

Biogas from Waste Water Generates Electricity in Thailand



The project has made the palm oil factory's wastewater plant less damaging to the climate.

In southern Thailand, climate-damaging methane gas is trapped at two large wastewater plants. Energy produced from the biogas is used at the plants themselves and is fed into the local power grid.

The industrial processing of palm oil produces copious amounts of wastewater. Treating this wastewater causes heavy emissions of methane - a gas that is some twenty times more harmful than CO₂. Before the project began, the wastewater at the Lamthap and TOPI factory was being treated anaerobically in open ponds in line with the normal and cheapest practices in the palm oil sector and in Southeast Asia. However, the anaerobic decomposition of organic matter in wastewater leads to climate-damaging methane emissions, and until now, these could freely enter the atmosphere.

For these two projects, a CIGAR system (Covered In-Ground Anaerobic Reactor) developed by the New Zealand company Waste Solutions Ltd was installed. This enables, on the one hand, an optimum anaerobic decomposition of organic matter thus producing more methane gas (biogas) while, on the other hand, the methane produced is trapped by a membrane and used for energy. The biogas is burnt in biogas engines (952 kW each). The resulting renewable electricity is utilised for the plant's energy supply and is sold to the local network operator, the Provincial Electricity Authority (PEA). Thailand's electricity is mainly produced by using natural gas. Besides the reduction of methane, the plant enables the sludge that builds up in the ponds to be skimmed off and used as fertiliser on the fields. Moreover, additional jobs have been created and a technology transfer has taken place.

Project type:

Biogas

Project location:

Krabi Province, Thailand

Project status:

Completed

Annual CO₂ reduction:

43,650 (Lamthap) and 41,174 (TOPI)
(share of total reductions)

Situation without project

Methane emissions and fossil power

Project standard

Gold Standard[®]

CER

Impressions



The wastewater pond is covered with a membrane that captures the climate-damaging methane gas (biogas).



Methane under cover.

The sustainability of the project is tested by the Gold Standard. Besides the treatment of wastewater, the environmental and social standards and the practices of the company in general are also investigated. Univanich Palm Oil Public Co. Ltd., which runs the projects, has been a member of the Round Table for Sustainable Palm Oil (RSPO) since May 2009 and hence committed to contributing towards the sustainable production of palm oil.

These projects contribute to 4 SDGs:

- SDG 7: 1,665,473,100 liter of wastewater treated and converted into 79,136,244 kwh of electricity
- SDG 8: 10 jobs generated and 122 people trained
- SDG 13: 374,397 tonnes of CO₂ reduced
- SDG 17: Programme enables transfer, dissemination and implementation of environmentally friendly technologies in Thailand.



The methane gas is transferred to the gas cleaning system through the connecting pipes and is then burnt in the generator. This renewable electricity is used in the plant and fed into the grid.



Machine room of the biogas plant, company Univanich.