



Biogas generation from wastewater, Thailand

Captured methane from the treatment of swine barn flushing-water is being used as sustainable fuel to generate clean energy and lower the pig farm's need for fossil fueled power from the grid.

Location



The pig farm is located between Bangkok and the Western border to Myanmar, in the province of Ratchaburi. The region's economy is mainly based on tourism, agriculture, and pottery.

Project



Before the installation of the new wastewater cycle, the pig farm was struggling with its high demand of water for cleaning the barns, with pungent odour emissions and high energy cost. Today, funded by carbon revenues and private investment, a one-in-all solution successfully tackles the above problems and at the same time saves greenhouse gas emission from entering our atmosphere.

With its swine rearing capacity of 120,000 fattening swine, the farm has recently invested in *high-rate continuous flow closed anaerobic treatment reactors* to treat 100% of all barn flushing effluents. The project owner has constructed these modern facilities to replace the former system of open anaerobic lagoons with their heavy emissions of methane (with 21 times the climate impact of CO₂, it is one of the strongest greenhouse gases), from the organic content of the wastewater. Now, the project activity replaces the old treatment with a modern *Upflow Anaerobic Sludge Blanket* (UASB) reactor system. In the end, the recycled water can be re-used in the plant for flushing the barns, which saves huge amounts of freshwater.



Technically, a 950 kW biogas electricity generation set, is generating electricity for use on the farm, e.g. in water and wastewater pumping, fans for barn cooling, lighting, etc. This displaces mostly fossil fueled electrical power from the Thai electricity grid; any excess electricity is exported to the national grid.

Apart from the positive climate effects, the project also benefits the local community by actively supporting higher education. Last but not least, the strong odour nuisance has dropped significantly.

Project achievements



Socio-economic impact:

- A number of temporary jobs for locals was created during construction of the new wastewater cycle, and several permanent jobs to operate and maintain the biogas facilities.
- Workers receive special training on modern technology to improve their skills.
- The project owner is providing support for internal team building activities, e.g. the company's soccer team.
- The project owner co-funded a local health center that is offering free medical treatment to locals.
- Regular fundings are given to local schools to support sustainable development and education for the young generation.
- A community charity shop has been set up by the project owner, with goods being sold at subsidized prices to locals in need.
- To improve the local traffic situation and prevent traffic accidents, the project owner has funded new traffic signs in the village.
- The project is supporting local school gardening through the free distribution of fertiliser for a local student food programme.
- To promote switching away from energy-intensive chemical fertilizers, the project owner is giving high quality organic fertiliser from sludge to local farmers, supplied at low cost. Effluent from the facultative ponds is also supplied to local farmers as liquid fertilisers upon request.
- Residents enjoy better living conditions thanks to avoided odour emissions (compared to pre-project status).
- Due to rapidly and continuously rising oil prices, the Thai government has set an ambitious target for the share of renewable energy in electricity production. In 2003, the government has published the "Energy Strategies for Competitiveness" which aims to increase the share of renewable energy in Thailand from 0.5 % to 8 %. This project represents an outstanding example of successful initiatives to support this goal.

Environmental impact:

- The project activity improves water and air quality significantly, mainly due to the high efficiency of the biogas reactor and improved process control as compared to open lagoons.
- In addition, large amounts of fresh water are now saved since the new biogas reactor system allows the pig farm to reuse the treated effluent in its operations.

Checklist Project 300368



✓ Additionality and permanence:	according to the rules of the VCS
✓ 3 rd party verified::	by SGS
✓ Transparency:	provided by the Markit Environmental
✓ Annual CO ₂ reduction:	30,000 tCO ₂ e
✓ Social and environmental benefits:	as documented in our database
✓ Marketing material:	high resolution pictures available

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