element MARKETS

John McDougal, VP Environmental Products
jmcdougal@elementmarkets.com
(281) 207-7246

Wolf Creek Landfill


LFGTE Facility

Project Description

The Wolf Creek Landfill began operations in 1992 and is located in Dry Branch, Georgia. The landfill has a 2,800 kilowatt landfill gas-to-energy facility that provides significant environmental benefits to the surrounding areas by voluntarily capturing the landfill gas produced at the facility and utilizing it as a fuel to produce green energy for the local power grid. The project activity also consists of an open flare and small capacity enclosed flare in which LFG is diverted to during outages or scheduled repair.

Project Type	Landfill Gas Capture/Combustion
Location	Dry Branch, Georgia
Registry/Protocol	Climate Action Reserve (CAR): U.S. Landfill Project Protocol
Third-Party Verifier	Ruby Canyon Engineering

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Sustainable Development Goals

Additionality

As the premier carbon offset registry for the North American carbon market, the Climate Action Reserve (CAR), in which this project is registered under, employs a performance standard approach for determining additionality, whereby each landfill must satisfy two tests to be deemed 'beyond business as usual':

- The Performance Standard Test
- The Legal Requirements Test

The Wolf Creek Landfill passes these two tests set by CAR to satisfy the additionality eligibility rule because landfill gas was not destroyed prior to the project start date, and the landfill is not required by regulation, statute or otherwise to install a gas collection system.

Lastly, the decision to implement a landfill gas system was incentivized by the prospect for carbon revenue.

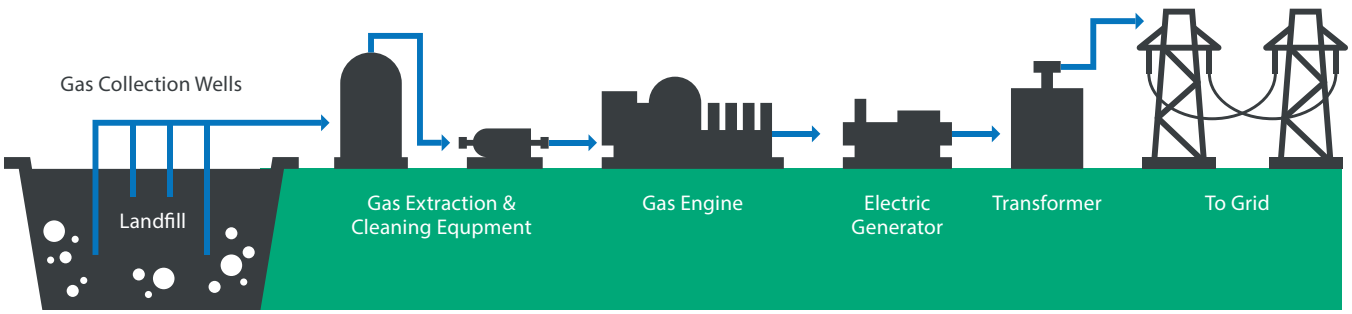
The installation and combustion of the methane at the site is voluntary, and this activity is additional.

Co-Benefits

In addition to a significant reduction in GHG emissions resulting from methane destruction, the project will provide the following multi-faceted co-benefits:

- Create construction, operations and maintenance jobs in the state
- Increase safety by avoiding methane migration, an issue that many older landfills encounter
- Control odors and destroy toxic compounds that can exist in landfill
- Reduces emissions of VOCs and other local pollutants
- Methane levels in groundwater are reduced, resulting in cleaner water and air
- Converts waste into energy, and is a top renewable energy source
- Provides a source of renewable electricity to local residents and promotes sustainable development — the landfill generates enough electricity to power over 900+ homes in Georgia per month

Landfill Gas System



Sustainability action · Project Renewable Energy and Energy Efficiency

Chol Charoen Wastewater treatment, Thailand

New technology in Thailand turning wastewater into energy - Biogas from wastewater is captured and burned to produce electricity and heat that powers the factory.

Project

Thailand is an emerging economy depending heavily on the agricultural sector. It is the number one exporter of dried cassava, producing about 75% of world exports. Cassava is a root crop grown in tropical climates and is a major food staple across Africa, Asian and South America. The Chol Charoen factory produces tapioca starch from dried cassava that is grown locally. This process creates vast amounts of wastewater, around 2,400m^3 per day, which is stored in a series of 13 lagoons. The large size of these lagoons and the warm temperature creates perfect conditions for the breakdown of organic compounds in the wastewater. This produces large amounts of methane, a powerful greenhouse gas. At Chol Charoen the existing process has been modified into a closed loop system that captures the methane emissions. This is done with new locally developed technology – the result of joint research between King Mongkut's University of Technology Thonburi and the National Centre for Genetic Engineering and Biotechnology. The captured gas is used to create heat and electricity for the factory, in place of electricity from the fossil-fuel intensive grid and heavy fuel oil used in the boilers. Surplus electricity is also fed into the national grid.

The project not only reduces GHG emissions by avoiding the release of methane into the atmosphere, but also by reducing fossil fuel consumption. In this way it prevents approximately 29,000 tonnes of greenhouse gases being emitted each year. The treatment of wastewater from tapioca factories in open lagoons is the prevailing practice in Thailand as it is low-cost and low maintenance. The substantial cost of modifying existing factories and a lack of locally available skills and technology are significant barriers to the implementation of improved processes. The additional revenue from the sale of carbon credits provided the necessary incentive to justify this investment.

Checklist	Additionality and permanence	3rd party verified	Transparency	Annual CO_2-reduction	Social and environmental benefits	Marketing material
Project 300 285	According to the rules of the VCS	By Germanischer Lloyd Certification	Provided by Markit Environmental Registry	29,000 tCO_2e	As documented in our database	Pictures available

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Location

The Chol Charoen Wastewater Treatment Project is located at a tapioca starch processing plant in Cholburi Province in Thailand.

Project achievements

Socio-economic impact

- The project has created 30 new local jobs in the construction and operation phases.
- Agricultural programs and trainings help regional farmers increase their tapioca output, e.g. through integrated pest management. In addition, farmers are supplied with non-chemical, biological means such as natural enemies to manage harmful insects.
- Residents enjoy better living conditions thanks to avoided odour emissions.
- The success of this project will lead to the spread of this new technology to other factories throughout Thailand.
- The project helps to improve Thailand's energy security by providing a local source of clean, renewable energy, reducing dependence on fossil fuels.

Environmental impact

- The treatment process has improved wastewater quality, so that the water can now be reused in the factory for washing the cassava, saving precious local groundwater resources.
- 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 water are now saved since the new biogas reactor system allows the starch factory to reuse the treated effluent in the production process.

VCS VERIFIED CARBON STANDARD






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Andrea Rumiz
Director Key Accounts

Phone +41 43 501 35 50
sales@thesouthpolegroup.com