Report and Recommendation of the President to the Board of Directors

Project Number: 48346-002
May 2016

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

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 25 March 2016)

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

ABBREVIATIONS

ADB	–	Asian Development Bank
DSC	–	design and supervision consultants
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
FMA	–	financial management assessment
kW	–	kilowatt
kWh	–	kilowatt-hour
MW	–	megawatt
PMU	–	project management unit
SCF	–	Strategic Climate Fund
SDR	–	special drawing right
WACC	–	weighted average cost of capital

NOTE

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

Vice-President	S. Groff, Operations 2
Director General	X. Yao, Pacific Department (PARD)
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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	**Subsector(s)**	**ADB Financing ($ million)**
✓ **Energy**	Renewable energy generation - solar	3.00
	Total	**3.00**

3. Strategic Agenda	**Subcomponents**	**Climate Change Information**	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change Impact on the Project	High
Environmentally sustainable growth (ESG)	Eco-efficiency Natural resources conservation		
Regional Integration (RCI)	Pillar 4: Other regional public goods		

4. Drivers of Change	**Components**	**Gender Equity and Mainstreaming**	
Governance and capacity development (GCD)	Institutional development Organizational development	Effective gender mainstreaming (EGM)	✓
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		

5. Poverty Targeting		**Location Impact**	
Project directly targets poverty	Yes	Rural	High
Geographic targeting (TI-G)	Yes		

6. Risk Categorization: Low

7. Safeguard Categorization **Environment: B** **Involuntary Resettlement: B** **Indigenous Peoples: C**

8. Financing

Modality and Sources	**Amount ($ million)**
ADB	**3.00**
Sovereign Project grant: Asian Development Fund	2.00
Sovereign Project loan: Asian Development Fund	1.00
Cofinancing	**6.20**
Strategic Climate Fund - SREP - Grant	6.20
Counterpart	**6.00**
Government	6.00
Total	**16.20**

9. Effective Development Cooperation

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

I. THE PROPOSAL

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

2. The Project will increase renewable energy generation in five of the eight Solomon Island provincial grids, consisting of Kirakira, Lata, Malu'u, Munda and Tulagi. The Project will assist Solomon Islands replace existing 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, an estimated 78% of power generated at the five targeted provincial grids will be from solar power. Project preparatory technical assistance was used in Project preparation.[3]

II. THE PROJECT

A. Rationale

3. The Project will support development of renewable energy in the Solomon Islands. The Project will (i) decrease the cost of generating electricity by replacing diesel power generation with solar power, and (ii) reduce greenhouse gas emissions. The Project is proposed to be financed through a loan and grant and externally-financed grant which will be administered by ADB.

4. Grid-connected electricity in Solomon Islands is generated and supplied by Solomon Islands Electricity Authority (Solomon Power), which is a state-owned electricity utility. Solomon Power provides 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 total population of 512,870 and the capital Honiara has a population of 64,609 (13% of total population). Installed capacity in Honiara is 34 Megawatt (MW) (peak load 14MW) and combined installed generation capacity in the provincial centers is 2.3MW. All grid-connected power generation in Solomon Islands is diesel generated, which has resulted in an average national tariff of $0.76/kilowatt hour (kWh) in January 2016, amongst the highest in the Pacific.[4] The high cost of electricity generation is negatively impacting economic growth, particularly the commercial and tourism sectors.

5. The cost of electricity generation in the provincial grids is significantly higher than in Honiara, primarily due to high transportation costs for small volumes of diesel and low economies of scale for operation and maintenance costs. High cost of generation in the provinces provides a disincentive for Solomon Power to extend the grid to new customers, as the national tariff does not cover the cost of supply in these high cost centers.

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[1] Under the Scaling Up Renewable Energy Program in Low-Income Countries.
[2] The design and monitoring framework is in Appendix 1.
[3] ADB. 2014. *Technical Assistance for the Solar Power Development Project.* Manila.
[4] Pacific Power Association, Performance Benchmarking Report for Pacific Power Utilities, 2015 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.

6. Electricity access is low in Solomon Islands. Grid-connected electricity is supplied to approximately 16% of the population of Solomon Islands. While the overall access rate in Honiara urban area is 64%, access in the remainder of the country is 6%, with 5 out of 9 provinces having access rates below 4%. Solomon Power is currently rolling out a program to extend the distribution network and establish renewable energy mini-grids at village sized centers, partially supported by the World Bank.[5]

7. The Project is targeting conversion of provincial grids to renewable energy.[6] Various alternative generation options were assessed and grid-connected solar power has been identified as the least cost generation option for the proposed sites. Average annual solar irradiation of around 2,000kWh per square meter at these sites constitutes a major renewable source for power generation.

8. The Project will construct a total of 2MW grid-connected solar power at five provincial grids, consisting of Kirakira, Lata, Malu'u, Munda and Tulagi. The project will include installation of battery storage which will allow high penetration rates of intermittent solar power. Levelized cost of solar power (with battery storage) is $0.405/kWh, which compares favorably with diesel generation costs of $0.501/kWh.

9. Increased solar generation will benefit the economy through reduced importation of fossil fuels and downward pressure on tariffs. Reduced diesel consumption significantly simplifies operation and maintenance costs of trans-shipping diesel to remote centers. Conversion of provincial grids to renewable energy supports sustainable least-cost growth in provincial centers. The proposed project will significantly improve the quality and reliability of the electricity to the 5 targeted provincial grids. This will benefit an estimated 7,300 beneficiaries in the 5 targeted provincial centers.

10. Utilization of renewable energy also reduces greenhouse gas emissions which contribute to global warming. The proposed solar installations will assist to mitigate climate change by reducing CO_2 emissions by 840 tCO2e per annum.

11. The solar power plants will be owned and operated by Solomon Power. In order to establish the enabling environment for grid-connected solar power, the Project will include training of Solomon Power staff in operation and maintenance of solar power plants.[7] Solar power is modular and suitable for upscaling to meet growing demand. Project design includes oversized site layout and oversized grid connection equipment to allow for future expansion.

12. The Project is included in the ADB's country partnership strategy, 2012-2016[8] and the country operations business plan 2016-2018.[9] The Project supports Solomon Islands National Development Strategy 2016-2035, which prioritizes renewable energy and increasing electricity

[5] Solomon Islands Sustainable Energy Project (SISEP).
[6] The remaining three provincial grids are (i) Auki, which is being supported under Provincial Renewable Energy Project to convert to hydropower, (ii) Gizo, which does not have sufficient available land to develop solar power, and (iii) Buala, which has an existing hydropower plant, which is currently being rehabilitated with support from World Bank.
[7] United Arab Emirates and New Zealand are currently supporting construction of the 1MW Henderson Solar Power Plant for the Honiara grid. The Project capacity building support will build on the support provided to Solomon Power at the Henderson Solar Power Plant.
[8] ADB. 2012. *Country Partnership Strategy: Solomon Islands, 2012-2016*, Manila.
[9] ADB. 2015, *Country Operations Business Plan 2016-2018,* Manila.

access[10]. The Project also supports Solomon Islands Draft National Energy Policy Framework, 2013[11] which promotes expansion of renewable energy in order to reduce reliance on diesel generation and expand access to energy. ADB is currently implementing Loan 3127/Grant 0386 Provincial Renewable Energy Project in Solomon Islands. Lessons learnt which will be implemented, include (i) necessity to establish fully staffed PMU early to minimize delays, (ii) importance of securing land during initial phases of development, and (iii) importance of provincial Governments in supporting implementation.

B. Impact and Outcome

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

C. Outputs

14. The outputs of the project are as follows:

(i) **Five grid-connected solar power plants.** The Project will construct a total of 2MW grid-connected solar power generation at five provincial grids. Installed solar power capacity will be Kirakira (320 kilowatt [kW]), Lata (290kW), Malu'u (140kW), Munda (1,000kW) and Tulagi (250kW). The project will include installation of battery storage which will allow high penetration rates of intermittent solar power. Battery storage sizing has been optimized and will replace between 66% and 87% of diesel generation at each of the 5 sites.[12] The Project will include innovative technology in remote monitoring and control of the hybrid-systems.

(ii) **Capacity building.** An operation and maintenance training program will be implemented for Solomon Power operators in the management of small grid connected solar-diesel hybrid systems.

D. Investment and Financing Plans

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

[10] Solomon Islands Ministry of Development Planning and Aid Coordination, 2016, National Development Strategy 2016-2035, Honiara.

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

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

Table 1: Project Investment Plan ($ million)

Item			Amount[a]
A.	**Base Cost**[b]		
	1.	Solar Hybrid Systems	
		(i) Kirakira	2.1
		(ii) Lata	2.0
		(iii) Malu'u	1.3
		(iv) Munda	4.9
		(v) 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**
C.	**Financing charges during implementation**[d]		
	1.	Interest during implementation	0.0
		Subtotal (C)	**0.0**
		Total (A+B+C)	**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.
[d] Financing charges during implementation is estimated at $13,000, which does not appear due to rounding.
Source: Asian Development Bank estimates.

16. The government has requested a loan in various currencies equivalent to Special Drawing Rights (SDR) XXX ($1 million equivalent) from ADB's Special Funds resources to help finance the project. The loan will have a 32-year term, including a grace period of 8 years, an interest rate of 1.0% per annum during the grace period and 1.5% per annum thereafter, and such other terms and conditions as set forth in the draft financing and project agreements. The government has also requested a grant not exceeding $2 million from ADB's Special Funds resources to help finance the project. Solomon Islands has received in principle approval of $6.2 million grant from the SCF, to assist in financing the project and to be administered by ADB.[13,14] From the proceeds of the ADF loan, ADF grant and SCF grant, the Solomon Islands will relend $1,000,000 equivalent to Solomon Power and will make $8,200,000 available as a grant in local currency under a subsidiary financing agreement acceptable to ADB[15]. The relending terms will include (i) interest at the rate of 4% per annum over $1,000,000 equivalent; and (ii) a repayment period of 20 years, inclusive of a grace period of 7 years or until the Project is completed (whichever comes earlier). Solomon Islands will finance the remainder of the total project cost in the amount of $6.0 million consisting of civil works, land acquisition costs, site preparation and taxes and duties. A blanket Board of Directors' waiver of member country procurement eligibility restrictions for operations funded by Asian Development Fund applies, therefore, permitting

[13] Government received clearance from the SREP Sub-committee to proceed with project preparation on the basis of $6 million grant availability from SREP. The preferred financing arrangement for SCF is cost-sharing.
[14] Under the Scaling Up Renewable Energy Program in Low-Income Countries. The loan/grant may finance local transportation and insurance costs.
[15] The Solomon Islands will relend the ADF loan of $1 million to Solomon Power. Despite Solomon Power's strong financial position, the Government will pass through the grant (in accordance with the State Owned Enterprise Onlending Policy), due to high technical project risks, which may otherwise deter investing in these areas.

participation of bidders from non-ADB member countries and/or procurement of goods and services from non-ADB member countries[16]. The financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Special Funds resources (loan)	1.0	7.0
Special Funds resources (grant)	2.0	13.0
Strategic Climate Fund (grant)[a]	6.2	41.0
Government[b]	6.0	40.0
Total	**15.2**	**100.0**

Source: Asian Development Bank

[a.] Under the Scaling Up Renewable Energy Program in Low-Income Countries financed by the Strategic Climate Fund. Administered by the Asian Development Bank.

[b.] Government financing includes civil works, land acquisition costs, site preparation works and taxes and duties.

E. Implementation Arrangements

17. The Ministry of Mines, Energy and Rural Electrification will be the executing agency for the project. Solomon Power will be the implementing agency. A Project Management Unit (PMU) will be established within Solomon Power to implement the project. Solomon Power will provide the services of (i) one project engineer, (ii) a finance officer, and (iii) an administrative assistant, as required to be part of the PMU. The project will finance additional consultants and equipment to support the PMU in implementing the outputs. One 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 upfront 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 procurement of all civil works and goods contracts. Procurement of goods and works 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 contract will be signed between the government and the selected consultant. Additional financing for additional sites may be considered if the project is performing well. If so, additional project preparation financing required (in areas such as design, safeguards, and capacity) will be sourced from the additional financing[17]. A project steering committee will oversee implementation, monitor progress, and provide guidance to the executing agency. The project steering committee will meet at least quarterly and will be chaired by Ministry of Mines, Energy and Rural Electrification. The PMU will host the project steering committee and will act as the secretariat.

18. The project will be implemented over four years with completion estimated by December 2020. To expedite implementation, the government has requested advance consultant recruitment and advance procurement action. ADB has informed the government that approval of advance consultant recruitment and advanced procurement action does not commit ADB to

[16] ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila.

[17] Additional financing preparation will be initially funded by Government and retroactively financed through the additional financing.

finance the project. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.[18]

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	Solar Power Development Project Steering Committee Ministry of Mines, Energy and Rural Electrification (chair) Ministries of finance and treasury, planning and aid coordination, rural development, and infrastructure development; Department of Environment and Conservation; 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 action for civil works package. Retroactive financing for one ICS contract up to a maximum amount equivalent to 20% of the ADF 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 loan and grants proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed upon between the government and ADB		

ICB = international competitive bidding, ICS = Individual Consultant Selection, QCBS = quality- and cost-based selection
Source: Asian Development Bank.

III. DUE DILIGENCE

A. Technical

19. 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 considered as the least-cost technology in view of available renewable resources, necessary capital and operational costs, power output stability, and environmental impacts.[19] Modelling has optimized the battery storage sizing and solar integration levels based on site specific data. The system design has been carefully 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 control, monitoring, and protection systems to stabilize the grid in line with international design

[18] Project Administration Manual (accessible from the list of linked documents in Appendix 2).
[19] The feasibility design includes lead-acid batteries, however contractors will propose optimum solutions.

standards. The PMU and the engineering, procure and construct engineers will provide training in operation and maintenance to Solomon Power to ensure sustainable operation.

20. **Climate change**. The project has been classified as 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 cyclone events, (ii) sea level rise at some sites, and (iii) a change in solar radiation. Climate change impacts have been taken into project design.

B. Financial

21. 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 (WACC) of 5.4%. The net present value is estimated at $6.2 million. The FIRR for individual sites is 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 FIRR exceeds WACC for 20% increase in costs and 20% decrease in revenues, and for combined 20% increase in costs and 20% decrease in revenues.

C. Economic

22. The project is economically feasible with the economic internal rate of return (EIRR) estimated at 17.9%, which is higher than the economic opportunity cost of capital of 12% recommended in ADB's *Guidelines for the Economic Analysis of Projects*. The EIRR for individual sites is Kirakira (20.4%), Lata (15.8%), Malu'u (13.7%), Munda (24.7%) and Tulagi (15.8%). Economic benefits of the project are derived from (i) savings in diesel consumption, (ii) reduced operation and maintenance costs for diesel generation compared to solar power generation, and (iii) environmental improvements from reduced emissions from diesel power generation. Sensitivity analyses 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 combined Project is not sensitive to unfavourable changes in the expected costs and benefits, the viability of Malu'u project site is vulnerable to a 20% capital cost increase, a 20% benefit decrease, or a 1-year delay in operation. This suggests particular attention must be given to the Malu'u project site during implementation, to minimize any possibilities of delays or cost escalations. Sensitivity tests for other subprojects do not show any similar vulnerabilities.

D. Governance

23. **Financial management**. A Project Financial Management Assessment (FMA) was prepared for Solomon Power, which indicated the overall financial management risk as low.[20] An FMA was completed in 2014 during the preparation of the Provincial Renewable Energy Project. The present FMA reviewed progress towards issues identified in 2014 and assessed any additional issues. Inadequacies previously noted in 2014 have largely been addressed, including improvements in utilization of financial management software and improvements to internal audit procedures. While Solomon Power's financial management has improved significantly since 2014, they still have limited experience in management of fund flows for multilateral development bank infrastructure projects, and relatively limited human resource capacity in the finance department. An international financial specialist will assist Solomon Power with fund flow procedures, and to train Solomon power staff in ADB procedures.

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

24. **Procurement capacity**. A procurement capacity assessment was completed for Solomon Power. Procurement at Solomon Power is governed by the "*Procurement Policies & Procedures Manual*", revised 29 January 2016, which generally aligns to ADB procurement guidelines. The assessment found that Solomon Power has an established procurement unit with considerable procurement experience in routine goods and minor projects procurement, however has limited experience in managing larger engineering, procure and construct packages or with ADB procurement systems. To address the identified 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 procurement guidelines, particularly engineer–procure–construct contracts; (ii) manage preparation of ADB standard bidding documents; and (iii) provide international expertise to support construction supervision. In addition, ADB will be providing targeted procurement training and support during the procurement process.[21]

25. **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 project administration manual.[22]

E. Poverty and Social

26. The Project will assist the poor through (i) reduced household expenditure on energy services by placing downward pressure on tariffs, and (ii) improve reliability of power supply to schools and clinics which will improve quality of essential services. Additionally, the Project will (i) reduce the impact of diesel generator noise and pollution on adjacent communities, and (ii) generate a limited number of jobs for local communities during implementation. The Project is classified as GI (general intervention) and while it does not address poverty directly, it 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 but not limited to equal pay for equal work regardless of gender, race or ethnicity, and excluding child labor. The poverty reduction measures will be implemented by the PMU.

27. The project is categorized as effective gender mainstreaming. A gender action plan has been developed based on gender analysis and community consultations, and includes specific measures related to the construction of the solar power plants. Measures included in the gender action plan cover (i) women's engagement in consultation activities, (ii) provision of gender awareness training to target groups, and (iii) actions to encourage women's participation in project-related contracts, and (v) collection of gender-related data for monitoring purposes.

F. Safeguards

28. **Environment**. The project has been classified as category B for environment following ADB's Safeguard Policy Statement (2009). An initial environmental examination has been prepared and disclosed on the ADB website. The main potential environmental impacts during construction are vegetation clearance, soil erosion and waste disposal at some sites. The main potential impacts during operation are noise from relocated backup diesel generators and waste disposal (batteries).[23] The Initial Environmental Examination and Environmental Management

[21] Supported through ADB. 2016. R-CDTA *Building Project Implementation Capacities in the Pacific*. Manila.
[22] Project Administration Manual (accessible from the list of linked documents in Appendix 2).
[23] The environmental management plan stipulates requirements for appropriate disposal of batteries.

Plan will be included in the bidding documents for contractors compliance and implementation monitoring. If there are changes to the scope of the works, 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. The PMU will be supported by an environment specialist to ensure implementation and monitoring of the environmental management plan.

29. **Involuntary resettlement and indigenous peoples**. The project has been classified as 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 deemed significant. No physical relocation of persons or loss of income is expected from the implementation of the project. The Project will require land acquisition of about 5.68 hectares of lease-hold title currently held by other Government departments and state owned enterprises[24]. There will be no land acquisition from customary landowners. No long-term impacts are expected as the construction and operation will not restrict the community members near the solar system from accessing and using nearby resources. Adverse impacts such as the loss of trees or crops currently being farmed on the state land, or exposure to potential health hazards due to entry of non-community workers, are likely to be minor. A draft resettlement plan has been prepared based on impact assessment and consultations during project preparatory technical assistance. Communities adjacent to the project sites will be further consulted during implementation. Information such as a brochure in local language has been disseminated to adjacent communities and local stakeholders. The resettlement plan has been endorsed by Solomon Power and disclosed on the ADB website.

30. Solomon Power will finalize the resettlement plan after approving the detailed design from the contractor and will ensure land title has been transferred to Solomon Power before the start of civil works. The project will support the strengthening of Solomon Power social safeguard capacity, including recruiting a social safeguard specialist to assist with project implementation. The due diligence concluded that while there are clans in the project area, their institutions are not separate from mainstream society, and these groups are not vulnerable. As sociocultural groups need to be both "distinct" and "vulnerable" to trigger the ADB Safeguard Policy Statement requirements on indigenous peoples, the project has been categorized as category C and an indigenous peoples plan is therefore not required.

G. Risks and Mitigating Measures

31. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[25] The risks of the project have been assessed and the benefits are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Public financial management: insufficient financial management capacity within Solomon Power.	Project monitoring, 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 DSC delayed.	Recruitment of DSC has been delegated to ADB.
Procurement: Insufficient procurement capacity in	International procurement specialist will support

[24] No land was purchased in anticipation of ADB funding.
[25] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

the PMU to manage ADB procurement procedures.	PMU and train staff on ADB procedures.
Procurement: Low capacity of local contractors results in low-quality installations.	Bidding documents will (i) require evidence of commitments, and (ii) require demonstrated experience in contracts of similar size.
Technical: Proposed technology is new to Solomon Power, who 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.
Capacity: Staffing of the PMU is not sufficient to manage project implementation adequately.	PMU will be adequately staffed and twice annual project reviews by ADB will be held to monitor. ADB will provide procurement assistance as required.[26]
Capacity: Solomon Power is unable to retain trained staff to operate the solar-diesel hybrids	Training program will be implemented to ensure an adequate number of operators are available.

ADB = Asian Development Bank, DSC = Design and Supervision Consultants, ICB = International Competitive Bidding, PMU = project management unit
Source: Asian Development Bank.

IV. ASSURANCES

32. 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 project administration manual 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

33. I am satisfied that the proposed loan and grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve;

(i) the loan in various currencies equivalent to SDR(XXX) ($1,000,000 equivalent) to Solomon Islands for the Solar Power Development Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft financing and project agreements presented to the Board; and

(ii) the grant not exceeding $2,000,000 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.

(iii) the administration of the grant not exceeding the equivalent of $6,200,000 to Solomon Islands for the Solar Power Development Project, to be provided by the Strategic Climate Fund.

Takehiko Nakao
President

Date

[26] Supported through ADB. 2016. R-CDTA *Building Project Implementation Capacities in the Pacific*. Manila.

DESIGN AND MONITORING FRAMEWORK

Impact the Project is Aligned with:

Utilization of renewable energy has increased

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Solomon Power generates an increased supply of reliable, cleaner electricity	a. Reduced diesel importation by 0.9 million liters per annum by June 2020, relative to January 2017 b. Renewable energy generation has increased as a percentage of power generation in the five provincial grids from 0% in January 2017 to 78% by December 2020 c. CO_2 emissions reduced by 840 tCO2e per annum by December 2020	a. Solomon Power annual corporate report b. PMU Quarterly Reports	Benefits of increased renewable energy such as reduced diesel consumption are offset by increased use in other sectors such as transport
Outputs 1. Five grid-connected solar power plants put into operation by Solomon Power	1a. Solomon Power installs 2MW of solar power by December 2020 1b. Solomon Power generates 3.1GWh per annum of solar power by December 2020	1. Solomon Power annual corporate report	Solomon Power does not maintain sufficient technical staff to operate and maintain solar plants
2. Capacity building program undertaken	2a. 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 (including target 20% women participation) by December 2020	2. PMU quarterly reports	

Key Activities with Milestones

<u>Five grid-connected solar power plants put into operation by Solomon Power</u>

1.1 Solomon Power advertises bidding documents for solar plants by August 2016
1.2 Solomon Power completes land acquisition by September 2016
1.3 Solomon Power awards design, supply and installation contract by June 2017
1.3 Solomon Power commissions solar plants by December 2020

Key Activities with Milestones
Capacity building program undertaken 2.1 PMU completes 5 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 Conduct procurement and financial management training for PMU staff (minimum 20% women) and Solomon Power management, including gender awareness training by September 2018
Inputs
ADF Loan: $1.0 million ADF Grant: $2.0 million Strategic Climate Fund (Grant): $6.2 million Government: $6.0 million

ADB = Asian Development Bank, ADF = Asian Development Fund, MWh = megawatt-hour, PMU = Project Management Unit
Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=XXXXX-XX-3

1. Financing Agreement
2. Grant Agreement (ADB 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

Supplementary Documents

1. Project Procurement Risk Assessment