

Country Report Denmark

May 2019

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Change in Danish NTL in Task 39

- Claus Felby has left University of Copenhagen and is from March Head of Biotech at the Novo Nordisk Foundation. He will be heading their funding programs for biotech and life-science research.
- Henning Jørgensen will replace Claus as official NTL
- Sune Tjalfe Thomsen will gradually take over and be the lead NTL in Task 39



Policy update 1

New Danish energy agreement for 2020-2030 (Passed June 2018) - The agreement is focused on energy for heat and power – transport sector 7 lines out of 19 pages!

- Target is 55% of all energy from renewable sources by 2030
- Heavily focused on RE from wind – one new off-shore wind park in before 2027 (800 MW) and three new parks in total before 2030. Target is 100% of electricity form RE before 2030.
- Reducing the use of biomass for energy (Heat and power) = more biomass for biorefining or less biomass import?
- Currently large economical support for biogas (electricity), but will be gradually reduced. But support for upgrade facilities for transport and industrial uses. Policy is still to expand the biogas production.
- Transport – “work on setting ambitious targets for CO₂ emissions from heavy vehicles”. Allocate funding to “support green mobility” - to be specified autumn 2018, but nothing has happened!
- Increase the funding available for Energy Research to a total of 580 million DKK/yr by 2020 (just back to level before recent years cut back)



Policy update 2

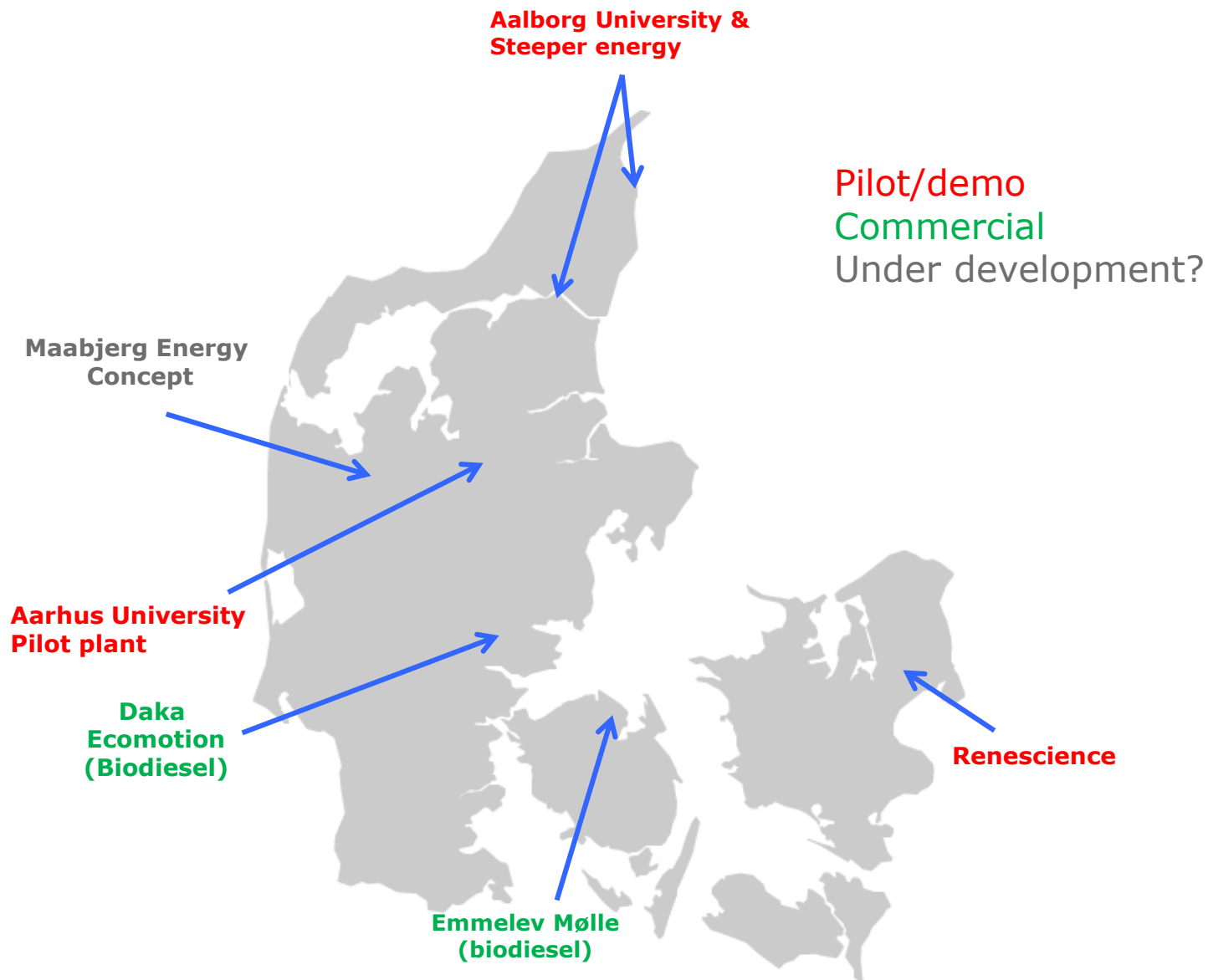
Climate policy – Government presented plans in autumn 2018 (plans – not decided yet)

- Ban for sale of diesel and gasoline cars by 2030 and hybrids from 2035
- Ambition is 1 million electrical vehicles by 2030
 - Current car fleet 2.6 million, statistically 44% of current fleet will still be in use by 2030)
 - New car sale first quarter 2019 – 34000 diesel/gasoline, 500 electrical, 750 hybrid
- From 2020 all new busses should be climate friendly, e.g. electrical, biogas or biofuels
- Increase use of biofuels (ethanol, biodiesel) according to EU directives
 - Increase from current 5.75% to 8% in 2020
 - Phasing out 1G biofuels – EU sustainability criteria

Election in June and climate is high on the agenda = all parties try to imply they will do more! Most focus is on electrification, and biofuels is very little discussed, expect for aviation.



Pilot, demo and commercial biofuels facilities



HTL for fuel production – several initiatives in Denmark

Two pilot scale facilities for HTL (hydrothermal liquefaction) of biomass for fuel

- Aarhus University

- Current focus on treatment of sludge eventually mixed with biomass fibers used as filter aid in bioprocesses
- HTL of biomass/lignin for higher value applications



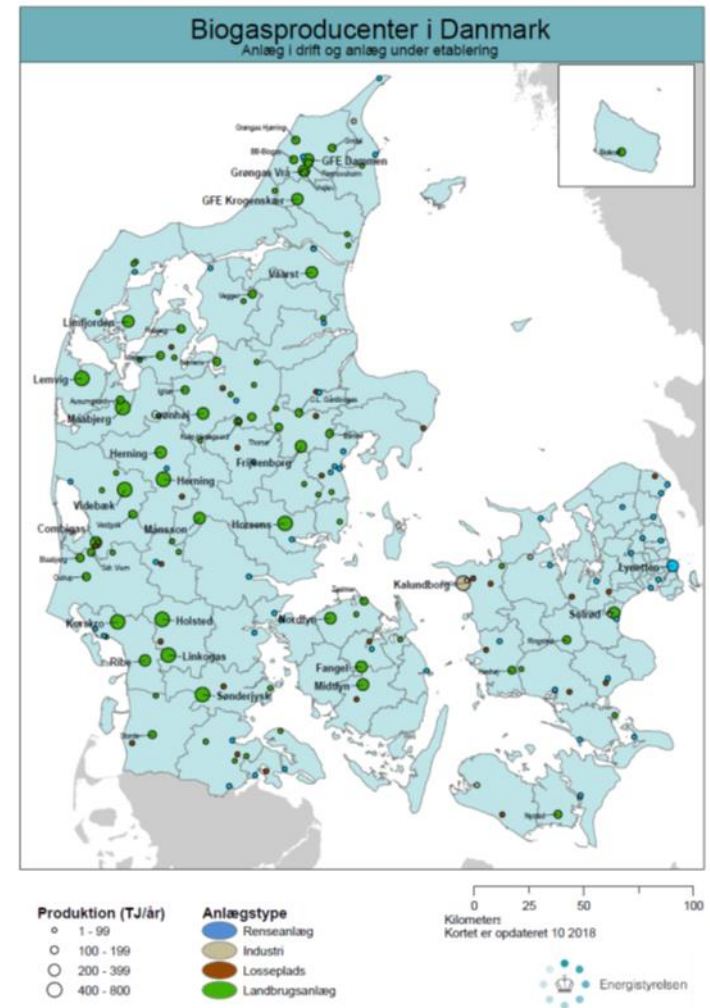
- Aalborg University in collaboration with Steeper Energy (Hydrofaction technology)

- The Hydrofaction™ pilot plant in Aalborg Denmark surpassed 4750 hours of hot operation with over 1750 hours of oil production hours
- November 2018, Aalborg Uni coordinating Horizon 2020 project (NextGenRoadFuels) on converting biogenic urban resources into liquid drop-in fuels for road transport by means of Hydrothermal Liquefaction (HTL). Steeper Energy partner.



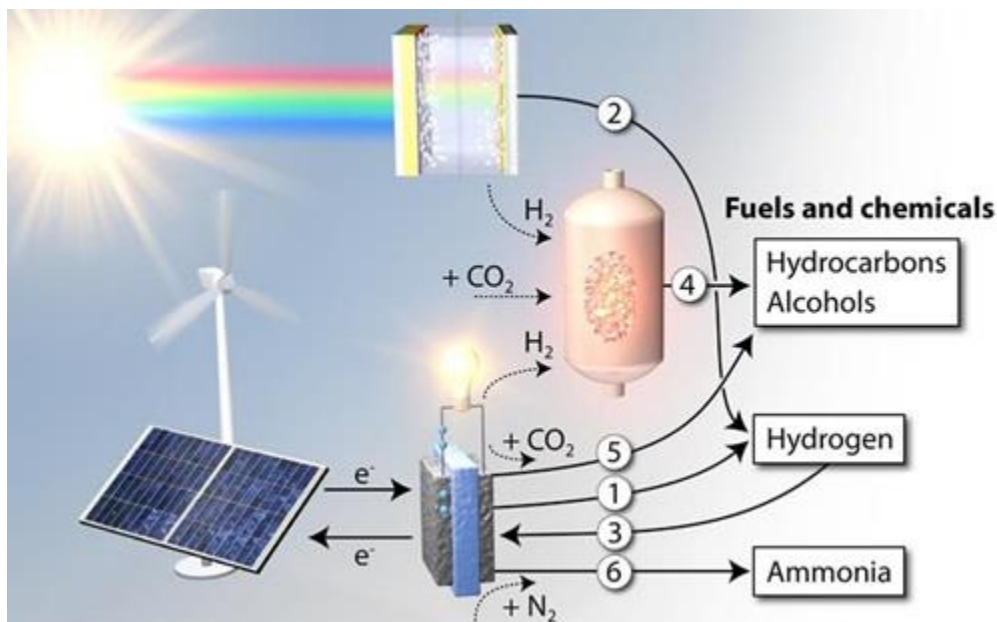
Biogas sector

- The Danish Biogas production has increased by 40-45 % during 2016-2017, compared to 2015 due to economical favorable conditions.
- Manure and household waste are main feedstocks, but straw is increasingly being used (and research focus on how to better include straw)
- Integration with (excess) wind power is important research topic – Reforming of CO_2 to methane by changing the equilibrium by excess H_2 will give 30-40% more methane
- A goal is to use biogas in heavy transport and bus fleets.



The Villum Center for the Science of Sustainable Fuels and Chemicals

- Large consortium funded by 150 MDKK (25 M USD) from Villum Fonden (2016)
- Lead by Prof Ib Chorkendorff, Technical University of Denmark
- Overarching theme is to develop better catalysts to convert sunlight into fuels and chemicals
 - Thermally driven processes for CO₂ reduction to fuels and chemical building blocks
 - Electrochemical CO₂ reduction to fuels and base chemicals (e-fuel)



More info

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