



BRED

Busuanga, Culion & Linapacan Islands Renewable Energy Development Project

OCTOBER 2015

Implemented by INNOVATION ENERGIE DEVELOPPEMENT (IED)

Context



The Calamian Islands are located in the North of the Palawan Province and have important protected natural areas. Currently the livelihood of more than 60% of the population depends on from the exploitation of natural resources (fisheries, livestock and agriculture, pearl production, etc ...).

However these activities, and especially on slash and burn cultivation, have led to serious **deforestation problems** accelerating soil erosion phenomena.

This situation now endangered rare ecosystems but also socio-economic development of local populations.

National and local authorities (DENR / PSCD) have implemented in the last years **vast replanting programs** in damaged forests and mangroves. This policy is limited by the difficulty for local people to make money from these initiatives .



In the meanwhile, tourism represents a strong growth potential. Today limited (from 3 to 7,000 visitors per month), this sector is booming with the creation of **new higher standard accommodation capacities**, based on eco-tourism.



The project focuses on the islands of Busuanga, Culion and Linapacan where **the energy constraint is now very strong**.

The electricity distribution cooperative BISELCO supplies about 12,000 customers while its mandate covers the three islands that represent a total of 25,000 households. Therefore, only 50% of the population, mainly clustered in villages with easier access, are connected to the BISELCO grid.

Furthermore, electricity is now produced only from thermal plants (diesel or heavy fuel oil) resulting in **high costs**, considering the additional costs fuel transport costs in these remote areas.

Grid extensions and development of economic activities (tourism, pearl culture, ice production for export of fish) lead to **very strong growth in demand for electric power**, requiring the development of new electricity generating capacities..

Objectives

With this in mind, the Department of Environment and Natural Resources (DENR), in collaboration with the Department of Energy (DOE), is looking for a sustainable solution supply of electricity to populations.

The BRED project aims to determine the best technical and organizational plan to:

- achieve a **high penetration of renewable sources** in the energy mix to enhance local potentials (biomass, solar) ;
- **reduce carbon emissions** ;
- **rehabilitate degraded land and generate income** through the establishment of plantations for energy purposes ;
- **define technical set-up replicable** on the thousands of islands that make up the archipelago of the Philippines.

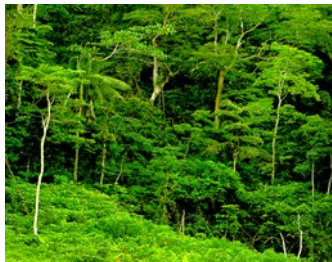


Expected results

The project started in August 2015 and will last 18 months. It is supported by the French Government through the FASEP facility and aims to achieve to detailed studies leading to project implementation.

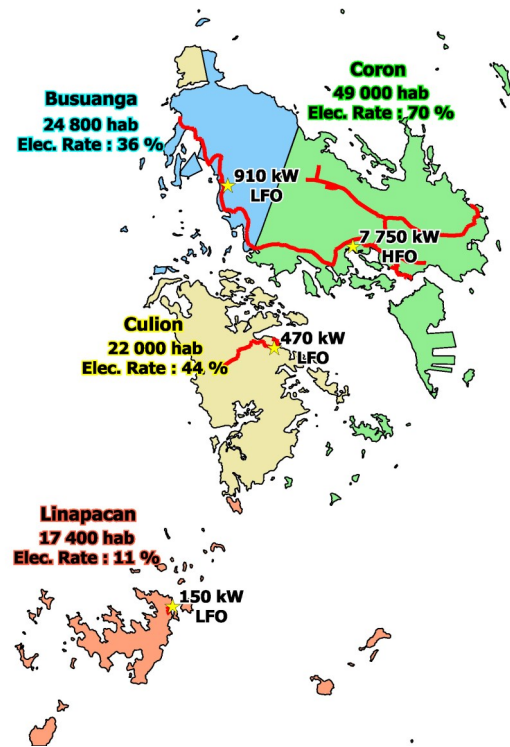
The main activities are to :

- Assess the future electricity demand;
- Make a diagnosis of existing facilities;
- Evaluate local potentials of renewable energy and the conditions for their uses;
- Identify technical solutions to achieve a very high penetration rate of renewable energy without disturbance to local grids;
- Assess the technical and economic feasibility of the proposed solutions;
- Carry out detailed studies of chosen plans;
- Evaluate the economic viability and develop an adapted business model for project developers.



TECHNOLOGICAL OPTIONS

- Systems sized according to expected demand and network characteristics: between 100 and 500 kW mini-grids for the most remote areas and up to several MW in grid-injection on the island of Busuanga.
- Technologies chosen based local renewable energy potential : Photovoltaic power plants with or without storage, biomass plants (gasification, direct combustion associated with a turbine / ORC / steam engine).
- Integration of innovations in the fields of power electronics and control of electrical systems (Smart Grid) for a strong contribution of renewable energy.



PARTNERS

This project, developed on request of DENR, is implemented by the engineering firm IED.

The operational counterpart of the project is the Provincial Government of Palawan represented by the PCSD.

The kick-off meeting held in September 2015 in Busuanga illustrates the strong involvement of institutional partners at national (DENR, DOE, NEA) and local level (Palawan, PCSD, BISELCO, CPIC, mayors of municipalities).



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