Landfill Gas and Biogas in Finland in year 2004

- **Landfill gas extraction systems**
  - in total 33 landfill gas extraction systems
  - landfill gas extracted in 2004: 97,0 Mm³
  - landfill gas utilised in 2004: 36,9 Mm³ (38 %)
  - average methane content 50 vol-%
  - power produced in 2004: 10,0 GWh
  - heat produced in 2004: 148,7 GWh

- **Biogas plants**
  - in total 26 plants (sewage sludge:15; industrial waste water: 4; ofmsw: 1; co-digestion: 1; farm waste: 5)
  - biogas produced in 2004: 27,4 Mm³
  - biogas utilised in 2004: 23,3 Mm³ (85 %)
  - average methane content 64,3 vol-%
  - power produced in 2004: 30,6 GWh
  - heat produced in 2004: 94,8 GWh
  - mechanical energy produced in 2004: 2,4 GWh

Source: Finnish Biogas Register
No of Installations in Finland – Update 21.4.2006

Source: Finnish Biogas Register
IV - VIII
Biogas & Landfill Gas Production and Use – Update 21.4.2006

Source: Finnish Biogas Register

IV - VIII
New laws and official policies - Update 21.4.2006

- **Waste Law 1072/1993 amendments**

- **Fuel Tax Law 1280/2003**
  - biogas used as fuel in motor vehicles is exempt from taxation. In force since 1.1.2004.

- **The National Biowaste Strategy of Finland**
  - amount of biowaste 2,1 Mt in 1994. Landfilling to be reduced to 1,6 Mt by 2006, 1,0 Mt by 2009 and 0,7 Mt by 2016.
  - the means proposed: 1) Reducing of quantity 2) Increasing recycling 3) Increasing of biological treatment – both composting and digestion 4) Incineration
  - separation, pre-treatment, reuse and building new plants to be decided regionally.
  - investment of new incineration plants is to be decided by power producing companies: several plants in planning phases: seems that mass burning is favoured
  - needed new utilisation capacity 0,6 Mt by 2009 and 1,2 Mt by 2016
  - investment costs of new plants and renovation of the existing ones is 0,8 M€ by 2016
  - increase of the capital and operation costs from 0,28 M€ in 2000 to 0,35 M€ in 2009 and 0,45 M€ in 2016.
New Projects – Update 21.4.2006

- **Laihia Co-digestion Plant**
- **Klaukkala Sewage Sludge Digestion Plant**
  - 10 000 tpy (100 % sewage sludge TS 10 %) delivered
- **Ilmajoki Co-digestion Plant**
  - 55,000 tpy (75 % sewage sludge, 9 % industrial sludge, 16 % biowaste).
  - contract awarded to YIT
  - construction scheduled in 2006-2007
  - completed and delivered in February 2006
- **Köyliö co-digestion Plant**
  - 20 000 tpy (30 % pig manure, 30 % sewage sludge, 30 % industrial waste, 10 % source separated biowaste from households
  - environmental permit given. In planning stage.
- 5-10 farm digesters under construction
News in Brief – 21.4.2006

- **Refuelling stations within the natural gas network**
  - Gasum Oy (co-owners Fortum 31 %, OAO Gazprom 25 %, State of Finland 24 % and E.ON Ruhrgas 20 %) has opened two new natural gas filling stations in Helsinki Metropolitan Area in 2005 thus increasing the total number of filling stations to 3.
  - In addition Gasum has 3 filling stations for their private use.
  - As planned Gasum will establish more gas filling stations (ca 30) in South of Finland. The first biogas filling station is going to be established in Jyväskylä region.
  - The number of gas fuelled vehicles in Finland is about 200.

- **Report on Energy and Climate Policy in Finland by Ministry of Trade**
  - Published in autumn 2005: some support for renewables. Several working groups continues work.
  - Report: Promotion the use of biofuels: Three major options: major open factor is the use of domestic raw material. Proposed: Development program 60 m€. Decisions expected this year.
  - In general, biogas in included in all plans and reports.
R & D and Technical Training

- **R & D**
  - Several projects with energy crops: energy efficiency of the whole chain
  - Development and demonstration of biogas upgrading facilities for vehicle use.

- **Technical Training**
  - AEL – Centre of Technical Training with a staff of 180 and network of 3 000 experts organised two day seminar on the Production and Use of Biogas in October 2005. Twenty three participants, eleven lectures.
  - AEL aims improving the technical expertise of Finnish engineers working on biogas technology also in long run.

- **Seminars**
  - The First Nordic Biogas Conference was held in Helsinki on February 8-10, 2006. 121 participants from 11 countries. Presentations can be found in: [http://www.bionova.fi/nordicbiogas/download.php](http://www.bionova.fi/nordicbiogas/download.php)
Bioenergy from energy crops/Biofuels

- 2-4 bioethanol plants in initial planning phase
- 1 biodiesel plant under construction: Neste Ltd, 700 buses in Helsinki in 3 year planned program (2007-2009)
- Ministry of Agriculture and Forestry: 500-600 000 hectares (25% of cultivated land) for energy crops by 2015
- Increasing amounts of reed canary crops for combustion