkey contractors) for all core and non-core subprojects to verify compliance with design specification, applicable code and standard, and contracts. Assist the PMU to guide and instruct the turnkey contractors for corrective actions or design and draw revision where necessary;
- (xxiii) Review Contractors' plans for pre-commissioning, test-run, and final acceptance procedure. Develop witnessing plan for review and confirmation of the performance and submit to the PMU/TPL/MEIDECC for approval. Jointly conduct pre-commissioning, test run, and final acceptance witnessing to verify compliance

- with functional guarantee of equipment and the designed performance of all subprojects;
- (xxiv) Develop (a) common technical standard and asset register for solar photovoltaic mini-grid system, and (b) operation and maintenance (O&M) strategy including supporting scheme to the outer islands. Assist the PMU/TPL/MEIDECC to review and approve O&M training program and O&M procedure manual (to be submitted by turnkey contractors) and to assess completeness of the O&M training program for invoice processing;
 - (xxv) Develop project performance monitoring system incorporating all subprojects' implementation progress, contract award and disbursement, project performance management system, and compliance with grant covenants to comprehensively monitor all subprojects performances and identify eminent and potential bottlenecks for implementation. These data and findings in the performance monitoring system are migrated into quarterly progress report and project completion report to be submitted to ADB;
 - (xxvi) Guide and assist the PMU/TPL/MEIDECC to prepare quarterly progress report and project completion report in ADB formats; and
 - (xxvii) In cooperation with other international and national experts, develop project management capacity enhancement training module in project preparation, procurement, disbursement, monitoring and administration, and evaluation upon completion. Lead to conduct capacity enhancement training for staff in the PMU and the other relevant agencies.

45. **Solar PV Power Engineer** (international, 8 person-months, intermittent). The expert should have a graduate degree in engineering or other relevant field; and about 8 years of experience in renewable energy (e.g. solar photovoltaic) engineering with the design, specification and installation of grid-connected solar photovoltaic system, and in power electric engineering with the design, specification, and implementation of middle and low voltage systems, or a combination of undergraduate degree and directly relevant professional experience. The expert will provide assistance to all activities of the team leader. The activities to be undertaken will include but not limited to the following:

- (i) Review existing documents and data relating to all subprojects;
- (ii) In cooperation with team leader, develop project management capacity enhancement training module in project preparation including site selection, system configuration design, costing, and grid synchronization and protection. Lead to conduct capacity enhancement training in project preparation for staff in the PMU/TPL/MEIDECC and/or the other relevant agencies;
- (iii) Assist in the supervision of construction, monitoring project program according to the construction program, maintaining quality and construction standards and Commissioning of the projects;
- (iv) Review Contractors' concept designs, detailed designs and drawings for the projects to ensure that they meet the necessary international standards and conforms to the Employer's Requirements;
- (v) Review the proposed construction materials and the construction process proposed by the Contractors to ensure it conforms to the recommended international standards and the Employer's Requirements;
- (vi) Undertake site visits to establish the project progress and effectively monitor the project progress and assess the contractor's claims. Provide advice to the PMU manager on the necessary measures to effectively mitigate project issues;

- (vii) Attend and review the material tests of the construction material and provide advice on the suitability of the material for construction;
- (viii) Review contractors' claims for milestone payments for civil portions and assist PMU/MEIDECC/TPL to verify and adjust the claims. Assist PMU/MEIDECC/TPL to assess any variations proposed by the Contractors and assess it;
- (ix) Provide skilled input to the review of the contractor's design and documentation including assessment of changes in design to accommodate site conditions;
- (x) Assist PMU/MEIDECC/TPL undertaking the implementation of the projects by ensuring all civil and structural components meet International best practice and ensuring that the contractor's design is suitable for conditions at sites and allow for any limitations imposed by the site conditions;
- (xi) Liaise with other international and national consultants and coordinate with their local counterparts to ensure that the overall design of the sub-projects is cost effective for long term operations and maintenance, practical and meet the overall requirements of PMU/MEIDECC/TPL;
- (xii) Assist both TPL and MEIDECC to review and approve the O&M training programs (to be conducted by RE/BESS turnkey contractors) and the O&M procedure manuals (to be prepared by RE/BESS turnkey contractors) and to assess completeness of the O&M training programs (to be conducted by RE/BESS turnkey contractors); and
- (xiii) Assist the Government of Tonga to enter into a long-term O&M contract with TPL for Output 3.

46. Battery Storage and Integration Specialist (international, 3 person-months, intermittent). The expert should have a graduate degree in engineering or other relevant field; and at least 5 years of experience in grid integration of intermittent generators, or a combination of undergraduate degree and directly relevant professional experience. Experience includes integration of intermittent renewables such as wind power and solar PV systems with BESS and diesel gen-sets; grid stability analysis and implementation and operation of control systems for energy management on projects of a similar nature. The expert will specifically target solutions for key challenges of stable operation of high penetration renewable power systems. The activities to be undertaken will include but not limited to the following:

- (i) Carry out site visits to assess the status of the existing electrical system prior to evaluating the Contractors' proposed electrical design;
- (ii) Review the contractors' designs including the proposed equipment as a part of the designs and assess their compatibilities with the existing system, where necessary, and its compatibility and interconnection with TPL's overall system and newly installed mini-grids;
- (iii) Review the adequacy of the contractors' proposed control system implementation plan and control system algorithm and operation. Make recommendations to TPL about integration actions for communications and control for the connection of the battery systems;
- (iv) Supervise the installation of the key electrical equipment and systems;
- (v) Assess the testing and commissioning process and documentation provided by the contractor and attend the testing and commissioning phase;
- (vi) Assist PMU/TPL/MEIDECC during implementation of the control system to ensure effective integration, training, and efficient operation of the electrical system;
- (vii) Provide the PMU Manager with the support to monitor and supervise the project and develop a monitoring procedure identifying key components in the installation process;

- (viii) Undertake site visits to establish the project progress and effectively monitor the project progress and assess the contractor's claims. Provide advice to the PMU Manager on the necessary measures to effectively mitigate project issues;
- (ix) Assist the PMU Manager in assessing changes to the project design, project requirements and any consequent variation claims; and
- (x) Develop (a) common technical standard for BESS system, and (b) O&M strategy including supporting scheme to BESS including the outer islands. Assist the PMU to review and approve O&M training program and O&M procedure manual (to be submitted by turnkey contractors) and to assess completeness of the O&M training program, especially for BESS.

47. **Project Engineer** (National, 10 person-months, intermittent). The expert should have a bachelor's degree in economics, business administration, engineering, science or other relevant field, and at least 5 years of working experience, with strong familiarity in international procurement procedures. The expert will assist the team leader in performing all tasks, particularly in the following activities:

- (i) Visit the project sites; collect the updated information; and guide and assist the other international specialists to prepare all the deliverables below in ADB formats; and
- (ii) Act as local liaison, including:
 - a. facilitate logistics of the team;
 - b. identify and collect existing data, reports and documentation to fulfil data requests of the team;
 - c. manage work schedule in conjunction with Team Leader and PMU;
 - d. advise turnkey contractors of local operational requirements and logistics; and
 - e. identify and manage opportunities for capacity building and knowledge transfer

48. **Environment Specialist** (international, 3 person-months, intermittent). The expert should have a graduate degree in environment or relevant field, and about 8 years of experience in environmental assessment and monitoring for project funded by ADB, preferably in the Pacific region, or a combination of undergraduate degree and directly relevant professional experience. The activities to be undertaken will include but not limited to the following:

- (i) Assist the PMU to monitor the environment management plan (EMP) and report to ADB every 6 months for all subprojects. Guide and assist the PMU for any corrective actions for EMP implementation and revisions for subprojects;
- (ii) Review the initial environmental examination (IEE) report, the feasibility study, and other relevant reports prepared by local institutes for all subprojects;
- (iii) Evaluate environmental impacts of the all subprojects proposed, and recommend environmentally-friendly options for the design and construction, which emphasizes on (a) biodiversity conservation, (b) public health and safety, (c) physical cultural resources, (d) pollution prevention and abatement, and ensure those aspects are documented and incorporated in the IEE reports;
- (iv) In cooperation with team leader, develop project management capacity enhancement training module in environmental safeguards. Lead to conduct capacity enhancement training in environmental safeguards for staff in the PMU and the other relevant agencies;

- (v) Provide capacity building to the PMU/MEIDECC/TPL in safeguard matters and raise awareness in the PMU and contractors on all aspects of the statutory and policy requirements for environmental assessment and management as required by the government and ADB, including obtaining necessary permits from the environment assessment authority;
- (vi) Assist PMU/MEIDECC/TPL in strengthening the environmental management of the overall program by undertaking the necessary training in environmental assessment procedure and techniques, mitigation planning, environmental supervision and monitoring, and reporting. Involve PMU/MEIDECC/TPL through on-the-job training, affecting transfer of knowledge and skills, in environmental management and monitoring of projects, and ensure staff capability in handling environmental management of the program under TREP;
- (vii) Ensure compliance with the ADB's Safeguard Policy Statement, 2009, and environmental assessments of the Project; and ensure compliance of project implementation with the government's laws, environmental policy and procedures, including preparation and submission of notification of each subproject to the environmental assessment authority in accordance with the prescribed format, and necessary requirements;
- (viii) Based on methods and procedures (checklists, database, reporting etc), developed during project preparation, work with and support PMU/MEIDECC/TPL to develop a program to (i) update assessment and EMPs required, based on detailed design and integrate these into bid documents; (ii) assist in the evaluation of bids in respect of environmental management matters; (iii) provide support and training to the contractor as they prepare their site-specific EMP (SEMP); (iv) review and approve the SEMP; and (v) monitor compliance with the approved SEMP;
- (ix) Ensure that the SEMP complies with the contractual and environment safeguard requirements;
- (x) In coordination with PMU/MEIDECC/TPL, develop and implement a detailed monitoring plan and supervise SEMP implementation and undertake regular compliance monitoring to ensure all works implemented are in accordance with the approved SEMP;
- (xi) Report on monitoring results, particularly SEMP implementation and effectiveness of environmental impact mitigations and training provided to PMU/MEIDECC/TPL and contractors in: (a) inputs to PMU quarterly progress reports; and (b) semi-annual safeguards monitoring reports; and
- (xii) In discussion and coordination with PMU/MEIDECC/TPL, assist in preparing or updating environmental assessment guidelines for energy sector focusing on solar and wind IPP projects in line with country systems/procedures and best practice (using SPS as benchmark) for staff guidance during project preparation and implementation.

49. **Social Safeguards Specialist** (international, 2 person-months, intermittent). The expert should have a postgraduate degree in social science or relevant field, and about 8 years working experience, or a combination of undergraduate degree and directly relevant professional experience. The expert will undertake the following activities:

- (i) Assist PMU/MEIDECC/TPL in leading resettlement and social safeguards during the design, implementation, and monitoring of the project, in accordance with the ADB's Safeguard Policy Statement (SPS) and relevant laws of Tonga;

- (ii) Develop and implement stakeholder consultation and communication programs to ensure the full awareness and participation of affected communities and stakeholders;
- (iii) Assist in establishing and implementing the project's grievance redress mechanism;
- (iv) Liaise with relevant government and local authorities for their participation in and oversight of census and detailed measurement survey and negotiation with landowners/affected persons (APs) for purposes of acquisition and compensation of land for the project;
- (v) Assist the PMU/MEIDECC/TPL to update land acquisition/resettlement plan (RP) and monitor implementation of the RP for all subprojects. Guide and assist the PMU for any corrective actions for land acquisition and resettlement plans' implementation and revisions for all subprojects;
- (vi) Assist the PMU and undertake the following tasks in coordination with relevant agencies and stakeholders for preparing/updating and implementing RPs: (a) collect/update APs' baseline information such as annual household income, size of land holding, source of income, education status through questionnaire survey; (b) identify poverty households, female-headed households, and disabled households among APs through questionnaire survey and focused-group discussion, and identify type of livelihood supports which have been already extended or will be extended to them by the local government; (c) undertake detailed measurement survey and prepare an entitlement matrix; (d) undertake meaningful consultation with all affected households to assess the level of their support to the project, compensation rate, and identify issues, if any; (d) monitor the status of land acquisition process; and (e) prepare land acquisition implementation plan;
- (vii) Assist the PMU/TPL/MEIDECC to monitor and ensure the poor household's and the women's participation in consultation activities; provision of gender awareness to target groups; encouraging the poor household and the women participation in Project related contracts; and collection of the poor household and the gender related data for monitoring and evaluation purposes;
- (viii) Facilitate disclosure of the RP to affected communities, including providing a summary of its contents to APs in local language on eligibility, entitlement, grievance mechanism, timeline of land acquisition, and compensation payment;
- (ix) Prepare semi-annual monitoring reports on land acquisition/resettlement and social safeguards;
- (x) Coordinate with other specialists and provide safeguard inputs to overall project reports, including quarterly progress reports;
- (xi) In cooperation with team leader, develop project management capacity enhancement training module in social safeguard. Lead to conduct capacity enhancement training in social safeguard for staffs in the PMU/TPL/MEIDECC and the other relevant agencies;
- (xii) Collaborate with the Environment Specialist to develop a program to monitor the requirements of the environment assessments and EMPs are fully integrated into the construction program of the project;
- (xiii) Review and analyze Contractor's program to ensure social safeguard mechanism is incorporated and undertake field visits during implementation to the selected project sites to assess if the measures are effectively included during construction;
- (xiv) Working closely with the PMU gender development officer, ensure Gender Action Plan performance targets and activities are implemented, monitored and reported in quarterly reports;

- (xv) Support the PMU/TPL/MEIDECC in the development, implementation and monitoring of a Stakeholder Communication Strategy;
- (xvi) Develop HIV/AIDS training program for community near the project construction sites, who may be impacted by temporary influx of construction workers, and coordinate with local health authorities and the PMU for its implementation;
- (xvii) Provide progress status on implementation of GAP and IPP in the PMU quarterly reports as per TPL and ADB requirement during project implementation;
- (xviii) Provide active support to the PMU/MEIDECC/TPL in facilitating, managing and monitoring stakeholder and former landowner engagement in all sub-projects; and
- (xix) Work closely with the PMU/MEIDECC/TPL in engaging with landowners and local community of the sub-projects for the allocation of community-based contracts where applicable.

50. **Financial Specialist** (international, 1.5 person-months, intermittent). The expert should have a graduate degree in finance or relevant field, and about 5 years working experience, or a combination of undergraduate degree and directly relevant professional experience. The expert will undertake the following activities.

- (i) Guide and assist the PMU/MEIDCC/TPL to prepare project audit report and corporate audit report in accordance with the requirements of ADB.
- (ii) In cooperation with the team leader, develop project management capacity enhancement training module in financial analysis and management. Lead to conduct capacity enhancement training in financial analysis and management for staff in the PMU and other relevant agencies.
- (iii) Conduct tariff and subsidy analysis to ensure sound financial performance of all subprojects and provide recommendations for necessary improvement in tariff level and structure.
- (iv) Undertake electricity tariff analysis based on historical data and assess the level of direct and indirect subsidies. Estimate the willingness to pay for incremental electricity consumed, long run marginal cost of power generation, and unit value of power exports, and the unit value of energy savings.
- (v) Assist TPL and MEIDECC to calculate appropriate tariff levels to comply with relevant grant covenants.

51. **Climate Change Expert** (International, 2 person-months). Qualified expert with a graduate degree in related field, and at least 7 years of relevant working experience in climate change modeling, hydrological modeling, and in climate change risk assessment in energy projects, or a combination of undergraduate degree and directly relevant professional experience. The consultant with previous experience in developing countries in the Pacific region is desirable. The key tasks are to:

- (i) Prepare the climate change impact, vulnerability and adaptation assessment reports for the project following ADB guidelines for climate proofing investment in the energy sector;
- (ii) Identify the climate change parameters to be assessed and the modeling scale (temporal and spatial) to be used in the impact assessment. Identify the goal of the climate change impact assessment in the context of the overall project objectives;
- (iii) Survey the existing information such as relevant climate change projections and local historical climate data available. Prepare an assessment on the reliability of existing climate change projections based on the model's ability to represent past climate conditions;

- (iv) Evaluate the range of climate projections and select projections. Identify any need for further modeling, or where existing modeling is sufficient for the project, and prepare a short synthesis report;
- (v) Identify the probabilities of occurrence of specific climate changes from taking place and the level of certainty. Identify assumptions and limitations in terms of the use of the projections for influencing project design;
- (vi) Formulate downscaled climate change scenarios for the relevant time horizon of the project, specifying the technique used for downscaling as necessary;
- (vii) Identify any project specific risks arising from the climate change analysis and advise the Team Leader and PMU on mitigation strategies for managing construction contracts;
- (viii) Identify possible technical gaps, in country and generally, for improving capabilities for climate change projections in the country;
- (ix) Submit for review and approval a draft outline of the analysis to be undertaken, including recommended methodology for impact assessment; and
- (x) Provide an expert opinion on the probability of further climate change research potentially altering project design protocols or operations requirements.

52. The consulting firm shall submit the following required reports:

- (i) **Inception Report.** This shall be submitted within one month after issuance of the Notice to Proceed. It shall contain the updated implementation plan, schedule of personnel deployment, and detailed approach and methodologies for implementation. An inception workshop will be conducted with PMU/TPL/MEIDECC and ADB within 6 weeks from notice to proceed with services to present the proposed program of activities and to seek feedback on improvements, which will be reflected in the consultants' inception report;
- (ii) **Monthly Progress Reports.** This shall be submitted by the end of the first week of the succeeding month during the consulting service period. This shall contain (i) the latest progress status against the targets set in the initially agreed implementation plan (including capacity building activities described in Output 4) in the inception report, (ii) justification for any major variations (iii) mitigation measures to minimize any further variations;
- (iii) **Semi-Annual Safeguards Monitoring Reports.** This shall be submitted every 7th month covering the previous 6 months during the consulting service period. These reports are required to be prepared in accordance with ADB's Safeguards Statement (2009) and as specified in paras 4, 5 and 7 in Appendix B.
- (iv) **Interim Report.** This shall be submitted 12 months after Notice to Proceed. This shall contain achievement of the project in relation to the targets set in the TOR and agreed implementation plan. It shall include key findings of project-supported workshops, and key progress, monitoring and evaluation data to enable overall project monitoring;
- (v) **Final Report.** This shall be submitted one month prior to the end of the assignment, including accomplishments under the project, challenges faced, and lessons learned and comparison between estimates vs. actual outputs - for instance, technical, financial, economic, and environment and social safeguards, etc. Following

submission, a final review workshop will be conducted with relevant government agencies, stakeholders and ADB. The final workshop will summarize the final report.

- (vi) **Donor reports.** The consultant must also prepare reports required by ADB and GCF relevant to the climate change mitigation and adaptation components and GCF funding including but not limited to the climate risk assessments and the GCF Inception Report to be submitted within 6 months from the GCF grant effectiveness.

53. For each construction contract, the CSC shall submit:

- (i) **Design Review/Acceptance Report.** This shall be submitted within one month after each turnkey contractor submits the detailed design. This shall contain (i) key assessments of detailed designs; and (ii) recommendation for acceptance.
- (ii) **Test Reports.** For each construction contract, the following test reports shall be prepared and submitted within one month after each test.
 - a. Mechanical Completion Test and Supervision Report;
 - b. Inverter Commissioning Test Report;
 - c. Performance Test (Acceptance Test) Report;
 - d. Provisional Acceptance Report; and
 - e. Final Acceptance Test Report
- (iii) **Site Records.** At the completion of the construction stage, the CSC shall provide to the Employer a full detailed set of all site records. This shall include, as a minimum, all site reports, materials approvals, test records, photographs, instructions, variations, inspection certs, etc. The information shall be provided in paper and electronic (PDF) format.

VII. SAFEGUARDS

A. Environment

54. The project is classified as category B for environment following ADB's Safeguard Policy Statement 2009 (SPS). The main potential impacts identified include: (i) limited impacts on flora and fauna during construction; and (ii) limited visual impact. Adequate mitigation measures have been incorporated into the environmental management plan, which will form part of the solar PV plants. A climate change adaptation risk evaluation was conducted and considered in infrastructure design. The PMU will lead the environmental supervision.

B. Involuntary Resettlement and Indigenous Peoples

55. TREP is classified as category B for involuntary resettlement and C for indigenous peoples. A resettlement plan has been prepared for the Project facilitating the necessary acquisition of 7 identified sites. No subproject under TREP is expected to involve physical displacement or relocation of people. No distinct and vulnerable indigenous peoples will be affected and all the activities under TREP will be implemented in a culturally appropriate and participatory manner.

VIII. GENDER AND SOCIAL DIMENSIONS

56. The project's GAP will be implemented and lead by the PMU which will include a lead national safeguards specialist and CSC's international environment and social safeguard specialists with relevant gender-related experience. The specialist will be responsible for incorporating the gender mainstreaming measures into project planning and implementation as well as environment and involuntary resettlement monitoring. The PMU will report the progress of GAP and safeguard activities in its quarterly progress reports and semi-annual safeguards reports on overall project activities to ADB and the government.

GENDER ACTION PLAN

PROJECT OUTPUTS	GENDER TARGETS AND ACTIVITIES	TIMELINE	BUDGET ⁱ	RESPONSIBILITY	MEANS OF VERIFYING THE ACHIEVEMENT OF TARGETS
Output 1: Battery Energy Storage System in Tongatapu	1.1 During design and implementation, all community consultations will have a target of at least 50% female participation, including women only consultations in all the sites (baseline: 0)	Q2 2018 – Q2 2022	USD 4,000 (estimated)	Implementing Agency (TPL) and through SGS during implementation	Sex disaggregated data of attendees in semi-annual GAP progress reports
	1.2 Requirement for contractors to hire at least 20% women in both technical and non-technical work *(baseline: 0)	Q3 2019 - Q2 2021	Contractor's budget	Principal contractor	Sex disaggregated pay sheets
	1.3 Provide separate toilet and sanitation facilities for men and women. Ensure women-friendly design by providing reliable water supply, proper lock and lighting (baseline: 0)	Q3 2019 -Q2 2021	Contractor's budget	Principal contractor	Site visits and site maps include separate male and female toilets
	1.4 Ensure equal pay for equal work between male and female workers	Q3 2019-Q2 2021	Contractor's budget	Principal contractor	Sex disaggregated pay sheets
	1.5 Contractor will be required to provide safety gear and protective to keep both men and women workers safe on the job	Q3 2019 -Q2 2021	Contractor's budget	Principal contractor	Site visit and inspection reports require sighting protective equipment
Output 2: Grid-connected renewable energy generation on 'Eua and Vava'u islands	2.1 During design and implementation, all community consultations will have a target of at least 50% female participation, including women only consultations (baseline: 0)	Q3 2018 – Q2 2022	USD 4,000 (estimated)	Implementing Agency (TPL) and through SGS during implementation	Sex disaggregated data of attendees in semi-annual progress reports
	2.2 Requirement for the contractor to hire 20% women in both technical and non-technical work *(baseline: 0)	Q3 2019 – Q2 2021	Contractor's budget	Principal contractor	Sex disaggregated paysheets
	2.3 Provide separate toilet and sanitation facilities for men and women. Ensure women-friendly design by providing reliable water supply, proper lock and lighting (baseline: 0)	Q3 2019 – Q2 2021	Contractor's budget	Principal contractor	Site visits and site maps include separate male and female toilets
	2.4 Contractor will be required to provide safety gear and protective equipment to keep both men and women workers safe on the job Contractors appointed for construction will be informed of the required facilities before bidding	Q3 2019 – Q2 2021	Contractor's budget	Principal contractor	Site visit and inspection reports require sighting protective equipment
	2.5 Ensure equal pay for equal work between male and female workers	Q4 2019 – Q2 2021	Contractor's budget	Principal contractor	Sex disaggregated paysheets

Output 3: Renewable -based hybrid system and mini- grids on outer islands.	3.1 During design and implementation, all community consultations will have a target of at least 50% female participation, including women only consultations in all the sites (baseline: 0)	Q2 2018 – Q2 2022	USD 8,000 (estimated)	Implementing Agencies (TPL and MEIDECC) and through SGS during implementation	Sex disaggregated data of attendees in reports
	3.2 Requirement for the contractor to hire 20% women in both technical and non-technical work*	Q1 2020 – Q1 2022	Contractor's budget	Principal contractor	Sex disaggregated paysheets
	3.3 Provide separate support to women such as toilet and sanitation facilities. Ensure women-friendly design by providing reliable water supply, proper lock and lighting	Q1 2020 – Q1 2022	Contractor's budget	Principal contractor	Site visits and site maps include separate male and female toilets
	3.4 Ensure equal pay for equal work between male and female workers	Q1 2020 – Q1 2022	Contractor's budget	Principal contractor	Sex disaggregated paysheets
	3.5 Contractor will be required to provide safety gear and protective equipment to keep both men and women workers safe on the job	Q1 2020 – Q1 2022	Contractor's budget	Principal contractor	Site visit and inspection reports require sighting protective equipment
	3.6 At least 90% of all female headed households and businesses have electricity connection prioritized. (Baseline: 0%) **	By Q4 2021	Contractor's budget	Principal contractor with supervision from TPL	Records of newly connected households with verification on women-headed households/businesses
Output 4: Capacity Building and Project Managemen t Support	4.1 All staff in MEIDECC, TPL and contractors involved in the project will receive awareness session on sexual harassment. The contractors will submit to TPL a policy against sexual harassment to be implemented during the entire project duration	Q3-Q4 2019	MEIDECC and TPL operating budget	All the tasks to be implemented by the Implementing Agency through the SGS	Report from sexual harassment awareness training. Sexual harassment policy
	4.2 Enhance community electric societies' management capacities through facilitation of inclusion of at least 30% women in Electric Management Committees (baseline: 0)***	Q4 2019 – Q32022	MEIDECC budget	Principal contractor	Electric management committee reports
	4.3 Provide yearly business skills training on income opportunities from increased electricity supply with 50% women participation in each of the project site (baseline:0)	Q4 2019 – Q3 2022	USD 6,000 (estimated)	Principal contractor /TPL	Sex disaggregated data of trainees in reports
	4.4 A minimum of 30% women in key decision-making committees for the project	Q4 2019	No budget required.	Implementing Agency - TPL	Key reports listing committee members

	4.5 Include training on intrahousehold decision-making and sharing household labor, financial access and control with indicators to be built into the monitoring and evaluation framework to track women's and men's perceptions and behavior on economic and personal empowerment measures before, and after business skills trainings	Q4 2019 – Q3 2022	USD 5,000 (estimated)	SGS to lead the perception study and engage an expert to assist	Perception study report pre-project, during project and on project completion Training reports
	4.6 Conduct at least 2 consumers' training on power budget management with a minimum of 50% female participation for each of the project community**** (baseline: 0)	Q4 2019 – Q4 2022	USD 5,000 (estimated)	Implementing Agency (TPL and MEIDECC) and through SGS and qualified trainer to be engaged	Training reports with sex disaggregated data
	4.7 Conduct annual workshop with a minimum of 30% female participation on demand side management for community electric societies' customers (Ha'apai and Niufo'ou)**	Q4 2019 – Q4 2022	Contractor's budget	Principal contractor	Workshop participant reports with sex disaggregated data
	4.8 Conduct at least 2 trainings per year on project planning and asset management maintenance for MEIDECC, TPL staff and the community electric societies (Ha'apai and Niufo'ou) with a minimum of 30% female participants. *****	2019 -2022	USD 8,000 (estimated)	Resource Persons from TPL or qualified training to be engaged by TPL	Training reports with sex disaggregated data
	4.9 Conduct workshop in the beginning of the project with a minimum of 30% female participants from MEIDECC and TPL staff on procurement, anticorruption and safeguards	Q3 2019	MEIDECC and TEPL operating budget	ADB working closely with MEIDECC and TPL	Workshop participant reports with sex disaggregated data
	4.10 Conduct at least one training of the Implementing Agency on collecting sex disaggregated data and inclusion in the progress, monitoring and evaluation reports	Q3 2019		SGS or expert to be engaged by MEIDECC	Training report and all progress, monitoring and evaluation reports
<p>Note: (*) Target (20%) is based on learning on what is achievable from the Tonga Outer Island Renewable Energy Project (Project 43452-024) (**)</p> <p>Approximately 208 households in total across the 5 islands. Female headed households estimated to be approx. 20 households across the 5 islands. The project aims to connect at least 90% of female headed households to the minigrid in the first tranche of connections, providing cheaper electricity sooner. (***)</p> <p>Target (30%) is based on learning on what is achievable from similar activities in the Tonga Outer Island Renewable Energy Project (Project 43452-024). There are currently no women involved in the Electric Societies in project locations (****) Female headed households will be prioritised. (*****)</p> <p>Target (30%) is based on learning on what is achievable from similar activities in the Tonga Outer Island Renewable Energy Project (Project 43452-024)</p> <p>A Social Development and Gender Specialist (SGS) will be engaged to assist the implementing agency in implementing and monitoring GAP implementation and providing capacity building activities. In addition to the Specialist, there will be at least one female member to the project team in charge of community consultation, information and training activities. A project brief will be held among traditional women and men leaders on the project including gender targets and their rationale. A dedicated semi-annual GAP progress and monitoring report will be submitted with gap performance indicators disaggregated by gender. Project performance reporting and annual reports will also collect and include gender disaggregated data and total number of female beneficiaries in the project.</p>					

**IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND
COMMUNICATION
DESIGN AND MONITORING FRAMEWORK**

Impact Tonga's dependency on imported fossil fuel for power generation reduced			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Access to clean, resilient and affordable energy for the population in Tonga at a lower cost expanded	By end of 2024 a. Renewable energy generation increased as a percentage of power generation to about 50% (December 2017 baseline: about 10%) b. At least 17,501 MWh of annual carbon-free electricity supplied to customers c. Diesel consumption for power generation by at least 4.17 million liters per annum d. At least 13,616 tons of annual carbon dioxide emissions are avoided	Project completion report	High debt distress and expenditure High dependency of the government on the funding transfer from development partners
Outputs 1. BESS facilities on Tongatapu installed 2. Grid-connected renewable energy generation on 'Eua and Vava'u installed 3. Renewable-based hybrid systems and mini-	By end of 2022 1a. 10.1 MW / 19.9 MWh BESS on Tongatapu are installed 1b. At least 20% of new jobs (technical/non-technical) are for women ^a (Baseline: 0) 2a. 0.65 MW solar photovoltaic generators and 1.3 MW / 1.4 MWh BESS are installed and connected to existing power grids of TPL on 'Eua and Vava'u 2b. At least 20% of new jobs (technical/non-technical) are for women ^a (Baseline: 0) 3a. 0.50 MW solar-based hybrid generation systems plus 4.3 MWh BESS and mini-grid are built on	Project progress reports, TPL annual report, semiannual safeguards monitoring reports, training attendance sheets, and ADB's project completion report	Foreign exchange risk There is no internal audit function at TPL

<p>grids on outer-Islands installed</p> <p>4. Capacity building</p>	<p>the outer islands (O'ua, Tungua, Kotu, Mo'unga'one and Niuafou'ou)</p> <p>3b. At least 20% of new jobs (technical and non-technical) are for women^a (Baseline: 0)</p> <p>3c. At least 90% of all households headed by women and businesses have electricity connection prioritized (Baseline: 0%)^b</p> <p>4a. Consultancy services provided through the appointment of CSC and PMU consultants</p> <p>4b. About 2-3 power purchase agreements supported by transaction advisors</p> <p>4c. Training includes</p> <p>(i) Capacity building program conducted for operation and maintenance of BESS and solar PV system with at least 50% participation of women (contractors/electric societies/community members)^c</p> <p>(ii) Yearly business/ income generation skills training with men and women at each of the project sites, including modules on intrahousehold decision-making, sharing household labor and financial access and control</p> <p>(iii) Two training programs per year on project planning and asset management maintenance with 30% participation of women (contractors/electric committees and community members)^d</p> <p>(iv) Training on sexual harassment and abuse for all MEIDECC, TPL and contractors involved in the project.</p>		
<p>Key Activities with Milestones</p> <p>1. BESS on Tongatapu</p> <p>1.1 Feasibility studies completed (by Q3 2018) (complete)</p> <p>1.2 Bidding for one turnkey contract completed (by Q3-Q4 2018) (complete)</p>			

- 1.3 Turnkey contracts awarded (by Q3 2019)
- 1.4 Start civil works and installation (by Q4 2019)
- 1.5 Systems commissioning, including test run (by Q3/Q4 2020)
- 1.6 O&M training by turnkey contractor completed (by Q3/Q4 2020)

2. Grid-connected renewable energy Generation on 'Eua and Vava'u islands

- 2.1 Feasibility studies completed (by Q3 2018) (completed)
- 2.2 Bidding for one turnkey contract completed (by Q4 2019)
- 2.3 Turnkey contract awarded (by Q1 2020)
- 2.4 Start of civil works and installation (by Q1 2020)
- 2.5 Systems commissioning, including test run (by Q3 2021)
- 2.6 O&M training by turnkey contractor completed (by Q3 2021)

3. Renewable-Based Hybrid Systems and Mini-Grids on Outer-Islands

- 3.1 Feasibility studies completed (by Q3 2018) (complete)
- 3.2 Bidding for one turnkey contract completed (by Q4 2019)
- 3.3 Turnkey contract awarded (by Q1 2020)
- 3.4 Start of civil works and installation (by Q2 2020)
- 3.5 Systems commissioning, including test run (by Q4 2021)
- 3.6 O&M training by turnkey contractor completed (by Q4 2021)

4. Capacity Building

- 4.1 Project management consultant recruited (Q2 2019)
- 4.2 Construction supervision consultant recruited (Q2 2019)
- 4.3 Project management support completed (by Q4 2022)
- 4.4 Environmental and social safeguard actions implemented (2019–2022)

Inputs

ADB	\$12.2 million
Government of Australia	\$ 2.5 million
Green Climate Fund	\$29.9 million
Tonga Power Limited	\$ 3.0 million
Government of Tonga	\$ 5.6 million
Total	\$53.2 million

ADB = Asian Development Bank, BESS = battery energy storage system, CSC = construction supervision consultant, MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Climate Change, Environment, and Communications, MW = megawatt, MWh = megawatt-hour, O&M = operations and maintenance, PMU = project management unit, Q = quarter, TPL = Tonga Power Limited.

^a Target (20%) is based on lessons from ADB. [Tonga: Outer Island Renewable Energy Project](#).

^b Total households headed by women estimated to be 20 households across the five islands (O'ua, Tungua, Kotu, Mo'unga'one, and Niuafu'ou).

^c Proxy baseline: the Tonga Outer Island Renewable Energy Project includes capacity building programs for O&M in other outer islands in Tonga where 50% of participants are women.

^d Proxy baseline: the Tonga Outer Island Renewable Energy Project includes training programs on planning and asset management maintenance in other outer islands in Tonga where 30% of participants are women.

Source: ADB.

A. Monitoring

57. **Project performance monitoring.** TPL and MEIDECC, in coordination with MFNP and assisted by PMU, will prepare quarterly monitoring reports, including (i) disaggregated baseline data for output and outcome indicators, and (ii) implementation status: 'Projection vs. Actual' (e.g. implementation schedule, costs, outputs (installed capacity, energy yield and GHG emissions reductions etc.). The quarterly reports will provide information necessary to update ADB's project performance reporting system. The two annual grant reviews and the quarterly monitoring reports will include environmental and social safeguard monitoring reports.

58. **Compliance monitoring.** In addition to the standard assurances, compliance with the specific assurances will be monitored. Implementation of covenants will be (i) summarized in the quarterly progress reports, (ii) discussed during PMU meetings, and (iii) reviewed during biannual grant review missions. The executing and implementing agencies will cause the detailed consolidated project accounts to be audited in accordance with International Standards on Auditing by an auditor acceptable to ADB. The audited accounts will be submitted in the English language to ADB within 6 months of the end of the fiscal year by the executing agency. The government has been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited accounts. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures. For revenue generating projects only, ADB requires audited financial statements (AFS) for each EA and IAs associated with the project.

59. **Safeguards monitoring.** Environment and social safeguards will be monitored by international and national specialists within the PMU, assisted PMC, in accordance with the initial environmental examination and the resettlement plan. The results of the safeguard monitoring will be reported in the PMU quarterly reports. Additionally, the two annual review missions will report on safeguard compliance.

60. **Gender and social dimensions monitoring.** The project's GAP will be implemented by the PMU which will include a social specialist with relevant gender-related experience. The specialist will be responsible for incorporating social and gender mainstreaming measures into project planning and implementation, including awareness activities and establishment of gender-disaggregated indicators for project performance and monitoring. PMU assisted by PMC will report the progress of activities in its quarterly progress reports on overall project activities to ADB and the government.

61. **Greenhouse gas emissions monitoring.** During the operational phase, the project's GHG savings will be monitored by the IAs, with initial assistance from the international specialists within the PMU. A monitoring procedure and analysis tools have been developed that utilize data streams available to the IAs through monitoring equipment to be included as part of the project. For islands with existing generation (Tongatapu, Vava'u and 'Eua), the method estimates fuel consumption if the TREP associated renewable energy contribution to demand was not available and compares that to actual fuel consumption. An emissions factor of 2.68 tCO₂/liter¹⁰ (diesel) is applied to the difference. For the outer islands, an emissions factor of 0.778 tCO₂/kWh¹¹ is applied for all energy exported from the power station. GHG savings will be published annually by the IAs.

¹⁰ <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/voluntary-ghg-reporting-summary-tables-emissions-factors-2015.pdf>

¹¹ As advised by GCF

B. Evaluation

62. ADB and the EA assisted by PMU will conduct two annual reviews throughout the implementation of the project as well as a midterm grant review for project. The review will monitor and conduct a 'Projection vs. Actual' comparison analysis for (i) project output quality (e.g. installed capacity, energy yields and GHG emissions reductions, etc.), (ii) implementation arrangements, (iii) implementation progress, and (iv) disbursements. Within 6 months of physical completion of the project, the EA will submit a project completion report to ADB.¹¹

63. ADB will undertake a midterm review within 3 years of the Project being effective or at any time that ADB and the concerned Government consider it necessary. The midterm review mission will (i) review institutional, administrative, organizational, technical, environmental, social, economic, and financial aspects of the project based on the assumptions and risks included in the design and monitoring framework and updated PPR; (ii) review covenants to assess whether they are still relevant or need to be changed, or waived due to changing circumstances; (iii) assess the need to restructure or reformulate the project and the effects of this on the immediate objectives (purpose) and long-term goals of the project; and (iv) update the project's design and monitoring framework if restructuring or reformulation is necessary or its immediate objectives will change. The midterm review mission will be conducted in accordance with ADB's Project Administration Instructions (PAI).

64. Within 6 months of physical completion of TREP, the national executing entities will submit a project completion report (PCR) to ADB. Then, ADB will prepare its own PCR¹² to evaluate the performance of the project to enhance transparency and accountability, and to learn from operation experience in the design and implementation of the project. These lessons are expected to be used to improve the design and performance of ongoing and future ADB-financed and administered projects. The PCR is validated by the Independent Evaluation Department (IED). The PCR:

- provides a concise description of the project and its rationale;
- assesses the adequacy of preparation, design, implementation arrangements, and due diligence, including how problems were identified and handled, whether they were foreseen as potential risks at appraisal, and the adequacy of the solutions adopted during implementation;
- evaluates relevance of project design at appraisal and at completion, effectiveness in achieving outcomes and attribution to the project by assessing achievements of output targets including GHG emissions reductions, efficiency in delivering outputs, and sustainability of achieving output and outcome targets;
- evaluates the performance of the recipient, executing entities, co-financiers (as applicable) and ADB;
- identifies remaining issues and lessons learned from the project;
- suggests follow-up actions if required; and

¹¹ Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

¹²The PCR will be prepared within 24 months (the preparation will start after 12 months if the project needs to see a full year operation of the project to gauge the achievements of the outcomes) after project completion regardless of financial closure of the grant accounts. A project is complete when all its outputs are completed (i.e. when the project's facilities are completed and ready to operate. If revenue streams are envisaged, then these should be occurring). The PCR can only be finalized and circulated to the Board after the financial closure of the grant accounts, including all co-financed products administered by ADB.

- makes recommendations—based on the evaluation and lessons learned—for future project design and implementation as well as improvements in related ADB procedures.

65. Within 2 years after the PCR is approved, ADB's IED will evaluate and validate the PCR. Both PCR and IED's evaluation report are rated as highly successful, successful, less than successful, or unsuccessful. To align with other Multilateral Development Banks like the World Bank Group weighting systems for 'sovereign' project ratings, equal weights are applied to the four evaluation criteria (relevance, effectiveness, efficiency, sustainability) that determine the overall success rate. Both PCR and IED's evaluation report will be prepared in accordance with ADB's (i) Guidelines for the Evaluation of Public Sector Operations and (ii) PAI.¹³

66. ADB will follow its project implementation processes and guidelines including reporting obligations under the AMA, and any additional terms that may be agreed in the FAA.

C. Reporting

67. TPL and MEIDECC will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan, (d) updated implementation plan for the next 12 months; and (iii) a project completion report within 3 months of physical completion of the project. To ensure that projects continue viability and sustainability, project accounts and the executing agency AFS, together with the associated auditor's report, should be adequately reviewed.

D. Stakeholder Communication Strategy

68. PMU will prepare a stakeholder communication strategy and submit to ADB for review by the end of month 3 after grant effectiveness. All communication will be in language suitable for the specific audience and will follow the ADB Public Communication Policy. The stakeholder strategy will incorporate the following components:

- (i) Compilation of stakeholder communication activities already undertaken.
- (ii) Role of PSC in coordinating and communicating with relevant government stakeholders.
- (iii) Public communication plan for disseminating information regarding project development to the public who may be impacted by the proposed projects.

X. ANTICORRUPTION POLICY

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

¹³ (i) <https://www.adb.org/documents/guidelines-preparing-performance-evaluation-reports-public-sector-operations>, and (ii) <https://www.adb.org/sites/default/files/institutional-document/33431/pai-6-07a.pdf>

70. To support these efforts, relevant provisions are included in the grant agreements and the bidding documents for the project. Additionally, the government will (a) comply with ADB's Anticorruption Policy (1998, as amended to date), and cooperate fully with any investigation by ADB and extend all necessary assistance, including providing access to all relevant books and records for the satisfactory completion of such investigation; (b) ensure that relevant staff are trained in ADB's Anticorruption Policy; (c) ensure that the audited annual project accounts under the project, project progress, and procurement activities are disclosed on relevant government entities; and (d) allow and facilitate ADB's representatives to conduct spot and random checks on (i) flow of funds and their use for the projects in accordance with the legal agreements; (ii) work-in-progress; and (iii) project implementation under the project.

XI. ACCOUNTABILITY MECHANISM

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

XII. RECORD OF PAM CHANGES

Date Changed	Section Changed	Changes made
1.		

ⁱ The estimated budget to implement the activities of the GAP will be made available by the Government and the Contractor as part of their legal commitment to the project. Other activities will be funded by existing MEIDECC or TPL operational budget.