Netherlands Enterprise Agency

Biogas in circular concepts

Mathieu Dumont

Jyväskylä March 2018

Long term approach policy strategies:
Ministry of Economic Affairs and Climate

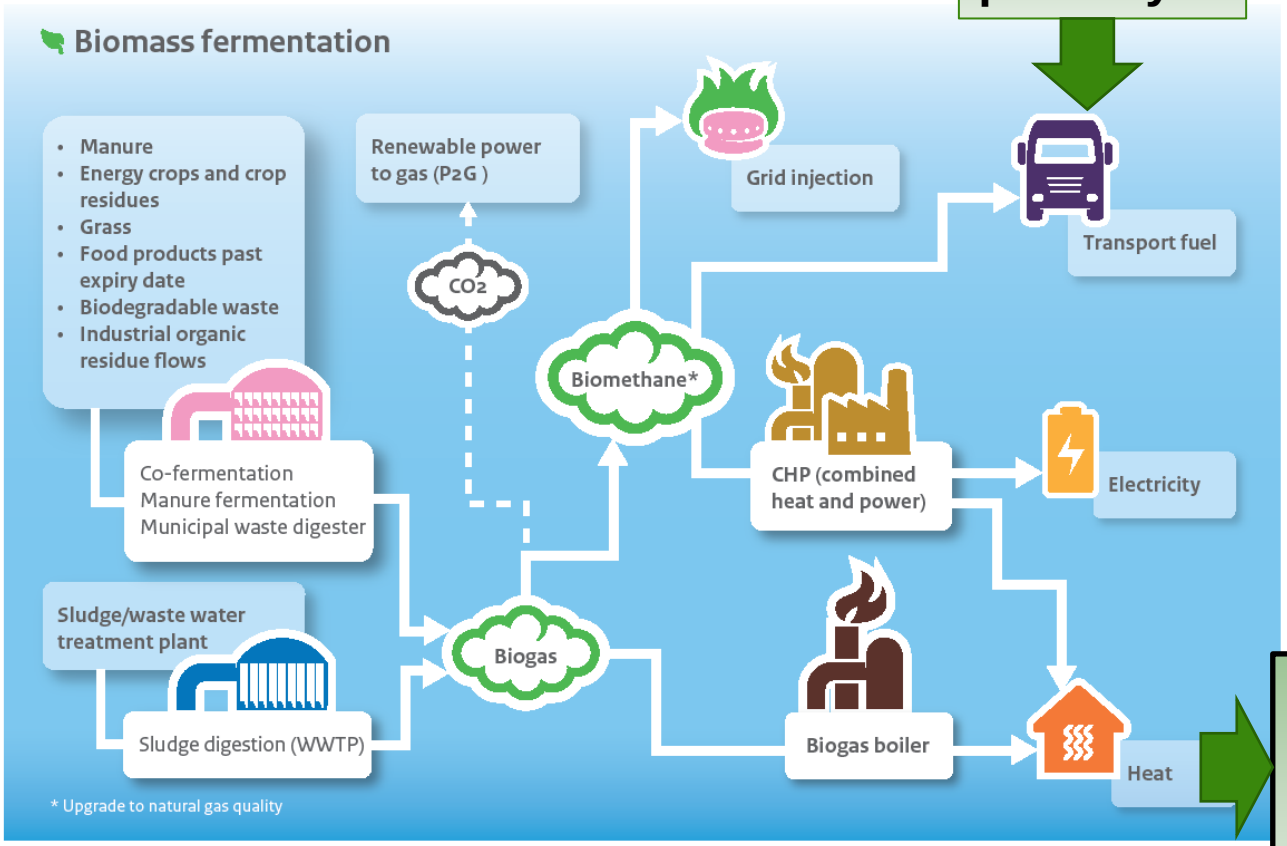
Energy report: Transition to sustainability

Focus on 2050 with an integral approach:

- CO2-emission poor energysystem
- Save, secure and effordable
- Focus on economical development and innovation

Possible roles of Biogas/Biomethane in the energysystem

Transition pathways

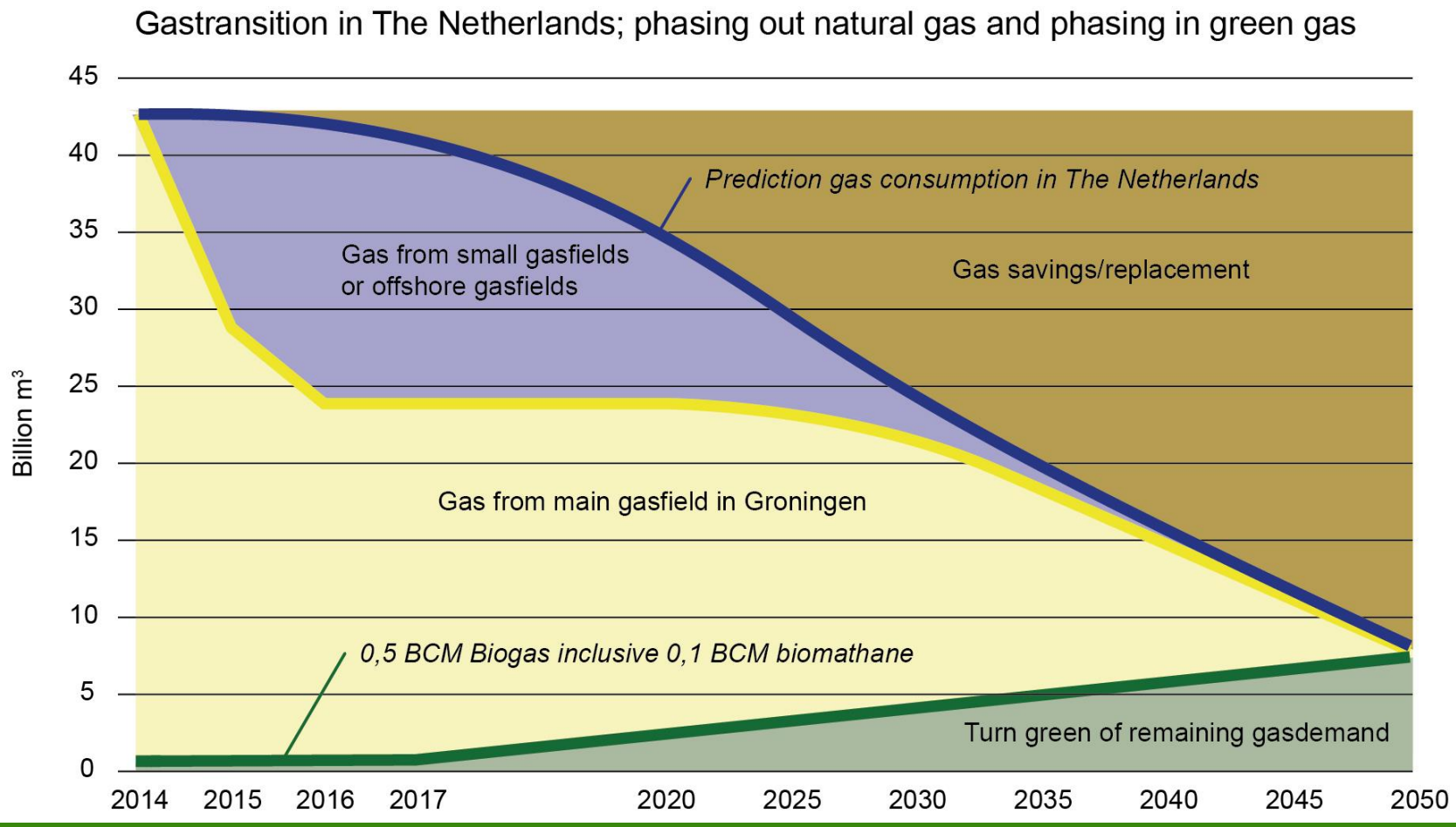


www.rvo.nl/bio-energie

High temperature

Low temperature

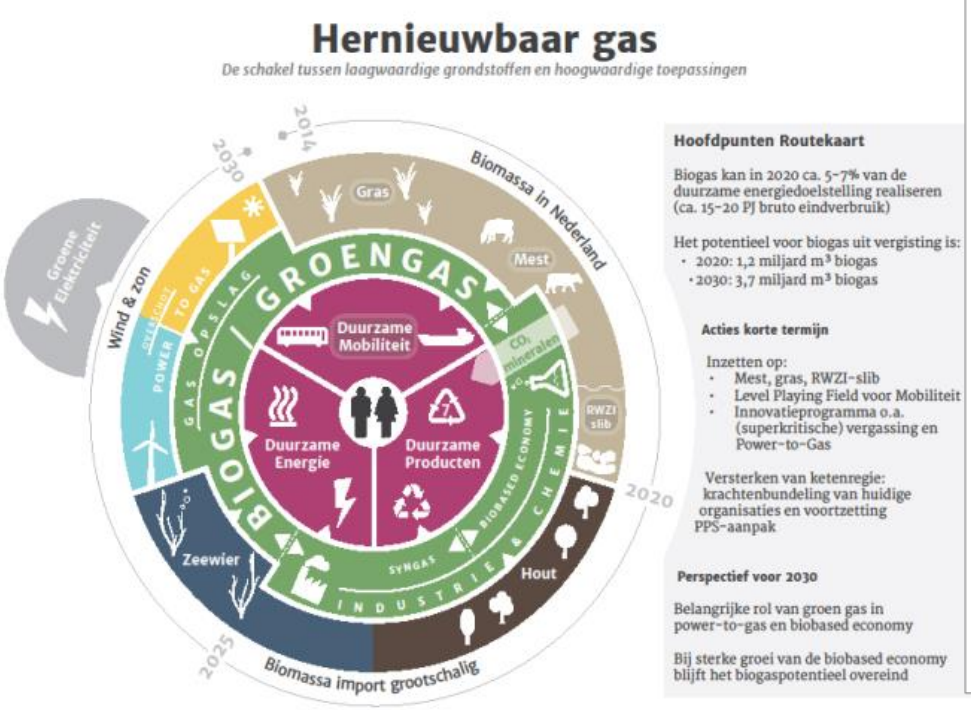
Gastransition in the Nl up to 2050

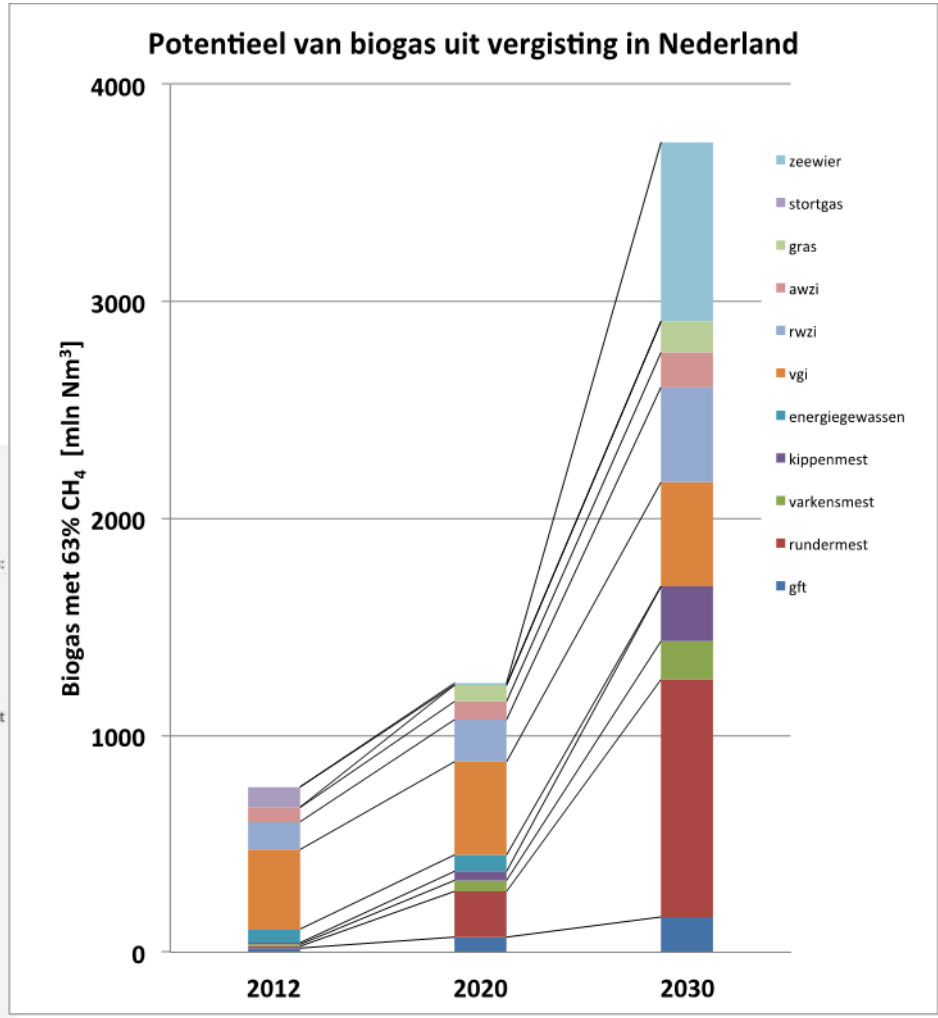


Impact of gastransition in NL up to 2050

- Big focus on energy saving
- Big focus on replacement of fossil gases to renewable gases
- Remaning gasdemand just available as feed stock options (chemical industry)
- Replacement of remaining heat demand through other renewable energy options.

Roadmap Biomethane
(main focus biomethane potential)





Several approaches

- Big focus on nutrient recovering from digestate (on farm or regional level but also in chemical fertlizer industry
- Integration of biogasproduction in local energy concepts
- Local initiatives for replacing replacing fossil gas by biogas
- Developing smart farming concepts in combination with focus on optimize and balance local energy infrastructure

Green Deal: Business with biomass and biobased gas

Short Term approach dairy sector

Development of farm scale Manure degistion
- Electricity production with biogas in CHP
- biomethaneproduction and grid injection for bigger farms (>=13kton manure)

- First phase of development: Renewable Energy production
- Second phase: recovering of nutrients from the digestate

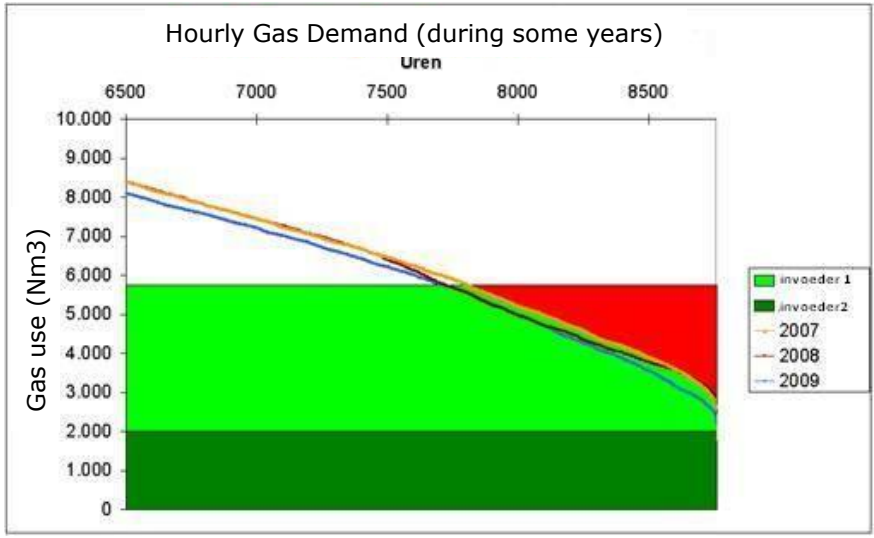
Development market manure digestion by milkprocessing industry

Goal is to achieve a CO2 neutral dairy sector with production of renewable energy with special focus on manure digestion on farm scale
Three technical options dependend options:

- 3000-4000 tons/y (small CHP)
- 7000-8000 tons/y (CHP)
- 13000 tons/y (biomethane)

Several Strategies for Gas Grid Injection; Different innovative approaches in cooperation with several grid operators; Basic challenge is: biomethane production capacity doesn't meet gas demand

- Direct injection (limited because of gas demand)
- Development biogas/green gas hubs
- Injection with recompression in gas grid to higher pressure part of grid
- Development of dedicated biogas grids with replacement of standard gas boilers
- Pressure regulation in distribution grid in combination with creation of storage capacity in distribution grid.(www.sg3.nl)

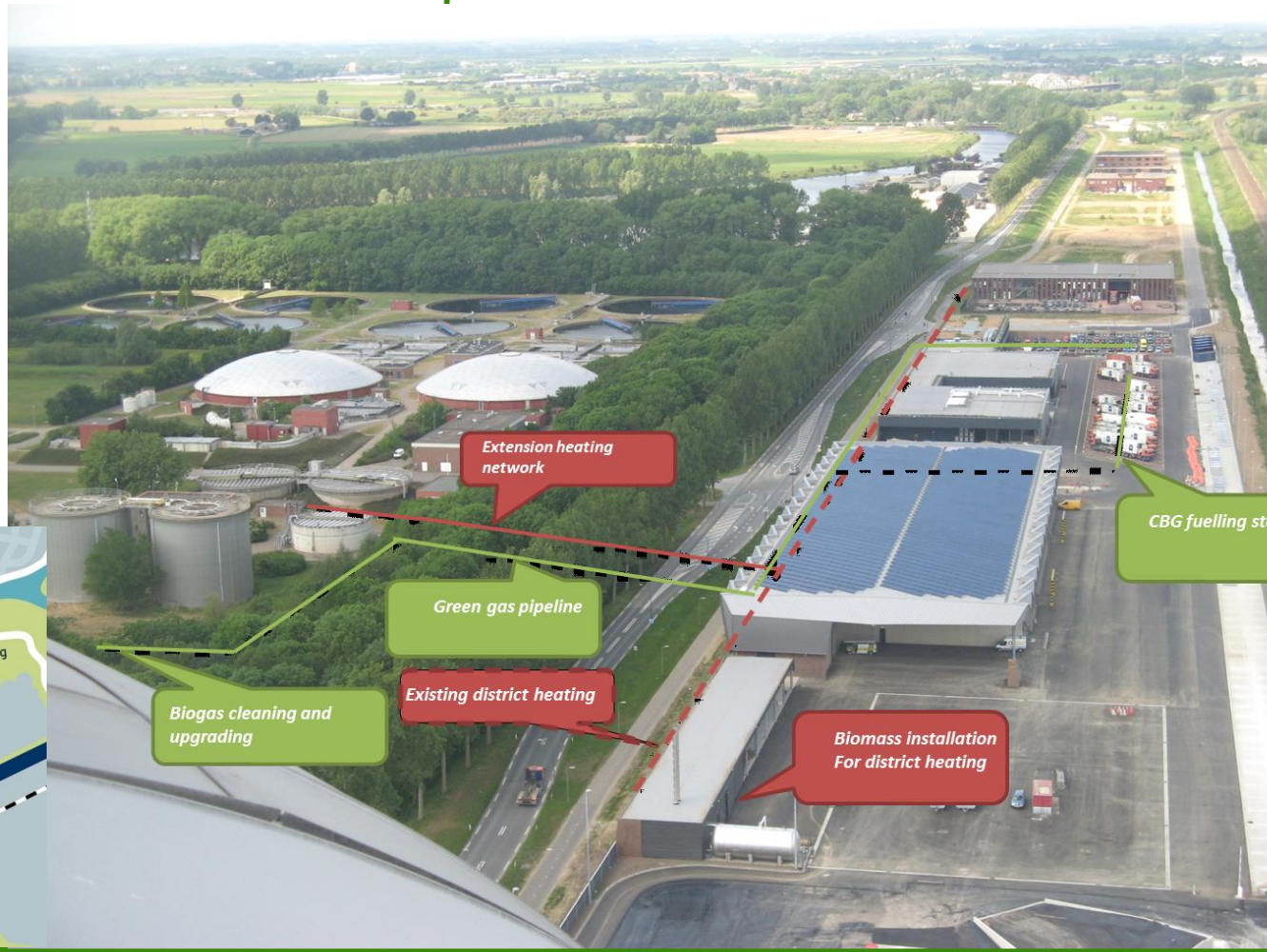


Bio-energy Netherlands gasification project in the harbor of Amsterdam

- Input: non recyclable wood chips
- Info: http://bioenergynetherlands.nl/

first phase of development end 2018		second phase from 2019
Input 10 MW	→ 8 MW heat	H2 and CO2 as feedstock in chemical industry
	→ 2 MW power (CHP)	

To start with small scale examples of cross border cooperation



GrootZevert – Friesland Campina

GENIAAL !!

Vision on future developments

- Prosumer in centre of energysystem
- Less growing pressure on infrastructure for top-down energy delivering
- More intergration and smart grid solutions
- Introduction of new technologies in Energystem (H2; P2G; gasification)
- Integration with local energy storages
- Introduction of co-operation models between different players in the local energy market
- Integration Energy system with biobased production chains