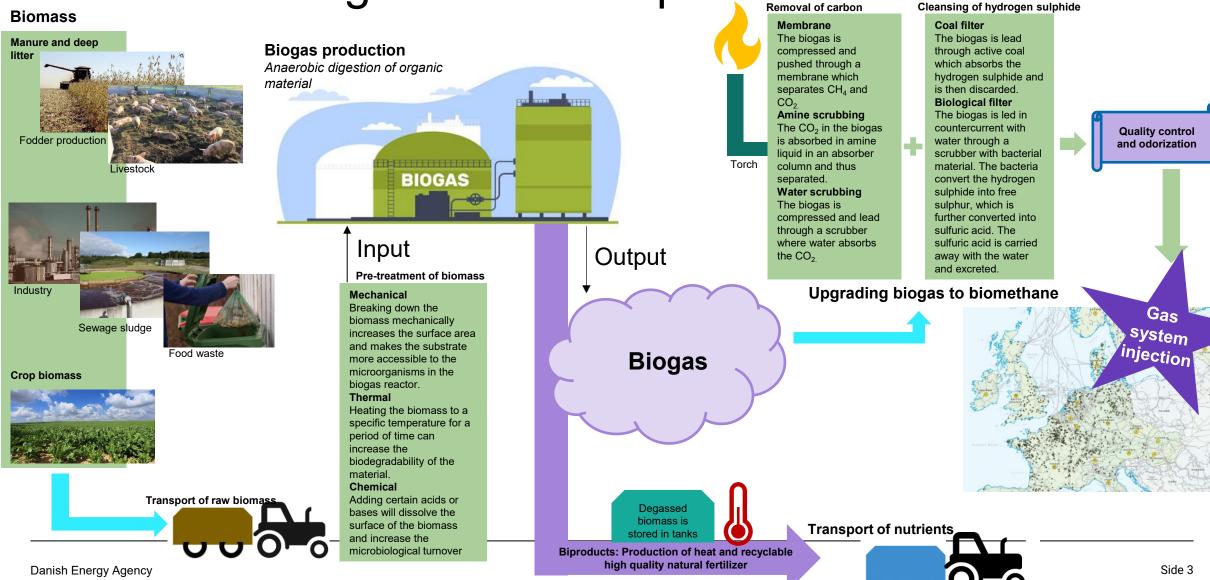


Denmark is an agricultural country

Biogas – chain of production



Biomasses

					\ \\
Biogas				Gas produced	
2023		Tonnes		mio. Nm3	
	Manure	14.684.000	77,2%	439	35,2%
	Energy Crops	657.000	3,5%	101	8,2%
	Crop residues	232.000	1,2%	32	2,6%
	Straw	260.000	1,4%	71	5,8%
	Husk	108.000	0,6%	36	3,0%
	Olive residues	35.000	0,2%	10	0,9%
	Potato/beet pulp	453.000	2,4%	32	2,6%
	Fisheries residues	203.000	1,1%	29	2,4%
	Slaugtherhouse waste	434.000	2,3%	63	5,1%
	Soapstock	126.000	0,7%	48	3,9%
	Melasse	106.000	0,6%	32	2,6%
	Glycerine	452.000	2,4%	222	17,8%
	Industrial waste	750.000	3,9%	63	5,1%
	Household pulp	530.000	2,8%	60	4,9%
Grand Total		19.030.000		1.246	
Energy content PJ				29	
Meth	ane yield, Nm3 pr. tonnes bior	mass		42,6	





SUSTAINABILITY REGULATION

Energy crop-regulation

- Starting 2015 12 %
- Current limit 4 %,
- Ban on use of maize from 2025 Challenges:
- Alternatives to energy crops?
- Catch crops?

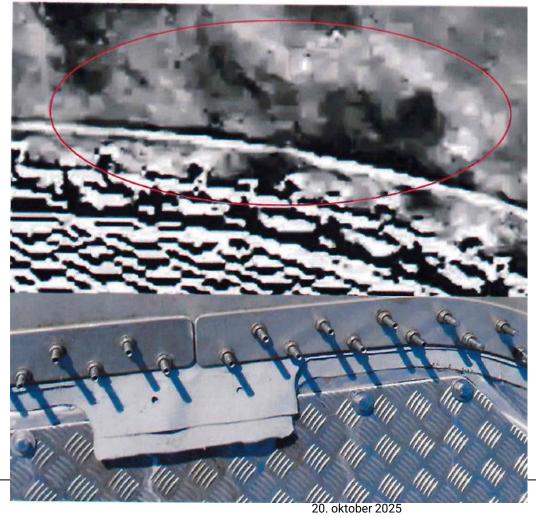
Methane loss

- Report from 2021 shows average loss of 2.5 pct.
- New regulation (implemented 2023):
 - Sources of leak must be identified and improved
 - Annual examination of the plant from 3rd party
 - Point source loss from upgrading plant max 1 pct.
- New quantification in October 25



Methane loss regulation Flir-Camera





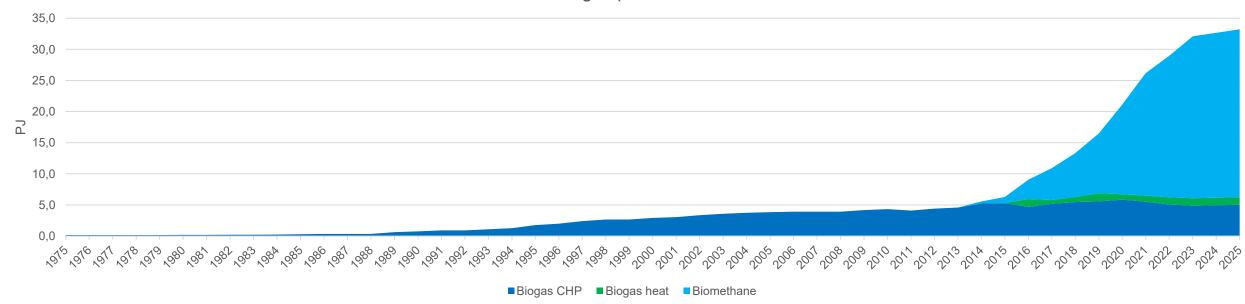
Energistyrelsen

BIOGAS PRODUCTION – THE LEARNING CURVE



Page 7







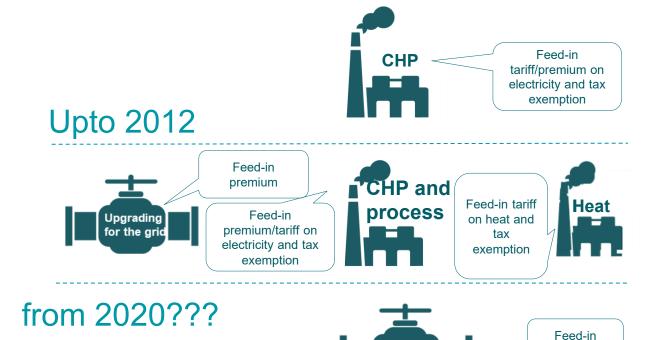
SUPPORT SCHEMES

EXPANDING FIRST, THEN DRIVING DOWN SUBSIDY COST



Support schemes (lasting 20 years)

- Until 2012: support for CHP using biogas
- 2012-2019: support in 20 years for upgraded biogas (biomethane) and direct applications
- From 2020: Tenders for biomethane (12,96 billion DKK ≈ 1,7 billion Euro) over 20 years for biomethane ?????
- From 2028 Blending obligation combined with tax exemption ????



from 202X



Green methanol no support

Page 8

premium



Incentive schemes

Production support

- Taxpayers pay
- RE-Share in country of consumption (REDII)
- CO2-effect in production country (IPCC)
- Long support period
- High investor certainty
- Necessity to start a new biogas sector
- Safety net for investors
- Immature biogas sector

Blending obligation

- Consumers pay
- Tax exemptions?
- RE-Share in country of consumption (REDII)
- CO2-effect in production country (IPCC)
- Short contracts
- Low investor certainty
- Large flexibility at improved market conditions
- Mature biogas sector



GREEN GAS STRATEGY

PUBLISHED DECEMBER 2021

- Gas consumption in the future Priority for the industry with high temperature production
- Facing out household consumption
- Security of supply. Support the energy system in case of wind shortage or disruptions in the gas network
- Sustainable production on biomethane
- Reshaping the gas network to other green gases.
- Governmental ambition to have 100 pct. green gas in 2035
 now 2032
- https://ens.dk/media/1715/download

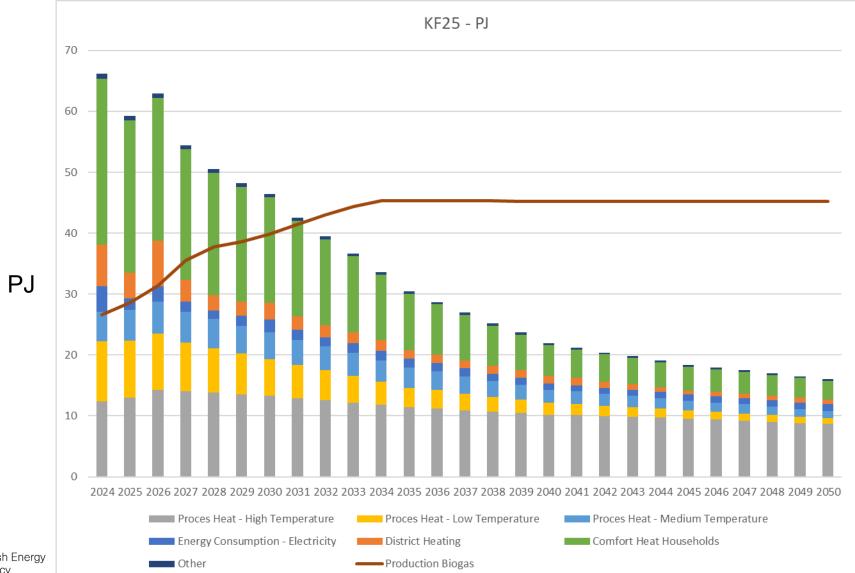




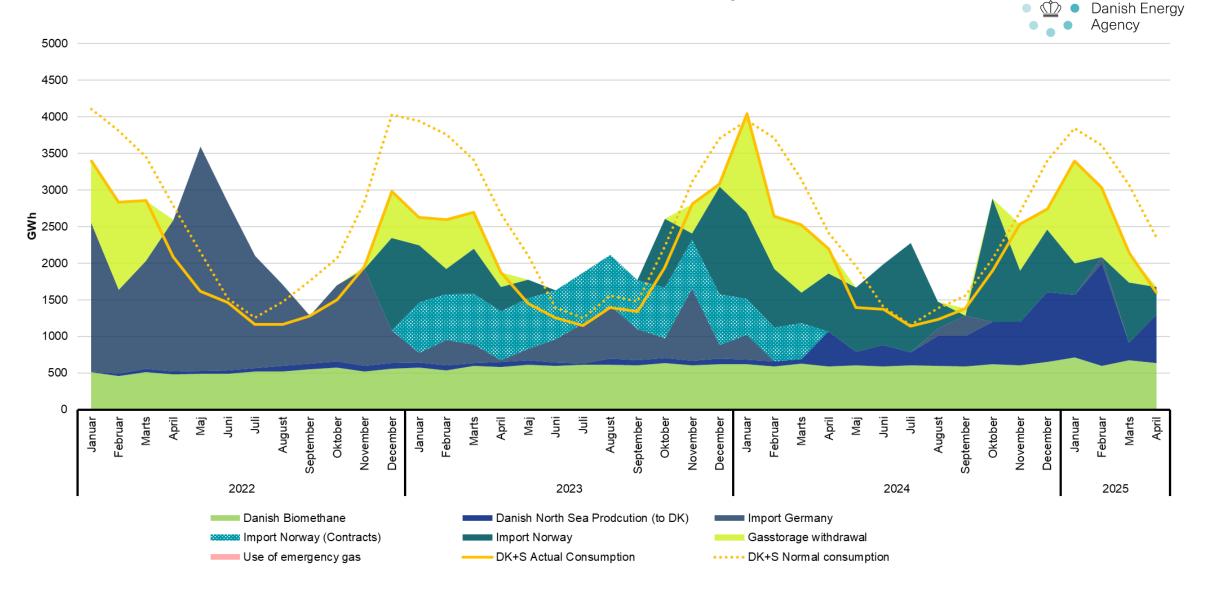


DEVELOPMENT IN BIOGAS PRODUCTION AND CONSUMPTION

CLIMATE PROJECTION (KF25)

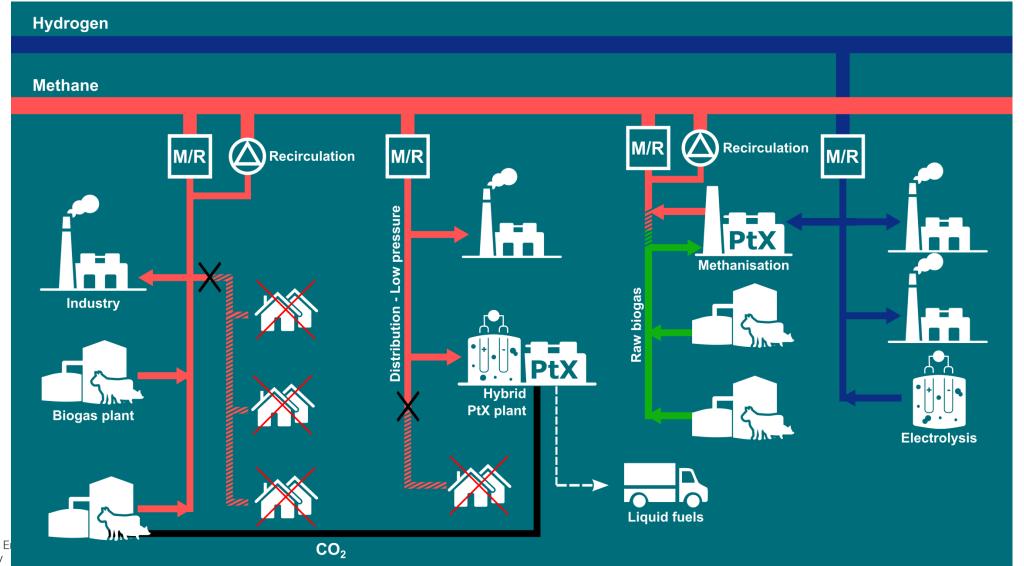


Gas consumption and supply since 2022,



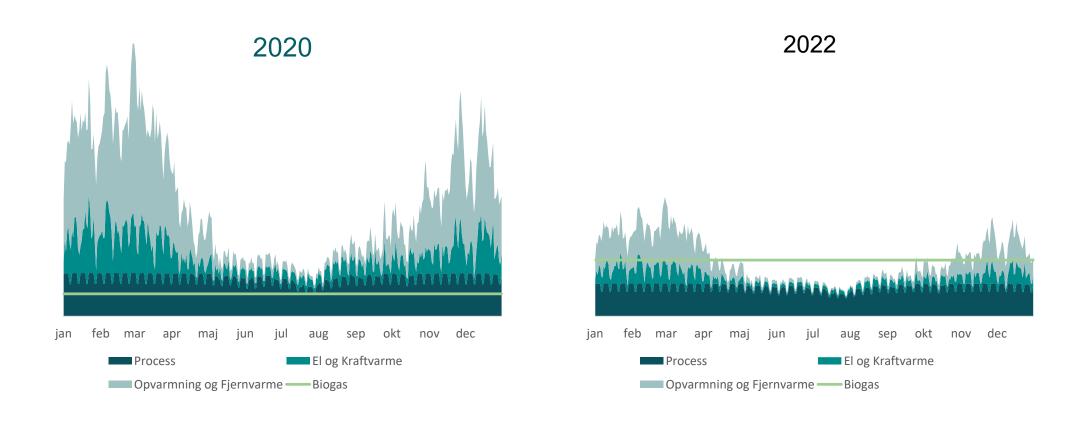
MODIFY THE GAS SYSTEM

HYDROGEN, BIOMETHANE, CO2 AND BIOGAS?





DSO bottlenecks biomethane





CHALLENGES AND OPTIONS

ADAPTING THE GAS-GRID(S)

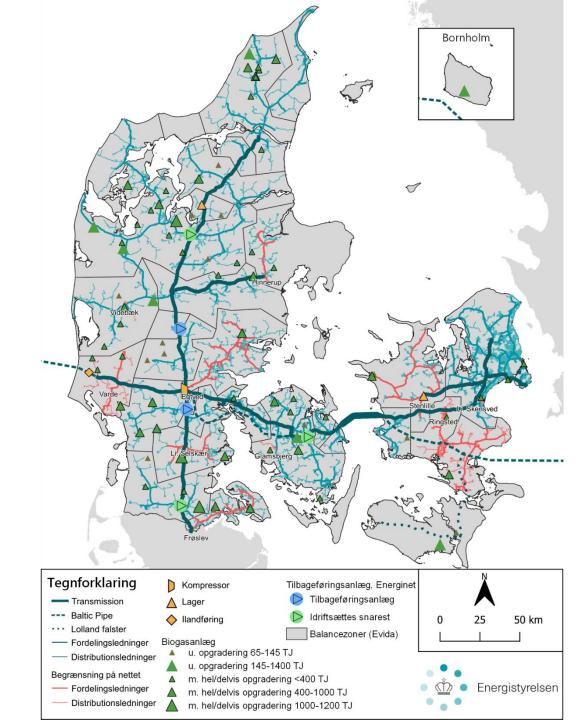
2020 Shift in focus 2050

Focus on adaptation of the gas system to transport of other gasses

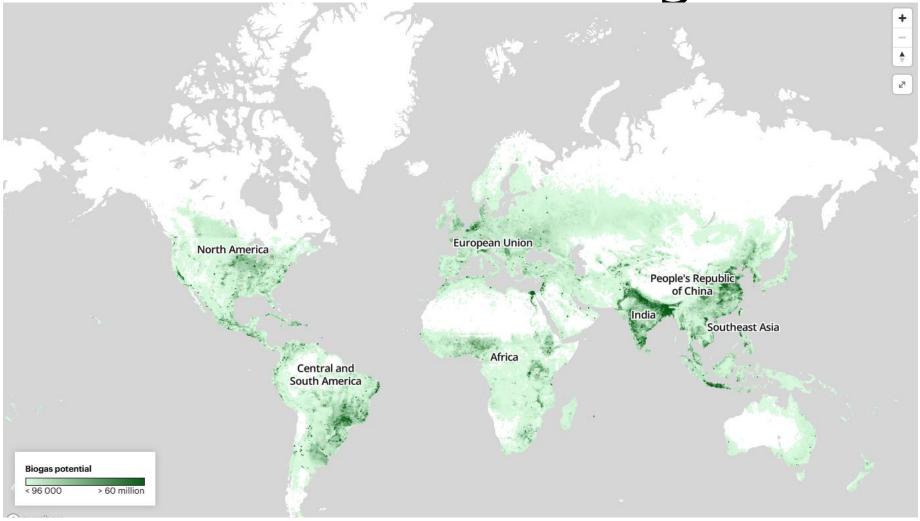
Focus on more greener gas and adaptation of the gas system, as well as phasing out households

- Adjusting the system to new flow patterns with decentral RE-gas production
- Modify the system for new gasses to transport
- Modify the support scheme
- Blending obligations /Tax exemptions
- Sustainability
- PtX/e-methane/Methanol





Potential for Global Biogas Production



Energistyrelsen Source: IEA Biogas Potential 20. oktober 2025 Side 16



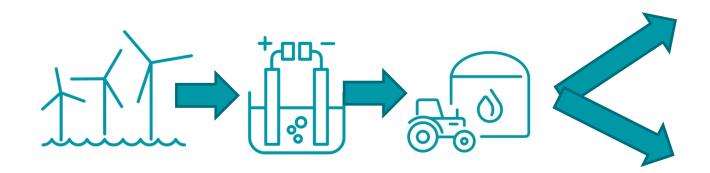
PTX – THE NEXT CHAPTER



E-methane (Sabatier)

$$4H_2 + CO_2 -> CH_4 + 2H_2O$$





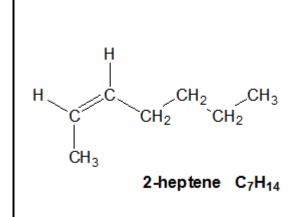
Fischer-Tropsch



Methanol (Catalytic)

$$2H_2 + CO_2 + CH_4 -> 2CH_3OH$$







THE DANISH GAS SYSTEM

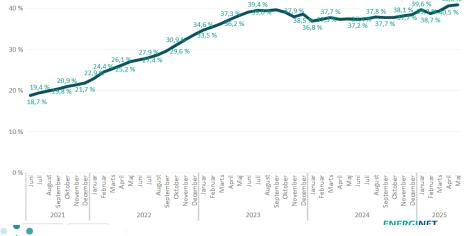
Increasing production of biogas and decreasing gas consumption

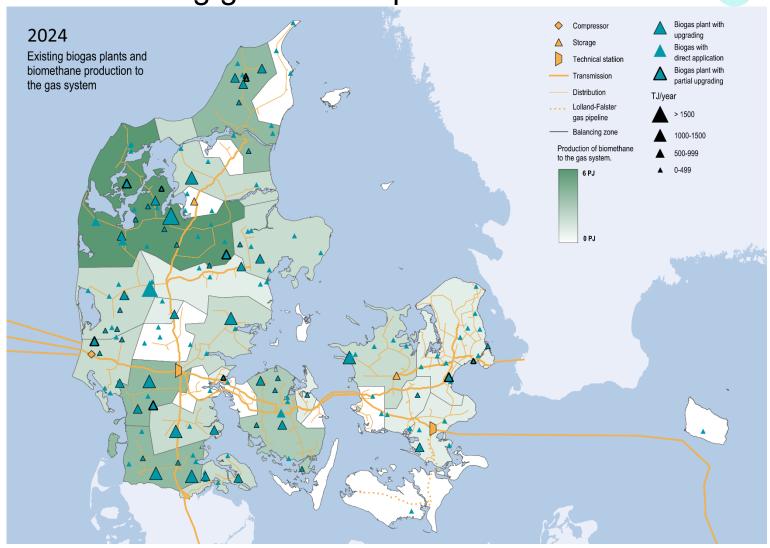
Increasing production of biogas

Increase since 2014. 2024 ≈ 40 % of total consumption.

Decreasing consumption

During the last 20 years gas consumption has decreased by 50% due to diminishing demand in gas for CHP and fazing out households.





2012 SUPPORT SCHEME UPGRADING/BIOMETHANE

Subsidy structure:

- Base premium
- Natural gas price adjusted premium (Low gas price -> high premium, High gas price -> low premium)
- Early starter premium (phased out in 2019)

Characteristics of scheme:

- 20 year subsidy period
- Possible to opt in and out
- Check for over-compensation
- Ngas adjusted market price 7,2
 Euro/GJ = 2,8 Euro/GJ

Euro/GJ	2020	2021	2022	2023	2024	2025
Base premium	11,2	11,2	11,3	11,8	11,6	11,6
Natural gas price adjusted premium	5,9	7,0	0,0	0,0	0,0	0,0
Total	17,1	18,2	11,3	11,8	11,6	11,6



TENDERS

- 6 tenders Support for 20 years 10 PJ/year in 2030
- Cross border trade issues
- Complaint Landvärme
- Court ruling Swedish tax exemption scheme
- Only support to methane
- Green value (OG/PoS) is property of the state
- Biogas Denmark suggested a blending obligation

Mio. Euro	2024	2025	2026	2027	2028	2029	2030
Tenders	27,0	0,0	20,3	10,1	10,1	12,2	11,9
Accumulated	27,0	27,0	47,3	57,4	67,6	79,7	91,6

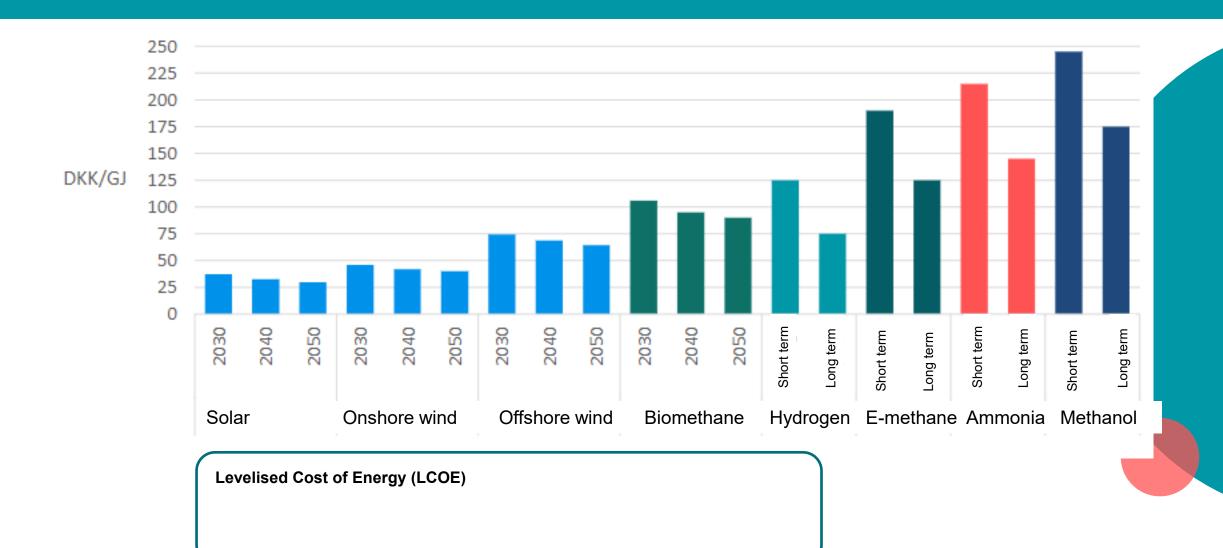
- Ukraine crisis 2022
- Accelerate first tender from 2026 to 2025
- Finansing methane loss regulation (appr. 4 mio. Euro/year 2026 tender)
- VAT issue
- State aid approval December 2024



10/20/2025 Page 2

Technology Projections

Danish Energy



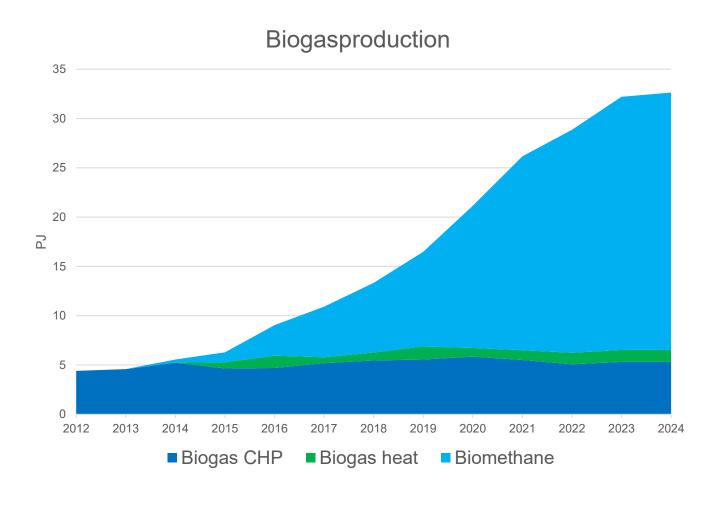
Development in Denmark

Increase in biogas productionen up to 2022

- Pipeline:
 - Mature projects app. 18 PJ
 - Immature projects app. 30 PJ

New incentives:

- Tenders?
- Blending obligation?
- Tax exemption?

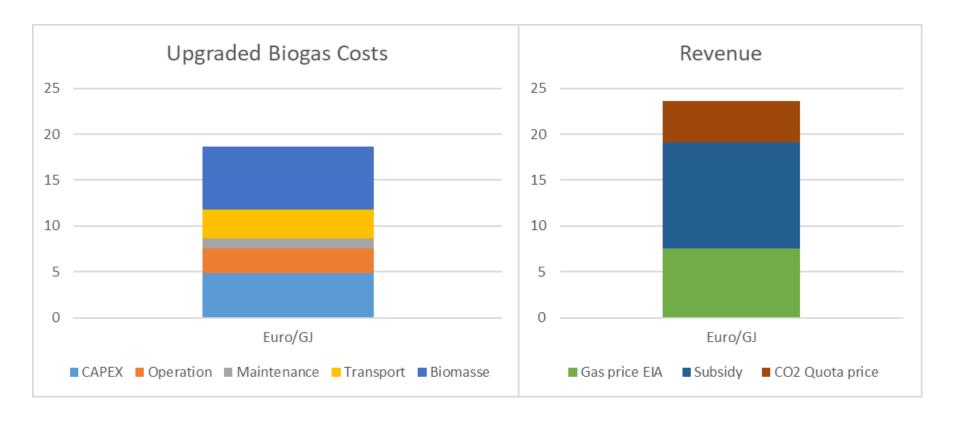


Energistyrelsen

Side 23

COSTS AND REVENUES OF UPGRADED BIOGAS - LCOE





Guaranties of origin – No public available price – EU quota price

2020 study on costs for producing biogas (2024 prices)

https://dgc.dk/media/fnpmk50w/prod upgraded biogas optimization uk summary.pdf

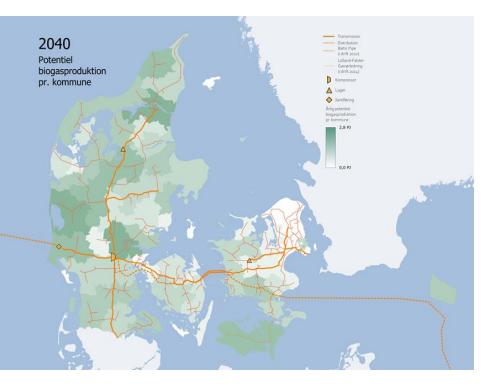


Blending obligations (Veyt)

	France	Germany	Austria	Portugal	Netherlands
Gas type	Biomethane	All renewable gases	All renewable and recycled gases	Renewable hydrogen and biomethane	Renewable gases
Certification	Biomethane Production Certificates (BPCs)	TBD	GOs + green gas seal	GOs	GOs + Green Gas Units (GGEs)
Unit	TWh	GHG reduction	TWh	TWh	GHG reduction
Timeline	From 2026 onwards	NA	From 2024 onwards	From 2023 onwards	From 2026 onwards
Status	Draft	Concept	Fail	In force	Draft
Qualified production	Domestic only	EU production	Domestic only	EU production	Domestic only
Buy-out price	100 EUR/MWh	TBD	2024: 180 EUR/MWh 2027: 200 EUR/MWh	max. 62 EUR/MWh	500 EUR/MWh
Targets https://www.veyt.com/articles/rev	2026: 0.63% 2027: 2.91% 2028: 6.59%	2025: 0.67% 2030: 7.5%	2024: 0.7% 2025: 1.05% 2026: 1.75% 2027: 2.8% 2028: 4.2% 2029: 5.95%	2025: 1% of in end-user portfolio 150 GWh/year	2026: 0.15 bcm 2030: 1.6 bcm/2.9 Mton chain emission reduction



BIOGAS POTENTIAL



		Potential (PJ/Year				
		2020	2025	2030	2040	
Manure/ Slurry	П	5	6	12	20 ⁶	
Straw	П	1	5	15 ⁵	45 ⁵	
Deep Litter		0,7	3	6	7	
Waste Food Industry		8	8	8	8	
Discarded Crops		0,3	0,4	0,6	0,9	
Household organic waste		2	6	6	6	
- heraf KOD		2	5	5	5	
- have/park affald		0	1	1	1	
Residuals from vegetal crops		1	2	7	7	
- heraf roetoppe og andre toppe		0	1	3	3	
- græs fra naturarealer ⁷		1	2	3	3	
- randzoner og grøftekanter		0	0	1	1	
I alt		16	30	55	94	



20. oktober 2025 Side 26

PLANNING MEASURES

- Government order in planning for the municipalities from 2018
- All Municipalities shall reserve areas suitable for biogas production
- Municipal plans runs for 4-8 years
- DEA checks draft plans in terms of biomasses available and proximity to the gas network.
- DEA may order the municipality to comply



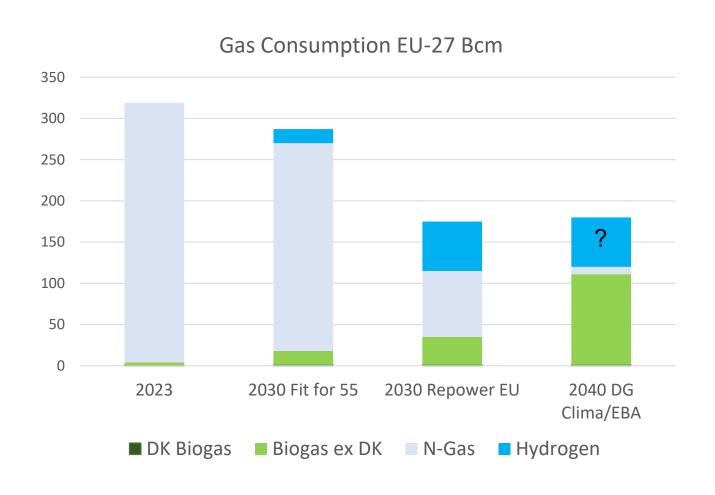


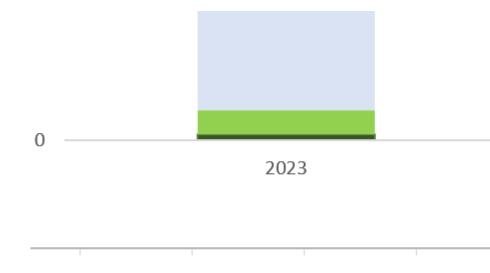
Industry

- Tax exemption for CO₂
 tax
- Guarantees of origen
- Proff of Sustainability (PoS)
- ETS

- ESG reporting
- Carbon footprint on building materials
- Investment state aid for converting to eletricity

Gas Consumption & Biogas Production





Source: EU Fit for 55 Repower EU

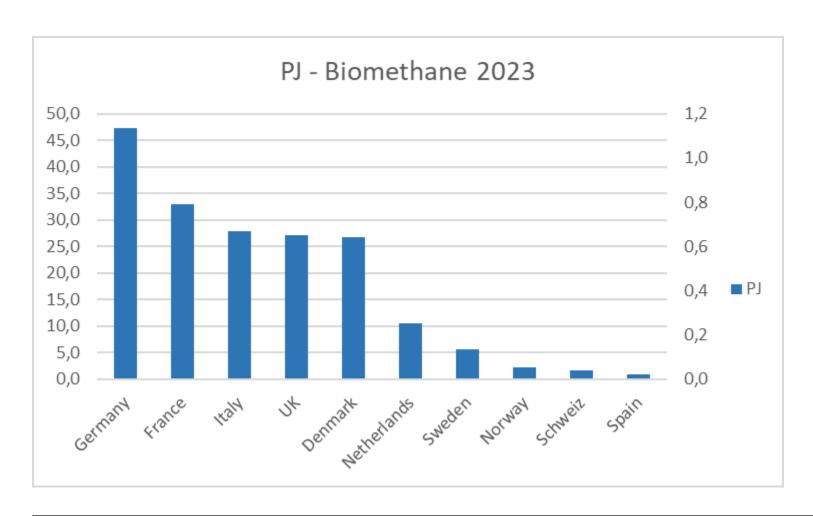
DG Clima: Securing our future Europe's 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and

prosperous society

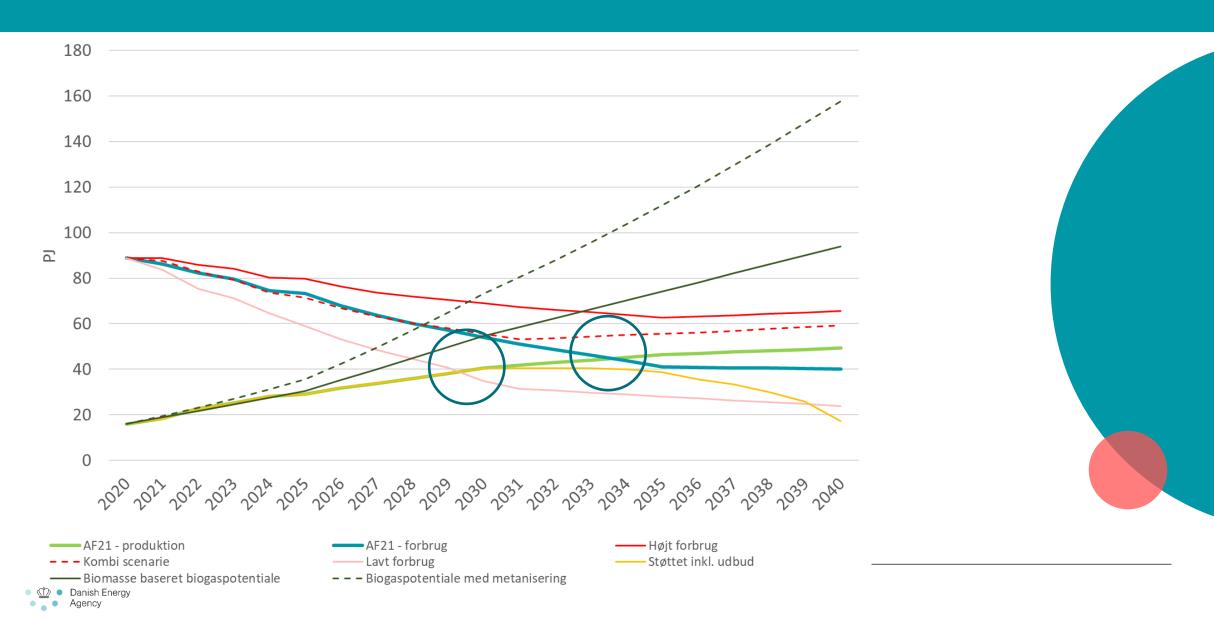
EBA: Biomasses toward 2040 and beyond

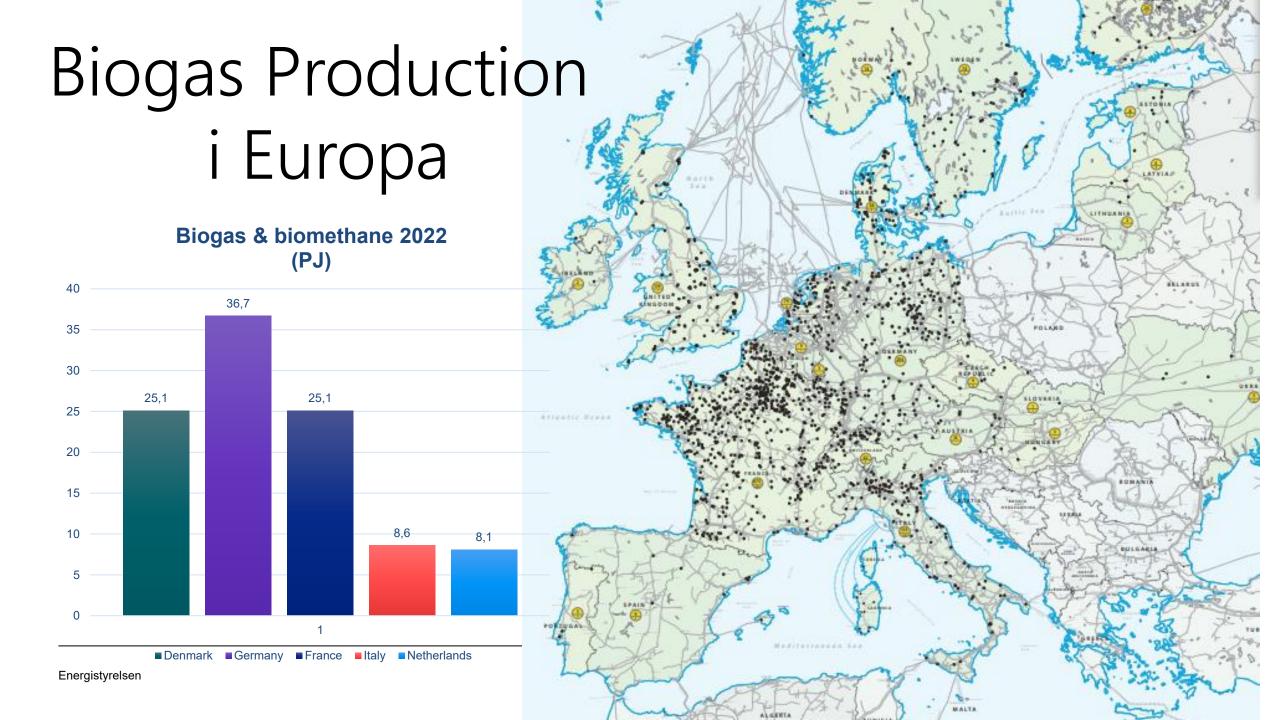
https://zerocarbon-analytics.org/archives/energy/existing-gas-supplies-to-meet-eu-demand-under-2040-emissions-target

EU Biomethane

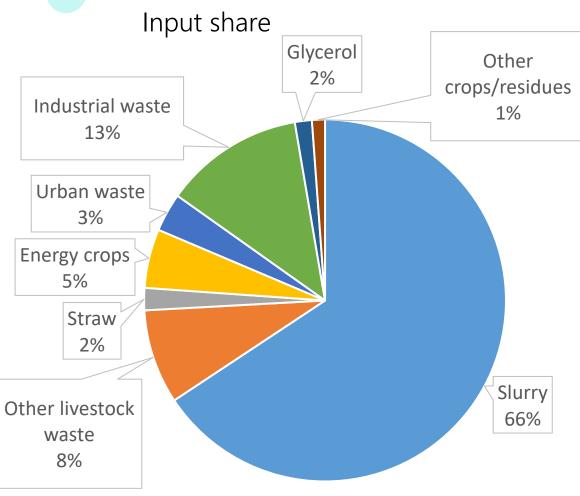


Greening the Gas Consumption - Scenarios

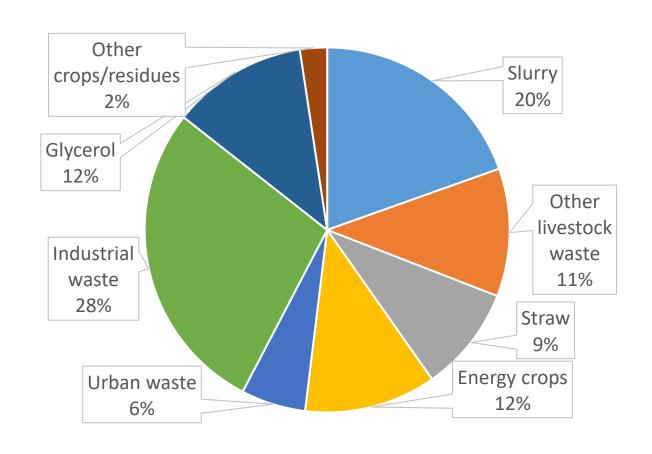




BIOMASS

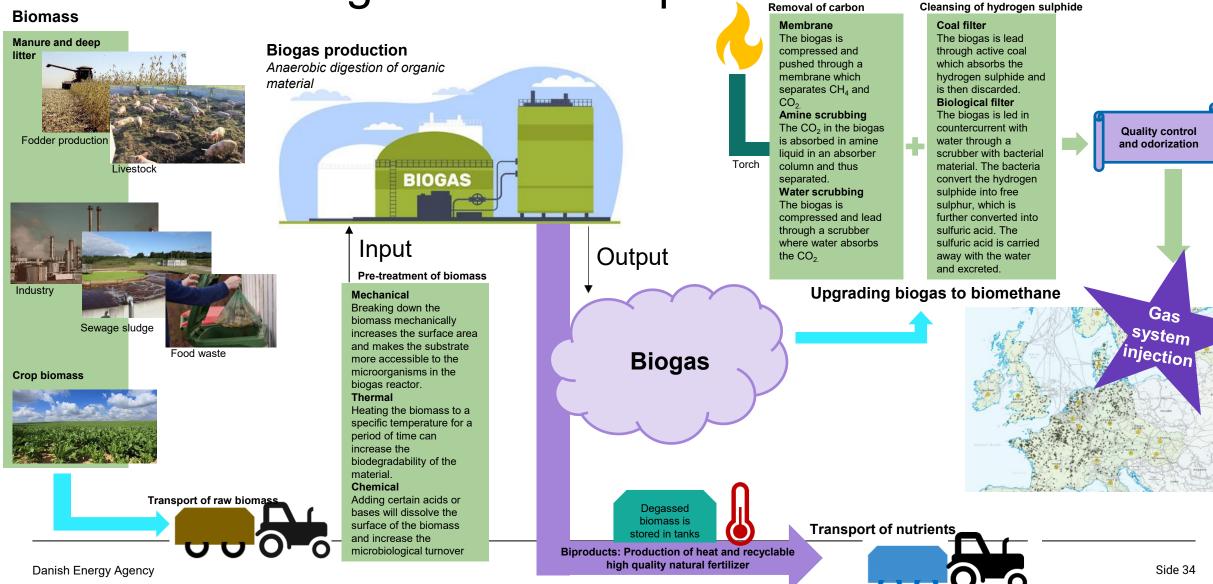


Output share





Biogas – chain of production



Nature Energy Korskro



20-10-2025 35



