

A decorative graphic on the left side of the slide, consisting of a complex network of thin, light blue lines forming a series of interconnected triangles and polygons, resembling a wireframe or a molecular structure.

THE DANISH GAS SYSTEM

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WHAT IS ENERGINET?

Energinet is the Danish TSO for the gas and electricity systems

Energinet is a group of companies with a workforce of around 2000 split between 7 locations.



ENERGINET

THE ENERGY BACKBONE

We operate and develop the transmission systems for gas and electricity in Denmark.

ENSURE BALANCE

We have the day-to-day and long-term responsibility for the overall electricity and gas system in Denmark.

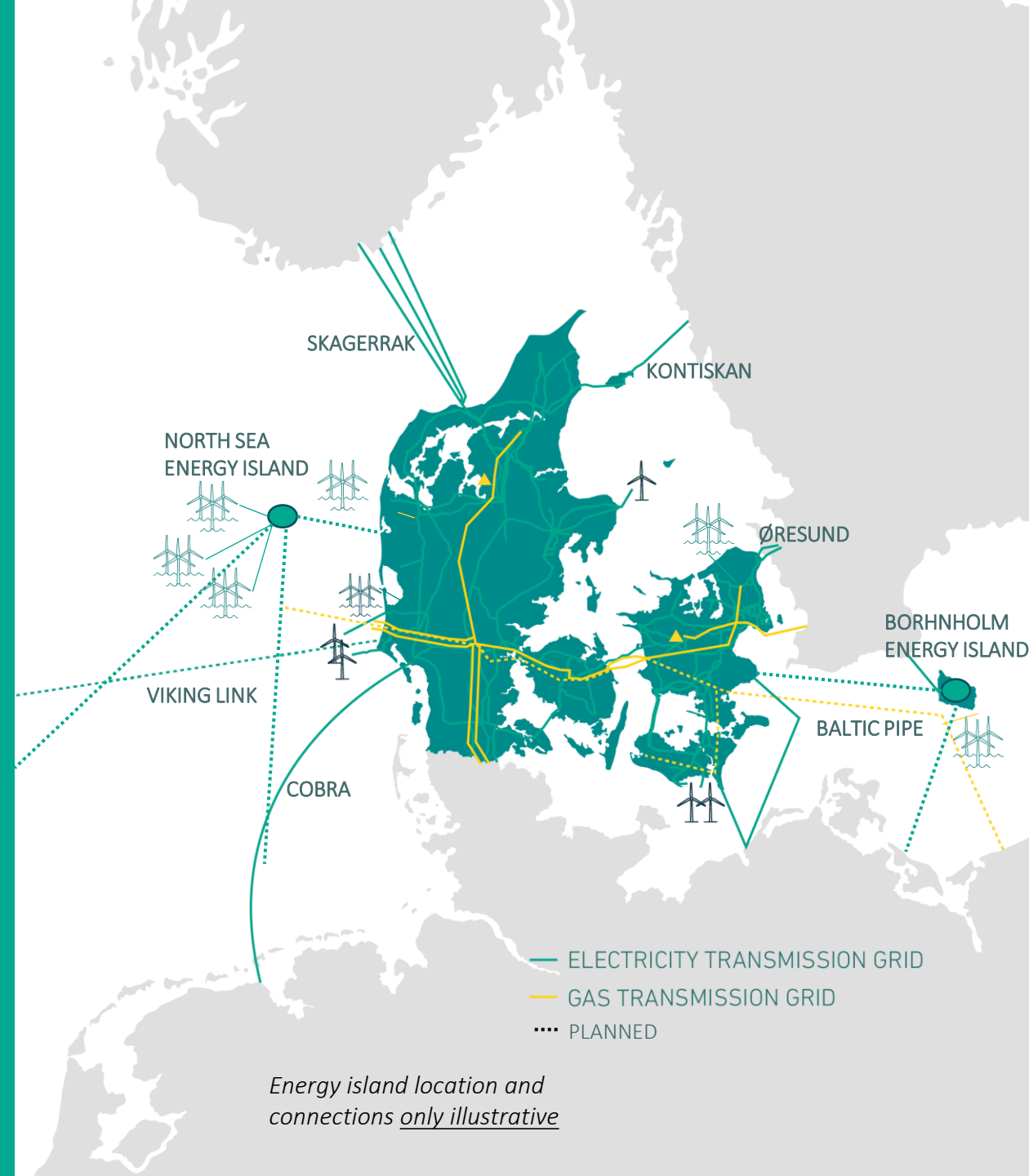
WORKING FOR THE SOCIETY

Owned by the Danish Ministry of Climate, Energy and Utilities we safeguard society's interests as we move to a 100% green energy system.



VISION

GREEN ENERGY FOR A
BETTER WORLD



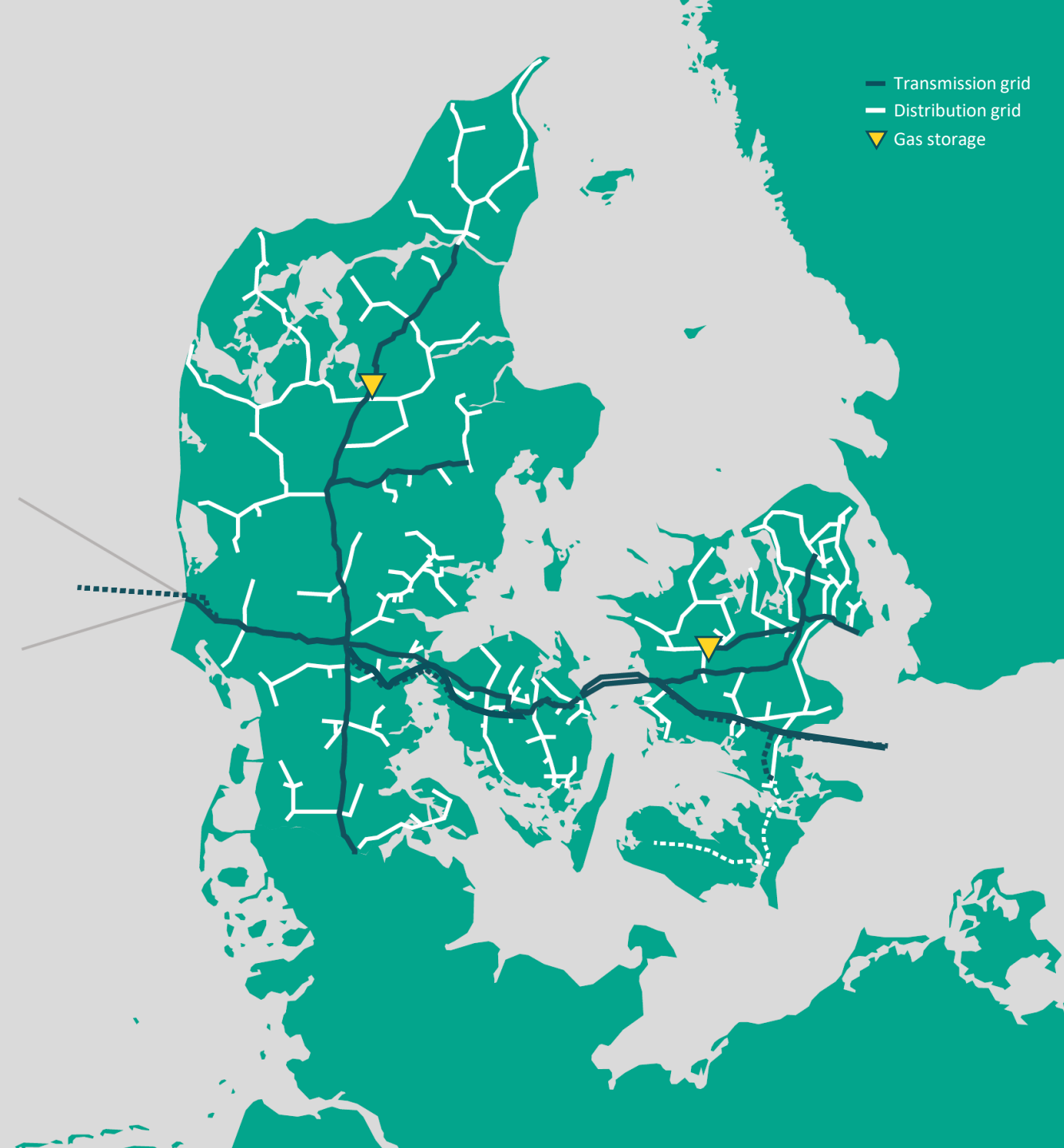
A BALANCING ACT

We work to make sure that the green transition is carried out in an economically responsible way without compromising on Denmark's already very high security of supply.



THE DANISH GAS SYSTEM

- Transmission grid → 80 bar
- Distribution grid → 40/20 bar
- 2 gas storage facilities
 - 1 Aquifer
 - 1 Salt cavern



BIOMETHANE IN DENMARK

The production of biogas will help us achieve our goal of being **CO2-neutral** in 2045.

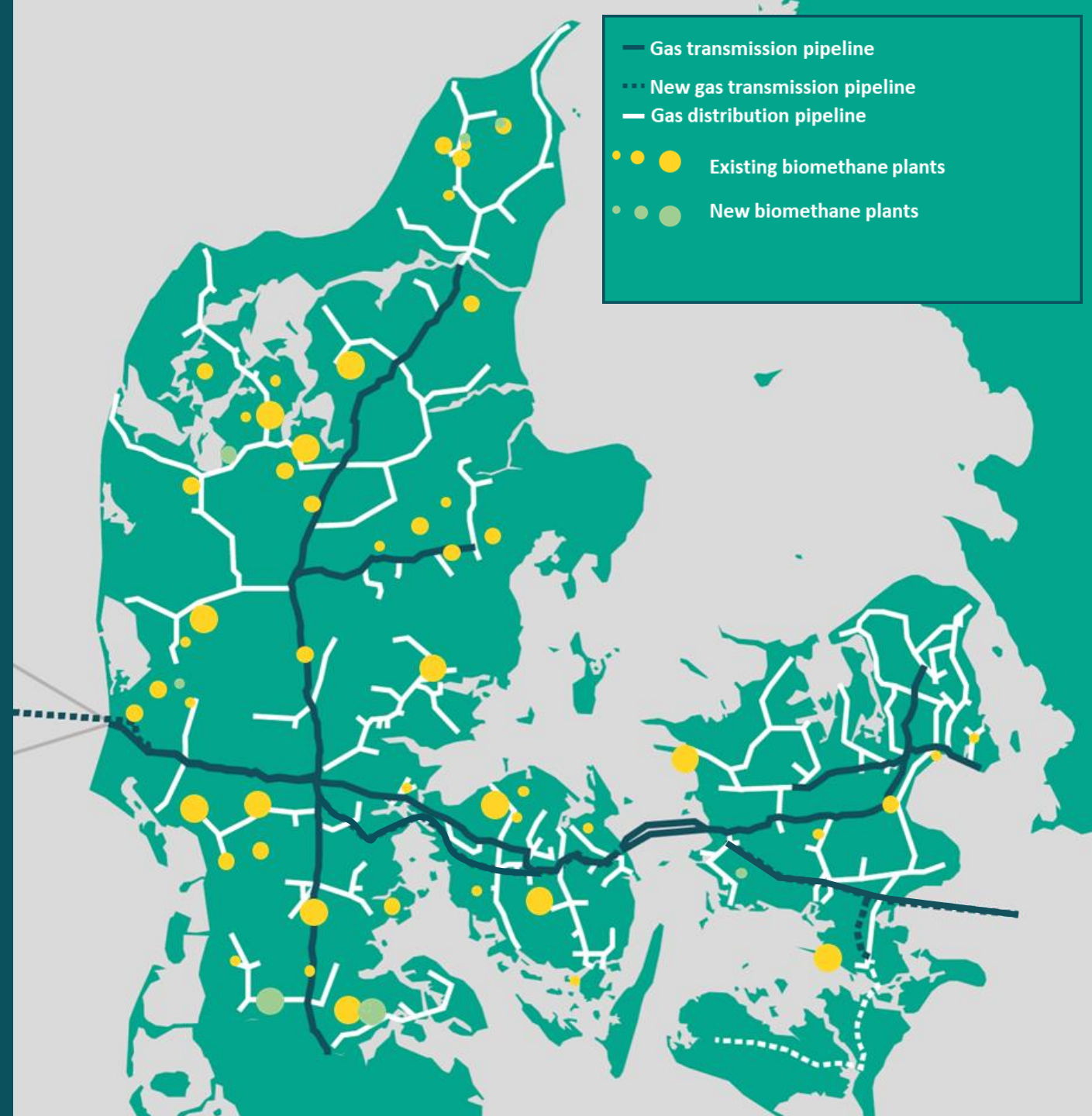
Biogas helps to **ensure security of supply**, as this can make us independent from Russian gas.

The production of biogas with residual and waste products is green energy, in contrast to the natural gas that we have until recently imported on a large scale from Russia to Europe.



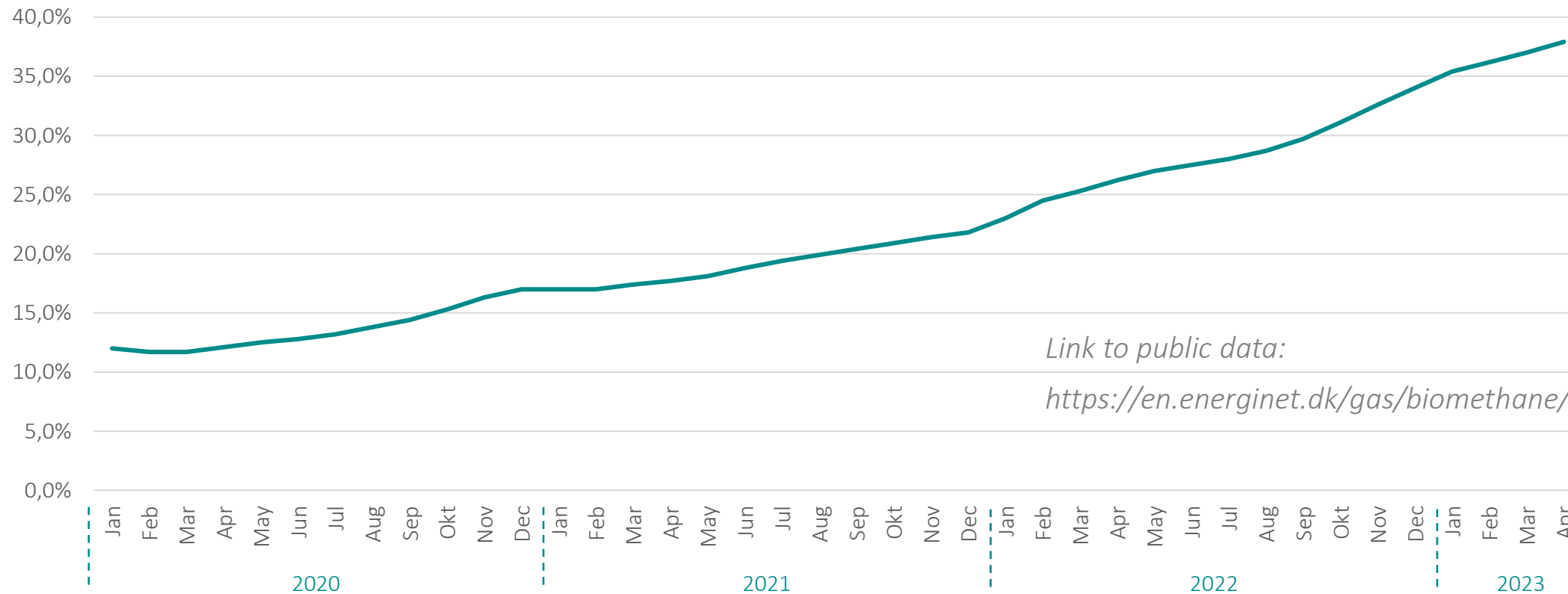
GAS GETS GREEN

- 58 biomethane facilities
- First biomethane plant connected in 2013
- 8 new biomethane facilities under construction
- +65 potential/rumoured biomethane facilities in pipeline



BIOMETHANE IN DENMARK

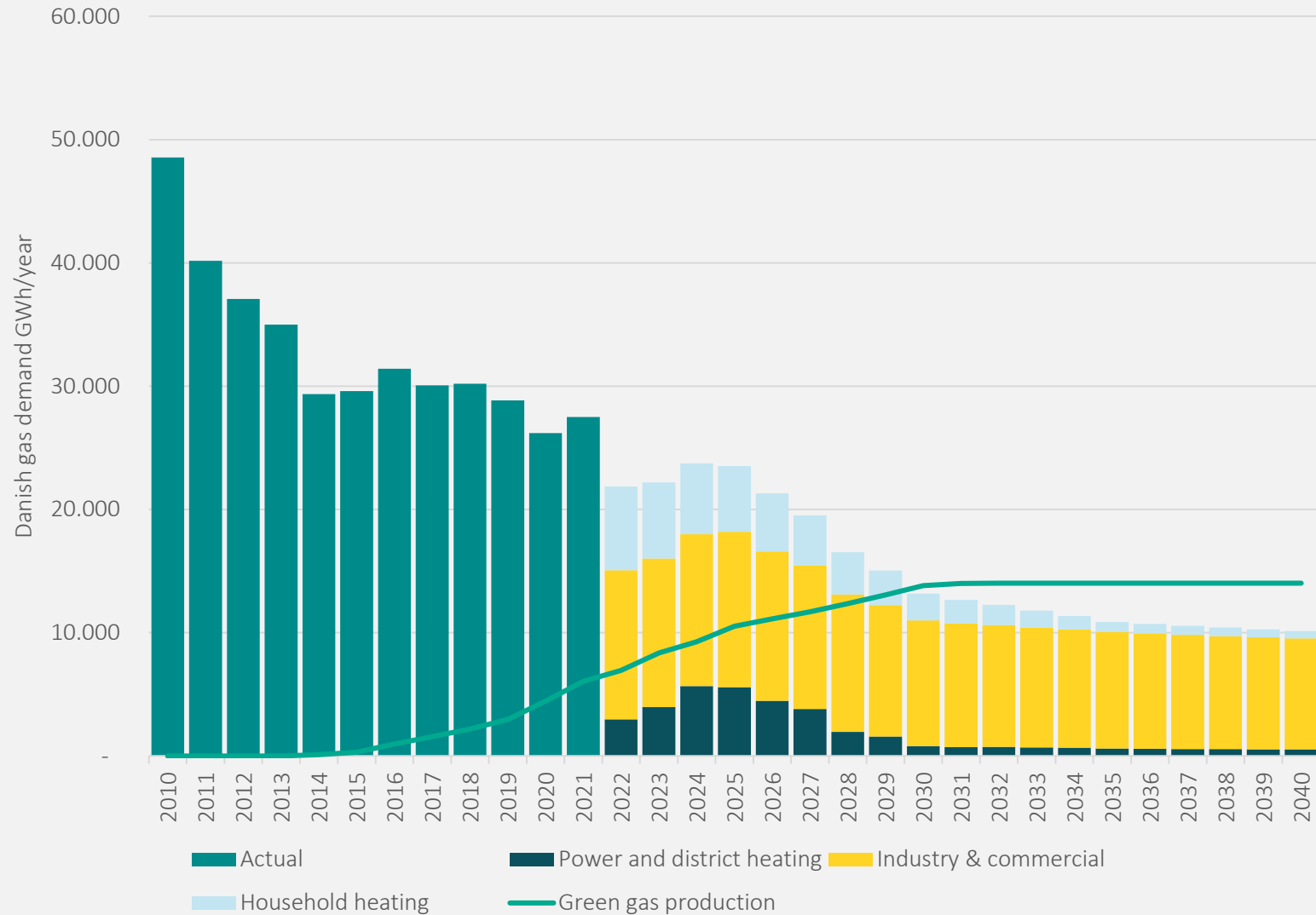
The share of biogas in relation to the last 12 months' production and gas consumption



AMBITION FOR 100% GREEN GAS BY 2030

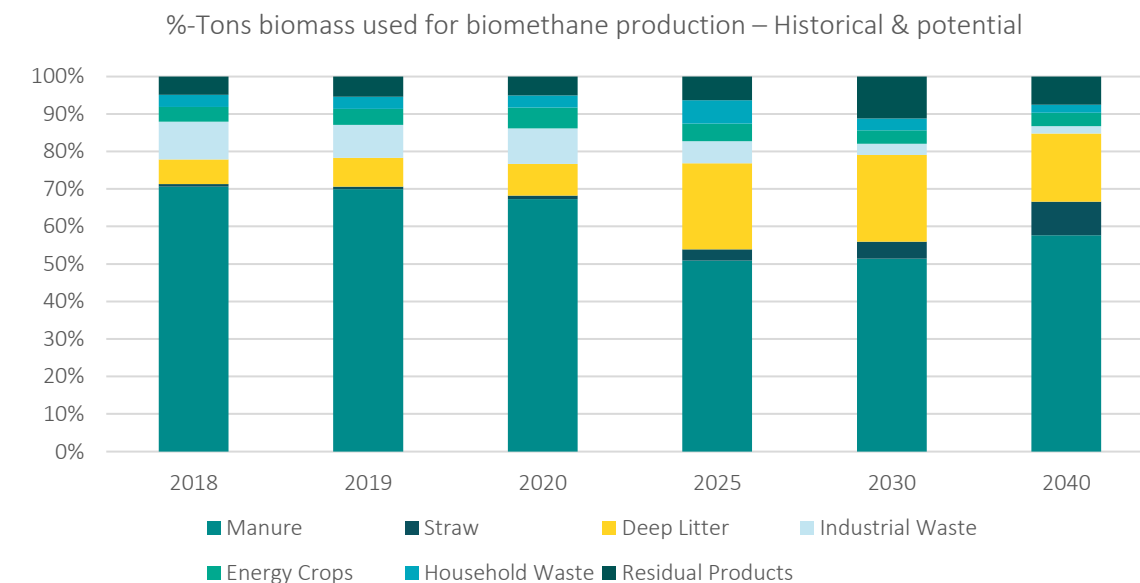
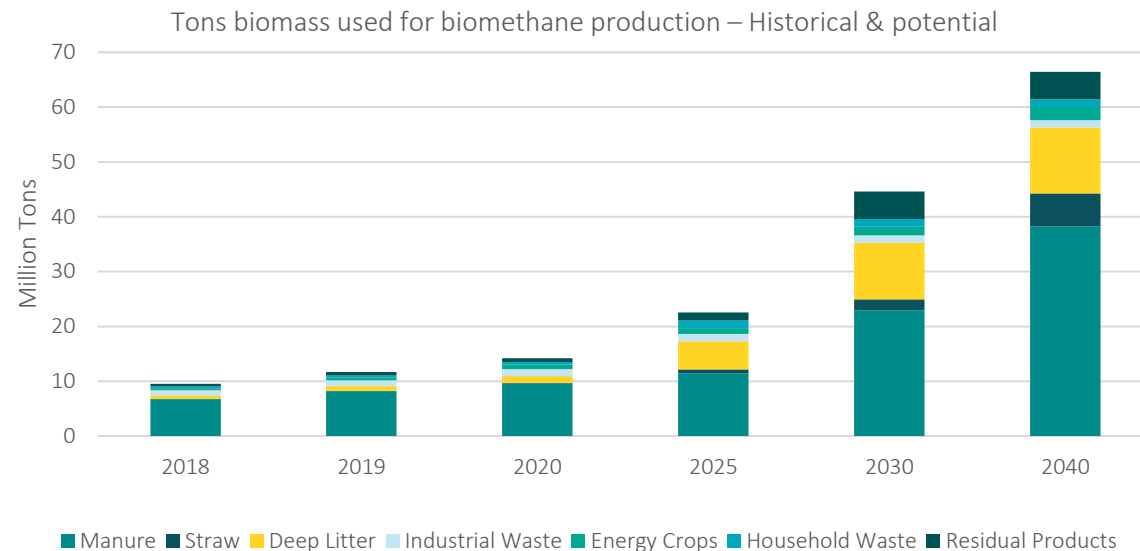
- The development is partly driven by political ambitions
- DKs Green Gas Strategy from 2021 outlined ambitions to reach 100% gas consumption from biomethane by 2035
- Grid connected biomethane has reached 39% relative to demand – is expected to reach 100% by 2030
- Reduction in demand for gas to heating and power means the share of biomethane increases quickly.

Historic and projected - demand and green gas production



HOW MUCH BIOMASS IS USED?

- **Manure** is currently, and in future, Denmark's largest source of biomass for biomethane
- Further potential for use of **deep litter** and **straw** in biomass energy mix

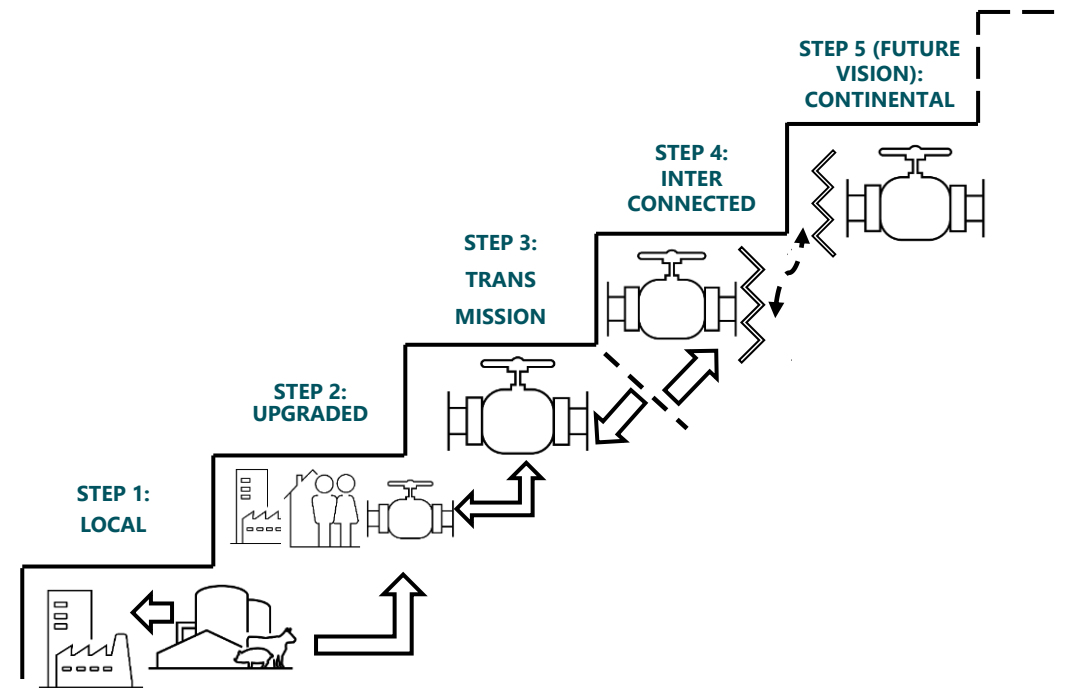


THE DANISH EXAMPLE

Each step, structured according to 6 parameters, which have been essential for the Danish biomethane development:

- Infrastructure
- Market
- Green value
- Regulation
- Subsidy scheme
- Operating economy

5 STEPS, BASED ON MILESTONES IN THE GAS INFRASTRUCTURE DEVELOPMENT



2012-2018: SUBSIDY SCHEME

- A subsidy for biogas for either power, industry or biomethane
- Anyone could apply
- Feed in subsidy 60€/MWh – on top of natural gas price
- Officially closed in 2018
- Plants receiving the subsidy need to come online before 1/1/2023
- Important to create incentives and favourable environment for developers

2023-FUTURE: SUBSIDY SCHEME

- From Q4 2023
- Fixed subsidy for 20 years based on technology neutral open public tendering
- Use of biogas in cogeneration is no longer subsidized
- Applicants with lowest bid for subsidy wins
- A limited amount of subsidy is tendered each year

HOW DO WE TRY TO PREDICT DEMAND FOR BIOMETHANE BALANCING?

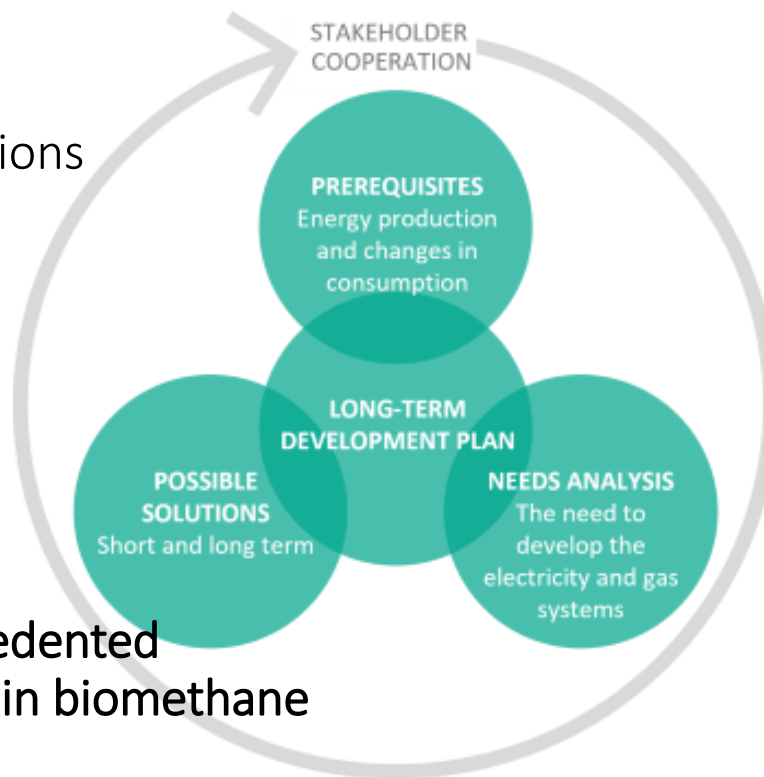
Lead time for reverse flow plants or pipeline projects are 2 to 3 years. Much longer than the time to construct a new biomethane plant

Long-Term development plan

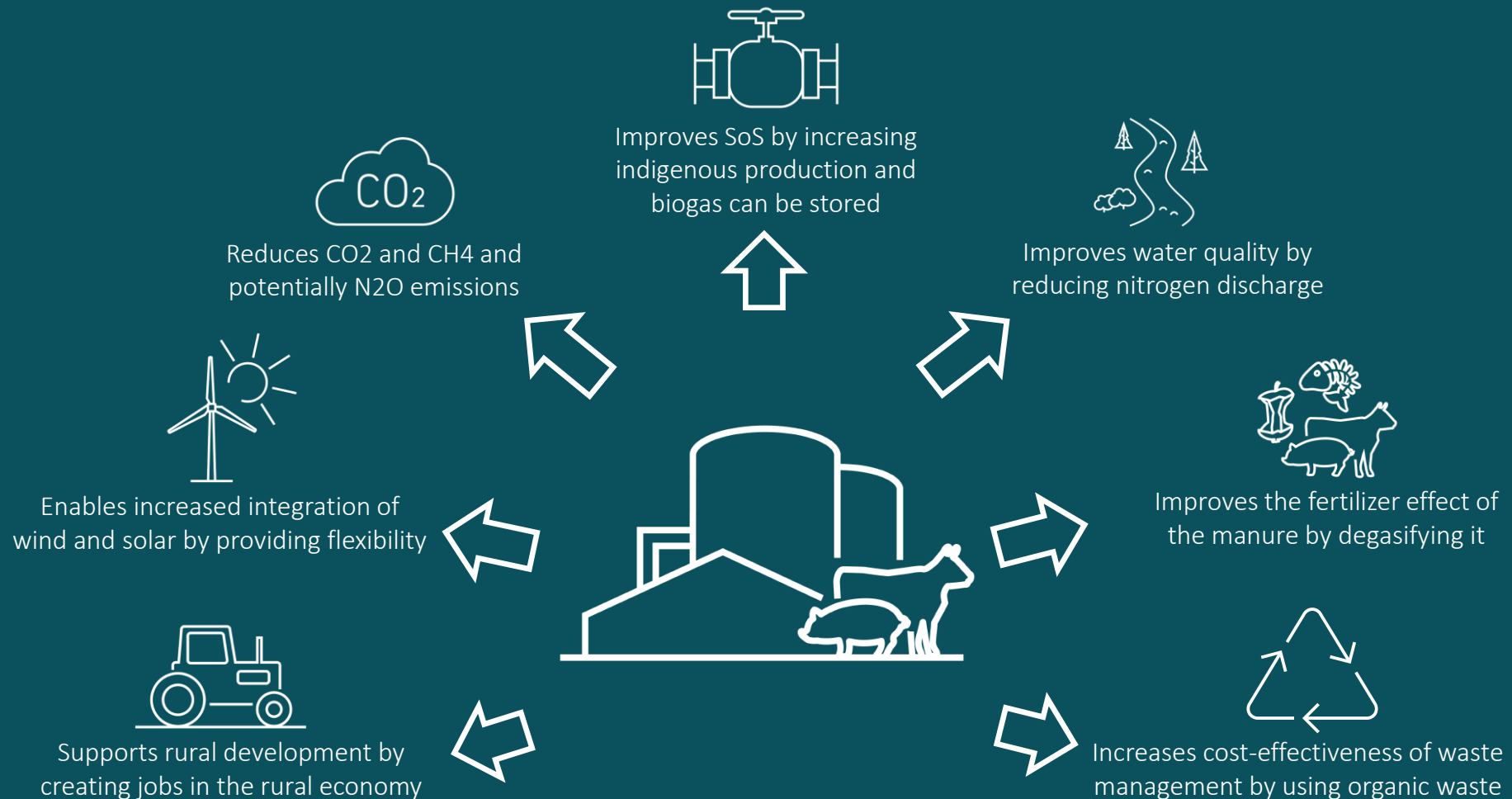
- Biomethane projects and projections
- Demand projections
- Input from stakeholders

From analysis of this we determine the needs and solutions for the next 10 years. This allows us to plan ahead.

However currently we see an unprecedented accelerated development of increase in biomethane and decrease in demand for gas



BIOMETHANE IS A 'SWISS ARMY KNIFE' CONTAINING SEVERAL ADVANTAGES



REPOWER EU (WITH BIOMETHANE)

In the REPowerEU Plan to reduce dependence on Russian fossil fuels, the European Commission has set out a target to increase the current European biomethane production from 3 bcm (2020) up to 35 bcm by 2030. This represents more than 10x increase.

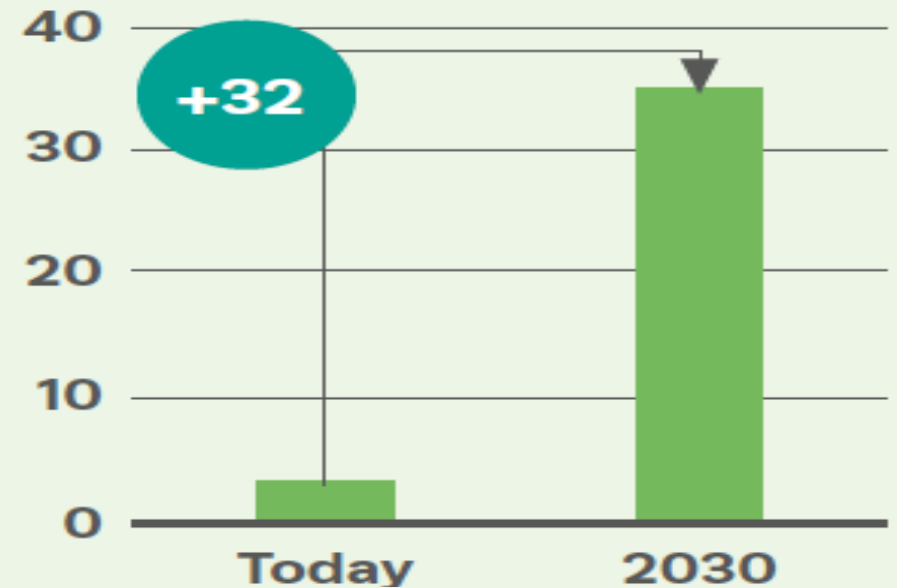
35 bcm represents 20-25 % of the European gas imports from Russia (pre Ukraine) and just under 10% of all EU gas consumed.

By 2050, 30-40 % of Europe's total gas consumption can be covered by sustainable biomethane.

Facts and figures are from the European Biogas Association

Dok. 22/04670-5 Offentlig/Public

From 3 bcm biomethane production today to 35 bcm EU-27



Urgent need to diversify supply and reduce dependence on external gas providers

35 bcm represent 20% of current gas imports from Russia today



TAKEAWAY POINTS

- ✓ Subsidies are necessary to ramp up biomethane production.
- ✓ Biogas and biomethane creates flexibility
- ✓ Byproducts from the agricultural sector such as manure are considered a resource and not waste.
- ✓ A close TSO-DSO cooperation is essential.
- ✓ Gas quality standards must accommodate biomethane injection.
- ✓ Sector-coupling perspectives between agriculture and energy sector
- ✓ Leadership from industrial gas-users on promoting biomethane – arguing for the needed regulatory/legislative development.
- ✓ Improvement of security of supply by decentralizing supply from biomethane production

- ✓ **Biogas has a huge potential in Europe**



THANK YOU

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