US delegation, SoG, September 8 th 2025

Biogas – The Danish Model

- Renewable gas based on circular economy

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COO

Biogas Danmark

Danish Biogas Association

The organisationen for all stakeholders in biogas

Mission

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

Members

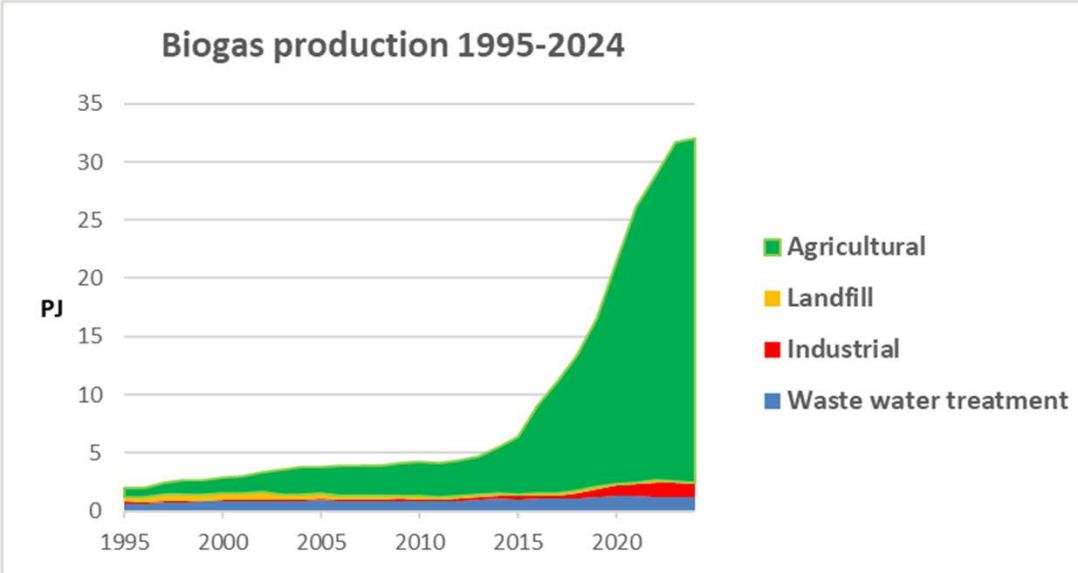
- Producers and users of biogas
- Biomass suppliers and users
- Technology and equipment suppliers
- Consultants and knowledge institutions
- Energy, waste and agriculture sectors
- Approximately 245 members

Biogas Danmark

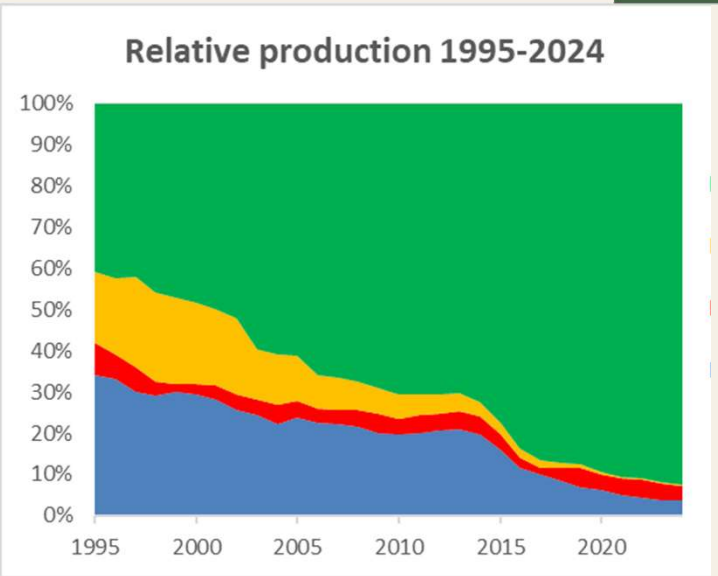
Biogas - a rapidly developing sector

From urban service to rural development and green transition

Expanding biogas production



Danish biogas is agricultural based



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

Biogas Danmark

Danish Biogas Model

Sustainable agriculture and security of supply of renewable gas based on residues

Livestock manure
Liquid slurry/Deep litter
Organic catch crops

Organic residues
Agriculture, households, industry, servicesector

Improved fertilizer & recirculation
Recirculation; N, P, K and carbon
Nutrient supply

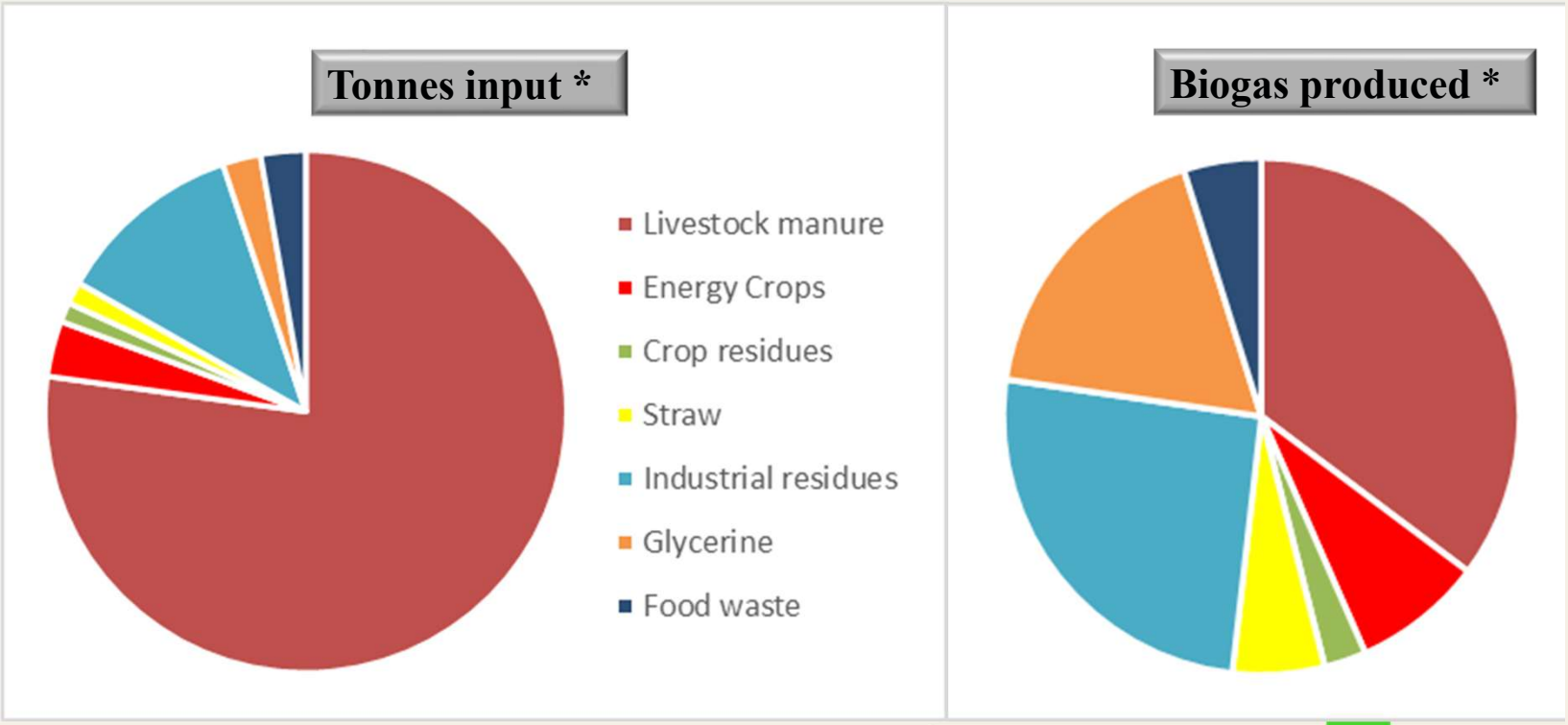
Renewable energy
Stabilise power and heat systems
Sectors that can't be electrified

Biogas Danmark

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.

Based on residues

From agriculture, industry and households

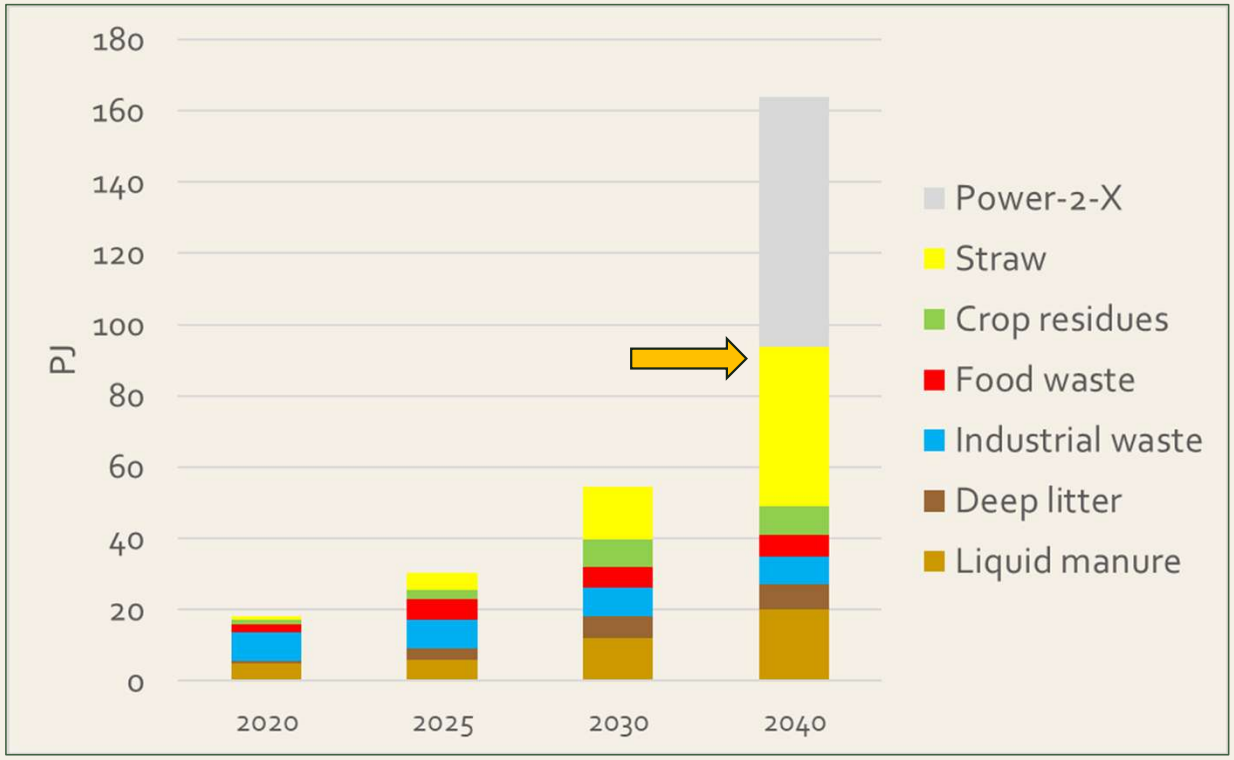


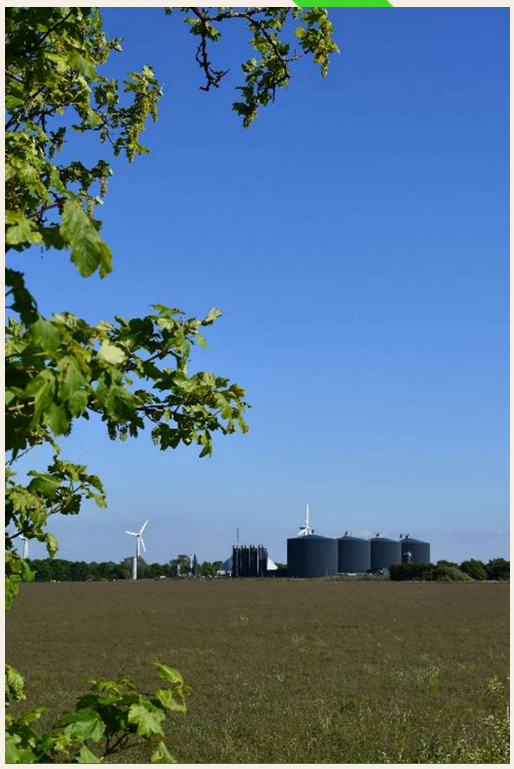
Biogas Danmark

* 2023 (DEA)

Resources are key

Biogas potential 2020 – 2040*





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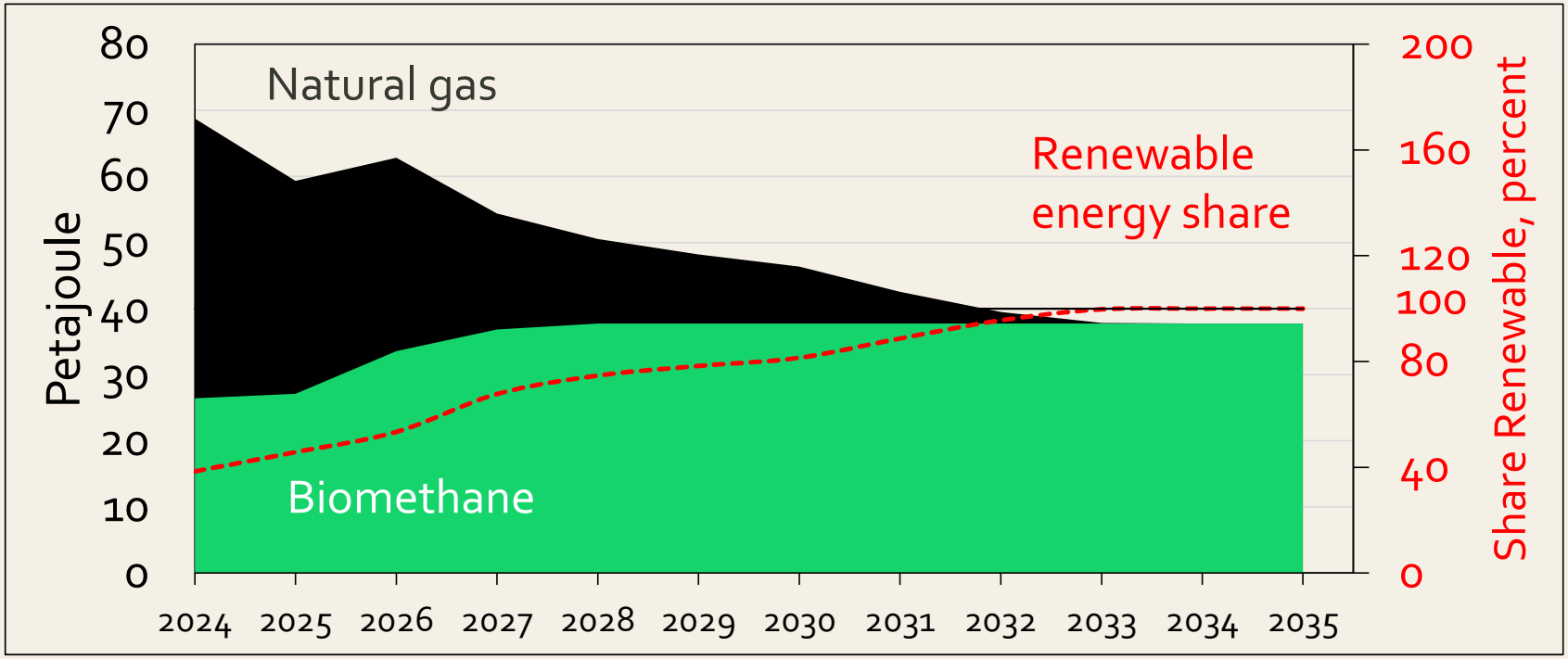
* University of Southern Denmark and Seges 2020

From fossil to green gas

Rapid green transition of gas supply



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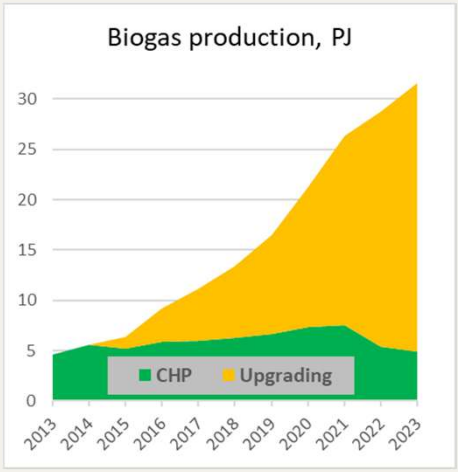
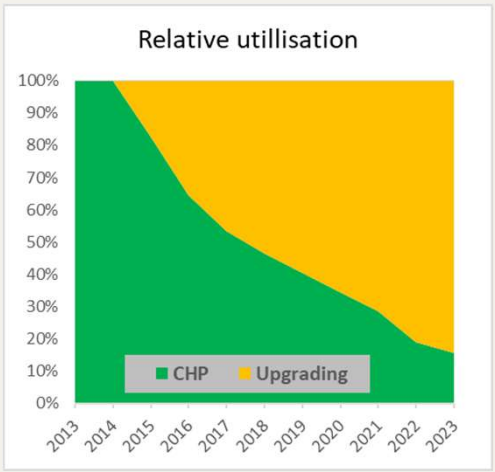
Biogas – the storable Renewable Energy

Fast turn-around from CHP to upgrading - greening the gas grid

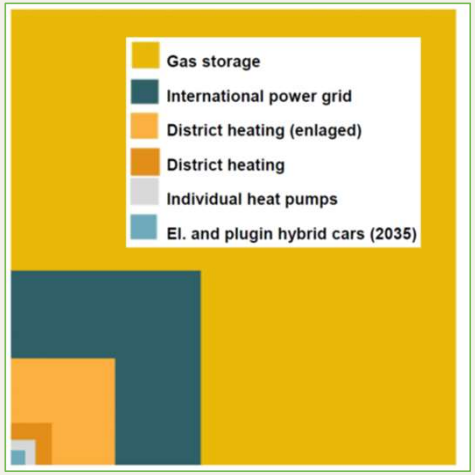
Rapid growth



Growth is in upgrading



Gas grid: the big battery*



* The Danish gas grid can store energy in biomethane equal to the electricity to power all electric cars on a parking lot 13 times around the Earth

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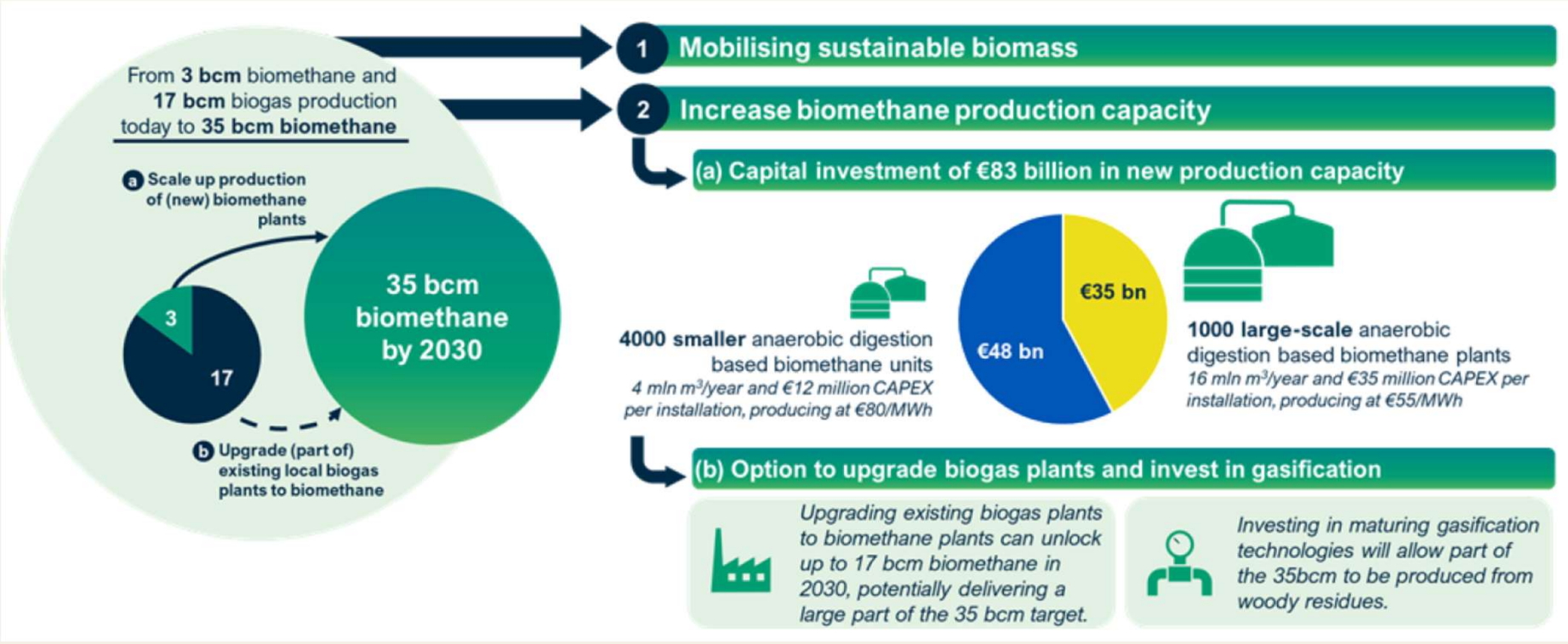
REPowerEU: 35 bcm biomethane

Very ambitious target in 2030 following the Russian aggression in Ukraine



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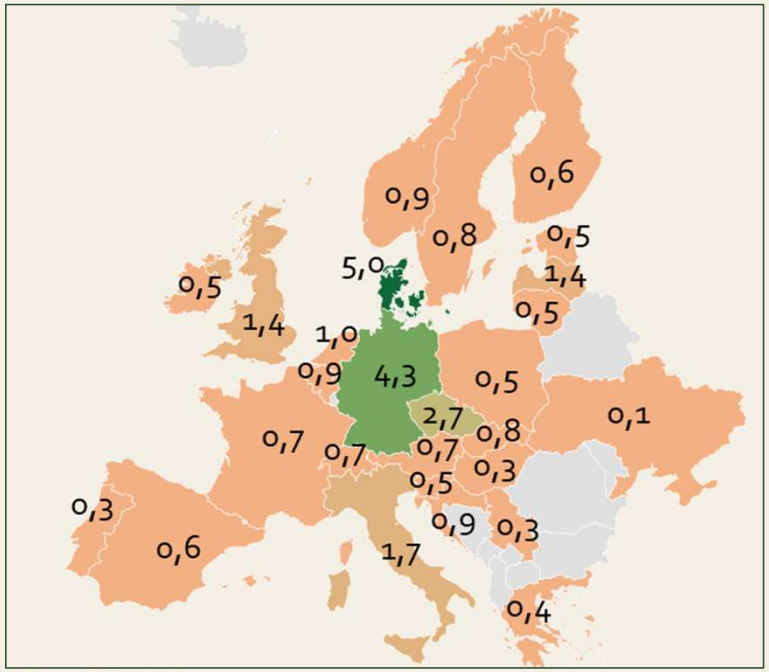
European frontrunners

Denmark on track to deliver on the EU 35 bcm target by 2030

Biogas production (GJ per capita)



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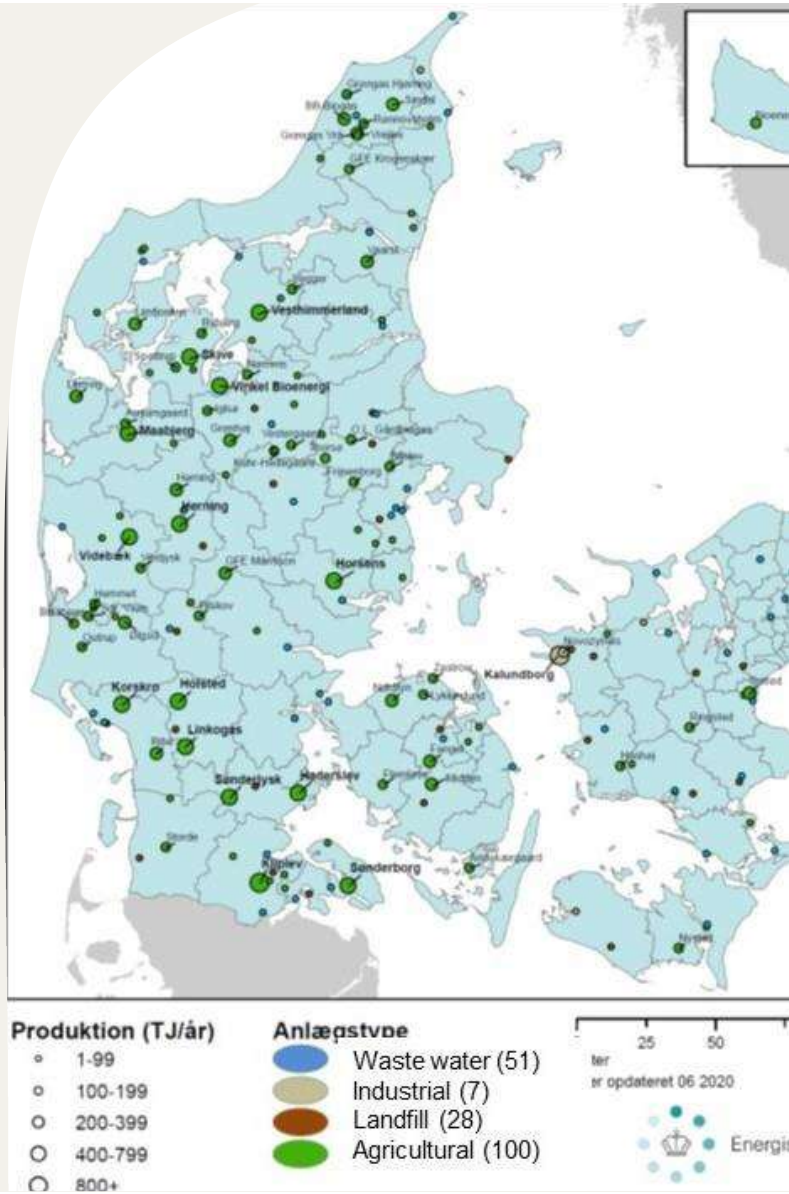
Danish Biogas Plants

Biogas Danmark



A shift in framework conditions

From Feed-In-Tarifs / Premiums to Tenders to market pull

2012 Energy Agreement

Specific FiT for different purposes

- CHP, Gas grid, Industry, Transport, Heat
- Originally without limit (volume, time)
- Guaranteed for 20 years for fixed volume
- Up to 42 PJ per year

Framework conditions*

Biogas - a tool in many policies

Agricultural policy	Energy policy	Circular economy	Climate
Green growth 2009 • Investment grants • Target: In 2020 50 % of livestock manure into biogas plants	**Energy agreement 2012** • Improved FiT (power) • New FiT upgrading, transportation, process and heat	**Ressource strategy 2013** • In 2023 reuse 50 % of household waste • Organic fraction from incineration to biogas	**Climate law 2019** • 70 % reduction of greenhouse gas emissions by 2030 • Climate partnerships

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* Key instruments recent years

The Green tripartite

The worlds first carbon tax on biological processes

Central elements

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

*** Carbon tax per ton CO2e**

- 2030: 40 €
- 2035: 100 €

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Biogenic CO_2 – an important resource

Examples of current use

Horsens Bioenergi

GrønGas Hjørring

Nature Energy Korskro

European Energy Kassø / Tønder Biogas

Biogas Danmark

TL: Bigadan, BR: European Energy / Lundsby

Biogenic CO_2

A very important molecule in future fossil free society

"Biological" use

Food

- Ingredient (sparkling)
- Controlled atmosphere

Production

- Greenhouses (terrestrial)
- Algae (aquatic)

Killing

- Anesthesia in slaughterhouses
- Controlling pests in stores

Technical use

Energy

- E-methane
- E-methanol

Materials

- Plastics og polymeres
- Cement

Technical

- Cooling
- Controlled atmosphere (semiconductors)

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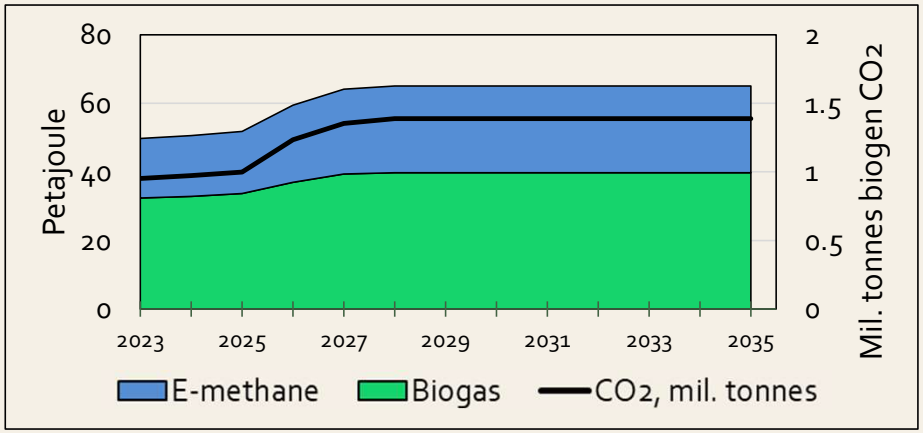
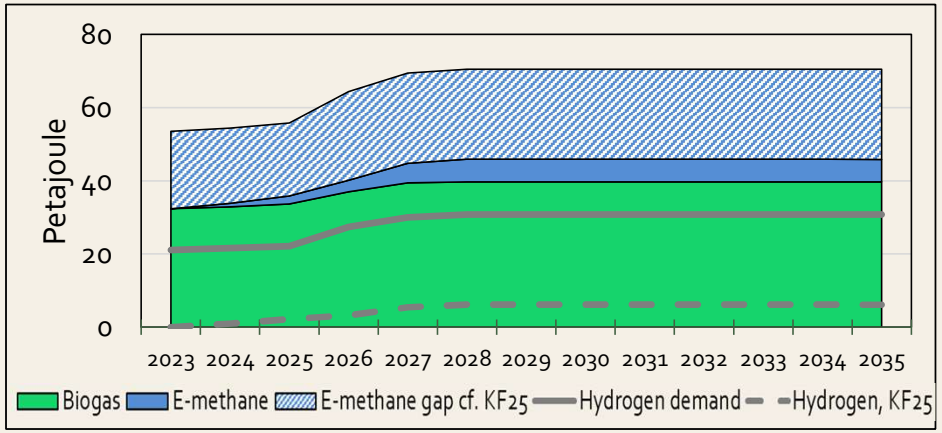
Huge PtX-potential from biogas

Hydrogen and electrolyzer capacity the limiting factor

Biogenic CO2 and e-methane potential



Hydrogen supply will be limiting factor



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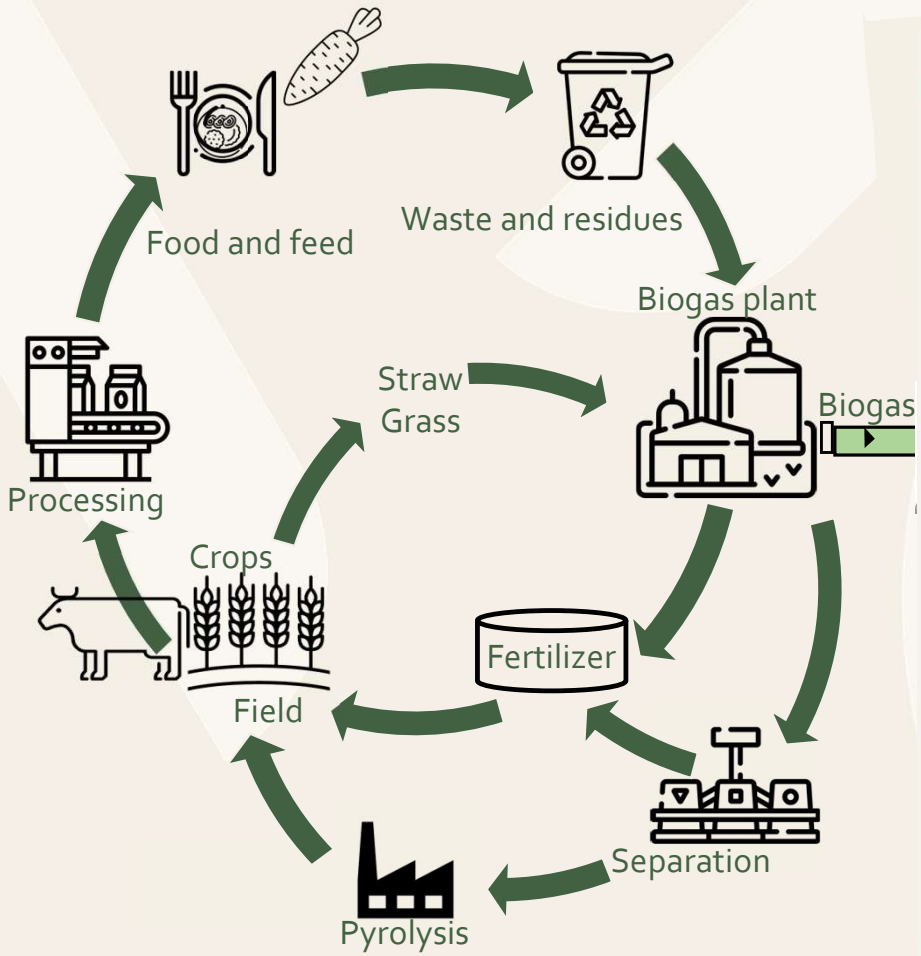
Biogas: circular economy and sector integration



Solutions to multiple challenges

Production **and** use of biogas has several positive effects

Advantages of biogas

- Reduced leaching of nitrates
- Recirculation of nutrients
- Reduced greenhouse gas emission from agriculture and energy sectors
- Storable renewable energy
- Jobs in construction, management and maintenance

Biogas – a key in many sectors

- Sustainable agriculture / food production
- Circular economy / waste handling
- Climate change / grenhouse gas mitigation
- Security of supply / geopolitical situation

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