

SNG FOR HEAT PRODUCTION, THE DUTCH POINT OF VIEW

A. van der Drift

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SNG FOR HEAT PRODUCTION, THE DUTCH POINT OF VIEW

Bram van der Drift





gas platform, DongHae-1

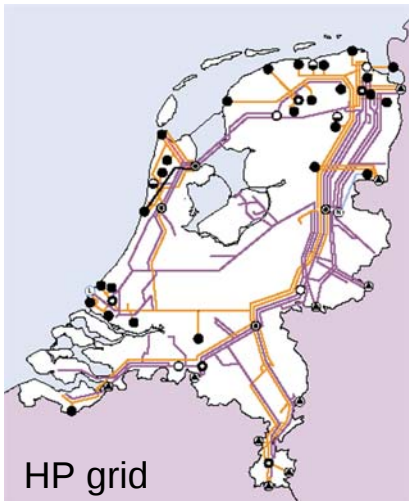


future gas platform?

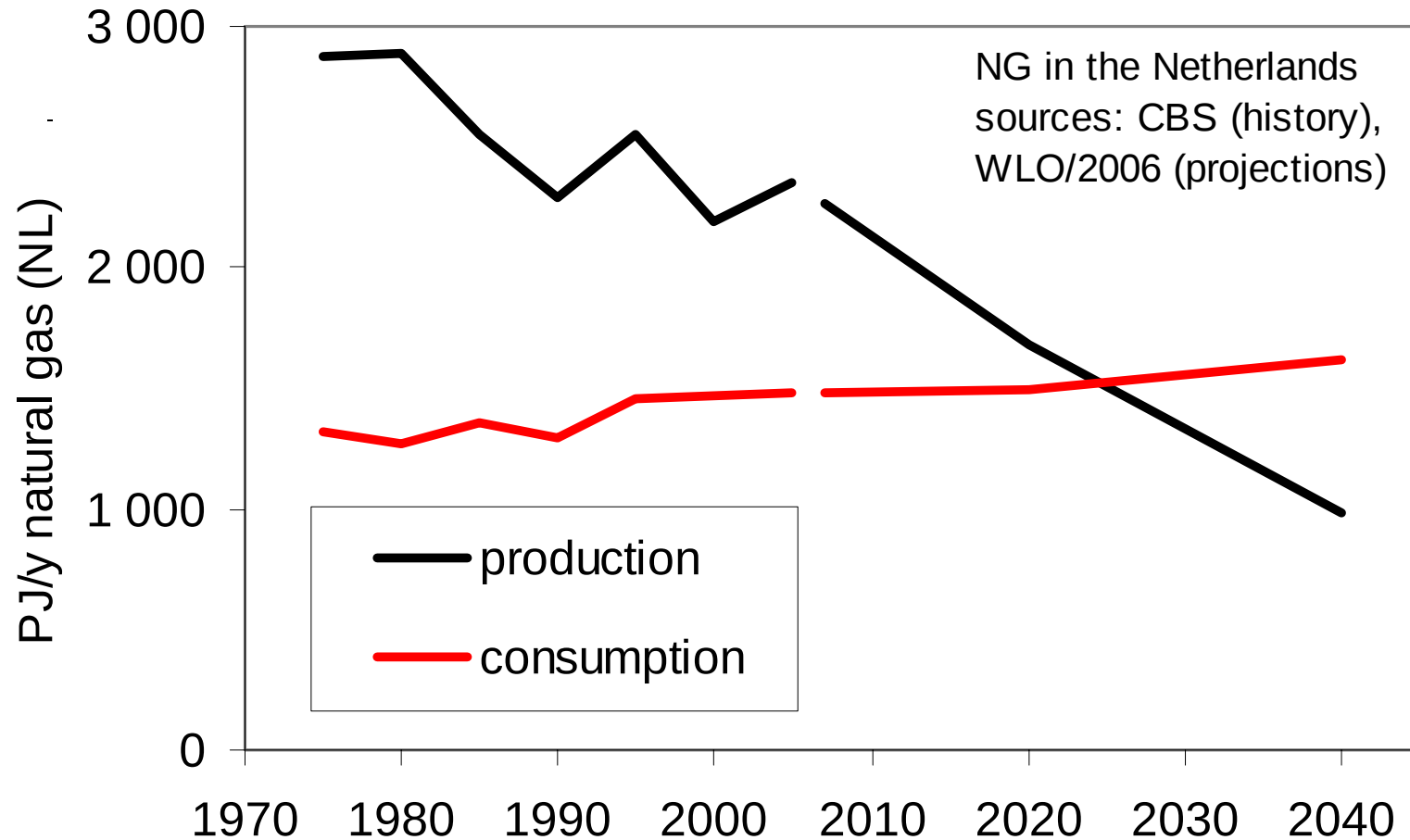
FACTS and FIGURES

natural gas in the Netherlands

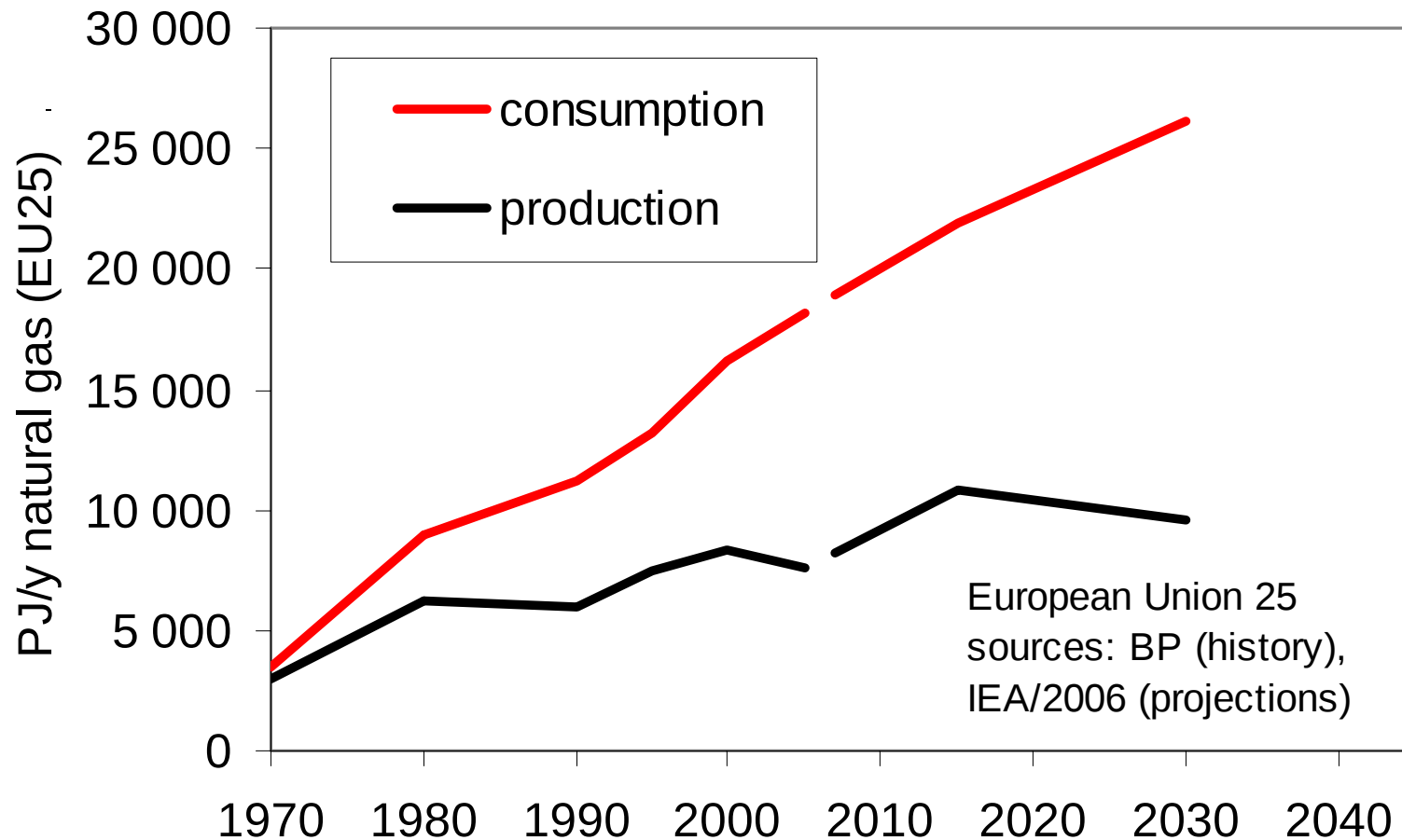
- almost 50% of primary energy is Natural Gas
- 135 000 km pipe line: in average *within 120 m*
- 94% of houses connected to gas grid
- ~70% of the gas is used for heating



THE END OF GAS EXPORT (NL)



OR EVEN WORSE (EU)...



SNG PRODUCTION from BIOMASS

ECN approach

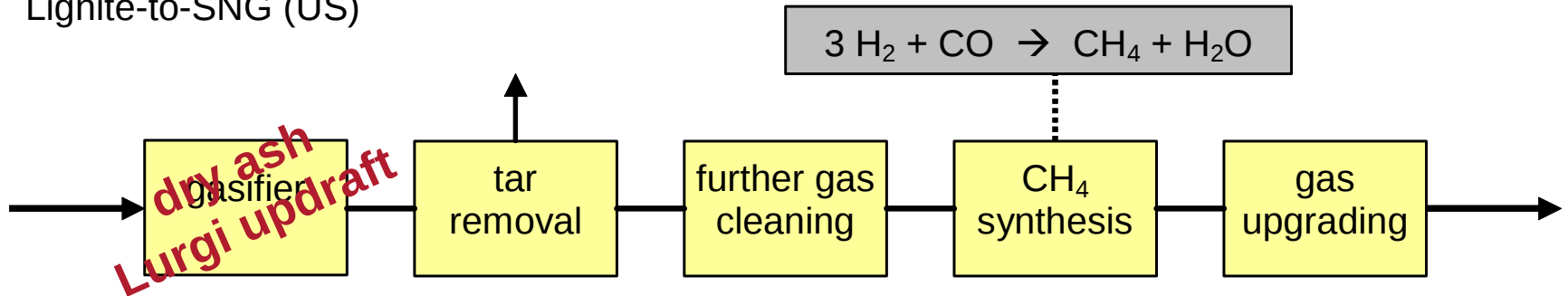
- use conventional technology (Great Plains Synfuels Plant, ND/USA)
- adapt for biomass
- focus on high efficiency (70%)



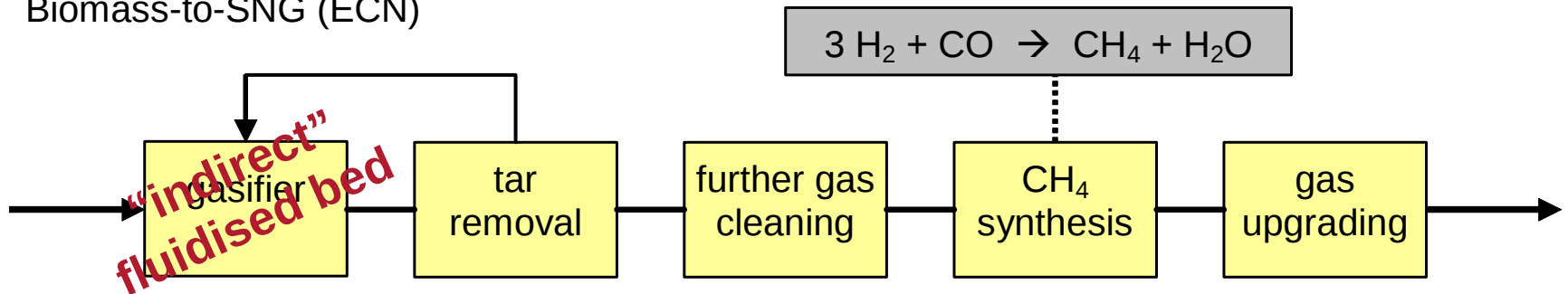
3 GW lignite-to-SNG plant, Beulah, ND, USA

SNG PRODUCTION system

Lignite-to-SNG (US)

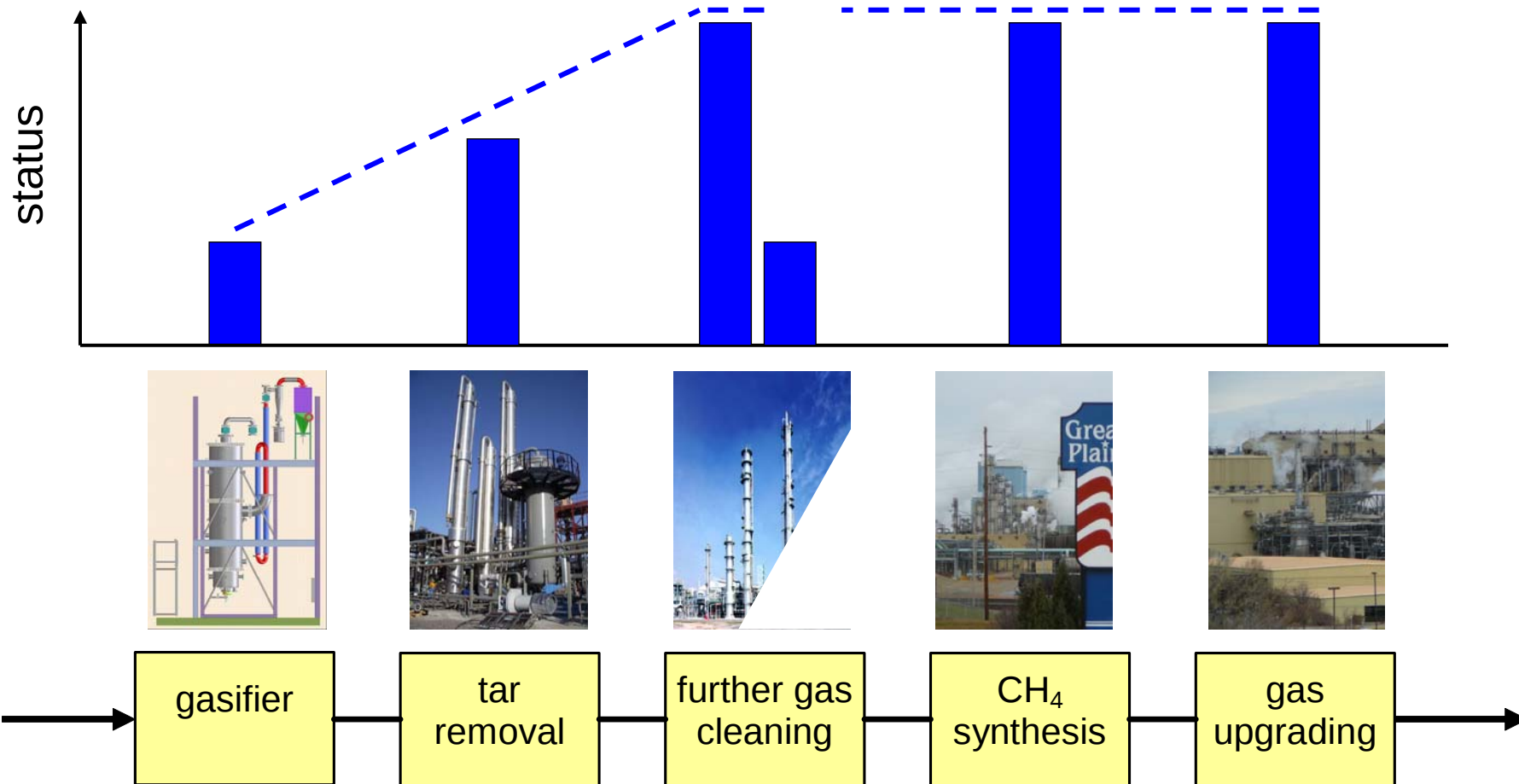


Biomass-to-SNG (ECN)



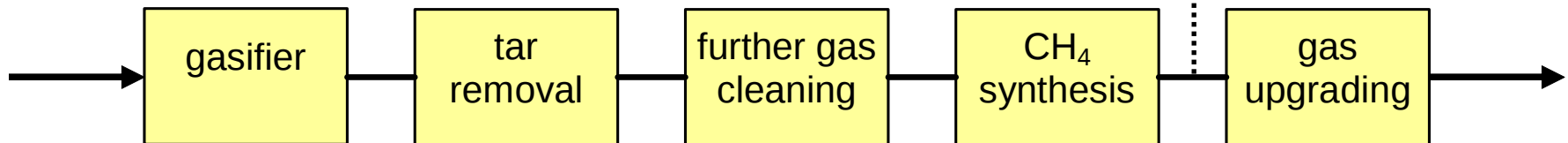
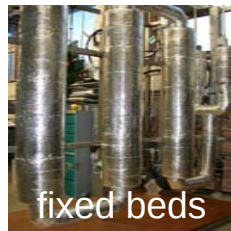
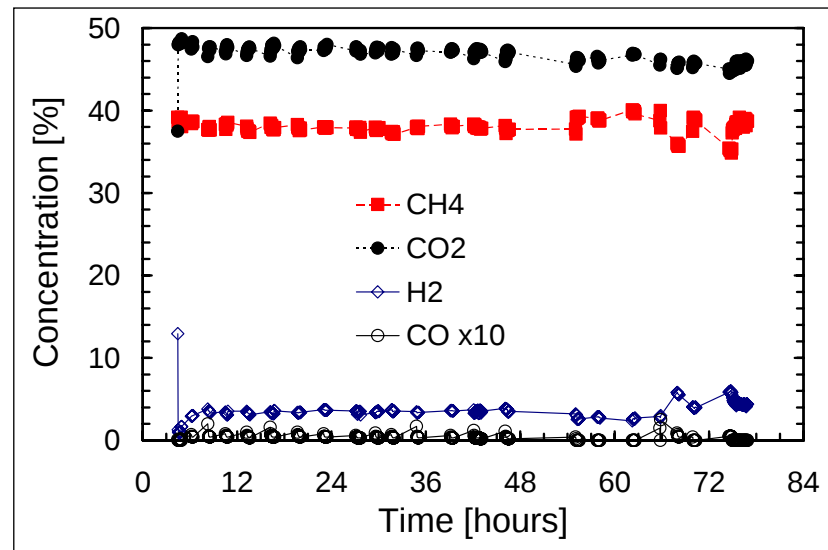
SNG PRODUCTION from BIOMASS

status



SNG PRODUCTION from BIOMASS

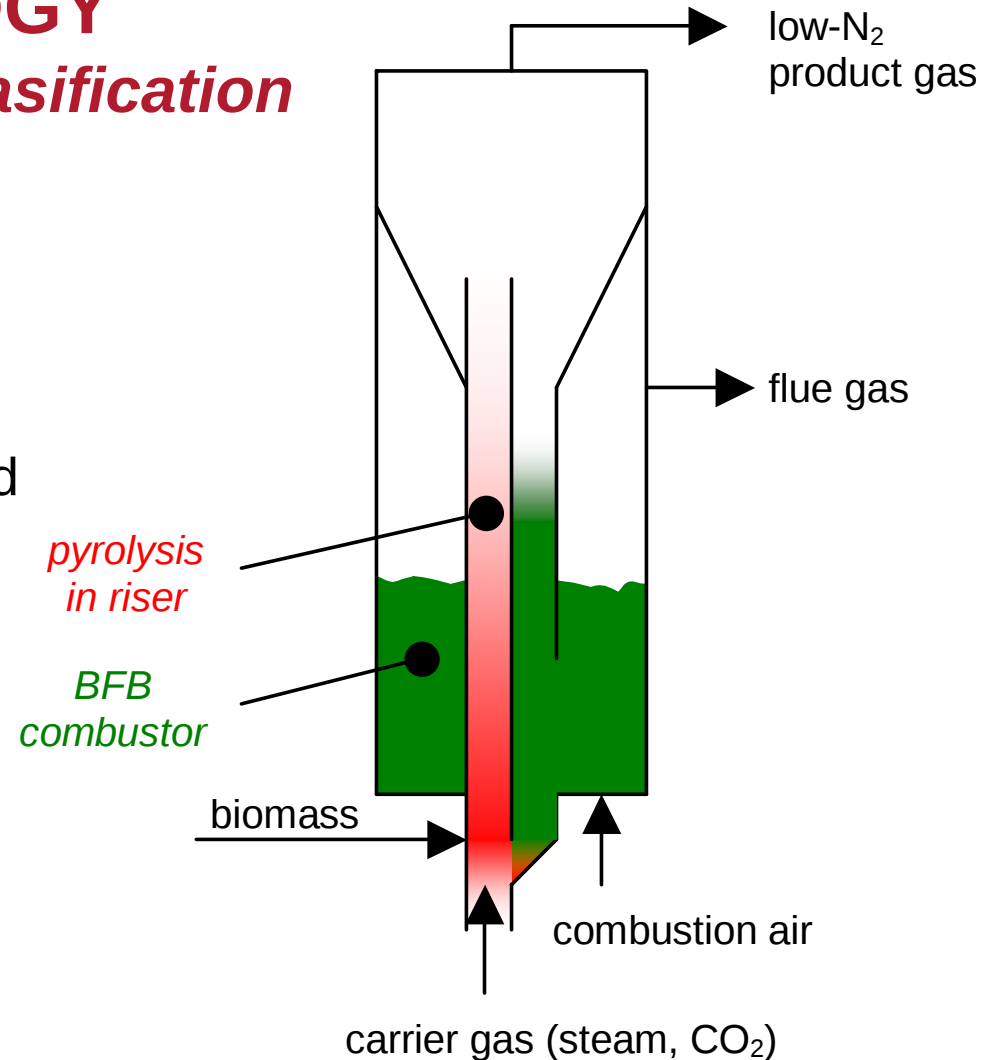
lab-scale test



MILENA TECHNOLOGY

indirect fluidised bed gasification

- indirect gasifier
- developed for high efficient SNG-production
- can be operated as “SilvaGas” and “Güssing” and BFB
- 25 kW available, 800 kW under construction



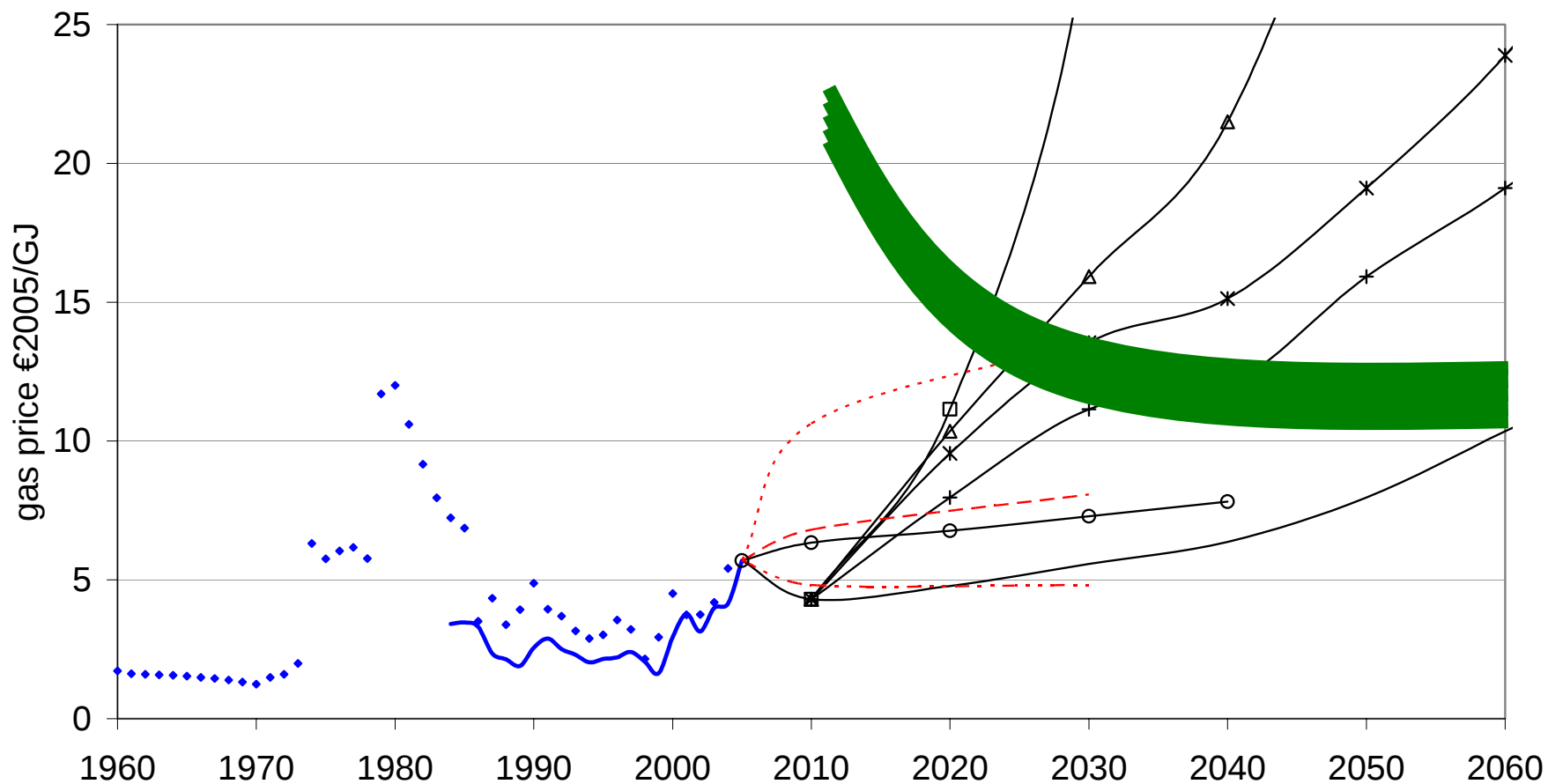
SNG PRODUCTION from BIOMASS *economics*

- large-scale (~1 GW)
- situated in NL harbor
- imported biomass
- IRR 12%/10 years

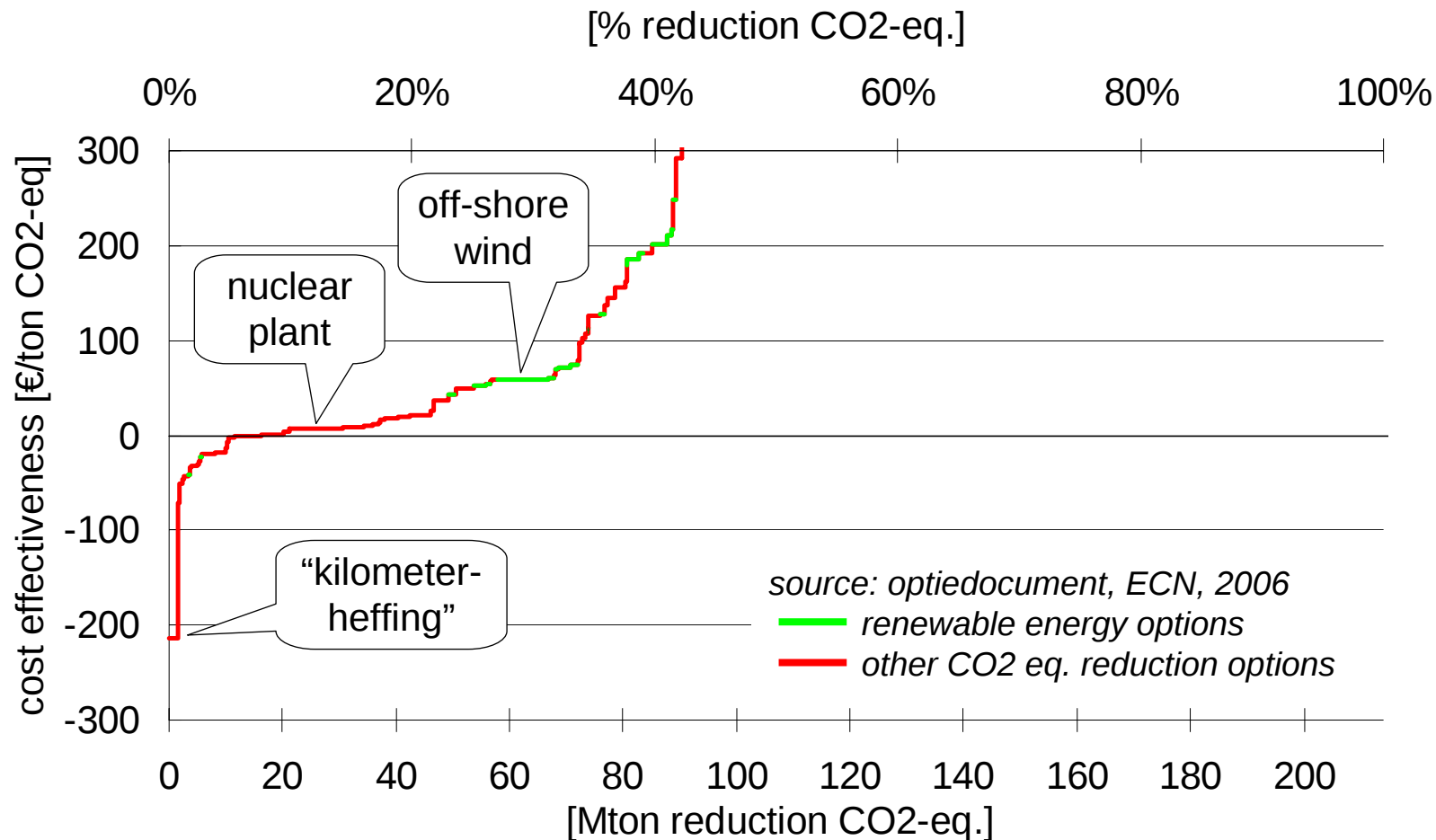


SNG PRODUCTION from BIOMASS

[€/GJ] SNG versus NG

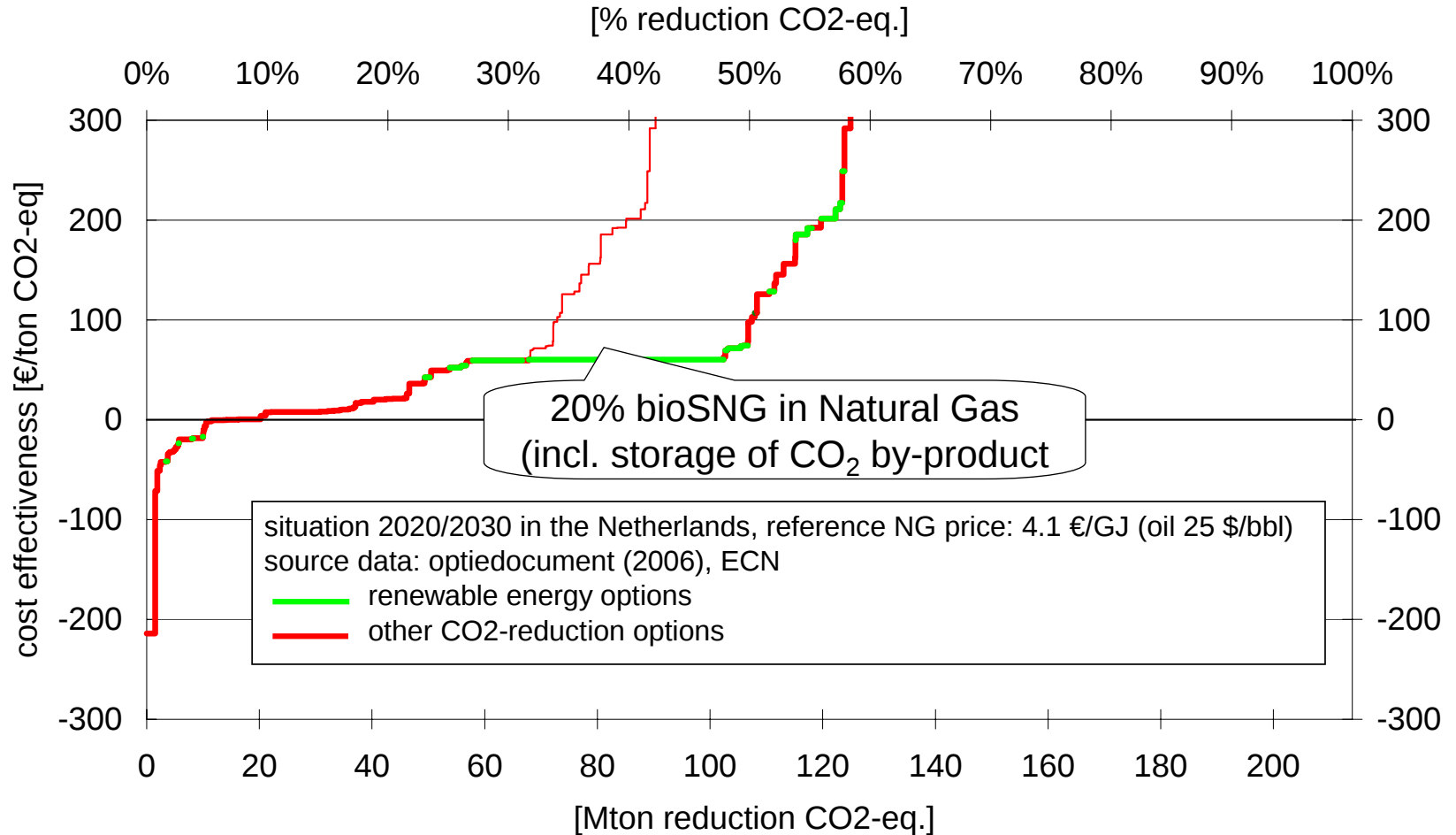


AVOIDING CO₂ (eq) IN THE NETHERLANDS



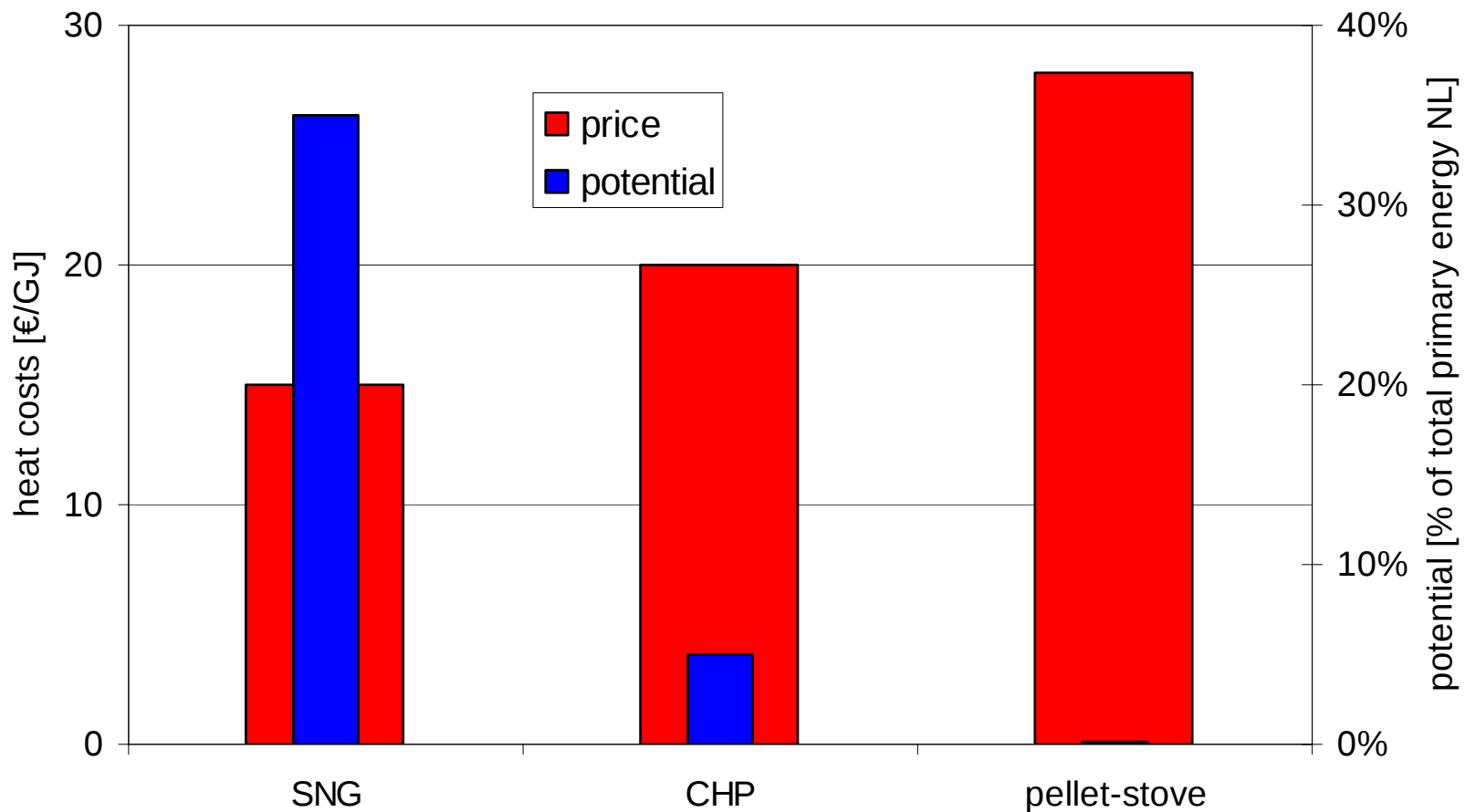
AVOIDING CO₂ (eq) IN THE NETHERLANDS

where is SNG from biomass?



HEAT from BIOMASS

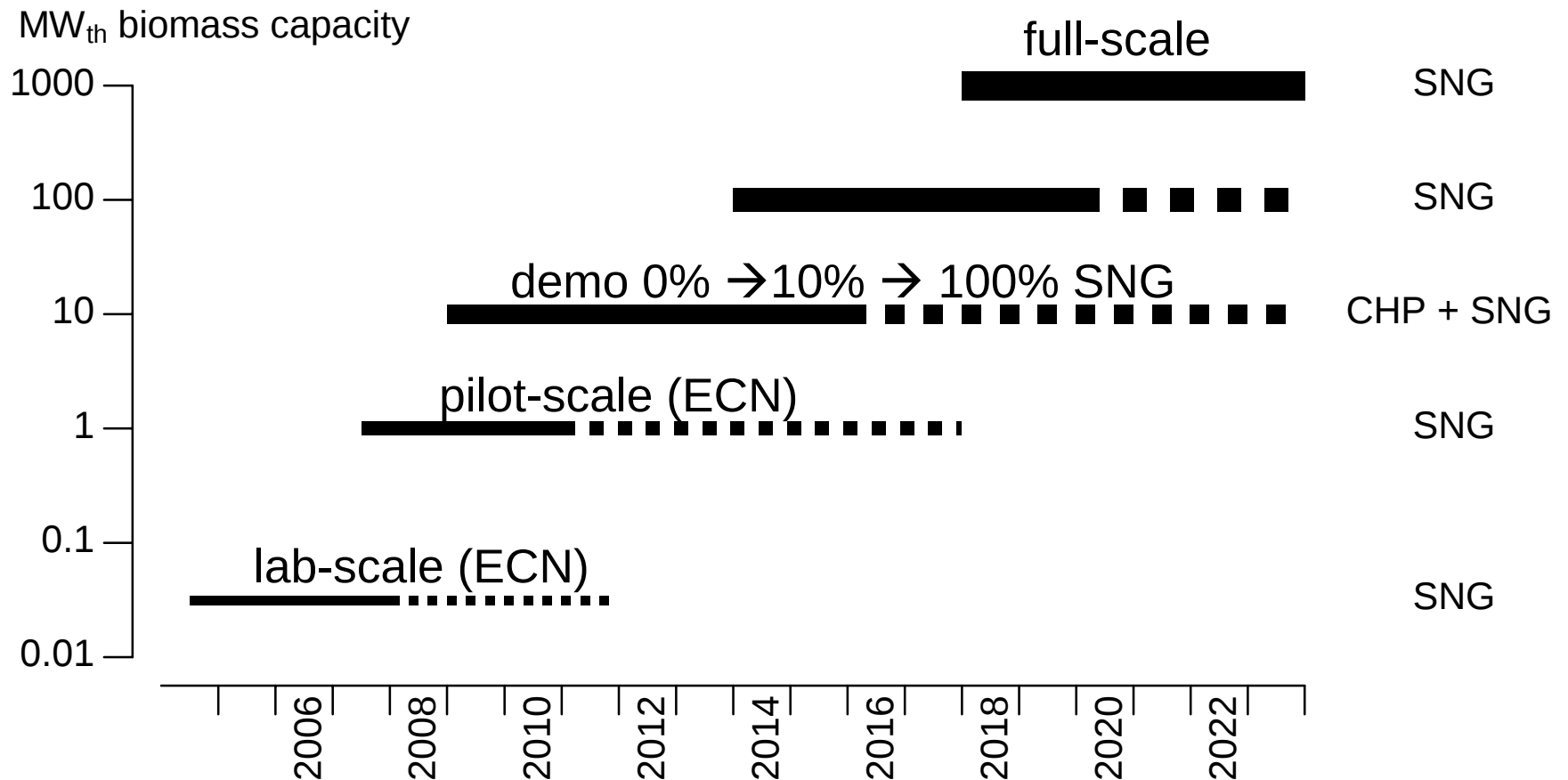
via SNG and other biomass alternatives



source: ECN-report ECN-E-07-001

IMPLEMENTATION TRAJECTORY

“ECN-concept”





MORE INFORMATION

Bram van der Drift

e: vanderdrift@ecn.nl

t: +31 224 56 4515

PO Box 1

NL 1755 ZG Petten

the Netherlands

Publications: www.ecn.nl/biomass

Phyllis biomass composition database: www.phyllis.nl

Tar dew point calculation tool: www.thersites.nl