

Brief Notes

PROJECT TITLE – SOLAR PV – POWERED WELL WATER PUMPING SYSTEM IN KAYANGEL STATE.

PROJECT YEAR – JULY 2013 – MARCH 2017

FUNDED: SIDS DOCK SUPPORTED PROGRAMME (DANISH INTERNATIONAL DEVELOPMENT AGENCY)

IMPLEMENTING AGENCY: UNDP

EXECUTING AGENCY: SPREP

NATIONAL EXECUTING PARTNER – PALAU PUBLIC UTILITY COOPERATION (PPUC)

CONTRACTOR: APEC (ALLIED PACIFIC ENVIRONMENTAL CONSULTING INC)

TOTAL FUNDING INJECTED: USD 320,000

BACKGROUND

Kayangel is the northernmost state of Palau located about 53 miles north of Koror, which is country's capital city. The only inhabited island in the state (Kayangel Islet) is about 3 km² in land area, and the latest census information is that the state's population is 180. Being a remote outer island in the country, the people living there have serious difficulties in obtaining basic necessities of life. This is not only because of the limited natural resources in the island group, but also access to the island is also difficult. The only access to the island is by water transport, which is also affected by weather conditions. It is indeed very difficult to ensure a consistent and regular supply of goods to the islanders, and the delays in the shipment of goods have serious impacts on their lives.

For drinking water, the people in Kayangel are using rain harvesting to store rainwater which they use for drinking.

In July 2012, it was decided that the SIDS DOCK/PIGGAREP+ project in Palau shall focus on supporting strategic interventions in the water and energy sectors in KayangelState (particularly Kayangel Islet, which is the only inhabited island in the State). Currently the water supply system on the island is limited by the lack of a central storage tank and only one of the two water pumps are working. The operational water pump only operates up to 12-hours a day and combined with lack of storage tank, water supply is limited to around 12-hours a day. Among the key interventions to improve the water supply system in the island is the installation of new water pumps, solar photovoltaic (PV) system to power the pumps and an overhead storage tank.

Project Objective

To contribute to the realization PIGGAREP goal of reducing the growth rate ofGHG emissions from fossil fuel use in the PICs through the removal of the barriers to the widespread and cost effective use of feasible RE technologies (RETs). As such, this project will facilitate the supply of sustainable

renewable energy (RE)-based power for social uses (and also some productive uses) particularly water supply in the Kayangel state of Palau. Solar energy, which is available in the country, is the target RE resource. The project will replace the electric motor driven pumps of the Kayangel well water systems with more cost effective, environment-friendly solar PV power units.

The specific objective is the widespread application of solar-PV powered well water pumping system in Kayangel State. The expected outcomes of this project include: (1) Sustainable and environment friendly operation of well water pumping system; and, (2) Reduced energy costs for well water supply. The project will mainly involve the provision of an alternative solar PV water pump for the water supply system in Kayangel State. This project is also in support of the country's water policy, this aims to protect and conserve Palau's water resources, ensure Palauans have access to safe, affordable, sustainable water supply and wastewater services, and to see that these services are managed and operated sustainably and effectively.

Major Activities

1. Technical evaluation and engineering design of the solar powered water pumping systems, including the water storage tank
2. Engineering, Procurement and Construction of a solar powered water pumping system in Kayangel.

Major Timelines

- PIGGAREP Plus start date 1st July 2013
- Letter of Confirmation on Funding Allocation for Palau under PIGGAREP Plus to Hon. Billy G. Kuartei on 21st October 2013.
- Tender for Activity 1; Technical evaluation and engineering design of the solar powered water pumping systems, including the water storage tank published on 25th March 2014.
- Contract for Activity 1 signed on 2nd August 2014.
- Consultant completed the work and submitted all the technical evaluation report, specifications, designs and drawings on 4th December 2014.
- Tender for Activity 2; Engineering, Procurement and Construction of a solar powered water pumping system in Kayangel published on 17th December 2014
- Contract signed with APEC (Allied Pacific Environmental Consulting Inc) on 19th June 2015
- Work to be completed by 30th March, 2017

Major Contributors towards Delay

- Funding - the allocation of USD198,500 was not enough for the 2 major activities. It was the main hurdle for delay in getting good consultant for Activity 1 and technical experienced engineering company for activity 2. At the end, we were able to inject additional USD120K to complete the project. These funds were only made available in end 2015.
- Travel logistic to Kayangel was very challenging for Activity 1 where the consultant was to conduct the field inspection. This was also a factor for implementation of activity 2
- Lack of technically qualified bidders for both activities due to budget constraints allowing the tender to be extended for at least 3 times.
- Re scoping of work and design to meet important criteria and specifications especially for cases of typhoon force winds of 160 mph

- The 2016 Palaun drought was significant and severely impacted the island of Kayangel as they have such a fragile water lens. Of course not only was water needed to build the structure, but also to test the system. That issue lasted the entire summer.
- In September 2016, contractor was informed by the construction crew, that no work could be done during the government elections, a process that took several weeks.
- Just prior to mobilizing in October, a site assessment done by the construction crew brought to light that the land had never been secured prior to commencement of the project. The team worked diligently to get this resolved, but the trickle-down was time consuming as it affected permits etc. The new Kayangel Governor had not been aware of this project during the turnover from his predecessor, but stepped in to help get this resolved as quickly as possible.
- At some point in time between an August site visit, where photographs show two water pumps in the pump house, and when the construction inspector went to Kayangel at the end of October; one of the pumps turned up missing. Unfortunately both water pumps were necessary for construction and commissioning. We were able to get the pump sourced (although it took a fair amount of time and legwork due to international restrictions) and we anticipate it should be on island any day now