

# PANAWAT WASTEWATER TREATMENT AND BIOGAS UTILIZATION



**Project developer:** Panawat Renewable Co., Ltd.  
**Location:** Ao-luk district, Krabi province, Thailand  
**Technology:** Biogas  
**Project Cost:** 6,857,059 Euro  
**EEP Contribution:** 642,853 Euro (9% of project value)  
**Duration:** June 2016 - May 2018



## Project Description

The project will install a biogas system using wastewater generated from a palm oil mill as substrate and utilise the generated biogas for electricity generation and sale to the grid. The project developer Panawat Renewable Co., Ltd will implement the project in partnership with Krabi Oil Palm Farmer Cooperative Federation Limited (KOF CFL) on a build-operate-transfer (BOT) basis for 15 years.

KOF CFL consist of eleven (11) cooperatives with about 8,000 households and 13,000 individual members. KOF CFL is operating a palm oil mill since 2004 and treats the mill's wastewater in open anaerobic lagoons, which generate methane emissions and create odour problems.

The biogas generated from the system will be transferred into electricity by two gas engines with a capacity of 5MW. The generated electricity will be sold to the grid under the Very Small Power Producers (VSPP) scheme of Thailand. The members of the cooperatives will be the direct beneficiaries of the project. The project will also create direct employment for the local population and enhance local technical skills related to operation and maintenance of the biogas system.

## Result-Based Financing (RBF)

Disbursement of the EEP Mekong funds will be done in three installments according to the project's milestones and results to be achieved. The first disbursement will be released after verified completion of civil works for the biogas system. The second installment will be released after verified completion of the biogas system, starting to generate electricity. The third disbursement will be made after proof of sale of electricity to the grid of about 10,000 MWh, measured from the date of commissioning of the biogas system.

## Social and Environmental Impacts

During its lifetime of 15 years the biogas system expected to reduce Green House Gas by about 1.75 million tCO<sub>2</sub>e, and export 398,458 MWh of clean electricity to the national grid.

The amount of electricity generated accounts for about 60% of the annual electricity consumption in Ao-luk district. This leads to higher energy security in the district and directly promotes other income generating activities by local suppliers, equipment manufacturers and small shop owners. KOF CFL receives a share from the revenues from the sale of electricity to the grid. This revenue will be used for creation of additional benefits for the members of the cooperative.

## Sustainability and Scaling Up

The project will generate income from the sale of electricity and from carbon credits which makes the project economically viable and sustainable. The BOT contract moreover ensures that the project's installation, operation and maintenance is done in a technically sound manner.

It is the first time that a private sector company is setting up a project of this scale in collaboration with a federation of farmers' cooperatives in Thailand. At present Thailand has over 50 palm oil cooperatives which shall be introduced to the biogas project with the aim of replication. In addition the impacts achieved by the project will be disseminated to cooperatives in other agricultural sectors such as cassava plantations.

## Dissemination of Impacts Achieved

The project combines an innovating financing mechanism called BOT with a proven biogas-power generation technology system. The impacts achieved from this approach will be disseminated to other agricultural cooperatives in Thailand focusing on the economic and social benefits achieved by the project.

### For more information, please contact:

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