

Te Tarai Vaka Activity Progress Report: ADB Loan 3193/Grant 0415-COO Renewable Energy Sector Project

Summary

Activity information

Activity Title	Cook Islands Renewable Energy Sector Project
Goal	Increased energy security in an environmentally sustainable manner
Intended outcomes	The outcome will be increased access to a higher share of electricity generated from renewable energy sources

Funding information

Start and end dates	9 February 2015 – 31 December 2017 ¹
Total cost	NZD33.22 million* Note that all reported costs will be in NZD millions
Reporting period	1 July - 30 September 2017

* conversion rate (19/6/2015)

Progress report preparation

Prepared by	Entura Team
Others involved or consulted during this reporting period	REDD staff, MFEM, DCD staff, ADB, Project Steering Group, TAU staff CIIC Staff, Woo Lee, ADB Energy Specialist Mpower staff (weekly meetings online) Infratec Staff on island, Entura Environmental Specialist, David Proctor Island Governments of Atiu, Mangaia, Mitiaro and Mauke.
Date of report	September 2017

Key Conclusions and Necessary Actions

This tenth Progress Report has been prepared by Entura, Project Owners Engineers, (POE) in co-operation with the Cook Islands Government (CIG), Project Management Unit (PMU), Project Steering Group (PSG) for the ADB funded Loan 3193/Grant 0415-COO Renewable Energy Sector Project. The Progress Report provides an update to the ADB and all relevant stakeholders on project progress between 1 July (commencement of reporting period) and 30 September 2017 (end of reporting period).

Activities undertaken in this reporting period focused on weekly teleconference meetings with MPower regarding the design and procurement of equipment for the battery energy storage system (BESS) on Rarotonga. The PMU continued to monitor site clearance on the islands of Atiu, Mitiaro and Mauke. Infratec/NETCON Limited turnkey contract work programme for this quarter includes overall design plans and drawings for each of the islands with 90% drawings complete for Mitiaro and construction commencing on Mitiaro and Mauke. Scoping of the civil works contract for Mitiaro and Mauke was undertaken between 31 July – Aug 5 to confirm the proposed locations of the cable trenches, pillar boxes, street lights, substations, and examination of residential meter boxes. Atitutaki ITB was advertised on 10 July 2017 and closing of ITB with Bid Opening was held on the 28 September 2017.

¹ ADB Fact-finding Mission in April reached an in principle agreement with the Government to extend the original loan and grant closing date from 31 December 2017 to 31 December 2019

Review of Progress to Date

A. Project Implementation

1. Administration

The POE works directly with the Implementing Agency, REDD, and during this reporting period the POE local team used the REDD office intermittently. For a short period POE environmental specialist, David Proctor used the office briefly, prior to and after the site visits to Atiu and Mitiaro. Other international staff were working from their home offices.

The PMU is staffed by the Project Manager, Finance Specialist (3 days per week) and PEC Fund Coordinator who are taking on the major responsibility for the project with oversight by the REDD Director in close consultation with the POE.

2. Procurement

The Phase 1 Turnkey contract, awarded to NETCON, was signed on the 17th August 2016 and the contract became effective on the 7th October 2016. The negotiated contract price was the sum of NZ\$7,708,494.88 and €1,023,208.74². A variation for NZ\$-395,554,.41 was agreed on 11 February 2016, removing the HV scope of works from the contract for inclusion in the power distribution network package. During this quarter the first two Monthly Reports CIRES-001 and CIRES-002 dated July and August 2017 were received from Infratec providing programme status and forecast for the next 6 months for each island.

The power distribution network package (grid package) for Mitiaro and Mauke was also awarded to NETCON Limited on the 27 March 2017 for the contract price of NZ\$3,926,941.. Under this contract NETCON will install or replace high voltage and low voltage cable and substations/transformers on Mauke and Mitiaro as well as connections to customers and the power station as the existing systems are at the end of life and no longer suitable for the new power system. Street lighting variation for Mitiaro and Mauke was being considered during this quarter. Infratec and REDD/Entura have initiated discussions around the extra work required to make the meter boards AS/NZS compliant as well as additional work and materials required for the LV upgrade.

During this reporting period a variation to the NETCON Phase 1 Turnkey contract was concluded to include the Civil Works. An ADB No Objection letter dated the 18 May 2017 confirmed the variation for Civil works with NETCON Limited for NZ\$3,718,672. Under this variation the Phase 1 Turnkey Contractors scope is expanded to include construction of the power house, roads/tracks, and array foundations and framing.

The BESS contract was awarded to MPower Limited on the 1 June 2017 for a fixed price of US\$3,092,768. During this period POE has confirmed 30% design stage, and POE is satisfied that MPower will effectively carry the design through to the 90% stage. Weekly teleconference meetings were held during this quarter with a number of Mpower technical staff, TAU technical staff and POE. POE are expecting to review several key documents prior to sign off.

The Phase 2 Aitutaki ITB was advertised on the 10 July 2017 and closing and the public bid opening took place on the 28th September 2017. Seven (7) bids were received. The CI Government has confirmed in the 2017/18 Capital Budget NZ\$2.8m for Aitutaki Renewable Energy Project and this together with

² Contract variation to remove HV system from main contract and transferred to power distribution package to the value of \$395,554.41

savings from current Phase 1 contracts is expected to see sufficient funds available for Aitutaki project. ADB is currently working on the estimate of savings from Phase 1 contracts but there are still a number of variations for the current projects, which will have an impact on estimated savings.

Entura, during this quarter, commenced the preparation of ITB documents for further BESS project on behalf of TAU to be funded from Green Climate Fund (GCF).

3. Financial disbursements.

The financial disbursements recorded below provides an update to the ADB and all relevant stakeholders for the CIRESF from 1 July - 30 September 2017 amount paid to date in NZD.

Project Spend by Financier for period 01st July to 30 September 2017						
	ADB	EU	GEF	CIG(PEC)	CIG	Total
	NZD	NZD	NZD	NZD	NZD	
A. Investment costs	\$ 1.03	\$ 0.58	\$ 0.43	\$ -	\$ 0.35	\$ 2.39
1. Solar PV Module Procurement						\$ -
2. Turnkey Contract - Solar PV System Development	\$ 0.90	\$ 0.58				\$ 1.48
3. Turnkey Contract for Battery Energy Storage System development			\$ 0.43			\$ 0.43
4. Consulting Services - Institutional Strengthening and Project Management	\$ 0.13				\$ 0.05	\$ 0.18
5. Land Acquisition						\$ -
6. Tax and duties					\$ 0.30	\$ 0.30
B. Contingencies						\$ -
C. Financing Charges during Implementation						\$ -
D. Administration Charges						\$ -

Note:

a. Numbers in ADB column may be different from Ministry of Finance and Economic Management Quarterly report

^b Exchange rates used to convert from NZD to USD is on the date that the transaction occurred 1.43. PAM used 1.16.

Source: LFIS/GFIS, DCD and PMU data

4. Field work.

Field investigations during this period included:

- Project Owner Engineer, David Proctor, Environmental Specialist, and Teariki Rongo, Safeguards Monitoring Specialist, Atiu 21 – 23 August, Mitiaro 25 – 28 August This was to conduct Environmental Monitoring Report with IC and Infratec (Mitiaro).
- PMU Staff Tangi Tereapii, Project Manager, Romani Katoa and CIIC Tamarii Tutangata, travelled to Aitutaki for solar site visit (3 August 2017) as well to discuss solar site clearance with Long Tuiravakai and Mike Henry,
- Teariki Rongo visited Mauke (14 August – 18 August 2017). Met with the Landowners to confirm location of transformer and sub-stations and to seek agreement for transferring the land to the Government.
- Teariki Rongo visited Atiu (16 August 2017) to monitor the solar site clearing.

5. Safeguards and monitoring

The second Semi-Annual Safeguard Monitoring Report for the CIRESPP was submitted in the last quarter. The report covers the period 1 January – 30 June 2017. The purpose of the report is to document social and environmental safeguard monitoring activities as well as environmental safeguards.

The revised Land Acquisition and Compensation Report (LACR) was re-submitted as at 21 August 2017. Voluntary land transfer and land use agreements were executed for the respective solar sites on each of the four Phase 1 islands. The outstanding land lease agreement for the power station on Mangaia (Taengakoro Sec 36 Keia Tapere, Oneroa District) has now been completed and confirmed by Cook Islands Investment Corporation and the agreement included as part of Annex 1 of the LACR.

The Government has formalised during this quarter the acquisition of the nine (9) substations/transformer land sites, including compensation payments of NZD1,000 per site as agreed by the landowners to be paid by the Office of the Prime Minister from the current budget allocation.

Environmental monitoring during this period included onsite monitoring of Mitiaro and Atiu by the POE, Environmental Specialist and Safeguards Monitoring Specialist.

Atiu

Atiu monitoring report by the Owners Engineer Environmental Monitoring Specialist was completed after the inspection from 21 August – 23 August 2017. It noted all commitments relevant to site preparation contained in the IEE and Cook Islands Technical Report. The major components being Water resources and quality, Waste, Noise, Ecology/nature conservation, Social, Air quality, Health and Safety, Hazardous materials, Erosion and sediment control and Heritage. Site preparation works have proceeded slowly over a six month period. Main areas of concern was the cleared vegetation and stockpiling on site and clearing exceeded the marked boundary however these were cleared with landown consent. Health and Safety plans have not yet been prepared. Spill Kits and containment devices have been purchased through the PMU for Atiu site.

Mitiaro

Mitiaro monitoring report by the Owners Engineer Environmental Monitoring Specialist was completed after the inspection from 26 August – 29 August 2017. It noted all commitments relevant to site preparation contained in the IEE and Cook Islands Technical Report and Infratec CIRESPP CEMP. The major components being Water resources and quality, Waste, Noise, Ecology/nature conservation, Social, Air quality, Health and Safety, Hazardous materials, Erosion and sediment control and Heritage. As well the report provides for Infratec emergency response procedures, management and staff procedures as well as staff environmental training. A serious incident occurred on 29 July resulting in a local Mitiaro worker being injured on site where a full site investigation was undertaken by NETcon. The results of the investigation were not available during the writing of this report. There appear to be no other major issues except a brief hazardous materials management plan should be prepared as required by Infratec's Induction and CEMP.

6. Phase 1 Turnkey Tender Packaging

Infratec are now providing monthly reports, with the first report dated July 2017. The August Report provides a summary of design, procurement and logistics and civil construction progress, which is included below. The Indicative Project Implementation Action Plan below takes into account the timelines as provided in the August Report.

Design:

- The IFC Civil drawings for Mitiaro and Mauke have been issued.
- The CIRESP-001 electrical drawing for Mitiaro set was issued in August and reviewed by Entura. Infratec has responded to the review comments and updated the drawings. A revised set of drawings was submitted with the August Report
- A full set of CIRESP-001 Mauke drawings are ready to be reviewed by the end of this quarter.
- A GIS map of the MV-LV design is nearing completion and was submitted for review during this quarter.

Procurement and logistics:

- A 16-day interisland barge schedule delay has impacted the project timeline. The barge arrived in Mitiaro on September 5th carrying the remainder of the solar array footings and the angle bracket, an excavator and rock breaker, generators, inverters, switchboards, pillar boxes, cables and tools.
- All materials for the Mitiaro powerhouse build are onsite aside from the generator room vents and some of the flashings.
- It is planned that the barge will arrive in Mauke the week of September 11th and carry the foundations, aggregate, cement and other materials required to begin construction.
- Atiu power station foundations as well as the walls and truss are currently in Rarotonga awaiting transport.

Civil Construction***Mitiaro***

- All exterior and interior walls of the Mitiaro power station have now been erected
- A preliminary building inspection was conducted on September 6th and will be made available to Entura/REDD.
- The truss correction (to increase the ceiling height) is currently underway and the roof of the powerstation will be on by approximately September 12th.
- The electrical services pre-wire was conducted during the week of September 4th.

Mauke

- 200 of the 360 pre-cast solar footings have been placed on Mauke
- Civil construction is planned to begin the week of September 18th

Electrical Construction (CIRESP-001)

- None to date

Electrical Construction (CIRESP-002)

- Trenching along the power station road has begun. This was conducted as required for the work stream but also to test the ground conditions and assess the effectiveness of trenching machine.

Overall the delays caused by heavy seas, and inability to move materials and machinery from Rarotonga to Mitiaro and Mauke as well as approval of the Mauke land sites has caused significant slippage in the overall programme. Infratec report that the programme has been reorganized to allow for earlier commissioning when specific areas are completed. Additionally the rate of trenching is still being quantified, as Infratec assesses and understands the variable ground conditions. Some additional time in the MV/LV programme has been allowed for due to the extent of trenching for service mains.

7. Cook Islands Renewable Energy Chart Implementation Plan (CIRECIP)

The CIRECIP is a document that continues to guide the work of the REDD office.

Progress against Results Measurement Table

The Results Measurement Table Appendix B shows progress of the activity against the intended outcomes and outputs and has been updated to mirror the changes in the Project Administration Manual (PAM) April 2016 carried out during the ADB Fact-Finding mission in April 2016. Finalisation of a Results Measurement Table is identified as an action for further discussion at PSG meetings.

Project Specific Covenants

Appendix D are those covenants that have been included in specific legal agreements, the Loan Agreement between the Government of the Cook Islands and ADB. The ADB Mission 21 – 25 November 2016 undertook a compliance review and all covenants are either being complied with or are not yet due. No further updates have been provided during this reporting period. The next ADB Mission 20 – 24 November 2017 is expected to update these covenants.

Changes to Activity Context in the Reporting Period

ADB has officially removed the Rarotonga solar subproject during this quarter.

Relationship between Implementing Agencies, Beneficiaries and Other Stakeholders

Pacific Environmental Community (PEC) Procurement

No additional activity with regard to PEC occurred during this reporting period, however the PEC fund solar panel allocation has been confirmed as follows:

Solar Panel Recipient	Total Solar Panel Capacity Allocated (kWp)	Total No. of Solar Panels Allocated	Construction Start Date	Construction Completion Date
Mitiaro Island	164.3	620	Jul 2017	Oct 2017
Mauke Island	234.26	884	Aug 2017	Nov 2017
Atiu Island	424	1,600	Oct 2017	Jan 2018
Mangaia Island	482.3	1,820	Dec 2017	Mar 2018
Aitutaki Island	1,026.61	3,874	TBA	TBA
TOTAL		8,798		

The panels allocated to the Phase 1 solar sites have been delivered to the respective islands . The panels for Aitutaki will be transported once the tender evaluation of the Aitutaki ITB has been completed and the

contract awarded. Installation Plan for Rarotonga by Te Aponga Uira (TAU) will be carried out after the commissioning of the BESS at the Rarotonga Airport. Proposed plan is as follows:

Rarotonga	Total Solar Panel Capacity Allocated (kWp)	Total No. of Solar Panels Allocated
- BCI Stadium	67.045	253
- TSA Stadium	195.04	736
- Avatiu Port	139.92	528
- Rarotonga Airport Runway	919.285	3,469
TOTAL	1,321.29	4,986

Co-financing from GEF

The co-financing from GEF has supported the government's effort 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. The additional financing is included as a firm project in ADB's country operations business plan, 2016–2018 for the Cook Islands.³ GEF has funded the contract for the battery energy storage system (BESS) to be installed at the Te Mana Ra Solar PV facility at the Rarotonga Airport for integration into the existing power system infrastructure.

Co-financing from the Green Climate Fund (GCF)

Co-financing from the GCF is secured for the purpose of purchasing three (3) new BESS units to support further expansion of renewable generation on Rarotonga.

During this reporting period TAU has requested a variation using GEF funds or loan funds in order for POE to undertake the GCF BESS Technical Assistance for TAU. BESS ITB is expected to be advertised in the next quarter with closing date in January 2018.

Updates to Key TTV Activity Management Documents

The Activity Results Framework is replaced with the Indicative Implementation Plan for this section. The updated Indicative Implementation Plan for the next 18 months is provided in the Table below.

The Table 1 includes key deliverables due during the next reporting period (highlighted) with the activities above having been completed during this reporting period

³ ADB. 2015. *Country Operations Business Plan: Cook Islands, 2016–2018*. Manila.

Table 1: Indicative Project Implementation Action Plan for the Next 12 Months

Activity	Responsibility	Target Date/Completed
Completed Q3 2017		
Semi-annual Safeguard Monitoring Report	PMU/Entura	Jul-17
ITB Aitutaki confirmed and advertised	ADB/PMU/Entura	Jul-17
Quarterly Progress Report 9	PMU/Entura	Jul-17
Land Acquisition and Compensation Report Resubmitted	PMU/ADB/Entura	Aug-17
Site clearance Mauke	PMU/IG	Aug-17
Site clearance Atiu	PMU/IG	Sep-17
ITB Aitutaki closed and Bid Opening Record	PMU/Entura	Sep-17
Civil Drawings for Mitiaro and Mauke	Infratec/Entura/PMU	Sep-17
Electrical Drawings for Mitiaro submitted	Infratec/Entura/PMU	Sep-17
Delivery of Solar Panels to Phase 1 islands	Infratec/PMU	Aug-17
Q4 2017 Next Reporting Period		
Quarterly Progress Report 10	PMU/Entura	Sep-17
Supply of Final detailed designs and documents. Mauke	Infratec/NETCon	Sep-17
Supply of Final detailed designs and documents. Atiu	Infratec/NETCon	Oct-17
Supply of Final detailed designs and documents. Mangaia	Infratec/NETCon	Nov-17
Semi-annual Safeguard Monitoring Report Complete	PMU/Entura	Dec-17
Monitoring and Safeguards Management Plan provided and updated	Infratec/NETCon	Dec-17
ADB Mission	PMU/Entura	Nov 20 – 24
Power distribution upgrade Mitiaro	Contractor/PMU/NETCon	Sep-17
Civil Works Phase 1 Mitiaro Powerhouse	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mitiaro PV Array	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mitiaro Generator	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mitiaro commissioning	PMU/Contractor/Entura/NETCon	Feb-18
Power distribution upgrade Mauke	Contractor/PMU/NETCon	Oct-17
Civil Works Phase 1 Mauke Land completion Report	PMU/Contractor/Entura/NETCon	Sep-17
Civil Works Phase 1 Mauke Powerhouse	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mauke PV Array	PMU/Contractor/Entura/NETCon	Nov-17
Civil Works Phase 1 Mauke Generator	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mauke commissioning	PMU/Contractor/Entura/NETCon	Apr-18
Civil Works Phase 1 Atiu Powerhouse	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Atiu PV Array	PMU/Contractor/Entura/NETCon	Nov-17
Civil Works Phase 1 Atiu Electrical Installation	PMU/Contractor/Entura/NETCon	Nov-17
Civil Works Phase 1 Atiu Commissioning	PMU/Contractor/Entura/NETCon	Mar-18

Activity	Responsibility	Target Date/Completed
Site clearance commences on Mangaia	PMU/Island Governments	Nov-17
Variation for Mangaia Reticulation	PMU/Contractor/Entura/NETCon	Oct-17
Civil Works Phase 1 Mangaia Powerhouse	PMU/Contractor/Entura/NETCon	Jan-18
Civil Works Phase 1 Mangaia PV Array	PMU/Contractor/Entura/NETCon	Feb-18
Civil Works Phase 1 Mangaia Electrical Installation	PMU/Contractor/Entura/NETCon	Mar-18
Civil Works Phase 1 Mangaia Commissioning	PMU/Contractor/Entura/NETCon	May-18
GEF BESS commissioning	TAU/PMU/Contractor	Apr-18
Aitutaki Phase 2 - ADB confirm funding	PMU/Entura/ADB	Oct-17
Aitutaki Phase 2 – BER completed	PMU/Entura/ADB	Nov-17
GCF Bess Variation	PMU/Entura/ADB/TAU	Oct- 17
GCF Bess ITB submission to ADB and Tender Committee	PMU/Entura/ADB/TAU	Oct- 17
GCF Bess ITB Advertisement	PMU/Entura/ADB/TAU	Nov-17
GCF Bess Site Visit	PMU/Entura/ADB/TAU	Nov-17
GCF BESS Closing Date	PMU/Entura/ADB/TAU	Jan-17

Estimated Contract Payments (Table 2)

A preliminary detailed costed workplan was provided in previous quarterly reports but is now considered not to be very useful. There were too many discrepancies between what was implemented and the projected estimated cost. Table 2 therefore replaces the costed workplan which provides estimates of contract payments for the next three quarters to June 2018 provided by the contractors.

	Quarter 3		Quarter 4		Quarter 1		Quarter 2	
	July - September 2017		October - December 2017		January to March 2018		April to June 2018	
NETCON	NZD	EURO	NZD	EURO	NZD	EURO	NZD	EURO
1. Solar PV					\$ 0.29	€ 0.05	\$ 0.54	€ 0.10
2. Distribution					\$ 1.43			
3. Civil Contract			\$ 1.17					
4. BESS (Mpower)			\$ 0.07					
ENTURA								
4. Consulting Services			\$ 0.13		\$ 0.13		\$ 0.07	
Romani's Designs								
5. Project Management			\$ 0.19		\$ 0.13		\$ 0.13	
NB: This is an estimated future spend.								
Source: Payment Schedules provided by Contractors								

Risk management

Key risks identified for the project, including current actions, are identified in Appendix C Risk Matrix Table. During this reporting period the POE has reviewed Appendix C and updated the risks to reflect the current contracts and present situation on the ground.

Also Infratec identified a number of risks which includes:

Weather is a major factor that has delayed the inter-island barge by 16 days causing delays, such as delivery of machinery and materials, to the overall programme.

The delays to the pending MV-LV variation is likely to impact the logistics, procurement, and work steam around the MV-LV distribution installation, specifically the proposed variation for streetlights have a lead time of 10-12 weeks.

The Infratec scoping trip for the Mitiaro MV-LV project has identified the following:

- Shifting location of the substation
- Underground cables – Request from the IG and REDD to upgrade all underground cables (pending an investigation by REDD to determine the state of these cables)
- There was also a request by the IG to leave behind some spare pillar-boxes and cables however at present this is out of scope.

The health and safety issues reported in the Infratec July Report have been addressed through management actions and health and safety management plans now in place.

Governance and Management Arrangements

The PSG oversees the implementation arrangements of the Southern Group Renewable Energy Project. The members of the PSG were confirmed as Chair, Elizabeth Wright-Koteka (Energy Commissioner), Tangi Tereapii (REDD), Garth Henderson (MFEM), Apii Timoti (TAU), Michele Aisake (DCD), Tamarii Tutangata (CIIC) and Romani Katoa (PMU), Chris Blanksby (Entura), Woo Lee (ADB), Vanessa Jenner (ADB Cook Islands Office), Bredina Drollet (Chief of Staff). NZHC has yet to appoint a new representative to the PSG.

The Project Manager of the PMU is responsible for the fortnightly PSG meetings. Three PSG meetings were held in the last quarter. The PMU and Entura provides secretariat services for the PSG.

Authorisation

I declare that the information contained in this report is true and correct and confirm:

- Funds were received and used only for the agreed purpose(s); and
- All conditions attached to Funding have been met; and
- Funds have been fully utilised for the intended purpose

Full Name (in block capitals)

Title / Position

Signature

Date

Appendices

This report includes the following appendices:

- Appendix A: Progress against Results Framework (table)
- Appendix B: Risk Matrix (table)
- Appendix C: Project specific covenants - as displayed in legal agreements (table)






Appendix A: Progress Against Results Framework







This table shows progress of the Activity against the intended outcomes and outputs defined in the (draft) Results Framework and has been updated from the Project Administration Manual (PAM) April 2016. Note that this framework still requires finalisation with the Steering Group Committee.

Note: Planned and actual indicators and targets should be sex-disaggregated where possible.



<i>From agreed Results Measurement Table in the Activity Design Document</i>				<i>Data up to and including this reporting period</i>	
Outcomes and outputs	Planned indicators	Planned targets	Planned methodology and data sources	Actual measurement against targets (using indicators)	Actual methodology and data sources
Impact Increased energy security in an environmentally sustainable manner	100% of islands convert energy system from diesel fuel to renewable energy source. (baseline: 0% in 2012)	By 2020	Government Statistics	6 of 15 islands commissioned with renewable energy generation systems	Project completion reports held by REDD
Medium-term outcome Increased access to a higher share of electricity generated by renewable energy sources	Four islands in the Southern group fully convert energy system from diesel fuel to renewable energy. (Baseline: 0% in 2012)	By end of 2018	Government statistics Project Completion Report		
Short-term outcome					
Output 1. Solar PV power system for four (4) subprojects developed on Mangaia, Mauke, Mitiaro and Atiu islands.	Solar PV power system of Phase 1 subprojects (with 1.24 kW installed capacity) connected to the existing power grid on Mangaia, Mauke, Mitiaro and Atiu islands. (Baseline: 0% in 2012)	By the end of 2017	Project Progress Reports Project Completion Report		
Output 2. Solar PV power system for Phase 2 subprojects developed on Aitutaki, and Rarotonga. Installation of a battery energy storage system (BESS) with a preliminary capacity of the 1.0 MW and 4.0 MWh	Solar PV power system of non-core subprojects (2400kW) connected to the existing power grid on Aitutaki, and Rarotonga islands. (Baseline 0% in 2012) About 2.0 MW of additional solar PV without negatively affecting the grid. This will result in fuel savings and carbon dioxide reduction of about 0.575 million liters and of 1,370 tons per annum	By end-2017 By end – 2018	Project Progress Reports Project Completion Report		
Output 3. Institutional and project management capacity strengthened.	Energy efficiency policy implementation plan is developed (2012 baseline 0%) Capacity of OEC and REDD (10 staff in total) for renewable energy technology assessments and tariff setting in private sector-funded developed (2012 baseline: 0%) The updated CIRECIP which incorporates load demand update, viable renewable technology choice, and least-cost investment plan, developed. (2012 baseline: 0%) Project management support for REDD and TAU to implement core and non-core subprojects (6 in total) completed (2012 baseline: 0%)	By end-2019	Project Progress Reports Project Completion Report		

Appendix B: Project Risk Table

ID	Discipline	Category	Risk description	Prior to implementing mitigating actions			Mitigation	After mitigating actions implemented			Risk Status
				Likelihood	Consequence	Risk ranking		Likelihood	Consequence	Risk Ranking	
1	Project management	Time management	Land payment confirmation report cannot be completed due to delays in land acquisition payments. Impact on preparation of site and civil works and turnkey contract timing (and liquidated damages)	C. Possible	4. Major	H	Emphasis on completing negotiations and discovery process asap. Travel to islands as required to facilitate. Complete Mauke substations by November 2017	C. Possible	2. Minor	L	
2	Project management	Integration management	Interface issues between scope of different turnkey projects	C. Possible	3. Moderate	M	All Phase 1 contracts now sit under single Contractor, with single responsibility including all interfaces. Phase 2 contracts are largely independent and less affected by this risk	C. Possible	2. Minor	L	
3	Engineering	Civil	Island clearing works not completed to satisfactory standard	C. Possible	3. Moderate	M	PMU to oversee site preparation and engineering implementation plans. Include procurement of local civil engineer Island councils are consulted and understand requirements. Work on islands to date has been satisfactory, but Mangaia remains a concern due to complex conditions	C. Possible	3. Moderate	M	
4	Project management	Time management	Phase 1 Project schedule is continually slipping due to a) barge delays b) weather delays c) dispensation to local workers to participate in local events d) optimistic schedule. Likely to push out construction past time to completion	B. Likely	3. Moderate	H	Work closely with stakeholders to manage expectations. Continue to work with Contractor to alleviate any obstacles or hold-ups that may affect progress	C. Possible	3. Moderate	M	
5	Science	Political	Communication difficulties mean different expectations between locals, Employer and Contractor.	B. Likely	2. Minor	M	Continue a diligent approach with REDD or PMU representatives meeting with Island Council regularly and communicating closely with Contractor	C. Possible	2. Minor	L	


6	Science	Political	Local contractors do not have sufficient opportunity to participate in works	C. Possible	3. Moderate	M	Existing Phase 1 contractor has effectively achieved high level of local participation on Mitiaro. Encourage this approach to continue for other islands.	D. Unlikely	3. Moderate	L	
7	Project management	Contract procurement management	Scoping work for distribution rehabilitation not included in ICT process due to schedule constraints	B. Likely	2. Minor	M	Discuss and agree with contractor for minor change orders to complete scope	C. Possible	2. Minor	L	
8	Science	Political	Manea Games held in October do not have power supply available.	C. Possible	3. Moderate	M	Use of new diesel generator in existing powerhouse for 1 month to address issue	D. Unlikely	2. Minor	L	
9	Project management	Cost management	Overall project budget approaching limits - possibility to exceed or need to drop planned project.	C. Possible	4. Major	H	Continue to assess budget and ensure minimum contingency amount remains. Risk reduced now a number of packages are locked in and Aitutaki tender opening completed. CI Govt allocation of \$2.8M significantly relieves any potential shortfall.	C. Possible	3. Moderate	M	
10	Project management	Contract/procurement management	Time taken to process change orders means validity lapses or costs increase.	B. Likely	3. Moderate	H	Minimise and package variations for administrative processing where possible. Ensure increased communication and coordinating of processing departments.	C. Possible	3. Moderate	M	
11	Engineering	Electrical - Primary	Connection of solar PV hybrid systems to remote grids has unforeseen technical difficulties	C. Possible	4. Major	H	Ensure grid assessment reviews the issues and risks and ensure contractual clauses in place for these eventualities in Turnkey contract.	C. Possible	3. Moderate	M	✓
12	Engineering	Renewable energy	Turnkey contractors designs, construction and commissioning have unforeseen difficulties on site	C. Possible	4. Major	H	Ensure sites assessment reviews the issues and risks and ensure contractual clauses in place for these eventualities in contract for Turnkey suppliers	C. Possible	3. Moderate	M	

13	Project management	Scope management	Environmental & Social Safeguards scope or site visits highlights significant issues arising or mitigation required.	C. Possible	3. Moderate	M	Ensure sites assessment reviews the issues and risks early, and mitigations are put in place through EMP. Review of Phase 1 projects to date have shown high level of compliance with safeguard requirements.	C. Possible	3. Moderate	M	✓
14	Technical	Environment	Environmental issues are not identified resulting in environmental impacts	D. Unlikely	4. Major	M	Use local expert support through the POE; follow NES and ADB requirements	D. Unlikely	2. Minor	L	✓
15	Project management	Contract procurement management	REDD and TAU has sufficient capacity to implement and maintain the project.	C. Possible	3. Moderate	M	The government adopts policy actions recommended under the institutional strengthening and project management that will support the performance and service delivery of TAU and REDD.	D. Unlikely	3. Moderate	L	🌀
16	Project management	Human resources management	To deliver project may require assistance from others outside of the project team that is not currently costed .	C. Possible	3. Moderate	M	PMU and financial capacity support in place. POE support implemented progressively as the overall project scope changes.	D. Unlikely	2. Minor	L	🌀
17	Project management	Cost management	GCF grant has no technical support funding allocation.	B. Likely	3. Moderate	H	Allocation sought from within broader budget to provide required procurement and implementation support	D. Unlikely	3. Moderate	L	✓
18	Technical	Electical	Power BESS sought under GCF is a highly sensitive component that needs to be carefully designed and implemented to achieve desired grid stability. Possible issues may reduce renewable contribution achievable.	C. Possible	3. Moderate	M	Utilise tightly controlled procurement specification and comprehensive technical review during design process.	D. Unlikely	3. Moderate	L	✓

19	Engineering	Renewable energy	Benefits of BESS rely on continued implementation of larger scale, locally located solar PV, however, delays in securing land for this purpose (and PEC panels) may mean BESS benefits are not initially realised	B. Likely	2. Minor	M	Review alternative Airport site. Continue to seek contingency options for PEC panels	C. Possible	2. Minor	L	
20	Engineering	Renewable energy	PEC panels installed beyond their initial guarantee period - warranty claims may be impacted	D. Unlikely	4. Major	M	Modules from a reputable supplier with 20 year warranty, though initial functional guarantee likely to be compromised	D. Unlikely	4. Major	M	

KEY

Risk status (column L)

Symbol	Definition
✓	Satisfactory - everything necessary and possible is being done
	Some concerns - actions are in place but are not fully implemented or effective - close monitoring required
✗	Unsatisfactory - current actions are not sufficient, or actions still to be commenced - immediate attention required

KEY

Risk trend (column M)

Symbol	Definition
↓	Risk is likely to reduce
→	Risk is likely to remain the same
↑	Risk is likely to become moderately worse
↑	Risk is likely to become significantly worse

Appendix C: Project specific covenants - as displayed in legal agreements

Product	Schedule	Para No.	Description	Remarks/Issues	Type
Loan 3193	Article IV	1	(a) The Borrower shall cause the Project to be carried out with due diligence and efficiency and in conformity with sound applicable technical, financial, business, and development practices.	Being complied with.	Others
Loan 3193	Article IV	2	The Borrower shall make available, or cause to be made available, promptly as needed, and on terms and conditions acceptable to ADB, the funds, facilities, services, land and other resources, as required, in addition to the proceeds of the Loan, for the carrying out of the Project.	Being complied with.	Others
Loan 3193	5	2	The Borrower shall ensure, and shall cause the Implementing Agencies and other involved agencies to ensure, that the preparation, design, construction, implementation, operation and decommissioning of the Project, and that all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment; (b) the Environmental Safeguards as set out in the SPS; and (c) all measures and requirements set forth in the IEE, the EMP, the EARF, and any corrective or preventative actions (i) set forth in a Safeguards Monitoring Report, or (ii) as subsequently agreed among ADB, the Borrower, and the Implementing Agencies.	Being complied with.	Safeguards
Loan 3193	Article IV	3	The Borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the Project and operation of the Project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.	Being complied with.	Others
Loan 3193	5	3	The Borrower shall ensure and cause the Implementing Agencies to ensure that all land and all rights-of-way required for the Project are made available to the Works contractors in a manner and within timeframes compliant with the RP, the RF and all land acquisition and resettlement activities are implemented in compliance with (a) all applicable laws and regulations of	Being complied with.	Safeguards

Product	Schedule	Para No.	Description	Remarks/Issues	Type
			the Borrower relating to land acquisition and involuntary resettlement; (b) the Involuntary Resettlement Safeguards; and (c) all measures and requirements set forth in the RP and the RF, and any corrective or preventative actions (i) set forth in the Safeguards Monitoring Report, or (ii) as subsequently agreed among ADB, the Borrower, and the Implementing Agencies.		
Loan 3193	5	4	Without limiting the application of the Involuntary Resettlement Safeguards or the RP, the Borrower shall ensure, or cause the Implementing Agencies to ensure, that no physical or economic displacement takes place until: (a) compensation and other entitlements have been provided to the displaced persons under Involuntary Resettlement Safeguards as described in and in accordance with the RP and the RF, and (b) a comprehensive income and livelihood restoration program has been established in accordance with the RP and the RF.	Being complied with.	Safeguards
Loan 3193	Article IV	4	The Borrower shall enable ADB's representatives to inspect the Project, the Goods and Works, and any relevant records and documents.	Being complied with.	Others
Loan 3193	Article IV	5	(b) ADB shall disclose the annual audited financial statements for Parts B and C the Project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website.	waiver on requirement approved as no financial disbursements in financial year ending 30 June 2015. 2016 audit report underway.	Financials
Loan 3193	5	5	The Borrower shall ensure and cause the Implementing Agencies to ensure that the provisions of the IEE, EMP and RP as well as any requirements under the SPS also apply to the portion of the Project to be financed by the Borrower.	Being complied with.	Safeguards
Loan 3193	Article IV	5	(c) The Borrower shall enable ADB, upon ADB's request, to discuss the financial statements for Parts B and C of the Project and the Borrower's financial affairs where they relate to Parts B and C of the Project with the auditors appointed pursuant to subsection (a)(iii) hereinabove, and shall		Financials

Product	Schedule	Para No.	Description	Remarks/Issues	Type
			authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of the Borrower, unless the Borrower shall otherwise agree.		
Loan 3193	Article IV	5	(a) The Borrower shall (i) maintain accounts and records for Parts B and C of the Project (separate from those for Part A, which will be maintained by TAU); (ii) prepare annual financial statements for Parts B and C of the Project in accordance with accounting principles acceptable to ADB; (iii) have such financial statements audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report (which includes the auditors' opinion on the financial statements and use of the Loan proceeds) and a management letter (which sets out the deficiencies in the internal control of Parts B and C of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 6 months after the end of each related fiscal year, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.	Being complied with	Financials
Loan 3193	4	6	The Borrower shall ensure that the Implementing Agencies shall not award any Works contracts until all land and related rights for the construction of the Project facilities, to be handed over to the contractor before construction commences, have been acquired or rights to access and use the land for the purposes of constructing and operating the Project facilities on an ongoing basis have been secured by the Borrower. (d) reinstate pathways and other local infrastructure to at least their pre-project condition as soon as possible and no later than the completion of construction.	Being complied with.	Safeguards
Loan	Article IV	7	(a) The Borrower shall exercise its rights under the Subsidiary Loan	No subsidiary loan	Others

Product	Schedule	Para No.	Description	Remarks/Issues	Type
3193			Agreement in such a manner as to protect the interests of the Borrower and ADB and to accomplish the purposes of the Loan. (b) No rights or obligations under the Subsidiary Loan Agreement shall be assigned, amended, abrogated or waived without the prior concurrence of ADB.	needed.	
Loan 3193	4	8	(a) The Borrower shall cause the Implementing Agencies to ensure that all Goods and Works procured (including without limitation all computer hardware, software and systems, whether separately procured or incorporated within other goods and services procured) do not violate or infringe any industrial property or intellectual property right or claim of any third party. (b) The Borrower shall cause the Implementing Agencies to ensure that all contracts for the procurement of Goods and Works contain appropriate representations, warranties and, if appropriate, indemnities from the contractor or supplier with respect to the matters referred to in subparagraph (a) of this paragraph.	Being complied with.	Others
Loan 3193	5	8	The Borrower shall do, or cause the Implementing Agencies to do, the following: (a) submit Safeguards Monitoring Reports to ADB: (i) in respect of implementation of and compliance with Environmental Safeguards and the EMP, annually during construction and the implementation of the Project and the EMP until the issuance of ADB's project completion report unless a longer period is agreed in the EMP; and (ii) in respect of implementation of and compliance with Involuntary Resettlement Safeguards and of the RP, semi-annually during the implementation of the Project, and the RP until the issuance of ADB's project completion report unless a longer period is agreed in the RP; and disclose relevant information from such reports to respective affected people under Environmental Safeguards, Involuntary Resettlement Safeguards, and Indigenous Peoples Safeguards promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation, or operation of the Project that were not considered in the IEE, the EMP and the RP, promptly inform ADB of	Being complied with.	Safeguards

Product	Schedule	Para No.	Description	Remarks/Issues	Type
			<p>the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and</p> <p>(c) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP or the RP promptly after becoming aware of the breach.</p>		
Loan 3193	4	9	The Borrower shall cause the Implementing Agencies to ensure that all ADB-financed contracts with consultants contain appropriate representations, warranties and, if appropriate, indemnities from the consultants to ensure that the Consulting Services provided do not violate or infringe any industrial property or intellectual property right or claim of any third party.	Being complied with.	Others
Loan 3193	5	10	The Borrower shall cause the Implementing Agencies to ensure that Works contracts include provisions to require the contractors (a) not to discriminate against people seeking work on the basis of age, provided they are capable of doing such work; (b) to provide equal pay for equal work, regardless of gender or ethnicity; (c) to comply with core labour standards and the applicable labour laws and regulations, including stipulations related to employment, such as health, safety, welfare, the workers' rights and anti-trafficking laws; (d) not to force the labour to work against their will; and (e) not to employ child labour.	Being complied with.	Social
Loan 3193	5	11	The Borrower shall cause the Implementing Agencies to ensure that the Works contractors (a) implement HIV/AIDS and STIs awareness and prevention training for all employees; (b) provide necessary measures to ensure the safety and health of their employees; and (c) together with the local centers of disease control, disseminate information on the risks, hazards, impacts and prevention know-how on HIV/AIDS and STIs among the staff, workers on the construction sites and the local community by means of information disclosure, education and consultation.	Being complied with.	Social
Loan 3193	5	12	The Borrower shall ensure to provide Counterpart Funds in a timely manner, including any additional Counterpart Funds required for any shortfall of funds or cost overruns. The Borrower shall also ensure to ensure	Being complied with.	Financials

Product	Schedule	Para No.	Description	Remarks/Issues	Type
			that O&M of all Project facilities is fully funded without any delay.		
Loan 3193	5	13	The Borrower shall, and shall cause the Implementing Agencies to, establish and maintain sound financial management systems in accordance with ADB's Financial Management and Analysis of Projects (July 2005), including the establishment of separate Project accounts.	Being complied with.	Financials
Loan 3193	5	14	The Borrower shall, and shall cause the Implementing Agencies to, (a) comply with ADB's Anticorruption Policy (1998, as amended to date); (b) acknowledge ADB's right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project; and (c) agree to cooperate, and shall cause the Implementing Agencies and all other government offices, organizations and entities involved in implementing the Project to cooperate, fully with any such investigation, and to extend all necessary assistance, including providing access to all relevant books and records, as may be necessary for the satisfactory completion of any such investigation. In particular, the Borrower shall ensure, or cause to be ensured, that (i) periodic inspections of the Project contractors' activities related to fund withdrawals and settlements are carried out; (ii) relevant provisions of ADB's Anticorruption Policy (1998, as amended to date) are included in all bidding documents for the Project; and (iii) contracts, financed under the Project, include provisions specifying the right of ADB to audit and examine the records and accounts of the Implementing Agencies, contractors, suppliers, consultants, and other service providers as they relate to the Project.	Being complied with.	Others
Loan 3193	5	15	In the event of (a) any change in ownership of the Project facilities, or (b) any sale, transfer or assignment of shares or interest or other change of control in the Implementing Agencies is anticipated, the Borrower shall consult with ADB at least 6 months prior to the implementation of such change. The Borrower shall ensure that such change be carried out in a lawful and transparent matter. The Borrower shall further ensure that the new controlling management of Implementing Agencies complies with (a) all Project-related agreements executed between ADB or the Borrower and the	Being complied with.	Others

Product	Schedule	Para No.	Description	Remarks/Issues	Type
			Implementing Agencies; and (b) the policies of ADB relevant to the Project.		
Loan 3193	5	16	Within 90 days following effectiveness of the Loan Agreement and Grant Agreement, the Borrower shall establish and maintain a Project website which will be regularly updated to include information on the following general matters: (a) bidding procedures, bidders and contract awards for Works, Goods, and Consulting Services; (b) physical progress of the Works and procurement of Goods; and (c) audited Project financial accounts, Project review reports (e.g. mid-term review), and quarterly progress reports, consolidated annual reports and post-completion report, in each case promptly after submission to ADB (unless, in the case of Project review reports and quarterly progress reports, ADB considers these to be exempt from disclosure under ADB's Public Communications Policy (2011)).	Project website established Government procurement website utilised (www.procurement.gov.ck)	Others
Loan 3193	5	17	The Borrower shall cause the Implementing Agencies to ensure that (a) the Project facilities are installed in accordance with design specifications and construction norms; and (b) construction supervision, quality control and contract management are performed in accordance with best international industry practices. The Borrower shall cause the Implementing Agencies to install, equip, operate, maintain and manage the project facilities in compliance with applicable standards and best international practices. The Borrower shall cause the Implementing Agencies to operate and maintain, and continue to operate and maintain, the Project facilities in accordance with an O&M framework that is satisfactory to ADB.		Sector
Loan 3193	5	18	The Borrower shall cause the Implementing Agencies to do the following: (a) acquire all rights necessary to use the parcels of land constituting the Project site at least 30 days prior to the award of the turnkey contract; and (b) install or otherwise secure road access sufficient for the purposes of the Project at least 30 days prior to the award of the turnkey contract.	Being complied with.	Sector
Loan 3193	5	19	The Borrower shall ensure ongoing operational financial sustainability of the Project, either through adjustment of electricity tariffs, or budgetary allocations.	Being complied with.	Sector

Product	Schedule	Para No.	Description	Remarks/Issues	Type
Loan 3193	5	20	The Borrower shall cause the Implementing Agencies to ensure that adequate staffing will be planned and allocated for the implementation and O&M of the Project facilities, and that relevant staff members will attend training provided under the Project in relation to O&M.	Being complied with.	Sector