



Wastewater treatment, Thailand

This project is involved in mitigating global warming and local air pollution at a Thai oil mill by capturing methane, generating sustainable energy and creating social benefits for local communities.

Location



A wastewater cycle was installed in an oil mill in southern Thailand, in a rural, agricultural region. Oil is produced from palm fruits that are grown by predominantly small-scale local farmers.

Project



Just a few years ago, the inhabitants of the villages surrounding the mill could smell the open lagoons used in clearing the oil mill's wastewater. Today, not only has the local air and water quality improved significantly, but the mill has also reduced its greenhouse gas emissions by about 25,000 tCO₂e p.a. In addition, the project and the resulting carbon revenues have generated jobs for locals and support social and educational activities in the community, enabling sustainable development.



Technically, the project activity involved the installation of a Complete Stirred Tank Reactor (CSTR), a biogas reactor technology. Before the installation of the project, the wastewater in the mill was treated through eight cascading open lagoons, with a retention time of more than one year. The combination of the lagoons' size, atmospheric and water temperatures resulted in an anaerobic environment in the ponds. These conditions led to methane generation from the organic content of the wastewater, which was then steadily released into the atmosphere. Methane is a greenhouse gas 21 times more harmful than CO₂.

Today the captured methane can be used for clean energy production in two gas engines which generate electricity to be supplied to the national grid. This emission reduction project has a double effect: keeping methane from heating up our climate and at the same time avoiding the burning of thousands of tons of fossil fuel per year. The project has a total electrical generation capacity of 2.5 MW.

The project owner aims to recycle the treated water in cleaning the raw palm fruit.

Project achievements



Socio-economic impact:

- The company has implemented an annual scholarship programme for local school students.
- Each year, the company gives support to disabled and underprivileged people in the community.
- Farmers take wastewater and sludge to use as natural fertiliser on their fields. Since this is given for free, the farmers can save on the cost of fertiliser (which is a large part of a farmer's annual expenses).
- Jobs have been created during both construction and operation of the project, benefitting all in the community.
- The plant workers receive training on modern technologies and can increase their knowledge and skills, and increase their understanding of modern and sustainable technology applications.

Environmental impact:

- With the newly covered lagoons and the CSTR reactor in operation, air pollution and strong, odorous emissions from wastewater have been reduced significantly.
- All water from the wastewater cycle can be re-used in the plant, reducing freshwater consumption.
- No solid waste is generated, only the sludge that is given to local farmers to use as fertiliser.

Checklist Projekt 300 447



✓ Additionality and permanence:	according to the rules of the VCS
✓ 3 rd party verified:	by Germanischer Lloyd
✓ Transparency:	provided by Markit Environmental Registry
✓ Annual CO ₂ -reduction:	25,000 tCO ₂ e
✓ Social and environmental benefits:	as documented in our database
✓ Marketing material:	high resolution pictures available

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