

# Country report - Sweden - September 2006



# Institutional framework

- **Tax on incineration of household waste – 50 €/ton (July 06), reduction to 10 € possible (high  $\eta_{el}$ )**
- **34 M€ in climate investment 2006, 40 % to biogas projects**
- **Green certificate – target 17 TWh 2016 (now 5 TWh), system extended until 2030.**
- **Compulsary to provide biofuels at filling stations, 5 & 10 M€ 2006/2007 as 30 % investment help for biogas.**

# Institutional framework

- **January - August 2006 13% of all new cars where Eco-cars (3 % last year).**
- **Reduced tax on new biogas cars in October 2006 (30%)**
- **Swedish Board of Agriculture look at validation methods according to EC 208/2006 to enable alternative hygienisation methods of ABP (January 2007).**



# Government policy on Environmental Targets - September 2006

- **35% of all governmental cars should be Eco friendly 2006. 75% of all new cars.**
- **Governmental commission for reduction of oil dependency – reduce oil for road transport with 40-50 % to 2020 (report June 2006)**
- **Investigation analysing Swedish agricultures potential to produce bioenergy (report February 2007)**

# R & D

- **SNG-production from solid biomass**
- **Measurement of methane losses from landfill (IR)**
- **Software for optimizing of biogas process**
- **Analysis of methane emissions from post treatment of digestate**
- **Optimisation of gas production from sewage sludge**
- **Optimisation of biogas process (influence of nutrients)**
- **Biogas production from sugar beet**
- **Affects on soil after use of bio fertilizer**
- **Evaluation of LCNG filling stations (Liquefied to Compressed Natural Gas)**

# Other

- **10 year anniversary – Biogas to vehicle fuel in Trollhättan**



Cheap vehicle fuel at the 10 year anniversary in Trollhättan.

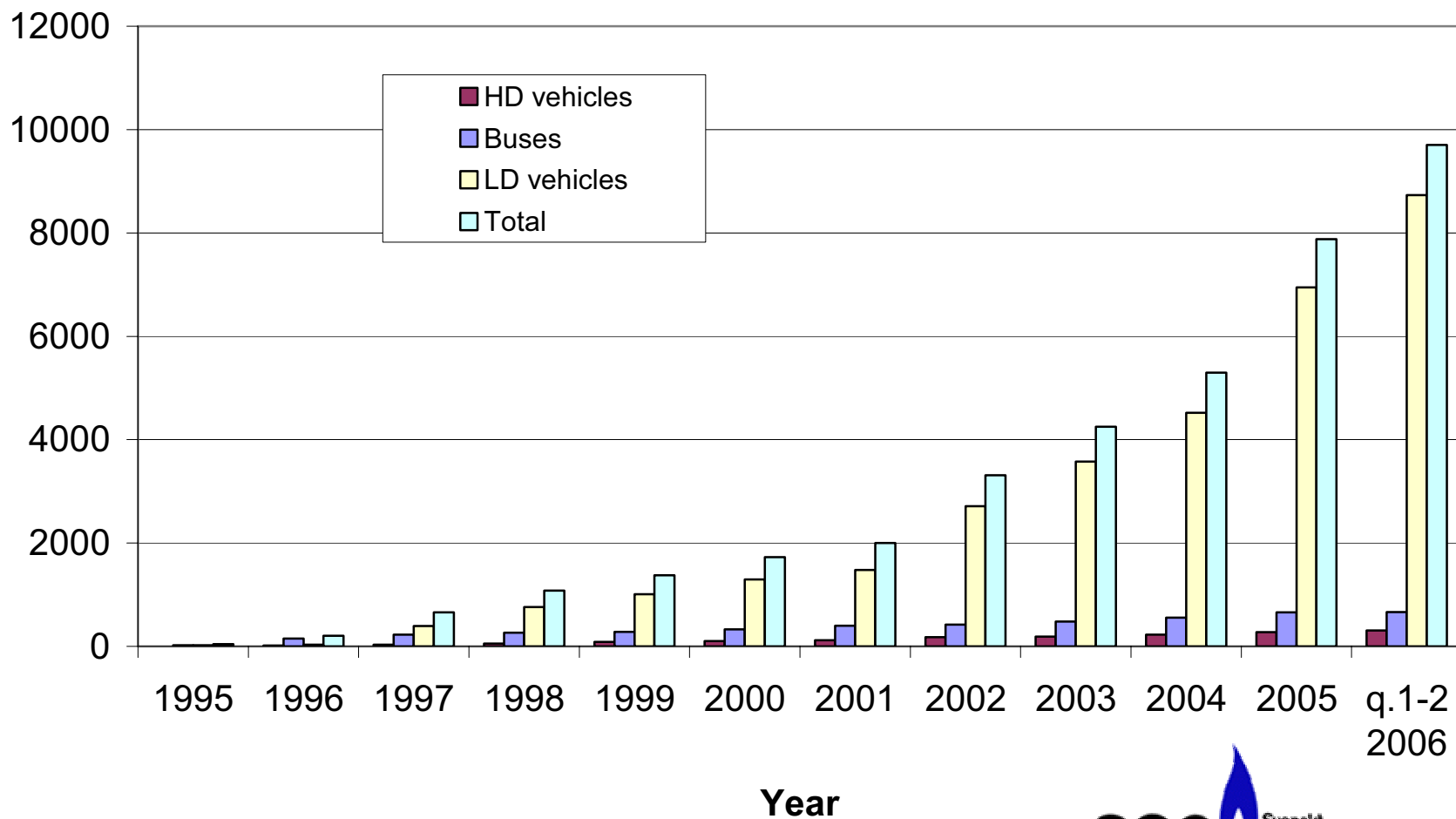
0.1 €/Nm<sup>3</sup>

# Development of gas vehicle market

## NGV in Sweden

(Source: Swedish Gas Association)

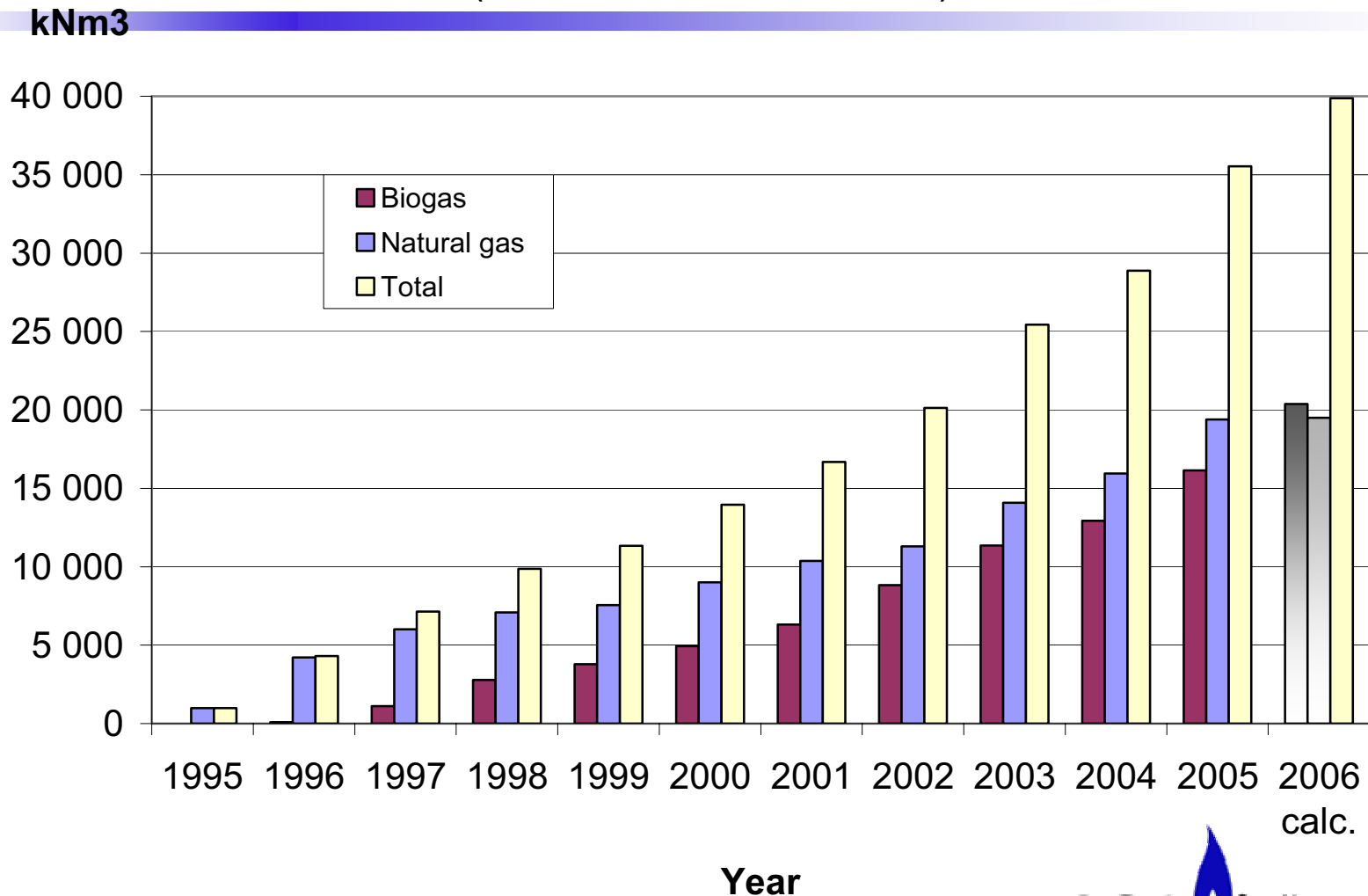
Number of  
vehicles



# Development of market for CNG/CBG

## Delivered volumes of methane gas

(Source: Swedish Gas Association)





# Biogas and Landfill Gas - 2005

- Sweden only have national statistics of biogas from co-digestion and landfill
- Project started to gather national statistic of all biogas production
- Co-digestion plants
  - 15 plants in operation
  - 260 000 ton of organic material
  - 11 % household waste, 28 000 ton
  - 98 % of digestate used as fertilizer
  - 160 GWh biogas
- Landfill Gas
  - extracted at about 70 sites
  - 410 GWh



# Selected news from SE biogas plants

- Norrköping - new biogas plant with raw material from ethanol plant, biogas used for vehicles
- Bjuv – new plant under construction (25 GWh/year) manure and organic industry waste, upgrading with PSA and injection into the gas grid
- Jönköping - co-digestion of OFMSW planned
- Trollhättan - new plant for plants studied
- Lidköping – new plant for organic waste from food industry studied
- Stockholm - 20 new garbage trucks on biogas, large scale biogas production (100 GWh/ year) investigated by JTI

# Selected news from SE biogas plants

- Laholm - upgrading plant reconstructed (water scrubber)
- Skellefteå - new upgrading plant (sewage)
- Kristianstad - new upgrading plant - 1,8 M€ - 600 m<sup>3</sup>/h
- Gothenburg - new upgrading plant - 1400 m<sup>3</sup>/h - CIRMAC - injection into LP grid - ready dec 2006
- Örebro, Östersund, Falköping, Lund, Helsingborg – new upgrading plants (sewage)





# Relevant Q's

- **Transport costs - documentation of transport**
- **Possibilities to spread digestate**
- **European certification system for digestate**
- **Technologies for spreading of wet digestate**
- **Pretreatment of MSW**
- **Characterisation - digestion properties**
- **Hygienisation – alternative technologies**
- **Methodes for disinfection of transport vehicles**
- **Data on utilisation of digestate**
- **N2O from waste treatment**
- **GHG emissions from biogas systems**
- **Local biogas grid**
- **Voluntary agreement GHG emissions**