

Renewable Energy
Industry Promotion

Joint Project between ADB and KEMCO

For Development of Distributed Grids
in off-grid areas in the Philippines

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KOREA ENERGY
MANAGEMENT CORPORATION



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**NRE: New and Renewable Energy*



Overview of

Korea Energy Management Corporation (KEMCO) & New and Renewable Energy Center (NREC)

1. Overview of Korea Energy Management Corporation

History



- **1980** Establishment of **KEMCO**(Korea Energy Management Corporation)

Organizations 4 Headquarters, 1 Renewable Center, 12 Regional Offices

Major Activities

Energy Efficiency and Saving

- **Implementing EE(Energy Efficiency) Programs** (VA, ESCO, Soft Loan, etc.)
- **Market Transformation for Energy Efficiency** (Labeling and Certificates)
- **Public Relations, Educations and Campaigns**

New and Renewable Energy

- **Deployment of 1 Million Green Homes**
- **Certification of New & Renewable Energy Systems**
- **Financial Supports** (Subsidy, Loan), **Public Obligation, RPS, FIT, etc.**

Climate Change Response

- **End-Use Energy & GHG Statistics**
- **Registration and Certification of Voluntary GHG Reductions (KCER*)**
- **Certification for CDM Projects**

* KCER : Korea Certified Emission Reductions

2. Overview of New and Renewable Energy Center(NREC)

History of NREC:



- **1980** KEMCO was Established
- **1989** (Affiliated) The Alternate Energy Development Center was Established
- **2003 (Affiliated) Expanded and Reorganized as New and Renewable Energy Center (NREC)**

Objective : Effective and Professional Promotion of NRE Deployment and Application

Legal Basis : Article 31 of Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy

Characteristic : Government Agency (Under MOTIE)

Organization : 4 Departments

Employment : 88 Staffs

Budget(2015) : 696.2 (R&D Budget : 208, Loan and Subsidy 488.2) * Unit: million USD

Major Activities :

- Deployment Programs(Home, Building, Regional)
- Infrastructure (Certification, Test-bed)
- Policy (Law and Regulation, Statistics, International Cooperation)



Project Outline



II Project Outline

Title : Joint Project between ADB and KEMCO for Development of Distributed Grids in off grid areas in the Philippines

Project Summary

- **Achieved 83%** as of 2014 through **Electrification Project in Off-Grid Areas** of the Philippines (Targets 90% by 2017)
- About 70% (162 Islands) of 233 target islands receives **less than 8 hours of electricity**
- Most are **diesel generation** with **high electricity cost (750won/kWh)**
- Expect **increase in residents' convenience** and **reduction of electricity cost** through **Hybrid System Pilot Project**

Stakeholders and Roles

- Project Implementation : **ADB, KEMCO**
- Government Support : **MOTIE, DOE** and **NEA** of the Philippines
- Beneficiary : Romblon Electric Cooperative (**ROMELCO**) ⇒ COBRADOR Island

Objectives :

- Ensuring access to energy for all residents in isolated grids while mitigating climate change
- Enhancing continuous cooperation with ADB in co-project.
- Searching for the new opportunities for developing similar co-project for electrification in off -grid





Current Status



III Current Status

Project Process and Results

Project Process

- MOU signed between ADB and KEMCO for joint collaboration ['12. 11. 8]
- Recognize "**Hybridizing existing diesel genset with renewable energy in off-grid areas** and construct distributed generation" as **New Business Model** which is part of ADB's "Energy For All Initiative" (KEMCO collaboration) ['13. 11]
- Implementation and Completion of Feasibility Study ['14. 5 ~ '15. 5]

Feasibility Study Outcomes

- Confirmed on the **Necessity** of Hybrid System Construction
- Finalized the **Target Island** in the Philippines (Cobrador, Romblon)
- Finalized **Investment Scope** and **Facility Scale** per agency for implementation



III Current Status

Status of Target Islands for Pilot Project

Feasibility Study Outcomes

- Carried Out FS for 5 Islands out of 233 with restricted electricity supply

| | # 1 | # 2 | # 3 | # 4 | # 5 |
|--------------|---------|----------|--------------|---------|----------|
| Site(Island) | Batanes | Cebu | Westrn Samar | Romblon | Romblon |
| | Sabtang | Bantayan | STO.Nino | Logbon | Cobrador |

Target for Pilot Investment Project

- Target Site : Cobrador, Romblon
- Area/Population : 2.64km², 983 people (609 people above 18, 374 people under 18)
- Total Households : 234 Households (Other Facilities: School, Hospital, Church, Commercial Facilities and etc)
- Electricity Usage : 15kW Diesel Generation for 8 Hours

Targeted Pilot Investment Project

- "PV + Lithium Battery + PCS + Diesel Generation (Existing Facilities)" Hybridization



IV.

Plan and Expected Impact



IV. Plans and Expected Impact

Plan for Pilot Investment Project

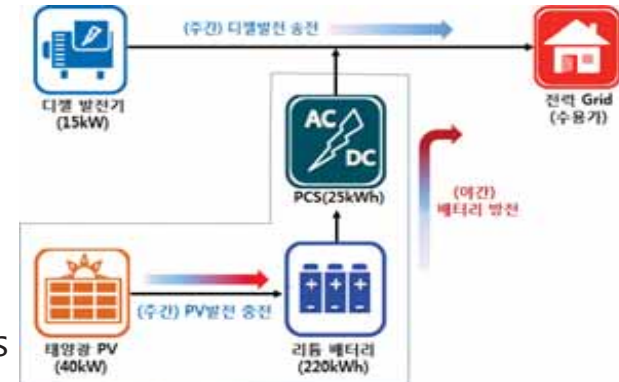
Investment Scale Per Agency and Usage

| Agency | Usage |
|---------|--|
| KEMCO | PV + PCS + Lithium Battery System installation |
| ADB | |
| ROMELCO | Building + Operation Cost + other Infrastructure Support |

* Establish strategy for Korean products during lithium battery selection by ADB (Emphasize on Maintenance and Operation)

Hybrid System Major Specifications

- PV Generating Facility : 30 kW
- Lithium Battery : 178 kWh)
- PCS (Power Conversion System) : 25 kW
- Diesel Genset : utilize existing facilities (15kW)
- Hybrid System Control Panel and other Operating Systems



IV. Future Plans and Expected Impact

Expected Impact

▷ Best Practice

- After analyzing operation of pilot project, it can be used for developing policy for deploying the hybrid system
- **Collection/Analysis and Sharing of Data** on operation (to be used in future projects)

▷ Enhancing the Cooperation

- Promoting **policies for expansion** of facility investment of Hybrid System in off-grid areas with ADBC and KEMCO
- Developing new opportunities for similar project with ADB ,Philippines and KEMCO.

▷ Advanced Welfare for resident in off-grid

- Ensuring the energy access could be a momentum to advance welfare for residents in off- grid areas





Thank you

KEMCO

**New&Renewable Energy
Promotion Division**