



# CCL Manoku Electrification Project

25kWp PV Hybrid Mini-Grid Solar System



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG



# Low Carbon Electricity system for Social economic development at Christian Community Leaders Community (CCL), Manoku, Kiribati

## Phase II Proposal

This report was compiled by:

Energy Planning Unit  
MINISTRY OF PUBLIC WORKS AND UTILITIES  
P.O BOX 498 BETIO, TARAWA  
KIRIBATI

Funded by the Grand Duchy of Luxembourg. Implemented by IUCN, the International Union for Conservation of Nature. Executed by Energy Planning Unit, Kiribati.

# Contents

1. Acknowledgement .....	3
2. Introduction .....	4
3. Activities.....	5
4. Project Implementation.....	6
a) Installation of mounting structure for Solar Modules .....	6
b) Installation of Solar Modules.....	6
c) Constructing a new control room .....	7
d) Installation of Fence .....	7
e) Installation of Inverters and Control Circuits.....	8
f) Installation of Batteries .....	9
5. CCL Alteration Impact. ....	10
6. Environmental Impact.....	10
7. Initial System Commissioning .....	10
8. Inauguration of PV System .....	11
9. Financial report.....	12
10. Conclusion and Recommendation .....	13
11. Annex I .....	14

# 1. Acknowledgement

Special gratitude must be extended to the Government and people of Luxembourg for availing funding for the Christian Community Leaders (CCL) Electrification Project. Gratitude is also extended to IUCN, the International Union for Conservation of Nature, in serving as the implementing agency. Last, but not least, special thanks to the Energy Planning Unit and Accounts section staff within the Ministry of Public Works and Utilities (MPWU), together with CCL Manoku community, and all those involved for their support, efforts, dedication, and commitment invested in making this project a success.

CCL's main objective is to train individuals to become missionaries for the Catholic Church around the country. The students are married couples, recruited every two years from all the islands in Kiribati. Every year about 30 couples reside in the community. The community's residents comprise four main categories:

- 1) Staff community;
- 2) Student community;
- 3) Missionaries of the Sacred Heart (MSC) community; and,
- 4) Sisters from Our Lady of the Sacred Heart (OLSH) community.

## 2. Introduction

The Christian Community Leaders (CCL) is a Catholic institute that offers training for future catechists. The CCL campus is located in a secluded area of Manoku on the island of Abemama. Like all outer islands (rural areas) in Kiribati, Abemama does not have access to grid electricity service, however, it is situated along the equator, in optimal conditions for solar energy utilization with minimal variance in generation potential.

The CCL campus accommodates up to 500 people, all of whom receive direct benefit from this project. Before the project implementation, CCL was powered by a 22kVA diesel generator which, due to high costs, ran for only 2 hours a day from 7:30pm to 9:30 pm, and is only extended as necessary. A 2-hour operation consumes five liters of diesel worth AU\$10. On special occasions, up to 10 liters of diesel would be consumed in a single running operation. Apart from the generator set, fuel is also required for the institute's two running vehicles (trucks). The output of this project achieves fossil fuel elimination, specifically for electricity generation through the utilization of an off-grid solar PV and battery storage system.

The project, Phase II Proposal - Low Carbon Electricity system for Social economic development at Christian Community Leaders Community (CCL), Manoku, Kiribati was funded by the Grand Duchy of Luxembourg with the total amount of US\$193,500, and has been implemented by IUCN, the International Union for Conservation of Nature's Oceania Regional Office, based in Suva, Fiji.

The Energy Planning Unit (EPU) from the Ministry of Public Works and Utilities takes on project management and execution role with key tasks including; site survey, procuring of materials, system installation, monitoring and evaluation protocols, and commissioning prior handing over to CCL Manoku. This was celebrated with the inauguration event on 6 May 2017.

The outcomes of the project realized after commissioning are as follows:

- Elimination of diesel fuel for electrification
- Access to 24hr electricity service for the community
- Energy efficiency improvement through the switch to LED lighting fixtures
- Community income generation from selling processed and frozen seafood

The project has aligned with the KDP 2016 - 2019, Kiribati Nationally Determined Contribution (NDC), the Kiribati National Energy Policy, the Kiribati Joint Implementation Plan, and commitments to promote the use of green energy and lower carbon emissions.

### **3. Activities**

#### **I. Site Survey and Systems Design**

10 – 17 June 2016, EPU designated staff conducted a site survey and load analysis for CCL. The head of community and members were pleased with the visit and were very cooperative. After site survey, a positive analysis was carried out for the system designing and specifications.

#### **II. Tender Process**

The tender was open to suppliers for 7 weeks: 22 June – 5 August 2016.

On 17 August 2016, tender evaluation was conducted for the 3 submissions from highly regarded suppliers from Taiwan, Australia and Fiji. Following evaluation, Clay Energy (based in Fiji) was awarded with a \$153,668.10 AUD with a contract signed on 23 August 2016.

#### **III. Purchasing and handling of materials**

Clay Energy received 50% of payment on 26 August 2016 for supplying the project materials. Due to delay in shipping, the materials arrived in Tarawa on 23 January 2017. Local procurement for construction materials in carried out in February 2017.

The EPU invited tender for local vessels to transfer the materials to Abemama. MV Naman Nei Raoi won the bid and so transported the materials, departed Tarawa with the materials and EPU staff on 1 March and arrived on Abemama on 3 March 2017.

#### **IV. System Installation**

Work commenced on installation as soon as materials and technicians arrived at CCL Manoku. The community was well prepared, cooperative, and committed. The system was installed in less than a month, from 3 – 27 March 2017.

On 28 March 2017, the system was commissioned, and generation and performance were then closely monitored.

#### **V. Commissioning and Handing Over**

Formal handing over and inauguration was staged on 6 May 2017.

#### **VI. Monitoring and Evaluation**

EPU remains engaged to provide technical support for CCL Manoku up until end of July 2017. EPU staff have been engaging with the community to improve their understanding and building capacity to undertake operations and maintenance of the system. So far, the system is running smoothly and no issues have been reported to date. The trained local PV system operator had successfully mastered the operation of the control station equipment, battery station, and the PV array maintenance.



## 4. Project Implementation

### a) Installation of mounting structure for Solar Modules

The team worked on completing the mounting structure with its foundation. Simultaneously, fencing work also commenced. During the installation, it was discovered there were three mounting structure screws missing in total. Fortunately, this does not affect the system as the PV array site is located inside on island where no strong winds can penetrate it. The mounting structure installation took one week to complete



Figure 1: Mounting structure installed

### b) Installation of Solar Modules

The laying of solar panels only took 2 days for the team to complete. Minor problems arose in the termination of solar modules process. The major problem was determining the most effective and efficient way to design the connection of solar panels to make three strings within each array. There were two arrays in the PV array site consisting of 50 solar modules per array. The connection was three strings of 17 modules and another three strings of 16 modules, totaling 99 solar modules requiring connection. The team eventually came up with a solution –in the first array there would be two strings of 17 and one string of 16 modules, and the other array would have two strings of 16 and one string of 17 modules. The team concluded this was the best way to tackle the problem within a short period of time. Below in Figure 3 find a sketch of the PV connection;



Figure 3: First two solar panels installed

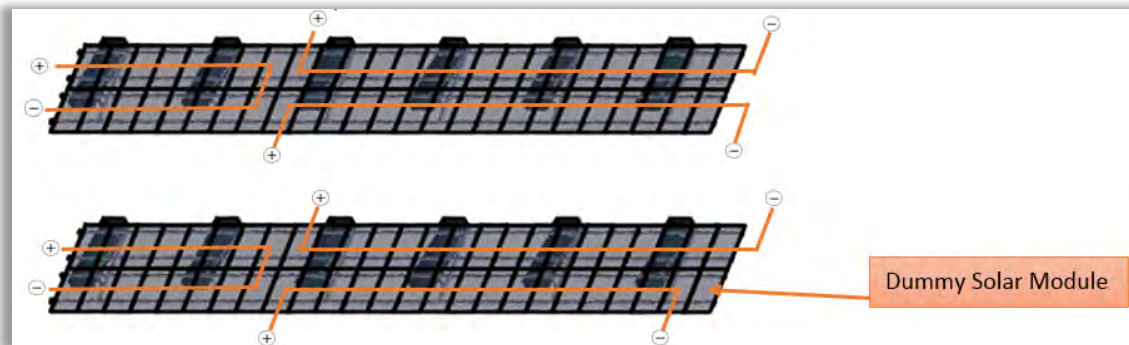


Figure 2: PV connection

### c) Constructing a new control room



*Figure 4: Control and Battery room under construction*



*Figure 5: Control and Battery room completed*

CCL recognized the need to establish a control room, and so opted to fund and construct the control room. The team provided technical advice and support on a standard control and battery room designed by the EPU and approved by the architectural division within the Ministry. The building's dimensions are 6.8\*4.4\*3 meters. The building construction was completed in two weeks. It successfully houses all batteries and the two meters for the inverters and control circuits.

### d) Installation of Fence

While the control room was under construction, fencing work was progressed. The team proceeded on finishing the fence installation before the major and critical work commenced in the control room, which required everyone's attention.



*Figure 6: Fence being straightened*



### e) Installation of Inverters and Control Circuits

Two technicians focused on the control room itself while the rest helped in the battery room. It took approximately one whole week to complete the wiring inside the control room, including inverter installations, PV isolators, and control circuits wiring. There were three strings of 17 (total 12.75kWp) and three strings of 16 (total 12kWp) solar modules coupled in parallel connection. The



Figure 7: Inverters ready for wiring

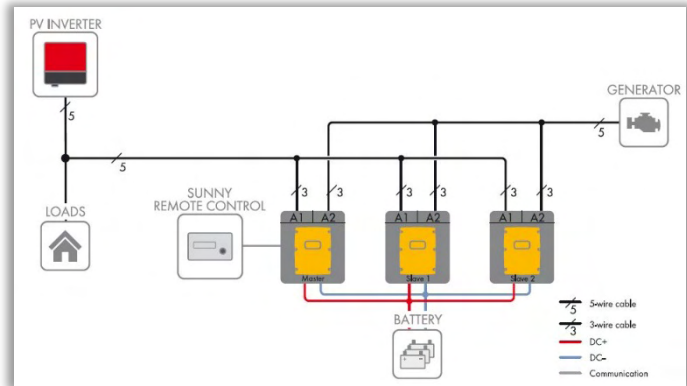


Figure 8: 3-phase single cluster diagram

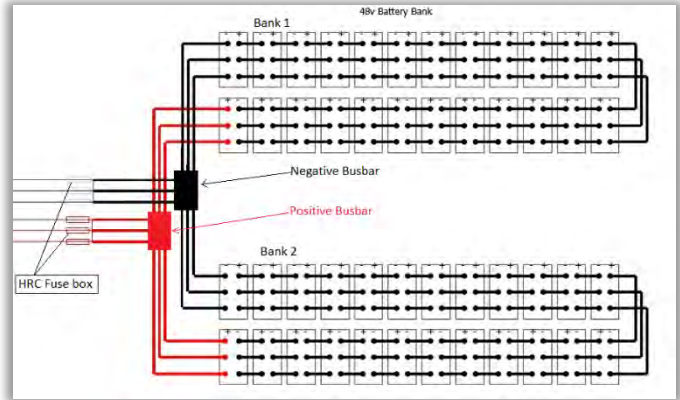
two arrays connected to a protective component – namely, 63A 2-pole inverter breaker responsible for protecting the PV inverter from excessive current. The inverters connected in a 3-phase single cluster manner with the generator remaining as a backup. The PV inverter extracts solar energy from the solar modules and converts it to 3-phase AC power then catering to a 3-phase AC transmission line. The Sunny Island inverters (battery inverters), on the other hand, connected to a single battery line forming a cluster. The AC side (AC1) of Sunny Island inverters coupled to three different line conductors, forming a 3-phase from three single-phase inverters. The backup generator set linked to AC2 side of the Sunny Island inverter to supply load and charge batteries during the periods where the PV inverter can't produce enough power to charge the battery (this may happen when there is no sun or cloud cover persists for some days.)

#### f) Installation of Batteries

For this process, extra manpower was mandatory to move the batteries from one place to another, since each battery weighed 150kg (2V battery). There were two battery banks with a nominal voltage of 48V for each bank. The connection of batteries is as follows; 24 x 2V batteries connected in series to produce 48V each bank (Fig 10). The positive terminals from both banks



*Figure 9: Batteries being torqued*



*Figure 10: Battery layout*

then coupled to a positive busbar, and likewise to the negative terminal, then to the DC isolator (High Rupturing Capacity Fuse Box). Before terminating in the battery room, it is strictly applicable to torque all the terminals to 20Nm (newton meters) to satisfy the requirement for a safe operation. During maintenance, every terminal connection should be torqued to 19Nm.

## 5. CCL Alteration Impact

The Community has been very lucky to obtain the grant for this solar electrification project. The community normally caters for electricity needs in the least expensive possible way to minimize the cost of fuel demands. Benefits from the project include;

- ❖ No fuel demand for electricity (based on the maintenance of system)
- ❖ Receiving reliable electricity on a 24/7 basis
- ❖ Deriving income generation for electricity sold to the nearby consumers, such as Our Lady of the Sacred Heart (OLSH) community and MSC community. These communities are located near CCL and connected to the grid with metering.
- ❖ Utilizing a 410L Chess Freezer for selling frozen seafood items.
- ❖ Low lighting energy consumption upon installation of LED lights

## 6. Environmental Impact

With the new PV system installed, CCL Manoku can now experience a new era without demand for fossil fuels to supply electricity generation for the next two decades or so, provided maintenance is conducted and best practices are applied. In addition, noise and waste oil pollution from the power house are now completely eradicated. However, in this project the clearing of various trees, primarily coconut palms, was undertaken to make room for the PV array site.

As of 6 May, 2017, the Sunny Island Inverter display provided a read-out of 1.870MWh generated in 44.34 days since the system was brought online. This means, given the Specific CO<sub>2</sub> Emission rates of Diesel (0.24kg<sub>CO2</sub> /kWh)<sup>1</sup>, 448.8kg of CO<sub>2</sub> emissions have already been mitigated. Extrapolating from the current figures, it is projected 3.694 tonnes of CO<sub>2</sub> will be avoided per annum, depending upon variations in solar irradiance over the course of the year.

## 7. Initial System Commissioning

The System installation was completed on 27 March 2017 and commissioned the following day, 28 March 2017. The system was turned on around 7:00am and monitored hourly by the responsible technicians. The PV inverter functioned perfectly during the charging state, producing 10-20kW charging power, which indicated the ideal amount expected, emphasizing smooth system operations. The Battery State of Charge (SOC) initially read 50% and charged until it reached 100% around 4pm. At 5pm, the CCL load was for the first time connected to the solar system and continued until the next day. The battery SOC read 83% on the second day when the Sunny Island inverter throttled down the charging from the PV inverter after reaching 80% SOC

---

<sup>1</sup> [http://www.engineeringtoolbox.com/co2-emission-fuels-d\\_1085.html](http://www.engineeringtoolbox.com/co2-emission-fuels-d_1085.html)

and above, it registered as full battery not requiring more charging. By discharging the battery to 60%, the Sunny Island inverter will undergo charging from PV inverter. The team stayed over for two additional weeks to monitor the behavior of the system.

## 8. Inauguration of PV System

The inauguration of the System was held near the project site. Guests present included the Ministry of Public Works and Utilities - Deputy Secretary, Mr Tioti Taaitee, Vice Mayor of Abemama, Mr Bukare Taawa, and Father Tion Anterea for CCL community, Energy Programme Officer, Andrew Irvin from IUCN, and the Project Proponent, Mr Kireua Bureimoa. The ceremony commenced with the Mass by Fr Tion Anterea, followed by the handing over and signing, facilitated by the community members. The Priest then blessed the project site and invited valued guests for a short site tour around the PV array installation and the control room. The trained power attendant was also tested by the Project Proponent, who later accredited after the system was verified as successfully operational.



Figure 11: Site tour after the blessing



Figure 12: Local Newspaper (Te Uekera) publicities CCL project completion



Figure 13: Deputy Secretary signed handing over certificate



Figure 14: Fr Tion (for CCL) signed handing over certificate



## 9. Financial report

CCL Manoku Project had been granted a total amount of US\$193,500.00. The first tranche (40%) was transmitted to CCL Project special account on the 18<sup>th</sup> May 2016 with the amount of US\$77,400.00 and converted to AU\$105,234.53. The second tranche (30%) fund was processed on 1<sup>st</sup> December 2016 by IUCN Oceania after receiving CCL mid-term report with the amount (after currency conversion) of AU\$76,841.88. The third tranche (20%) was deposited into CCL account on the 3<sup>rd</sup> of March 2017 total of AU\$49,492.48. (refer to Annex 1)

Table 1: Expense summary

Financial Year	End of 2016 (AUD)	Up to date 2017 (AUD)
Balance b/f	\$ 231,568.89 (90% Tranche Fund)	\$ 153,407.36
Expenses	\$ 78,161.53	\$ 135,971.89
Balance	\$ 153,407.36	\$ 17,435.47

The Account report emphasize all disbursements (as of 30<sup>th</sup> May 2017) processed to complete the projects activities and targets. There were some forthcoming payments to be made such as; one laptop for the project management, and post-commissioning monitoring and evaluation activities.

The forth and also the last tranche of 10%, amounting to US\$19,350 (around AU\$27,000) will be transmitted after this Final Report is deposited and accepted by the Project Executing Agency, IUCN. This last tranche AU\$27,000, plus the remaining fund AU\$17,435.47 will total approximately AU\$44,435.47. It is recommended to be expended on related activities for CCL Manoku as identified in the recommendation including monitoring logistics and additional energy efficiency material to encourage electricity management and reduced demand.

## 10. Conclusion and Recommendation

In consideration of the Project's timeline, it may be assumed this project was smoothly facilitated, efficiently and effectively as planned by the installation team and the community. The first tranche fund was transmitted to CCL's special bank account on 18 May 2016, followed by a site survey conducted by one of the technicians marking the starting date of the project.

The project completion date was delayed due to a shipment issue where the consignment was landed in Tuvalu erroneously and had to be diverted, taking some months. Apart from this delay, the project was successfully completed and CCL now receives energy that extracted from the sun instead of imported fossil fuel.

Furthermore, the community has received a 410L chest freezer as part of this project's compliment, along with forthcoming LED tube lighting fixtures and household energy metering. For the community to sustain this donation, the Ministry had offered energy meters to allow billing to compensate for future maintenance funding requirements.

In order for the community to reduce its carbon footprint, and since this project is still ongoing (monitoring state), the Energy Planning Unit will request add-on proposals from the remaining project fund for the following:

1. Procure and install a solar pumping system to replace the generator set-powered 600W Davey pump used for the overhead water tank located some 1km away, which is currently supplying the water rectification system for CCL.
2. Minimizing the use of the two internal combustion engine trucks through transition to the utilization of two solar powered Tuk Tuks. This will assist greatly in fuel reduction for transport when selling fish to the nearby boarding schools as well as for CCL staff meetings around the island or airport pick-ups.
3. Procurement of additional freezer capacity to maximize the income generation from fishing, with savings reserved for the PV system long-term maintenance plan.

## 11. Annex I

AF: 10(F.R. 169)					VOTE LEDGER		YEAR		2016-2017		
BUDGET PROVISION					VOTE HEAD NO.		MINISTRY: <b>MPWU</b>				
DFAW #		AMOUNT	TOTAL		SUB HEAD NO.						
					OUTPUT NO.		OUTPUT NAME: Energy				
					EXPENSE						
Swift Inward	19/05/16	\$ 105,234.53			DETAIL NO.						
Swift Inward	5/12/2016	\$ 76,841.88	\$ 231,568.89								
Swift Inward	6/3/2017	49492.48			DESCRIPTION: <b>CCL Project</b>						
1	2	3	4		5		6	7	8	9	
Line No.	Date	Reference (requisition, LPO, PV No, etc)	Suppliers	Payable to & Details of payments	Estimated Commitments	Actual Expendi- -ture	Cheque #	Credits (Commit ments written back)	(Previous line 8 + 5+6+7) Total Commitme nts & Expenditure	Balance Available = (A.W. Col 8)	Remarks
1	3/6/2016	PV 01/16	Air Kiribati	Air tickets iro Simon Reiher from Trw/Abemama/Trw		\$150.00	694201		\$150.00	\$ 231,418.89	
2	3/6/2016	Imp 02/16	Simon Reiher	Visit project site CCL whilst discuss the new funding ( this would		\$315.00	694202		465.00	\$ 231,103.89	
3	3/6/2016	Pv 02/16	Simon Reiher	Motorbike hire, fuel and airport tax		\$174.00	694202		639.00	\$ 230,929.89	
4	9/8/2016	Pv 03/16	KAB Boys	Payment for hiring measuring wheel for EPU CCL		\$52.50	694203		691.50	\$ 230,877.39	
5	18/8/16	PV 04/16	Veronika T & Others	Sitting allowance for opening tender evaluation		\$305.00	694204		996.50	\$ 230,572.39	
6	24/8/16	Pv 05/16	Clay Engineering Ltd	First payment 50% of the total cost \$153,668.10 for supplying n		\$76,884.05	694205		77,880.55	\$ 153,688.34	
7	29/12/16	PV 06	MMB Agencies Seives	Payment for PSC THC Inv#5955		\$154.30	694206		78,034.85	\$ 153,534.04	
8	29/12/16	PV 07/16	KPA	Payment of port charges on B/La# PVno4AFLTRW001 INV#202		\$76.68	694207		78,111.53	\$ 153,457.36	
9	29/12/16	PV08/16	TMAR	Payment for making cargo entry for release from custom Inv# 1		\$50.00	694208		78,161.53	\$ 153,407.36	
10									78,161.53	\$ 153,407.36	
11	17/01/17	PV 01/17	KPA	Payment of Inv # 233 073821 delivery chargo 2 ton		\$160.00	694209		78,321.53	\$ 153,247.36	
12	27/01/17	PV 02/17	KCS	Payment for Import entry for 48 batteries		\$241.00	694210		78,562.53	\$ 153,006.36	
13	27/01/17	PV 03/17	Air Kiribati	Payment for reschedule of air ticket		\$80.00	694211		78,642.53	\$ 152,926.36	
14	31/01/17	PV 04/17	KPA	Payment of delivering and & port chargews		\$443.16	694212		79,085.69	\$ 152,483.20	
15	31/01/17	PV 05/17	TMAR	Payment for entry charges		\$50.00	694213		79,135.69	\$ 152,433.20	
16	31/01/17	PV 06/17	Rainbow Powers Co.Ltd	Payment for ordering items			694214		79,135.69	\$ 152,433.20	Cancelled
17	2/2/2017	PV 07/17	SAOK	Payment for the release of container		\$458.44	694215		79,594.13	\$ 151,974.76	
18	2/2/2017	PV 08/17	Triple Tee	Payment for materials plus handling - Inv 0051/17		\$309.30	694216		79,903.43	\$ 151,665.46	
19	3/2/2017	PV 09/17	SAOK	Payment for deposit charges - Inv 0108			694217		79,903.43	\$ 151,665.46	Cancelled
20	14/2/2017	PV 10/17	Rainbow Powers Co.Ltd	Payment for ordering items			694218		79,903.43	\$ 151,665.46	Cancelled

21	17/2/2017	PV 11/17	Tokaraetina K trading	Payment for materials - Inv 12783		\$5,014.27	694219		84,917.70	\$ 146,651.19	
22	17/2/2017	PV 12/17	Imbo	Payment for materials - Inv 2821		\$5,103.38	694220		90,021.08	\$ 141,547.81	
23	17/2/2017	PV 13/17	Angiriin	Payment for materials - Inv 9988		\$846.13	694221		90,867.21	\$ 140,701.68	
24	17/2/2017	PV 14/17	Art Enterprises	Payment for materials - Inv 0370		\$265.50	694222		91,132.71	\$ 140,436.18	
25	17/2/2017	PV 15/17	Taotin	Payment for materials - Inv 100481		\$1,169.00	694223		92,301.71	\$ 139,267.18	
26	23/2/2017	PV 16/17	Clay Engineering Ltd	Final payment of the 153,668.10 plus tt cost 50.00		\$76,884.05	694224		169,185.76	\$ 62,383.13	
27	23/2/2017	PV 17/17	Simon Reiher	Payment for travel cost to Abemama for installation of pv hybr			694225		169,185.76	\$ 62,383.13	Cancelled
28	23/2/2017	PV 18/17	Beria Oromita	Payment for travel cost to Abemama for installation of pv hybr			694226		169,185.76	\$ 62,383.13	Cancelled
29	23/2/2017	PV 19/17	Ubaitoi Teurakai	Payment for travel cost to Abemama for installation of pv hybr			694227		169,185.76	\$ 62,383.13	Cancelled
30	23/2/2017	PV 20/17	Lokea Itienang	Payment for travel cost to Abemama for installation of pv hybr			694228		169,185.76	\$ 62,383.13	Cancelled
31	23/2/2017	PV 21/17	Buraieta	Payment for travel cost to Abemama for installation of pv hybr			694229		169,185.76	\$ 62,383.13	Cancelled
32	23/2/2017	PV 22/17	Triple Tee	Payment for materials - Inv 0102		\$570.00	694230		169,755.76	\$ 61,813.13	
33	27/2/2017	PV 23/17	Simon Reiher	Payment for travel cost to Abemama for installation of pv hybr		\$385.00	694231		170,140.76	\$ 61,428.13	
34	27/2/2017	PV 24/17	Beria Oromita	Payment for travel cost to Abemama for installation of pv hybr		\$385.00	694232		170,525.76	\$ 61,043.13	
35	27/2/2017	PV 25/17	Ubaitoi Teurakai	Payment for travel cost to Abemama for installation of pv hybr		\$1,450.00	694233		171,975.76	\$ 59,593.13	
36	27/2/2017	PV 26/17	Lokea Itienang	Payment for travel cost to Abemama for installation of pv hybr		\$900.00	694234		172,875.76	\$ 58,693.13	
37	27/2/2017	PV 27/17	Buraieta	Payment for travel cost to Abemama for installation of pv hybr		\$520.00	694235		173,395.76	\$ 58,173.13	
38	27/2/2017	PV 28/17	DNY	Charter cost for delivering materials to Abemama 70 % of 6500		\$4,550.00	694236		177,945.76	\$ 53,623.13	
39	27/2/2017	PV 30/17	DNY	Final payment charter for delivering materials to Abemama		\$1,950.00	694239		179,895.76	\$ 51,673.13	
40	2/3/2017	PV 31/17	Imbo	Payment for materials - Inv 2860		\$784.00	694238		180,679.76	\$ 50,889.13	
41	2/3/2017	PV 32/17	Tokaraetina K trading	Payment for materials - Inv 12793		\$5,680.05	694237		186,359.81	\$ 45,209.08	
42	15/3/2017	PV 33/17	Beria Oromita	Payment for travel cost to Abemama to continue the intallation		\$1,924.00	694240		188,283.81	\$ 43,285.08	
43	15/3/2017	PV 34/17	Lokea Itienang	Payment for travel cost to Abemama to continue the intallation		\$2,176.00	694241		190,459.81	\$ 41,109.08	
44	15/3/2017	PV 35/17	Ubaitoi Teurakai	Payment for travel cost to Abemama to continue the intallation		\$1,440.00	694242		191,899.81	\$ 39,669.08	
45	15/3/2017	PV 36/17	Buraieta	Payment for travel cost to Abemama to continue the intallation		\$1,440.00	694243		193,339.81	\$ 38,229.08	
46	15/3/2017	PV 37/17	Simon Reiher	Payment for travel cost to Abemama to continue the intallation		\$1,752.00	694244		195,091.81	\$ 36,477.08	
47	30/3/2017	PV 38/17	Imbo	Payment for materials - Inv 2923		\$3,889.00	694245		198,980.81	\$ 32,588.08	
48	31/3/2017	PV 39/17	DNY	Payment meal charge, KPA port charge, stevedoring handling -			694246		198,980.81	\$ 32,588.08	Cancelled
49	5/4/2017	PV 40/17	DNY	Payment meal charge, KPA port charge, stevedoring handling -		\$934.37	694247		199,915.18	\$ 31,653.71	
50	5/4/2017	PV 41/17	Angiriin	Payment for materials - Inv 9341		\$136.00	694248		200,051.18	\$ 31,517.71	
51	19/4/2017	PV 42/17	Air Kiribati	Payment for air ticket iro Kireua with his teams to Abemama		\$750.00	694249		200,801.18	\$ 30,767.71	
52	24/4/2017	PV 43/17	Kireua Bureimooa	Payment for travel cost -trw/abemama/trw		\$156.00	694250		200,957.18	\$ 30,611.71	
53	24/4/2017	PV 44/17	Benjamin Tokataake	Payment for travel cost -trw/abemama/trw		\$156.00	694251		201,113.18	\$ 30,455.71	
54	24/4/2017	PV 45/17	Simon Reiher	Payment for travel cost -trw/abemama/trw		\$276.00	694252		201,389.18	\$ 30,179.71	
55	25/4/2017	PV 46/17	Simon Reiher	Payment for commissioning cost for handing over ceremony		\$500.00	694253		201,889.18	\$ 29,679.71	
56	25/4/2017	PV 47/17	Rainbow Powers Co.Ltd	Payment for tt - Estimate # 77911		\$4,604.30	694254		206,493.48	\$ 25,075.41	
57	26/4/2017	PV 48/17	Tateraka Enterprises	Payment for materials - Inv 055137		\$2,216.50	694255		208,709.98	\$ 22,858.91	
58	26/4/2017	PV 49/17	KSEC	Payment for materials - Inv 00000012	2946.78		694256		211,656.76	\$ 19,912.13	
59	26/4/2017	PV 50/17	KSEC	Payment for materials - Inv 00000011	2368.08		694257		214,024.84	\$ 17,544.05	
60			ANZ Bank charges	Ledger fee (31/03/16		\$10.00			214,034.84	\$ 17,534.05	
61			ANZ Bank charges	Debit Interest 30/04/16		\$0.12			214,034.96	\$ 17,533.93	
62			ANZ Bank charges	Line fee 30/04/16		\$25.00			214,059.96	\$ 17,508.93	
63			ANZ Bank charges	Debit Interest 31/05/16		\$0.31			214,060.27	\$ 17,508.62	
64			ANZ Bank charges	Line fee 31/05/16		\$25.00			214,085.27	\$ 17,483.62	
65			ANZ Bank charges	Ledger fee 31/05/16		\$10.00			214,095.27	\$ 17,473.62	
66			ANZ Bank charges	Ledger fee 30/06/16		\$10.00			214,105.27	\$ 17,463.62	
67			ANZ Bank charges	Ledger fee 31/07/16		\$10.00			214,115.27	\$ 17,453.62	
68			ANZ Bank charges	Ledger fee 31/08/16		\$10.00			214,125.27	\$ 17,443.62	
69			ANZ Bank charges	Transaction fee 31/08/16		\$1.80			214,127.07	\$ 17,441.82	
70			ANZ Bank charges	Ledger fee 30/09/16		\$10.00			214,137.07	\$ 17,431.82	



71			ANZ Bank charges	Ledger fee 31/10/16	\$10.00			214,147.07	\$ 17,421.82	
72			ANZ Bank charges	Ledger fee 30/11/16	\$10.00			214,157.07	\$ 17,411.82	
73			ANZ Bank charges	Ledger fee 31/12/16	\$10.00			214,167.07	\$ 17,401.82	
74			ANZ Bank charges	Transaction fee 31/12/16	\$10.00			214,177.07	\$ 17,391.82	
75			ANZ Bank charges	Ledger fee 31/01/17	\$10.00			214,187.07	\$ 17,381.82	
76			ANZ Bank charges	Statement fee 2/2/2017	\$2.00			214,189.07	\$ 17,379.82	
77			ANZ Bank charges	Statement fee 2/2/2017	\$2.00			214,191.07	\$ 17,377.82	
78			ANZ Bank charges	ledger fee 28/2/2017	\$10.00			214,201.07	\$ 17,367.82	
79			ANZ Bank charges	Transaction fee	\$4.20			214,205.27	\$ 17,363.62	
80			ANZ Bank charges	Ledger fee 31/3/2017	\$10.00			214,215.27	\$ 17,353.62	
81			ANZ Bank charges	Transaction fee 31/3/2017	\$3.00			214,218.27	\$ 17,350.62	
82			ANZ Bank charges	Ledger fee 30/4/2017	\$10.00			214,228.27	\$ 17,340.62	
83			ANZ Bank charges	Transaction fee	\$0.60			214,228.87	\$ 17,340.02	
84				Transfer ref: ttk1042740000020	-\$4,554.30			209,674.57	\$ 21,894.32	
85	30-05-17	PV51/17	Rainbow Powers Co.Ltd	Payment for TT - Estimate # 77911 (for Energy Meter)	\$4,458.85			214,133.42	\$ 17,435.47	

*Figure 15: CCL account vote as of 30-05-17*



**INTERNATIONAL UNION  
FOR CONSERVATION OF NATURE**

OCEANIA REGIONAL OFFICE  
5 Ma'afu Street  
Private Mail Bag  
Suva, Republic of the Fiji Islands  
[oceania@iucn.org](mailto:oceania@iucn.org)  
Tel +679 3319 084  
Fax +679 3100 128  
[www.iucn.org/oceania](http://www.iucn.org/oceania)

