ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 48346-002
October 2016

Proposed Grant and Administration of Grant Solomon Islands: Solar Power Development Project

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 30 September 2016)

Currency unit	–	Solomon Islands dollar (SI$)
SI$1.00	=	$0.12
$1.00	=	SI$8.12

ABBREVIATIONS

ADB	–	Asian Development Bank
FIRR	–	financial internal rate of return
FMA	–	financial management assessment
kW	–	kilowatt
kWh	–	kilowatt-hour
MMERE	–	Ministry of Mines, Energy and Rural Electrification
MW	–	megawatt
O&M	–	operation and maintenance
PAM	–	project administration manual
PMU	–	project management unit
SCF	–	Strategic Climate Fund
SREP	–	Scaling Up Renewable Energy Program

NOTE

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

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PROJECT AT A GLANCE

1. Basic Data

Project Number: 48346-002

Project Name	Solar Power Development Project	**Department /Division**	PARD/PATE
Country	Solomon Islands	**Executing Agency**	Ministry of Mines, Energy and Rural Electrification
Borrower	Ministry of Finance and Treasury		

2. Sector

	Sector	Subsector(s)	ADB Financing ($ million)
✓	**Energy**	Renewable energy generation - solar	2.24
		Total	**2.24**

3. Strategic Agenda

Strategic Agenda	Subcomponents
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive
Environmentally sustainable growth (ESG)	Eco-efficiency Global and regional transboundary environmental concerns Natural resources conservation
Regional integration (RCI)	Pillar 4: Other regional public goods

Climate Change Information

Mitigation ($ million)	2.24
CO_2 reduction (tons per annum)	840
Climate Change impact on the Project	High

4. Drivers of Change

Drivers of Change	Components
Governance and capacity development (GCD)	Institutional development Organizational development
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas Pilot-testing innovation and learning
Partnerships (PAR)	Implementation Private Sector
Private sector development (PSD)	Promotion of private sector investment Public sector goods and services essential for private sector development

Gender Equity and Mainstreaming

Effective gender mainstreaming (EGM)	✓

5. Poverty and SDG Targeting

Geographic Targeting	Yes
Household Targeting	No
SDG Targeting	Yes
SDG Goals	SDG7

Location Impact

Rural	High

6. Risk Categorization: Low

7. Safeguard Categorization

Environment: B **Involuntary Resettlement:** B **Indigenous Peoples:** C

8. Financing

Modality and Sources	Amount ($ million)
ADB	**2.24**
Sovereign Project grant: Asian Development Fund	2.24
Cofinancing	**6.20**
Strategic Climate Fund - SREP - Grant	6.20
Counterpart	**6.76**
Government	6.76
Total	**15.20**

9. Effective Development Cooperation

Use of country procurement systems	No
Use of country public financial management systems	Yes

Source: Asian Development Bank

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed grant to Solomon Islands for the Solar Power Development Project.[1] The report also describes the proposed administration or a grant to be provided by the Strategic Climate Fund (SCF),[2] and if the Board approves the proposed grant, I, acting under the authority delegated to me by the Board, approve the administration of the SCF grant.

2. The project will increase renewable energy generation in five of the eight Solomon Island provincial grids: Kirakira, Lata, Malu'u, Munda, and Tulagi. The project will help the country replace diesel generation with solar power hybrid grids including battery storage. This will be the first solar power project in Solomon Islands supported by battery storage. Following the project, solar power will generate about 78% of the electricity in the five targeted provincial grids. Project preparatory technical assistance was used in project preparation.[3]

II. THE PROJECT

A. Rationale

3. The project will support the development of renewable energy in Solomon Islands to (i) decrease the cost of generating electricity by replacing diesel power generation with cheaper solar power and (ii) reduce greenhouse gas emissions. The project will be financed through an Asian Development Bank (ADB) grant and an externally financed grant that ADB will administer.

4. Solomon Islands Electricity Authority (Solomon Power), a state-owned electricity utility, generates and supplies grid-connected electricity to the national capital (Honiara) and eight isolated provincial centers on separate islands (Auki, Buala, Gizo, Kirakira, Lata, Malu'u, Munda, and Tulagi). Solomon Islands has a population of 512,870, of which 64,609 (13%) live in the capital. Honiara has 34 megawatts (MW) of installed capacity with a peak load of 14 MW; the combined installed generation capacity in the provincial centers is 2.3 MW. All grid-connected power generation in Solomon Islands is diesel-generated, which resulted in an average national tariff of $0.76/kilowatt-hour (kWh) in January 2016—among the highest in the Pacific.[4] The high cost of electricity generation constrains economic growth, particularly in the commercial and tourism sectors.

5. The cost of electricity generation in the provincial grids is significantly higher than in Honiara, primarily because of high transportation costs for small volumes of diesel and small economies of scale for operation and maintenance (O&M) costs. The costly generation in the provinces is a disincentive for Solomon Power to extend the grid to new customers, as the national tariff does not cover the supply cost in these expensive areas.

6. Electricity access is low in Solomon Islands. Grid-connected electricity is supplied to about 16% of the population. While the access rate in the Honiara urban area is 64%, access in the remainder of the country is 6%, with five of nine provinces having access rates below 4%. Solomon Power is extending the distribution network and establishing renewable energy mini

[1] The design and monitoring framework is in Appendix 1.
[2] Under the Scaling Up Renewable Energy Program (SREP) in Low-Income Countries.
[3] The Asian Development Bank (ADB) provided project preparatory technical assistance for the Solar Power Development Project (TA 8756-SOL).
[4] Pacific Power Association. 2015. *Performance Benchmarking Report for Pacific Power Utilities*. Suva. This report indicates that the average domestic tariff across 21 Pacific utilities in 2012 was $0.45/kWh. The tariff allows for full cost recovery for Solomon Power's operations.

grids at village-sized centers, partially supported by the World Bank's Solomon Islands Sustainable Energy Project. The project aims to convert the provincial grids to renewable energy.[5] Grid-connected solar power has been assessed as the least-cost generation option for the proposed sites. Average annual solar irradiation of 2,000 kWh per square meter at these sites constitutes a major renewable source for power generation.

7. The project will construct a total of 2 MW of grid-connected solar power at five provincial grids: Kirakira, Lata, Malu'u, Munda, and Tulagi. It will include installation of battery storage to allow high penetration rates of intermittent solar power. The levelized cost of solar power (with battery storage) is $0.405/kWh, nearly 20% below the diesel generation cost of $0.501/kWh. Increased solar generation will benefit the economy by reducing fossil fuel imports and putting downward pressure on tariffs. Lower diesel consumption will significantly cut the O&M costs of transshipping diesel to remote centers. The conversion of provincial grids to renewable energy will support sustainable, least-cost growth in provincial centers. The project will significantly improve the quality and reliability of the electricity supply of the five targeted provincial grids, improving the lives of about 7,300 beneficiaries. The use of renewable energy also reduces greenhouse gas emissions, which contribute to global warming. The solar installations will help mitigate climate change by reducing carbon dioxide emissions by 840 tons equivalent per year.

8. Solomon Power will own and operate the solar power plants. To establish the enabling environment for grid-connected solar power, the project will include training of Solomon Power staff in O&M of these plants.[6] Solar power is modular and suitable for scaling up to meet growing demand. The project design includes oversized sites and grid connection equipment to allow for future expansion.

9. The power sector is prioritized under ADB's country partnership strategy for Solomon Islands, 2012–2016[7] and the project is included in the country operations business plan, 2016–2018.[8] The project also supports Solomon Islands National Development Strategy, 2016–2035, which prioritizes renewable energy and increasing electricity access.[9] Further, it is in line with the government's draft National Energy Policy Framework, 2013,[10] which promotes renewable energy expansion to reduce reliance on diesel generation and expand access to energy. ADB is implementing the Provincial Renewable Energy Project in Solomon Islands. Lessons learned that will be implemented by the current project include (i) the necessity to establish a fully staffed project management unit (PMU) early to minimize delays, (ii) the importance of securing land during initial phases of development, and (iii) the importance of provincial governments support during implementation.

[5] The remaining three provincial grids are (i) Auki, which is being supported under ADB. 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Grant to Solomon Islands for the Provincial Renewable Energy Project*. Manila (Loan 3127-SOL and Grant 0386-SOL) to construct hydropower plants; (ii) Gizo, which does not have sufficient available land to develop solar power; and (iii) Buala, which has an existing hydropower plant that is being rehabilitated with World Bank assistance.

[6] United Arab Emirates and New Zealand are supporting the construction of the 1 MW Henderson solar power plant for the Honiara grid. The project's capacity building will build on the support provided to Solomon Power at the Henderson solar power plant.

[7] ADB. 2012. *Country Partnership Strategy: Solomon Islands, 2012–2016*. Manila.

[8] ADB. 2015. *Country Operations Business Plan: Solomon Islands, 2016–2018.* Manila.

[9] Government of Solomon Islands, Ministry of Development Planning and Aid Coordination. 2016. *National Development Strategy, 2016–2035*. Honiara.

[10] Government of Solomon Islands, Ministry of Mines, Energy and Rural Electrification. 2013. *Solomon Islands' National Energy Policy Framework* (draft). Honiara.

B. Impact and Outcome

10. The impact will be increased utilization of renewable energy. The outcome will be an increased supply of reliable and cleaner electricity.

C. Outputs

11. The project will have two outputs:

(i) **Five grid-connected solar power plants.** The project will construct a total of 2 MW of grid-connected solar power generation at five provincial grids. Solar power capacity will be installed at Kirakira (320 kilowatts [kW]), Lata (290 kW), Malu'u (140 kW), Munda (1,000 kW), and Tulagi (250 kW). The project will include the installation of battery storage, which will allow high penetration rates of intermittent solar power. Battery storage sizing has been optimized and will replace from 66% to 87% of diesel generation at each site.[11] The project will include innovative technology in remote monitoring and control of the hybrid systems.

(ii) **Capacity building.** A training program will be conducted for Solomon Power operators on O&M of small grid-connected solar–diesel hybrid systems.

D. Investment and Financing Plans

12. The project is estimated to cost $15.2 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item			Amount[a]
A.	**Base Cost**[b]		
	1.	Solar hybrid systems	
		a. Kirakira	2.1
		b. Lata	2.0
		c. Malu'u	1.3
		d. Munda	4.9
		e. Tulagi	1.9
	2.	Capacity building	0.2
	3.	Project management	0.6
		Subtotal (A)	**13.0**
B.	**Contingencies**[c]		
	1.	Physical	1.3
	2.	Price	0.9
		Subtotal (B)	**2.2**
		Total (A+B)	**15.2**

[a] Includes taxes and duties of $1.3 million to be financed from government resources through exemptions.
[b] In mid-2015 prices.
[c] Physical contingencies computed at 10% for civil works and goods. Price contingencies computed at foreign inflation on foreign exchange costs and local inflation on local currency costs.
Source: Asian Development Bank estimates.

[11] Backup diesel generation will be maintained and will operate periodically during long cloudy periods, as well as for maintenance and unplanned outages.

13. The government has requested a grant not exceeding $2.24 million from ADB's Special Funds resources (Asian Development Fund) to help finance the project. The SCF[12] will provide grant cofinancing equivalent to $6.20 million, to be administered by ADB. From the proceeds of the Asian Development Fund grant and SCF grant, the government will make $8.44 million available as a grant in local currency to Solomon Power. Solomon Islands will finance the remaining $6.76 million cost of the project to cover civil works, land acquisition, site preparation, and taxes and duties. Since ADB is administering cofinancing resources in the form of grants from the SCF for operations financed by the Asian Development Fund, universal procurement will apply to all procurement packages under the project.[13] The financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Special Funds resources (grant)	2.24	14.7
Strategic Climate Fund (grant)[a]	6.20	40.8
Government[b]	6.76	44.5
Total	**15.20**	**100.0**

[a.] Under the Scaling Up Renewable Energy Program in Low-Income Countries. Administered by the Asian Development Bank.
[b.] Government financing includes civil works, land acquisition costs, site preparation works, and taxes and duties.
Note: the proposed project is a climate change mitigation project so all financing can be considered climate financing
Source: Asian Development Bank estimates.

E. Implementation Arrangements

14. The Ministry of Mines, Energy and Rural Electrification (MMERE) will be the executing agency for the project. Solomon Power will be the implementing agency; a PMU will be established within Solomon Power. Solomon Power will provide the following personnel for the PMU: (i) a project engineer, (ii) a finance officer, and (iii) an administrative assistant, as required. The project will finance additional consultants and equipment to support the PMU in achieving the outputs. A consulting firm will be engaged for support during design finalization, tendering, and project supervision, using the quality- and cost-based selection method with a quality–cost ratio of 90:10. Two consultants will be hired through individual consultant selection to provide up-front procurement support and site supervision support. All consultants will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The PMU will be responsible for the procurement of all civil works and goods, which will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). Solomon Islands has requested that ADB select the design and supervision consultants on its behalf. The government and the selected consultant will sign the contract. Additional financing for more sites may be considered if the project is performing well, and any additional project preparation financing that is required (in areas such as design, safeguards, and capacity) will be sourced from the additional financing.[14] A project steering committee will oversee implementation, monitor progress, and provide guidance to the executing agency. The

[12] The government received clearance from the SREP subcommittee to proceed with the project preparation on the basis of $6.2 million grant availability from SREP. The grant may finance local transportation and insurance costs.
[13] ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila.
[14] Additional financing preparation would be initially funded by the government and retroactively financed through the additional financing.

committee will meet at least quarterly and will be chaired by a representative from the MMERE. The PMU will host the project steering committee and will act as the secretariat.

15. The project will be implemented over 4 years with completion estimated by December 2020. To expedite implementation, the government has requested advance consultant recruitment, advance procurement, and retroactive financing. ADB has informed the government that approval of advance consultant recruitment, advance procurement, and retroactive financing does not commit ADB to finance the project. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM).[15]

Table 3: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	December 2016–December 2020		
Estimated completion date	December 2020 (closing date 30 June 2021)		
Management			
(i) Oversight body	Project steering committee Ministry of Mines, Energy and Rural Electrification (chair) Ministries of Finance and Treasury; Development Planning and Aid Coordination; Rural Development, and Indigenous Affairs; Environment, Conservation & Meteorology; and Solomon Power (members)		
(ii) Executing agency	Ministry of Mines, Energy and Rural Electrification		
(iii) Key implementing agencies	Solomon Power		
(iv) Implementation unit	The project management unit will be established within Solomon Power, with 3 Solomon Power staff, 3 international consultants (intermittent), and 3 national consultants (intermittent).		
Procurement	ICB	2 lots	$11.5 million
Consulting services	QCBS	26 person-months (4 consultants)	$0.5 million
	ICS	30 person-months (2 consultant)	$0.3 million
Retroactive financing and/or advance contracting	Advance contracting for ICS and QCBS. Advance procurement for civil works package. Retroactive financing for one ICS contract up to a maximum amount equivalent to 20% of the Asian Development Fund grant, eligible for expenditures incurred under the project before the effective date, but not earlier than 12 months before the date of the financing agreement.		
Disbursement	The grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, ICB = international competitive bidding, ICS = individual consultant selection, QCBS = quality- and cost-based selection.
Source: Asian Development Bank.

[15] Project Administration Manual (accessible from the list of linked documents in Appendix 2).

III. DUE DILIGENCE

A. Technical

16. The five solar–diesel hybrid systems have been assessed as technically viable. The project will construct solar photovoltaic power plants with specialized batteries for energy storage, which is considered the least-cost technology in view of the available renewable resources, necessary capital and operational costs, power output stability, and environmental impacts.[16] Modeling has optimized the battery storage sizing and solar integration levels based on site-specific data. The system design has been analyzed considering the assessed solar irradiation, load demand curve, grid conditions, hard marine environments, and extreme weather events such as cyclones. The solar–diesel hybrid systems will include remote monitoring and protection systems to stabilize the grid in line with international design standards. The PMU and the engineering, procurement, and construction engineers will provide O&M training to Solomon Power to support sustainable operation.

17. **Climate change**. The project has been classified *high risk* for climate change impact. A climate risk vulnerability assessment has been prepared. The major risks to the project from climate change are (i) an increase in cyclones, (ii) sea level rise at some sites, and (iii) a change in solar radiation. Climate change impacts have been accounted for in the project design.

B. Economic and Financial

18. **Economic.** The project is economically feasible with the economic internal rate of return estimated at 17.9%, which is higher than the economic opportunity cost of capital of 12.0% recommended in ADB's Guidelines for the Economic Analysis of Projects.[17] The economic internal rates of return for individual sites are as follows: Kirakira, 20.4%; Lata, 15.8%; Malu'u, 13.7%; Munda, 24.7%; and Tulagi, 15.8%. The economic benefits of the project are derived from (i) savings in diesel consumption, (ii) reduced O&M costs for solar power generation compared with diesel generation, and (iii) environmental improvements from reduced emissions from diesel power generation. A sensitivity analysis was undertaken to gauge the impact of unfavorable changes in variables on the net benefits, and to test the robustness of the project's viability. While the overall project is not sensitive to unfavorable changes in the expected costs and benefits, the viability of the Malu'u site is vulnerable to a 20% capital cost increase, a 20% benefit decrease, or a 1-year delay in operation. Sensitivity tests for other subprojects do not show similar vulnerabilities.

19. **Financial.** The project is financially viable with the financial internal rate of return (FIRR) estimated at 10.0%, which is higher than the (real) weighted average cost of capital of 5.8%. The net present value is estimated at $6.2 million. The FIRRs for individual sites are as follows: Kirakira, 13.1%; Lata, 8.9%; Malu'u, 5.4%; Munda, 12.7%; and Tulagi, 6.5%. A sensitivity analysis was conducted to account for potential increases in financial costs, as well as a reduction of financial benefits. The project is robust as the FIRR exceeds the weighted average cost of capital with a 20% increase in costs and a 20% decrease in revenues, as well as with a combined 20% increase in costs and 20% decrease in revenues.

[16] The feasibility design includes lead-acid batteries. However, contractors will propose optimum solutions.
[17] ADB. 1997. *Guidelines for the Economic Analysis of Projects.* Manila.

C. Governance

20. **Financial management**. A financial management assessment (FMA) was prepared for Solomon Power, which indicated the overall financial management risk is low.[18] An earlier FMA was completed in 2014 during the preparation of the Provincial Renewable Energy Project. The FMA for the current project reviewed progress toward the issues identified in 2014 and assessed any additional issues. Inadequacies noted in 2014 have largely been addressed, including improvements in the use of financial management software and enhancements to internal audit procedures. While Solomon Power's financial management has improved significantly since 2014, it still has limited experience in managing fund flows for infrastructure projects financed by multilateral development banks, as well as limited human resource capacity in its finance department. An international financial specialist will assist Solomon Power with fund flow procedures and train Solomon Power staff on ADB procedures.

21. **Procurement capacity**. Procurement at Solomon Power is governed by its *Procurement Policies & Procedures Manual*, revised on 29 January 2016, which is generally aligned with ADB's Procurement Guidelines. ADB conducted a procurement capacity assessment, which found that Solomon Power has an established procurement unit with considerable experience in procuring routine goods and minor projects. However, Solomon Power has limited experience in managing larger engineering, procurement, and construction packages—or with ADB procurement systems. To address these capacity constraints, the project will include an international procurement specialist to (i) train Solomon Power staff in procurement processes for preparation and management of larger contracts following ADB's Procurement Guidelines, particularly engineer–procure–construct contracts; (ii) manage the preparation of standard ADB bidding documents; and (iii) provide international expertise to support construction supervision. In addition, ADB will provide targeted procurement training and support during procurement.[19]

22. **Anticorruption measures.** ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and Solomon Power. The specific policy requirements and supplementary measures are in the PAM.

D. Poverty and Social

23. The project will benefit the poor from improved reliability of the power supply to schools and clinics, which will raise the quality of essential services. Electricity tariff reduction is also expected that will eventually reduce household expenditure on energy services. In addition, the project will reduce the impact of diesel generator noise and pollution on adjacent communities, and generate a limited number of jobs for local communities during implementation. The project is classified as a general intervention. While it does not address poverty directly, the project is expected to indirectly improve well-being and expand opportunities for livelihoods. The project will comply with applicable national labor laws and core labor standards, including equal pay for equal work regardless of gender, race, or ethnicity; and prohibiting child labor. The PMU will implement the poverty reduction measures.

24. The project is categorized as *effective gender mainstreaming*. A gender action plan, developed based on a gender analysis and community consultations, includes measures related to the construction of the solar power plants such as (i) women's engagement in consultation

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

[19] Supported by ADB. 2016. *Technical Assistance for Building Project Implementation Capacities in the Pacific*. Manila.

activities, (ii) provision of gender-awareness training to target groups, (iii) actions to encourage women's participation in project-related contracts, and (v) collection of gender-related data for monitoring purposes.

E. Safeguards

25. **Environment**. The project has been classified category B for the environment following ADB's Safeguard Policy Statement (2009). An initial environmental examination was prepared and disclosed on the ADB website. The potential environmental impacts during construction are mainly vegetation clearance, soil erosion, and waste disposal at some sites. The main potential impacts during operation are noise from backup diesel generators and waste disposal (batteries).[20] The initial environmental examination and the environmental management plan will be included in the bidding documents. If the scope of the works changes, the PMU will compile an updated initial environmental examination and environmental management plan to be approved by ADB. As part of the assessment, a climate change adaptation risk evaluation was conducted and considered in the project design. An environment specialist will support the PMU.

26. **Involuntary resettlement and indigenous peoples**. The project has been classified category B for resettlement and category C for indigenous peoples following ADB's Safeguard Policy Statement. The project will have land acquisition impacts that are not considered significant. No physical relocation of persons or loss of income is expected from the implementation of the project. The project will need to acquire about 5.7 hectares of leasehold title land held by other government departments and state-owned enterprises.[21] The project will not need to acquire any land from customary landowners. No long-term impacts are expected as the construction and operation will not restrict the community from accessing and using nearby resources. Adverse impacts such as the loss of trees or crops being farmed on the state land, or exposure to potential health hazards because of the entry of noncommunity workers, are likely to be minor. A draft resettlement plan has been prepared. Communities adjacent to the project sites will be consulted during implementation. Information, such as a brochure in the local language, has been disseminated to adjacent communities and local stakeholders. Solomon Power has endorsed the resettlement plan, which was disclosed on the ADB website.

27. Solomon Power will finalize the resettlement plan after approving the detailed design from the contractor and will ensure the land title has been transferred to Solomon Power before the start of civil works. The project will help strengthen Solomon Power's social safeguard capacity, including recruiting a social safeguard specialist to assist with project implementation. The due diligence concluded that, while clans live in the project areas, their institutions are not separate from mainstream society and these groups are not vulnerable. As the project has been categorized as C, an indigenous peoples plan is not required.

F. Risks and Mitigating Measures

28. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[22] The risks of the project have been assessed and the benefits are expected to outweigh the costs.

[20] The environmental management plan stipulates the requirements for appropriate disposal of batteries.
[21] No land was purchased in anticipation of ADB funding.
[22] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Public financial management: Insufficient financial management capacity within Solomon Power	Project monitoring, and separate project records and accounts will be maintained; imprest accounts will not be used; and an international financial specialist will be recruited to assist the PMU.
Procurement: Recruitment of design and supervision consultants (DSC) delayed	Recruitment of DSC has been delegated to ADB.
Procurement: Insufficient procurement capacity in the PMU to manage ADB procurement procedures	An international procurement specialist will support the PMU and train staff on ADB procedures.
Procurement: Low capacity of local contractors results in poor-quality installations	Bidding documents will require (i) evidence of commitments, and (ii) demonstrated experience in contracts of similar size.
Technical: Proposed technology is new to Solomon Power, which may not have technical skills to operate and maintain the systems	Solomon Power staff will undertake training in operation and maintenance of solar hybrid grids.
Technical: Major customers disconnect from grid and self-generate.	Improved consultations with key major customers.
Capacity: Staffing of the PMU is not sufficient to manage project implementation adequately	The PMU will be adequately staffed, and ADB will review the project twice a year to monitor implementation. ADB will provide procurement assistance as required.[a]
Capacity: Solomon Power is unable to retain trained staff to operate the solar–diesel hybrids	Training program will be implemented to ensure that an adequate number of operators is available.

ADB = Asian Development Bank, DSC = design and supervision consultant, PMU = project management unit.
[a] 2016. *Technical Assistance for Building Project Implementation Capacities in the Pacific*. Manila.
Source: Asian Development Bank.

IV. ASSURANCES

29. The government and Solomon Power have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and financing documents. The government and Solomon Power have agreed with ADB on certain covenants for the project, which are set forth in the financing and project agreements.

V. RECOMMENDATION

30. I am satisfied that the proposed grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the grant not exceeding $2,240,000 to Solomon Islands, from ADB's Special Funds resources, for the Solar Power Development Project, on terms and conditions that are substantially in accordance with those set forth in the draft financing and project agreements presented to the Board.

Takehiko Nakao
President

31 October 2016

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned With

Utilization of renewable energy increased as stated under National Development Strategy, 2016–2025.[1]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome An increased supply of reliable and cleaner electricity	a. Reduced diesel importation by 0.9 million liters per year by June 2020, relative to January 2017 b. Renewable energy generation increased as a percentage of power generation in the five provincial grids to 78% by December 2020 (January 2017 baseline: 0%) c. Carbon dioxide emissions reduced by 840 tons of carbon dioxide equivalent per year by December 2020	a. Solomon Power annual corporate report b. Project management unit (PMU) quarterly reports	Major customers disconnect from grid and self-generate, reducing utilization of increased supply of renewable energy.
Outputs 1. Five grid-connected solar power plants put into operation	1a. Solomon Power installs 2 megawatts of solar power by December 2020 1b. Solomon Power generates 3.1 gigawatt-hours a year of solar power by December 2020	1a–b. Solomon Power annual corporate report	Solomon Power does not maintain sufficient technical staff to operate and maintain solar plants.
2. Capacity building program undertaken	2. Implement training program for 10 Solomon Power staff in solar power plant operation, including on-the-job training during construction and operation as well as course work accreditation (with a target of 20% women participation) by December 2020	2. PMU quarterly reports	

[1] Government of Solomon Islands, Ministry of Development Planning and Aid Coordination. 2016. *National Development Strategy, 2016–2025.* Honiara.

Key Activities with Milestones

1. Five grid-connected solar power plants put into operation by Solomon Power
1.1 Solomon Power advertises bidding documents for solar plants by February 2017.
1.2 Solomon Power completes land acquisition by February 2017.
1.3 Solomon Power awards design, supply, and installation contract by June 2017.
1.3 Solomon Power commissions solar plants by December 2020.

2. Capacity building program undertaken
2.1 PMU completes five training workshops for solar power plant operators by September 2018.
2.2 PMU conducts on-the-job training for 10 Solomon Power staff by December 2020.
2.3 PMU staff (minimum 20% women) and Solomon Power management receive procurement and financial management training, including gender-awareness training, by September 2018.

Inputs

Asian Development Bank (ADB):	$2.24 million (Asian Development Fund grant)
Strategic Climate Fund:	$6.20 million (grant)
Government of Solomon Islands:	$6.76 million

Assumptions for Partner Financing

Not Applicable

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=48346-002-3

1. Grant Agreement (Special Operations)
2. Grant Agreement (Strategic Climate Fund)
3. Project Agreement
4. Sector Assessment (Summary): Energy
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Financial Analysis
9. Economic Analysis
10. Country Economic Indicators
11. Summary Poverty Reduction and Social Strategy
12. Gender Action Plan
13. Initial Environmental Examination
14. Resettlement Plan
15. Risk Assessment and Risk Management Plan