

TGF Project Profile : Saaremaa Animal Waste Biogas Project, Estonia

The Project Activity

The Animal Waste Biogas project on Saaremaa, is a Joint Implementation project developed between Estonia and the investor countries of the Baltic Sea Region Testing Ground Facility (Iceland, Norway, Sweden, Denmark, Finland and Germany). The project developer and owner is Estonian company OÜ Saare Economics, which has been advised on carbon issues by the Norwegian company ECON Carbon.

Pig farming is an important economic activity on Saaremaa. The project seeks to improve animal waste management practices through the utilization of the waste as a resource by processing manure and other organic wastes into biogas for energy use using anaerobic digestion technology and producing a mineral enriched natural fertilizer. The project will also aim

- To end the land spread of pig manure on farmland at the picturesque island of Saaremaa, which currently causes odours and nuisance to local community and tourism;
- To cease the substandard treatment of waste water biosludge from Kuressaare city waste water treatment plant;
- To minimize the burying of animal waste on Saaremaa;
- To minimize the amount of animal waste transported and reduce the risk for associated environmental pollution;
- To produce and market "green" energy from biogas; and
- To produce and market mineral-enriched natural fertilizer

Technology

The biomass treatment technology comprises: an anaerobic digester, a biogas engine including electricity generator and effluent treatment equipment. The project activity introduces advanced treatment of pig manure and other raw material (biosludge and slaughterhouse waste) in

a digestion plant (or biogas plant) where the generated biogas is utilized for energy purposes (electricity and power generation) and digester effluent undergo further treatment where the output is organic material applicable for soil improvements/fertilization purposes and effluent water to be discharged. In the digester, organic matter in the manure is fermented by into biogas under controlled anaerobic conditions.



Reception and Digestion Tanks

The tank volume allows a hydraulic retention time of up to 30 days. The capacity for biomass treatment is 40,000 m³ per year. The biogas is combusted in a gas engine and used for generation of heat and electricity. The entire heat production and most of the electricity (approx. 75%) is used to cover the digestion plants own demand for heat and power. The rest is to be sold to the grid under a guaranteed contract under Estonian law.

The principal turnkey contract was awarded to Ecomac N.V., which is part of the diversified Belgian contractor Group Machiels.

The project began planning in 2004, and installation and commissioning of equipment was undertaken in the summer of 2005. The project commenced full operation from 1st January 2006. NEFCO attended the official opening of the project on the 30st September 2005, when the plant was opened by the President of Estonia, Arnold Ruutel.



Saaremaa Animal Waste Biogas Plant

Nature of Emission Reductions

Emission reductions of 88,000 tCO₂e are expected from the project over the contracted period 2006-2012 inclusive. These emission reductions include methane from improved waste management practices, avoided N₂O emissions from manure storage and from agricultural soils and avoided CO₂ from grid supplied electricity (which in Estonia is principally from carbon intensive oil shale fired generation).

The above listed baseline emissions are all included in the project boundary. However, in the interest of conservativeness and as uncertainty in estimations would be high, some are taken to be zero in the baseline emissions, such as methane emissions from agricultural soil and emissions from treatment of biosludge and organic animal waste (both methane and N₂O emissions).

For a full explanation of the methodology used please refer to the Project Design Document.

Contribution of Carbon Finance

The total capital requirement of the project was EEK 52 million (€3.35 million). The project was financed through a commercial loan from an Estonian bank, and was supported by carbon contribution from the TGF, which formed an integral part of the financing package. The TGF contributed in nominal terms 13% of the capital invested.

For Further Information

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