# Methane Capture Project

**Cholburi Wastewater Biogas-to-Energy Project**
This project uses biogas from wastewater to generate heat and power at a tapioca starch drying factory in Cholburi (pronounced chon-boori), Thailand.

**Standard**
VCS (Voluntary Carbon Standard)

**Country**
Thailand

## About your project

Thailand is the world's largest exporter of tapioca starch which is manufactured from treated and dried cassava root and used by the food and toothpaste industries. Drying tapioca starch uses large volumes of water which in turn creates vast quantities of wastewater with high organic content. Before the implementation of this project, the 2400m³ of wastewater produced each day at this factory was discharged into 13 open lagoons. Cholburi has a tropical climate, with an average temperature of 84° Farenheit. In this environment, the organic matter in the lagoons was breaking down, creating biogas which was being released directly into the atmosphere.

This project introduces Anaerobic Fixed Film Reactor (AFFR) technology to the factory; a closed loop system co-developed by the King Mongkut's University of Technology in Thonburi and the National Center for Genetic Engineering and Biotechnology. The AFFR technology collects and supplies biogas to a boiler where it is combusted to generate heat and electricity. This energy is used onsite to power the factory, replacing energy that was previously supplied by fossil fuel fired power stations. Any excess power generated at the plant is delivered to the regional grid.

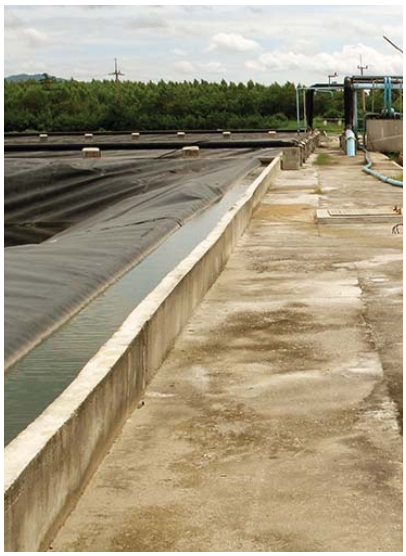
Thailand has approximately 65 million people, the majority of which live in rural areas. Agriculture is an essential part of Thailand's economy, providing jobs for the majority of the workforce and contributing over 10% of GDP. However, as the country's biggest sector, agriculture is also responsible for large quantities of greenhouse gas emissions. As a result, Thailand is exceptionally vulnerable to small changes in climate and even a minimal temperature rise would destroy vital crops. Projects like this one help mitigate climate change and support an industry that is critical to Thailand's economy and food supply.

Alongside the emissions reductions, the project reduces air pollution as the odors from decomposing organic matter are now contained. The factory has adopted sustainable water management practices by reusing the treated wastewater in the manufacturing process, reducing the volume of new water required. Additionally, eight new jobs have been created - four permanent and four temporary - to plan and operate the project.

These images have been provided by individuals working with the project operators

# About wastewater biogas-to-energy

Wastewater is liquid waste from homes, businesses, industry or agriculture which contains residual solids and a wide range of potential contaminants. Wastewater treatment involves anaerobic digestion where, in the absence of oxygen, bacteria digest the solids while creating significant amounts of biogas. This gas – primarily consisting of methane and carbon dioxide – can be captured and used to run engine/generator units to produce electricity, heat or a combination of both (also known as cogeneration). Using biogas in this way reduces greenhouse gases in two ways: it prevents the release of methane which is 21 times more potent than $CO_2$ and displaces energy that would otherwise have been derived from fossil fuel sources. Alongside greenhouse gas reductions, wastewater treatment systems can improve water conservation in factory processes and reduce the release of toxic compounds and odors.



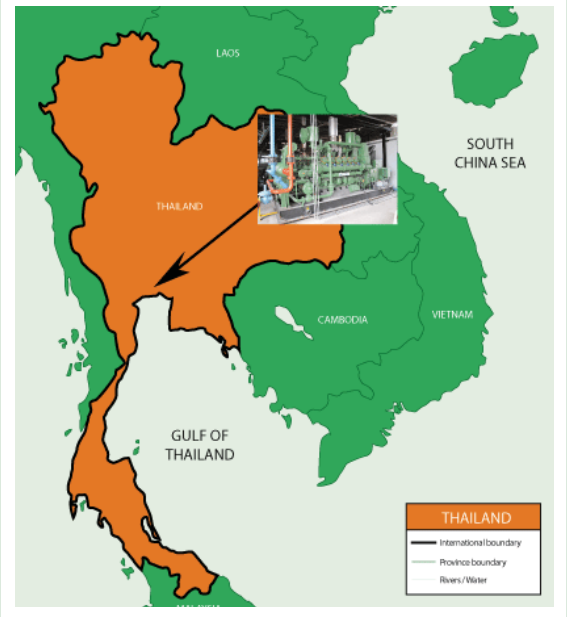
# How carbon offsetting helps the project

It is expensive to develop and operate methane capture and fuel-switch technologies and that is where carbon finance can play an important role. Biogas-to-energy projects like this one are not required by law and often have to overcome financial and technological barriers to realize implementation. Carbon finance provides an additional revenue stream, helping to make these projects an attractive and viable option. In this case, the incentives from carbon finance are enabling the development of an anaerobic digester to capture biogas and generate clean energy.

The reductions in $CO_2$ emissions achieved by this project are incremental to business-as-usual and measured by an independent verifier to internationally recognized standards. These are bought as carbon credits by clients of The CarbonNeutral Company to neutralize their own emissions.

### Verification:

This project is verified to the Voluntary Carbon Standard (VCS).




**Project area coordinates:**

The project is located in the Banbung district of the Cholburi province and has geographical coordinates of latitude 13°17’736” North and longitude 101° 09’108” East.