



LFG Baltic

The LFG Baltic project - Landfill gas in Sweden

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Baltic Energy Innovation Centre

BEIC is a non-profit association providing a platform for international collaboration within the field of innovative and renewable energy in general, and biogas and biomethane in particular

Founded: 2017

Founding members: Lithuanian Energy Institute
Inst. for Biogas, Waste Management & Energy
Renewtec AB

Website: www.beic.nu

Public funding: Swedish Institute

Services

Through its founding members BEIC has access to

- 11 laboratories with top modern equipment
- infrastructure and equipment for arranging national and international conferences/seminars/workshops
- approx. 280 co-workers dedicated to the development of innovative energy technology

For more info: <http://www.beic.nu/services/>

Platform for international collaboration

- A perfect arena to discuss ideas and new developments
- Get an insight into policy framework and local conditions in the member countries
- The members are a good starting point to build a project consortium
- Apply for public funding in a systematic way
- Long term relations (trust and openness is the name of the game)

Membership

- Entrance fee 5000 SEK (approx. 500 EUR)
- Annual membership fee. Decided by the General Assembly currently 10 000 SEK (approx. 1,000 EUR)
- Gdansk University of Technology – joined in August 2018

Challenges and opportunities with landfill gas in the Baltic Sea Region (2018-2019)

<https://lfg-baltic.beic.nu/>

Project partners: Gdansk University of Technology

Lithuanian Energy Institute

Baltic Energy Innovation Centre

Project period: 01.06.2018 – 30.11.2019

Public funding: Swedish Institute

LFG Baltic project

The overall aim is to encourage the use of landfill gas as an energy resource and reduce aggressive green house gas emissions from landfills by cross border knowledge exchange and technology transfer.

- Screen landfill gas extraction and utilisation in LT, PL and SE
- Compile a report on best practice and lessons learned
- Arrange a LFG Baltic seminar in collaboration with REGATEC 2019
- Invite poster presenters from the Baltic countries and EaP (reimburse conference fee, travel and hotel)

Landfill gas in Sweden

In Sweden there are approx. 4,000-8,000 landfills

Many landfills were closed in 2001 - EU landfill directive and landfill tax.

January 2005 - ban to landfill organic material.

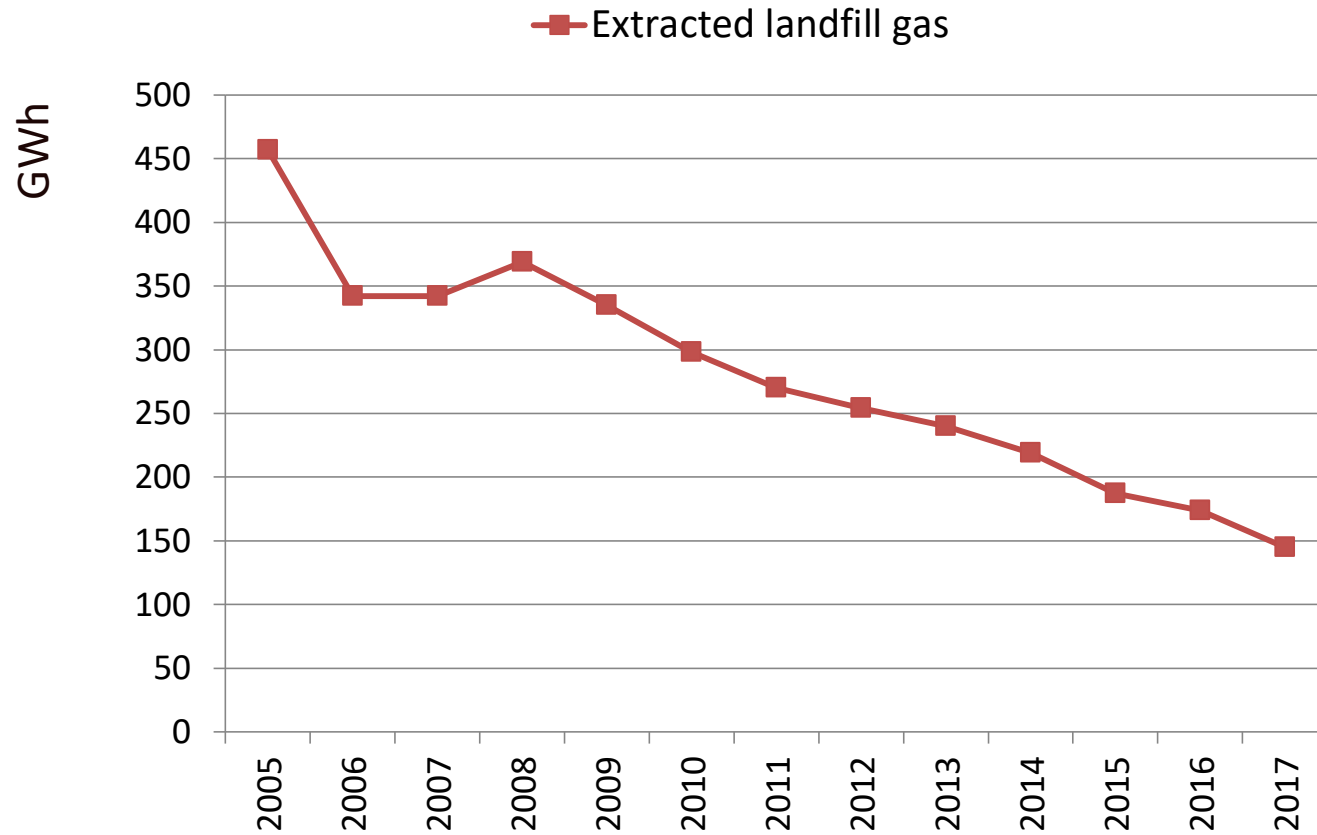
265 landfills in operation in Sweden in 2015. The number includes also not yet closed facilities with permission to deposit.

60 landfills - hazardous waste

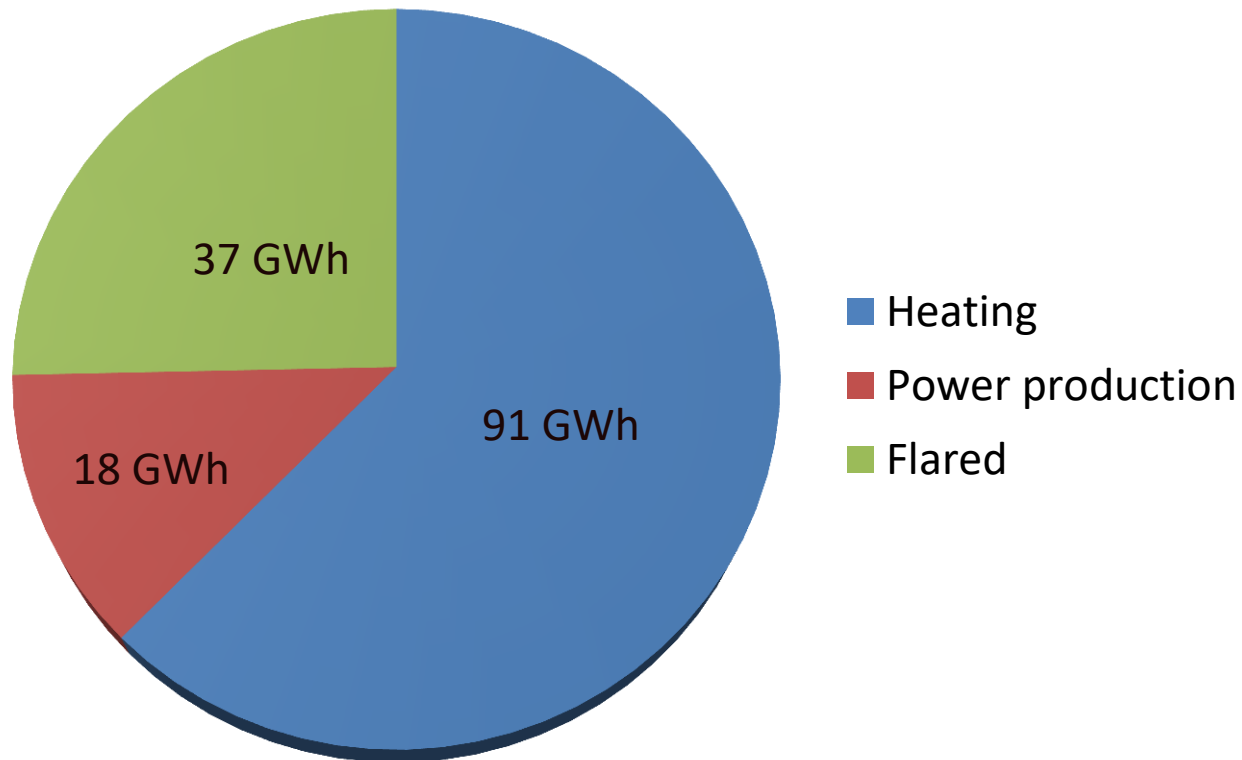
133 landfills - non-hazardous waste

72 landfills - inert waste.

Landfill gas extraction



Landfill gas utilisation 2017



Power production

- Gas engines
- Stirling engines
- Gas turbines



The two Stirling engines at Rönneholms waste management facility

Experience of Stirling engines

Methane content 25-30%

2 x 7 kW electricity

300 MWh electricity during 5 years (2012-2017) and 800 MWh heat

Stirling engines can be fuelled with landfill gas with a methane content down to 15-18%

Other technology development

MEGTEC Systems AB offers flameless thermal regenerative oxidation technology for conversion of landfill gas with methane levels down to 0.15%. The excess heat generated above this concentration limit is recovered in an integrated embedded heat exchanger (see Poster nr 1)

Geo-electrical methods to map the interior of a landfill (gas pockets, water movement, optimize placement of wells etcetera)

Conclusions

Declining landfill gas production

Declining methane content

Not likely that there will be any upgrading of landfill gas

High share of flaring – it's likely that the landfills could produce more landfill gas if optimised

Need for simple, robust and cost-efficient power production (and upgrading technologies)



Thank you for your attention!

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