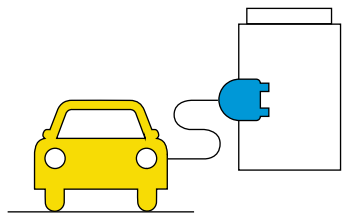


Regional E-mobility and Battery Storage Programmatic Technical Assistance (TA) for Pacific Island Countries and Territories



Energy
East Asia and Pacific
Pacific Island Countries

TEAM LEADERS:
Alain Ouedraogo,
Senior Energy Specialist
Inchul Hwang,
Senior Energy Specialist
2020

CONTEXT AND CHALLENGES

Pacific Island Countries (PICs) are facing significant challenges in the power sector, including high dependency on costly imported fuels, lack of energy planning and management capacity, and the need for financing battery storage and other facilities to absorb renewable energy. These challenges result in some of the world's highest electricity prices, ranging from 20 to 80+ US cents per kWh.

The Pacific Power Association (PPA), a regional organization assisting Pacific power utilities, drafted a long-term strategy to address the energy sector challenges, including deploying electric vehicles (EV) and battery storage. The World Bank's study indicated that the Levelized Cost of Electricity (LCOE) in PICs could decrease by increasing renewable energy and battery storage to some extent. Still, LCOE can increase if a power system relies only on battery storage to absorb renewable energy above a certain penetration level. The effective usage of EVs as part of demand-side management is expected to contribute to total cost reduction. The programmatic regional approach would be a timely support to build the momentum to develop a broader sector strategy and a robust and bankable pipeline of EVs and ESS investments.

PROGRAM GOAL

Pacific Island Countries must decarbonize their transport and electricity sectors in tandem to realize their ambitious sustainable development goals. The primary objective of this program is to tackle the significant challenges faced by the Pacific Island Countries (PICs) in the power sector when implementing e-mobility and battery storage through a collaborative approach between the PPA and the World Bank, to promote sustainable development and reduce dependence on costly imported fuels.

PROGRAM IN PROCESS

The activity provided strategies for the efficient usage of the resources on battery storage and improving the system's reliability, thereby improving the efficiency of the grid. It will help create a framework to finance battery storage-related projects and expedite lending projects related to system reinforcement. The decision-makers will get more insight and solutions to effectively plan and implement plans and policies to promote optimal and reliable electricity supply at an accessible cost.

During the 25th Micronesian Island Forum (MIF) Annual Meeting (February 15-17, 2023), the Regional Energy Committee noted that new technologies for battery storage could help stabilize the grid and recognize that Individual Power Producers (IPPs) and Power Purchase Agreements (PPAs) could solve many of the obsolescence problems of old systems.



Living Case Study of EV and battery storage deployment

Jeju, the biggest island in Korea is a natural fit for EVs. It is a relatively small, oval-shaped island where drivers can travel along the 180 kilometers of coastal roads. A fully charged electric car can travel between 100 to 150 kilometers. Because most people drive an average of fewer than 100 kilometers daily, the island is the right size for EVs. Jeju Island has spent years building EV infrastructure to encourage residents to make the switch from gas to battery-powered cars. Until 2020, the Jeju government provided subsidies to EV buyers of up to \$21,800 per car plus an additional \$6,700 and tax incentives. Jeju province has invested \$12.5 million to help the small island of Gapa become carbon-free. Along with two 250 kW wind turbines which cost \$8.6 million, 174kW solar panels were installed in 49 households in May 2017. The Jeju provincial government subsidized the installation of solar panels on houses, so residents pay only 10% of the total approximate cost of \$12,000. Other installations include a battery storage device, a system control center, power conversion equipment and remotely controlled power meters. The electricity produced in this way powers the households on the island, four electric cars and a desalination plant. From the private sector, the area received \$88.6 million from Korea Electric Power Corporation (KEPCO), Korea Southern Power Company (KOSPO).



KNOWLEDGE EXCHANGE PROGRAMS HELD

27 participants from 10 countries (including Palau, Marshall Islands, Samoa, Micronesia, Vanuatu, Kiribati, Nauru, Solomon Islands, Tonga, Tuvalu) in partnership with 8 Korean organizations (KEPCO, Starkoff, JRI, KOMIPO, KOEN, GPhilos, Seoguipo Bus, KIER)

Two publications will further support Pacific Island leaders with a plan on how to transition the energy and transport sectors.



Battery Energy Storage Systems identify the best policies, technologies, and financing approaches for Pacific Islands to scale up renewable energy through Battery Energy Storage Systems (BESS).

The Regional e-mobility policy framework sets out the technical guidelines tailored for small island countries.

Key Results

The Pacific Island Countries' understandings of e-mobility and battery storage has been enhanced because of the virtual Knowledge Exchange on E-mobility and Energy Storage Systems (ESS) held in May 2020.

The in-person learning workshop and Knowledge Exchange on E-mobility and BESS held in November 2022 on Jeju Island provided the team with a comprehensive overview of how to transition both the energy and transport sectors.

Jeju site visits included:

- d-bus fleet charging site
- KEPCO ESS/RE Control Center
- Haengwon PV and wind farm
- Sangmyoun Wind Farm
- Gphilos green hydrogen production facility
- Tamla offshore wind farm

PARTNERSHIPS & COLLABORATION

Korea Electric Power Corporation (KEPCO)
 Jeju Research Institute (JRI)
 Korea Battery Industry Association K-BIA

- Korean Partnerships include the Coalition for Our Common Future in the publication: Battery Energy Storage System Development in Pacific Island Countries
- Research on Korean Cases, particularly in Jeju, was used in both the training and in the publication.

LOOKING AHEAD

The member states have accepted the recommendations and are considering adoption. Adopting the relevant PPP policies and guidelines will require additional time as these require governmental action and establishing new policies.

This program has inspired Mongolia to consider a similar approach. Research on e-mobility and BESS will be conducted for the country soon.

