





THE NETHERLANDS COUNTRY REPORT

Berend Vreugdenhil
Alkmaar, The Netherlands
7th May 2018



Policy is changing

- Big increase in CCUS activities
 - Ban on coal power
 - Strong focus on offshore wind
1. 6 b€ subsidy of sustainable energy (power, heat or NG) in Spring
 2. 6 b€ subsidy of sustainable energy (power, heat or NG) in Autumn
 3. Open up SDE+ for other forms of sustainable energy (CCUS f.i.)
 4. Discussion on NL being a gas country
 5. Change the law on obligation for a gas connection in every household



Biofuels – How green is your fuel?

Share of electricity by source:

- Source: Bloomberg

● Coal-fired ● Oil-fired ● Gas-fired ● Renewables ● Nuclear

- NL: Quite some gas-fired power



China



Germany



Japan



U.S.

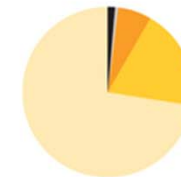
- France: Nuclear



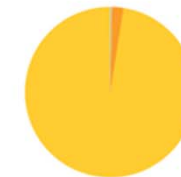
Netherlands



U.K.



France



Norway

- UK: Even share

- Norway: place to be

Note: Renewables include geothermal, solar, wind, biomass and waste, large and small hydro sources
Source: Bloomberg New Energy Finance

Bloomberg

ecn.nl

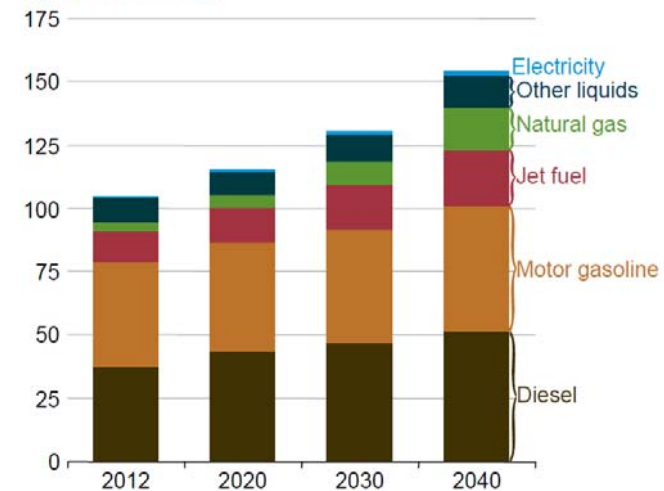
J. Efstathiou and D. Merill, How green is your electric car?, Bloomberg, 2018.

Liquid fuels



- Easiest/fastest is to replace fossil fuels by biofuel
- What biofuels are required?
 - Dominant liquid fuels in transport: **Gasoline, kerosene and diesel.**
- Our focus
 - Fischer-Tropsch: FT-L (naphtha, kerosene, diesel)
 - MeOH (fuel additive + platform molecule)
 - Possible conversion to gasoline (MTG)

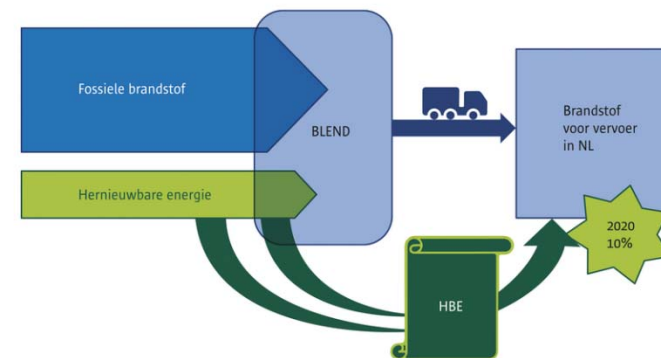
Figure ES-7. World transportation sector delivered energy consumption by energy source, 2012–40 (quadrillion Btu)



Biofuel framework

- (Financial) drivers for using liquid fuels
- EU directive min. targets on renewable energy by 2020:
 - 20% renewable energy overall
 - 10% biofuels in liquid transportation fuels
 - Biofuels from food and feed crops (first gen) are limited to 7%.
 - Advanced fuels desired
- NL, HBE units:
 - 1 unit for 1 GJ biofuel
 - Minimum 8.5% required (2018)
 - HBE market value: ~9 €/GJ
 - Double counting for advanced biofuel

Uitvoeringssystematiek met HBE's



Status update gasification developments



- See presentation on the 8th and site visit
- No update



- Green Gas production
- Site visit on the 9th



- See presentation on the 8th



Green Gas developments - AMBIGO

Various hick-ups along the way that keep on postponing the FID



Super Critical Water gasification



- Currently in the phase of commissioning the demonstration in Alkmaar
- The installation will supply SNG to the HTL grid

MORE INFORMATION

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Publications: www.ecn.nl/publications

Fuel composition database: www.phyllis.nl

Tar dew point calculator: www.thersites.nl

IEA bioenergy/gasification: www.ieatask33.org

Milena indirect gasifier: www.milenatechnology.com

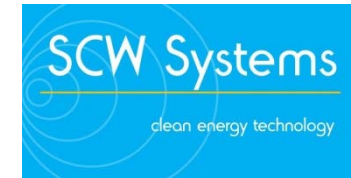
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