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# The Danish biogas development

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COO

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**Biometano y otros gases renovables:  
El camino hacia una economía sostenible y competitiva.**



## Biogas Danmark / Danish Biogas Association

### Mission

- Promote production and use
- Promote circular economy
- Capacity building
- Network and knowledge sharing

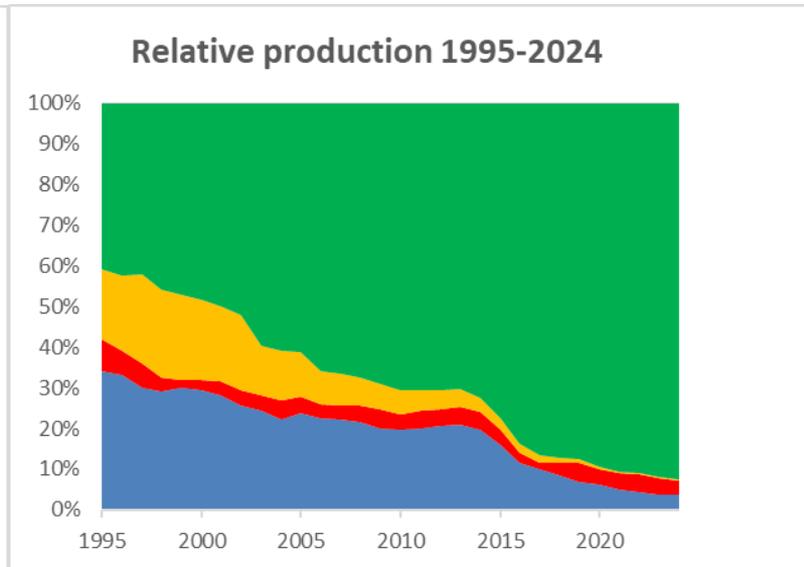
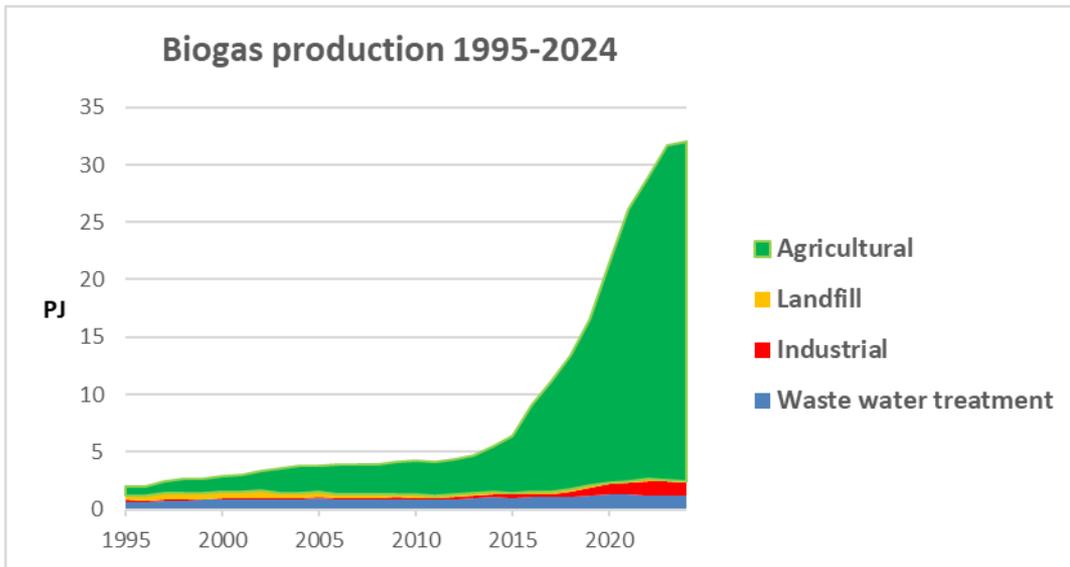
### Members

- Producers and users of biogas
- Biomass suppliers and users
- Technology and equipment suppliers
- Consultants and knowledge institutions
- Energy, waste and agriculture sectors
- Approximately 245 members





## Rapid development – in agricultural based biogas

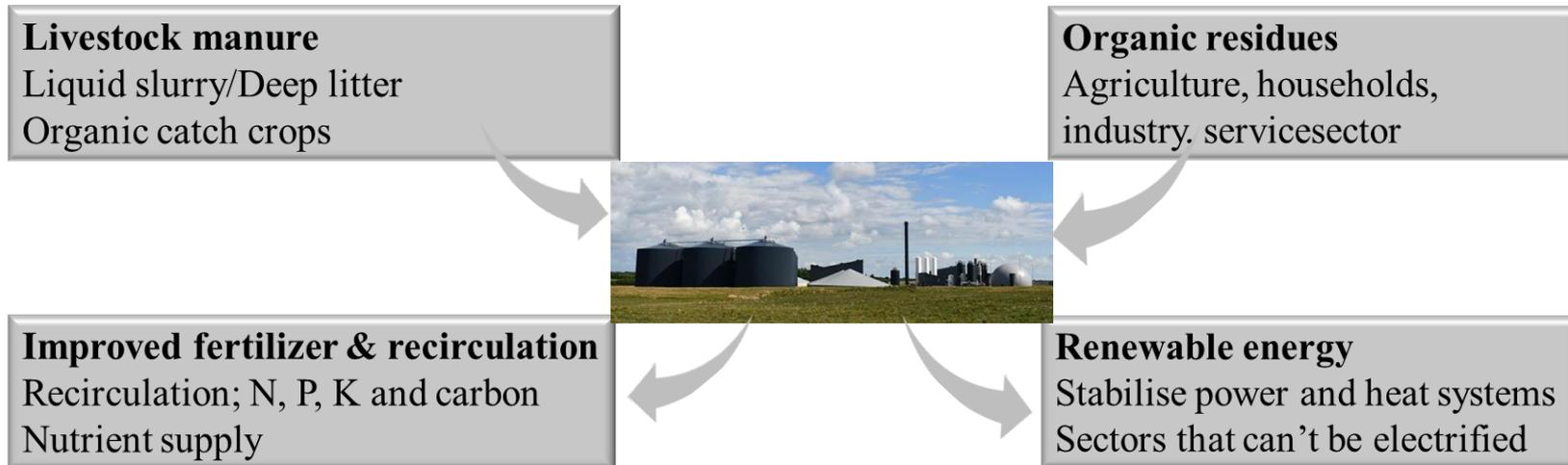


40 per cent of the livestock manure is digested in biogas plants  
40 per cent of the gas in the grid is biogas





## Danish Biogas Model – Renewable Energy in circular economy

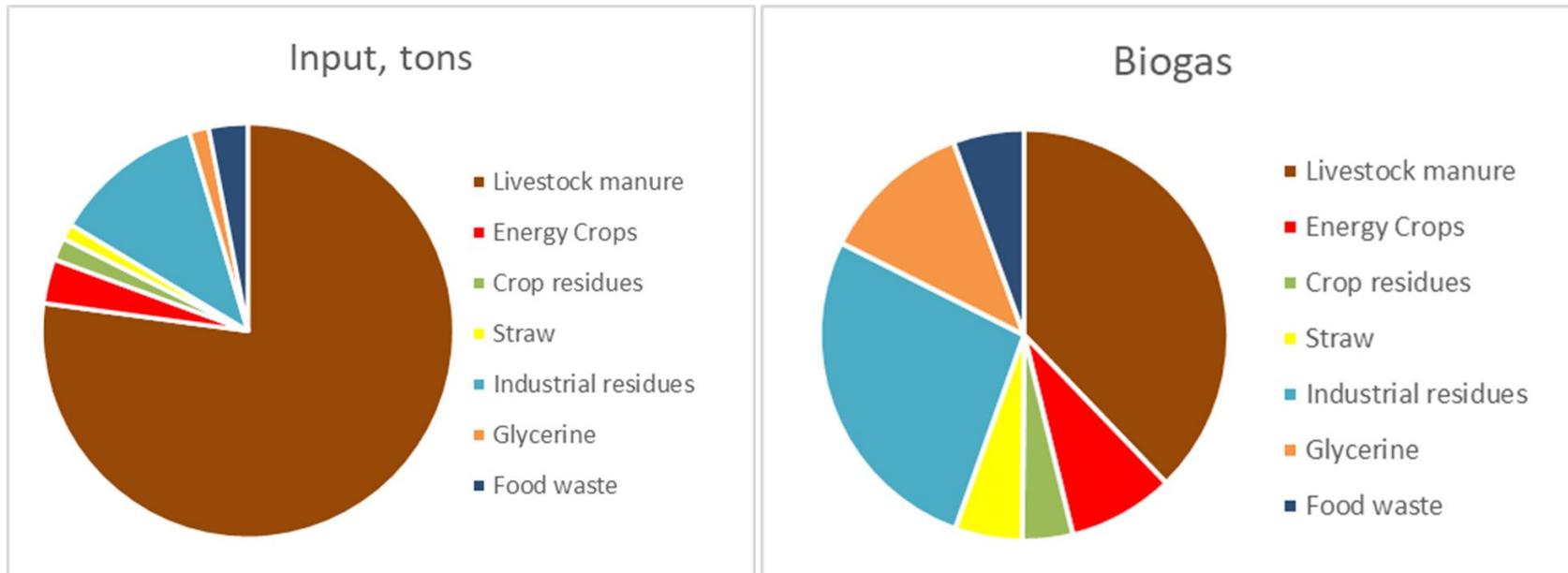


We turn residues from agriculture, industry and households into sustainable fertilisers with reduced climate and environmental footprint and the biogas fill the gap in the green transition where electricity do not meet the need and when there is no sun or no wind.





## Danish biogas – based on residues

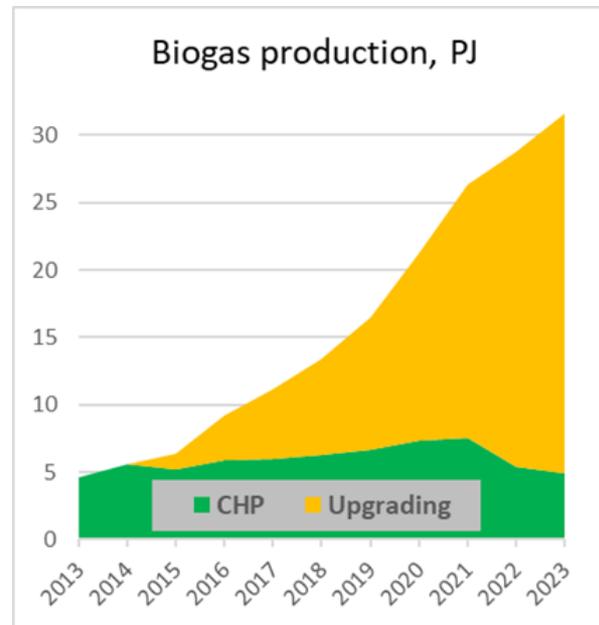
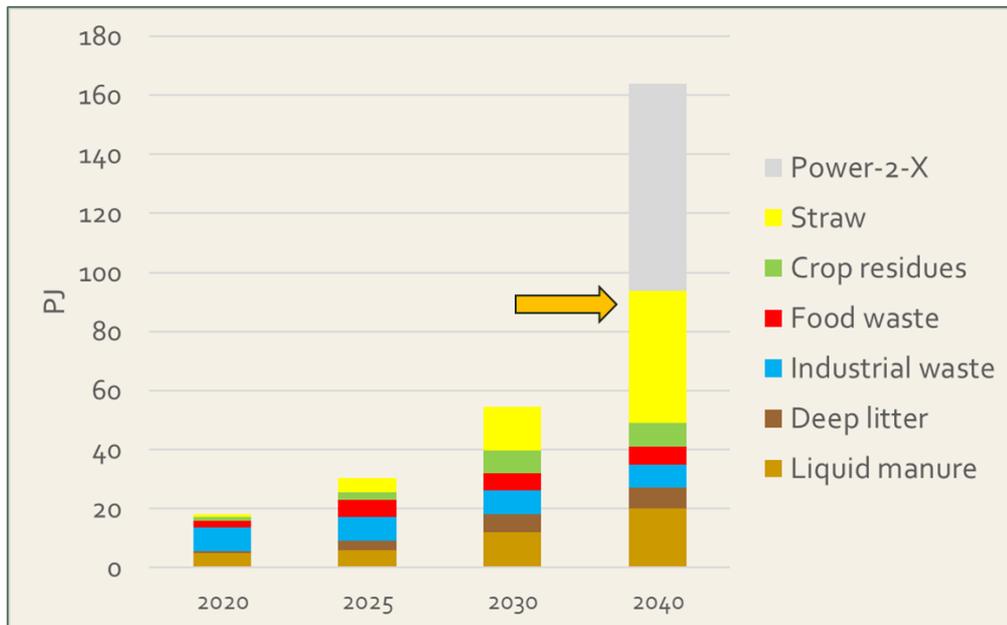


\* 2024 (DEA)





## Residues can substitute natural gas fully with storable RE

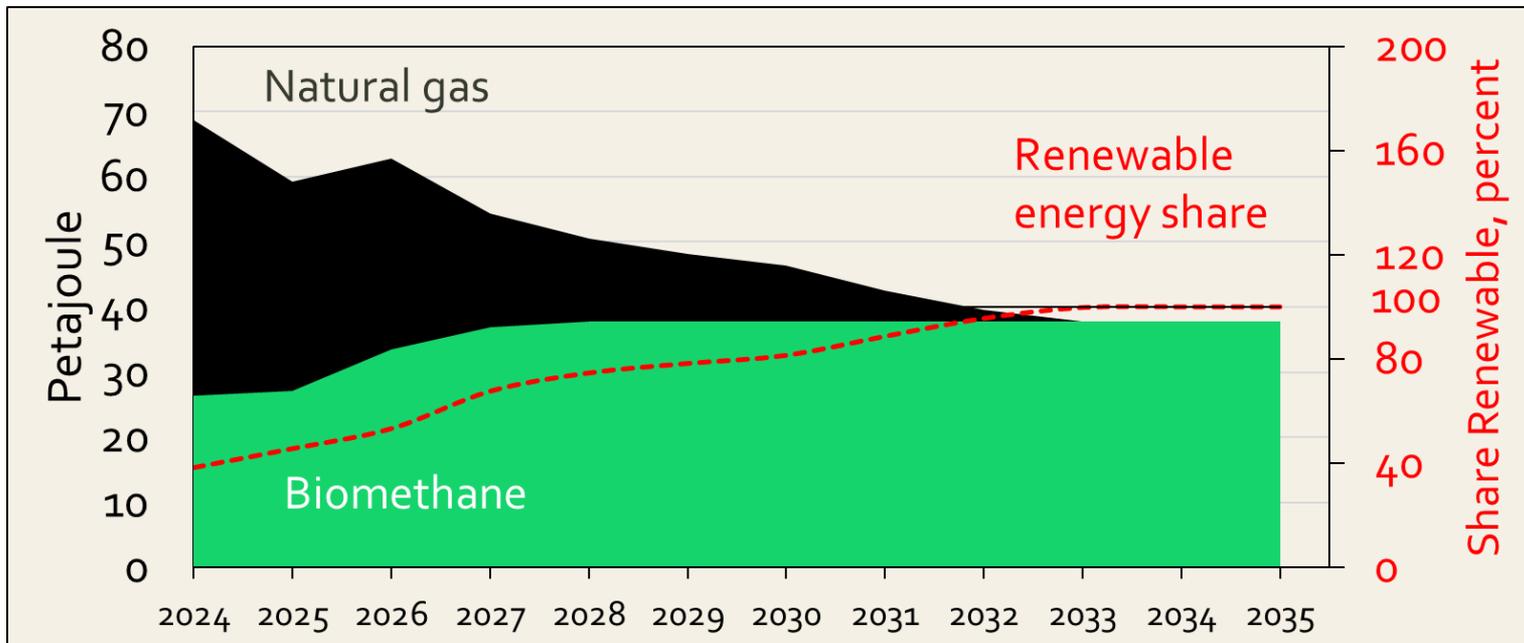


\* University of Southern Denmark and Seges 2020



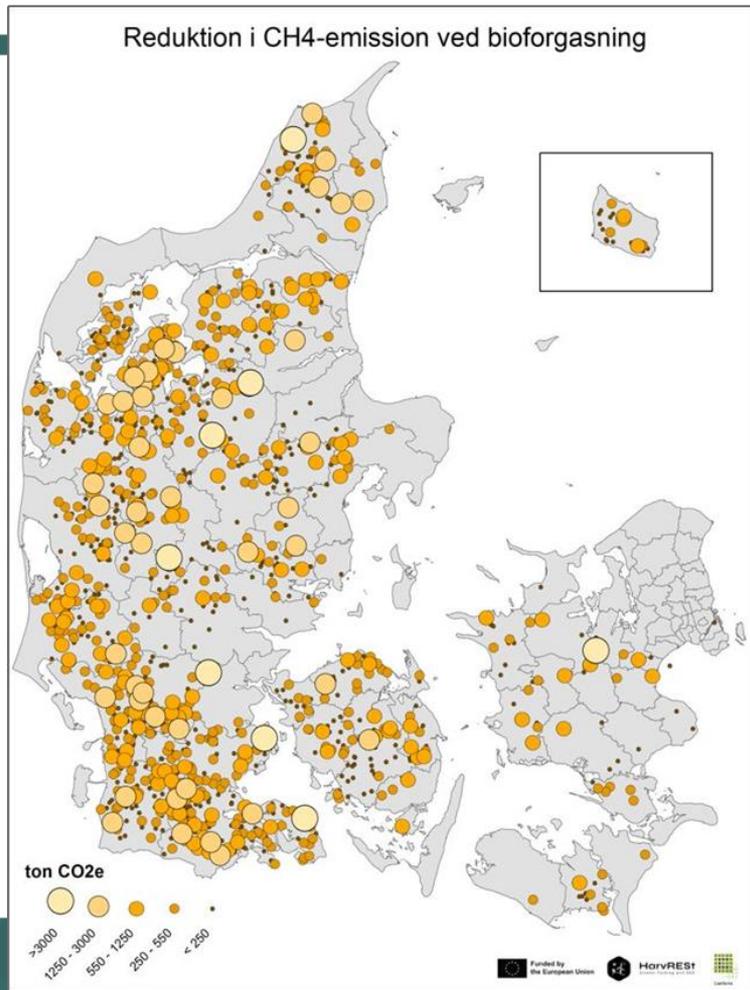


## 100 per cent green gas supply within 5 – 6 years!





## Examples of Danish biogas plants





## Green tripartite – worlds first carbon tax on biological emissions

### Central elements

- Tax on GHG emissions\*
- Aquatic environment protection
- Turn around in arable land use
- Doubling of organic acreage

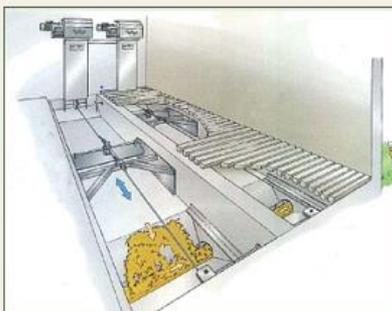


#### \* Carbon tax per ton CO<sub>2</sub>e

- 2030: 40 €
- 2035: 100 €

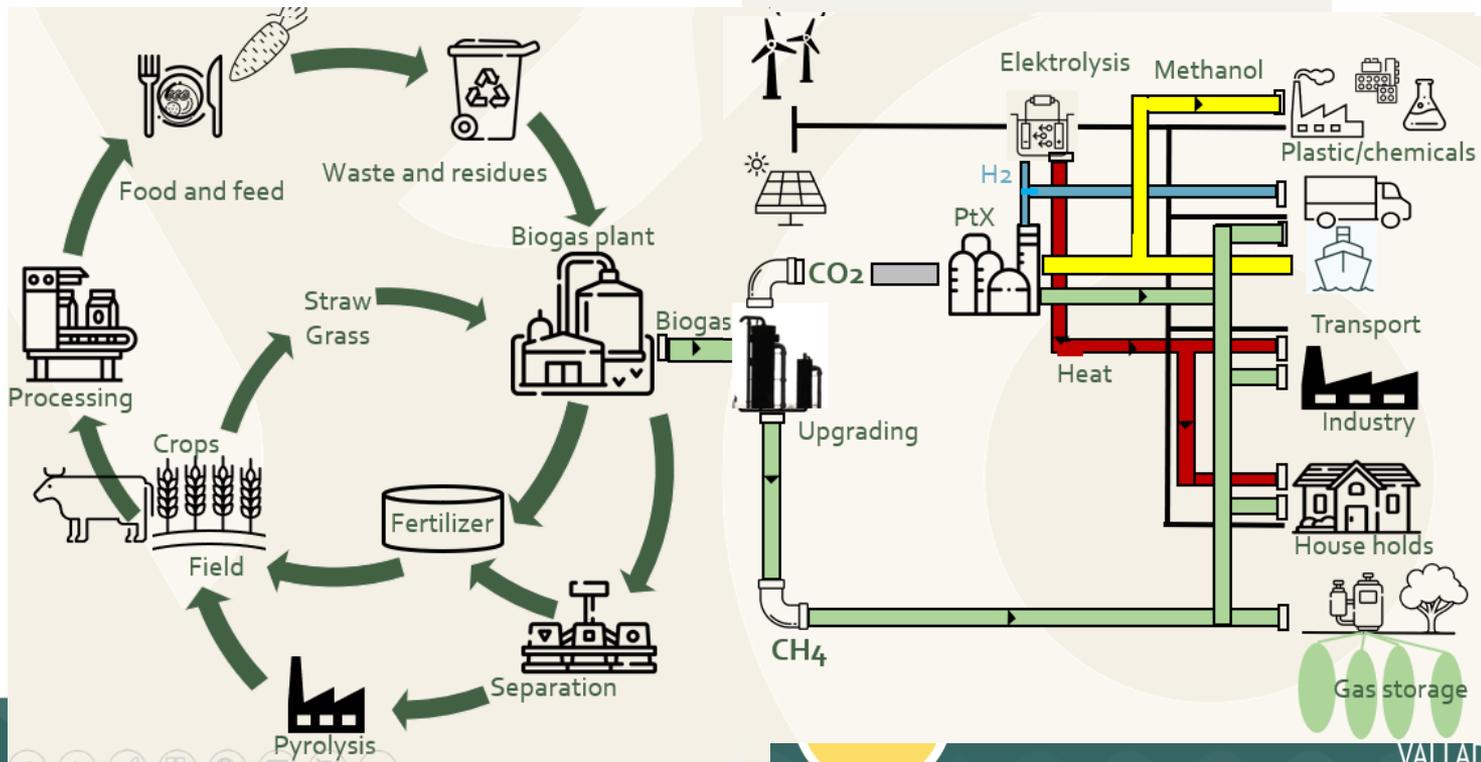
### Biogas a multiple solution

- Reduce methane emission from livestock manure
- Recirculation of nutrients from environm. sensitive areas
- Reduced leaching of nitrates by growing perennial grass
- Fertilizer supply – directly or after protein extraction





# Coupling sustainable agriculture with energy sector





## Incentives – stable framework conditions and pragmatism

### Subsidies

- FiT and FiP for electricity production
- FiP for upgrading and grid injection

### Construction subsidies

- Technological risk (1980'ies – 1990'ies)
- Financial crisis (2010's)

### Planning and permits

- Mandatory planning for biogas plants
- Standard requirements for permits

### Grid access

- Grid access (power and gas systems)
- District heating

### Use of digestate as fertilizer

- If <25 pct. waste: As pure livestock manure
- If >25 pct. waste in feedstock: As waste

### Veterinarian

- Cleaning of outside of lorries
- Shift pig / cattle and digestate / raw manure





## Use and post-treatment of digestate

Digestate – as liquid fertilizer



Digestate - separated





### 40 – an important figure !

- Share of biogas in Danish gas grid (per cent)
- Share of livestock manure being digested in biogas plants (per cent)
- Total Danish biogas production when I started (million cubic metres)
- Annual biomethane production in newest Danish biogas plant (million cubic metres)

**The biogas sector deliver solutions to the societal challenges:**

Geopolitical, climate change, ressource efficiency, aquatic environment protection, sustainable agriculture and food production, decarbonisation



# CONGRESO INTERNACIONAL BIOENERGÍA VALLADOLID 1-2.OCT.2025



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