



# Investment Facility Report

---

**PUBLIC**

Project Number: 49450-036  
December 2022

## Pacific Renewable Energy Investment Facility Kingdom of Tonga: Nuku'alofa Network Upgrade Project

This document is being disclosed to the public in accordance with ADB's Access to Information Policy.

Asian Development Bank

## **CURRENCY EQUIVALENTS**

(as of 3 November 2022)

Currency unit	–	pa'anga (T\$)
T\$1.00	=	\$0.42
\$1.00	=	T\$2.38

## **ABBREVIATIONS**

ADB	–	Asian Development Bank
COVID-19	–	coronavirus disease
DMC	–	developing member country
GAP	–	gender action plan
IEE	–	initial environmental examination
km	–	kilometer
kV	–	kilovolt
MOF	–	Ministry of Finance
OP	–	operational priority
PAM	–	project administration manual
PMU	–	project management unit
PREIF	–	Pacific Renewable Energy Investment Facility
TA	–	technical assistance
TPL	–	Tonga Power Limited
TNNUP	–	Tonga Nuku'alofa Network Upgrade Project

## **NOTES**

- (i) The fiscal year (FY) of the Government of Tonga and its agencies ends on 30 June. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2023 ends on 30 June 2023.
- (ii) In this report, "\$" refers to United States dollars.

<b>Vice-President</b>	Ahmed M. Saeed, Operations 2
<b>Director General</b>	Leah C. Gutierrez, Pacific Department (PARD)
<b>Deputy Director General</b>	Emma M. Veve, PARD
<b>Director</b>	Mukhtor Khamudkhanov, Energy Division (PAEN), PARD
<b>Team leaders</b>	Woo Yul Lee, Principal Energy Specialist, PAEN, PARD Ranishka Wimalasena, Energy Specialist, Pacific Subregional Office (SPSO), PARD
<b>Team members</b>	Uzma Altaf, Gender Specialist, Social Sectors and Public Sector Management Division (PASP), PARD Flordeliza Asistin, Financial Management Specialist; Portfolio, Results, and Quality Control Unit (PAOD-PRQ); PARD Ferila Brown, Senior Safeguards Officer, SPSO, PARD Faith Joy Buentipo, Senior Operations Assistant, PAEN, PARD Yan Yee Chu, Procurement Division 2; Procurement, Portfolio, and Financial Management Department Henry Cornwell, Counsel, Office of the General Counsel Pilimilose Faotusia, Senior Country Officer, SPSO, PARD <sup>a</sup> Alexandra Galperin, Senior Disaster Risk Management Specialist, PAEN, PARD Grace King, Senior Project Officer (Financial Management), SPSO, PARD Teresita Bibal Leono, Associate Project Officer, PAEN, PARD Rommel F. Rabanal, Public Sector Economist, PASP, PARD Eun Young So, Energy Specialist, PAEN, PARD Jean Williams, Principal Environment Specialist, PAOD-PRQ, PARD <sup>b</sup>
<b>Peer reviewer</b>	Jaimes Kolantharaj, Senior Energy Specialist, Energy Division, South Asia Department

<sup>a</sup> Outposted to the Pacific Country Office, Tonga.

<sup>b</sup> Outposted to the Pacific Subregional Office.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



## CONTENTS

	Page
PROJECT AT A GLANCE	
I. BACKGROUND	1
II. THE PROJECT	1
A. Rationale	1
B. Project Description	4
C. Value Added by ADB	5
D. Summary Cost Estimates and Financing Plan	5
E. Implementation Arrangements	6
III. DUE DILIGENCE	7
A. Technical	7
B. Economic and Financial Viability	8
C. Sustainability	9
D. Governance	9
E. Poverty, Social, and Gender	10
F. Safeguards	11
G. Summary of Risk Assessment and Risk Management Plan	11
IV. ASSURANCES AND CONDITIONS	12
V. THE PRESIDENT'S DECISION	12
APPENDIXES	
1. Design and Monitoring Framework	13
2. List of Linked Documents	15



## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 49450-036	
<b>Project Name</b>	Pacific Renewable Energy Investment Facility: Nuku'alofa Network Upgrade Project	<b>Department/Division</b>	PARD/PAEN
<b>Country Recipient</b>	Tonga Kingdom of Tonga	<b>Executing Agency</b>	Ministry of Finance
<b>Country Economic Indicators Portfolio at a Glance</b>	<a href="https://www.adb.org/Documents/LinkedDocs/?id=49450-036-CEI">https://www.adb.org/Documents/LinkedDocs/?id=49450-036-CEI</a> <a href="https://www.adb.org/Documents/LinkedDocs/?id=49450-036-PortAtaGlance">https://www.adb.org/Documents/LinkedDocs/?id=49450-036-PortAtaGlance</a>		
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Energy</b>	Electricity transmission and distribution		7.200
		<b>Total</b>	<b>7.200</b>
<b>3. Operational Priorities</b>		<b>Climate Change Information</b>	
✓ OP1: Addressing remaining poverty and reducing inequalities		GHG reductions (tons per annum)	38
✓ OP2: Accelerating progress in gender equality		Climate Change impact on the Project	Medium
✓ OP3: Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability			
✓ OP4: Making cities more livable			
✓ OP6: Strengthening governance and institutional capacity			
		<b>ADB Financing</b>	
		Adaptation (\$ million)	2.120
		Mitigation (\$ million)	0.180
		<b>Cofinancing</b>	
		Adaptation (\$ million)	0.000
		Mitigation (\$ million)	0.000
<b>Sustainable Development Goals</b>		<b>Gender Equity and Mainstreaming</b>	
SDG 1.1, 1.5		Effective gender mainstreaming (EGM)	✓
SDG 5.5			
SDG 7.1			
SDG 10.3			
SDG 13.a			
		<b>Poverty Targeting</b>	
		Geographic Targeting	✓
<b>4. Risk Categorization:</b>		Low	
<b>5. Safeguard Categorization</b>		Environment: B Involuntary Resettlement: C Indigenous Peoples: C	
<b>6. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>7.200</b>	
Special Funds resources (ADF grant)		5.000	
Expanded disaster and pandemic response facility (DRF+grant)		2.200	
<b>Cofinancing</b>		<b>0.000</b>	
None		0.000	
<b>Counterpart</b>		<b>1.500</b>	
Government		1.000	
Tonga Power Limited		0.500	
<b>Total</b>		<b>8.700</b>	
<b>Currency of ADB Financing:</b> US Dollar			





## I. BACKGROUND

1. On 22 June 2017, the Board of Directors of the Asian Development Bank (ADB) approved the Pacific Renewable Energy Investment Facility (PREIF).<sup>1</sup> The facility finances renewable energy projects in 11 small Pacific Island developing member countries (DMC).<sup>2</sup> Upon approval, the Board delegated authority to the President to approve loans and/or grants to targeted countries for qualifying projects of up to \$200 million in cumulative ADB financing.

2. The facility will finance a grant to Tonga for the Nuku'alofa Network Upgrade Project. The project will help the Government of Tonga reduce climate vulnerability and technical power losses in the electricity network by upgrading the aged and inefficient network to a higher standard of disaster resilience to overcome extreme weather conditions and disasters in the project area in Nuku'alofa. The project will focus on climate change adaptation and “building back better” to withstand extreme weather events.

## II. THE PROJECT

### A. Rationale

3. **Country context.** Tonga is classified as a small island developing state.<sup>3</sup> It consists of 177 islands with a total area of 748 square kilometers divided into the following four island groups: Tongatapu, Ha'apai, Vava'u, and Niua. A total of 36 islands in Tonga are inhabited. Tonga's total population is estimated at 100,200.<sup>4</sup> About 75% of the population lives in Tongatapu, the main island of the capital, Nuku'alofa. Tonga is considered remote from most markets and resources, lying in the Pacific about 1,000 kilometers (km) from Fiji and more than 4,000 km from New Zealand.

4. **Climate change vulnerability.** Like other small island developing states in the Pacific, Tonga is highly vulnerable to external economic shocks and climate change. The country is already experiencing the effects of climate change. Increasing variability in rainfall patterns is causing flooding and droughts in some locations. Increasing ocean temperatures have led to coral bleaching and the destruction of natural coastal barriers, and sea-level rise contributes to coastal erosion. Floodwaters caused by heavy rainfall or sea-level rise can negatively impact the safety and performance of power distribution assets such as power poles, power lines, and sensitive electrical equipment.

5. **Disaster risk.** Climate change increases the frequency and severity of extreme weather events such as tropical cyclones and storm surges in Tonga. Tropical Cyclone Gita in 2018 resulted in total damage and losses of about \$164 million, equivalent to nearly 38% of the country's nominal 2017 gross domestic product. Tonga is also located within the Pacific Ring of Fire, which is associated with significant seismic activity. The volcanic eruption and tsunami in January 2022 resulted in estimated economic damage of \$90 million, including destruction and interruption of energy infrastructure across Tongatapu, including the proposed project area in Nuku'alofa (para 9). During disasters, failure in power distribution through damaged power lines

---

<sup>1</sup> ADB. 2017. [\*Report and Recommendation of the President to the Board of Directors: Pacific Renewable Energy Investment Facility\*](#). Manila. The implementation period of the facility has been extended until July 31 2027.

<sup>2</sup> The 11 small Pacific island DMCs are the Cook Islands, the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

<sup>3</sup> ADB. 2021. [\*Fragile and Conflict-Affected Situations and Small Island Developing States Approach\*](#). Manila.

<sup>4</sup> Government of Tonga, Department of Statistics. 2021. *Preliminary Census Data*. Nuku'alofa.

may cause electricity supply disruption, and repair and/or replacement of damaged utility poles may result in a significantly higher monetary cost.

6. **High network losses.** As part of the electricity supply chain, the power distribution system requires considerable investment and operation and maintenance efforts. Power distribution assets typically represent 20%–30% of the required power system investments in electricity industries worldwide. However, for Tonga, they represent about 42%. The standard losses in rural power distribution networks are about 5.0%, yet the losses are about 10.5% in Tonga. Greater losses mean an increased requirement for power generation, which makes improving the efficiency of the country's power system a matter of paramount importance for the government.

7. **Gender inequality.** Women's unpaid care burden is substantially increased by unreliable energy supply. Women have highlighted that their household tasks, such as laundry, cooking, and ironing, are significantly affected by the electricity supply. Access to electricity remains an issue—about 35% of the population relies on unclean cookstoves and fuels. Gender-based violence is prevalent, and surveys have found that women are very concerned for their safety during power outages. Women have limited representation in technical (about 20%) and senior (about 30%) roles in the energy sector.

8. **Government program.** To address the multiple development challenges of reducing high technical losses and incorporating climate and disaster resilience features for the electricity grids in Nuku'alofa, the government and Tonga Power Limited (TPL)<sup>5</sup> have implemented the Tonga Nuku'alofa Network Upgrade Project (TNNUP) in five central business district areas of Nuku'alofa.<sup>6</sup> The rehabilitation works under the TNNUP were completed for areas 1 and 2 and were funded by the Government of New Zealand (area 1) and ADB (area 2) through the Cyclone Gita Recovery Project.<sup>7</sup> The works in area 3 are being implemented with funding from the Government of Australia. When Cyclone Gita hit Tonga in 2018, about 54% of TPL's grid on Tongatapu had already been upgraded before the landfall of the cyclone. Of the network that had not yet been upgraded, 45% was damaged, compared with damage to only 5% of the upgraded network. The experience from the TNNUP demonstrates the disaster resilience benefits of updating inefficient and aging power network infrastructure.

9. **Proposed support.** At the government's request, the project will cover reliable access to the electricity supply network by upgrading the network to a higher standard of resilience to extreme weather conditions and other disasters. Between the remaining network upgrade requirements in areas 4 and 5 of TNNUP, network improvement in area 5 is critical, especially to absorb the intermittent electricity generated from both the ongoing and scheduled renewable energy developments. Therefore, area 5 (the project area) is prioritized for consideration under the project.<sup>8</sup> The investment will focus on climate change adaptation and "building back better" and provide some mitigation benefits, following the overall plans for upgrading the Nuku'alofa network. The project will support the government in upgrading about 6% of the network in Tongatapu by improving and/or replacing old, inefficient, and less climate-resilient assets.

<sup>5</sup> TPL is a vertically integrated government-owned public enterprise under the Ministry of Public Enterprises and the government's cabinet. TPL has the concession for and operates four independent grids for on-grid electricity services. These are on the main islands of the Tongatapu and Vava'u, Ha'apai, and 'Eua island groups, where it generates, distributes, and retails electricity, and provides operation and maintenance services.

<sup>6</sup> The TNNUP restored reliable access to the electricity supply network by upgrading the network to a higher standard of disaster resilience to overcome extreme weather conditions and other disasters.

<sup>7</sup> ADB. 2018. [\*Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Kingdom of Tonga for the Cyclone Gita Recovery Project\*](#). Manila.

<sup>8</sup> Network improvement in area 4 will be considered for future investments to continue the strategic partnership with the government and development partners and to fully utilize the benefits in the Nuku'alofa network.

10. **Impact of the pandemic.** Tonga has been impacted by the coronavirus disease (COVID-19) pandemic, compounded by disaster events, with declining economic activity in tourism, transport, communication, and trade. There were 16,182 confirmed COVID-19 cases and 12 deaths reported as of 11 November 2022. With the support of development partners, including ADB, the government has implemented pandemic mitigation programs.<sup>9</sup> Quality infrastructure is a central component of the government's post-pandemic economic recovery strategy, so the project is highly relevant in a post-COVID-19 context. The stable power grids proposed under the project will help maintain the basic operations of urban health facilities, which are critical to reducing COVID-19 risks and managing any community transmission outbreak.

11. **Lessons.** Key lessons from ongoing and completed ADB energy sector projects incorporated in the project design include the need for (i) sufficient resources for project management, especially gender-sensitive aspects; (ii) standard technical specifications and flexible procurement methods to support standardization and compatibility with existing equipment in other areas of the TNNUP (footnote 6); (iii) close coordination with other development partners for sector support to share lessons, help meet quality standards and target timelines, and avoid unnecessary redundancy; and (iv) securing of timely funding for the remaining areas of the TNNUP to maintain the implementation momentum.<sup>10</sup>

12. **Alignment of development plans.** The project is a high priority for the government under the Tonga National Infrastructure Investment Plan 3, 2021–2030<sup>11</sup> and Tonga Energy Road Map Plus framework.<sup>12</sup> The project supports the efforts of the government initiated through the TNNUP. The project supports the operational priorities (OPs) of ADB's Strategy 2030 by (i) addressing remaining poverty and reducing inequalities (OP1); (ii) accelerating progress in gender equality (OP2); (iii) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability (OP3); (iv) making cities more livable (OP4);<sup>13</sup> and (v) strengthening governance and institutional capacity (OP6).<sup>14</sup> It will contribute to Sustainable Development Goal 7: ensuring access to affordable, reliable, sustainable, and modern energy for all. The project aligns with Tonga's Second Nationally Determined Contribution actions. The project supports the Nationally Determined Contribution action of achieving a 13% reduction of greenhouse gas by 2030 from the energy sector. The project is in line with the objectives of

<sup>9</sup> These include contributions from ADB through various technical assistance (TA) projects and health interventions, including Introducing eGovernment through Digital Health (\$7.5 million), Systems Strengthening for Effective Coverage of New Vaccines in the Pacific (\$5.5 million additional financing for Tonga), and a COVID-19 Emergency Response Project (\$1.03 million), which have been critical in managing the COVID-19 outbreak. Additionally, ADB has disbursed Tonga's full allocation of \$10 million under contingent disaster financing soon after the volcanic eruption and tsunami in January 2022, which has assisted the government with targeted programs to support the health sector and targeted cash transfers to businesses and vulnerable households.

<sup>10</sup> ADB. 2013. [\*Report and Recommendation of the President to the Board of Directors: Proposed Grant and Administration of Grant to the Kingdom of Tonga for the Outer Island Renewable Energy Project\*](#). Manila; ADB. 2015. [\*Report and Recommendation of the President to the Board of Directors: Proposed Grant and Administration of Grants for Additional Financing to the Kingdom of Tonga for the Outer Island Renewable Energy Project\*](#). Manila; ADB. 2016. [\*Report and Recommendation of the President to the Board of Directors: Proposed Loan and Grant for Additional Financing to the Kingdom of Tonga for the Outer Island Renewable Energy Project\*](#). Manila; ADB. 2018. [\*Facility Financing Proposal to the President: Proposed Grant and Administration of Grants for Additional Financing to the Kingdom of Tonga for the Outer Island Renewable Energy Project\*](#). Manila; ADB. 2014. [\*Report and Recommendation of the President to the Board of Directors: Proposed Grant and Administration of Grant to the Kingdom of Tonga for the Cyclone Ian Recovery Project\*](#). Manila; and ADB. 2018. [\*Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Kingdom of Tonga for the Cyclone Gita Recovery Project\*](#). Manila.

<sup>11</sup> Government of Tonga. 2021. *Tonga National Infrastructure Investment Plan 3, 2021–2030*. Nuku'alofa.

<sup>12</sup> Government of Tonga. 2021. *Tonga Energy Road Map PLUS framework, (2021-2035)*. Nuku'alofa.

<sup>13</sup> This will be done through enhancing the continuity and resilience of the energy supply during extreme weather events.

<sup>14</sup> ADB. 2018. [\*Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific\*](#). Manila.

ADB's 2021 Energy Policy, highlighting the support for countries in building higher resilience in the transmission and distribution subsector.<sup>15</sup> The project also aligns with ADB's Pacific Approach, 2021–2025, as it will help improve power supply side efficiency and vulnerability to disaster and the effect of climate change.<sup>16</sup>

**13. Financing under the Pacific Renewable Energy Investment Facility.** The project meets the qualifying criteria as set out in the PREIF report and recommendation of the President (footnote 1):

- (i) The project scope supports energy sector infrastructure by rehabilitating power distribution networks.
- (ii) Tonga is one of the 11 eligible Pacific DMCs.
- (iii) The project is included in the Tonga National Infrastructure Investment Plan 3 as a priority investment.
- (iv) The project is not classified as *category A* for the environment.

## **B. Project Description**

**14.** The project is aligned with the following impact: electricity supply reliability in Nuku'alofa improved (footnote 10). The project will have the following outcome: technical power losses and climate vulnerability of the electricity network in Nuku'alofa reduced.<sup>17</sup> The project has two outputs (paras. 15–16).

**15. Output 1: Nuku'alofa electricity network system improved.** This output will (i) rehabilitate 16.5 km of the 11-kilovolt (kV) medium-voltage transmission network, (ii) upgrade 50 km of the 0.4 kV low-voltage distribution network in seven villages, (iii) climate- and disaster-proof the Nuku'alofa electricity network benefiting 1,240 customer connections, and (iv) connect 59 new households.<sup>18</sup> It includes (i) converting the open overhead network to covered area bundled conductors, (ii) replacing overhead consumer connections with underground cables, and (iii) replacing aging distribution switchgear and old distribution poles with climate-resilient high-standard poles. This output will help the government address the dual challenges of reducing high technical losses (by 2.5 percentage points) and incorporating climate resilience features for the grids in Nuku'alofa. This output will also ensure that at least 25% of technical workers on the project sites are women. Moreover, this output will contribute to PREIF output 1, which includes the construction or rehabilitation of 300 km of transmission and distribution network.<sup>19</sup>

**16. Output 2: Project implementation capacity and gender inclusiveness of Tonga Power Limited operation enhanced.** Activities will include (i) providing project management support during procurement and construction, (ii) conducting technical and community safety training and a user education program for targeted female customers in the project area, (iii) preparing and implementing gender mainstreaming guidelines in TPL, and (iv) training TPL staff (including at least 30% women) on project management.

<sup>15</sup> ADB. 2021. [Energy Policy: Supporting Low-Carbon Transition in Asia and the Pacific](#). Manila.

<sup>16</sup> ADB. 2021. [Pacific Approach, 2021–2025](#). Manila.

<sup>17</sup> The design and monitoring framework is in Appendix 1.

<sup>18</sup> The total number of beneficiaries is estimated to be 5,100.

<sup>19</sup> By June 2025, the facility has the following performance indicators in the design and monitoring framework: (i) 80 megawatts of renewable energy generation capacity commissioned, (ii) 30 megawatt-hours of battery storage installed, and (iii) 300 kilometers of transmission and distribution network constructed.

### C. Value Added by ADB

17. The project is not considered suitable for a stand-alone private sector investment because it is not principally revenue earning but rather focuses on providing greater climate change resilience and social and economic benefits. Therefore, development partners, including the Government of Australia, the Government of New Zealand, and ADB, have jointly supported the implementation of the NNUP through separate projects. Moreover, ADB's financing, especially a grant from its expanded disaster and pandemic response facility, and its involvement with extensive experience in disaster recovery works will help the Government of Tonga and TPL to rehabilitate the power distribution network quickly while the country is recovering from the COVID-19 pandemic and the January 2022 volcanic eruption and tsunami in other sectors.

18. As part of ADB's integrated approach to support the generation, integration, and distribution of electricity from renewable energy sources in Tonga, the project will considerably reduce the offtake risks for private sector generation through network improvement, and create an enabling environment for further renewable energy development. The proposed network improvement in the project area is critical, especially to absorb the intermittent electricity generated from ongoing and scheduled renewable energy developments, such as the Hihifo 6-megawatt solar project<sup>20</sup> to be financed by ADB under its Pacific Renewable Energy Program.<sup>21</sup> The project will also complement previous ADB interventions, such as installation of two battery energy storage systems funded under the Renewable Energy Project, which will enable an increase in renewable energy generation by reducing its intermittency.<sup>22</sup> ADB's support for energy sector resilience will also complement its regional programs on disaster risk management.

### D. Summary Cost Estimates and Financing Plan

19. The project is estimated to cost \$8.70 million (Table 1). Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).<sup>23</sup>

**Table 1: Summary Cost Estimates**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Output 1: Nuku'alofa electricity network system improved	8.04
2. Output 2: Project implementation capacity and gender inclusiveness of Tonga Power Limited operation enhanced	0.16
<b>Subtotal (A)</b>	<b>8.20</b>
<b>B. Contingencies<sup>c</sup></b>	<b>0.50</b>
<b>Total (A+B)</b>	<b>8.70</b>

<sup>a</sup> The government will bear taxes and duties (noncash contribution). The Asian Development Bank will not fund any duties and taxes.

<sup>b</sup> In the first quarter of 2022 prices.

<sup>c</sup> Physical and price contingencies and a provision for exchange rate fluctuation are included.

Source: Asian Development Bank estimates.

<sup>20</sup> On 21 June 2021, the ADB President approved (i) a loan of \$3,000,000 from ordinary capital resources, and (ii) administration of up to \$2,000,000 from the Pacific Renewable Energy Program for the letter of credit facility for this project.

<sup>21</sup> ADB. 2019. [Report and Recommendation of the President to the Board of Directors: Pacific Renewable Energy Program](#). Manila. ADB's Private Sector Operations Department and the Pacific Department jointly developed this program under the One ADB approach.

<sup>22</sup> ADB. 2019. [Facility Financing Proposal to the President: Proposed Grants to the Kingdom of Tonga for the Renewable Energy Project](#). Manila.

<sup>23</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

20. The government has requested (i) a grant not exceeding \$5.00 million from ADB's Special Fund resources (Asian Development Fund) and (ii) a grant not exceeding \$2.20 million from ADB's Expanded Disaster and Pandemic Response Facility to help finance the project.<sup>24</sup> ADB will finance the expenditures in relation to the procurement of goods, works, and consultancy services. The government will finance duties and taxes of \$1.0 million (noncash contribution), and TPL will contribute \$0.5 million equivalent in project management and administrative costs. The government will make the grant proceeds available to TPL under a subsidiary grant agreement upon terms and conditions satisfactory to ADB. The summary financing plan is presented in Table 2.

**Table 2: Summary Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Special Funds resources (ADF grant)	5.0	57.5
Expanded disaster and pandemic response facility (DRF+ grant)	2.2	25.3
Tonga Power Limited <sup>a</sup>	0.5	5.7
Government of Tonga <sup>b</sup>	1.0	11.5
<b>Total</b>	<b>8.7</b>	<b>100.0</b>

ADF = Asian Development Fund, DRF+ = Expanded Disaster and Pandemic Response Facility.

<sup>a</sup> Tonga Power Limited will pay for project management and administrative costs.

<sup>b</sup> The government will bear duties and taxes as part of the government counterpart funding. The Asian Development Bank will not fund any duties and taxes.

Source: Asian Development Bank estimates.

21. Climate mitigation is estimated to cost \$0.18 million, and climate adaptation is estimated to cost \$2.12 million.<sup>25</sup> About 32% of the ADB financing is counted as climate financing.

## **E. Implementation Arrangements**

22. The Ministry of Finance (MOF) will be the executing agency. TPL will be the implementing agency. The sector-based project steering committee, comprising multiagency representatives, will oversee and guide project implementation. An ADB representative sits in the committee meetings as an observer to ensure appropriate action is taken on project implementation issues. A project management unit (PMU) has been established in TPL and will be supported by project implementation consultants. Implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 23).

23. **Value for money.** The project will achieve the best value for money by (i) establishing a force account with TPL for network construction works, leveraging TPL's technical expertise, experience, and lower cost, and providing economic and social benefits to Tonga through the use of local labor; (ii) attracting qualified international suppliers for high-value goods and equipment following open competitive bidding; (iii) enabling the participation of local contractors and suppliers for readily available off-the-shelf goods and simple works of low value by using the request for quotation method; and (iv) using e-procurement technology where feasible to lower the transaction cost and enhance process efficiency and transparency.

<sup>24</sup> On 10 August 2022, the director general of ADB's Strategy, Policy, and Partnerships Department approved an allocation of \$2.2 million of Asian Development Fund grant from the Expanded Disaster and Pandemic Response Facility, which provides Asian Development Fund grants to group A countries following disasters triggered by natural hazards and in accordance with para. 47 of the Staff Instructions on Business Processes for Concessional Resource Allocations. This grant will be used to upgrade the network in area 5 damaged by the volcanic eruption and tsunami (para 9).

<sup>25</sup> Details are in Climate Change Assessment (accessible from the list of linked documents in Appendix 2).



**Table 3: Implementation Arrangements**

Table 3: Implementation Arrangements			
Aspects		Arrangements	
Implementation period		December 2022–December 2026	
Estimated completion date		31 December 2026	
Estimated grant closing date		30 June 2027	
Management			
(i) Oversight body		Project steering committee Technical working committee: minister of the MEIDECC (chair); CEO of MEIDECC, CEO of Ministry of Finance, CEO of Public Enterprises, and CEO of Tonga Power Limited (members); representatives of Asian Development Bank (observers)	
(ii) Executing agency		Ministry of Finance	
(iii) Implementing agency		Tonga Power Limited	
(iv) Implementation unit		Tonga Power Limited, 4 staff	
Procurement	Open competitive bidding (internationally advertised)	2 contracts	\$4.25 million
	Request for quotation	7 contracts	\$0.85 million
	Force account <sup>b</sup>	1 contract	\$1.41 million
	Direct contracting	1 contract	\$0.03 million
Consulting services	Individual consultant selection	15 person-months (2 contracts)	\$0.16 million
Retroactive financing and advance contracting <sup>a</sup>	Advance contracting and retroactive financing will apply for package 1 (supply of conductors and hardware) and package 3 (supply of power poles). The amount to be financed retroactively will not exceed 20% of the ADB grant and may finance costs incurred prior to the grant effectiveness but not earlier than 12 months before the signing date of the ADB grant agreement.		
Disbursement	Disbursement of the grant proceeds will follow ADB's <i>Loan Disbursement Handbook</i> (2022, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank; CEO = chief executive officer; MEIDECC = Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication.

<sup>a</sup> The executing agency and the implementing agency have been informed that advance contracting and retroactive financing does not commit ADB to finance the project.

<sup>b</sup> The ADB grant will finance the incremental labor costs that Tonga Power Limited incurs in carrying out the project civil works via force account because of the scattered nature of the works to be conducted. Tonga Power Limited has a successful track record of implementing ADB projects using force account.

Source: Asian Development Bank.

### III. DUE DILIGENCE

#### A. Technical

24. The proposed network upgrade for the Nuku'alofa electricity network project is technically robust, following international best practices. A technical due diligence report has been prepared. The network designs provide a low-loss operation with inherent safety for the public, consumers, and maintenance staff, thus improving system reliability and efficiency. The materials proposed for procurement are of an international standard, and the construction carried out by TPL for similar scope in other areas (para. 9) is recognized as following international standards. The same construction standards will continue to be followed for the project area. The 2016 due diligence report has been reviewed, and the scope has been slightly revised to accommodate

developments since then.<sup>26</sup> Demand growth of about 10% has been observed since 2016. Therefore, the designs have been revised to cater to the expanded demand and pave the way for future growth because of increased economic activity.

25. The project scope entails upgrading the 11 kV medium-voltage transmission network and 0.4 kV low-voltage distribution network. The networks will be upgraded to aerial bundled conductors, replacing aging open conductors. Insulated underground cables will replace the overhead service connections (consumer connections). These technical modifications minimize losses (both technical and nontechnical) and improve voltage quality (stability and reliability). The improved designs provide resistance to outages because of tree interference, especially in adverse weather conditions, and are considerably safer for operation and maintenance. The network will be built on new 11-meter wooden poles. The switchgear, such as distribution transformers, will be pole or ground-mounted, thus improving their climate resilience by being able to withstand extreme cyclonic conditions. The technical diagnostic confirms (i) reduction of transmission and distribution losses; (ii) reduction in TPL's operational costs by decreasing generation; (iii) reduction in network faults, thus increasing reliability; and (iv) improved safety for the public and TPL staff.

## **B. Economic and Financial Viability**

26. **Economic analysis.** The project is expected to deliver greater benefits than costs from an economic point of view, and the project is economically viable. Given the project's focus on strengthening the network's disaster and climate change resilience, an economic discount rate of 6.0% is applied. Based on this, the project is considered economically viable, as the estimated baseline economic internal rate of return of 6.7% is higher than the applicable economic discount rate. The project also remains economically viable under the most adverse scenarios. Network investment projects are capital-intensive and sensitive to capital cost overruns. In this case, project capital costs are well informed by TPL's experience since 2016 in completing similar projects for other areas of the Nuku'alofa network, along with the earlier Cyclone Gita Recovery Project and TNNUP. Thus, a 10% capital cost overrun is considered unlikely. The sensitivity analysis confirms that the project remains viable in such a case, albeit with a lower economic internal rate of return of 6.0%.<sup>27</sup>

27. **Financial analysis.** The project is primarily designed to mitigate disaster and climate change impacts and is therefore not principally revenue-earning. Therefore, the financial analysis does not focus on financial viability but instead evaluates financial sustainability. The financial sustainability analysis confirms that the project generates a strong, positive, and sustainable cash flow in its operational phase. Tonga's economic regulatory framework for electricity distribution is set out in legislation, and TPL's concession contract is administered by the Tonga Electricity Commission. The framework specifies that TPL can recover operating-related costs and earn a regulated return on investment (currently 8.5% real post-tax) on assets funded by debt or equity. This regulatory regime provides income certainty and a mechanism through which TPL can pass its fuel cost exposure to electricity consumers. The mechanism removes outside factors from the tariff-setting process and ensures that TPL can remain financially sustainable. During fiscal year (FY) 2016–FY2020, TPL's financial performance was generally solid, except for impacts related to the COVID-19 pandemic. TPL has returned a net profit and an acceptable return on net fixed assets during this period. It has generally controlled costs effectively and maintained a respectable capital investment program, deferring capital expenditure when tight cash flow exists. TPL's

<sup>26</sup> TPL. 2016. *Due Diligence of Tonga Nuku'alofa Distribution Network Upgrade Project*. Nuku'alofa.

<sup>27</sup> Financial Analysis and Economic Analysis (accessible from the list of linked documents in Appendix 2).



strong financial performance is projected to continue, underpinned by a concession contract that is anticipated to be renewed for a further 5-year period in FY2026.

### C. Sustainability

28. TPL has extensive experience following ADB guidelines in implementing projects. TPL will allocate full-time staff under the PMU, and TPL will recruit individual project management consultants to support the PMU. TPL also has adequate capacity and resources to operate and maintain its power network assets. TPL has a tariff regime sufficient for full-cost recovery, which can support its financial sustainability.

### D. Governance

29. **Financial management.** The financial management capacity of TPL has been assessed and found to be adequate for the grant. TPL has experience implementing other ADB projects and understands ADB's disbursement and financial management requirements. TPL has well-documented financial processes and procedures. The assessed pre-mitigation financial management risk is *moderate*, and strengthening is required with its internal audit function. The increased workload of the project accountant needs to be monitored, and additional support will be provided as necessary. The decision to retain a separate project accounting system from TPL's enterprise resource planning system needs to be revisited. In 2019, the MOF officially established the internal audit unit to help improve risk management and governance processes. A financial management action plan has been prepared.

30. **Procurement.** ADB and TPL have conducted a strategic procurement planning exercise, including project procurement risk assessment and market analysis. The overall (post-mitigation) project procurement risk is rated *moderate*. While TPL's procurement capacity has progressively improved through experience in procurement of similar types of goods and works in energy sector projects financed by ADB, its capacity will need to be supplemented with external consulting support considering the scale of procurement activities under this project. The strategic procurement planning report recommends the following mitigating measures: (i) ADB's prior review of bidding documents and bid evaluation reports for complex and high-value contracts; (ii) use of an e-procurement system (such as TenderLink) where feasible to advertise and receive bids in view of COVID-19-related travel restrictions faced by bidders and to enhance transparency and efficiency; (iii) establishment of a force account with TPL for network construction works in view of its expertise and exclusive rights to operate the distribution network and the absence of capable suppliers for such sophisticated works in the local market; and (iv) recruitment of a project management specialist (an individual consultant) to support the MOF and TPL for procurement activities (e.g., developing technical specifications, and preparing bidding documents and bid evaluation reports) and contract management activities for effective project implementation. ADB staff will oversee procurement activities under the project to ensure good governance.

31. **Anticorruption.** Tonga continues to improve control of corruption with mitigation measures in place. It adopted the Public Procurement Regulations in 2010 (updated in 2015 and amended in 2019), which paved the way for the creation of the Government Procurement Committee, which monitors all public procurement activities. Tonga set up its Anti-Corruption Commission in 2008. The Office of the Auditor General is efficiently performing its task of ensuring that the whole-of-government financial reports are audited and disclosed, with findings tabled by the Public Accounts Committee.

32. Integrity due diligence was conducted on TPL, its board of directors, and key senior management members.<sup>28</sup> They do not appear to constitute a potentially significant integrity risk on the project, particularly relating to money laundering or terrorism financing in the project jurisdiction. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government, the MOF, and TPL. The specific policy requirements and supplementary measures are described in the PAM (footnote 23).

## **E. Poverty, Social, and Gender**

33. The project's beneficiaries are the residents of Tonga in the project area, specifically in the villages of Sopu, Tuatakilangi, Hala'ovave, Maui, 'Isileli, Siaatoutai, and Hofoa. Tonga is dependent on imported petroleum to meet its energy needs for electricity and transportation. Electricity generation consumes about 16 million liters of fuel annually, costing about 10.0% of the total gross domestic product. TPL will upgrade the project area's existing low- and medium-voltage electrical networks. It will minimize power distribution losses and reduce fuel consumption at the existing diesel power plants. From the poverty assessment, about 22.1% of the population lived below the poverty line in 2015. About 83% of households in the project area were connected to electricity in 2016. Connection of all households within the project area to reliable and efficient electricity would have positive impacts on poverty. The health and disability information in the 2016 census reports that about 5.0% of people within the project area live with some form of disability. Consistent electricity supply by reducing power failure and shortening restoration time within the project area would benefit these groups who are more vulnerable and unsafe at times of power outages.

34. **Gender.** The project is categorized as *effective gender mainstreaming*, with gender targets across both outputs in the project's design and monitoring framework and 13 targets in the gender action plan (GAP). The project supports women and girls as energy users and increases employment opportunities for women in the energy sector. Consultations and surveys in due diligence highlighted several challenges for women, including energy affordability (given additional constraints women face in accessing finance and energy-related services) and concerns relating to safety during power disruptions (87% of women surveyed said they were concerned or very concerned for their safety). The gap in labor force participation between men and women is widening (71% for men and 57% for women), and women's participation in leadership and technical roles continues to be limited. Previous ADB projects (footnote 10) have supported several positive outcomes for women in the energy sector, including increasing the number of lineswomen and supporting several all-women line crews in TPL.

35. The GAP will address these concerns and build on opportunities. The GAP contains targets for women's employment, including supporting women to complete the practical requirements for training and certification in technical areas. In addition, the project will support livelihoods training for women who want to develop micro, small, and medium-sized enterprises, including all no-income women respondents surveyed. To address issues of safety, at least one workshop will be conducted in each village to raise awareness of the safety concerns of women and girls, and safety measures will be identified and implemented. A user education program on safety and energy efficiency focusing on women as a priority group will enhance safety and build community resilience. TPL has made significant progress toward increasing gender equality in the workforce and challenging gender stereotypes. New gender mainstreaming guidelines will be developed, approved, and adopted to institutionalize the progress.

---

<sup>28</sup> ADB. 2003. [\*Enhancing the Asian Development Bank's Role in Combating Money Laundering and the Financing of Terrorism\*](#). Manila.

## F. Safeguards

36. In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.<sup>29</sup>

37. **Environment (category B).** An initial environmental examination (IEE) has been developed. The IEE has been cleared by ADB and will support the application for clearance under the country system by the Department of Environment. The IEE will be disclosed on the ADB website. TPL has experience implementing similar projects and will retain the PMU for project implementation. The PMU will recruit a full-time environment management officer to implement and monitor safeguards and all project compliance, with additional capacity building support provided to the project through the ADB Pacific Department's regional Sustainable Capacity Development for Safeguards in the Pacific knowledge and support technical assistance (TA), including an independent review of the construction environmental management plan that TPL will prepare.<sup>30</sup> The PMU will monitor TPL's compliance with the approved construction environmental management plan through routine monitoring conducted by the environmental management officer and inspections conducted by the existing independent engineer of the PMU. The international specialist engaged through the regional safeguards TA will undertake additional reviews and monitoring.

38. **Involuntary resettlement (category C).** The project will not require land acquisition or create any involuntary resettlement impacts as the proposed physical works will be undertaken on land already owned by the government. A due diligence report has been prepared to document the ownership of the affected site. The PMU will prepare semiannual safeguards monitoring reports that ADB will clear before being disclosed. A grievance redress mechanism will be established under the PMU to record and address any complaints received relating to the project.

39. **Indigenous peoples (category C).** The project will not adversely affect any indigenous peoples or any site of national significance.

## G. Summary of Risk Assessment and Risk Management Plan

40. There are risks associated with the project, and mitigating measures have been incorporated into the project design. Significant risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>31</sup>

**Table 4: Summary of Risks and Mitigating Measures**

<b>Risks</b>	<b>Mitigation Measures</b>
An insufficient number of bidders able to supply all requirements of a combined conductors and hardware package leads to low competition or a failed bid.	The package is divided into "lots" to allow smaller or specialist suppliers to bid on parts of the package.
The procurement process takes longer than anticipated.	A technical consultant has been engaged to assist with drafting technical specifications and with the tender process.

<sup>29</sup> ADB. 2009. [Safeguard Policy Statement](#). Manila.

<sup>30</sup> ADB. [Technical Assistance for Sustainable Capacity Development for Safeguards in the Pacific - Phase 1](#). Manila. Phase 2 is expected to be approved in late 2022.

<sup>31</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

<b>Risks</b>	<b>Mitigation Measures</b>
Weaknesses of the current internal audit function may allow for lapses in internal control.	Tonga Power Limited has completed the recruitment of a qualified and experienced internal auditor to attend the Asian Development Bank training on disbursements, financial reporting, and auditing requirements.

Source: Asian Development Bank.

#### **IV. ASSURANCES AND CONDITIONS**

41. The government and TPL have assured ADB that implementation of the project shall conform to all applicable ADB requirements, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management, and disbursement as described in detail in the PAM and grant documents.

42. The government and TPL have agreed with ADB on certain covenants for the project, which are set forth in the draft grant agreement and project agreement. As a condition to grant disbursement, the government has to submit to ADB a subsidiary grant agreement, in form and substance acceptable to ADB, which shall be duly executed and delivered on behalf of the government and TPL and shall become fully effective and binding on the parties thereto in accordance with its terms, subject only to the effectiveness of the grant agreement.

#### **V. THE PRESIDENT'S DECISION**

43. The President, acting under the authority delegated by the Board, has approved the (i) grant not exceeding \$5,000,000 from the Special Funds resources (Asian Development Fund) of the Asian Development Bank (ADB); and (ii) grant not exceeding \$2,200,000 from the Expanded Disaster and Pandemic Response Facility to the Kingdom of Tonga for the Nuku'alofa Network Upgrade Project under the Pacific Renewable Energy Investment Facility, on terms and conditions that are substantially in accordance with those set forth in the grant and project agreements, and hereby reports this action to the Board.

## DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with			
Electricity supply reliability in Nuku'alofa improved (Tonga National Infrastructure Investment Plan 3, 2021–2030) <sup>a</sup>			
Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
<b>Outcome</b> Technical power losses and climate vulnerability of the electricity network in Nuku'alofa reduced	By the end of 2028: a. Network restoration time shortened to 2 days (2022 baseline: 10 days) (OP 1.3, OP 3.1, OP 4.1, OP 2.1.4, OP 2.5, OP 3.2.5)  b. Distribution network losses in Nuku'alofa reduced to 8% (2021 baseline: 10.5%) (OP 1.3, OP 3.1, OP 4.1.2, OP 6.2)  c. Greenhouse gas emissions reduced by 38 tons per annum (2022 baseline: not applicable) (OP 3.1)	a.–c. TPL annual reports, project progress reports.	R: Delays in project implementation  A: All procurement activities are conducted on schedule
<b>Outputs</b> 1. Nuku'alofa electricity network system improved	By the end of 2026: 1a. 16.5 km of 11 kV medium-voltage network rehabilitated and upgraded (2022 baseline: not applicable) (OP 1.3, OP 3.1, OP 4.1.2, OP 6.2)  1b. 50 km of 0.4 kV low-voltage network in seven villages rehabilitated and upgraded (2022 baseline: not applicable) (OP 1.3, OP 3.1, OP 3.1.1, OP 3.1.3, OP 3.2, OP 4.1.2, OP 6.2)  1c. 1,240 customer connections (including all households headed by women) climate- and disaster-proofed (2022 baseline: not applicable) (OP 1.3, OP 3.1, OP 3.1.1, OP 3.1.3, OP 3.2, OP 4.1.2, OP 6.2)  1d. 59 new households connected (2022 baseline: 0) (OP 1.3, OP 3.1, OP 3.1.1, OP 3.1.3, OP 3.2, OP 4.1.2, OP 6.2)	1a.–e. Project progress reports, TPL annual reports.	R: Implementation delays related to COVID-19

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
2. Project implementation capacity and gender inclusiveness of TPL operation enhanced	<p>1e. At least 25% of technical workers on the project sites are women<sup>b</sup> (2022 baseline: not applicable) (OP 2.1)</p> <p>2a. Project management supported through consultancy services (2022 baseline: not applicable) (OP 6.1.1)</p> <p>2b. Gender mainstreaming guidelines in TPL prepared, approved, and adopted by management (2022 baseline: not applicable) (OP 2.3.2)</p> <p>2c. TPL staff, including at least 30% women, trained in project management (2021 baseline: 10%) (OP 2.3.2)</p>	2a.–c. Project progress reports, TPL annual reports.	

### Key Activities with Milestones

#### 1. Nuku'alofa electricity network system improved

- 1.1 Award contracts for equipment supply (by Q4 2023)
- 1.2 Complete works (by Q4 2026)

#### 2. Project implementation capacity and gender inclusiveness of TPL operation enhanced

- 2.1 Recruit project management and gender consultants (by Q1 2023)
- 2.2 Monitor and report project implementation and implement gender action plan (by Q4 2026)

### Project Management Activities

Project management unit established (already established)

### Inputs

Asian Development Bank: \$7.2 million (grant)  
Government of Tonga: \$1.0 million  
TPL: \$0.5 million

A = assumption, COVID-19 = coronavirus disease, km = kilometer, kV = kilovolt, OP = operational priority, Q = quarter, R = risk, TPL = Tonga Power Limited.

<sup>a</sup> Government of Tonga. 2021. *Tonga National Infrastructure Investment Plan 3, 2021–2030*. Nuku'alofa.

<sup>b</sup> Workers requiring or working toward trade certificates or qualifications.

### Contribution to Strategy 2030 Operational Priorities

Expected values and methodological details for all OP indicators to which this operation will contribute results are detailed in Contribution to Strategy 2030 Operational Priorities (accessible from the list of linked documents in Appendix 2).

Source: Asian Development Bank.

**LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=49450-036-2>

1. Grant Agreement (Special Operations)
2. Project Agreement
3. Sector Assessment (Summary): Energy
4. Project Administration Manual
5. Financial Analysis
6. Economic Analysis
7. Summary Poverty Reduction and Social Strategy
8. Risk Assessment and Risk Management Plan
9. Contribution to Strategy 2030 Operational Priorities
10. Climate Change Assessment
11. Gender Action Plan
12. Initial Environmental Examination

**Supplementary Documents**

13. Social Safeguards Due Diligence Report
14. Strategic Procurement Planning
15. Financial Management Assessment Report