

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 2019 ¹
Total cost	NZD33.22 million* Note that all reported costs will be in NZD millions
Reporting period	1 April – 30 June 2018

* 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, Project Steering Group, TAU staff, CIIC Staff, ADB Eun Young So, Energy Specialist, Member). Mpower staff (weekly meetings online), Infratec Staff on island, Entura Electrical Engineer David Skinner, Aitutaki Power Supply, Powersmart NZ. Island Governments of Atiu, Mangaia, Mitiaro and Mauke.
Date of report	July 2018

Key Conclusions and Necessary Actions

This thirteenth 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 March (commencement of reporting period) and 30 June 18 (end of reporting period).

Activities undertaken in this reporting period included:

- weekly teleconference meetings with MPower covering the final stage documentation, site works and delivery of the Global Environment Facility (GEF) funded battery energy storage system (BESS) prior to commissioning, planned for August.
- Construction continued on the Phase 1 Infratec/NETCON Limited turnkey contract work programme. This saw completion of Mitiaro and Mauke power stations, and completion of the

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

NETCON 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 (equivalent).

The Phase 2 Aitutaki Contract was awarded to Powersmart NZ on 31 May 2018 for a fixed price of NZ\$3,352,090 (equivalent). The ITB Bid Evaluation Report (BER) was completed this quarter and ADB has issued the No Objection letter and approval from the CI Government Tender Committee has been received.

The GCF Grant funded "Rarotonga Battery Energy Storage Systems "Power Station" and "Airport South" under Cook Islands Renewable Energy Sector Project (COO46453-002) – Phase 2 (Rarotonga) (BESS)" ITB closed on 20 February 2018 with Bid Opening commencing at midday on the same day. Six bids were received and publicly opened. The bid evaluation committee considered these bids and submitted a bid evaluation report to ADB. In June 2018, ADB provided a letter of No Objection and preparation of contract commenced.

3. Financial disbursements.

The PMU Financial Audit as at 30 June 2017 was completed and submitted to ADB in January 2018 confirming that the special purpose financial statements present fairly, in all material respects, the financial position of the Project, in accordance with the generally accepted accounting practices in NZ as applied in the CI for Public Sector Accounting and in accordance with the conditions of the Loan and Grant Agreement between the CI Government and ADB.

The financial disbursements recorded below provides an update to the ADB and all relevant stakeholders for the CIRESPP from February 2015 to June 2018 amount paid to date in NZD.

Items as per Project Administration Manual Updated	Amount paid to date 09 February 2015 to June 2018.	Total cost of Project as per PAM*
	NZD'000,000	
A. Investment Costs	\$29.07	\$47.60
B. Contingencies	\$0.00	\$1.22
C. Financing Charges during implementation	\$0.06	\$0.73
D. Administration Charges	\$0.00	\$0.99
Total Project Cost	\$29.13	\$50.53

*All these amounts are exclusive of VAT

In addition to the above the following Table is the project spend by Funding Partner for the same quarter in New Zealand Dollars (NZD).

Design:

- The CIRESP-001 electrical design/drawings for Mangaia was finalized during this quarter. This completes the design deliverables for the project.

Test and completion:

- Inspection and test reports were submitted and approved for Mitiaro and Mauke solar plants, and Mitiaro distribution system as part of the pre-commissioning works.
- Functional guarantee test reports were submitted and approved (provisional) for Mitiaro and Mauke solar plants as part of commissioning.

Other:

- A number of variations were outstanding relating to additional work for the MV LV project. ADB issued a no objection for variations relating to network equipment, power factor correction, metering and extension of the Mauke network at the end of June.

Summary overview of percentage completed as per Infratec February Report

Work Stream	Mitiaro	Mauke	Atiu	Mangaia
Community Engagement	Completed	Completed	Completed	Completed
Civil – Powerstation	Completed	Completed	Completed	Completed
Civil – Array	Completed	Completed	Completed	80%
CIRESP-001 Electrical	Completed	Completed	95%	95%
CIRESP-002 Civil and Electrical	Completed	80%	NA	NA

All power stations are expected to be fully commissioned in August, with the only outstanding item being the completion of the distribution grid in Mauke, which is expected to be completed by the end of September.

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. Results Measurement Table is provided as Appendix B.

TOTAL	1,321.29	4,986
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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.⁴ 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.

Progress of the BESS contract awarded to MPower Limited on the 1 June 2017 has been slow since POE confirmed in the last Progress Report that 90% design submission is accepted. Factory acceptance tests were completed by MPower but associated documentation and issued for construction designs are yet to be approved by the POE. Commissioning of the BESS, Contracted for April, is now scheduled for September. All BESS equipment is now on site and site acceptance testing is planned for August and September and will be witnessed by POE and TAU representatives.

Weekly teleconference meetings continued to be held during this quarter with a number of Mpower technical staff, TAU technical staff and POE. Inspections of the site works were undertaken by POE in June.

The BESS will be connected to the electricity grid that is managed by Te Aponga Uira (TAU). The BESS will provide flexible response to fluctuating Solar PV output in the TAU network. The main function of BESS is to:

- Minimise the severity and frequency of events that cause low load at the Power Station
- Minimise any curtailment of Solar PV facilities that may be necessary to maintain grid stability

The BESS is a containerised energy storage and power conversion platform, utilising a flexible open architecture communication. The supplied Battery System has a total energy rated capacity of 6.4MW hours at Beginning of Life (BOL) but is expected to de-rate over the 10 year period End of Life (EOL) to 4MW hours.

The initial tender for the BESS was for a 1MW power output. MPower offered a 1.5MW power output at the inverter however this was constrained back to 1MW at the transformer. A variation has now been agreed with MPower to include a larger transformer that allows the Employer to utilize up to 1.35 MW power from the BESS.

Co-financing from the Green Climate Fund (GCF)

The CIRES Project received additional financing of a US\$12 million grant from the Green Climate Fund (GCF) in December 2016 and ADB's President approved the GCF grant on 30 October 2017. The GCF grant will be used for the procurement of equipment and materials, civil works, related transportation, insurance, and installation costs for the installation of three additional units of BESS. TAU is the implementing agency for this subproject to be funded by GCF. The grant agreement between ADB and GCF, and the project agreement between ADB and TAU, were both signed during this quarter.

⁴ ADB. 2015. *Country Operations Business Plan: Cook Islands, 2016–2018*. Manila.

Performance monitoring of Phase 1 projects	PMU/Entura/Infratec	Ongoing
Contract award: GCF BESS	PMU/Entura	August 18
GCF BESS– design submission and review	PMU/Entura	October 18

Estimated Contract Payments

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. The following Table therefore replaces the costed workplan which provides estimates of contract payments for the next three quarters to June 2018 which has been provided by the contractors.

	Quarter 3		Quarter 4		Quarter 1		Quarter 2	
	July to September 2018		October to December 2018		January to March 2019		April to June 2019	
NETCON	NZD	EURO	NZD	EURO	NZD	EURO	NZD	EURO
1. Solar PV	\$ 1.23	€ 0.14						
2. Distribution	\$ 1.47							
3. Civil Contract	\$ 0.43							
4. BESS (Mpower)			\$ 0.45					
ENTURA								
4. Consulting Services	\$ 0.35							
Romani's Designs								
5. Project Management	\$ 0.31							
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. The previous primary risk of delays in variations is now reduced (approval to proceed with these variations has been provided). Other delay risks remain, including implementation of these variations, contracting for GCF, and ongoing delays in the commissioning of the GEF BESS and finalization of the Mauke distribution grid.

The Infratec Progress Reports highlight a number of issues and risks that will impact on project completion and commissioning on each project site. These include:

Mitiaro

- Damaged radiator has delayed the Genset and commissioning expected to be in mid April. A damage and service report is being completed – who will pay the cost of repairs is still to be determined.
- CIRES-002 trenching and cable install is complete with delays in the kiosk arriving

Mauke

- Delays in communication panels due to shipping and generally poor sea conditions will delay installation
- CIRES-002 HV line is installed – A small excavator and rock-breaker were to be shipped but the barge crane was damaged in Rarotonga and so heavy lifting is not possible between islands causing significant delays in the trenching programme.

Atiu

- No issues identified but noted the Atiu PV layout changed due to PV array being placed over the site boundary markers

Appendices

This report includes the following appendices:




- Appendix A: Progress Against Agreed Work-plan and Actuals (not required for this Quarterly Report)
- Appendix B: Progress against Results Framework (table)
- Appendix C: Risk Matrix (table)
- Appendix D: Project specific covenants - as displayed in legal agreements (table)

Appendix B: 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.

From agreed Results Measurement Table in the Activity Design Document				Data up to and including this reporting period	
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	8 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	2 Islands complete	Project completion report held by REDD
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	2 Islands complete	Project completion report held by REDD
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	CIRECIP 2016 update approved and published by CIG	Published CIRECIP 2016 (MFEM website)

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 Phase 1 islands. Same for GEF BESS contractor. Indications are this approach will continue on Aitutaki. Continue to monitor.	D. Unlikely	3. Moderate	L		↓	1/10/2018
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 - COMPLETE	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 - COMPLETE	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	3. Moderate	M	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		↓	1/10/2018
10	Project management	Contract/procurement management	Time taken to process change orders means validity lapses or costs increase.	B. Likely	3. Moderate	H	Key variations now approved. Need to work closely with contractor to avoid any further delays. 3 proposed variations remain for approval	C. Possible	3. Moderate	M		↓	1/10/2018

			this purpose (and PEC panels) may mean BESS benefits are not initially realised									
20	Engineering	Renewable energy	PEC panels installed beyond their initial guarantee period - warranty claims may be impacted. Substantially reduced by results of commissioning tests	E. Rare	4. Major	L	Modules from a reputable supplier with 20 year warranty, though initial functional guarantee likely to be compromised	E. Rare	4. Major	L	↓	1/10/2018

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

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
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
			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
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