

National Incentives and Barriers for the Energetic Use of Manure in the Baltic Sea Region

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Introduction

The European Union has set ambitious goals for producing renewable energy and reducing greenhouse gas emissions (GHG). The directive 2009/28/EG sets binding minimum targets for each member state, including the Baltic Sea Region (BSR) countries. Animal manure can be utilised as a source of renewable energy via different technologies, such as anaerobic digestion (AD), which is by far the most efficient renewable energy technology to reduce GHG emissions. Simultaneously, the valuable nutrients in manure may be recycled and the environmental burden of manure relieved. The EU-Project „Baltic Forum for Innovative Technologies for Sustainable Manure Management, Baltic MANURE“ has investigated the existing incentives and barriers for the energetic use of manure and aims to develop policy recommendations in order to promote manure energy use and subsequent reduction in GHGs in the BSR.

Incentives

Each BSR country has implemented support system basing on **investment subsidies**, **tax exemptions**, green certificates and/or **feed-in tariffs**. The specific design and the amount of support differ heavily (Table 1). The **definitions for the requirements on sustainability** and efficiency are diverse and reflect the different **political approaches and targets**:

- Denmark heavily investing in biogas plants to have 50% of all manure in energetic use by 2020.
- German system boosted sector up to 7000 biogas plants. Amount of manure utilised is increasing.
- Swedish, Polish and Latvian support systems also resulted in increased manure based biogas.
- In Finland and Estonia, the progress in manure energy use is less effective.
- Lithuania has no biogas plants utilising manure.

Table 1: Feed-in tariffs in the BSR countries

Country	€ ct/kWh	Comments
Estonia	5.37	Fixed feed-in-tariff for all producers, new feed-in tariffs under preparation
Poland	6.60	Certificate-of-origin system; change to feed-in tariff planned including higher compensation for small biogas plants (16-18 €ct/kWh)
Sweden	7.97	Tariff composed of spot price and electricity certificates; tax exemptions; general trend: decreasing tariff
Denmark	10.0-15.4	Fixed tariff with decreasing component; Min. 75% manure input; Max. 12% energy crops in 2018
Finland	13.35	Feed-in-tariff: basic 8.35 ct/kWh + 5 ct/kWh bonus for heat use from CHP (efficiency 50%); only for CHPs > 100 kVA; no support for upgrading to biomethane
Lithuania	14 - 17	Feed-in-tariff depending on capacity of plant; tariff value changes following the price of electricity from fossil fuels
Latvia	19 – 21.4	Purchase tariff guaranteed for 10 years, 20% reduction for the next 10 decade
Germany	15 - 25	Complex system taking into account e.g. the installed capacity, type of substrate and heat utilisation

Main Barriers

Profitability: Main barrier the poor profitability mainly due to high investment costs. The national incentive systems often do not lead to a sufficient improvement of the plant economy. The real environmental benefit from manure based biogas, including recycled nutrients and mitigated emissions is not fully compensated by the incentive systems.

Changing policies: Unsecure long-term perspectives in manure and renewable energy related policies deter potential investors.

Knowledge and attitude: Lack of knowledge among policy makers, authorities, farmers and other stakeholders hinders the development of energetic use of manure. The attitudes of general public towards manure biogas, especially large biogas plants, may also hinder the development due to concerns for e.g. foul odours and increased traffic.



Summary

The situation in the BSR varies widely regarding the **awareness** of manure being a resource for energy supply, **infrastructural conditions**, and financial and administrative **support systems**. Accordingly, energy use of manure for biogas varies from none in Lithuania to several thousand biogas plants in Germany.

Overall, due to very low volumes of manure being currently used energetically, there is a **potential of more than 150 million tons of manure** in the BSR to be mobilised and harnessed. **Improvements of financial and GHG reduction support** as well as **sustainability requirements** need to be forced in order to guarantee the economic feasibility and thus meet the energetic and environmental potential of manure based biogas.