



Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 27-Oct-2017 | Report No: PIDISDSA23015



BASIC INFORMATION

A. Basic Project Data

Country Marshall Islands	Project ID P160910	Project Name Sustainable Energy Development Project	Parent Project ID (if any)
Region EAST ASIA AND PACIFIC	Estimated Appraisal Date 26-Oct-2017	Estimated Board Date 20-Dec-2017	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) Republic of the Marshall Islands	Implementing Agency Marshalls Energy Company (MEC)	

Proposed Development Objective(s)

The project development objective is to increase the share of renewable energy generation in the Recipient's territory, and enhance the reliability of electricity supply and improve energy efficiency in the Project Areas.

Components

Renewable Energy Investments
Promotion of Energy Efficiency and Loss Reduction Program
Technical Assistance, Capacity Building, and Project Management

Financing (in USD Million)

Financing Source	Amount
IDA Grant	34.00
Total Project Cost	34.00

Environmental Assessment Category

B - Partial Assessment

Decision

The review did authorize the preparation to continue



Other Decision (as needed)

B. Introduction and Context

Country Context

1. The Republic of the Marshall Islands (RMI) is one of the world's smallest, most isolated, and vulnerable nations. The country consists of 29 atolls and five isolated islands and has a total land mass of just 181 square kilometers (km²) set in an area of over 1.9 million km² in the Pacific Ocean. The population of RMI is estimated at 53,066¹ in 2016 of which the two largest urban centers, Majuro (the capital atoll) and Ebeye (an islet on Kwajalein atoll with a land area of 40 hectares and home to local workers at the United States military base), have populations of 28,000 and 9,614, respectively.

2. RMI is a sovereign nation in a "Compact of Free Association" (CFA) agreement with the United States (U.S.). The first CFA was signed in 1983 and continued through 2003, while an amended CFA entered into force in 2004 and is in effect through 2023. The current CFA provides approximately US\$70 million in grants per year. No CFA financing is assured beyond the life of the current arrangement, which presents a key challenge to the country's fiscal sustainability. While a Compact Trust Fund (CTF) was established to replace CFA grants from 2024 onward, based on current projections CTF contributions are inadequate to assure a smooth transition, and annual CTF income can be expected to fall short of what is needed to replace CFA grants.

3. RMI is a lower middle-income country with a 2016 gross domestic product (GDP) of US\$183 million, and a per capita GDP of \$3,448.5.² GDP has grown at an average rate of around one percent per annum in real per capita terms since RMI established self-government in 1979.³ However, foreign grants averaged 60 percent of GDP since access to sovereignty in 1986.⁴ There is a subsistence economy in most outer islands.⁵ The size and remoteness of RMI increase the costs of economic activity and make it unable to achieve economies of scale. With limited export and domestic production opportunities, public administration and social services constitute the largest share of the economy – approximately 45 percent of GDP. The fisheries sector comprises around 10 percent of GDP, while manufacturing makes up less than two percent. Copra and fisheries are the most significant exports, while the country is almost completely reliant on imports for food, fuel, and other basic needs. With substantial constraints to export-led growth, RMI is heavily dependent on aid and other fiscal transfers. Foreign aid funds a very large public sector that dominates the economy.

4. RMI is one of the most vulnerable countries to climate change and rising sea levels. A sea level rise of one meter could lead to a loss of 80 percent of the land in the capital city of Majuro. With average elevation of just two meters above sea level, inundations and large storms are already becoming an increasing threat to RMI, which is becoming more vulnerable to extreme weather events. The 2014 Intergovernmental Panel on Climate Change models suggest that the cost of sea level rise impacts as a percentage of GDP would be highest for the

¹ 2011 RMI census.

² Source: World Bank.

³ In 1979, the Government of RMI was officially established and the country became self-governing.

⁴ *The Republic of the Marshall Islands Renewables Readiness Assessment*, International Renewable Energy Agency (IRENA), 2015. In 1986, the [CFA](#) with the [U.S.](#) entered into force, granting RMI its sovereignty.

⁵ *The Republic of the Marshall Islands Renewables Readiness Assessment*, IRENA, 2015.



Federated States of Micronesia, Palau, RMI, and Nauru in the Pacific.⁶

5. In the medium to long-term, RMI could face significant challenges arising from the scheduled decline in CFA grants, extreme weather-related events due to climate change, the impact of poorly performing state-owned enterprises, and limited private sector activity. In addition, RMI's reliance on expensive imported fuel will continue to impose severe fiscal challenges, with effects felt throughout the economy, if not properly addressed. In 2015 and 2016, Marshalls Energy Company (MEC), which is responsible for the country's fuel imports, sold 11.2 million and 9.4 million gallons of diesel fuel, respectively; in 2016, MEC and the Kwajalein Atoll Joint Utility Resource (KAJUR) consumed 3.9 million and 1.3 million gallons of diesel fuel for the power plants in Majuro and Ebeye, respectively.

B. Sectoral and Institutional Context

6. RMI's energy sector is led by the Ministry of Resources and Development (MRD), and energy policy is managed through MRD's Energy Planning Division (EPD). EPD has full responsibility over the national energy policy framework and its associated action plans; overseeing renewable energy and energy efficiency on both the power supply and demand sides; petroleum reform towards energy efficiency; and energy security. Electricity is provided mainly by the two public sector utilities: KAJUR and MEC. KAJUR only serves Ebeye in Kwajalein. MEC operates throughout the rest of the country. Staff and resources of EPD include just two full time staff and a part-time assistant.

7. MEC is a vertically integrated, state-owned utility established by charter in 1984 that oversees electric power generation and distribution in Majuro, Jaluit, and Wotje. It is responsible for urban and rural power supply, diesel fuel import, storage and bunkering, and rural photovoltaic (PV) programs. MEC is overseen by the Combined Utilities Board appointed by the Cabinet, and subject to Cabinet direction. The Board consists of three government and four private sector members. MEC's annual net generation is 51,147 megawatt hours (MWh) with a peak load of 8.2 MW and average load of 6.11 MW in 2016. Diesel generators account for 99 percent of electricity generation and only one percent of electricity is produced through renewable sources. MEC also imports and distributes petroleum products and is hierarchically under the Ministry of Works, Infrastructure and Utilities. MEC relies on 188 staff to supply 4,050 customers.

8. KAJUR is much smaller than MEC, responsible for providing power, water, sewer, and potable water for Ebeye atoll. KAJUR has an installed capacity of 4.8 MW, a peak demand of two MW, and about 1,300 metered customers. The annual net generation is 14,355 MWh, and diesel generators account for 100 percent of electricity generation, or about 4.2 million liters of fuel yearly. KAJUR was run by the Kwajalein Atoll Development Authority (KADA), but is now operated as a subsidiary of MEC, with the same Board of Directors and under the direction of the MEC Chief Executive Officer (CEO). MEC has the authority for the management of KAJUR based on the delegation resolution dated on September 5, 2007.

9. The Cabinet and Cabinet appointed Combined Utilities Board direct and authorize the operations and management of MEC, KAJUR, and EDP. The President and RMI Cabinet are responsible for regulating energy in RMI; there is no independent energy or utilities regulator.

⁶ International Monetary Fund (IMF) staff report for the 2016 Article IV Consultation with the Republic of the Marshall Islands.



10. A 2008 fuel crisis pushed MEC towards insolvency with the company requiring continual cash transfers and advances from the national government, placing additional pressure on an already stressed fiscal system. In depth diagnoses of MEC's financial and operational performance revealed numerous long-standing problems, including deteriorating financial situation, deficient asset management, and continuous operational losses. MEC adopted a series of reform measures and prepared a Comprehensive Recovery Plan aimed at achieving an improvement in its financial position. In response to the crisis, RMI also adopted in September 2009 a "National Energy Policy" (NEP), which it reviewed in 2015. The NEP was developed with the vision of "improved quality of life for the people of the Marshall Islands through clean, reliable, affordable, accessible, environmentally appropriate and sustainable energy services." It has the broad goals to: (i) strengthen financial, policy, and legislative frameworks for the energy sector; (ii) supply 100 percent of urban households with electricity by 2015; (iii) provide 95 percent of rural outer atoll households with off grid electricity by 2015; (iv) provide access to modern forms of cooking to 90 percent of all households by 2020; (v) make households and businesses 50 percent more energy efficient and government buildings 75 percent more energy efficient by 2020; (vi) achieve a 20 percent efficiency improvement in transport sector fuel use by 2020; (vii) reduce supply side energy losses from MEC by 20 percent by 2017; and (viii) provide 20 percent of power generation through indigenous renewable resources by 2020. The NEP also identified four priority outcomes: (i) improved enabling frameworks for reducing dependence on imported fossil fuel; (ii) all Marshallese have equitable access to modern energy services; (iii) smarter uses of energy in households, businesses, government, transport sector, and power utilities; and (iv) reliable, sustainable, and affordable energy supply.

11. *Consumption and Access.* RMI's imported fuel consumption breakdown is as follows: 68 percent for transportation, 30 percent for power generation, and the remainder for commercial enterprises and private homes. In 2014, estimated rates of access to electricity in RMI were 90 percent, or 81 percent in rural areas and 94 percent in urban areas. The rates of electrification in Majuro atoll and Ebeye are 93 percent and 97 percent, respectively.⁷

12. *Majuro Electricity System.* MEC operates two diesel power stations (adjacent to one another) on Majuro. The utility has four generators in operation, two decommissioned and one under repair. The total rated capacity on name plates is 19.4 megawatts (MW), but the available capacity is approximately 11.4 MW. The diesel power station is ageing and has been plagued with problems, including a major fire that permanently damaged two generators. Two waste-heat turbines installed at the Majuro power plant started to generate some 2,100 MWh of continuous renewable energy annually. Typical daytime loads are approximately six MW, with peaks up to eight or nine MW, resulting in limited reserve capacity. Loads have decreased over the last decade mainly due to tariff increases and the introduction of prepayment meters. Since the first prepayment meters were installed in 2010, there has been a steady decrease in electricity demand, averaging around 1.8 percent annually, consistent with the energy saving properties of prepayment meters. The first phase of the prepayment meter project concentrated on residential customers which, when completed in 2017, will be followed by a second phase that will concentrate on single-phase, commercial customers. The residential sector, which represents 86 percent of the customer base, accounts for 49 percent of the energy sold in 2016. The governmental and commercial sectors account for three and 11.6 percent in customer numbers, and 15 and 36 percent in electricity sales, respectively. Average monthly sold energy per customer is 537 kilowatt hours (kWh) for residential, 3,716 kWh for business, and 4,395 kWh for government in 2016.⁸

⁷ Marshall Islands Project on the Formulation of a Self-Sufficient Energy Supply System Final Report, JICA, January 2015.

⁸ Source: MEC data.



13. There are approximately 3,000 standalone solar home systems (SHS) and some small grid connected solar PVs in Majuro, including a 600 kW MASDAR system, located near the airport, a 209 kW Japan International Cooperation Agency (JICA) system on the hospital roof, a 111 kW system at the College of Marshall Islands (privately owned system), a 55 kW system at the University of South Pacific campus, and several small privately owned grid-connected PV systems (five to six kW each).⁹ MEC's distribution network is aged (over 30 years old) and in need of significant reinvestment and modernization and was not designed to accommodate any distributed generation from intermittent renewable resources (i.e., solar). Preliminary findings of an analysis conducted by JICA reveal that the current system can accommodate no more than 890 kW of PV-grid connected energy without advanced control or storage and upgrades of its diesel generation system and distribution network. As the current amount on the grid is approximately one MW,¹⁰ it is not recommended that any more grid-connected PV be installed without a proper countermeasure.

14. *Outer Islands.* MEC operates diesel mini-grids on the outer islands of Wotje and Jaluit, and also a small diesel mini-grid on Rongrong Island on the Majuro atoll. Wotje, with a population of 860, has two x 275 kW generators and a load of 70-110 kW that drops to 40 kW during school holidays. Jaluit has a population of 1,780 (890 served by mini-grid) and has two x 300 generators and a load of 80-100 kW that drops to 40 kW during school holidays. Rongrong, with a population of 60, has two x 60 kW diesel generators and a load of 10-15 kW. The mini-grids on the Jaluit and Wotje receive an annual subsidy of approximately US\$800,000 as the tariffs do not cover true costs. The remaining islands are served by SHS supplied and maintained by MEC. When this program was first introduced, customers were charged a flat monthly fee of US\$12 for servicing and replacement of parts. According to MEC, this fee adequately covered the cost to make service of the SHS sustainable. However, due to social considerations, there was a subsequent decision by GoRMI to reduce the monthly fee to US\$5, which does not cover the cost of replacement parts. This means that the program is likely to end once the batteries in the existing systems fail, without additional government action on monthly payments or further donor funds (which will not encourage the GoRMI to set appropriate fees).

15. *Ebeye Electricity System.* KAJUR has a generation capacity sufficient to meet the Ebeye population's demand. The power station houses four high-speed, diesel generators rated at 1,286 kW each (three online and one currently under repair). The total capacity is about five MW. The generators are manually operated and the total power demand fluctuates between 1.5 MW and 1.8 MW from midnight to about eight in the evening, after which it peaks at 1.9-2.1 MW for three to four hours. The last major upgrade of the generating plant was carried out in 2012. The engines are rundown and would need to be replaced as part of any new generation project implemented on the island. The last upgrade of the existing power distribution system was carried out in 2004/2005. During this upgrade, all high voltage overhead transmission lines within the village community on Ebeye Island were replaced with the underground cables and all pole mounted transformers replaced with the cubicle type units mounted on the concrete plinths on the ground. KAJUR receives annual operational subsidies, most recently over US\$2.5 million in 2015 and US\$1.8 million in 2014¹¹ as the tariffs do not cover costs and most of the water and sanitation services are free of charge. There is currently no solar PV or any other renewable energy on Ebeye, but JICA has planned a 600kW grid-connected PV system to be located on land behind the power station. A JICA grid study found that the maximum installed capacity for PV on Ebeye without additional controls could only be about 270 kW. The new 600 kW JICA system near the Ebeye power station will likely

⁹ MEC 2016 Power Report.

¹⁰ MEC 2016 Power Report.

¹¹ KAJUR Financial Statement and Auditor's Report, Year ended September 2015 and 2014.



include curtailment controls for the PV, which would require a new generator control system to facilitate this.

16. *Electricity Tariffs.* Financial recovery electricity tariffs are determined by MEC and approved by Cabinet and the President. Tariffs are adjusted based on imported diesel prices. On-grid tariffs are uniform across all grids supplied by MEC (Majuro, Jaluit, Wotje, Rongrong) and are relatively high, even for the Pacific region, at US\$0.416 per kWh for government, US\$0.406 for commercial, and US\$0.346 for residential. There is also a lifeline tariff of US\$0.326 for low-use customers with less than 500 kWh consumption per month. They constitute about 60 percent of total customers and the largest sales share at 38 percent in 2016. KAJUR has the same tariffs as MEC. According to a JICA study and MEC records, the tariff is high enough to achieve cost recovery on the commercial and government tariffs in Majuro, but not on residential tariffs, or in Ebeye or any of the outer islands. There are no direct subsidies to lower the electricity tariffs, but important governmental support to meet these shortfalls is provided, such as (i) no tax on MEC's imported fuel; and (ii) US\$500,000-US\$800,000 to MEC annually to supply fuel and power to Wotje and Jaluit atolls through the National Energy Support Fund, and about US\$2-US\$2.5 million for KAJUR. The subsidies are vulnerable to the volatile prices of diesel oil. The Government of RMI (GoRMI) also provides all land owners (approximately 900) with 1,000kWh of electricity per month for providing their lands for various power equipment and distribution lines.

17. *Distribution Losses.* The only distribution loss study available was conducted in 2010 on MEC. Distribution losses are believed to be at least 26 percent; there is no segregation in technical losses and non-technical losses, but the latter is estimated to be higher than the former. One of the reasons behind those high losses pertains to the total capacity of the transformers as compared to the supplied load: the distribution network in Majuro has a total capacity of 43 MW of transformers that supply a peak load of only eight MW. There is no available figure for the level of losses in Ebeye, but they are generally believed to be higher than in Majuro even though the technical losses might be lesser because the network is relatively shorter in Ebeye.

18. *Potential for Renewable Energy.* Various studies have assessed the potential for renewable energy in RMI, concluding that solar PV is the most feasible and cost efficient technology as the country has about 2,480 hours of direct sunlight per year. In addition, there is a coconut oil (CNO) resource on the outer islands, and there is a mill on Majuro producing CNO (mostly for export but also for blending with diesel in one of the MEC generators). The Asian Development Bank (ADB) is funding a project to test the use of CNO in one of MEC's generators. Biomass energy in the country is produced from waste materials, coconut stalks, and copra (coconuts oil), and used for cooking and water heating in households.

19. In summary, the major issues faced in the power sector include: (i) high dependency on costly imported fuels; (ii) insufficient tariff revenue for MEC and KAJUR to meet operations and maintenance (O&M) costs (thus requiring government subsidies); (iii) high maintenance cost of generation and distribution systems in a marine environment; (iv) lack of capital to finance power infrastructure requirements; and (v) weaknesses in the sector regulatory framework. The country is trying to address these issues through implementation of the NEP and Action Plan. Various donors (including: the European Union (EU); ADB; Taiwan, China; JICA; New Zealand; and IRENA/Abu Dhabi Fund for Development (ADFD)) are preparing projects to support the sector based on a comprehensive approach developed by GoRMI to: (i) strengthen the financial, policy, and legislative frameworks for the sector; (ii) achieve 50 percent more energy efficient households and businesses and 75 percent more efficient government buildings by 2020; (iii) reduce supply side energy losses by MEC by 20 percent by 2020; and (iv) provide 20 percent of power generation through indigenous renewable resources by 2020. These investments will complement the project objectives and also pave the way for its success.



C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

20. The project development objective (PDO) is to increase the share of renewable energy generation in the Recipient's territory, and enhance the reliability of electricity supply and improve energy efficiency in the Project Areas.

Key Results

21. Progress will be Progress will be measured against the following PDO level results indicators:
- Share of renewable generation in the Recipient's territory (%).
 - MEC and KAJUR System Average Interruption Duration Index (SAIDI, minutes).
 - Distribution Loss reduction in the project areas (%).

D. Project Description

A. Project Components

22. The GoRMI formally requested the Bank's support in advancing its NEP and energy sector objectives of (i) increasing the use of renewable energy to at least 20 percent by 2020 while reducing by 20 percent its GHG emissions; and (ii) reducing subsidies to the sector by lowering the operating costs (i.e., by reducing the share of expensive imported fuels in its generation mix and by increasing its energy sector utilities' efficiency). In this context, the Bank commissioned a study to conduct a preliminary analysis of potential solutions that would increase the share of renewable energy in the country, thereby reducing the dependency on imported fuels. The study evaluated three solutions (all estimated monetary values are undiscounted, 2016 US\$ prices):

- **Solution 1 – Majuro – Centralized storage and control system:** This option would involve building (i) a centralized, open protocol Battery Energy Storage System (BESS) to be located at MEC power station and (ii) the installation of 3.4 MW to 6.8 MW¹² of solar PV to increase the share of renewable energy supply between 10-20 percent for Majuro. The associated solar PV panels could be installed at the existing Majuro Water Company's (MWSC) water reservoir near the airport, on land leased by the GoRMI near the hospital, or on various recently built school rooftops. This solution would cost approximately US\$19 million and save US\$580,000 per year on fuel cost subsidies from avoided diesel oil consumption for power generation (based on 3.4 MW capacity).
- **Solution 2 – Ebeye- Centralized storage and control system:** This option would involve (i) a centralized, open BESS to be located at KAJUR power station and (ii) up to 3.4 MW of solar PV, located at different sites

¹² The final capacity would depend on component financing, technology, and competitive bidding.



due to the limited land availability on Ebeye, to increase the share of renewable energy supply to approximately 30 percent for the atoll. This solution would cost approximately US\$19 million and would save approximately US\$720,000 per year on fuel cost subsidies.

- **Solution 3 – Outer islands - Mini-grids:** This solution would support conversion of the existing diesel mini-grids on Wotje, Jaluit, and Rongrong atolls into solar hybrid mini-grid systems and establishment of one new solar-hybrid mini-grid in Santo (Kwajalein atoll). This solution would cost approximately US\$10 million and would provide fuel cost savings to MEC of approximately US\$700,000 per year.

23. For RMI to be able to reach its targets by 2020, and 100 percent renewable energy by 2050, approximately nine MW of solar PV needs to be installed. To this end, all three solutions should be implemented. With this aim, a phased approach to sustainable energy development in RMI is proposed. Through discussions with GoRMI and other stakeholders, solution 1 has been chosen as the priority for the first phase. The recommendation to commence with solution 1 on Majuro was made *inter alia* considering the level of investment intensity on the island of Ebeye in the coming years, the fact that Majuro offers more possibilities than Ebeye and the Outer Islands in terms of achieving the country's intended objectives and targets, particularly for 2020, and the lower unit costs of investment in Majuro.

The WBG strongly supports and is committed to the phased approach and looks forward to a long-term partnership in the sector with GoRMI. This commitment is reflected in the Regional Partnership Framework (RPF), which identifies the energy sector as a high priority for the WBG and the GoRMI. This proposed project is built around solution 1 on Majuro and will include the three components described below.

24. **Component 1: Renewable Energy Investments (IDA US\$28.63 million).** This component will include the following two sub-components:

- (i) **Sub-component 1.1: Renewable Energy Development in Majuro (US\$23.6 million).** This sub-component will finance the design, supply, installation, and operational support for solar power generation, battery energy storage, and grid management equipment in Majuro. The activities to be supported include (i) conducting a detailed survey, preliminary design, cost analysis, preparation of bidding documents, and supervision of engineering, procurement, and construction (EPC) contractor; (ii) installation of an estimated three MW of solar power-generation, inverters, battery storage, grid-connection, and other ancillary equipment needed to support the contribution of renewable energy in RMI's generation system and reduce diesel generation; and (iii) provision of assistance on operations and maintenance and capacity building activities to enhance knowledge transfer and sustainability of the technology supplied and installed. An initial assessment on potential sites (owned or leased by GoRMI) available to host the arrays of PV panels include MWSC's water reservoir near the airport, some public schools and public buildings, the empty space adjacent to the Majuro hospital, and some basketball fields in the city. The water reservoir is the primary candidate for several reasons: it would serve both MWSC and MEC generation purposes in a situation of limited land availability; it would reduce evaporation currently experienced by MWSC; it concentrates half of the potential sites' total capacity; it avoids anticipated potential distribution constraints; and, due to its size and relative proximity with MEC's existing thermal generation facilities, a power distribution feeder can easily be erected to convey the generated RE from the reservoir site to the power plant. If the reservoir is used, this would involve installation of floating or fixed solar PV panels in the reservoir.¹³ This component will also address the lining

¹³ There are existing PV arrays located on the left bank of the reservoir.



of the reservoir as needed during implementation. More information is provided in the Technical Assessment section below and in Annex 1. Site selection will be confirmed during the preparation of the bidding documents.

- (ii) **Sub-component 1.2: Supply and Installation of Gensets for Majuro and Ebeye (US\$5.03 million).** This sub-component will finance gensets (low/medium or high-speed depending on studies) for MEC and KAJUR's power plants in Majuro and Ebeye to help accommodate the planned grid solar capacity, and to improve fuel efficiency and system reliability.

25. **Component 2: Promotion of Energy Efficiency and Loss Reduction Program (US\$2.45 million).** This component will provide technical and operational assistance and will complement Component 1 by reducing energy demand through improving the efficiency for both use and supply of electricity from MEC and KAJUR. It will include the following three sub-components:

- (i) **Sub-component 2.1: Loss Reduction Program in Ebeye (US\$1.4 million).** This sub-component will support design and implementation of a loss reduction program for KAJUR to address issues related to supply-side management (SSM). Current losses are estimated at approximately 30 percent in Ebeye. This is mostly caused by technical mismatches in facility configurations and operations. A loss reduction study will be prepared by external consultants to provide recommendations to achieve loss reduction. Recommendations from the study that are designed to increase the energy efficiency of essential energy infrastructure will also be supported under this sub-component, and may include activities such as downsizing transformers, upgrading distribution lines, and the installation of meters for monitoring usage.
- (ii) **Sub-component 2.2: Demand Side Energy Efficiency (US\$1.05 million).** This sub-component will support activities designed to enhance efficient use of energy. This could include such activities as enhanced insulation in buildings and replacement of inefficient lighting or appliances in said buildings. External consultants will provide recommendations to harness best available technologies. This sub-component will also support information awareness campaigns, workshops, training, and education on demand-side management and energy efficiency. It will also support development of policies and regulations for energy efficiency, as well as the development of standards and labeling for energy efficiency, including phasing out inefficient incandescent bulbs and more stringent standards for appliances. Activities aimed at raising consumer awareness on energy efficiency and related capacity-building activities and training will also be supported under this sub-component.

26. **Component 3: Technical Assistance, Capacity Building and Project Management (IDA US\$2.92 million).**

- (i) **Sub-component 3.1: Technical Assistance and Capacity Building (US\$0.335 million).** This sub-component will enhance the capacity of the Ministry of Finance (MoF), MEC, EPD, KAJUR and Majuro Water and Sewer Company (MWSC) to support efficient energy sector operation, including: (i) carrying out Training and Workshops on energy sector policies, regulatory framework, management, and planning; (ii) conducting studies and provision of technical assistance to enhance EPD's role in the sector; (iii) provision of technical assistance to establish the O&M Fund to ensure sufficient funds for the operation and maintenance of the renewable energy investments supplied and installed under Part 1 of the Project; and (iv) mainstreaming of gender dimensions into the Project. Provision of technical assistance, training and workshop to support



mainstreaming of gender dimensions in the project will be financed under this sub-component.¹⁴

- (ii) **Sub-component 3.2: Preparation of Renewable Energy Projects in Ebeye and the Outer Islands (US\$0.6 million).** This sub-component will support the preparation of studies to identify further assistance and investments needed on renewable energy in Ebeye and the Outer Islands (Wotje, Jaluit, Rongrong, and Santo), including the design of the potential renewable energy projects and preparation of related documents include design documents and the preparation of technical specifications.
- (iii) **Sub-component 3.3: Project Management (US\$1.985 million).** This sub-component will support MEC and MoF to manage and implement the Project, including provision of support on Project coordination, monitoring and evaluation, reporting, procurement, financial management, audit, safeguards management, and technical operation. The project’s incremental operating costs will be financed as well as office equipment and project audits.

27. The project implementing agency is MEC, with support provided by KAJUR, EPD, MoF, DIDA, and MWSC in accordance with the provisions of a Memorandum of Understanding to be entered between the organizations that will define roles and responsibilities of each organization. MEC will be the focal point for the implementation component 1, sub-component 2.1 and component 3 with support from KAJUR; MEC and KAJUR will support EPD which will be the focal point for the implementation of sub-component 2.2.

Focal Point	Project Components	Support Entities
MEC	Sub-component 1.1	KAJUR, DIDA, EPD, MWSC
	Sub-component 1.2	KAJUR, DIDA, EPD
	Sub-component 2.1	KAJUR, DIDA, EPD
	Component 3	KAJUR, DIDA, EPD
EPD	Sub-component 2.2	KAJUR, DIDA, MEC

28. The focal point role of the MEC and EPD is to ensure that the Project Implementation Unit, consultants and contractors receive the necessary support to successfully implement the project activities. This includes, but is not limited to, drafting/reviewing specifications, reviewing reports, participating to meetings and generally ensuring all necessary support is made available.

¹⁴ (a) TA to (a) conduct a gender assessment during implementation that explores the differentiated roles and responsibilities of men and women consumers, needs and knowledge gaps regarding energy efficiency, to inform the program of activities under Component 2 (energy efficiency consumer awareness campaign, and entry points for addressing gender in future interventions as part of the phased approach to increase the share of RE in the country); and (b) assessment of community involvement/options for women’s groups participation in basic maintenance; (b) implementation of recommendations of the assessment, possibly including investments in skills development and organization; (c) training for utility, contractors, supervision on implementation of workforce codes of conduct; and (d) as part of capacity development activities, implementation of specific recommendations provided under the on-going IDA-financed Regional Sustainable Energy Industry Development Project (P152653) to increase the participation of women in the energy sector workforce on both utilities, MEC and KAJUR.

B. Project Cost and Financing

29. The proposed lending instrument is investment project financing (IPF) funded by a grant from the International Development Association (IDA). The project cost and financing plan, including price, foreign exchange, and physical contingencies is presented in the table below.

Table 1: Project Financing by Component (US\$ million)

Project Components	Project Cost	IDA Financing	Trust Funds	Counter-part Funding
Component 1: Renewable Energy Investments	28.63	28.63	..	..
Component 2: Promotion of Energy Efficiency and Loss Reduction Program	2.45	2.45	..	..
Component 3: Technical Assistance, Capacity Building, and Project Management	2.92	2.92	..	..
Total Costs	34.00	34.00	..	..
Total Financing Required	34.00	34.00	..	..

C. Implementation

Institutional and Implementation Arrangements

30. MEC is responsible for overall project preparation and implementation, including procurement. A Project Implementation Unit (PIU) will be established within MEC and include a Project Manager, a Project Accountant, a Procurement Specialist, a Safeguards Specialist and a Technical Advisor. The Safeguards Specialist, the Accountant, the Procurement Specialist will be recruited by MoF/DIDA to support the implementation of various projects including the SEDeP and IDA-financed Pacific Resilience Program (PREP). The PIU will coordinate the implementation of the project between MoF, MEC, EPD, KAJUR, and MWSC in a manner that is to be set forth in a Memorandum of Understanding that outlines the roles of each organization. The Memorandum of Understanding will clarify, *inter alia*, the necessary intra-government cooperation and support necessary for the project.

31. The Project Manager will be responsible for overall project coordination and technical guidance and will support the procurement of the various packages and studies. Technical staff will be recruited as necessary to support the implementation of Component 3 at EPD. The Project Manager will report to the CEO of MEC and to the Project Steering Committee (PSC). MoF's DIDA, as the unit responsible for coordinating all international development assistance to RMI, will be responsible for the project's fiduciary aspects. DIDA is currently responsible for fiduciary management of the PREP Project and other development partner-supported projects. DIDA will act as the focal point for the WBG.

32. A PSC will be established and comprise representatives of the MoF/DIDA, the Ministry of Resources and Development (represented by EPD), as well as MEC, KAJUR, KADA, MWSC, Combined Utilities Board, Ministry of Works, Infrastructure and Utilities, and others as needed. The PSC will provide oversight and strategic guidance for project implementation. The Chief Secretary of the Public Service will chair the PSC.



33. A Project Implementation Manual (PIM) is being prepared by DIDA and includes information such as: (i) the criteria and procedures to be used for the selection of energy efficiency investment activities undertaken under Sub-component 2.2, (ii) institutional arrangements for day-to-day execution of the project; (iii) the procurement plan and implementation arrangements; (iv) guidance on implementation of safeguard instruments; (v) budgeting, disbursement, and financial management processes; and (vi) project monitoring, reporting, evaluation, and performance indicators including implementation of, and compliance with, Bank safeguard policies; and (vii) the boundaries of defined Project Areas and the criteria and procedure for selecting additional Project Areas.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The Republic of Marshall Islands (RMI) comprises 29 atolls and 5 isolated islands, 24 of which are inhabited by a population of around 53,000 people. Two-thirds of the population live on Majuro atoll, the capital, and Ebeye, a densely populated islet of Kwajalein atoll. Outer islands are sparsely populated due to lack of employment opportunities and economic development. Both Majuro and Ebeye have highly modified and degraded environments due to uncontrolled and unmitigated development. There is little land available for development as most of the land is already occupied and utilized. The project is a Category B. The anticipated impacts from energy infrastructure investments and demand management will be localized and able to be mitigated through good design and operation, and no anticipated impacts will be irreversible. Solar investments under Component 1 will be on multi-purpose, Government-leased sites in urban Majuro. Options include panels on or over the water reservoir, panels on roof tops of public buildings (including schools), and arrays on spare land within the hospital compound (allowing for uses underneath the panels), car parks and over basketball courts. The diesel gen-sets will be located within the KAJUR compound on Ebeye. Ancillary sites will include laydown or storage areas on Government-leased sites, and wharf and transportation routes to get equipment onto Majuro and Ebeye and to site. Technical assistance under Component 2 will be in the urban areas of Ebeye and Majuro. All waste will require export to landfills or recycling facilities offshore, as there are no secure, engineered landfills or a recycling industry in Marshall Islands. Future investments subject to technical assistance under Component 3 will be located on outer islands (exact islands to be confirmed during project implementation) and Ebeye. On outer islands, land leases will be required to confirm the use of land for energy generation. The local infrastructure is basic, and some improvements may be required to wharfs or roads to allow for equipment to be transported to site. On Ebeye the location of solar investments will be determined during project implementation, and will require amendments to the Master Lease with the land owners of the atoll.



G. Environmental and Social Safeguards Specialists on the Team

Penelope Ruth Ferguson, Environmental Safeguards Specialist

Ross James Butler, Social Safeguards Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>This policy is triggered.</p> <p>Energy investment options include solar panel arrays on the water supply reservoir, car parks or roof top mounted arrays and battery storage. Land is scarce on Majuro and multi-use sites have been selected. Diesel Impacts could include risks to the potable water supply for Majuro, ongoing management and final disposal of batteries, disposal of obsolete equipment from diesel gen-set installation, and from the influx of temporary construction workforce.</p> <p>The project will fund technical assistance to prepare future projects for investment, including the preparation of safeguards instruments (solar investments on Ebeye and solar – diesel hybrid investments on some outer islands). The future investments have been screened and the potential issues relate to the site selection and use of scarce land for solar in Ebeye and the potential for coastal protection works, waste management of obsolete equipment and confirmation of use of land for energy generation in outer islands. Outer Islanders may be impacted by a reduction in shipping services to the outer islands, if fuel services become less frequent.</p> <p>The project is a Category B. The anticipated impacts from energy infrastructure investments, demand management and the future investments that will have safeguards instruments prepared under this project, will be localized and able to be mitigated through good design and operation, and no</p>



		<p>anticipated impacts will be irreversible.</p> <p>A draft ESMP has been prepared to cover all investment options for Majuro and the diesel gen-set subproject in Ebeye (to be completed by appraisal). The final ESMP will include draft terms of reference for the preparation of safeguards instruments for future projects not funded by this project (Ebeye solar investments, outer island solar-diesel hybrid investments).</p>
Natural Habitats OP/BP 4.04	Yes	<p>No disturbances to natural habitats is anticipated for the investments under Component 1 and technical assistance under Component 2, as all works will occur within the urban environment of Majuro and Ebeye.</p> <p>The policy is triggered in case disturbances to natural habitats are required to improve ship-to-shore facilities or coastal protection works, or other works, associated with future investments prepared under technical assistance under Component 3.2. If potential impacts are identified in the environmental assessment the safeguards instrument will include avoidance or mitigation measures. The policy requirements are included in the draft TOR for safeguards instruments (to be completed prior to appraisal).</p>
Forests OP/BP 4.36	No	<p>The project activities are not expected to create or induce deforestation and their environmental impact is not expected to compromise the integrity and health of forested areas (including mangroves). Some minor clearings of trees, shrubs and undergrowth may be required on outer islands to construct or renovate generation and distribution infrastructure but the scale will be less than 1ha.</p>
Pest Management OP 4.09	No	<p>The proposed project will not the purchase of pesticides and pesticide equipment, nor will lead to increase usage of pesticides.</p>
Physical Cultural Resources OP/BP 4.11	Yes	<p>The environmental assessment for Component 1 investments has confirmed there are no PCR issues. The sites are all within urban areas and heavily modified from decades of earlier development.</p> <p>The policy is triggered because under Component 3, World War II relics and / or culturally significant</p>



		<p>sites, including grave sites, may be discovered during the preparation of safeguards instruments for future investments. If potential PCR impacts are identified in the environmental assessment the safeguards instrument will include avoidance or mitigation measures for PCR and will include a chance find procedure. The policy requirements are included in the draft TOR for safeguards instruments (to be completed prior to appraisal).</p>
Indigenous Peoples OP/BP 4.10	No	<p>RMI's population is relatively homogenous. The policy is not triggered because there are no social groups that meet the characteristics of the policy.</p>
Involuntary Resettlement OP/BP 4.12	Yes	<p>Government land will be used for investments in Component 1. There will be no involuntary resettlement for tenants, squatters or any economic displacement.</p> <p>During the preparation of future investments, under Component 3.2 site selection will be done in conjunction with land owners. Government land will be prioritized, and otherwise, land leases will be negotiated with the private land owners. There will be no involuntary land acquisition, although there may be involuntary resettlement for tenants, squatters or economic displacement from the future investments. This is due to the high number of tenants (formal and informal) on private land on Ebeye. Compulsory acquisition of land in RMI, although legally possible, is very difficult and not supported by the cultural norms of land tenure. The policy is triggered and a draft Resettlement Policy Framework has been prepared (to be completed by appraisal) to provide a process for land acquisition that prioritises government land, and a process for consulting with private land owners to acquire leases with the assistance of the Ministry of Internal Affairs. It also provides a process for compensating or assisting tenants, squatters or economic displacement and the requirement to prepare Abbreviated Resettlement Action Plans if necessary for future investments.</p>
Safety of Dams OP/BP 4.37	Yes	<p>A solar investment option under Component 1 is the installation of panels on or over the water supply reservoir on Majuro. This policy is triggered since this option relies on an existing reservoir structure.</p>



Additionally, the option of fixed panels anchored to the reservoir floor could potentially adversely affect the reservoir structurally, increasing the risk of structural failure (leaks, spills), if poorly designed or constructed.

The ESMP outlines the process for reviewing the structural integrity of the reservoir as part of detailed design, and the requirement to include any remediation and ongoing management and monitoring, into the project.

Projects on International Waterways OP/BP 7.50	No	There are no international waterways in the project area.
Projects in Disputed Areas OP/BP 7.60	No	There are no known disputed areas in the project areas of influence.

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The installation of investments on Majuro and Ebeye will avoid under-utilization of scarce land by prioritising multi-use options. Key safeguards issues include the management of the workforce to avoid conflicts and harassment of local people, maximising opportunities for local employment, and avoiding the use local landfills or indiscriminant dumping of obsolete equipment and construction waste by ensuring export of all waste. For the water reservoir option, there are risks that the panels will affect water quality due to heavy metals leaking from the panels, and that construction or operation of the panels may disrupt or compromise supply of potable water. This is low probability but would have significant consequences to the Majuro population if not mitigated through design.

Technical assistance under Component 3 will screen and assess the impacts of future investments. The key safeguards issues will be to avoid or minimize involuntary resettlement of tenants, squatters and economic displacement on Ebeye through effective site selection. Other safeguards issues include the management of the workforce on Ebeye and cumulative impacts of several development projects under implementation on the atoll putting strain on public infrastructure and the community. On outer islands, the key issues will be the community engagement with the proposed energy solutions and obtaining land use agreements with land owners. Site selection for RE energy infrastructure should easily avoid significant safeguard issues, but if upgrades to local infrastructure are needed then design will need to take into account avoiding or mitigating damage to sensitive sites (habitats, physical cultural resources).

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area: Improved RE in the outer islands may result in less frequent shipping services (due to reduced diesel deliveries) and the outer islanders may become more isolated. This could affect the delivery of other goods and travel choices.



Energy efficiency, particularly demand side management and policy, may create future waste streams that will require recognition and management as part of the technical advisory outputs. For example, replacement of LED light bulbs will require the management of old, hazardous light bulbs.

Continuous exposure to LED lights can create glare and discomfort, but can be mitigated with good design and maintenance of street light infrastructure.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

NA

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The Government of RMI is taking proactive steps to ensure that there is experienced staff recruited into DIDA to support the integration of safeguards into the SEDP (and other World Bank-funded projects). A Safeguards Advisor will support MEC and KAJUR and work closely with the Project Manager. Land acquisition will be assisted by the Ministry of Internal Affairs, which has the mandate to obtain and manage leases for Government purposes. The SEDP is one of the first World Bank-funded projects to be implemented in the RMI and therefore there will be some ongoing and intensive supervision, training and mentoring by task teams of staff in DIDA, MEC, KAJUR and Ministry of Internal Affairs to ensure that the World Bank safeguards policies and instruments are fully understood and integrated into the way that the project is implemented.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

Stakeholders include: Government agencies: National Environmental Protection Agency, Ministry of Internal Affairs, Ministry of Public Works, Kwajalien Atoll Development Authority, Kwajalien Atoll Local Government, Majuro Atoll Local Government. Land owners and occupiers: Ebeye land owners, Marshall Islands Water and Sewerage Company, Ministry of Education, RMI Ports Authority, Ministry of Health. Non-Governmental organisations: College of the Marshall Islands, CMAC, Women United Together Marshall Islands, International Organisation for Migration. Meetings were held for invited stakeholders (including the above) on 31 July 2017 to discuss the project design and the safeguards instruments. A draft stakeholder plan (to be completed by appraisal) provides an ongoing plan for engagement and consultation throughout the project.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

Date of receipt by the Bank 25-Sep-2017	Date of submission for disclosure 28-Sep-2017	For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors
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"In country" Disclosure



Marshall Islands

26-Sep-2017

Comments

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank

25-Sep-2017

Date of submission for disclosure

28-Sep-2017

"In country" Disclosure

Marshall Islands

26-Sep-2017

Comments

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?

Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

No

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?

No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

NA

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?

NA

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?

NA



OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

OP/BP 4.37 - Safety of Dams

Have dam safety plans been prepared?

No

Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?

NA

Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?

NA

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

Yes



All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes

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APPROVAL

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Approved By

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Country Director:	Mona Sur	30-Oct-2017