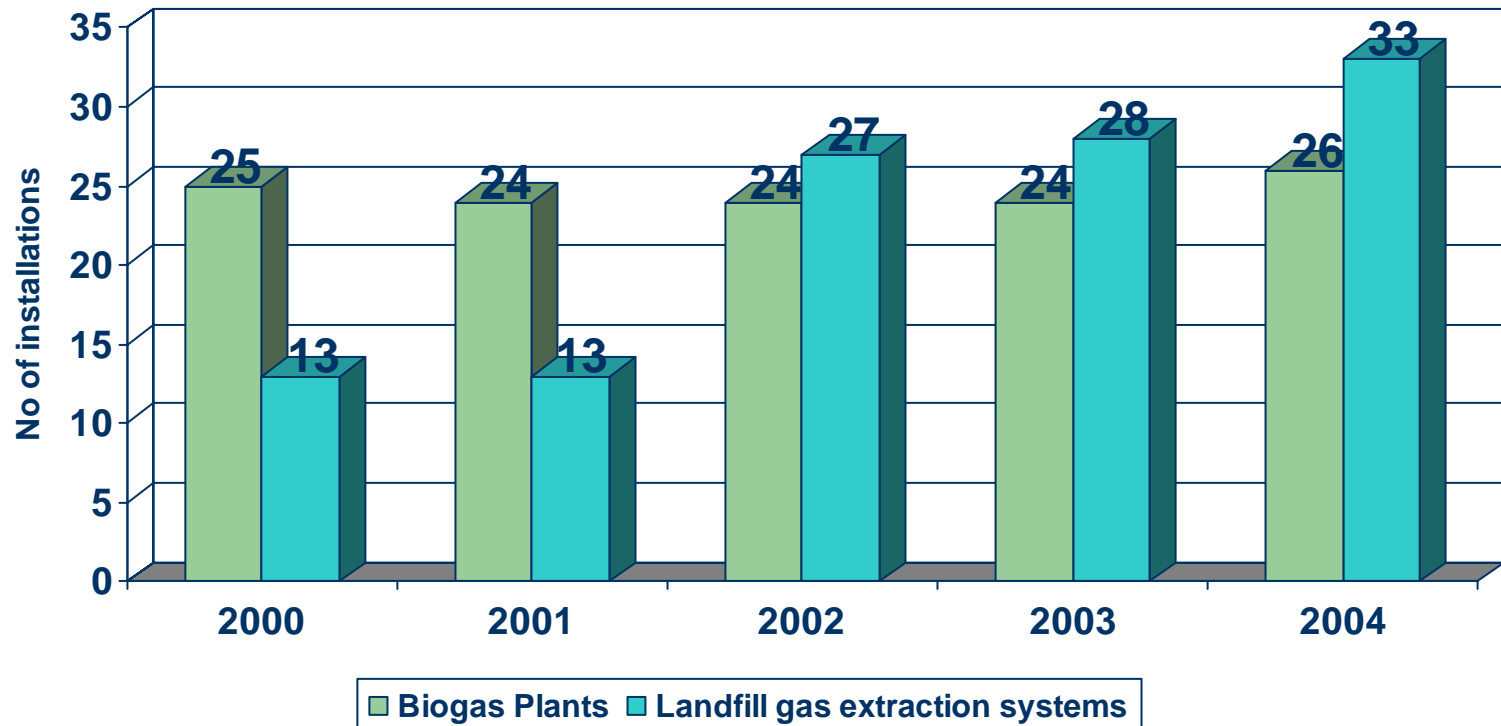


Landfill Gas and Biogas in Finland in year 2004

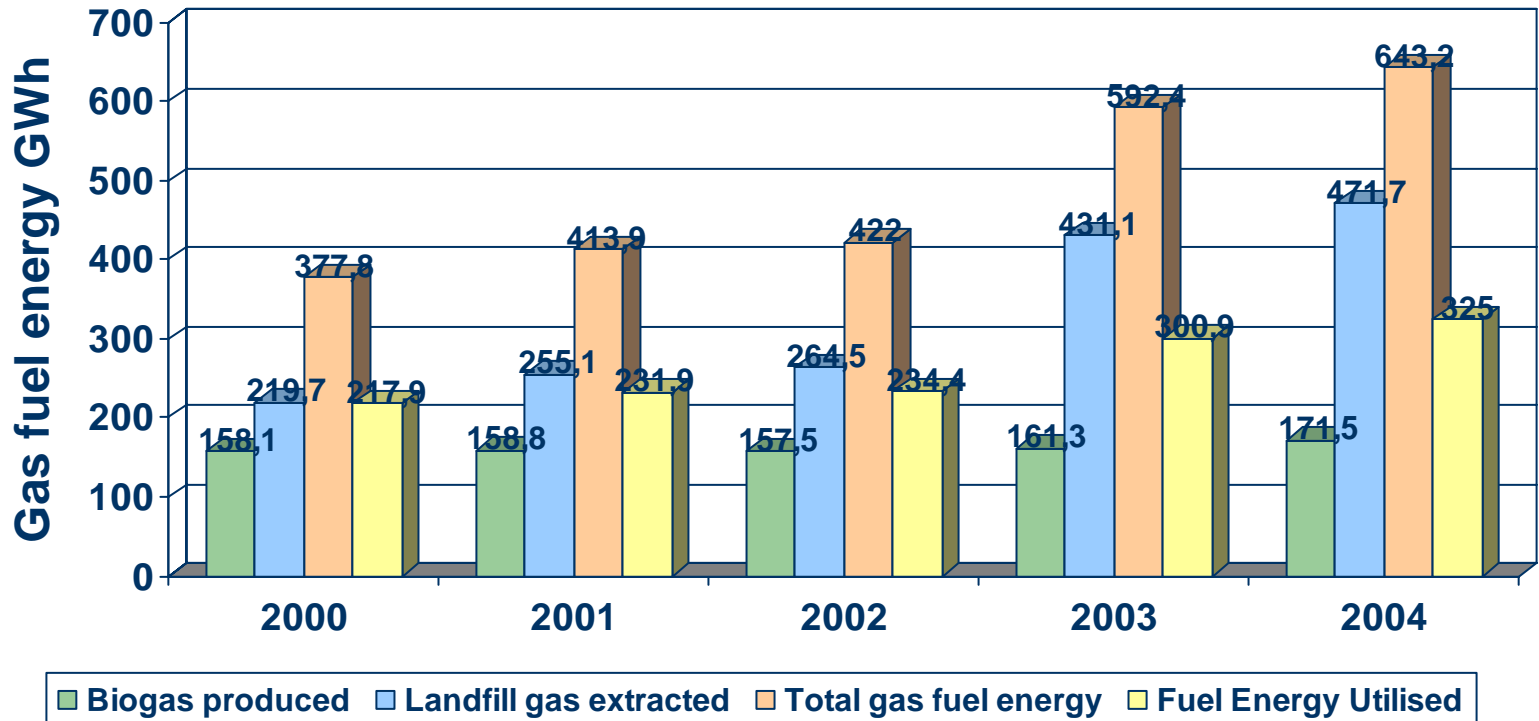
- **Landfill gas extraction systems**
 - in total 33 landfill gas extraction systems
 - landfill gas extracted in 2004: 97,0 Mm³
 - landfill gas utilised in 2004: 36,9 Mm³ (38 %)
 - average methane content 50 vol-%
 - power produced in 2004: 10,0 GWh
 - heat produced in 2004: 148,7 GWh
- **Biogas plants**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

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**
 - latest amendments in force since 1.9.2004. Comprehensive reform in progress..
- **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 is 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>

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 hectars (25% of cultivated land) for energy crops by 2015
- Increasing amounts of reed canary crops for combustion