



Netherlands Enterprise Agency

Development of the biomethane market in the Netherlands

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Workshop Task 37 IEA-Bioenergy

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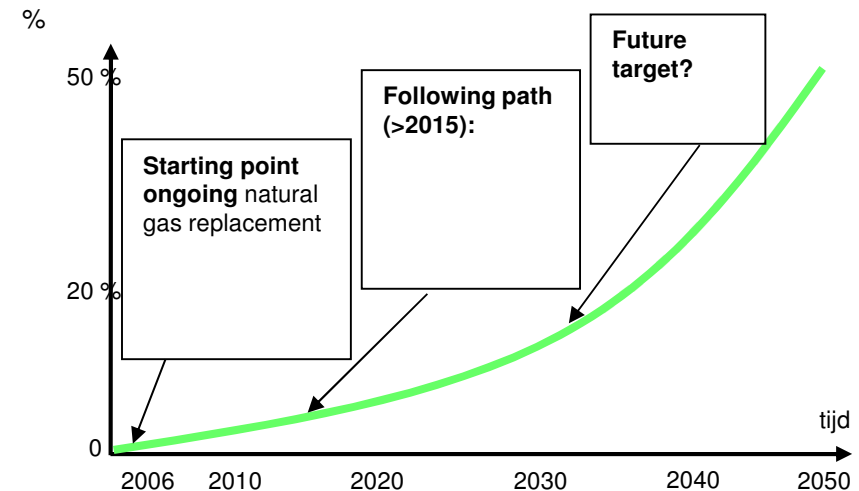
Content

- Development of a vision document/roadmap within a public-private-collaboration working group
- Identifying main focus areas (feed-in tariff and certification)
- State of the art of development
- Gas quality requirements and grid access scenarios
- Further information



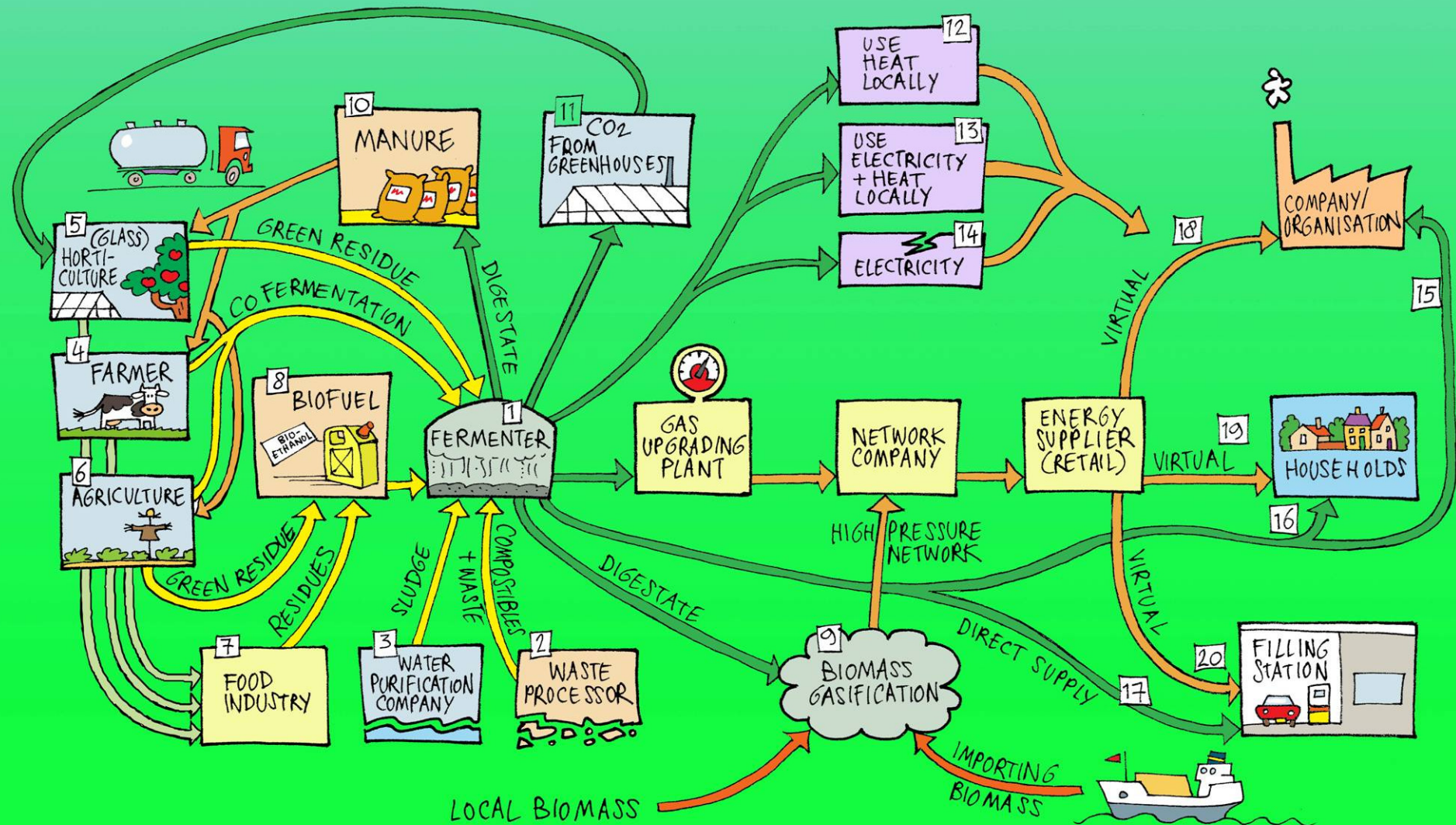
Ambition for Green Gas

(of working group Green Gas dec. 2007)



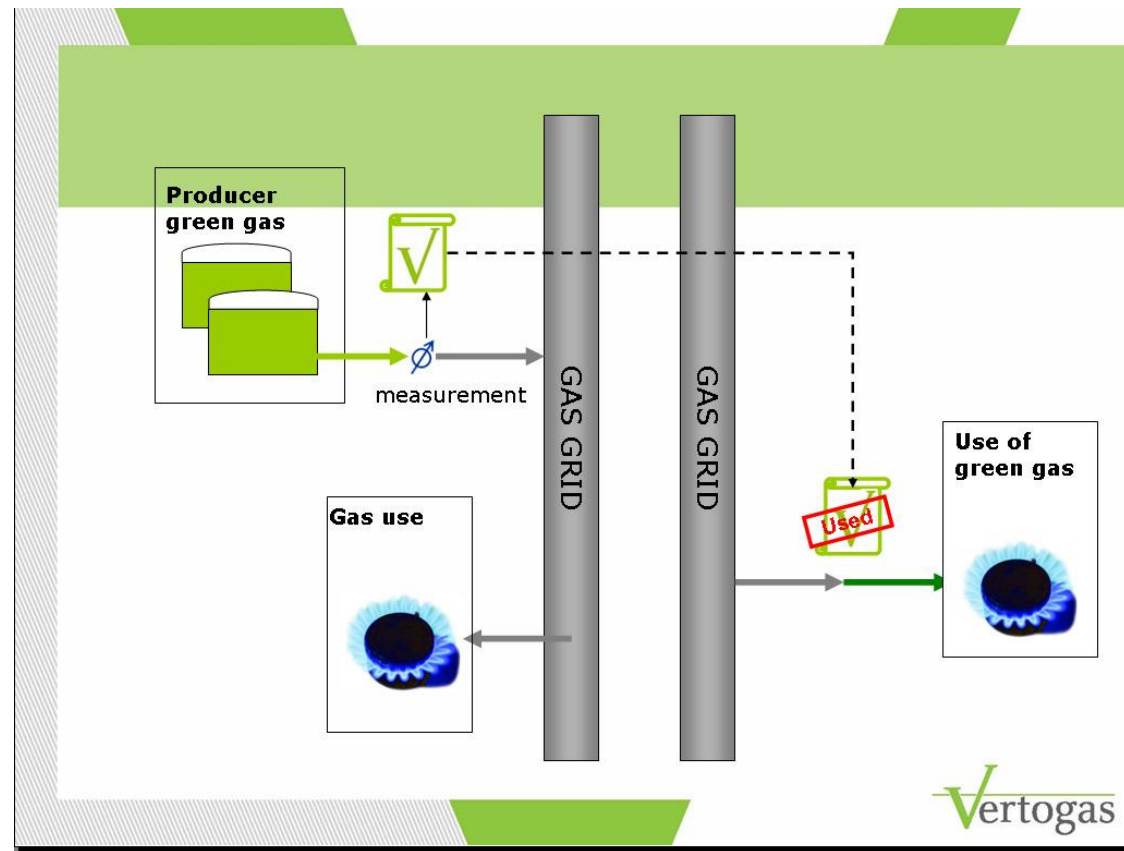
- **Short term target: Replacement of natural gas by up-graded biogas 1-3%**
- **Mid-term target: 8-12% replacement of natural gas in 2020**
- **(4 billion Nm³/y), inclusive SNG production from biomass**
- **Long term: Up-scaling to 50% replacement of natural gas by Green Gas in the gas grid**

THE GREEN GAS CHAIN
20 ROUTES TO GREEN GAS
GREEN GAS WORKING GROUP / NEW GAS PLATFORM



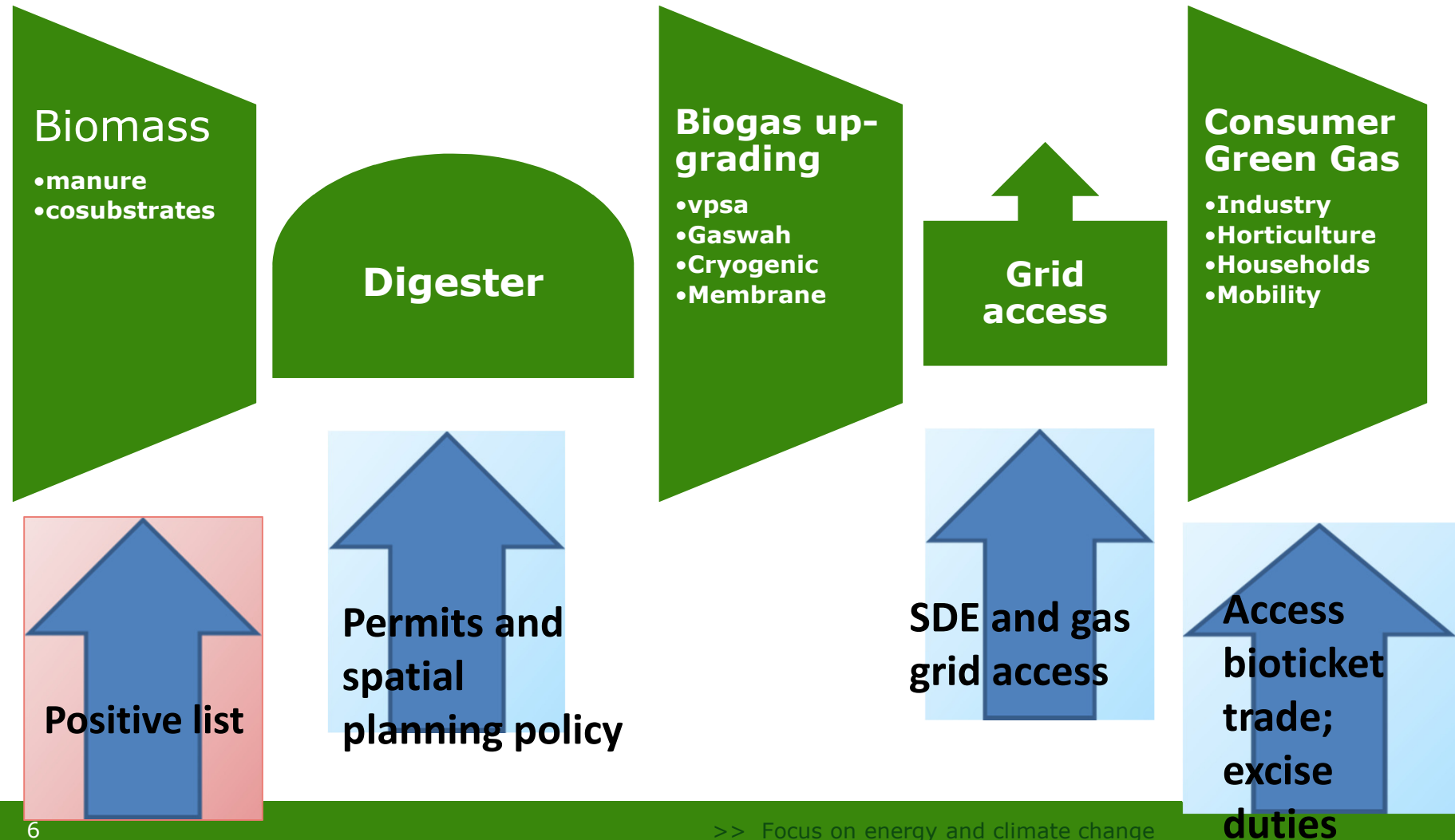


Virtual Trade in Green Gas Certificates (www.vertogas.nl)



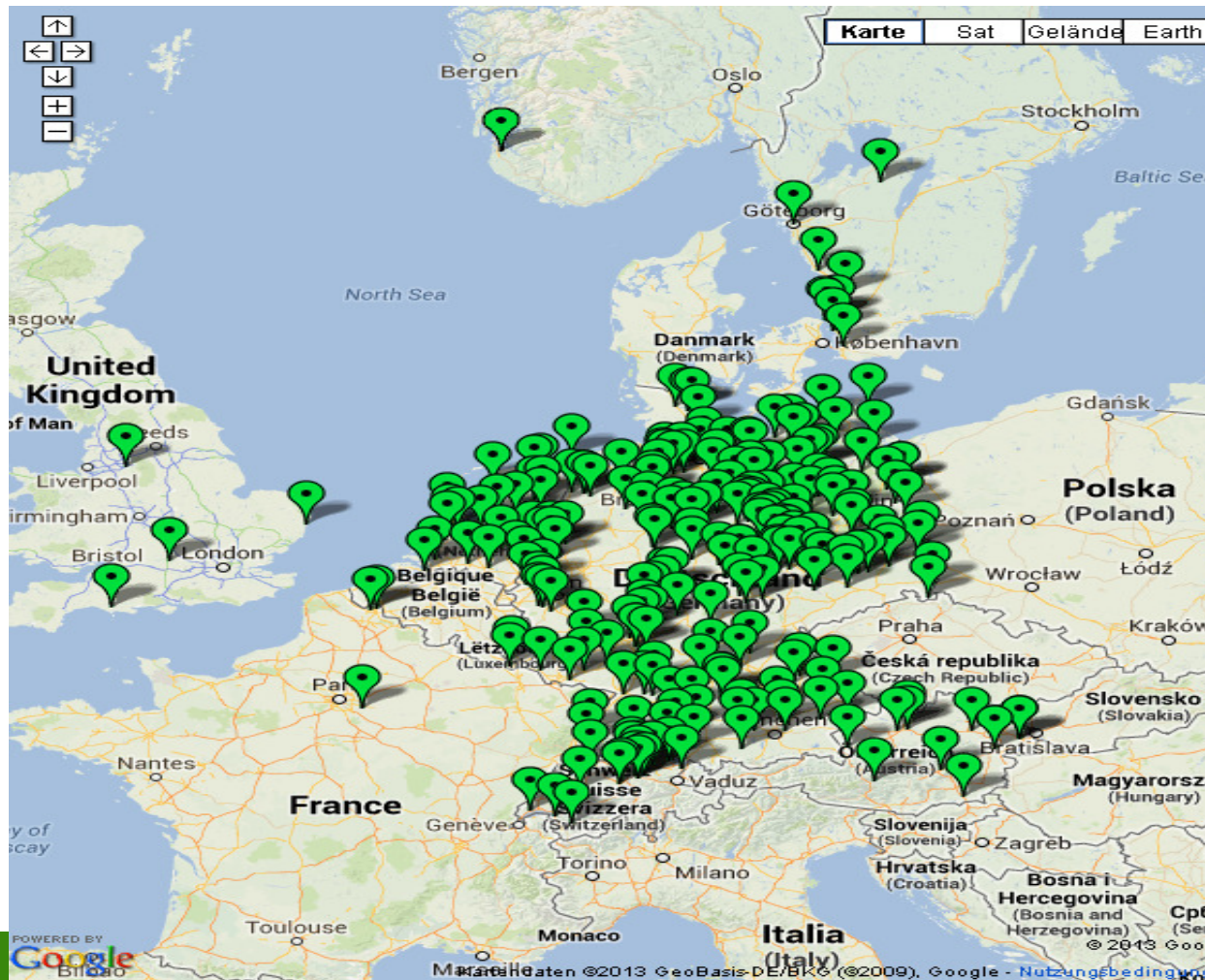


Approach: Speed up Team Green Gas (in the production chain)



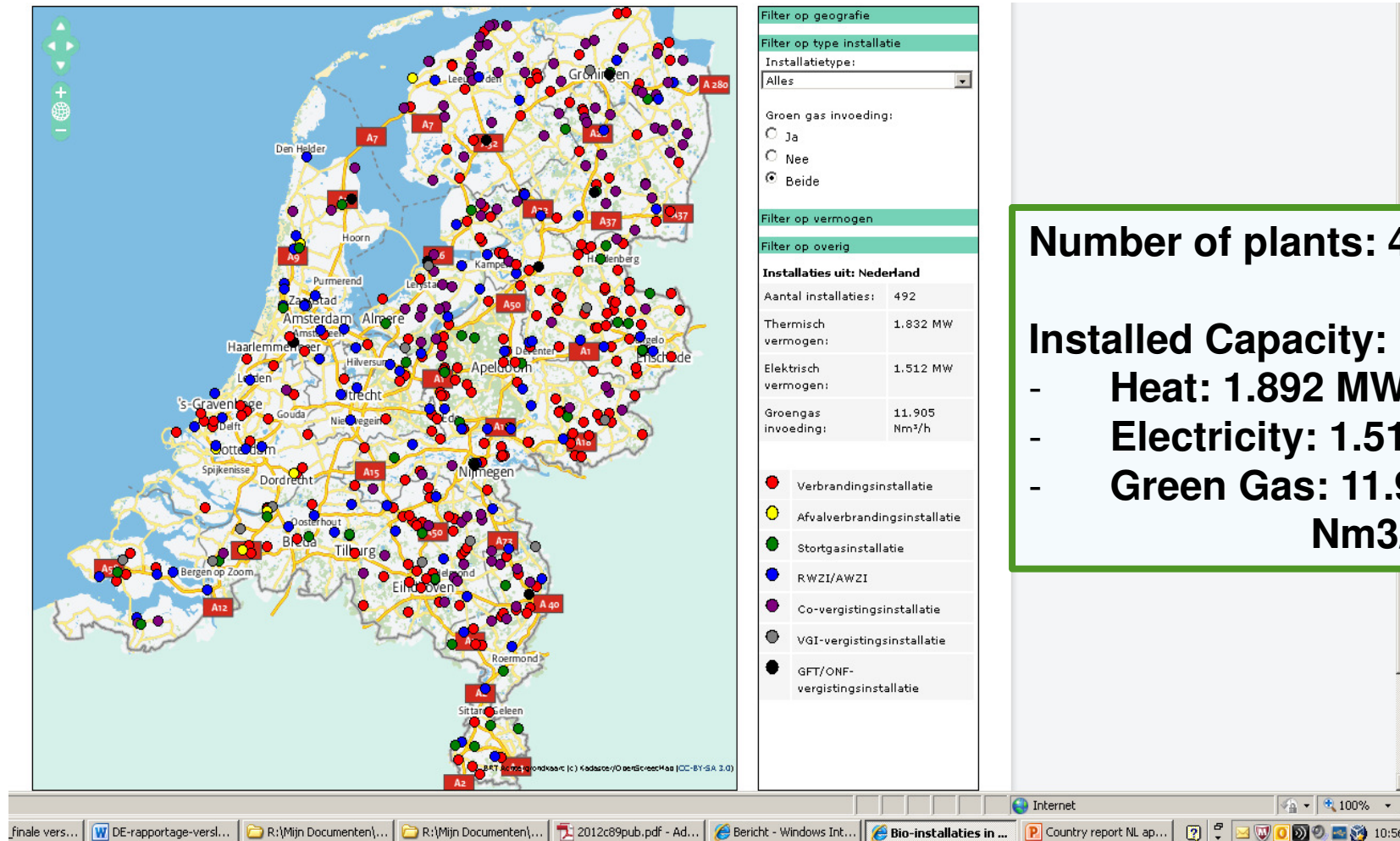


Grid Injection Biomethane in EU





Total Overview Bio-energy Plants in NL: www.b-i-o.nl





Overview Biogas Production in NL

Type of biogas production	Number of plants	Capacity Heat (MW)	Capacity Electricity (MW)	Capacity Green Gas (Nm3/h)
Waste Water Treatment	82	8	46	470 (N=3)
Landfills	41	0	15	1.625 (N=5)
Co-digestion	105	18	129	606 (N=2)
Organic industrial waste	13	0	18	5.312 (N=4)
Municipal organic waste	11	11	11	3.892 (N=6)
Totals	252	37	219	12.530 (N=21)

Link to official report statistical office NL:

<http://www.cbs.nl/nl-NL/menu/themas/industrie-energie/publicaties/publicaties/archief/2012/2012-hernieuwbare-energie-in-nederland-2011-pub.htm>



FUELswitch

maak de switch naar schone brandstoffen en aandrijftechnieken

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TANKSTATIONS NEDERLAND

Tenzij anders aangegeven beschikken de getoonde tankstations ook over normale diesel en benzines

- [online lijst](#): Bekijk de lijst met aardgas / Groengas tankstations online.
- [pdf file](#): Download de pdf file met aardgas / Groengas tankstations.

TOMTOM

Voeg de locatie van alle tankstations direct toe aan je tomtom door de knop hieronder te gebruiken.



- [ov2 file](#): het is ook mogelijk een losse ov2 file te downloaden en later op uw tomtom te plaatsen. Deze bevat alle aardgas/ groengas tankstations.



De tankstations op deze kaart bieden **naast de reguliere brandstoffen** ook de aangegeven **schone brandstoffen** aan



National Biomethane Standards*

- Most biomethane standards are gas grid injection specs, predominantly in European countries
- Outside Europe: SoCalGas, "Rule 30" – more strict than the European ones
- Swedish SS 155438:1999 only one for direct utilization of biomethane as vehicle fuel
- Despite international work: national standards still important, still in use and up-dated
- European CEN work succeeding, but still ongoing

*Compiled public information available in Marcogaz report (2006) "Injection of Gases from Non-Conventional Sources into Gas Networks"; Health and Safety Executive (2010) "Guidance on hazards arising from the conveyance and use of gas from Non-Conventional Sources (NCS)"; SoCalGas (2010). "Rule 30 Biomethane Gas Delivery Specifications", www.socalgas.com/documents/business/Rule30_BiomethaneGuidance.pdf



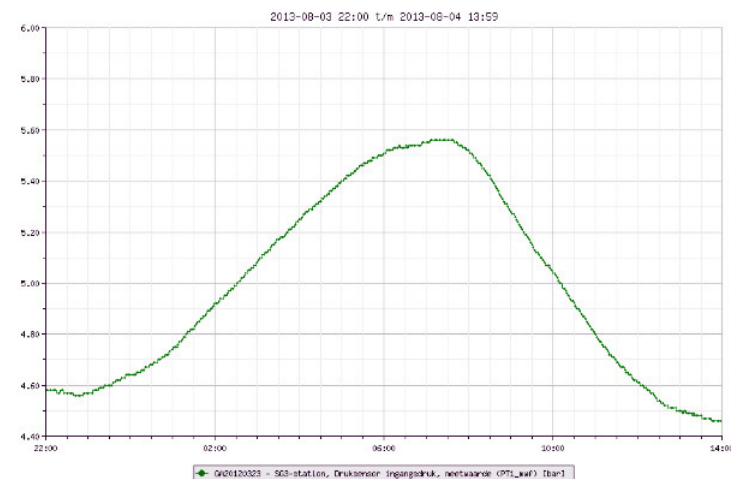
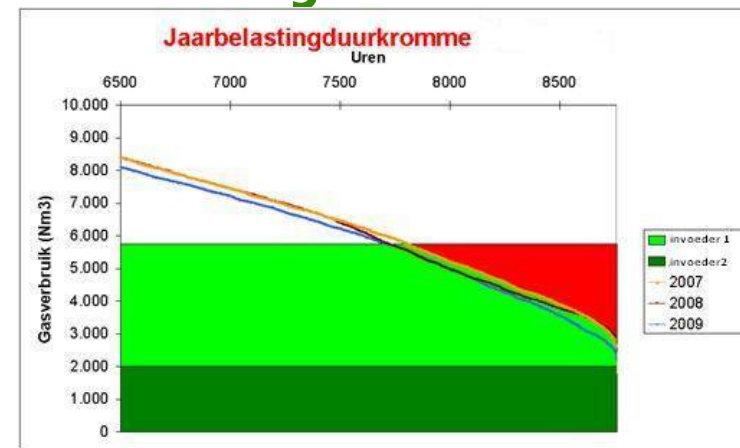
Most Important Parameters for Non-Conventional Source Gases

- Oxygen – corrosion and fouling in cavern storages
- Dry pipelines allow higher levels; main source in biomethane is air for H₂S removal, alternative removal methods exist
- Siloxanes – forms SiO₂ during combustion
 - Man-made, found in WWTP and landfill; Fouling of λ -sensors and EATS; Abrasion and clogging of engines
- Ammonia – corrosion risk
 - Easily removed during normal upgrading
- Halocarbons – corrosion and health concerns
 - Low risk probability since levels generally low, except some landfill gas



Several Strategies Gas Grid Injection

- Direct injection (limited for reason of gas demand)
- Development biogas/green gas hubs
- Injection with recompression in gas grid to higher pressure part of grid (e.g. transmission grid)
- Development of dedicated biogas grids with replacement of standard gas boilers
- Pressure setpoint control in the grid in order to use storage capacity of the grid (www.sg3.nl)





Further information

- www.iea-biogas.net
- www.greengasgrids.eu
- www.sgc.se
- www.biogaspartner.com





Thank you for your attention

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