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The World Bank

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Report No: PP1461

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT AND

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT

IN THE AMOUNT OF US$5.66 MILLION

TO THE

PACIFIC POWER ASSOCIATION

FOR A

REGIONAL SUSTAINABLE ENERGY INDUSTRY DEVELOPMENT PROJECT

FOR PACIFIC ISLAND COUNTRIES AND TERRITORIES

September 8, 2015

Energy & Extractives Global Practice
East Asia and Pacific

CURRENCY EQUIVALENTS

(Exchange Rate Effective August 21, 2015)

Currency Unit	=	FJD
FJD 1	=	USD 0.47205

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ACS	Administrative and Client Support
ADB	Asian Development Bank
BP	Bank Procedure
CAS	Country Assistance Strategy
CEO	Chief Executive Officer
CQS	Selection Based on Consultant's Qualifications
DA	Designated Account
DRM	Disaster Risk Management
EE	Energy Efficiency
ESDP	Energy Sector Development Project
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESWG	Energy Sector Working Group
EU	European Union
FAESP	*Framework for Action on Energy Security in the Pacific*
FM	Financial Management
FSM	Federated States of Micronesia
GAP	Gender Action Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GFDRR	Global Facility for Disaster Reduction and Recovery
GIS	Geographic Information System
GPSA	Global Partnership for Social Accountability
GRMs	Grievance Redress Mechanisms
GRS	Grievance Redress Service
GSEP	Global Sustainable Energy Partnership
GWh	Gigawatt Hours
IBRD	International Bank for Reconstruction and Development
IC	Individual Consultant
ICB	International Competitive Bidding
IDA	International Development Association
IFC	International Finance Corporation
IFR	Interim Financial Report
IRENA	International Renewable Energy Agency

IUCN	International Union for Conservation of Nature
Km	Kilometer
km^2	Square kilometer
kV	Kilovolts
kW	Kilowatts
kWh	Kilowatt-hour
kWp	Kilowatts-peak
LCS	Least-cost Selection
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MOF	Ministry of Finance
MoU	Memorandum of Understanding
MW	Megawatts
MWh	Megawatt-hour
NZ	New Zealand
NZAid	New Zealand Aid
NZMFAT	New Zealand Ministry of Foreign Affairs and Trade
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PCO	Pacific Region Infrastructure Facility Coordination Office
PDO	Project Development Objective
PEC	Pacific Environment Community
PICs	Pacific Island Countries
PICTs	Pacific Island Countries and Territories
PIFS	Pacific Islands Forum Secretariat
PNG	Papua New Guinea
PNA	Parties to Nauru Agreement
PPA	Pacific Power Association
PRDR	Pacific Regional Data Repository
PREP	Pacific Resilience Program
PRIF	Pacific Region Infrastructure Facility
PV	Photovoltaic
QBS	Quality-based Selection
QCBS	Quality- and Cost-based Selection
RRAs	Renewable Readiness Assessments
RE	Renewable Energy
S	Second
RMI	Republic of the Marshall Islands
SE4ALL	Sustainable Energy for All
SEIAPI	Sustainable Energy Industry Association of the Pacific Islands
SIDS	Small Island Developing States
SIDS DOCK	Small Island Developing States Initiative
SORT	Systematic Operations Risk-rating Tool
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Programme
SRDP	Strategy for Climate and Disaster Resilient Development in the Pacific
SREP	Scaling Up Renewable Energy Program
SSS	Single-source Selection
TORs	Terms of Reference
TTL	Task Team Leader

TVET SECCA	Technical and Vocational Education and Training for Sustainable Energy and Climate Change Adaptation
UAE	United Arab Emirates
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USAID	US Agency for International Development
USD	United States Dollar
USDOI	US Department of the Interior
USP	University of the South Pacific
V	Volt
VOCTEC	Pacific Vocational Training and Education for Clean Energy
WB	World Bank
WBG	World Bank Group

Regional Vice President:	Axel van Trotsenburg
Country Director:	Franz R. Drees-Gross
Global Practice Senior Director	Anita Marangoly George
Global Practice Director:	Charles M. Feinstein
Practice Manager	Julia M. Fraser
Task Team Leader:	Roberto Gabriel Aiello

PACIFIC ISLAND COUNTRIES
Regional Sustainable Energy Industry Development Project (P152653)

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PAD DATA SHEET

Pacific Islands

Regional Sustainable Energy Industry Development Project (P152653)

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC

0000009259

Report No.: PP1461

Basic Information			
Project ID P152653	EA Category B - Partial Assessment		Team Leader(s) Roberto Gabriel Aiello
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 01-Oct-2015	Project Implementation End Date 31-Aug-2020		
Expected Effectiveness Date 01-Oct-2015	Expected Closing Date 31-Aug-2020		
Joint IFC No			
Practice Manager/Manager	Senior Global Practice Director	Country Director	Regional Vice President
Julia M. Fraser	Anita Marangoly George	Franz R. Drees-Gross	Axel van Trotsenburg

Approval Authority
Approval Authority The SREP grant will be approved by Board of Executive Directors. The SIDS DOCK and GFDRR grants will be approved by the Regional Vice President (RVP).

Borrower: Pacific Power Association			
Responsible Agency: Pacific Power Association			
Contact:	Andrew Daka	Title:	Executive Director
Telephone No.:	6793306022	Email:	andrewd@ppa.org.fj

Project Financing Data(in USD Million)					
[ ]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[ ]	Credit	[X]	Grant	[ ]	Other

Total Project Cost:	5.66	Total Bank Financing:	0.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	0.00
Strategic Climate Fund Grant	1.92
Energy Sector Management Assistance Program	3.47
Global Facility for Disaster Reduction and Recovery	0.27
Total	5.66

Expected Disbursements (in USD Million)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021	0000	0000	0000
Annual	0.04	2.15	2.21	0.54	0.50	0.20	0.02	0.00	0.00	0.00
Cumula-tive	0.04	2.19	4.40	4.94	5.44	5.64	5.66	0.00	0.00	0.00

Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Cross Cutting Topics

[X] Climate Change
[ ] Fragile, Conflict & Violence
[X] Gender
[ ] Jobs
[ ] Public Private Partnership

Sectors/Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and mining	Other Renewable Energy	75	75	75
Energy and mining	General energy sector	25	25	25

Total	100

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Environment and natural resources management	Other environment and natural resources management	100
Total		100

Proposed Development Objective(s)

The project development objective (PDO) is to increase the data availability and capacity of power utilities of the Pacific Island Countries and Papua New Guinea (PNG) to enhance their ability to incorporate and manage renewable energy technologies and long-term disaster risk planning.

Components

Component Name	Cost (USD Millions)
Renewable Energy Resource Mapping Phases 1 to 3	2.27
Technical Assistance	2.57
Project Implementation Support	0.82

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Low
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Moderate
7. Environment and Social	Low
8. Stakeholders	Low
9. Other	None
OVERALL	Moderate

Compliance

Policy

Does the project depart from the CAS in content or in other significant	Yes [ ] No [X]

respects?	

Does the project require any waivers of Bank policies?	Yes [ ]	No [X]
Have these been approved by Bank management?	Yes [ ]	No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04		**X**
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10	**X**	
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Engineering Advisor		Six months after effectiveness	Continuous

Description of Covenant

The Recipient shall, no later than six months after the effective date of the Grant Agreement, hire and thereafter maintain an engineering advisor to be responsible for assisting the project manager with the technical aspects of the project.

Name	**Recurrent**	**Due Date**	**Frequency**
Safeguards Application to technical assistance (TA)			Continuous

Description of Covenant

The Recipient shall ensure that:
(a) all terms of reference (TORs) for any TA carried out under the project are consistent with the World Bank's (WB) environmental and social safeguards policies, as well as the Member Countries' laws relating to the environmental and social aspects; and
(b) in drafting any guidelines or corporate procedures and carrying out capacity-building activities under the project, due attention is given to said policies and laws.

Name	**Recurrent**	**Due Date**	**Frequency**
Safeguards Instruments			Continuous

Description of Covenant

The Recipient shall carry out the project in accordance with the provisions of the Safeguards Instruments.

Name	Recurrent	Due Date	Frequency
Project Implementation Officer			Continuous

Description of Covenant

The Recipient shall maintain a project implementation officer to be responsible for overseeing day-to-day implementation of the project, including financial management, procurement, monitoring and reporting for the project, and coordination with national utilities of the Member Countries.

Name	Recurrent	Due Date	Frequency
Project Operations Manual	**I.** X		Continuous

Description of Covenant

The Recipient shall: (a) carry out the project in accordance with the Project Operations Manual; and (b) not amend, revise or waive, nor allow to be amended, revised or waived, the provisions of the Project Operations Manual or any part thereof without the prior written agreement of the World Bank.

Name	Recurrent	Due Date	Frequency
Mid-term Review		Two and a half years after signing	

Description of Covenant

The Recipient shall: (a) no later than two and a half years after the effective date of the Grant Agreement (or such other date as the World Bank may agree), carry out a midterm review of the project and prepare and furnish to the World Bank a midterm report, in such detail as the World Bank shall reasonably request, documenting progress achieved in the carrying out of the project.

Conditions

Source Of Fund	Name	Type
CSCF, ESMP, GFDR	Project implementation officer	Effectiveness

Description of Condition

As a condition of effectiveness of the Grant Agreement, the Recipient shall hire a project implementation officer to be responsible for overseeing day-to-day implementation of the project, including financial management, procurement, monitoring and reporting for the project, and coordination with national utilities of the Member Countries.

Source Of Fund	Name	Type
CSCF, ESMP, GFDR	Project Operations Manual	Effectiveness

Description of Condition

As a condition of effectiveness of the Grant Agreement, the Recipient shall prepare and adopt a Project Operations Manual, setting forth implementation, organizational, administrative, monitoring and evaluation, financial management, disbursement, and procurement arrangements for purposes of implementation of the project, in form and substance acceptable to the World Bank.

Team Composition				
Bank Staff				
Name	**Role**	**Title**	**Specialization**	**Unit**
Roberto Gabriel Aiello	Team Leader (ADM Responsible)	Senior Energy Specialist	Senior Energy Specialist	GEEDR
Cristiano Costa e Silva Nunes	Procurement Specialist	Senior Procurement Specialist	Senior Procurement Specialist	GGODR
Stephen Paul Hartung	Financial Management Specialist	Financial Management Specialist	Financial Management Specialist	GGODR
Denis Jean-Jacques Jordy	Team Member	Senior Environmental Specialist	Senior Environmental Specialist	GENDR
Katherine Baker	Team Member	Consultant	Operations Analyst	GEE02
Kim Dagmar Baverstock	Team Member	Team Assistant	Team Assistant	EACNF
Manush Hristov	Counsel	Senior Counsel	Senior Counsel	LEGES
Marjorie Mpundu	Counsel	Senior Counsel	Senior Counsel	LEGES
Martin Schroeder	Team Member	Jr Professional Officer	Junior Professional Officer	GEEES
Natsuko Toba	Team Member	Consultant	Senior Economist	GSU18
Neha Mukhi	Team Member	Environmental Specialist	Environmental Specialist	GCCPT
Paul Fulton	Team Member	Consultant	Renewable Energy Consultant	GEEDR
Penelope Ruth Ferguson	Safeguards Specialist	Consultant	Environmental Safeguards Specialist	GEN02
Ross James Butler	Safeguards Specialist	E T Consultant	Social Safeguards Specialist	GSURR
Seble Berhanu	Team Member	Legal Analyst	Legal Analyst	LEGES
Silvia Martinez Romero	Team Member	Sr. Renewable Energy Specialist	Senior Renewable Energy Specialist	GEEES
Zhuo Yu	Team Member	Finance Officer	Finance Officer	WFALN
Fowzia Hassan	Team Member	Energy Specialist	Energy Specialist	GEEDR
Extended Team				
Name	**Title**	**Office Phone**	**Location**	
Locations				

Country	First Administrative Division	Location	Planned	Actual	Comments
Micronesia, Federated States of	Pohnpei	Micronesia	X		
Solomon Islands	Guadalcanal	Honiara	X		
Kiribati	Gilbert Islands	Gilbert Islands	X		
Tuvalu	Funafuti	Funafuti	X		
Marshall Islands	Majuro Atoll	Majuro	X		
Vanuatu	Shefa	Port-Vila	X		
Fiji	Central	Central	X		
Tonga	Tongatapu	Nuku'alofa	X		
Samoa	Tuamasaga	Apia	X		
Palau	Melekeok	State of Melekeok	X		
Papua New Guinea	National Capital	Port Moresby	X		

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required? Consultants will be required

II. STRATEGIC CONTEXT

A. COUNTRY CONTEXT

1. The Pacific Island Countries (PICs) in East Asia and the Pacific (EAP) comprise 10 countries with a total population of about 2.3 million people.[1] Fiji accounts for over 40 percent with a population of 881,100 in 2013.[2] Seven PICs have populations well below 200,000 (e.g., Tuvalu with approximately 10,000 people, the smallest member of the World Bank Group [WBG]).[3] Papua New Guinea (PNG), with a population of about 7 million, is also a member of the Pacific Power Association (PPA) and thus part of this project. Timor-Leste is not a member of PPA.

2. These populations are scattered over an area equivalent to 15 percent of the globe's surface.[4] The PICs are all relatively small, with open but narrowly based economies and limited institutional capacity. They are vulnerable to external economic and environmental shocks and have limited access to global markets. Size and remoteness are strong defining characteristics of the 10 island members, with a total land area of only some 64,000 square kilometers (km^2)[5] (equivalent to twice the size of Belgium[6]), while the exclusive economic zones they control are over 14 million km^2, roughly twice the land area of Australia.[7]

3. These countries are also some of those most vulnerable to the impacts of climate change and natural disasters. According to a 2012 WBG study, of the 20 countries in the world with the highest average annual disaster losses scaled by gross domestic product (GDP), 8 are PICs.[8] They are highly exposed to adverse effects from climate change and natural hazards (including floods, droughts, tropical cyclones, storm surges, earthquakes, volcanic eruptions, and tsunamis), which can result in disasters that affect their entire economies and their human and physical capital, and impact their long-term development agenda. Since 1950, natural disasters have affected approximately 9.2 million[9] people in the Pacific region, causing 9,811 reported deaths.

4. The PICs have continued to benefit from a number of regional projects in the areas of economic management and governance, climate change, and support from the Pacific Region

[1] The World Bank Group's 10 Pacific island member countries are: Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. (http://www.worldbank.org/en/country/pacificislands/overview).
[2] Source: World Bank data. http://data.worldbank.org/country/fiji
[3] Solomon Islands, Fiji, and Vanuatu had more than 200,000 people in 2013. Source: World Bank data. http://data.worldbank.org/region/PSS
[4] Source: World Bank Pacific Islands. http://www.worldbank.org/en/country/pacificislands/overview
[5] Source: World Bank data. http://data.worldbank.org/region/PSS
[6] Source: The Government of United States Central Intelligence Agency: https://www.cia.gov/library/publications/the-world-factbook/geos/be.html
[7] Source: http://www.seaaroundus.org/eez/ and http://data.worldbank.org/indicator/AG.LND.TOTL.K2
[8] Vanuatu, Niue, Tonga, the Federated States of Micronesia, the Solomon Islands, Fiji, the Marshall Islands, and the Cook Islands. Data source: World Bank Feature Stories. http://www.worldbank.org/en/news/feature/2012/06/04/acting-today-for-tomorrow-a-policy-and-practice-note-for-climate-and-disaster-resilient-development-in-the-pacific-islands-region
[9] SPC Pocket Handbook 2010.

Infrastructure Facility (PRIF)[10] Coordination Office (PCO) in the energy and utilities sectors.

B. SECTORAL AND INSTITUTIONAL CONTEXT

5. *Main electricity sector challenges.* The major issues that PICs face in relation to the power sector include: (a) high dependency on costly imported fuels; (b) insufficient revenues from tariffs to meet operation and maintenance (O&M) costs (thus requiring additional government subsidies); (c) lack of adequate capacity and reliable data for energy planning and management; (d) the high maintenance cost of generation and distribution systems in a marine environment; and (e) the need for capital to finance the power infrastructure requirements on outer islands and in remote locations.

6. *Broader challenges impacting the sector.* To differing degrees, all PICs face a broader set of challenges in providing energy for sustainable development. These include: (a) often small, isolated population centers; (b) small and dispersed markets that are difficult to serve and lack significant economies of scale; (c) extreme vulnerability to oil supply and price shocks; (d) high vulnerability to the impacts of natural disasters and expected climate change; and (e) weak legislative, regulatory and institutional arrangements.

7. *Electricity access rates.* Overall, the region has relatively low rates of access to electricity (about 48.9 percent of households in PICs have access to electricity[11]), although this average is highly skewed by very low rates in PNG (13 percent), the Solomon Islands (19 percent) and Vanuatu (24 percent).[12] Energy poverty in the region is concentrated in these three countries, which account for 84 percent of the population of all PICs, and which have very low levels of access to electricity. The electrification rate in all three countries is lower than that of other countries with similar levels of GDP per capita.[13]

8. *Electricity prices.* Expenditure on petroleum imports can account for 10 to 25 percent of GDP in small PICs.[14] This heavy reliance on imported petroleum fuel results in extreme vulnerability to oil supply and price shocks in most PICs. It also contributes to some of the world's highest electricity prices, with grid electricity prices ranging from 18 to 79+ US cents per kilowatt hour (kWh) in 2011.[15] The high costs of electricity are also due in some instances to operational inefficiencies, particularly high network losses[16] and high unit fuel consumption rates.

9. *Chief regional body for support in the energy sector.* The PPA is the key regional organization that provides support to power utilities in Pacific Island Countries and Territories (PICT). The PPA is a nongovernmental regional organization, established in 1992 under the *Companies Act of Fiji* as a company limited by guarantee. The PPA's main objective is to create an environment of "cooperative partnership" with the private sector, funding institutions, and

[10] www.theprif.org
[11] Source: World Bank data: http://data.worldbank.org/region/PSS
[12] Source: World Bank data for 2011 the latest data available.
http://databank.worldbank.org/data/views/reports/tableview.aspx
[13] UNDP, Energy and Poverty in the Pacific Island Countries, United Nations Development Programme, Bangkok, 2007
[14] Source: World Bank Engagement Note for the Energy Sector in the Pacific, April 2014
[15] Source: Pacific Power Utilities Benchmarking Report 2012, Pacific Power Association, March 2013.
[16] Overall system losses and technical losses are nearly identical for the Pacific and Caribbean utilities. However, non-technical losses (such as theft or bad metering) are significantly higher in the Pacific.

others with interest in the development of the power industry, and to enhance the role of the power sector in the PICs. The PPA aims to improve the quality of power in the region through a cooperative effort among the region's utilities. It has a mandate to assist the utilities in resolving problems, including the integration of renewable energy, and to encourage them to be efficient and accountable in their operations.

10. The active membership of the PPA is composed of any electric power utility operating in the following 20 PICT member countries: American Samoa, Commonwealth of the Northern Marianas, Cook Islands, Federated States of Micronesia (FSM), Fiji, French Polynesia, Guam, Kiribati, Republic of the Marshall Islands (RMI), Nauru, New Caledonia, Niue, Palau, PNG, the Solomon Islands, Tonga, Tuvalu, Vanuatu, Wallis and Futuna, and Samoa. Active members shall include public or private electric power corporations, government departments, statutory bodies or other agencies, whether incorporated or unincorporated, which are directly responsible for public power supply within a member country.

11. *Disaster and climate resilience.* Energy production and distribution infrastructure can be highly vulnerable to the impacts of natural hazards and climate change. In one year alone, the World Bank found that climate extremes accounted for a 13 percent variation in energy productivity in developing countries.[17] Although effects on supply and demand are the most obvious, disasters and climate change can also have direct effects on energy endowment, infrastructure and transportation, and indirect effects through other economic sectors.[18] These impacts have important consequences for the design, construction, location and operations of power infrastructure, given the long-term implications of energy planning decisions.

12. Policies, plans and investments that encourage efforts to reduce anticipated as well as current risks are likely to pay off. However, despite recent progress in terms of national-level plans or policies to respond to disaster and climate risks, translating national climate and disaster-resilient policies into sector policies and investments has been a significant challenge, particularly in the infrastructure and energy sectors. In addition, sector ministries and public utilities are not properly trained in disaster-risk management (DRM) and climate resilience, and they lack the capacity required to identify priority measures aimed at strengthening resilience and developing recovery strategies in post-disaster situations. Due to the capacity constraints in the PICs, the project will support the PPA, which plays a critical role in technical, policy, and information areas.

Key Issues and Country Strategies

13. *Energy policy and the renewable energy (RE) targets.* Increasing energy security and lowering energy usage costs are becoming increasingly important within the region and are providing motivation for these governments to accelerate investments in RE and energy efficiency (EE). The PICs are addressing these issues through the formulation of long-term energy policies and plans for implementing policy targets. Most PICs have very ambitious goals and time frames for the percentage of electricity to be generated from renewable energy, as demonstrated in Table 1 below. However, there is a general lack of clear priorities, no detailed costing of RE options and likely costs relative to diesel-based generation, and sometimes only limited dialogue between

[17] World Development Report, 2010: Development and climate change. The World Bank, Washington D.C.
[18] World Bank. 2011. Climate Impacts on Energy Systems: Key Issues for Energy Sector Adaptation. The World Bank, Washington D.C.

energy planning authorities and power utilities.

Table 1: RE Targets in Pacific Island Countries[19]

Pacific Island Countries	Renewable Energy Electricity Generation	Renewable Energy Electricity Targets (Primary Energy)	
	Approx. % of Total	% of Total	Year
Fiji	67	90	2015
FSM	<1	30	2020
Kiribati	<1	Official targets in the process of being approved by the Cabinet	
Marshall Islands	6	20	2020
Palau	3	20	2020
Samoa	32	+10	2016
Solomon Islands	<1	50	2015
Tonga	4	50	2020
Tuvalu	2	100	2020
Vanuatu	25	65	2020

14. Coordinated energy planning, strong institutions, clear regulations, and enabling policies, including those for leveraging private sector participation, are fundamental elements for enhancing energy security, increasing electricity access, and achieving the abovementioned RE targets.

15. Hydro and geothermal RE sources can offer non-intermittent energy supplies but only some PICs have potential for both (e.g., PNG, Vanuatu, the Solomon Islands and Fiji). For the remaining PICs, the primary potential for RE is from solar and wind sources, both of which produce intermittent supplies that pose significant challenges for network integration when high levels of intermittent generation are installed.

16. The PICs' energy sector capacity is under constant challenge for a number of reasons: (a) energy ministries, where they exist, comprise a handful of staff members who are expected to cover a very broad range of activities, often in fragile political environments; (b) there can be a high turnover of staff in energy ministries as good professionals move to better-paid jobs in other countries or in the private sector, retire, or shift to other areas within government; (c) power utilities in most PICs have a shortage of engineers, and those engineers who are in place are more focused on operating existing systems and less on longer-term planning; and (d) public-owned power utilities generally lack a program to train and develop management staff across the organization, and certified apprenticeship schemes are not in place in most small PICs.

17. Comprehensive data sets for high-quality planning and existing systems are not readily available, despite nearly 30 years of technical assistance (TA) to develop and maintain such data sets. There remains an ongoing need to support improved data collection, analysis and

[19] IRENA 2013, Pacific Lighthouses–Renewable Energy Roadmapping for Islands, http://prdrse4all.spc.int/production/system/files/Pacific%20Lighthouse%20Roadmapping.pdf.

dissemination in the region.

Initiatives Underway and Rationale for Bank Involvement

18. A number of other donors, including New Zealand, the European Union (EU), Japan, and the United Arab Emirates (UAE), have various activities already under way to assist PICs in their energy sectors (see Annex 2). Most of these activities are focused on the replacement of diesel generation with RE technologies, and primarily provide funds for the installation of grid-connected solar photovoltaic (PV) systems.

19. There is a clear rationale for WBG involvement to address a serious gap in information and capacity on RE technologies and integration management, in close coordination with activities supported by other development partners. There have been some instances in PICs where intermittent generation, in particular wind power, has been installed without sufficient resource assessments by independent parties (rather than vendors), and there is insufficient capacity within PIC utilities to critically assess the merits of proposed projects and their impact on existing grids. This has led to less-than-forecast energy output from these installations, and economic and financial returns on the investment have been less than projected. In capital-constrained economies, and in a highly capital-intensive industry such as energy, investment decisions and their performance need to be very carefully scrutinized, particularly those that are funded through the use of concessional finance. This project would help PICs to have the independent data, knowledge and tools to subject intermittent generation proposals to proper scrutiny. This proposed project also supports the Bank's energy sector strategy for the Pacific Islands, supports the Bank's twin goals of ending extreme poverty and promoting shared prosperity, and helps to address important known gaps in the capacity of PIC power utilities to effectively assess and plan for increased use of intermittent generation.

20. This project will complement existing work being undertaken by other development partners in the sector, including the EU's Technical and Vocational Education and Training for Sustainable Energy and Climate Change Adaptation (TVET SECCA) project, led by the Secretariat of the Pacific Community (SPC) and the University of the South Pacific (USP); the United States Agency for International Development's (USAID) Pacific Vocational Training and Education for Clean Energy (VOCTEC) led by Arizona State University in close partnership with USP; grid-stability studies and training programs undertaken by the International Renewable Energy Agency (IRENA); training programs conducted by the International Union for Conservation of Nature (IUCN); the International Finance Corporation's (IFC) Pacific RE Gen (P600131), which is focused on developing business models for private sector engagement in the sector; and the World Bank's Pacific Regional Data Repository for Sustainable Energy for All (PRDR for SE4ALL) (P153190) as a basis for strengthening the availability, quality and comparability of energy data and statistics in the region. The information from the PPA project (P152653) will also go into the PRDR. This project, which is being prepared in close coordination with these partners to ensure complementarity, is due to be completed in 2016.

21. The WBG has worked closely with the PPA in its capacity as the chief regional body in the energy sector. In view of the increasing support that the PPA is being asked to provide to its member utilities, particularly in their integration of RE technologies in both on- and off-grid scenarios, there is a need to build capacity within the PPA so that it can better provide advice in this area. Of the few regional energy sector projects carried out to date, none provides for the level

of capacity building and information sharing across jurisdictions that this project aims to provide. Having the PPA as the recipient and project implementation agency provides an effective mechanism for dissemination of knowledge. The PPA can play a central role in building capacity across PIC power utilities in areas such as technical standards, staff training, and staff exchanges among utilities. This also provides a unique opportunity for the PPA to build its capacity not only by assisting with the delivery of specific tools for the use of the PPA and its members, but also through the direct capacity building of the PPA itself, which will have benefits that extend beyond the project implementation period.

22. The Bank's involvement will bring a longer-term perspective on RE investments from all sources by including capacity building, technical expertise, and the development of critical data for RE planning, all of which are critical for long-term grid stability. Thus, this project will facilitate planned and other future incremental RE additions without leading to grid instability and other system problems that would seriously set back PICs' plans to achieve their RE goals.

23. On the resilience side, the WBG is scaling up its engagement with the Pacific Resilience Program (PREP), whose aim is to strengthen the capacity of selected PICs (Samoa, Tonga, Vanuatu, and RMI) and regional organizations (SPC, Pacific Islands Forum Secretariat [PIFS]) for early warning, preparedness, resilient investments and disaster-risk financing. The project will complement PREP by mainstreaming disaster and climate resilience in the energy sector, and will strengthen the resilient planning capacity of targeted power utilities and the PPA.

C. HIGHER-LEVEL OBJECTIVES TO WHICH THE PROJECT CONTRIBUTES

24. The Bank's Energy Engagement Strategy in the Pacific currently prioritizes the following two areas:

i. Strengthening energy planning and enabling policy, institutional and regulatory development, including private sector involvement in Pacific countries. Examples of WBG support include implementation of energy roadmaps in Tonga and Vanuatu; TA for development of energy master plans in FSM and a National Electrification Roll-Out Plan in PNG; and development of business models for private sector investment in PICs.

ii. Improving utilities performance/capacity. Examples of WBG support include efficiency measures in FSM, Samoa, the Solomon Islands, Vanuatu and Tuvalu; and utilities service reform in Kiribati, FSM and the Solomon Islands.

25. These two areas help underpin other objectives of the Bank's assistance, including the facilitation of least-cost power supply (generation, transmission, distribution) and increased access to affordable, reliable and sustainable electricity services.

26. With a focus on building the capacity of utilities to improve their performance and supporting them in encouraging private sector involvement in RE investment, this proposed project supports the Bank's priority areas in the sector. The Pacific power utilities lack sufficient budget for capacity building, because 70 to 75 percent of many of these utilities' budgets go to paying for the costs of fuel.[20] Performance of power utilities has a direct influence on the economic development of the Pacific Islands, and a well-performing power utility contributes to poverty

[20] Pacific Power Utilities Benchmarking Report 2012, Pacific Power Association, March 2013.

alleviation.

27. The project is aligned with the *Framework for Action on Energy Security in the Pacific* (FAESP) adopted at the 41st Pacific Islands Forum meeting in August 2010. The FAESP encompasses the leaders' vision for an energy-secure Pacific where Pacific people at all times have access to sufficient sustainable sources of clean and affordable energy and services to enhance their social and economic well-being.

28. The project is also in line with the Bank's twin goals of ending extreme poverty and promoting shared prosperity by facilitating PICs' efforts to adopt cleaner and more sustainable electricity in the medium term. This will benefit the extreme poor by reducing dependence on imported fuels that not only affect electricity-connected households and businesses, but also the price of all goods and services linked to the high cost of retail energy products. Moreover, the increase in the share of RE will result in fuel savings and reduced greenhouse gas (GHG) and other harmful gas emissions. A strong and lasting correlation exists between access to electricity services and core human development measures including poverty reduction, improved health, and education. Electricity is also an important enabler in terms of driving gender equity and equality.

29. The project is also aligned with the strategic documents and frameworks that identify needs and priorities for responding to the PICs' extreme vulnerability to the effects of climate change and natural hazards. These include the Hyogo Framework for Action, as well as the Pacific Regional Framework for Action on Disaster Risk Management 2005–2015[21] and its proposed successor, the Strategy for Climate and Disaster Resilient Development in the Pacific (SRDP).[22]

III. PROJECT DEVELOPMENT OBJECTIVE

A. PDO

30. The project development objective (PDO) is to increase the data availability and capacity of power utilities of the Pacific Island Countries and Papua New Guinea (PNG) to enhance their ability to incorporate and manage renewable energy technologies and long-term disaster risk planning.

31. The project's high-level outcomes are: (a) increased publicly available information on renewable energy resources; (b) increased available energy sector planning tools, and people in the PPA and PIC power sector utilities who know how to use them; (c) improved institutional and technical capacity within the PPA and utilities for planning and management aimed at the successful integration and long-term management of power systems with higher levels of renewables once renewable projects become operational; and (d) strengthened planning capacity for disaster recovery and risk reduction.

[21] Theme 4: "*Planning for Effective Preparedness, Response and Recovery,"* and Theme 5: "*Effective, Integrated and People-Focused Early Warning Systems.*"
[22] Action 2.10.7: "*Strengthened capacity to anticipate, resist, plan and prepare for, respond to and recover from the consequences of disasters and climate change."*

B. PROJECT BENEFICIARIES

32. The project's potential beneficiaries are:

- All power sector utilities in PICs that will benefit from demand-driven training in RE integration, grid-stability modeling software and resource mapping, an online benchmarking tool, the development of competency standards and guidelines for the sector, and increased capacity within the PPA to provide advice as required.
- All electricity customers in PICs, including residential, commercial and government users, who will obtain improved service from the improved capacity within utilities as a result of the project.
- The PPA, whose capacity will increase through investment in appropriate training of existing staff.

C. PDO-LEVEL RESULTS INDICATORS

33. The following indicators will be used to measure progress toward PDO-level results:

Table 2: Indicators to Measure PDO Results

PDO Result	Indicator
Increased publicly available information on renewable energy resources.	Increased availability of data on RE resources in targeted project areas.
Increased available planning tools and people who know how to use them.	Increased available planning tools and training to both PPA and PIC power utilities in the use of these tools.
Improved institutional and technical capacity within the PPA and utilities for planning and management aimed at the successful integration and long-term management of power systems with higher levels of renewables once renewable projects become operational.	Improved technical and institutional capacity of PPA and PIC power utilities.
Strengthened planning capacity for disaster recovery and risk reduction.	Increased planning capacity for disaster recovery and risk reduction within PIC power utilities.

IV. PROJECT DESCRIPTION

A. PROJECT COMPONENTS

34. The proposed regional project, whose estimated cost is USD 5.66 million, will include the following three components to be implemented by the PPA.

Component 1. Renewable Energy Resource Mapping Phases 1 to 3. Estimated Cost: (Small Island Developing States Initiative [SIDS DOCK] USD 2.27 million)

35. This component will carry out a resource-mapping assessment of solar and wind capacity across 10 PICs.[23] The objective of this component is to enhance the awareness and knowledge of governments, utilities and the private sector about the resource potential for renewable technologies (solar and wind), and to provide governments with a spatial planning framework to guide investment in the RE sector. These resource maps will: (a) provide a detailed assessment for solar and wind and potentially other renewable energy resources in the islands; (b) increase the awareness and knowledge of governments and other energy sector players about renewable energy potential; (c) provide baseline information for potential new public and private sector investment projects; and (d) serve as an input for grid integration studies.

Component 2. Technical Assistance. Estimated Cost: USD 2.57 million (SIDS DOCK USD 0.7 million, Scaling Up Renewable Energy Program [SREP] USD 1.6 million; Global Facility for Disaster Reduction and Recovery [GFDRR] USD 0.27 million)

36. This component will carry out a program of activities designed to increase capacity within the utilities in 10 PICs[23] and PNG on planning for and management of the integration of variable RE in their systems, data collection and management, and knowledge sharing across jurisdictions. This program of activities will include: (i) acquisition of modeling software and consultancy services for renewable energy integration and capacity building; (ii) development of an online power benchmarking platform; (iii) development of industry guidelines and competency standards; (iv) training/workshops; (v) power utilities' career development assessment plan; and (vi) disaster-recovery and risk-reduction activities.

Component 3. Project Implementation Support. Estimated Cost: USD 0.82 million (SIDS DOCK USD 0.5 million; SREP USD 0.32 million)

37. This component will carry out a program of activities designed to enhance the PPA's capacity for overall project coordination, management and monitoring. These activities include coordination, administration, technical operation, procurement, financial management (FM), environmental and social management, gender action plan implementation, monitoring and evaluation (M&E), and reporting. The project's incremental operating costs will also be financed through this component (up to USD 0.1 million). The program of activities will include: (a) a project implementation support subcomponent (USD 0.72 million), and (b) an incremental operating costs subcomponent (USD 0.1 million).

B. PROJECT FINANCING

38. The project will be financed with a USD 1.92 million grant from SREP, a USD 3.47 million grant from SIDS DOCK, and a USD 0.27 million grant from the Government of Japan under GFDRR. Please see Annex 6 for SREP funding activities details of the project.

[23] These PICs are: Fiji, FSM, Kiribati, Marshall Islands, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Note that the World Bank is already assisting Papua New Guinea with a Renewable Energy Resource Mapping and Geospatial Planning Project (P145864), which is why it has not been included in Component 1 of this project. PNG is included in Components 2 and 3 of this project.

C. PROJECT COST AND FINANCING

Table 3. Project Financing by Component and Source

Components	Total Cost USD million	Financing Source		
		SIDS DOCK	SREP	GFDRR
Component 1: RE Resource Mapping Phases 1 to 3	2.27	2.27	0.00	0.00
Component 2: Technical Assistance	2.57	0.70	1.60	0.27
Component 3: Project Implementation Support	0.82	0.50	0.32	0.00
TOTAL	**5.66**	3.47	1.92	0.27

D. LESSONS LEARNED AND REFLECTED IN THE PROJECT DESIGN

39. Project design has benefited from the Bank's experience in designing and implementing projects in other islands and PICs, as summarized below.

40. *Changes in the sector*. Based on the experience of other countries[24] that are rapidly transitioning to very high penetration of renewables, such as Tokelau (PV, batteries), Aruba (wind), and Cape Verde (wind, PV), PICs must receive the necessary support to ensure the maintenance of grid stability—voltage and frequency regulation—as generation from intermittent energy sources increasingly becomes the dominant portion of their power mix. Therefore, a large proportion of this project deals with supporting PICs, through the PPA, to manage the integration of RE into their systems.

41. *Project ownership.* A project such as this one, with multiple direct stakeholders, requires a high level of ownership by all parties. This ownership needs to be secured throughout project preparation and implementation by means of the direct participation of all beneficiaries. In the case of the proposed project, there is not only a strong commitment and ownership of the proposed operation by the PPA, but also by PPA member utilities, as indicated in the PPA's discussions with the CEOs of these utilities.

42. *Importance of donor coordination.* During project preparation, close coordination with other donors is critical to avoid overlaps. This project has been prepared in close coordination with all relevant institutions. Discussions with a range of key stakeholders, including the EU, USP and SPC, have taken place through e-mail and in person during project preparation missions.

43. *Strengthening of relationship with the client.* A well-designed and well-executed TA project offers the opportunity to conduct a continuous policy dialogue and strengthen the

[24] The countries referred to are island countries that have transitioned or are on the way toward achieving close to 100 percent renewables, such as Tokelau (PV, batteries), Aruba (wind), and Cape Verde (wind, PV). Such projects were not financed by the World Bank.

relationship between governments and development partners. The project can help build trust and pave the way for sustained and greater collaboration by creating an enabling environment for further support to the countries' energy sector.

44. *Alignment of project design with implementation capacity.* Due to the implementation agency's limited capacity, the project is designed to be instrumental in broadening and strengthening implementation capacity by funding the staffing of key operational and technical positions in support of the agency. In addition, project activities will be packaged to reduce the number of transactions to the extent possible.

45. *Specific measures should be taken to address and mitigate slow implementation.* Slow implementation of energy sector projects in some PICs has been attributed to poor project design. The design of this project takes into account the World Bank's good practices: (a) a limited and modest set of initial objectives to create momentum; (b) a deliberately lean program with only three core development components closely tied to existing policy commitments; and (c) close attention to implementation arrangements, including the project's readiness to implement these arrangements from day one.

V. IMPLEMENTATION

A. INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS

46. The project will be implemented by the PPA, whose executive director will serve as the project manager. The project will fund a full-time project implementation officer to support the project manager with: day-to-day implementation, monitoring and reporting of project activities, including the completion of the project's FM requirements; coordination with relevant power utilities, national government institutions and development partners; procurement of goods and consultancies under the guidance of the PPA's accounts officer, administrative officer, and the deputy executive director who acts as the chief financial officer; and monitoring and reporting on results achieved by activities financed under the project. The project implementation officer will be hired prior to effectiveness. A part-time procurement advisor may be hired to assist with procurement activities if needed for purposes of the project. A full-time engineering advisor will also be hired no later than six months after effectiveness to assist the project manager with the technical aspects of the project. All project staff will be jointly located within the PPA's office in Suva.

47. Although it has not previously worked with the WBG, the PPA is aware of the WBG's safeguards policies and is supportive, especially with reference to effective public consultation aimed at managing environmental and social risks, resettlement principles, and impact monitoring. The Bank will provide support to the PPA through its internal safeguards, as required, including supervision of the implementation of the Environmental and Social Management Framework (ESMF) and the review and clearance of TORs for technical assistance and capacity development consultants engaged under the project. Please see Annex 4 Implementation Support Plan.

B. Results Monitoring and Evaluation

48. The implementation agency will conduct overall monitoring and coordination of project activities in accordance with the indicators included in the Results Framework (Annex 1), including the monitoring of compliance with safeguards policies. No later than 45 days after the end of each semester, the implementation agency will submit semi-annual progress reports to the Bank, covering all project activities and including a procurement and financial summary report. Financial reports for each semester will also be provided to the Bank no later than 45 days after the end of each semester. Semi-annual reviews, the first one to take place six months after grant effectiveness, will provide a detailed analysis of implementation progress toward achievement of the PDO and will include an evaluation of FM and a post review of procurement.

49. The implementation agency will: (a) no later than two and a half years after the effectiveness date (or such other date as agreed with the Bank), carry out a midterm review of the project, and prepare and provide to the Bank a midterm report documenting progress achieved in project implementation during the period preceding the date of such report, taking into account the M&E activities performed and setting out the measures recommended to ensure the continued efficient implementation of the project and the achievement of its objectives during the period following such date; and (b) review with the Bank said midterm report, on or about one month after its submission, and thereafter take all measures required to ensure the continued efficient implementation of the project and the achievement of its objectives.

C. Sustainability

50. *Sustainability*. The project's sustainability is supported by the PPA's strong commitment to achieving its mission to support power utilities in the provision of high-quality, secure, efficient and sustainable electricity services.

51. *Improvements in the PPA's capacity*. The project aims to assist the PPA in building its capacity to support its members by providing technical assistance and financing a number of online tools (resource mapping, benchmarking, and grid-stability modeling) to facilitate data available to PPA and utilities so that they can work together on a range of issues in the sector.

VI. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

52. *Overall risk rating is moderate.* The main reasons for this rating are: (i) although this is the first Bank project to be implemented by the PPA, the PPA has experience in managing other donor projects; (ii) although the PPA currently has limited capacity for executing the project, PPA staff will be supplemented through consultant advisors to boost capacity for implementation; and (iii) there is a technical coordination challenge due to the multiple projects of development partners in the sector. Key risks are described below.

53. *Political and governance risk is moderate.* The PPA is a nongovernmental regional organization, established in 1992 under the *Companies Act of Fiji* as a company limited by guarantee. As such, its operations will be unaffected by the political environments in PICs. The

PPA has a Board composed of the chief executive officers (CEOs) from all Active Members[25] and a member elected from Allied Members.[26] The PPA's Board of Directors meets annually at the annual conference. An Executive Committee of the Board guides the Secretariat between Board meetings and has the authority to make decisions on behalf of the Board between such meetings. The Executive Committee, comprising the Chairman, the Secretary, the Treasurer, the Executive Director, and the elected Allied Member representative, is elected from the members of the Board. There is an Alternate to all positions in the Executive Committee. The PPA has managed a number of other projects with development partners, including the US Department of the Interior (USDOI), EU, Global Sustainable Energy Partnership (GSEP), IRENA, New Zealand Aid (NZAid), and United Nations Industrial Development Organization (UNIDO).

54. *Technical design project risk is low*. The project has been designed in close coordination with other development partners in the sector, including the PRIF Energy Sector Working Group (ESWG). By anchoring this project in the PPA's regional organization, the project will significantly reduce the transactions connected with providing TA to remote Pacific islands. Because many PICs face similar energy sector challenges, the preparation of country-level outputs and products is also expected to benefit from substantial synergies by being coordinated through a single project.

55. *Institutional capacity for implementation and sustainability risk is moderate.* The capacity building of PPA staff to manage the project will be conducted during project implementation as part of the execution of the respective components. Work on the resource mapping, benchmarking and grid-stability modeling tools will help build capacity and keep it current after project implementation.

56. *Fiduciary risk is moderate.* The PPA's lack of experience with procurement and use of Bank guidelines and standard bidding documents will be addressed through the provision of Bank support in all stages of the bidding process. The PPA will also hire a procurement advisor to assist it throughout the project implementation period. Under the Bank's OP/BP 10.00 with respect to projects financed by the Bank, the Borrower and implementation agency are required to maintain adequate FM systems—including accounting, financial reporting, and auditing systems—to ensure that they can provide the Bank with accurate and timely information on project resources and expenditures. Overall, FM arrangements meet the FM requirement as stipulated in OP/BP 10.00, subject to the successful implementation of agreed actions and mitigating measures.

57. *Environmental and social risks are low*. Screening has identified a low risk of environmental and social impacts from the installation of wind and solar monitoring equipment and from the related TA. The field equipment has a very small footprint, and simple screening checklists and guidelines have been developed in an ESMF to ensure that environmental and social risks are identified and managed. The research work undertaken under Component 1 will produce recommendations that may result in future RE developments in any or all of the 10 PICs. The training provided under Component 2 will develop skills and knowledge in the sector, including the social, gender, and environmental aspects of RE. Because of the influence this project may have on future RE activities in PICs (not funded by this project), the TORs for the consultants responsible for TA will be cleared by the Bank's safeguards team. The consultants will be required

[25] There are currently 25 Active Members. Quorum for Board meetings is 10 active members.
[26] There are currently 85 Allied Members.

to take into account the Bank's safeguards policies when recommendations are made.

58. *Stakeholder risk is low*. All aspects of the project align with the PPA's strong commitment to achieving its mission to support power utilities in the provision of high-quality, secure, efficient and sustainable electricity services. All PPA members will have access to the benefits produced by the project, including the resource-mapping data, online benchmarking tool, grid-stability modeling software, guidelines and competency standards, training and workshops. Any identifiable communities, households or other entities who may be directly affected by the project will be fully consulted in accordance with the requirements outlined in the ESMF once they have been identified and the nature of possible impact is known.

VII. APPRAISAL SUMMARY

A. ECONOMIC ANALYSIS

59. An economic analysis will be conducted prior to the midterm review for a minimum of two participating countries to gauze the economic benefits that could be derived through the proposed project. The economic analysis will be conducted in tandem with phase 2 of the RE resource mapping component of the proposed project, which will provide the required quantitative data. The proposed project has the potential to create economic benefits by enabling power utilities and potential independent power producer (IPP) partners to make better-informed decisions on RE investment and the integration of renewable resources in their systems. These decisions could lead to fuel-cost savings and improved efficiency and effectiveness of power sector performance with more skilled staff. Through this, the proposed project is expected to benefit all electricity customers in PICs, who will obtain improved service from the improved capacity within utilities.

60. The key economic benefits are expected to be derived through Components 1 and 2 of the proposed project. The economic benefits from Component 1 could include among others, reduced cost, duplication, overlap, and / or inconsistencies from country specific RE resource mapping. The publication of this data would facilitate more streamlined investment decision making for pacific utilities as well as potential IPP partners when investing in future RE resources. The economic benefits of Component 2 would include costs saving due to: (i) development of local capacity for network planning and renewable energy integration, which the utilities could update regularly, instead of paying for external consultants; (ii) improved efficiency in producing the annual Power Benchmarking Report; (iii) improved network performance due to the availability of industry guidelines and standards; (iv) improved capability of utility staff (hiring fewer international consultants); and (v) improved preparedness, resilience and restoration capacity in the face of potential disasters.

B. TECHNICAL

61. No technical issues are expected with the project. All activities involve established technologies and practices on which substantial experience has already been accumulated in past projects.

C. FINANCIAL MANAGEMENT

62. An FM assessment was conducted in accordance with the "Financial Management Practices in World Bank-Financed Investment Operations," issued by the Financial Management Sector Board on November 3, 2005 and further rationalized in the "Principles-Based Financial Management Practice Manual" issued by the Board on March 1, 2010. Overall, the FM arrangements satisfy the FM requirement as stipulated in OP/BP 10.00, subject to the implementation of agreed actions and mitigating measures. The FM risk for this project before mitigation is assessed as moderate (refer to Annex 3 for details on FM and disbursement arrangements).

D. PROCUREMENT

63. The PPA will be responsible for project implementation. The PPA, with the assistance of the procurement advisor and the project implementation officer to be hired under the project, will be responsible for procurement activities. The Bank conducted a procurement capacity assessment, and risk-mitigation actions have been agreed (refer to Annex 3 for details). The PPA has prepared a procurement plan for the first 18 months of the project (see Annex 3 for a summary of this plan).

E. SOCIAL (INCLUDING SAFEGUARDS)

64. OP 4.12 Involuntary Resettlement is triggered because the installation of temporary wind monitoring equipment under Component 1 (Phase 2 of the ESMAP process)[27] may require the temporary use of communal or customary land. Land acquisition and resettlement aspects will be incorporated in capacity development activities in Component 2. Because the project will apply to a number of countries where Indigenous Peoples reside and have strong relationships with land, OP 4.10 is also triggered. For Component 1's land requirements, it is expected that government land will generally be available, and use of this land will be prioritized, but this may not always be possible. Land acquisition will not be required, but there will be some temporary use of land for temporary monitoring equipment. This will require either voluntary land donation or temporary land lease or similar arrangements; some of this land may be in areas used/inhabited/owned by indigenous communities. Capacity development activities under Component 2 will be guided by Bank-approved TORs, which will ensure that social safeguard issues are adequately addressed in these activities. Accordingly, although social safeguards are not expected to be a substantial risk, OP 4.12 and OP 4.10 are triggered through use of a precautionary approach. The ESMF has guidelines and checklists to ensure that the requirements of both policies are suitably covered for equipment installations, including consultation protocols and methods to secure temporary access to land (with particular emphasis on negotiating temporary access to communal or customary land). This aim of this approach is to ensure that if any risks are identified, they are appropriately managed in accordance with World Bank requirements.

65. The PPA's attention to gender mainstreaming in the PICs' energy sector includes work on the Pacific Power Utilities Benchmarking Report produced annually. This report will disaggregate utilities' job levels by gender. In addition, some staff members of three utilities (Samoa, Vanuatu, and Cook Islands) who are contributing to the production of this benchmarking report are women.

[27] See Annex 2 for a detailed description of each phase of the ESMAP process.

66. In both developed and developing countries, fewer women than men are employed in engineering roles. Currently, women who work in PIC utilities tend to be employed in non-engineering roles, such as finance and administration. The PPA would like to encourage more women to work in engineering roles. Annex 5 provides a proposed Gender Action Plan for this project.

F. ENVIRONMENT (INCLUDING SAFEGUARDS)

67. The screening of environmental and social risks and issues has been based on the preliminary information currently available on proposed technical advisory studies and the installation of wind and solar monitoring equipment. The EA category is B–Partial Assessment.

68. Component 1 (Phase 2 of the ESMAP process) comprises the temporary installation of wind monitoring masts and solar monitoring equipment, but the proposed locations will not be known until the desk-based research under Phase 1 has been completed. These may be located in 10 of the 11 countries. The installation of ground-based measurement equipment under Phase 2 of the ESMAP process is expected to be on government land, but this may not always be the case (for example, wind monitoring will depend on the location of the wind resource). Customary or community land may be required temporarily for the installation of measurement equipment.

69. An ESMF will be used to inform site selection and the mitigation measures required at each site. Sensitive sites, such as physical cultural resources, nests or productive gardens, can be avoided through the use of the ESMF in the site-selection process. The draft ESMF was published on the PPA website on July 9, 2015. Consultations on the draft ESMF were held with power utility staff and government energy officials at the PPA Conference in RMI on July 13, 2015, and at a workshop with energy utilities and regulators in Hawaii on July 23, 2015. The final ESMF, following consultations, was published on the PPA website on August 16, 2015, in the Bank's InfoShop on August 17, 2015, on the Pacific Region Energy Data Repository website on July 28, 2015, and on the utilities' websites in participating countries by September 1, 2015.

70. The ESMF will also include methods to identify and minimize impacts during installation, use and decommissioning, and will include voluntary land donation protocols and consultation methods. Potential impacts to be managed are: (a) minimizing vegetation clearance for mast installation and associated track clearances; (b) ensuring that land access is secured (as discussed in Section E above); (c) avoiding nests, gardens, houses, sites of significance to local people, other physical cultural resources, etc.; and (iv) ensuring that affected parties are consulted and are fully informed of the activity.

71. The PPA will ensure that all TORs for any TA or studies carried out under the project are consistent with the World Bank's environmental and social safeguards policies and requirements. These TORs will be cleared by the World Bank.

72. Safeguard Policy OP/BP 4.01 Environmental Assessment is triggered based on the screening process and the requirement for a safeguards instrument to manage potential impacts and ensure safeguards is mainstreamed into training materials. OP 4.11 Physical Cultural Resources is triggered on a precautionary basis because such resources may be identified through the site-selection screening process.

G. CITIZEN ENGAGEMENT

73. Citizen engagement will be introduced through utility staff's capacity for grievance redress mechanisms (GRMs), enabling them to collect information on customer satisfaction/complaints and to close the beneficiary feedback loop by responding. This activity will be executed through Bank-supported TA to be provided by the WBG's Global Partnership for Social Accountability (GPSA) program. GPSA supports the efforts of governments, civil society and the private sector to work together to resolve critical governance challenges in developing countries. GPSA's capacity-building area will support utilities in the design of GRMs. Once PICs "opt-in" to the GPSA program, the PPA will also be able to submit a grant proposal for supporting the implementation of GRMs in PICs, thus opening the channel for directing additional resources to this subcomponent.

H. WORLD BANK GRIEVANCE REDRESS

74. Communities and individuals who believe that they are adversely affected by a World Bank- (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project-affected communities and individuals may submit their complaint to the WB's independent Inspection Panel, which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the WB's attention and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the WB's corporate GRS, please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the WB Inspection Panel, please visit www.inspectionpanel.org.

ANNEX 1. RESULTS FRAMEWORK AND MONITORING

Pacific Island Countries

Project Name: Regional Sustainable Energy Industry Development Project (P152653)

Project Development Objectives

PDO Statement

The project development objective (PDO) is to increase the data availability and capacity of power utilities of the Pacific Island Countries and Papua New Guinea (PNG) to enhance their ability to incorporate and manage renewable energy technologies and long-term disaster risk planning.

These results are at:	Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values				
		YR1	**YR2**	**YR3**	**YR4**	**End Target**
Increased publicly available information on RE resources in targeted project areas	Limited public data	0	0	Availability of public data on PPA website (Phase 1 data, including draft resource maps)	Availability of public data on PPA website (Phase 1 data, including draft resource maps and Phase 2 data)	Availability of public data on PPA website (Phase 1 data, including draft resource maps, Phase 2 data, and Phase 3 data)
Increased available planning tools and training to both PPA and PIC power utilities in the use of these tools	Limited available planning tools	0	Availability of planning tools (grid-stability software and benchmarking tool) to PPA members	Availability of planning tools (grid-stability software and benchmarking tool) to PPA members and	Availability of planning tools (grid-stability software and benchmarking tool) to PPA members and	Availability of planning tools (grid-stability software and benchmarking tool) to PPA members and

				increased capacity to use these tools	increased capacity to use these tools	increased capacity to use these tools
Improved technical and institutional capacity of PPA and PIC power utilities	Limited capacity-building activities	Capacity-building plan developed	30% of capacity-building plan implemented	60% of capacity-building plan implemented	90% of capacity-building plan implemented	100% of capacity-building plan implemented
Increased planning capacity for disaster recovery and risk reduction within PIC power utilities	Limited capacity	Limited capacity	Investment plan in resilience available for at least 1power utility	Investment plan in resilience available for at least 2 power utilities	Investment plan in resilience available for at least 3 power utilities	Investment plan in resilience available for at least 3 power utilities

Intermediate Results Indicators

		Cumulative Target Values				
Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
Phase 1 (satellite based) resource-mapping assessment of solar and/or wind capacity across 10 PICs completed and available[28]	0	Technical consultancy contracted	Phase 1 assessment under way	10 PICs completed	10 PICs completed	10 PICs completed and available online
Phase 2 (ground measurements) resource-mapping assessment of solar and/or wind capacity across 10 PICs completed and available[29]	0	Technical consultancy contracted	Technical consultancy contracted	Phase 2 assessment under way	10 PICs completed	10 PICs completed and available online
Phase 3 (validation) resource-mapping assessment of solar and/or wind capacity across 10 PICs completed and available[30]	0	Technical consultancy contracted	Technical consultancy contracted	Technical consultancy contracted	Phase 3 assessment under way	10 PICs completed and available online

[28] Note that a resource-mapping assessment is being conducted for PNG through a separate ESMAP activity (P145864).
[29] Note that a resource-mapping assessment is being conducted for PNG through a separate ESMAP activity (P145864).
[30] Note that a resource-mapping assessment is being conducted for PNG through a separate ESMAP activity (P145864).

Training courses/workshops provided	0	2	3	4	5	6
Planning tool available and training provided to increase capacity in using the tool	0	Planning tool software purchased	Planning tool software available online and training provided to use the tool	Planning tool software available online and training provided to use the tool	Planning tool software available online and training provided to use the tool	Planning tool software available online and training provided to use the tool
Reports on industry guidelines and competency standards available through PPA	4 guidelines currently available (Off-Grid Power Systems–Design; Off-Grid Power Systems–Install; Grid-Connected PV Systems–Design; Grid-Connected PV Systems–Install)	Consultants recruited to develop guidelines and competency standards	4 additional guidelines/ standards available	6 additional guidelines/ standards available	7 additional guidelines/ standards available	8 additional guidelines/ standards available
Post-disaster and/or disaster-risk reduction needs assessment developed	0	Consultants for the needs assessment recruited	Needs assessment for at least 2 power utilities developed	Needs assessment for at least 3 power utilities developed	Needs assessment for at least 4 power utilities developed	Needs assessment for at least 5 power utilities developed
PPA publishing reports on grievance redress mechanism and how issues were resolved (Yes/No)	No	Reporting development under way	Yes	Yes	Yes	Yes

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition, etc.)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Increased public information on RE resources in targeted project areas	This indicator will measure the increase of public information on RE resources in targeted project areas available on the PPA website.	Annual	Project reports	PPA
Increased available planning tools and training to both PPA and utilities in the use of these tools	This indicator will measure the increase in available planning tools for use by PPA members, and training of PPA and utility staff in the use of these tools.	Annual	Project reports	PPA
Improved technical and institutional capacity of power utilities	This indicator will measure the improved technical and institutional capacity of power utilities.	Annual	Project reports	PPA
Increased planning capacity for disaster recovery and risk reduction	This indicator will measure the number of power utilities that have adopted an investment plan in resilience based on the needs assessment developed through the project.	Annual	Project reports	PPA

Intermediate Results Indicators

Indicator Name	Description (indicator definition, etc.)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Resource mapping assessment of solar and/or wind capacity across all PICs completed and available	This indicator will measure completion and availability of resource-mapping assessment of solar and/or wind capacity across all PICs.	Annual	Project reports	PPA

Training/workshops provided	This indicator will measure the number of workshops provided under the project.	Annual	Project reports	PPA
Planning tool available and training provided to increase capacity in using the tool	This indicator will measure the availability of a grid-stability modeling planning tool available to power utilities through the PPA and training in how to use the tool.	Annual	Project reports	PPA
Reports on industry guidelines and competency standards available through PPA	This indicator will measure the number of reports on industry guidelines and competency standards for the selected PICs to consider, which will available through PPA.	Annual	Project reports	PPA
Post-disaster and/or disaster-risk reduction needs assessment developed	This indicator will measure the number of needs assessments developed for targeted power utilities. The needs assessments will either focus on resilient recovery/reconstruction in post-disaster situations or on disaster-risk reduction and resilience building in normal circumstances (i.e., during “peace” time)	Annual	Project reports	PPA
PPA publishing reports on grievance redress mechanisms and how issues were resolved	This indicator will measure the availability of reports on grievance redress mechanisms prepared by PPA	Annual	Project reports	PPA

ANNEX 2. DETAILED PROJECT DESCRIPTION

Pacific Island Countries: Regional Sustainable Energy Industry Development Project (P152653)

1. The project development objective (PDO) is to increase the data availability and capacity of power utilities of the Pacific Island Countries and Papua New Guinea (PNG) to enhance their ability to incorporate and manage renewable energy technologies and long-term disaster risk planning. Because of the importance and potential for RE in PICs, it is important for utilities to learn about integration of RE in their power systems and be able to critically assess the merits of proposed RE projects and their impact on existing grids. This project aims to: (a) increase the information publicly available on renewable energy resources; (b) increase available planning tools and people who know how to use them; (c) improve institutional and technical capacity within the PPA and utilities for planning and management aimed at the successful integration and long-term management of power systems with higher levels of renewables once renewable projects become operational; and (d) strengthen planning capacity for disaster recovery and risk reduction.

2. To achieve this PDO, the project will be supported by a USD 1.92 million SREP grant, a USD 3.47 million grant from SIDS DOCK, and a USD 0.27 million grant from GFDRR. The project contains three components: (i) Renewable Energy Resource Mapping–Phases 1 to 3; (ii) Technical Assistance; and (iii) Project Implementation Support. These components support the achievement of the PDO by: (a) enabling resource mapping of wind and solar energy across all PICs; (b) building capacity across PIC utilities in the area of power system planning, with emphasis on the integration of intermittent generation; and (iii) providing implementation support to the project implementation agency.

Component 1. Renewable Energy Resource Mapping–Phases 1 to 3. Estimated Cost: (SIDS DOCK USD 2.27 million)

3. This component will conduct a resource-mapping assessment of solar and wind capacity across 10 PICs.[31] The objective of this component is to enhance the awareness and knowledge among governments, utilities and the private sector about the resource potential for renewable technologies (solar and wind), and to provide the governments with a spatial planning framework to guide investment in the renewable energy sector. These resource maps will: (a) provide a detailed assessment for solar and wind and potentially other renewable energy resources in the islands; (b) increase the awareness and knowledge of the governments and other energy sector players about renewable energy potential; (c) provide baseline information for potential new public and private sector investments projects; and (d) serve as inputs for grid integration studies. The abovementioned Phases 1 to 3[32]of the resource mapping will be undertaken with support from the

[31] These PICs are: Fiji, FSM, Kiribati, Marshall Islands, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Note that the World Bank is already assisting Papua New Guinea with a Renewable Energy Resource Mapping and Geospatial Planning Project (P145864), which is why it has not been included in Component 1 of this project. PNG is included in Components 2 and 3 of this project.

[32] Phase 1: satellite data-based mesoscale mapping; Phase 2: commissioning of ground-based data collection and assessment; and Phase 3: production of a validated atlas for the RE resource in question and dissemination of commissioned data.

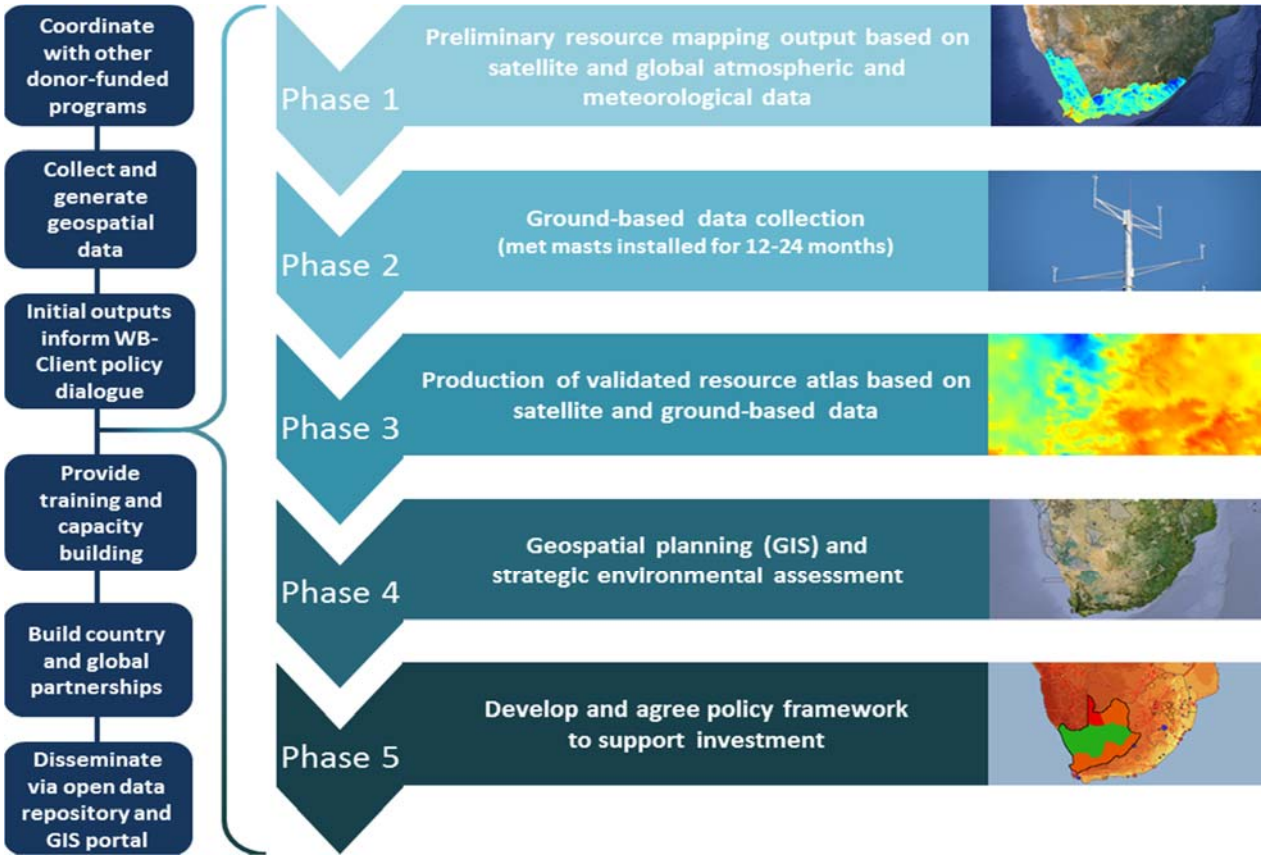
Energy Sector Management Assistance Program (ESMAP):

- **Phase 1–Project inception, preliminary modeling, and implementation planning:** Project inception and stakeholder engagement; preparation of an initial resource estimate at the country level based on a mesoscale model using satellite and re-analysis data; preliminary validation using existing ground-based data; preparations for the implementation of Phase 2.
- **Phase 2–Ground-based data collection:** Implementation of a ground-based measurement campaign using high-quality measurement devices, with real-time data transmission and reporting, for the purpose of validating and improving the mesoscale model and generating reliable benchmarking data.
- **Phase 3–Production of validated wind resource atlas:** Preparation of validated resource maps and atlas reports that describe the final outputs, methodology and process, and include provision of the final geographic information system (GIS) data.

4. The activity will ensure the sharing of knowledge about the current existing information and will avoid duplication of data collection. Use of the ESMAP approach will make it possible to continue with the next phases (Phases 4 and 5) under a different project if additional funds become available or if the funds allocated to Phases 1 to 3 make it possible to cover additional scope in some islands.[33]

[33] Phase 4: Carrying out geospatial planning and a Strategic Environmental Assessment (SEA), whereby RE resource-mapping outputs are analyzed alongside other geospatial and environmental data to determine zones most appropriate for development. Phase 5: Development of policy recommendations to help guide commercial investment in a manner that is consistent with economic, social and environmental objectives.

Figure 1: Five phases of RE resource mapping being supported under the ESMAP initiative



5. The awarding of the contract for implementation of this component will use the Bank's standard bidding document for consultancy firms. Bidders will be responsible for the delivery of this component.

6. As part of implementation, the PPA will explore options to formalize in-kind contributions to this project from PPA members with strong technical know-how about insular systems (e.g., Guam, French Polynesia).

Component 2. Technical Assistance. Estimated Cost: USD 2.57 million (SIDS DOCK USD 0.7 million; SREP USD 1.6 million; GFDRR USD 0.27 million)

7. This component will conduct a program of activities designed to increase capacity within the utilities in 10 PICs[30] and PNG on planning for and management of the integration of variable RE in their systems, data collection and management, and knowledge sharing across jurisdictions. This program of activities will include:

- Modeling software and consultancy services for renewable energy integration and capacity building, including: (a) acquisition of modeling software and tools to support utilities with network expansion planning, variable renewable integration studies, including interconnection, grid-stability and protection coordination studies (building on the work initiated by IRENA in 2013–2014); (b) training of PPA staff in the use of the software in

order to support utilities through the conduction of independent grid integration studies.

- Online power benchmarking platform, including: (a) development of an online power benchmarking data submission tool to support the PPA's coordination of the annual Power Benchmarking Report with input from member utilities; and (b) training of PPA staff in the use of the tool in order to support utilities with their independent data collection/entry using the tool.

- Development of industry guidelines and competency standards, including: (a) development of renewable grid connection guidelines based on the applicable grid codes in order to maintain adequate levels of reliability and grid stability; and (b) development of industry guidelines (design, installation, O&M) and competency standards to support certified technical training in RE technologies.

- Training/workshops for PPA members, including: (a) support for training courses in a range of demand-driven RE technologies, industry guidelines, standards and other relevant industry issues in each PIC (thus reducing the cost of bringing people from multiple PICs to a single location and reaching more staff within utilities), system planning (including energy efficiency considerations) and demand-side management; (b) support for the PPA to undertake an online training needs assessment among its members to identify training and skills-enhancement needs at the individual utility level and then draw common issues/themes for multi-utility staff training sessions; and (c) support for the PPA's management of workshops focused on developing utilities' understanding of frameworks for private sector involvement in the energy sector (links with IFC's P600131 Pacific RE Gen focused on developing business models for private sector engagement in the energy sector).

- Career development assessment: PPA to hire a consultant who would assist with career development initiatives aimed at attracting and retaining talented staff within utilities (e.g., staff development and training, performance incentives, etc.). The PPA will also join PIC university career fairs to encourage both female and male high school students to study engineering and other energy-related majors at universities, and will provide internship opportunities for them.

- Disaster-recovery and risk-reduction activities to support PIC power utilities' efforts to improve their preparedness for responding to natural hazards/climate shocks and to reduce economic losses when disasters occur. This is part of the Japan–World Bank Program for Mainstreaming DRM in Developing Countries. This will include the provision of advisory services to the utilities on the planning and prioritization of investments in resilience in the power sector, as well as an emergency response window to assist utilities with post-disaster damage assessment reports. Risk-reduction/adaptation measures will include engineering (e.g., designing more robust design specifications; relocating or retrofitting extremely vulnerable existing infrastructure; designing new systems better able to capture the energy of increased wind speeds, flood protection, underground distribution for protection against wind, high temperatures, corrosion, and flooding), and non-engineering options (more robust O&M procedures, improved and better-coordinated land-use planning; for example, rezoning land use so that future power infrastructure is located in less vulnerable areas).

8. This component will complement Component 1 by providing training and workshops to power sector utility staff on technical skills related to renewable energy integration so that they can better use the information that is obtained through the resource-mapping component.

Component 3. Project Implementation Support. Estimated Cost: USD 0.82 million (SIDS DOCK USD 0.5 million; SREP USD 0.32 million)

9. This component will conduct a program of activities designed to enhance the PPA's capacity for overall project coordination, management and monitoring. These activities include coordination, administration, technical operation, procurement, FM, environmental and social management, M&E, and reporting. The project's incremental operating costs will also be financed through this component (USD 0.1 million). This program of activities will include:

- A project implementation support subcomponent (USD 0.72 million), including: (a) hiring of a full-time project implementation officer to support the PPA throughout project implementation; (b) hiring of a part-time procurement advisor to assist with procurement processes throughout project implementation; (c) provision of TA to support the mainstreaming of gender dimensions in the project; (d) purchase of videoconferencing equipment to support enhanced interaction and training support between the PPA and utilities; (e) support for the PPA to organize training courses and workshops on RE technologies and key issues facing utilities; and (f) support for the PPA to update its website and facilitate links to the resource-mapping online tool, online grid-stability software, online benchmarking tool, and other resources generated throughout project implementation.

- An incremental operating costs subcomponent (USD 0.1 million).

10. Table 1 summarizes project costs totaling USD 5.66 million.

Table 1. Summary of Project Costs

Components	Total Cost USD million	Financing Source		
		SIDS DOCK	SREP	GFDRR
Component 1: RE Resource Mapping–Phases 1 to 3	2.27	2.27	0.00	0.00
Component 2: Technical Assistance	2.57	0.70	1.60	0.27
Component 3: Project Implementation Support	0.82	0.50	0.32	0.00
TOTAL	**5.66**	3.47	1.92	0.27

Other Related Projects

11. These activities will complement existing work being undertaken by other development partners in the sector, including the EU's Technical and Vocational Education and Training for Sustainable Energy and Climate Change Adaptation (TVET SECCA) project led by the Secretariat of the Pacific Community (SPC) and the University of the South Pacific (USP); the United States Agency for International Development's (USAID) Pacific Vocational Training and Education for Clean Energy (VOCTEC) led by Arizona State University in close partnership with USP; grid-stability studies and training programs being undertaken by the International Renewable Energy Agency (IRENA); training programs conducted by the International Union for Conservation of Nature (IUCN); and the International Finance Corporation's (IFC) Pacific RE Gen (P600131) focused on developing business models for private sector engagement in the sector. This project is being prepared in close coordination with these partners to ensure that there is complementarity and no overlap.

ANNEX 3. IMPLEMENTATION ARRANGEMENTS

Pacific Island Countries: Regional Sustainable Energy Industry Development Project (P152653)

Project Institutional and Implementation Arrangements

1. The project will be implemented by the PPA, whose executive director will serve as the project manager. The project will fund a full-time project implementation officer to support the project manager with: day-to-day implementation, monitoring and reporting of project activities, including the completion of the project's FM requirements; coordination with relevant power utilities, national government institutions and development partners; procurement of goods and consultancies under the guidance of the PPA's accounts officer, administrative officer, and the deputy executive director who acts as the chief financial officer; and monitoring and reporting on results achieved by activities financed under the project. The project implementation officer will be hired prior to effectiveness. A part-time procurement advisor may be hired to assist with procurement activities, if needed, for purposes of the project. A full-time engineering advisor will also be hired no later than six months after effectiveness to assist the project manager with the technical aspects of the project. All project staff will be jointly located within the PPA's office in Suva.

2. The PPA is a nongovernmental regional organization, established in 1992 under the *Companies Act of Fiji* as a company limited by guarantee. The PPA's active membership is composed of any electric power utility operating in the following 20 PICT member countries: American Samoa, Commonwealth of the Northern Marianas, Cook Islands, FSM, Fiji, French Polynesia, Guam, Kiribati, RMI, Nauru, New Caledonia, Niue, Palau, PNG, Solomon Islands, Tonga, Tuvalu, Vanuatu, Wallis and Futuna, and Western Samoa. Active members shall include public or private electric power corporations, government departments, statutory bodies or other agencies, whether incorporated or unincorporated, which are directly responsible for public power supply within a member country.

3. There are three other membership categories: (i) Allied Members–any organization or individual wishing to be affiliated with the PPA who is not eligible for active membership but whose affiliation would be of benefit to the PPA; (ii) Affiliate Members–any organization that will not seek to gain a financial benefit from the PPA, including multilateral and bilateral agencies, non-utility government entities, and various international standards associations; and (iii) Honorary Members–chosen by the Board on the basis of outstanding service to the power industry in member countries or for outstanding service to the PPA.

4. The PPA has a Secretariat Office with five staff members located in Suva, Fiji. The PPA currently has a membership of 25 electricity utilities from 20 PICs (Active Members) and 114 commercial members (85 Allied Members and 29 Affiliate Members) worldwide with interest in the development of the power industry in the Pacific region.

5. The PPA's main objective is to create an environment of "cooperative partnership" with the private sector, funding institutions, and others with interest in the development of the power industry, and to enhance the role of the power sector in PICs. The PPA aims to improve the quality of power through a cooperative effort among the region's utilities. It has a mandate to assist the

utilities in resolving problems, including the integration of renewable energy, and to encourage them to be efficient and accountable in their operations.

6. The PPA is directly funded through annual subscriptions from its members. There are four categories of membership: Active Membership, Allied Membership, Affiliate Membership, and Honorary Membership. Active members pay an annual membership fee based on their size: USD 9,000 (peak load >30MW), USD 8,500 (peak load 5MW–30MW), and USD 3,500 (peak load <5MW). Allied Members pay an annual membership fee of USD 2,500. There are no membership fees for Affiliate Members or Honorary Members and they are not financial members of the PPA.

7. The PPA's Board is composed of the chief executive officers (CEOs) from all Active Members and a member elected from Allied Members. The PPA's Board of Directors meets at the annual conference. An Executive Committee of the Board guides the Secretariat between Board meetings and has the authority to make decisions on behalf of the Board between such meetings. The Executive Committee, comprising the Chairman, the Secretary, the Treasurer, the Executive Director, and the elected Allied Member representative, is elected from the members of the Board. There is an Alternate to all positions in the Executive Committee.

8. The PPA has managed a number of other development partner projects, including those of the USDOI, EU, GSEP, IRENA, NZAid and UNIDO.

9. Although it has not previously worked with the Bank, the PPA is aware of the Bank's safeguards policies and is willing to work constructively to ensure compliance, especially with reference to effective public consultation aimed at managing environmental and social risks, resettlement principles, and impact monitoring. The Bank will provide support to the PPA through its internal safeguards advisors, as required.

10. A project implementation officer will support the PPA during project implementation and will provide inputs on TORs, studies and expert technical guidance, as needed.

Financial Management, Disbursements, and Procurement

Financial Management

11. *Risks and Mitigation Strategies*. The existing FM systems appear adequate to meet the FM requirements as stipulated in OP/BP 10.00, subject to implementation of the agreed actions and mitigation measures. The project's overall FM risk is rated as moderate. No FM effectiveness or disbursement conditions are recommended.

12. *Budgeting arrangements.* The PPA will prepare a total budget for the life of the project. This budget will be consistent with the work plan and broken down into annual budgets. The PPA will review this document periodically as required, at least annually, and will analyze budget versus actual expenditure.

13. *Accounting arrangements.* The PPA will perform the project's accounting functions using the PPA's accounting software (MYOB), and either ensure the adequate setup of MYOB to provide the required level of project reporting, or maintain adequate support systems (Excel spreadsheets) to provide the required level of reporting (e.g., contract records, financial reporting, withdrawal applications). It is recommended that separate accounts be set up in MYOB to record

the project's financial activities.

14. *Internal controls.* The project will adopt the FM procedures and processes stipulated in the PPA's Accounts Policy and Procedures Manual, combined with the various WBG manuals and guidelines (e.g., Disbursement Manual, Procurement Guidelines). These procedures and processes are considered adequate. A brief FM section will be included in the Operational Manual to provide guidelines on the project's internal controls and procedures, with the inclusion of any details not adequately addressed in the PPA's policies and manuals and the WBG's manuals and guidelines.

15. *Financial reporting.* The PPA will prepare unaudited interim financial reports (IFRs) on a calendar semester basis. The IFRs will include an analysis of actual expenditure for the current semester, year to date and project to date, and outstanding commitments, compared to the total project budget. The format will be developed and agreed to by the WBG prior to submission of the first IFR. The IFRs will be forwarded to the WBG within 45 days of the end of each calendar semester.

16. *External audit.* An annual audit of the project's financial statements will be required. The PPA contracts out audits to private auditors. The audited financial statements must be submitted to the Bank no later than six months after the end of each fiscal year.

Disbursements

17. *Flow of funds.* The Designated Account (DA) will be opened in USD at the ANZ Bank in Suva, Fiji. The PPA will prefinance local eligible expenditures then get reimbursed from the DA or the Bank. There will be quarterly reconciliations of the account. The DA's ceiling will be specified in the Disbursement Letter.

18. *Disbursement Methods*. The project will use the three disbursement methods of advance, reimbursement and direct payments. Disbursements will be made against Lists of Payments, Statements of Expenditure, and records evidencing eligible expenditures.

19. *Retroactive financing***.** Retroactive financing of up to USD 100,000 would be available for eligible expenditures incurred on and after May 1, 2015. Retroactive financing will be processed according to the requirements specified in the Financing Agreement.

Procurement

20. *Procurement arrangements.* Procurement for the proposed project will be carried out in accordance with the World Bank's Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011 and revised July 2014 (Procurement Guidelines); Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011 and revised July 2014 (Consultant Guidelines); and the provisions stipulated in the financing agreement. The description of various items under different expenditure categories is summarized below. For each contract to be financed by the grant, different procurement or selection methods, estimated costs, prior-review requirements, and a time frame will be agreed by the recipient and the Bank in the Procurement Plan.

21. *Procurement of goods and non-consulting services.* Procurement under the proposed

project includes: (a) purchase of grid-stability modeling software; (b) purchase of videoconferencing equipment; and (c) benchmarking online data submission platform (software). International competitive bidding (ICB) procedures shall be used for procurement of goods estimated to cost USD 500,000 or more per contract. Shopping may be used to procure goods and non-consulting services estimated to cost less than USD 500,000 per contract. Direct contracting may be used in circumstances that meet the criteria set out in paragraph 3.7 of the Procurement Guidelines.

22. *Selection of consultants.* The proposed project will require the hiring of consultants, including: (a) a consultancy firm to undertake resource mapping for Component 1; (b) a consultant project implementation officer; (c) a consultant engineer; (d) a consultant procurement advisor; (e) a consultant gender advisor; and (f) a consultant firm to develop guidelines and competencies and conduct various workshops. Consultants will be selected in accordance with the following procedures:

- *Selection of consulting firms.* Consulting contracts expected to cost more than USD 300,000 equivalent per contract will use Quality- and Cost-based Selection (QCBS) or Quality-based Selection (QBS) in accordance with the Consultant Guidelines. Consulting services estimated to cost under USD 300,000 equivalent per contract may follow Selection Based on Consultant's Qualifications (CQS). Under the circumstances described in paragraph 3.9 of the Consultant Guidelines, consultants may be selected and awarded contracts on the basis of a Single-source Selection (SSS), subject to the Bank's prior approval.

- *Selection of individual consultants (ICs).* ICs will be selected and contracts awarded in accordance with the provisions of paragraphs 5.1 through 5.5 of the Consultant Guidelines. Under the circumstances described in paragraph 5.6 of the Consultant Guidelines, ICs may be selected and awarded on a single-source basis, subject to the Bank's prior approval.

23. *Prior-review thresholds*. Table 2 shows the prior-review and procurement thresholds for the proposed project.

Table 2. Prior-review and Procurement Thresholds

Procurement Methods	Procurement Thresholds	Prior-Review Thresholds
Goods		
ICB	≥USD 500,000	All contracts subject to prior review
Shopping	<USD 500,000	None
Direct contracting	Meet the criteria set out in paragraph 3.7 of Procurement Guidelines	All contracts subject to prior review
Consultant Selection Methods	**Applicability**	**Prior-Review Thresholds**
Firms (QCBS, QBS, Least-cost Selection [LCS], CQS, and SSS)	In accordance with the Bank's Consultant Guidelines	≥USD 200,000, and all SSS contracts
IC		≥USD 50,000 (exception made for SSS, legal- and procurement-related assignments, in which all contracts are subject to prior review)

24. *Implementation arrangements.* The PPA will be responsible for project implementation. The PPA, with the assistance of the procurement advisor and the project implementation officer to be hired under the project, will be responsible for procurement activities.

25. *Procurement risks and mitigation actions.* The Bank conducted a procurement capacity assessment. The main risk-mitigation actions include: (a) hiring of a procurement advisor to assist the PPA in handling procurement; (b) hiring of a consultant engineer to assist the PPA in the preparation of technical specifications, in bid evaluations and in contract supervision; (c) use of the procurement database system developed for the Pacific; and (d) sharing with the PPA a standard procurement checklist of records for procurement recordkeeping purposes.

26. *Frequency of procurement supervision.* In addition to the prior review to be conducted by the Bank, procurement supervision missions will visit the field to carry out post reviews of procurement activities every 12 months. The post-review sampling ratio will be one out of five contracts.

27. *Procurement plan.* A procurement plan for the first eighteen months of implementation of the proposed project has been prepared by the PPA. This plan will be available in the project's database and on the Bank's external website once it is approved by the Bank. The procurement plan will be updated in agreement with the Bank annually, or as required, to reflect project implementation needs and improvements in institutional capacity. Tables 3 and 4 present a summary of the procurement plan.

Table 3. Procurement of Goods, Works, and Non-consulting Services

Contract No.	Description	Estimated Cost (USD Million)	Procurement Method	Prequalification	Domestic Preference	Estimated Contract Dates	Review by Bank
1	Acquisition of modeling software and license	80,000	Shopping	N	N	December 2015	Post
2	Acquisition of videoconferencing equipment	7,000	Shopping	N	N	December 2015	Post
3	Online benchmarking data submission platform (software)	25,000	Shopping	N	N	February 2016	Post

Table 4. Selection of Consultants

Contract No.	Description	Estimated Cost (USD Million)	Selection Method	Bank Review	Expected Proposal Submission Date
1	Hiring of a project implementation officer	300,000	ICS*	Prior	August 2015
2	Hiring of a procurement advisor (on an as-needed basis for entire project duration)	60,000	ICS	Prior	August 2015
3	Hiring of a firm to develop RE/EE guidelines and competency standards	998,700	QBS	Prior	September 2015
4	Hiring of an engineering specialist	184,000	ICS	Prior	September 2015
5	Hiring of a resource-mapping consultant firm for Component 1	700,000	QCBS	Prior	October 2015
6	Hiring of a consultant to customize the online benchmarking platform	10,000	ICS	Prior	December 2015
7	Hiring of a gender advisor to advise on the Gender Action Plan work program and provide necessary inputs into gender issues for workshops	10,000	ICS	Prior	February 2016

***Competitive Individual Consultant Selection*

Environmental and Social (including safeguards)

28. The PPA will be responsible for the implementation of the ESMF, preparing TORs for consultants that include safeguards clauses, and reviewing the consultants' outputs in relation to the TORs and the ESMF. One of the consultants selected to support the PPA under Component 3 will require experience in donor safeguards to undertake this role. The EA category is B–Partial Assessment.

29. The ESMAP consultants engaged under Component 1 will be required to develop the ground-monitoring program in accordance with the ESMF, and will be required to use the site

selection checklists and the guidelines in the ESMF for installing, maintaining and removing the equipment. The task team safeguards specialists will provide further training and support to PPA during implementation.

Monitoring & Evaluation

30. The PPA will conduct overall monitoring and coordination of project activities, in accordance with the indicators included in the Results Framework (Annex 1), including the monitoring of compliance with safeguards policies. No later than 45 days after the end of each semester, the implementation agency will submit semi-annual progress reports to the Bank, covering all project activities, including a procurement and financial summary report. Financial reports for each semester will also be provided to the Bank no later than 45 days after the end of each semester. Semi-annual reviews, the first one to take place six months after International Development Association (IDA) grant effectiveness, will provide a detailed analysis of implementation progress toward achievement of the PDO and will include an evaluation of FM and a post review of procurement.

Role of Partners

31. In relation to RE integration in the energy sector, a number of development partners are currently assisting PICs with the implementation or preparation of projects. Good communication and coordination among development partners and with the PPA will remain necessary to ensure that overlaps are kept to a minimum and that each project's outcomes contribute to the energy sector's overall goals. Table 5 shows current and proposed projects in the sector.

Table 5. Key Related Activities being Undertaken by Development Partners and Regional Organizations in PICs' Renewable Energy Sector

Funding Agency	Activity Description
IFC	"Pacific RE Gen" Project (P600131) focused on developing business models for private sector engagement in the sector. Currently under way and due for completion June 2017. This project aims to support the development of three replicable business models by supporting and developing three bankable RE projects in PNG and the Pacific.
EU	Technical and Vocational Education and Training for Sustainable Energy and Climate Change Adaptation (TVET SECCA) project (€6.1 million) being led by the Secretariat of the Pacific Community (SPC) and the University of the South Pacific (USP). Commenced November 2014. Training needs assessment due to be completed second quarter 2015.
EU	"Capacity Building Project" (€1.2 million) 2012. Training needs assessment of Pacific utilities led by PPA.
EU/NZ	"Quantification of the power system energy losses in Southern Pacific Utilities" report completed May 2012. Covered 9 Southern Pacific utilities. Managed by PPA using EasyPower static grid-stability modeling software.
Global Sustainable Electricity Partnership (GSEP)	Renewable Energy, Solar Home Systems and Grid-connect PV training for PPA utilities from 2006 to 2010.
IRENA	"Assessment of grid stability for high shares of renewable energy integration into Pacific Island grids" (February 2013–December 2014). PPA assisted with the first study in Palau and will lead the second study in Kiribati starting mid-2015. Aim is to develop a standard

	methodology of assessing the effects of variable renewables on the stability of island grids.
IRENA	Grid stability studies using PowerFactory software. Palau study has been completed.
IRENA	Renewable Readiness Assessments (RRAs) undertaken by countries in cooperation with IRENA to produce a holistic evaluation of the sector and identify key actions to overcome barriers to increased renewable energy deployment. To date, among PICs, RRAs have only been completed for Vanuatu, RMI and Fiji.
IRENA	RE training program: Design and Installation of Grid Connect PV systems. Online course funded by individuals. IRENA funded 4-day practical courses in Fiji, Kiribati (2 off), Samoa, Tonga and RMI. Persons who passed the course are eligible for certification under the PPA/SEIAPI certification program.
International Union for Conservation of Nature (IUCN), funded by the Governments of Italy and Austria	Grid-Connected Solar PV Training over 2 weeks in Niue, Nauru and Tuvalu to be completed before the end of 2015. Aims to provide operational staff of power utilities and public works departments in Niue, Nauru, and Tuvalu with practical training in installation, O&M of grid-connected solar PV systems.
Pacific Environment Community Fund (PEC)	The USD 66 million PEC Fund contribution from the Government of Japan is coordinated, managed and administered by the PIFS. The PEC Fund supports projects with a focus on the provision of solar power-generation systems and sea-water desalination plants or a combination of both. Participating countries include 14 Forum island countries: Cook Islands, Federated States of Micronesia, Kiribati, Fiji, Niue, Nauru, Republic of Palau, Papua New Guinea, Republic of the Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.
Pacific Regional Infrastructure Facility (PRIF)	Power Benchmarking Reports 2012, 2013, 2014. Power Benchmarking Manual. PPA to lead the 2015 Power Benchmarking Report.
USAID	Pacific Vocational Training and Education for Clean Energy (VOCTEC) program led by Arizona State University in close partnership with USP. Provides education on solar PV technology to PICs to support off-grid solar PV equipment installation, O&M (train-the-trainer model). Completed November 2014.
USDOI	"Quantification of the power system energy losses in Southern Pacific Utilities" report completed May 2010. Covered 10 Northern Pacific utilities. Managed by PPA using EasyPower static grid-stability modeling software.
World Bank	Pacific Regional Data Repository for Sustainable Energy for All (PRDR for SE4ALL) (P153190) as a basis for strengthening the availability, quality and comparability of energy data and statistics in the region. Information from the PPA project (P152653) will also go into the PRDR. Due to be completed in 2016.

Source: PPA's proposal and inputs from development partners during the identification mission and ongoing consultations.

ANNEX 4. IMPLEMENTATION SUPPORT PLAN

Pacific Island Countries: Regional Sustainable Energy Industry Development Project (P152653)

Implementation Support Plan

1. The development of the implementation support strategy is based on the nature of the project and its risk profile. The aim is to make implementation support to the client more flexible and efficient by focusing on the implementation of the risk-mitigation measures defined in the project.

2. The Bank's task team leader (TTL) will provide ongoing support by coordinating with the client and among WBG staff who will provide implementation support on technical, fiduciary (FM and procurement), and safeguards aspects. Task team members based in the WBG's Sydney and Washington, DC offices will support implementation. This will ensure that field missions can be organized quickly should the need arise and that international expertise can also be mobilized to provide global best practices. Formal missions will be conducted at least three times during the first two years of implementation and at least twice yearly thereafter.

3. In conjunction with government counterparts, the Bank will monitor progress against the monitoring indicators in the Results Framework. The Bank will also monitor risks and update the risk-assessment and risk-management measures, as needed. A midterm review will encompass a more in-depth stocktaking of performance under the project. Based on the assessment of progress at the midpoint of the project, government counterparts and the Bank will consider recommendations for improvements or changes, and the use of contingency funds assigned to the project.

4. A series of technical reviews and capacity-building activities support the Bank's implementation plan. In addition to periodic reviews by the task team and inputs from procurement, FM and safeguards specialists, the plan identifies appropriate technical expertise to be retained during critical implementation periods.

5. It is important to note that the Bank team will be in close coordination with relevant development partners who are assisting with the energy sector in PICs, and will seek to coordinate supervision missions at the same time with those partners.

Table 1. Implementation Support Main Focus and Skills

Time	Focus	Skills Needed	Resource Estimate (Staff Weeks)
First twelve months	Team leadership	TTL/Co-TTL	10
	Review of procurement documents	Procurement specialist	6
	Review of FM	FM specialist	4
	Technical reviews	Renewable energy specialist	4
	Safeguards training and review of instruments	Environmental specialist Social Specialist	2
12–48 months	Team leadership	TTL/Co-TTL	20
	Review of procurement documents	Procurement specialist	10
	Review of FM	FM specialist	8
	Technical reviews	Renewable energy specialist	8
	Safeguards review	Environmental Specialist Social Specialist	2

Table 10. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
TTL/Co-TTL	30	8	
Procurement	15	4	
FM	12	4	
Administrative Support	20	8	

ANNEX 5: GENDER ANALYSIS, ACTION PLAN AND MONITORING AND EVALUATION FRAMEWORK

Gender Analysis

1. Gender inequality remains a development challenge throughout the Pacific. This region registers some of the world's worst gender indicators, particularly in relation to political representation, gender-based violence, economic opportunity, and country cases of high maternal mortality rates. In addition, non-communicable diseases are an emerging concern in the Pacific and women are disproportionately affected.

2. The outcomes of Millennium Development Goals (MDG) are mixed. Although all PICs are on track to achieve gender parity in education, with the exception of PNG, the Solomon Islands and Tonga,[34] and several countries are on track for reaching Millennium Development Goal 5 (MDG5) on maternal mortality ratio targets (Cook Islands, Fiji, Nauru, Niue, Palau, RMI, Samoa, Tonga, and Tuvalu), there is still significant room for improvement in many PICs.

3. Overall, women's agency is limited and expressed through their low representation in politics and widespread violence against women. Women's representation in Pacific parliaments is the lowest of any region in the world. For example, FSM, Palau and Vanuatu currently have no women in their parliaments. In Samoa, only individuals with the chiefly Matai title can be elected to parliament. Although both women and men can receive the title, the percentage of women with this title remains low at 10.5 percent. Therefore, women are significantly disadvantaged when they wish to enter politics. Similarly in Tonga, until 2010, 14 of the 32 parliamentary seats were reserved for cabinet ministers appointed by the king, 9 were reserved for nobles, and 9 were elected by popular vote. Therefore, because only men can be nobles, the number of possible parliamentary seats available to women has been limited.

4. Lower levels of secondary school attainment and literacy pose barriers to women's equal participation in economic activity. Women also endure low levels of access to and control of economic resources, especially those related to access to credit markets and land, despite the fact that women in the informal sector provide a significant part of the region's labor. Women are less represented in formal work, with men outnumbering women in paid employment outside the agricultural sector by approximately two to one. There is also evidence that across the Pacific (except in Kiribati), young women are less likely to be employed than young men.[35]

5. Of the total female population of PICs, approximately 70 percent live in rural areas.[36] Subsistence economy predominates, as do strong gender roles determined by culture. Women are involved predominantly in household chores, including childrearing, caring for the sick or elderly, collection of water and firewood, and production of handicrafts for both household use and sale.

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[34] Pacific Island Forum Secretariat 2013. *2013 Pacific Regional MDGs Tracking Report.* Suva.
[35] United Nations Children's Fund (UNICEF Pacific) and Secretariat of the Pacific Community (SPC) 2011. *The State of Pacific Youth Report 2011: Opportunities and Obstacles.* Noumea.
[36] Economist Intelligence Unit 2012: *Women's economic opportunity 2012, A global index and ranking from the Economist Intelligence Unit, Findings and methodology*. Retrieved from http://www.juntadeandalucia.es/haciendayadministracionpublica/planif_presup/genero/documentacion/Women_Economic_index2012.pdf

6. Violence against women in the Pacific is endemic, with some of the world's highest incident rates. For example, 68 percent of ever-married women between the ages of 15 and 49 in Kiribati, 64 percent in the Solomon Islands, and 60 percent in Vanuatu have experienced physical and/or sexual violence by an intimate partner.[37] Violence against women significantly and negatively affects not only their health, well-being and agency, but also affects the public health system, business, and children's development, education, and nutrition levels. It is also self-perpetuating and women who have experienced intimate partner violence are seven times more likely to have children who are also abused than those who have not experienced partner violence. The development costs are significant: a recent World Bank study[38] estimated the cost of intimate partner violence annually to be close to the average that developing country governments spend on primary education. However, this may be higher in the Pacific. In 2009, the cost of domestic violence to Fiji's economy was calculated at around 6.6 percent of GDP.[39]

7. Women, especially in the Pacific, also have less control over their own earnings. Between 13 and 15 percent of women in the Marshall Islands, Samoa and Tuvalu report that their husbands have control over their cash earnings.[40] In addition, women's decision-making power in the home is limited; the family structure traditionally places household decision making with the male head of household.

8. Due to these inequalities, women and men have different opportunities to participate in discussions around the energy sector (grid and off-grid), work in the energy sector, and undertake training and professional development in the energy sector, which is currently dominated by state-run utilities.

9. Furthermore, women and men are affected differently by access to reliable energy and electrification rates both for households and public services. This project will actively consider gender throughout project activities. To monitor potential benefits to women, indicators will be developed and tracked throughout project implementation, as outlined in Table 1 below. Consultations will also be undertaken to ensure that the training needs of women are understood. A gender action plan has been developed with PPA involvement that commits to encouraging a greater representation of women in the utilities as well as enhanced training.

[37] World Bank. 2012. *Toward Gender Equality in the East Asia and the Pacific: A Companion to the World Development Report.* Washington, DC.
[38] World Bank. 2013. Intimate Partner Violence Economic Costs and Implications for Growth and Development.
[39] Professor Biman Prasad, Dean, University of the South Pacific, Island Business 2012. Also see: www.worldbank.org/en/news/opinion/2012/11/25/the-human-and-economic-cost-the-pacific-cannot-afford).
[40] World Bank. 2012. *Toward Gender Equality in the East Asia and the Pacific: A Companion to the World Development Report.* Washington, DC.

Table 1: Gender Action Plan Framework

	Related Actions/Activities	Measurable Outputs/Key Performance Indicator (KPI)	Time Frame	Respon-sible Agency	Resources	Cost (USD)
To assist PPA in issuing messages to its members regarding recognition that access to energy is a human right for men and women.						
Mainstream gender equity/equality throughout project activities	Ensure that PPA provides relevant website links on this issue on a separate page of its own website	• Number of visitors to webpages that include relevant information on gender in energy sector on PPA website	2015–2020	PPA	Bank	Included in cost of project
Encourage greater representation by women within utilities	PPA to monitor utilities' employment of women/men	• PPA to request gender-disaggregated employment data through the annual Pacific Power Utilities Benchmarking Report, commencing with the Benchmarking Report that covers the FY 2013–2014 period	2015–2020	PPA	Bank	Included in cost of project
Encourage enhanced training of women within utilities	PPA to monitor utilities' training of women/men	• No. of participants trained through training/workshops offered under this project, disaggregated by gender • Measured annually, commencing 2015	2015–2020	PPA	Bank	Included in cost of project
Encourage gender equality and equity in the energy sector	PPA to join universities' career-fair events to encourage more women to major in engineering or energy-related majors and provide internships within the energy sector	• Number of university career fairs in which PPA participated • Number of women and men who participated in PPA's internship program	2015–2020	PPA	Bank	Included in cost of project

ANNEX 6: SCALING UP RENEWABLE ENERGY PROGRAM (SREP)

Indicator	Baseline	Target
Project Development Objective		
Increased public information on RE resources in targeted project areas	Limited public data	Increased availability of data on RE resources in targeted project areas on PPA website.
Increased available planning tools and training to both PPA and utilities in the use of these tools	Limited available planning tools	Availability of planning tools (grid-stability software and benchmarking tool) to PPA members
Improved technical and institutional capacity of PPA and power utilities	Limited capacity-building activities	100% of capacity building plan completed
Increased planning capacity for disaster recovery and risk reduction	Limited capacity	Investment plan in resilience available for at least 3 power utilities
Intermediate Results Indicators		
Resource-mapping assessment of solar and/or wind capacity across all PICs completed and available	0	All PICs' assessments completed and available online
Training courses/workshops provided	0	6
Planning tool available	0	Planning tool software available online
Reports on industry guidelines and competency standards available through PPA	4 guidelines currently available (Off-Grid Power Systems–Design; Off-Grid Power Systems–Install; Grid-Connected PV Systems–Design; Grid-Connected PV systems–Install)	8 additional guidelines/standards available
Post-disaster/or disaster-risk reduction needs assessment developed	0	Needs assessment for at least 5 power utilities developed

Project Description

1. The objective of the proposed SREP-funded Regional Sustainable Energy Industry Development Project is to increase the data availability and capacity of power utilities of the Pacific Island Countries and Papua New Guinea (PNG) to enhance their ability to incorporate and manage renewable energy technologies and long-term disaster risk planning. Because of the importance and potential for RE in PICs, it is important for utilities to learn about the integration of RE in their power systems and be able to critically assess the merits of proposed RE projects and their impact on existing grids. This project aims to: (a) increase the information publicly

available on RE resources; (b) increase available planning tools and persons who know how to use them; (c) improve institutional and technical capacity within the PPA and utilities to plan and manage the successful integration and long-term management of power systems with higher levels of renewables once renewable projects become operational; and (d) strengthen planning capacity for disaster recovery and risk reduction.

2. The project is composed of three primary components designed to manage knowledge and build capacity related to the deployment of renewable energy technologies in PICs. These components are: (i) Renewable Energy Resource Mapping–Phases 1 to 3 (USD 2.27 million, without SREP funding support); (ii) Technical Assistance (USD 2.57 million, of which USD 1.6 million from SREP); and (iii) Project Implementation Support (USD 0.82 million, of which USD 0.32 million from SREP). See Annex 2 for a detailed description of all project components.

3. ***Barriers/issues to be addressed.*** The proposed project will help address a number of important barriers to RE integration and management in PICs. The project will help PICs to build capacity in order to scale up the deployment of renewables in their power systems. With a better understanding of the integration of RE in systems, utilities will be better able to critically assess the merits of proposed projects and their impact on existing grids. This project will assist PICs in having the necessary independent data, knowledge and tools to subject proposals for intermittent generation to proper scrutiny. The project will also help to make information about RE resources more publicly available, and will provide benchmarking tools that will also assist private investors in their decision-making processes and lead to potential increased investment in RE power systems that in turn will lead to increased megawatts (MW) from renewables, as well as increased energy (in gigawatt hours [GWh]) in the selected islands.

4. ***Transformation.*** The proposed SREP-funded project will help Pacific Island power utilities to increase their capacity to better exploit the potential benefits of renewable energy technologies in a sustainable manner. The project will also indirectly support the implementation of a broader set of SREP-funded activities in the Solomon Islands and Vanuatu.

Assessment of the Proposed Program with SREP Investment Criteria

5. ***Increased installed capacity from renewable energy sources.*** The project will help the PPA's member utilities in PICs build capacity in order to scale up the deployment of renewables in their power systems. With a better understanding of the integration of RE into systems, utilities will be better able to critically assess the merits of proposed projects and their impact on existing grids. In capital-constrained economies, and in a highly capital-intensive industry such as energy, investment decisions and their performance need to be scrutinized very carefully, particularly those that are financed through concessional finance. This project will help PICs to have the necessary independent data, knowledge and tools to subject proposals for intermittent generation to proper scrutiny. The project will also help to make information about RE resources more publicly available, and will contribute benchmarking tools that will also assist private investors in their decision-making processes and lead to potential increased investment in RE power systems that in turn will lead to increased MW from renewables, as well as increased energy (in GWh) in the selected islands.

6. ***Increased access to energy through renewable energy sources.*** The rate of access to electricity in Small Island Developing States (SIDS) of the Pacific is low by international

standards: it is equivalent to access rates in Sub-Saharan Africa and slightly below the average for low-income countries. Overall, the region has relatively low rates of access to electricity (about 48.9 percent of households in PICs have access to electricity), although this average is highly skewed by very low rates in PNG (13 percent), the Solomon Islands (19 percent), and Vanuatu (24 percent). Energy poverty in the region is concentrated in these three countries, which account for 84 percent of the population of all 14 independent SIDS in the Pacific, and which have very low levels of access to electricity. The electrification rate in all three countries is lower than that of other countries with similar levels of GDP per capita.

7. Potential increases in RE investment as a result of this program will likely lead to increased rates of energy access as well as improved reliability and quality of power in the power systems of selected islands. This results from increased penetration of renewables in power systems that currently run on diesel.

8. ***Low-emission development.*** The project will support capacity building within PIC utilities on the integration and management of RE technologies for electricity generation, and will help to mainstream RE technologies into the overall energy system by replacing fossil-fuel technologies and helping PICs' efforts to achieve a low-carbon development pathway.

9. ***Affordability and competitiveness of renewable sources.*** The project will help to address cost barriers for the adoption of RE technologies (e.g., connection costs for rural consumers, higher capital costs of RE technologies, risk-adjusted rates of return sought by investors) by making available free training in RE technologies for utility staff as well as by providing assistance with the development of grid-stability studies for RE integration. This will enable preliminary studies of RE integration as well as the building of capacity within utilities to critically assess the merits of proposed projects and their impact on existing grids. This will likely lead to more accurate forecasts of energy output from these installations, and more accurate estimates of economic and financial returns on the investment.

10. ***Productive use of energy.*** Integration of RE technologies provides extensive opportunities for productive energy use. In some cases, RE projects provide better reliability and security of supply, especially if they are able to be grid connected, as well as access. There are significant spillovers from the improved quality and reliability of power in PICs, including improved social outcomes and potential for greater economic output based on industries that depend on reliable power.

11. ***Economic, social and environmental development impact.*** The project will lead to economic, social and environmental benefits in PICs. Training for utility staff will include energy efficiency aspects in system planning as well as gender mainstreaming aspects. The project will provide experience and lessons in scaling up renewable energy, promote the sharing of lessons at national, regional and international levels, and increase public awareness of the opportunities for RE.

12. ***Economic and financial viability.*** RE technologies can often be the most economically and financially viable options for electrifying many areas of PICs, because of geography, topography, population distribution, and the location of existing grids. Therefore, assistance to PICs with the integration of RE technologies within their systems has great potential to enhance the overall economic and financial viability of many utility operations, particularly where there is

a current dependence on diesel-power sources that are subject to major price variations.

13. The SREP-funded component of this project will also contribute to the project's economic and financial viability by assisting with the training of utility staff in a range of RE technologies and key competencies, and will help to build capacity within the PPA to assist PICs with ongoing issues regarding the use of the resource-mapping tool developed through ESMAP funding.

14. ***Leveraging of additional resources.*** The SREP funding provided for this project has leveraged additional financing from other sources, including Small Island Developing States Initiative (SIDS DOCK), Global Facility for Disaster Reduction and Recovery (GFDRR), and Global Partnership on Social Accountability (GPSA) support. Together, these funds have created a comprehensive regional program of activities to support RE integration in PICs and necessary capacity building to support this. The activities within this project, the capacity that is built within utilities, and the increased data that will become publicly available throughout the project have enormous potential to leverage further financing from other sources (e.g., private, MDB, government, development partners and further SIDS DOCK financing for Phase 2 of the resource-mapping project).

15. ***Gender.*** The proposed SREP-funded project has been designed to mainstream gender equity/equality throughout project activities. To monitor potential benefits to women, indicators will be developed and tracked throughout project implementation. Consultations will also be undertaken to ensure that the training needs of women are understood. At a broader level, the increased knowledge of gender considerations within utilities will have great benefits for women. Furthermore, the increased adoption of RE technology has ample benefits for women, such as encouraging greater economic participation by women in the community. See Annex 5 for further information about the gender action plan for this project.

16. ***Co-benefits of renewable energy scale-up.*** This project will support data availability and training to support RE investments. Such investments in RE could simultaneously address local air-pollution reductions while reducing GHG emissions, contributing to climate resilience, and enhancing energy security. Reductions in dependence on diesel-fueled energy systems could have a positive impact on foreign exchange savings from reduced oil imports, enhanced reliability and quality of power, enhanced institutional capacity of selected utilities, reduced electricity prices, and health benefits from avoided local pollution.

Stakeholder engagement

17. This project will engage with all power sector utilities in PICs, which will benefit from demand-driven training in RE integration, grid-stability modeling software, an online resource-mapping tool, an online benchmarking tool, the development of competency standards and guidelines for the sector, and increased capacity within the PPA to provide advice as required. The PPA, as the implementation agency, will use its existing stakeholder engagement mechanisms to engage with utilities on their training needs and operations.

Implementation Arrangements

18. The project will be implemented by the PPA, whose executive director will serve as the project manager. The project will fund a full-time project implementation officer to assist the project manager with: day-to-day implementation, monitoring and reporting of project activities,

including the completion of the project's FM requirements; coordination with relevant national government institutions and development partners; procurement of goods and consultancies under the guidance of the PPA's accounts officer, administrative officer, and the deputy executive director who acts as the chief financial officer; and monitoring and reporting on results achieved by activities financed under the project. A part-time procurement advisor will be hired to assist with procurement activities throughout project implementation. A full-time engineering advisor will also be hired to assist the project manager with the technical aspects of the project, i.e., the online benchmarking tool and support to PICs for this and the grid-stability software. All project staff will be jointly located within the PPA's office in Suva.

19. *Monitoring and Evaluation.* Overall M&E of project activities will be the PPA's responsibility. The PPA will establish an M&E system, in cooperation with the WBG, for the purpose of tracking and reporting on progress in reaching SREP impacts and outcomes. The PPA will follow the WBG's normal monitoring processes.