

Environmental and Social Data Sheet

Overview

Project Name: ENVO BIOGAS TØNDER
Project Number: 2015-0400
Country: Denmark
Project Description: Construction and operation of a biogas production and upgrading plant in Denmark, with an annual production of approximately ~31 m Nm³ of natural gas.

EIA required: yes

Project included in Carbon Footprint Exercise¹: yes

(details for projects included are provided in section: "EIB Carbon Footprint Exercise")

Summary of Environmental and Social Assessment, including key issues and overall conclusion and recommendation

The project is a greenfield development of a centralised biogas plant and seven remote intermediate storage facilities for feedstock, that will be implemented on sites which are currently classified as agricultural land. The biogas plant falls under Annex I of the Environmental Impact Assessment (EIA) Directive 2011/92/EU and the Industrial Emission Directive 2010/75/EC (IED). An environmental impact study (EIA) was submitted to the competent authority in 2013. Environmental permit to build was granted in 2014 after completion of the corresponding approval and public consultation process.

The project design minimises emissions to the environment both during feedstock logistics and anaerobic digestion process of the biomass. It further aims at maximising energy efficiency and heat recovery. The project is based on best available techniques/ technology and will result in reduction of negative environmental externalities due to of livestock production upstream and the substitution of fossil natural gas downstream of the project once the plant is in operation. It is anticipated that the project will result in relative CO₂ equivalent savings of 72 000 tpa compared to the baseline situation without the project.

The operational permits of the biogas plant (according to the IED) and its remote silage and digestate storage facilities will be requested upon completion of construction of the plant. At the same time, the disposal of the degassed biomass (digestate) and its application on agricultural land are subject to specific authorisation requirements. Customary undertaking conditions in the finance contract will make sure that any environmental permit required for the operation of the plant is submitted to the Bank and, where applicable, for each of its independent remote storage facilities. With the feedstock mix envisaged for the plant (i.e. manure, lignocellulose and starch from feed and food industries), no substantial issues that could prevent or delay the expedition of these permits are foreseen at this stage. The borrower will be required in an undertaking condition to the finance contract to seek a non-objection from the EIB before processing feedstock other than those materials mentioned in the current business plan as such a change could affect operational permits and process performance.

The closest nature conservation site is at ~1 km of the project and surrounded by several designated habitats and bird areas. The EIA has concluded that the construction and operation of the plant will not result in any significant damage to these sites.

¹ Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100 000 tons CO₂e/year absolute (gross) or 20 000 tons CO₂e/year relative (net) – both increases and savings.

With the proposed environmental management systems in place, the project is considered acceptable for being financed by the Bank from an environmental perspective.

Environmental and Social Assessment

Environmental Assessment

The biogas plant is expected to process +/- 700 000 m³ of manure (from cows and pigs), and +/- 230 000t of lignocellulosic material from agricultural crops (corn and grass silage and residues from sugar beet cultivation, etc.) on an annual basis. Based on the current livestock production patterns, manure is deemed to be sufficiently available within a 20-km radius of the plant. Part of the biomass from agricultural crops will progressively be substituted by either biomass from other sources (namely fibre, starch and milk based waste streams from food and feed industry in the proximity of the biogas plant), and/or manure to meet the eligibility criteria of the Danish Biogas Subsidy Scheme from 2018 onwards which will limit the amount of lignocellulosic material from agricultural crops (energy crops) to 12%.

Corn monoculture is not a common practice in the area around the plant. The cross-compliance mechanism implemented obliges all farmers receiving payments under various schemes of the Common Agricultural Policy (CAP) to comply with a set of statutory environmental management requirements that aim at improving the sustainability and environmental footprint of agricultural activities.

Today, the manure is being stored in tanks at the individual farms and spread on the fields which is associated with strong diffuse methane emissions and other GHG gases with high CO₂ equivalences. Once the centralised biogas plant becomes operational, the manure, together with other biomass, will undergo anaerobic digestion to produce biogas together with ca. 850 000tpa of digestate that will be returned to farmers to be spread on their fields as a compensation for the manure that they will supply to the biogas plant. The substantial benefits for the farmers, their neighbouring communities and society in comparison with the without project situation are as follows:

1. Degassed manure returned to the farmer is more liquid and homogeneous and, therefore, easier to handle.
2. It has better ratios of nitrogen, phosphor and potassium, and better bioavailability of nutrients than undigested manure, hence the uncontrollable long-term release of bound nitrogen (the main cause of groundwater pollution due to animal production) is substantially reduced and the phosphor and potassium supply is more balanced between cow, pig and crop producing farmers.
3. Biomass digestate odour nuisance is considerably less than untreated manure and its spreading in spring and autumn will create less disturbance to the farmers' neighbours.
4. Less diffuse CO₂ and other GHG emissions into the atmosphere due to animal husbandry.

The biogas plant will incorporate best available technologies to minimise emissions to the air and, in particular, losses or escapes of methane in the process (methane drift). The plant will produce liquid digestate as process effluent. The digestate will be returned to farmers (please see above). Neither liquid nor solid process emissions requiring waste water treatment are foreseen. Storm waters will be collected at a pond on site for infiltration after the corresponding separation of potential contaminants like oil spillage from trucks in a decantation unit. Human waste water is treated separately in a small commercial waste water treatment unit.

The project's main negative impact will be the increase of heavy duty traffic in the area around the plant. The road network in the direct vicinity of the site will be affected mostly by traffic to and from the plant. In order to alleviate the impact of increased traffic, the commune of Tønder has committed to improve the connection of the site to the existing road network, as suggested in the Environmental Impact Study. Traffic increase is deemed to be relatively moderate after a few road forks from the biogas plant.

The construction of the plant and its remote storage facilities is not deemed to be in conflict with any geological areas of interest. There is no protected nature on the biogas plant site and, for this reason, the establishment of ENVO Biogas Tønder does not entail any direct intervention in protected nature. The closest Natura 2000 site is 900 meters away from the plant and there are several designated habitats and birds areas in the surroundings. Impacts of the project on these areas have been modelled within the EIS. Based on these calculations, it is assessed that the establishment and operation of the biogas plant will have no harmful effects on these protected nature sites. The plant is located at a safe distance from the nearest residential settlement which is more than 400 m away.

EIB Carbon Footprint Exercise

It has been calculated that the total climate impact of the biogas plant measured in CO₂ equivalents will imply a relative reduction in CO₂ emissions of ~ 72 000 tons/year by 2019.

The main differences between the "with-project" and the baseline scenario are a reduced greenhouse gas release (methane, NO₂) from manure storage, and the replacement of fossil natural gas in the national grid.

The CO₂ emissions will augment owing to the operation of the biogas plant and the transport of biomass to and from the site. The absolute CO₂ emissions linked to the project are negative (ie. due to the fertiliser value of the digestate and its substitution of mineral fertiliser use by farmers net emission savings of ~12 tn/CO₂ per year are anticipated.

Public Consultation and Stakeholder Engagement, where required

The project plant (including its seven remote intermediate storage facilities) has undergone a two-stage public consultation. The first public hearing took place between 4th December 2012 and 18th January 2013. The project was described in a public paper prepared for discussion and the public was invited to come up with ideas and proposals for the forthcoming EIS (in Danish VVM) report. The paper was published on the website of the municipality of Tønder, in the *Tønder Magazine* and also sent directly to the closest neighbors of the project. It was discussed in two public information sessions: one of with the closest neighbours in December 2013 and then in a public meeting at the Tønder City Hall on 7th January 2014. The second public consultation round took place from 4th June to 23rd July 2014 with the publication of the amended EIA (VVM) report together with an addendum with the necessary amendment proposal to the municipal land use and development plan. No major concerns were brought forward during these consultation processes.

Other Environmental and Social Aspects

With a view to avoiding the risk of spreading infections from one farm to another, each of the three digestion lines will be equipped with an independent pasteurisation unit which will treat the degassed materials at 70 °C during a minimum retention time of one hour. The greatest of cares will be devoted to hygiene during the whole process of logistics of the manure and the digestate from the farm to reception and unloading at the plant. Spills will be minimised through closed handling of liquid manure. In the event these occur inside the plant, they will be removed immediately and the areas cleaned. Trucks will be cleaned and disinfected before switching their pick-up services between farms.

A number of articles in the Nitrates Directive (0676/1991/EC) relate to the storage and handling of manure from livestock. Farmers are only allowed to apply 170Kg/Ha of slurry to farmland per year. This figure is reduced to 140 Kg/Ha in areas that are at risk of groundwater pollution. Therefore, manure availability due to the requirements of the Nitrates Directive acts as a constraint on animal production, although many farmers can enter into arrangements for remote disposal.

Luxembourg, 17 November 2015

Transport of manure over long distances is not contemplated in the operation model devised for the project plant, where individual farmers will commit themselves contractually to take the digestate back and spread it on their fields as they are doing with the untreated manure today. The same as the manure, the digestate is rich in plant nutrients such as nitrogen, phosphor and potassium and, for this reason, has an intrinsic value for the farmers. Therefore, only limited "cross-selling" or exchange to other farmers is expected and no substantial increases in the overall livestock densities are foreseen due to the project.

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