Cassava Waste to Energy, Thailand

Carbon offset funds enabled a group of cassava processing facilities in northeastern Thailand to install a wastewater treatment and biogas recovery system, generating onsite heat and electricity, and reducing the facility’s greenhouse gas emissions.

**HOW IT WORKS**

Approximately 5,110 m$^3$ of wastewater is produced each day from the cassava processing plant of Asia Modified Starch Co., Ltd. (AMSCO). Three AMSCO facilities on-site (a native starch plant, a citric acid plant and a modified starch plant) produce wastewater that is directed into an open lagoon system, resulting in direct atmospheric methane emissions from anaerobic degradation.

The new wastewater treatment and biogas recovery system operated by Cassava Waste to Energy Co., Ltd. (CWTE) will process and treat the three wastewater streams removing approximately 90% of organic pollutants prior to being released into the existing lagoons. The methane-rich, recovered biogas will be channeled back to the cassava processing plant to generate electricity for the plant (reducing its grid electricity needs) and generate heat for its production processes (eliminating the use of approximately 4.2 million litres of heavy fuel oil per year). In addition to improving wastewater quality, reducing methane emissions, and reducing the facility’s reliance on non-renewable forms of energy, the wastewater treatment system also has other environmental benefits: it helps conserve groundwater resources with the use of a polyethylene liner, reduces air pollution associated with the use of heavy fuel oil, and reduces the odour and
nuisance associated with the old open treatment system.

**CARBON OFFSETS MADE IT HAPPEN**
Carbon offsets helped address some of the financial and technical risks associated with investment in the project.

**OTHER BENEFITS OF THE INSTALLATION**
The project can expect to deliver multiple benefits in respect to sustainable development in Thailand, including a decrease of health problems associated with an open lagoon wastewater treatment system, the creation of twenty-two new full-time staff positions, a decrease in dependency on oil imports while at the same time enhancing energy security by increasing diversity of fuel supply, and enhancing competitiveness of cassava processing industry in Thailand which is currently facing a lot of competitive pressure in the global market. Additionally, the waste to energy recovery facility will open as a biogas education centre for local community, a request expressed during the public participation meeting to show how this concept can be applied to other sources of organic wastewater.

**Project At A Glance**
- **Project Location:** Kalasin province in the northeast of Thailand
- **Project Type:** Waste to Energy
- **Standard:** VCS
- **Credits Generated per Year:** ~87,586 tCO₂e
- **Equivalent # of cars removed from the road annually:** ~15,580 (Based on EPA GHG Equivalency Calculator)
- **Verifier:** SGS United Kingdom Ltd.
- **Project Start:** 19th Feb 2007
- **Technical Longevity:** 10 years

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