

Processing chicken manure in Russia into marketable products

Project: Pyrolysis for the production of bio-oil, fertiliser and energy from chicken manure

Project owner: Scandinavian Enviro Systems (SES), Sweden

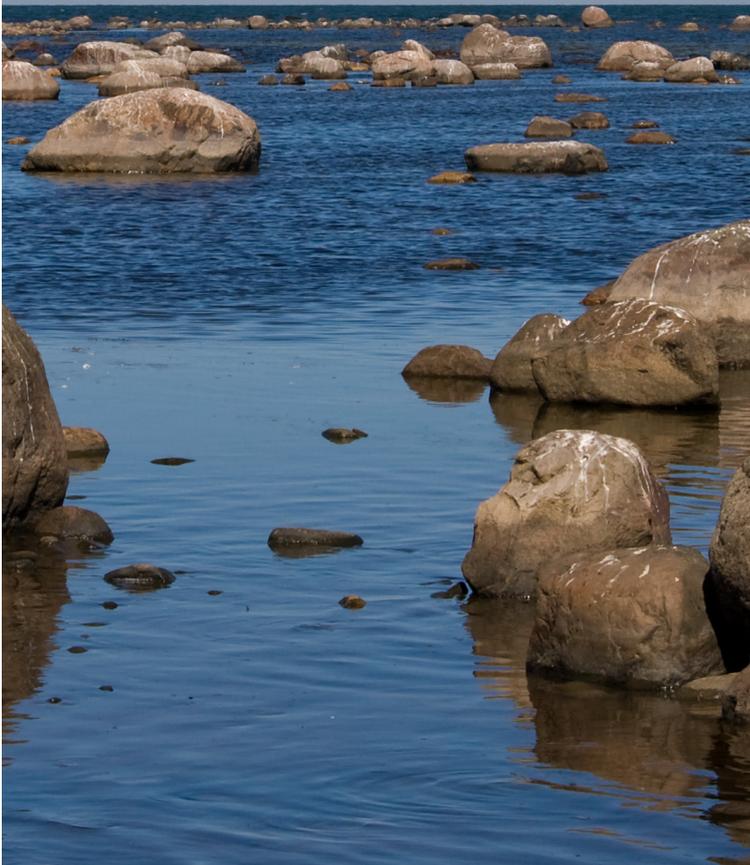
Duration: September 2010–April 2011

Year of BSAP funding: 2010

Approximate total budget: EUR 120,000

BSAP funding: EUR 92,000

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In the Leningrad Oblast, Russia, chicken manure from chicken production units form a considerable waste problem by adding to the nutrient load into the Baltic Sea.

Most of the more than 1 million tonnes of manure annually produced within the region is not managed properly, meaning that nutrients are leaking, or may leak, into the Baltic Sea. New technology may, however, make possible the use of manure as raw-material for the production of bio-oil, nutrient rich charcoal and biogas. All of these have a market value and may be further processed for use elsewhere.

“Carbonising by Forced Convection” is a patented Swedish technology for recirculation of organic material. The technology has so far been used for processing of used car tyres.

“Principally the process may be illustrated by a reversed baking process,

where the bread is placed in the oven and after a while out comes the flour, yeast, salt, and water. The output from a car tyre recycling process is carbon black, oil, gas and steel. In the case of chicken manure, the same products, except steel, are recovered from the process,” says Karl-Johan Lehtinen, Environmental Analyst at NEFCO.

The bio-char formed contains phosphorus and nitrogen, making it a valuable non-smelling and lightweight fertiliser which can be further processed into high value products. The oil can be used as such for energy production similarly as fuel oil or mazut, or further processed into products for the pharmaceutical industry. The gas can be used partly in the process. Furthermore, excess gas can be used for other possible processes, such as heating or further distillation of oil components.

The company Scandinavian Enviro Systems (SES), founded in 2001 with the business idea of building and operating pyrolysis plants in cooperation with partners, has established a full-scale recirculation plant for used car tyres in the former pulp mill Åsensbruk in Sweden. According to SES, processing chicken manure does not differ much from the processing of used car tyres. However, the process needs refinement in order to reveal specific key process conditions needed for optimal product composition. The Baltic Sea Action Plan (BSAP) Fund has allocated EUR 92,000 for the optimisation of process conditions for the handling of chicken manure. The aim is to implement the technology at a chicken farm in the Leningrad Oblast.

Until now, there has been no technology to handle chicken manure in both an environmentally and economically sustainable fashion as direct incineration of the manure has been found not to be economically viable. The Russian government has expressed a goal to considerably increase chicken and egg production within the next few years in the Leningrad Oblast. Thus, if no measures are undertaken, uncontrolled emissions of nutrients will increase further. However, in the Russian National Implementation Plan of the BSAP, eutrophication from agricultural activities within the Leningrad Oblast is identified as a key area for remedial actions.

“From a broader perspective, the successful implementation of a plant for pyrolysis of chicken manure would serve as a demonstration for other chicken producers of how to convert an environmental liability into a profitable way of producing renewable products,” says Mr Lehtinen.



Baltic Sea Action Plan Fund

The BSAP Fund is a fund managed by the Nordic Investment Bank (NIB) and the Nordic Environment Finance Corporation (NEFCO). The fund provides grants for technical assistance to projects that support the implementation of the HELCOM Baltic Sea Action Plan (BSAP). The aim of the BSAP is to help restore the ecological status of the Baltic Sea.

Recipients eligible for financing through the BSAP Fund include both public and private entities operating in the agricultural and wastewater treatment sectors, shipping and ports, as well as those working to reduce hazardous waste in the Baltic Sea catchment area. A key purpose of the fund is to facilitate and speed up the preparation of bankable projects. The fund provides grant financing for the following:

- Project preparation and development, including feasibility studies, development of business ideas, and cash-flow models
- Technical assistance for institutional support, that is, training and support needed for project preparation, development and implementation
- Measures that improve efficiency and quality in project implementation (e.g., the acquisition of equipment for demonstration purposes).

Sweden has committed SEK 90 million (EUR 9 million) to the BSAP Fund and Finland EUR 2 million.

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