



Country update - Denmark

Spring 2021

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Status

“Despite a leading position internationally on research and development within biofuels, there have not been political incentives strong enough for a Danish industry to develop, with the exception of a small but stable production of biodiesel and a significant increase of biogas production capacity. “

Policy

- **Denmark adopts a binding climate law to cut emissions 70% by 2030 (first of its kind)**
 - The law targets carbon neutrality by 2050 and includes a robust monitoring system.
 - This includes an ongoing obligation to deliver on international agreements, including climate finance to developing countries.
 - No direct implications for liquid biofuels, support for gaseous biofuels, new sustainability demands for solid biofuels (wood pellet and wood chips for CHP)
- **In 2021 there is demand of 7.6% biofuels for road transport**
 - Share of advanced biofuels of 0.75%
 - Palm oil is prohibited -> more bioethanol
 - From 2022 this will (most likely) be replaced by a CO₂ displacement demand
- **Research budgets have been increased again**
 - Quite tight political control

Trends - Power to X

- ~50% of Denmark's total electricity consumption is covered by wind power
- Focus on utilizing peak production for electrofuels
- Power to X - has large political focus - also for research foundations
- To some extent this can/should be coupled to biofuel production
 - E.g. coupling to biological biogas upgrading (adding H_2 to the AD to shift the methane content)
 - Utilizing “green carbon” - e.g. CO_2 from AD, bio-based fermentation processes, or from thermal conversion processes



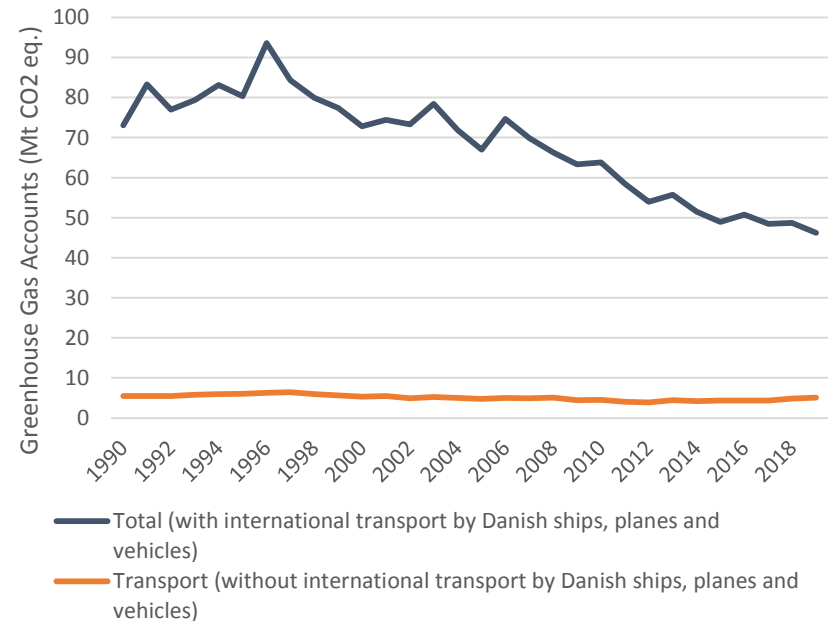
Trends - Green biorefining

- Utilising perennial grasses for protein feed for monogastric livestock
 - Denmark produces 24m pigs/yr = 4 pigs/yr for every person
- Several pilot plants -> going into full-scale in 2021
- Side-streams with liquid biofuel potential
 - Grass fibres - promising for 2G ethanol
 - Brown juice - residual sugar and protein



Trends - Alternative marine fuels

- Very large ambitions from Maersk
 - world's largest container shipping company
 - Launch carbon-neutral container ship to sea by 2023
 - Net Zero CO₂ emission target by 2050
 - Center for Zero Carbon Shipping,
 - independent, non-profit research and development centre
 - start-up donation of DKK 400m
- Not much public awareness / R&D funds



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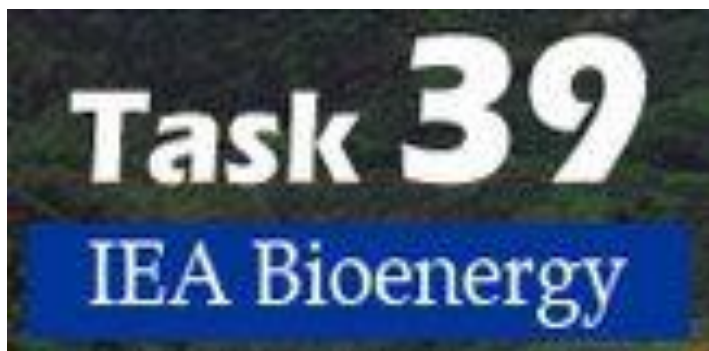
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