



# Report and Recommendation of the President to the Board of Directors

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Project Number: 46453-002  
October 2014

## Proposed Loan and Administration of Grant Cook Islands: Renewable Energy Sector Project

This document is being disclosed to the public prior to its consideration by ADB's Board of Directors in accordance with ADB's Public Communications Policy 2011.

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 25 September 2014)

Currency units	–	New Zealand dollar (NZ\$)		
	–	euro (€)		
NZ\$1.00	=	\$0.807	or	€0.631
\$1.00	=	NZ\$1.238	or	€0.782
€1.00	=	\$1.278	or	NZ\$1.583

## ABBREVIATIONS

ADB	–	Asian Development Bank
CIRECIP	–	Cook Islands Renewable Energy Chart Implementation Plan
kWh	–	kilowatt-hour
MFEM	–	Ministry of Finance and Economic Management
O&M	–	operation and maintenance
OEC	–	Office of the Energy Commissioner
POE	–	project owner's engineer
REDD	–	Renewable Energy Development Division
TAU	–	Te Aponga Uira (Rarotonga Power Authority)

## NOTE

In this report, "\$" refers to US dollars unless otherwise stated.

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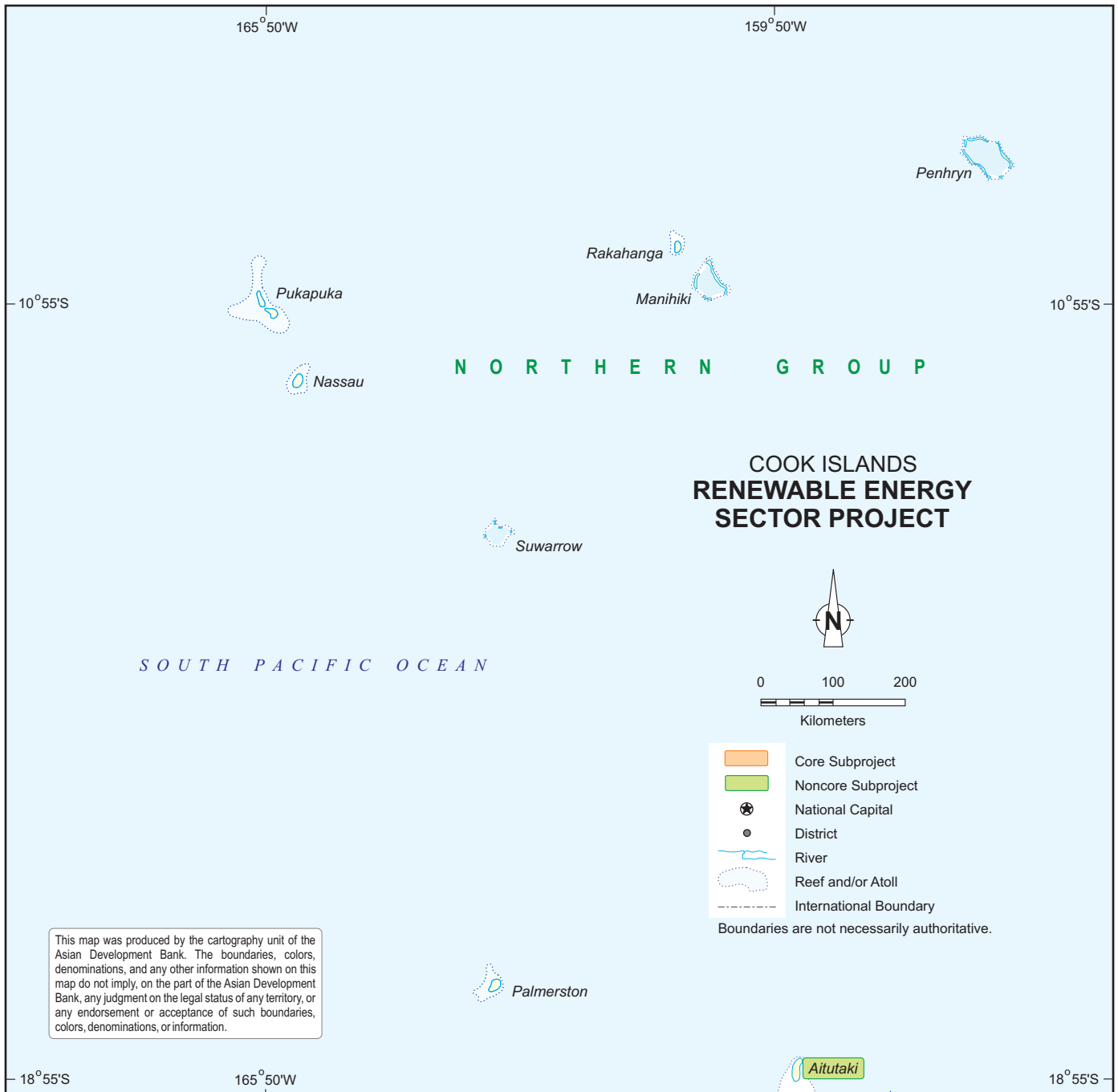
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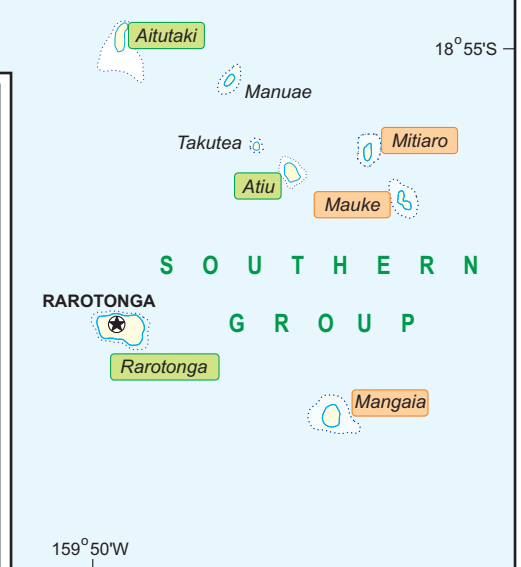
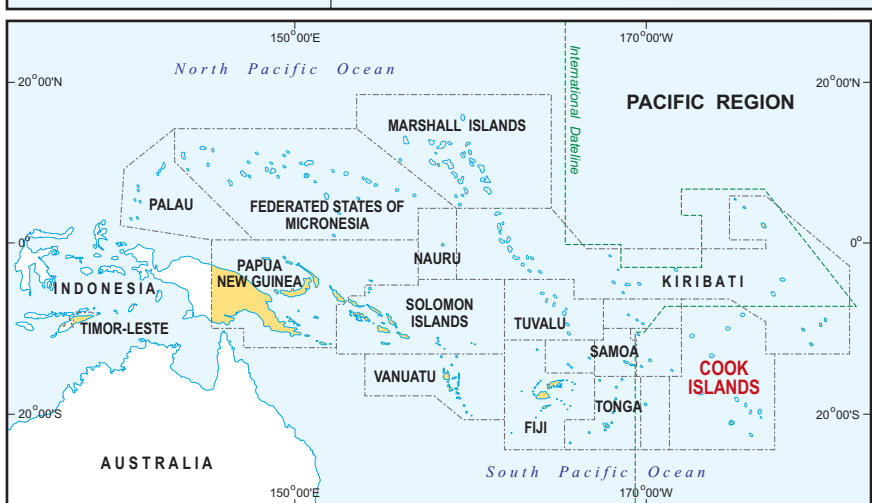
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## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number: 46453-002</b>	
<b>Project Name</b>	Renewable Energy Sector Project	<b>Department /Division</b>	PARD/PATE
<b>Country Borrower</b>	Cook Islands Cook Islands	<b>Executing Agency</b>	Ministry of Finance & Economic Management
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Energy</b>	Renewable energy generation - solar		11.19
		<b>Total</b>	<b>11.19</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Mitigation (\$ million)	11.19
Environmentally sustainable growth (ESG)	Eco-efficiency Global and regional transboundary environmental concerns	CO <sub>2</sub> reduction (tons per annum)	2,930
		Climate Change impact on the Project	Medium
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	Institutional development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Knowledge sharing activities		
Partnerships (PAR)	Bilateral institutions (not client government) Official cofinancing		
Private sector development (PSD)	Public sector goods and services essential for private sector development		
<b>5. Poverty Targeting</b>		<b>Location Impact</b>	
Project directly targets poverty	No	Rural	Medium
		Urban	Medium
<b>6. Risk Categorization:</b>	Low		
<b>7. Safeguard Categorization</b>	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>11.19</b>	
Sovereign Project loan: Ordinary capital resources		11.19	
<b>Cofinancing</b>		<b>7.26</b>	
European Union		7.26	
<b>Counterpart</b>		<b>5.83</b>	
Government		5.83	
<b>Total</b>		<b>24.28</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		No	
Use of country public financial management systems		No	



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## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan and (ii) proposed administration of a grant to be provided by the European Union, both to the Cook Islands for the Renewable Energy Sector Project.<sup>1</sup>

2. The project will support the government's policy to increase power generation from renewable sources and enhance the government's institutional capacity for implementing the Cook Islands Renewable Energy Chart Implementation Plan (CIRECIP), 2012–2020, which sets a target of supplying electricity from renewable energy sources on all inhabited islands by 2020.<sup>2</sup> It will construct new solar photovoltaic power plants on up to six islands of the southern group, as shown on the map. The project will result in annual savings of 1.09 million liters of diesel consumption and annual reduction of 2,930 tons of carbon dioxide emission, for greater energy security and sustainability in the Cook Islands.<sup>3</sup>

## II. THE PROJECT

### A. Rationale

#### 1. Socioeconomic Context and Sector Performance

3. The Cook Islands is a Pacific island country divided into two island groups with an estimated total population of 18,600 people.<sup>4</sup> The northern group consists of seven low-lying and sparsely populated coral atolls, while the southern group consists of eight fertile volcanic islands. About 92% of the population lives in the southern group, which includes the main island of Rarotonga. Economic development is hindered by the country's limited size, isolation and distance from markets, lack of natural resources, periodic devastation from natural disasters, and inadequate infrastructure.

4. The Cook Islands depends heavily on imported fuels. Its total fuel import bill in 2012 was \$29.8 million, or 25% of total imports and 9% of gross domestic product.<sup>5</sup> The total installed power generation capacity in the Cook Islands is 11.75 megawatts. Diesel-powered generators constitute about 99% of the total electricity generating capacity. More than 99% of all households are grid connected, 5.5% have additional solar photovoltaic home systems, and 1.0% use small diesel generators.<sup>6</sup> According to the CIRECIP, current electricity demand in the Cook Islands is about 33.0 gigawatt-hours, and is forecast to grow modestly to 38.5 gigawatt-hours by 2020. The southern group is the dominant load center, accounting for 98% of current and future load demand.

5. Delivery of energy services is undertaken by a state-owned utility on Rarotonga, and by island administration committees on the other outer islands in the northern and southern groups. They are vertically integrated electricity authorities in charge of generation, transmission,

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

<sup>2</sup> Government of the Cook Islands. 2012. *The Cook Islands Renewable Energy Chart Implementation Plan*. Avarua.

<sup>3</sup> The Asian Development Bank (ADB) provided project preparatory technical assistance: ADB. 2013. *Technical Assistance to the Cook Islands for Preparing the Renewable Energy Project*. Manila (TA 8439-COO, \$500,000, approved on 4 September, financed by the Japan Fund for Poverty Reduction).

<sup>4</sup> Government of the Cook Islands. 2013. *Vital Statistics and Population Estimate*. Avarua.

<sup>5</sup> According to the Cook Islands Statistics Bulletin (2012), the country imported about 14.1 million liters of fuel in 2012, of which 8.6 million liters were used to generate electricity.

<sup>6</sup> Ministry of Finance and Economic Management. 2012. *Census of Population and Dwellings*. Avarua.

distribution, and retail sales of electricity. Assets for energy services are administered and managed by the Cook Islands Investment Corporation, the government's holding company that groups the state-owned enterprises.

## **2. Sector Challenges and Opportunities**

6. Electricity costs in the Cook Islands are among the highest in the Pacific. The reliance on imported fuel is reflected in the high average electricity tariff charged, which was \$0.63 per kilowatt-hour (kWh) in 2013. Such a high tariff translates into 4% of annual household expenditure and 15% of annual business entity expenditure. Under the regulations, the utilities can pass on fuel costs directly to consumers and charge an inflation-indexed nonfuel tariff. In Rarotonga, the current tariff is \$0.70 per kWh. On the outer islands, due to limited affordability, the government subsidizes a part of the electricity generation cost so the average electricity tariff is \$0.57 per kWh. Both are above regional average tariffs.

7. Volatile diesel fuel prices and heavy reliance on imported diesel fuel for power generation significantly affects the economy and living standards in the Cook Islands. Changing diesel-based power generation to renewable energy sources is expected to reduce the cost of generation by up to 40% and diesel consumption for power generation by up to 95%, and will contribute to sustainable social and economic development. Average annual solar irradiation of around 1,900 kWh per square meter constitutes a major renewable source for power generation.

8. In 2011, the government issued the Cook Islands Renewable Energy Chart, which sets a target of supplying 50% of inhabited islands with power from renewable sources by 2015, and 100% of the inhabited islands by 2020.<sup>7</sup> It also launched the CIRECIP in 2012, which incorporates a development schedule for electricity generation from renewable sources.

## **3. Institutional Framework**

9. The government has a coherent institutional framework to guide renewable energy development. The National Renewable Energy Committee was formed in 2010 to lead the renewable energy project and ensure timely achievement of the government's renewable energy policy.<sup>8</sup> A Renewable Energy Development Division (REDD) was established in 2010 within the Office of the Prime Minister and is responsible for implementing the CIRECIP. REDD is under the supervision and guidance of the Office of the Energy Commissioner (OEC), which is responsible for energy sector planning and management, including electricity tariff regulation and standardization of electricity services.

## **4. Rationale for Sector Loan Modality and ADB Intervention**

10. The Cook Islands has a clearly articulated renewable energy sector development plan in the CIRECIP. However, developing grid-connected renewable energy systems on all islands within the next 6 years requires strengthened and comprehensive project management and institutional capacity. The CIRECIP proposes a wide range of renewable energy systems for 12 geographically scattered islands in the northern and southern groups according to their

<sup>7</sup> Government of the Cook Islands. 2011. *The Cook Islands Renewable Energy Chart*. Avarua.

<sup>8</sup> It is comprised of the minister in charge of renewable energy, OEC, REDD, Te Aponga Uira (TAU), Ministry of Infrastructure and Planning, the Cook Islands Investment Corporation, and Ministry of Finance and Economic Management (MFEM).

resource endowments, load demand, and grid conditions for stable electricity supply. The CIRECIP also proposes mitigating technical and administrative complexity through comprehensive institutional strengthening in load management and grid protection, demand-side energy efficiency, and private sector participation.

11. To minimize complexity in project management and support CIRECIP implementation in a phased manner, the project will finance a time and area slice of the development plan. It will support solar photovoltaic power development and implementation in the southern group over 3 years. Combined with ongoing assistance by New Zealand for the northern group (para. 13), the project will help achieve renewable energy system deployment on about 80% of islands by 2017. It will also provide project management support and capacity building for design, implementation, and operation and maintenance (O&M); and help facilitate private sector participation, enhance demand-side energy efficiency, and update the CIRECIP for further renewable energy deployment by 2020.

12. The Energy Policy (2009) of the Asian Development Bank (ADB) supports the rationale of the proposed project by promoting deployment of clean energy in its developing member countries.<sup>9</sup> Development of energy and infrastructure are a main component of the Pacific Approach 2010–2014.<sup>10</sup> The project is included in the country operations business plan, 2014–2016, which includes energy as a priority area of support and sets a primary goal of reducing the country's dependence on imported fossil fuels by generating power from its own renewable energy sources.<sup>11</sup> The sector loan approach is appropriate because it allows flexibility in subproject development, and capacity development to roll out renewable energy deployment on all islands; and the Cook Islands has a sound sector development policy, institutional capacity, and appropriate policies.

## 5. Development Partner Coordination

13. New Zealand started solar photovoltaic power system development in the northern group of islands in 2012, and on Rarotonga in 2014. ADB, New Zealand, and the European Union have coordinated closely to support implementation of the CIRECIP by developing a common technical standard for grid-connected solar photovoltaic systems, sharing lessons and issues related to engineering design and project implementation; and sharing a project steering group. The proposed project will complement these efforts.<sup>12</sup>

### B. Impact and Outcome

14. The impact of the project will be increased energy security in an environmentally sustainable manner. The outcome will be increased access to a higher share of electricity generated by renewable energy sources.

### C. Outputs

15. The project will have two outputs:

- (i) **Solar photovoltaic power system development.** The project will construct up to six solar photovoltaic power plants with a total installed capacity of about

<sup>9</sup> ADB. 2009. *Energy Policy*. Manila

<sup>10</sup> ADB. 2009. *Pacific Approach 2010–2014*. Manila

<sup>11</sup> ADB. 2013. *Country Operations Business Plan: Cook Islands, 2014–2016*. Manila.

<sup>12</sup> Development Coordination (accessible from the list of linked documents in Appendix 2).



3 megawatts-peak coupled with lithium-ion batteries to store electricity from solar energy, and rehabilitate the existing distribution network for core and noncore subprojects. The project will feature three core subprojects on Mangaia, Mauke, and Mitiaro and up to three noncore subprojects on Aitutaki, Atiu, and Rarotonga. Core subprojects are already designed, assessed as viable, and ready for implementation. These three will be implemented first. Noncore subprojects require additional resources for further due diligence and final design after project approval. They will be implemented sequentially.

- (ii) **Institutional strengthening and project management support.** The project will provide institutional strengthening to OEC and REDD to develop the energy efficiency policy implementation plan including an energy audit and monitoring scheme to enhance demand-side energy efficiency practices for targeted major electricity consumer groups;<sup>13</sup> develop the capacity to assess renewable energy technologies and set appropriate off-take tariffs for power purchase agreements in projects funded by the private sector; and update the CIRECIP by reexamining the electricity load demand up to 2020, the renewable technology choices, and a least-cost investment plan. The consultants to be engaged under this component will be the project owner's engineer (POE) team, who will also provide project management support for REDD and Te Aponga Uira (TAU) to help implement the project.

#### D. Investment and Financing Plans

16. The project is estimated to cost \$24.28 million (Table 1).

**Table 1: Project Investment Plan**  
(\$ million)

Item	Amount
<b>A. Base Cost<sup>a</sup></b>	
1. Solar photovoltaic module procurement	2.80
2. Solar photovoltaic power system development	14.91
3. Institutional strengthening and project management support	1.26
4. Land acquisition	1.42
5. Tax and duties	1.61
<b>Subtotal (A)</b>	<b>22.00</b>
<b>B. Contingencies<sup>b</sup></b>	<b>1.39</b>
<b>C. Financing Charges During Implementation<sup>c</sup></b>	<b>0.64</b>
<b>D. Administration Charges<sup>d</sup></b>	<b>0.25</b>
<b>Total (A+B+C+D)</b>	<b>24.28</b>

<sup>a</sup> In April 2014 prices. The amounts are indicative since the noncore subprojects will be appraised during implementation.

<sup>b</sup> Physical contingencies estimated at 5.0% of base cost. Price contingency is computed using international inflation rates: 2.3% in 2014, 1.0% in 2015, and 1.4% in 2016 onwards.

<sup>c</sup> Includes interest and commitment charges. Interest during construction for the Asian Development Bank (ADB) loan has been computed at the 3-year forward New Zealand dollar swap rate plus spread of 0.5%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

<sup>d</sup> ADB's administration fee and bank charges to the extent that this item is not covered by the interest and investment income earned on this grant or any additional grant from the European Union.

Source: Asian Development Bank estimates.

<sup>13</sup> The CIRECIP also seeks to enhance demand-side energy efficiency to reduce peak-load demands and minimize diesel fuel consumption for the existing power generators, which will continue to be used as back-up capacity for power systems based on renewable energy.

17. The government has requested a loan of NZ\$12.98 million (\$11.19 million) from ADB's ordinary capital resources to help finance the project. The loan will have a 22-year term, including a grace period of 3 years, straight-line repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions as set forth in the draft loan and project agreements. The European Union will provide grant cofinancing equivalent to €5.30 million (\$7.26 million), to be administered by ADB and monitored in US dollars.<sup>14</sup> The financing plan is in Table 2.

**Table 2: Financing Plan**

<b>Source</b>	<b>Amount</b> (\$ million)	<b>Share of Total (%)</b>
Asian Development Bank		
Ordinary capital resources (loan)	11.19 <sup>a</sup>	46.09
European Union (grant)	7.26 <sup>b</sup>	29.90
Government of the Cook Islands <sup>c</sup>	5.83	24.01
<b>Total</b>	<b>24.28</b>	<b>100.00</b>

Note: Numbers may not sum precisely because of rounding.

<sup>a</sup> Equivalent to NZ\$12.98 million (exchange rate as of 8 April 2014).

<sup>b</sup> Equivalent to €5.30 million (exchange rate as of 8 April 2014).

<sup>c</sup> The government's contribution comprises land acquisition, tax and duties (exemption), and solar photovoltaic module procurement.

Source: Asian Development Bank estimates.

18. The loan will be used for the procurement of equipment and materials, civil works, services, related transportation, insurance, installation costs, and interest and commitment charges on the loan during construction for noncore subprojects on Atiu, Aitutaki, and Rarotonga. The loan will also be used to finance consulting services and contingencies. The grant will be used for the procurement of equipment and materials, civil works, related transportation, insurance, and installation costs for core subprojects on Mauke, Mitiaro, and Mangaia. The government will finance land acquisition, environmental and social monitoring, taxes and duties, and solar photovoltaic module procurement.

19. The government will provide the loan proceeds to TAU through a subsidiary loan.<sup>15</sup>

## **E. Implementation Arrangements**

20. The executing agency will be the Ministry of Finance and Economic Management (MFEM). The implementing agencies will be REDD and TAU. REDD will implement core subprojects on Mangaia, Mauke, Mitiaro, and noncore subprojects on Atiu and/or Aitutaki. It will also implement the institutional strengthening and project management support component. TAU will implement the noncore subproject on Rarotonga. REDD and TAU will designate counterpart staff conversant in engineering, power system planning, procurement, finance, environment, and social areas. POE will help enhance project management capacity. A project management unit will be established to implement the project.

<sup>14</sup> Exchange rate as of 8 April 2014. This amount may be adjusted for currency fluctuations to match the grant amount received by ADB. Reporting to the European Union will be done in euros. The financing option will be cost sharing in accordance with para. 15 of *Operations Manual*. OM E1/OP.

<sup>15</sup> The government will onlend ADB loan proceeds to TAU on the same terms and conditions plus 0.5% onlending charge. The government will bear the exchange rate and interest rate fluctuation risks.

21. Procurement of goods, works, and services will be conducted through turnkey contracts. The turnkey contracts will include final design and engineering, supply and installation of equipment, construction works and commissioning, and an O&M knowledge transfer program. The procurement will follow ADB's Procurement Guidelines (2013, as amended from time to time) for the civil works contracts. However, the European Union cannot exclude any of its eligible countries from the contracts it funds.<sup>16</sup> Therefore, ADB Board approval for a waiver of Article 14(ix) of the Articles of Agreement of the Asian Development Bank is required to allow those countries eligible for procurement under the European Union regulations that are not member countries of ADB to tender for the procurement of equipment and materials, civil works, and services to be financed under the grant.<sup>17</sup>

22. Consulting services will be recruited through firms using the quality- and cost-based selection method with a quality–cost ratio of 90:10 for project management support to REDD and TAU, including project preparation for noncore subprojects, preparation of bidding documents, assistance during the bidding process, project supervision, and commissioning. The consultants will also support institutional strengthening of OEC and REDD for updating the CIRECIP, enhancing demand-side energy efficiency, and facilitating private sector participation.

23. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.<sup>18</sup>

**Table 3: Implementation Arrangements**

Aspects	Arrangements		
Implementation period	June 2014–June 2017		
Project completion date	30 June 2017 (Loan closing date: 31 December 2017)		
Management	Project steering committee		
(i) Oversight body	Office of the Prime Minister, chief of staff (chair) MFEM finance secretary, TAU chief executive, REDD director, Energy Commissioner, ADB and EU representatives (members) New Zealand representative (observer)		
(ii) Executing agency	MFEM		
(iii) Implementing agency	TAU (noncore subproject on Rarotonga) and REDD (core subprojects on Mangaia, Mauke, Mitiaro, noncore subprojects on Atiu and/or Aitutaki, and institutional strengthening and project management support).		
(iv) Implementation unit	The PMU will be composed of REDD (chair), TAU (member), and POE (member) and be established in REDD. Number of staff: 6		
Procurement	Turnkey 1	one package (core subprojects)	\$7.01 million
	Turnkey 2	one package (Noncore subproject)	To be determined
	Turnkey 3	one package (Noncore subproject)	To be determined
Consulting services	QCBS	40 person-months (intermittent)	\$1.26 million
Advance contracting	The executing agency has requested advance contracting. This will include procurement of consulting services.		
Disbursement	All loan and grant proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, EU = European Union, MFEM = Ministry of Finance and Economic Management, PMU = project management unit, POE = project owner's engineer, QCBS = quality- and cost-based selection, REDD = Renewable Energy Development Division, TAU = Te Aponga Uira.

Source: Asian Development Bank.

<sup>16</sup> Defined in Annex IV of the Partnership Agreement African Caribbean Pacific-European Union signed in Cotonou on 23 June 2000 as last revised in Ouagadougou on 22 June 2010.

<sup>17</sup> The Board of Directors must approve the waiver by a vote representing not less than two thirds of the total voting power of the members of the Board.

<sup>18</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

### III. DUE DILIGENCE

#### A. Technical

24. The three core subprojects have been assessed as technically viable. Solar photovoltaic power plants with lithium-ion batteries for energy storage have been assessed as the least-cost technology in view of available renewable resources, necessary capital and operational costs, power output stability, and environmental impacts. The system configuration design of core subprojects has been carefully analyzed considering the assessed solar irradiation, load demand curve, grid conditions, hard marine environments, and extreme weather events such as cyclones. These core subprojects will include remote control, monitoring, and protection systems to stabilize the grid in line with international design standards. The turnkey contractor(s) will provide specialized O&M knowledge transfer to ensure sustainable operation.

25. The power outputs from the three core subprojects will be synchronized and integrated into the existing electricity grid using lithium-ion battery storage to make up for the intermittent nature of solar energy and ensure electricity supply even during the night. This will help make the electricity system sustainable, stable, and reliable, allowing it to supply clean electricity and meet more than 90% of electricity load demand. The three noncore subprojects will be prudently prepared based on the system configuration design and lessons from implementation of the three core subprojects.

#### B. Economic and Financial

26. **Financial analysis.** The project financial analysis quantifies costs and benefits for each core subprojects. Project financial costs include (the initial capital costs of solar photovoltaic power system development, including power grid refurbishments; annual and periodic O&M expenditures; and consulting services required for design review, tender assistance, project supervision, and training. The financial costs exclude price contingencies. A financial appraisal of the three core subprojects was undertaken using with- and without-project scenarios over a 25-year operational period. Revenue is derived from the levelized cost of electricity under the with-project scenario and derived from the existing tariff under the without- project scenario.<sup>19</sup> The financial internal rates of return for the Mangaia, Mauke, and Mitiaro subprojects are estimated to be 6%, 9%, and 7%. This compares favorably with the estimated weighted average cost of capital of 5.02%, indicating that the project is financially viable. The sensitivity tests showed robust results for all adverse scenarios, with financial internal rates of return exceeding the weighted average cost of capital.<sup>20</sup>

27. **Economic analysis.** Economic analysis was undertaken for the three core subprojects by comparing the discounted costs and benefits under the with- and without-project scenarios over 2014–2042 in constant 2014 prices. The without-project case represents a continuation of the existing situation, and the with-project case represents the project investment scenario. The economic internal rates of return for Mangaia, Mauke, and Mitiaro are estimated to be 13%, 14%, and 14%. They compare favorably with the 12% economic opportunity cost of capital, indicating that the project is economically viable. Under the same scenarios considered in the financial analysis, the economic internal rate of return remains robust.<sup>21</sup>

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<sup>19</sup> The average levelized cost of electricity for core subprojects is estimated at \$0.45, while the average prevailing tariff is at \$0.65.

<sup>20</sup> Financial Analysis (accessible from the list of linked documents in Appendix 2).

<sup>21</sup> Economic Analysis (accessible from the list of linked documents in Appendix 2).

### C. Governance

28. **Financial management.** To ease cash flow during project implementation, the executing agency will approve and submit to ADB withdrawal applications from the project management unit, assisted by POE, for direct payment for most project goods, works, services, and the consultancy component of the turnkey contractor(s). Disbursements of grant funds under the project will be to procure goods, works, services, and the related consultancy component of the turnkey contractor. A financial management assessment of MFEM, REDD, and TAU's internal controls and accounting and audit procedures was undertaken. Their financial management practices and procedures are considered to be adequate if assisted by POE and the overall risk rating was assessed as moderate. The project management unit to be established will comprise POE, REDD, and TAU, and will be responsible for project financial management and accounting. The government and TAU's accounts and reporting structures are based on New Zealand's generally accepted accounting standards.

29. Procurement capacity assessments for MFEM, REDD, and TAU were also conducted and overall risk ratings were average. MFEM, REDD, and TAU have experienced and trained personnel in procurement and contract management supported by well-established internal procedures and management systems, which are consistent with ADB requirements. The accountability mechanism is also deemed effective for procurement and contract awards, disbursement, and internal audit. However, both REDD and TAU lack experience in procurement with international financing institutions. To overcome this capacity gap, procurement training seminars were provided through project preparatory technical assistance (footnote 3). The POE, which should have extensive experience with ADB-financed infrastructure projects, will help conduct procurement in line with ADB guidelines.

30. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and TAU. The specific policy requirements and supplementary measures are described in the project administration manual.

### D. Poverty and Social

31. The project will improve access to more affordable power supply, and will also widen access to better social services and income-generating opportunities. It will contribute to poverty alleviation indirectly by reducing the country's reliance on volatile and costly imported fossil fuels for power generation. The resettlement plan includes the participation of youth, vulnerable people, and women's groups in all project consultations, and employment opportunities for these groups.

### E. Safeguards

32. **Environment (category B).** The project has been classified as category B for environment following ADB's Safeguard Policy Statement (2009). An environmental assessment and review framework has been prepared for noncore subprojects, and an initial environmental examination has been prepared for core subprojects. The main environmental impacts will occur during site preparation, which will include the cutting of about 140 trees and clearing of vegetative cover from the proposed sites and surrounding areas to prevent shading. There will be impacts from noise and dust due to transportation of plants and materials, and operation of construction machinery. These impacts will be short-term (about 1 week for the smaller plants, and up to 1 month for the larger plants). Operational impacts include maintenance of the plant and management of used batteries. It is proposed, as a special condition in the technical

specifications, that suppliers handle and dispose used batteries. The solar photovoltaic power system will not have any significant long-term environmental impacts.

33. During implementation, MFEM, REDD, and TAU, with support from the environmental expert under the institutional strengthening and project management support component, will prepare the initial environmental examination for noncore subprojects and update the initial environmental examinations and the environmental management plans based on the detailed designs for core and noncore subprojects. ADB will clear the updated documents. The environmental management plans from the updated assessments will be integrated into the bid and contract documents. During project implementation, the environment expert will enhance the capacity of MFEM, REDD, and TAU in safeguard implementation and monitoring.

34. **Involuntary resettlement (category B).** The project has been classified as category B for involuntary resettlement. It is not expected to involve physical displacement. Impacts are not significant, but will arise from the minor acquisition of land with some trees. A resettlement plan has been prepared for the three core subprojects. A resettlement framework has been prepared for the project with guidelines to prepare resettlement plans for noncore subprojects. Affected communities have been consulted during project preparation, and the resettlement framework and plan have been posted on ADB's website. The resettlement plan will be updated after the detailed design, and compensation will be provided to affected persons before civil works start on the respective sites. The Cook Islands Investment Corporation and Crown Law Office have experience in acquiring land and they will support MFEM, REDD, and TAU in updating and implementing the resettlement plan. The project will recruit social safeguard specialist to boost the capacity of government agencies for managing land acquisition and safeguards.

35. **Indigenous peoples (category C).** The project has been classified category C for indigenous peoples. The population in the project area comprises the mainstream population of the Cook Islands. The project is not expected to affect any distinct and vulnerable group of indigenous peoples as defined under ADB's Safeguard Policy Statement.

## F. Risks and Mitigating Measures

36. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>22</sup> The integrated benefits and impacts are expected to outweigh the costs.

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

<b>Risks</b>	<b>Mitigating Measures</b>
Support, performance, and coordination at REDD and TAU could be inadequate.	Adequate project management assistance provided by the institutional strengthening and project management support component.
Implementation could be delayed due to delays in noncore subproject preparation, land acquisition, and procurement.	Preparation of noncore subprojects will be supported under institutional strengthening and project management support. Sites of noncore subprojects have been identified and are in the consultation process. Turnkey contracts will also be used for all noncore subprojects to minimize potential delay.
Government and development partner support to implement	Institutional strengthening and project management support components will help OEC and REDD optimize all action

<sup>22</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

Risks	Mitigating Measures
CIRECIP could be inadequate.	necessary to implement CIRECIP. ADB will also coordinate with the Government of New Zealand, the EU, and other potential development partners to help implement CIRECIP.

ADB = Asian Development Bank, CIRECIP = Cook Islands Renewable Energy Chart Implementation Plan, EU = European Union, OEC = Office of the Energy Commissioner, REDD = Renewable Energy Development Division, TAU = Te Aponga Uira.

Source: Asian Development Bank estimates.

#### IV. ASSURANCES AND CONDITIONS

37. The government and TAU have assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the project administration manual and loan, grant, and project agreements.

38. The government and TAU have agreed with ADB on certain covenants for the project, which are set forth in the loan, grant, and project agreements.

39. As a condition to disbursement of the portion of the loan to be used for solar photovoltaic power system development for the noncore subproject on Rarotonga, the subsidiary loan agreement between the government and TAU, in form and substance satisfactory to ADB, will have been duly executed on behalf of the government and TAU and declared effective.

#### V. RECOMMENDATION

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

- (i) the loan of NZ\$12,980,000 to the Cook Islands for the Renewable Energy Sector Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 22 years, including a grace period of 3 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (ii) the administration by ADB of a grant not exceeding the equivalent of €5,300,000, to the Cook Islands for the Renewable Energy Sector Project, to be provided by the European Union; and
- (iii) the proposal in paragraph 21 of this report to permit procurement in nonmember countries of ADB of goods and works produced in nonmember countries of ADB.

Takehiko Nakao  
President

28 October 2014

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Increased energy security in an environmentally sustainable manner</p>	<p><b>By 2020:</b> 100% of islands convert energy system from diesel fuel to renewable energy source (2012 baseline: 0%)</p>	<p>Government statistics</p>	<p><b>Assumptions</b> Stable macroeconomic conditions for the Cook Islands</p> <p>Stability in electricity demand</p> <p>World oil prices remain high and volatile</p> <p><b>Risk</b> Policy actions and development partner support are inadequate to implement the CIRECIP.</p>
<p><b>Outcome</b> Increased access to a higher share of electricity generated from renewable energy sources</p>	<p><b>By end of 2018:</b> Four islands in the southern group fully convert energy system from diesel fuel to renewable energy sources (2012 baseline: 0%)</p>	<p>Government statistics</p> <p>Project completion report</p>	<p><b>Assumptions</b> The government continues to prioritize implementing the CIRECIP.</p> <p>Tariffs are adequate for system O&amp;M.</p> <p><b>Risk</b> Implementation is delayed due to delays in noncore subproject preparation, land acquisition, and procurement.</p>
<p><b>Outputs</b> 1. Solar photovoltaic power system development</p> <p>2. Institutional strengthening and project</p>	<p><b>By end of 2016:</b> Solar photovoltaic power system of core subprojects (with 780 kW of installed capacity) connected to the existing power grid on Mangaia, Mauke, and Mitiaro islands (2012 baseline: 0%)</p> <p><b>By end of 2017:</b> Solar photovoltaic power system of noncore subprojects (2,400 kW) connected to the existing power grid on Atiu, Aitutaki, and Rarotonga islands (2012 baseline: 0%)</p> <p><b>By end of 2017:</b> Energy efficiency policy implementation plan is</p>	<p>Project progress reports</p> <p>Project completion report</p>	<p><b>Assumptions</b> REDD and TAU have sufficient capacity to implement and maintain the project.</p> <p>The government adopts policy actions recommended under the institutional strengthening and project management component.</p> <p><b>Risks</b> Support, performance, and coordination at REDD and TAU are weak and inadequate.</p>



Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
management support	<p>developed (2012 baseline: 0%)</p> <p>Capacity of OEC and REDD (10 staff in total) for renewable energy technology assessments and tariff setting in private-sector-funded projects developed (2012 baseline: 0%)</p> <p>The updated CIRECIP, which incorporates load demand update, viable renewable technology choice, and least-cost investment plan, developed (2012 baseline: 0%)</p> <p>Project management support for REDD and TAU to implement core and noncore subprojects (6 in total) completed (2012 baseline: 0%)</p>		
<p><b>Activities with Milestones</b></p> <p><b>1. Three core subprojects on Mangaia, Mauke, and Mitiaro islands</b></p> <p>1.1 Bidding for single turnkey contract completed (Q3 2015)</p> <p>1.2 Turnkey contract awarded (Q3 2015)</p> <p>1.3 Start of construction (Q4 2015)</p> <p>1.4 Systems commissioning, including test run (Q3 2016)</p> <p>1.5 O&amp;M training by turnkey contractor completed (Q4 2016)</p> <p><b>2. Three non-core subprojects on Atiu, Aitutaki, and Rarotonga</b></p> <p>2.1 Feasibility studies completed (Q2 2015)</p> <p>2.2 Bidding for two turnkey contracts completed (Q1 2016)</p> <p>2.3 Turnkey contracts awarded (Q1 2016)</p> <p>2.4 Start of construction (Q2 2016)</p> <p>2.5 Systems commissioning, including test run (Q1 2017)</p> <p>2.6 O&amp;M training by turnkey contractor completed (Q2 2017)</p> <p><b>3. Institutional strengthening and project management support</b></p> <p>3.1 Selection of consultants and award of contracts (by Q1 2015)</p> <p>3.2 Project management support completed (by Q2 2017)</p> <p>3.3 Update of the CIRECIP completed (Q4 2016)</p> <p>3.4 Implementation of the environmental and social safeguard actions (2015–2017)</p>			<p><b>Inputs</b></p> <p><b>ADB:</b> NZ\$12.98 million (equivalent to \$11.19 million)</p> <p><b>European Union:</b> €5.30 million (equivalent to \$7.26 million)</p> <p><b>Government of the Cook Islands:</b> \$5.83 million</p>

ADB = Asian Development Bank, CIRECIP = Cook Islands Renewable Energy Charter Implementation Plan, kW = kilowatt, OEC = Office of the Energy Commissioner, O&M = operation and maintenance, OCR = ordinary capital resources, Q = quarter, REDD = Renewable Energy Development Division, TAU = Te Aponga Uira.

Source: Asian Development Bank.

**LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=46453-002-3>

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

**Supplementary Documents**

17. Subproject Eligibility Criteria and Selection Procedure
18. Procurement Capacity Assessment