

# BREAKOUT SESSION: SHAPING THE EU BIOMETHANE MARKET

Moderated by TV & Radio presenter Sasha Twining



Olivier Aubert, SWEN Capital

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Leonardo d'Acquisto, GD4S

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Matthias Edel, ERGaR

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Peter Kristensen, GEODE

# EBA Conference – 26 October

*Making the biomethane industry  
Fit for 55*

**OLIVIER AUBERT**

Managing Director, SWEN Capital



26–27 October 2021, Brussels

# THE “FIT FOR 55” PACKAGE AND ITS IMPLICATIONS FOR BIOMETHANE

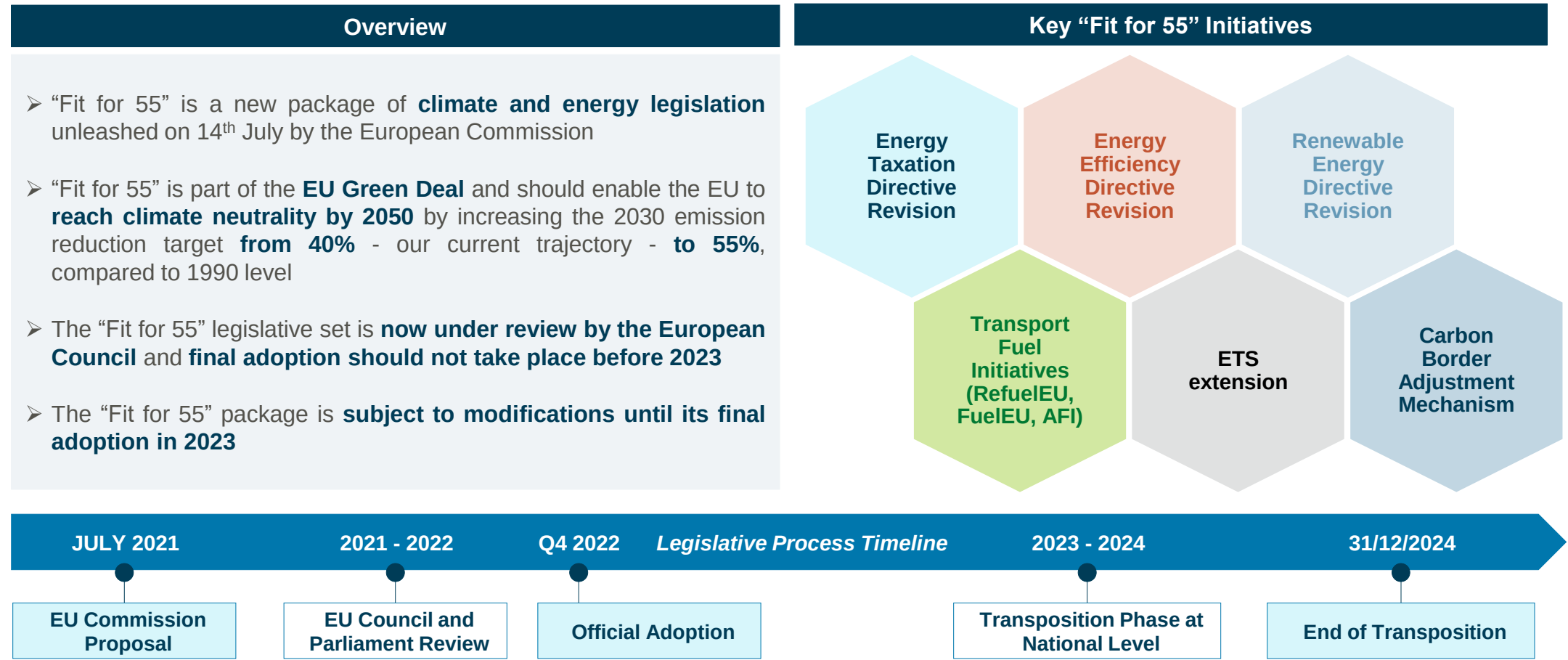
2021 European Biogas Conference

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COTÉ

## “Fit for 55” Ambition and Objectives

12 new proposals to achieve a 55% cut in GHG emissions by 2030





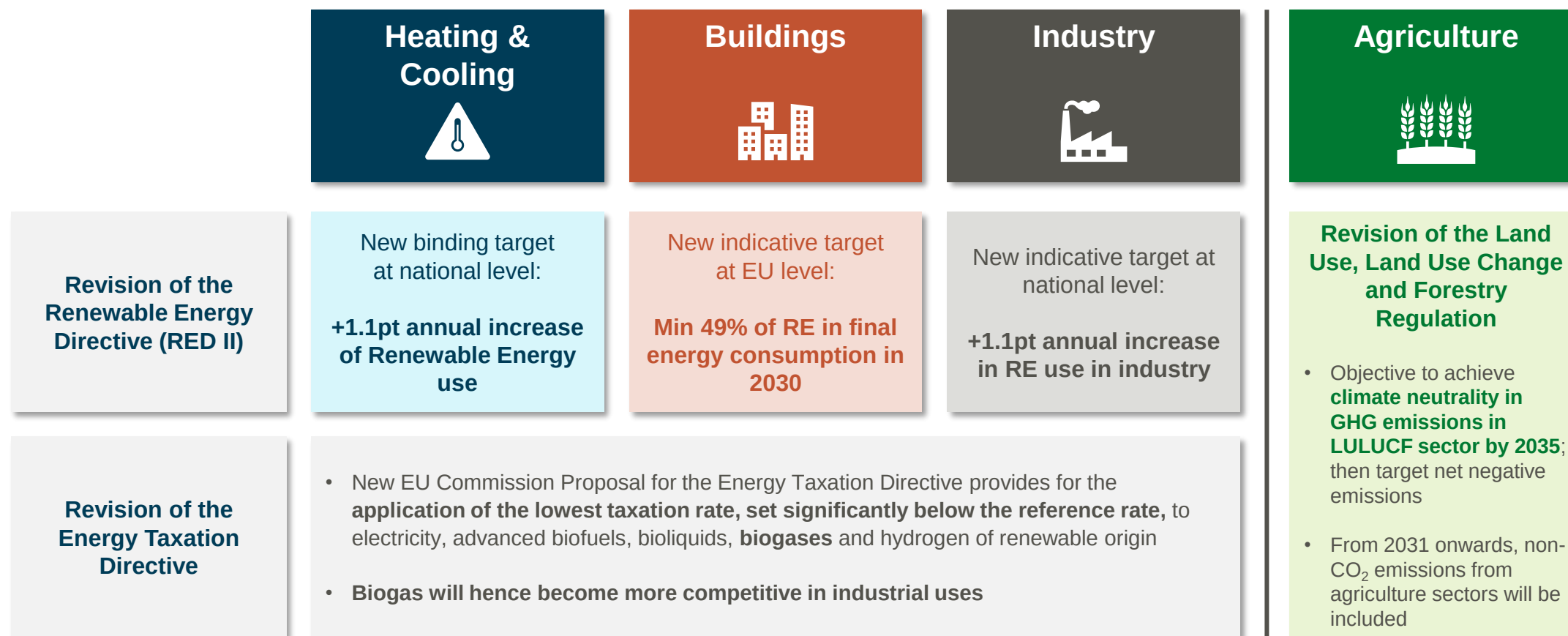
## “Fit for 55” Implications for Biomethane (1/2)

Transport sector and hard-to-abate emissions are at the front line to achieve the -55% target

| Biomethane End-usage                                                                                             | Fit for 55 Directive                               | Key Provisions                                                                                                                                                                                                                                                                                                                                                                                                                      | Illustrative Impact                                                         |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Maritime Transport</b><br>   | <b>FuelEU Maritime</b>                             | <ul style="list-style-type: none"> <li>-6% GHG intensity reduction requirement for ship operators by 2030</li> <li>Well-to-wake approach to emissions favorable to biomethane</li> </ul>                                                                                                                                                                                                                                            | <b>1.2% estimated bioLNG share<sup>1</sup> in maritime fuel by 2030</b>     |
|                                                                                                                  | <b>ETS extension</b>                               | <ul style="list-style-type: none"> <li>ETS extended to maritime transport from 2023, biogas counted as zero emission</li> </ul>                                                                                                                                                                                                                                                                                                     |                                                                             |
| <b>Heavy Road Transport</b><br> | <b>Alternative Fuels Infrastructure Regulation</b> | <ul style="list-style-type: none"> <li>AFI Regulation to ensure a sufficient number of LNG refuelling stations by 2025; LNG infrastructure will enable to integrate a higher share of bioLNG</li> </ul>                                                                                                                                                                                                                             | <b>~ 40 TWh bioLNG fuel needed for LNG trucks fleet by 2030<sup>2</sup></b> |
|                                                                                                                  | <b>ETS extension</b>                               | <ul style="list-style-type: none"> <li>Extension of the ETS to road transport from 2026</li> </ul>                                                                                                                                                                                                                                                                                                                                  |                                                                             |
| <b>Aviation</b><br>            | <b>ReFuelEU</b>                                    | <ul style="list-style-type: none"> <li>5% Sustainable Aviation Fuels and 0.7% e-fuels target for 2030; these targets represent an opportunity for biomethane as <b>advanced biofuels' production will remain insufficient by 2030</b></li> </ul>                                                                                                                                                                                    | <b>~ 150 TWh of SAFs required by 2030</b>                                   |
|                                                                                                                  | <b>ETS extension</b>                               | <ul style="list-style-type: none"> <li>Full phase-out of free allowances by 2026</li> </ul>                                                                                                                                                                                                                                                                                                                                         |                                                                             |
| <b>All Transports</b><br>     | <b>RED II Revision</b>                             | <ul style="list-style-type: none"> <li>New target on GHG emission intensity of fuel suppliers: -13% by 2030</li> <li>Multiplier of 1.2x used for biogas energy content calculation<sup>4</sup></li> <li>2.2% targeted share of advanced biofuels by 2030 and 2.6% share of renewable H<sub>2</sub> and synthetic fuels &gt; constituting an opportunity for biomethane as those <b>targets will be hardly achievable</b></li> </ul> | <b>~ 461 TWh total demand of bioLNG for transport by 2030<sup>2</sup></b>   |

## “Fit for 55” Implications for Biomethane (2/2)

Biogas benefits from new Renewable Energy targets in Heating, Buildings, Industry and Agriculture



## Leveraging “Fit for 55”’s full potential in the Biomethane industry

Key challenges to be tackled while further developing new installations

| Key issues in Biomethane investments |                      |                                                                                                                          | “Fit for 55” limits and regulatory gaps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
|--------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                                    | Feedstocks           | <ul style="list-style-type: none"><li>• Use of energy crops</li></ul>                                                    | <ul style="list-style-type: none"><li>➤ <b>Flagrant lack of consistency between the “Fit for 55” high ambition for biomethane and the very low role given to it in road transport by other EU regulations</b><ul style="list-style-type: none"><li>➤ BioLNG banned for passengers' cars in EU Taxonomy</li><li>➤ <b>Tank-to-wheel approach</b> leads to a poor appreciation of biomethane potential</li></ul></li><li>➤ <b>Administrative difficulties in securing permits, combined to the harmfulness of vested interests at local level, could hinder biomethane production capacities</b><ul style="list-style-type: none"><li>➤ Permitting hurdles indeed result in <b>very long development periods</b> (3 to 5 years in average) and can prevent biomethane from reaching the intended “Fit for 55” objectives in time</li></ul></li><li>➤ <b>Deep need for a harmonized cross-border trading scheme across Europe to limit excesses of national egoisms</b></li></ul> |  |
| 2                                    | GHG emission         | <ul style="list-style-type: none"><li>• Methane leakages</li></ul>                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 3                                    | Permitting           | <ul style="list-style-type: none"><li>• Complex administrative procedures</li></ul>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 4                                    | Cross-border trading | <ul style="list-style-type: none"><li>• Numerous barriers to cross-border trading</li></ul>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| 5                                    | Revenues             | <ul style="list-style-type: none"><li>• Revenues diversification through CO<sub>2</sub> and fertilizers’ sales</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |

# EBA Conference – 26 October

*Checklist for biomethane injection  
into the grid*

Leonardo d'Acquisto

Executive Committee Member, GD4S



26–27 October 2021, Brussels



01:36:55



Abbandona



# EBA Conference – 26 October

*Tracing green gas flows*

**MATTHIAS EDEL**  
Secretary General, ERGaR



26–27 October 2021, Brussels

# Tracing Green Gas Flows

Matthias Edel



26 October 2021 Brussels  
European Biogas Conference



# About ERGaR

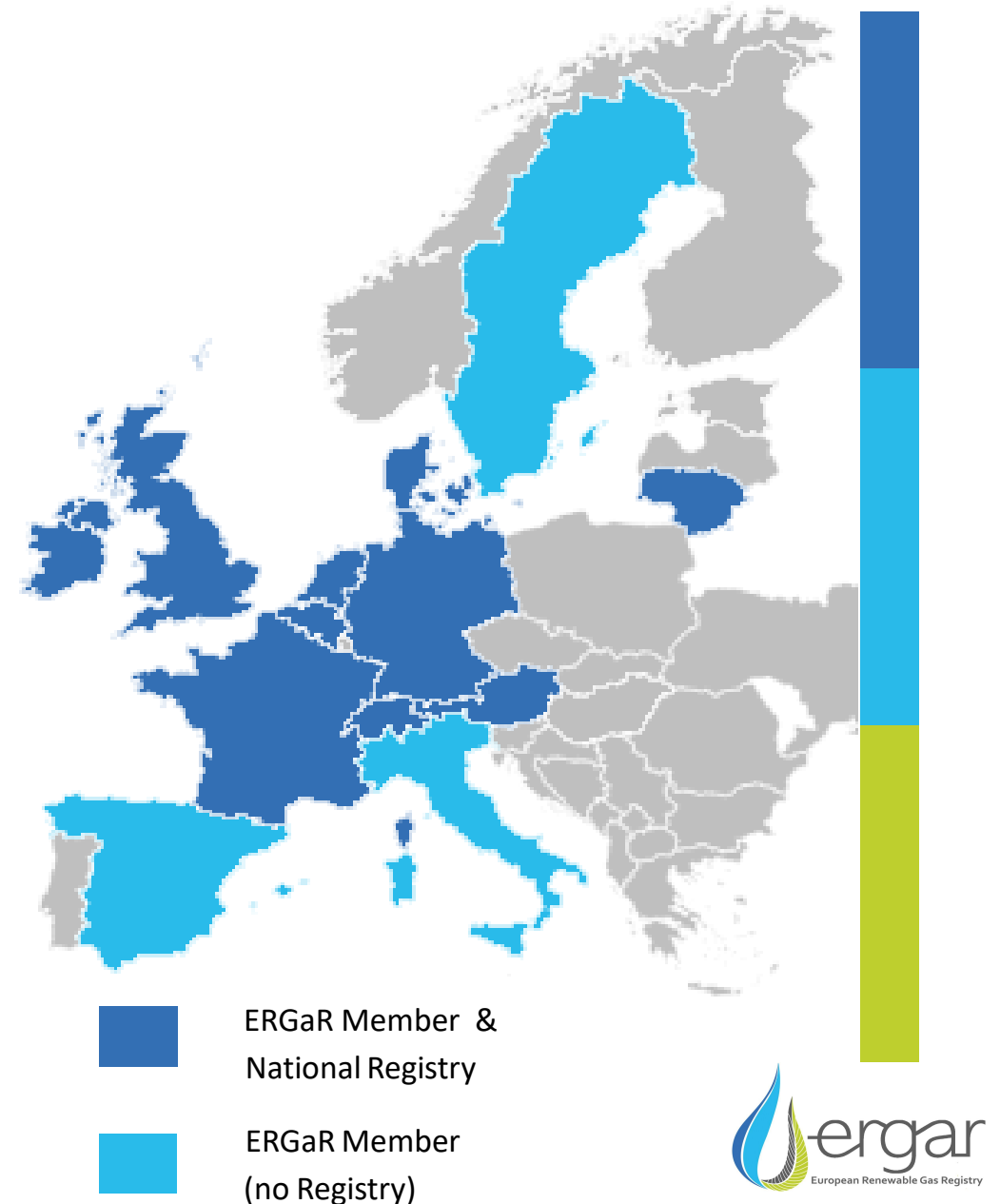
International non-profit, non-governmental organisation  
(BE law) established in September 2016

**Founded by established biomethane registries**

ERGaR provides a **forum for the collaboration of renewable gas registries and market participants in Europe**

**31 ERGaR members in 13 European Countries**

- Established biomethane / renewable gas registries, appointed issuing bodies
- Traders, gas DSOs & TSOs, biogas associations and other major stakeholders of the European biomethane market

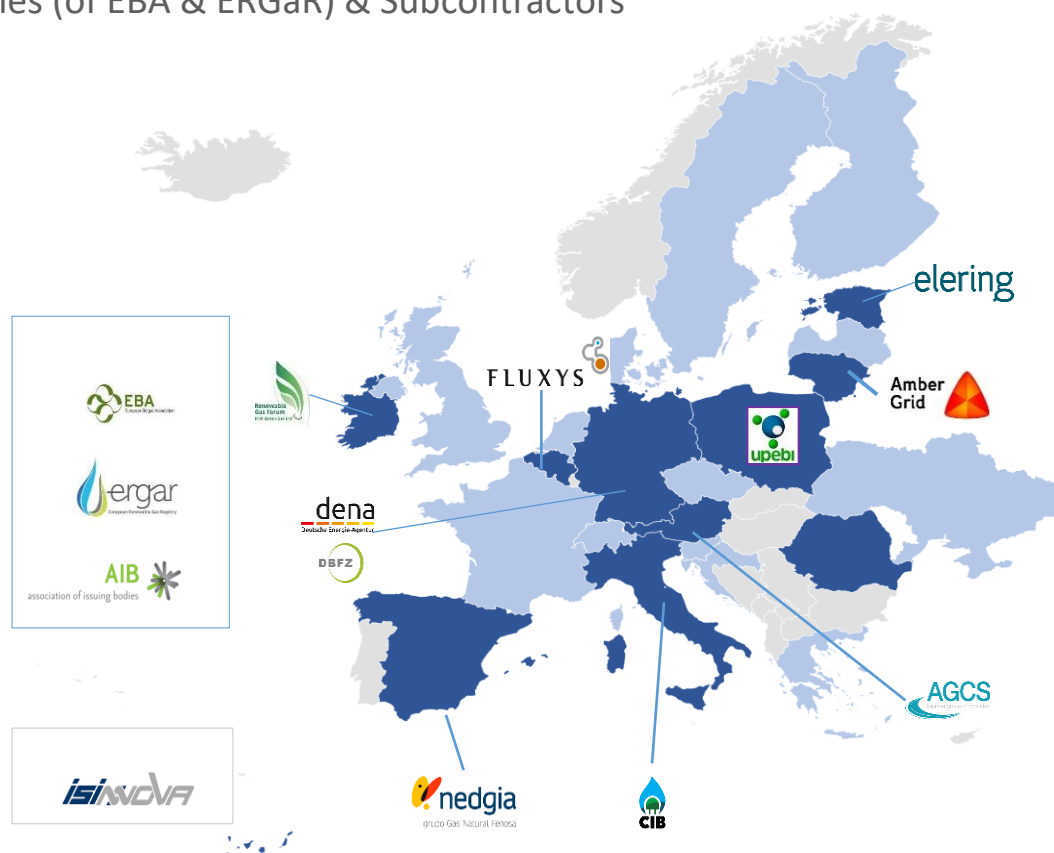


# REGATRACE Project – members & objectives



Project consortium

Third Linked Parties (of EBA & ERGaR) & Subcontractors

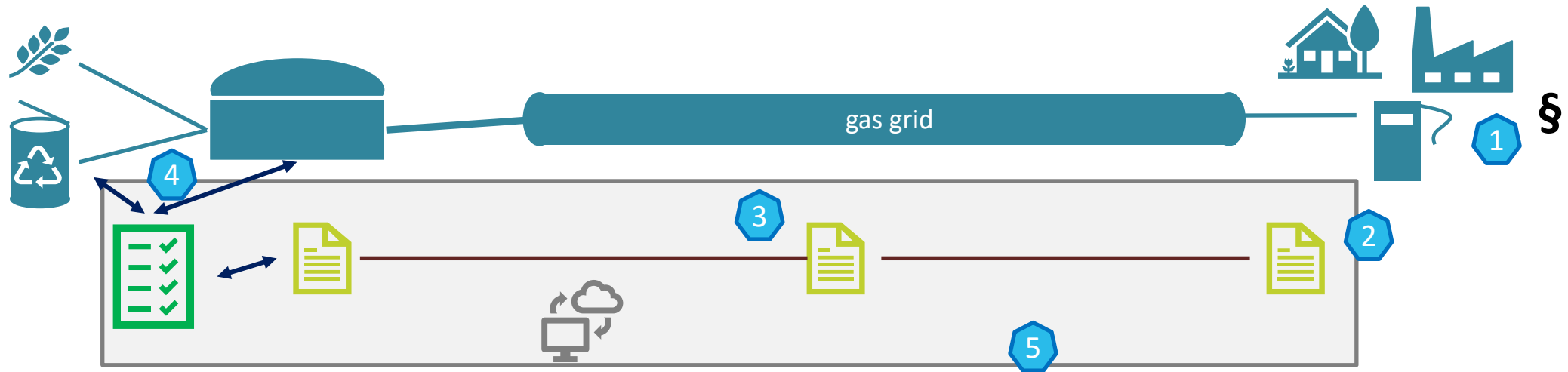


- Create an **efficient trade system based on issuing and trading biomethane/renewable gases** Guarantees of Origin (GoO).
- Strongly contribute to the **uptake of the European common biomethane market**.
- Set up a **European biomethane/renewable gases GoO system**:
  - By setting up national GoO issuing bodies,
  - By integrating GoO from different renewable gas technologies with electric and hydrogen GoO systems
  - Through integrated assessment and sustainable feedstock mobilisation strategies and technology synergies,
  - Through support for biomethane market uptake, and by transferring the results beyond the project's countries.

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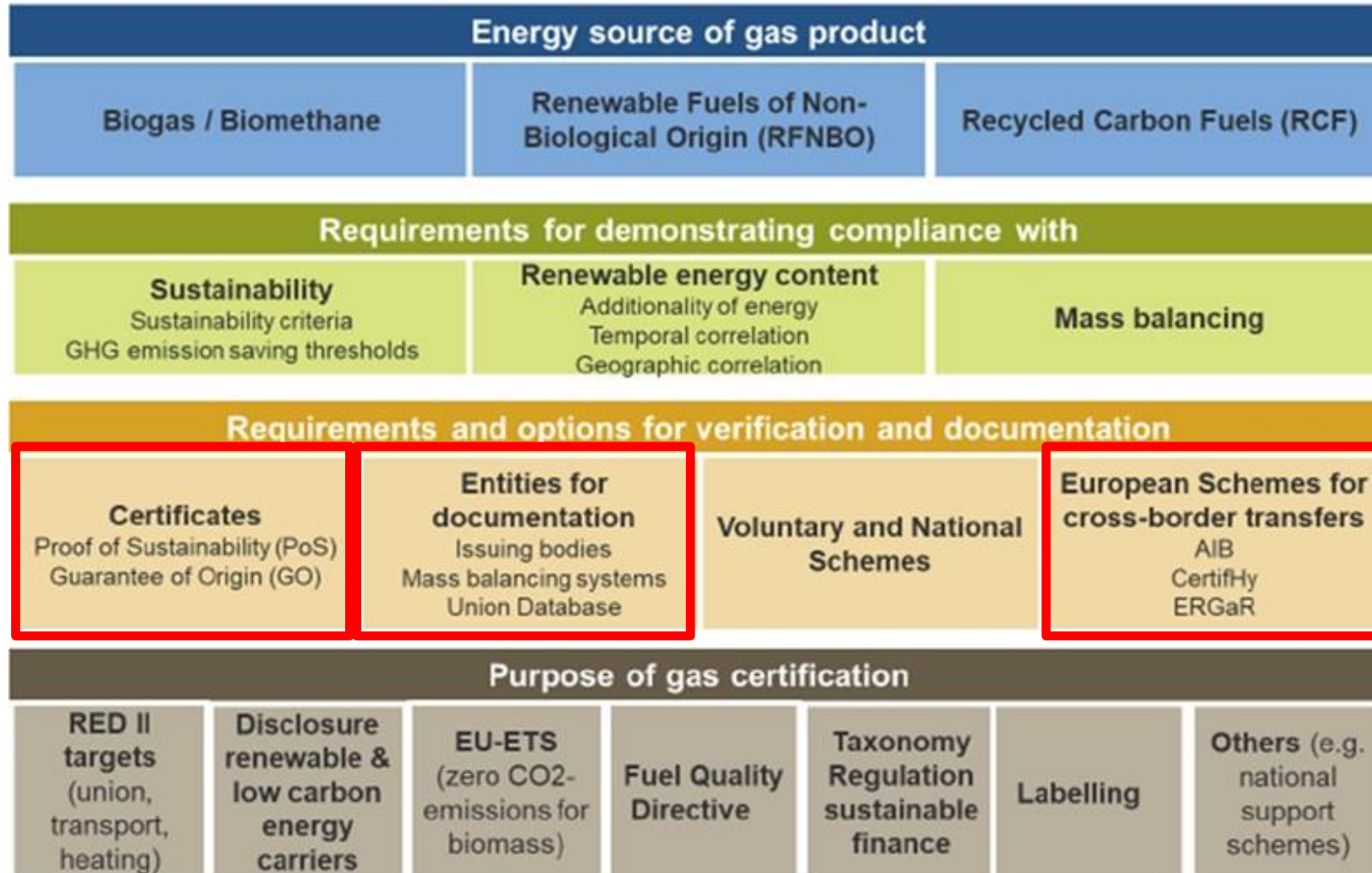


# Tracing back renewable gases



|   | <u>Elements</u>    | <u>Disclosure (GO)</u>                        | <u>Target Compliance (PoS)</u>        |
|---|--------------------|-----------------------------------------------|---------------------------------------|
| 1 | Purpose            | Disclosure to final customer (art. 19 RED II) | Target compliance (art. 25-31 RED II) |
| 2 | Certificate        | Guarantee of Origin (GO)                      | Proof of Sustainability               |
| 3 | Tracing principle  | Book & claim                                  | Mass balancing                        |
| 4 | Verification rules | CEN standard 16325                            | Recognised Voluntary Schemes          |
| 5 | Databases          | Issuing bodies                                | National registries, Union Database   |

# European Framework of Gas Certificates



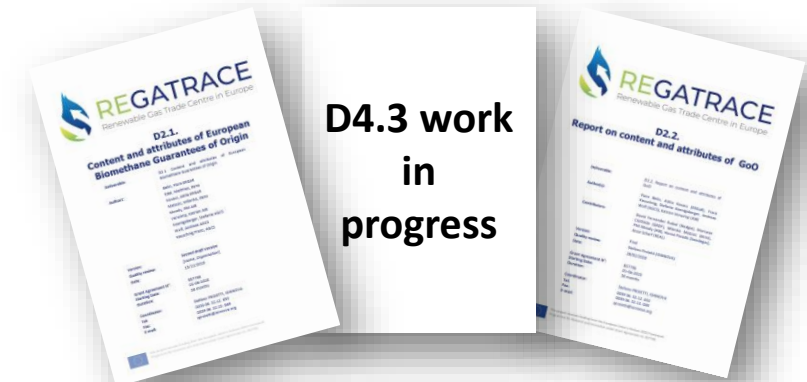
Major purposes and elements for demonstrating compliance with European Regulatory Framework for different renewable and recycled gas categories Source: REGATRACE D4.2 (2021)

# Guarantees of Origin / Revision of Standard CEN 16325

## What is inside the current draft of the revised EN 16325?

- **Terms and definitions**
- **Generic rules for GO for all energy carriers**
  - Main objectives and principles
  - Registration of Competent Bodies, Production Devices and Account Holders
  - Issuing and content of a GO
  - Ownership of a GO
  - Transferring of a GO
  - Correction of errors
  - Lifetime of a GO
  - Disclosure Statements
  - Monitoring and Auditing
- **Rules specific to individual energy carriers**
- **Annexes**
  - Normative: Energy Source Type, Technology codes, Coding structure, Cogeneration GO codes for uses of Heat
  - Informative: Methodology for quantifying the Carbon Footprint of the output for which a GO is being issued

## REGATRACE reports and contribution



**D2.1 Content and attributes of European Biomethane Guarantees of Origin**

**D2.2 Report on content of the Guarantees of Origin**

**D4.3 Harmonised set of rules for handling GOs in relation with conversion of electricity into biomethane/renewable gas and hydrogen and vice versa**



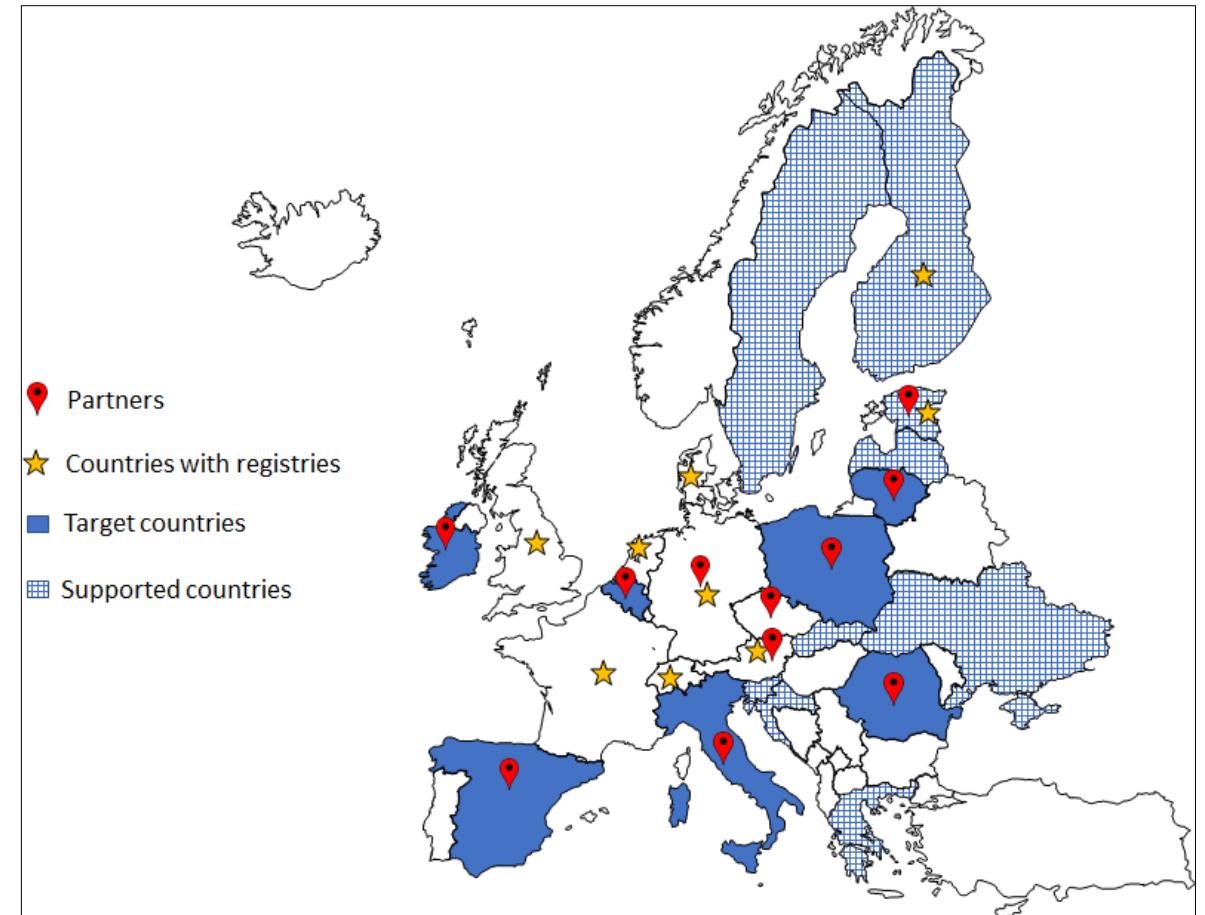
# Objective of WP3

Prepare target countries (BE, CZ, IE, IT, LT, PL, SK & ES) to join the European biomethane/renewable gas trading system by:

Establishing  
national renewable  
gas GO issuing  
bodies

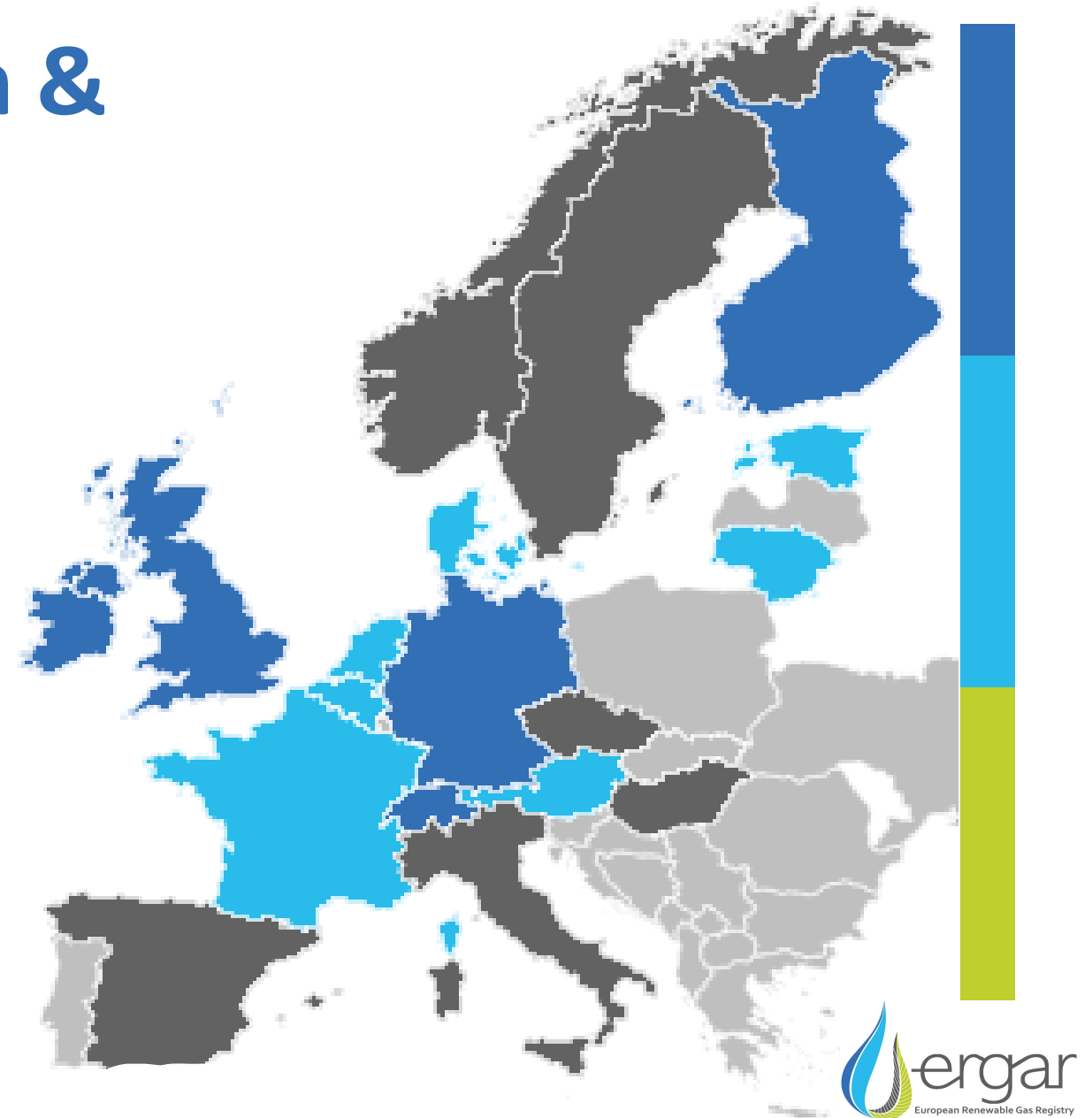
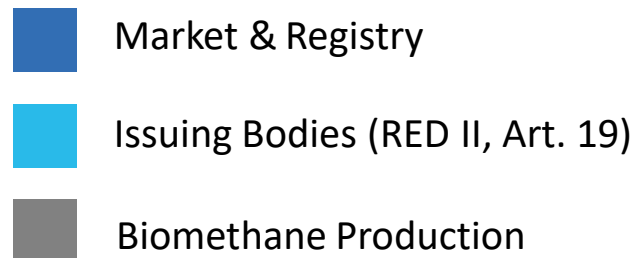
Providing a  
provisional IT  
system for the  
registries

Providing guidelines  
for establishing  
biomethane  
registries in  
supported countries



# Biomethane Production & Issuing Bodies

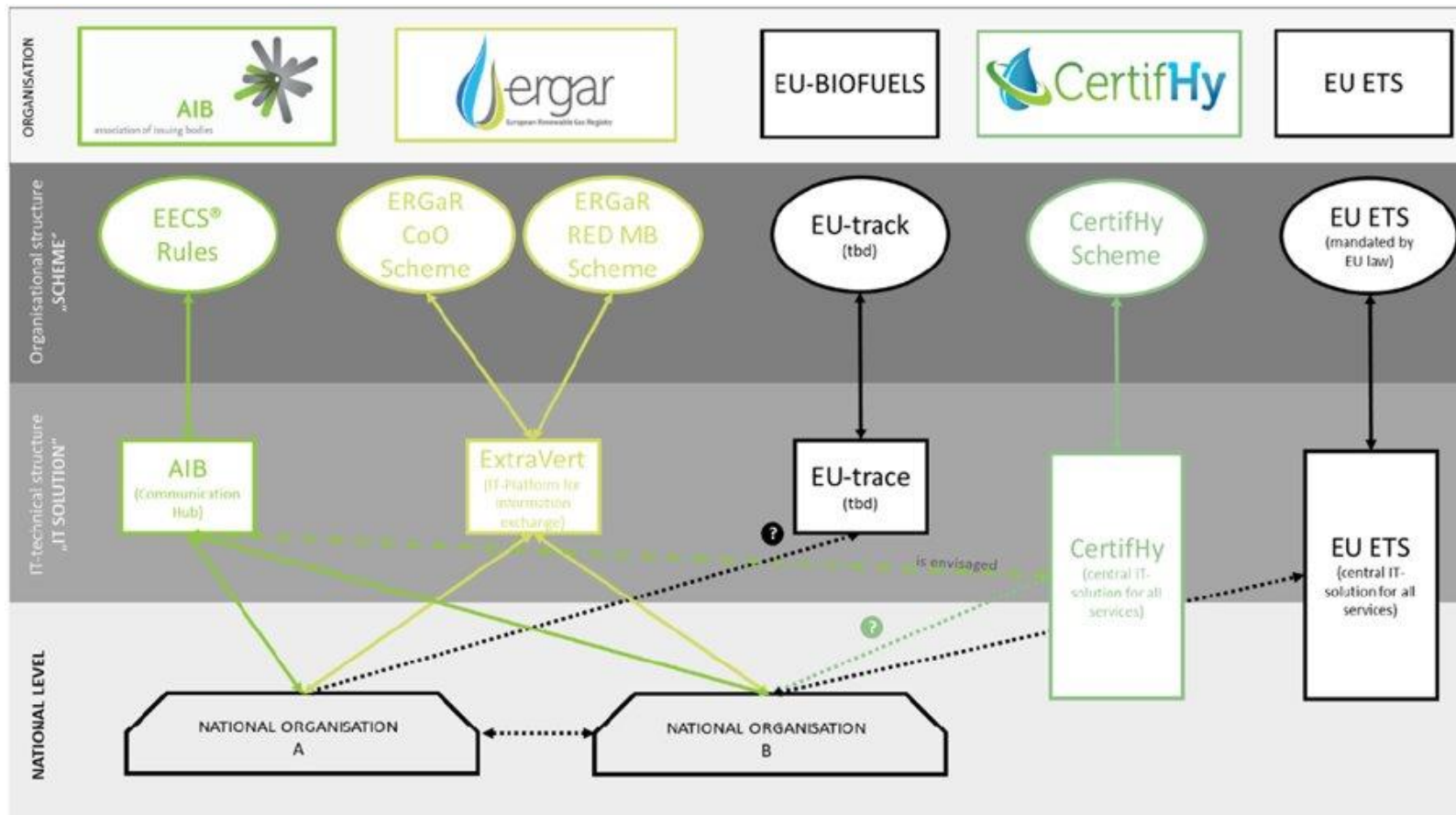
- Biomethane facilities are operated in 19 European countries today
- 26 TWh biomethane were produced in 2020
- Registries and issuing bodies for biomethane can be found in 12 countries





# European Schemes

European schemes for cross-border certificate transfer under development and in operation (adapted from REGATRACE D2.4)



Source: REGATRACE D4.2 (2021)

**D4.1 Technical and operational comparison of gas GO and electricity GO system**



**D2.8 Techno-economic feasibility study on a harmonised system for cross-border transfers**

**D2.8 work in progress**



# ERGaR Schemes

|                         | ERGaR CoO Scheme                                                                                               |                                                                                                                     | ERGaR RED MB Scheme                                                                                                    |                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| APPLICATION PURPOSE     |  Consumer disclosure          | Initiatives by Market & Society  |  Target compliance transport sector |                                                                                                                    |
| BACKGROUND              | Art 19 RED II                                                                                                  | Market and Scheme Rules                                                                                             | Sustainability & Mass Balance<br>Art 25-31 RED II                                                                      |                                                                                                                    |
| COMPETENT AUTHORITY     | Issuing Bodies by Government Mandate                                                                           | Registries                                                                                                          | Voluntary Scheme recognised by EC                                                                                      | Registries via ERGaR RED MB Scheme                                                                                 |
| Rules and Standards     | CEN – EN 16325                                                                                                 | ERGaR CoO Scheme                 | E.g.: ISCC, REDCert, NTA 8080                                                                                          | ERGaR RED MB Scheme             |
| DOCUMENT TYPE           | GoO <br>Guarantee of Origin |  CoO<br>Certificate of Origin   | PoS <br>Proof of Sustainability   |  ERGaR PoO<br>Proof of Origin |
| STATUS<br>(August 2021) | Launched in June 2021                                                                                          |                                                                                                                     | Under recognition by the European Commission as voluntary scheme                                                       |                                                                                                                    |



# ERGaR CoO Scheme

## System Participants:

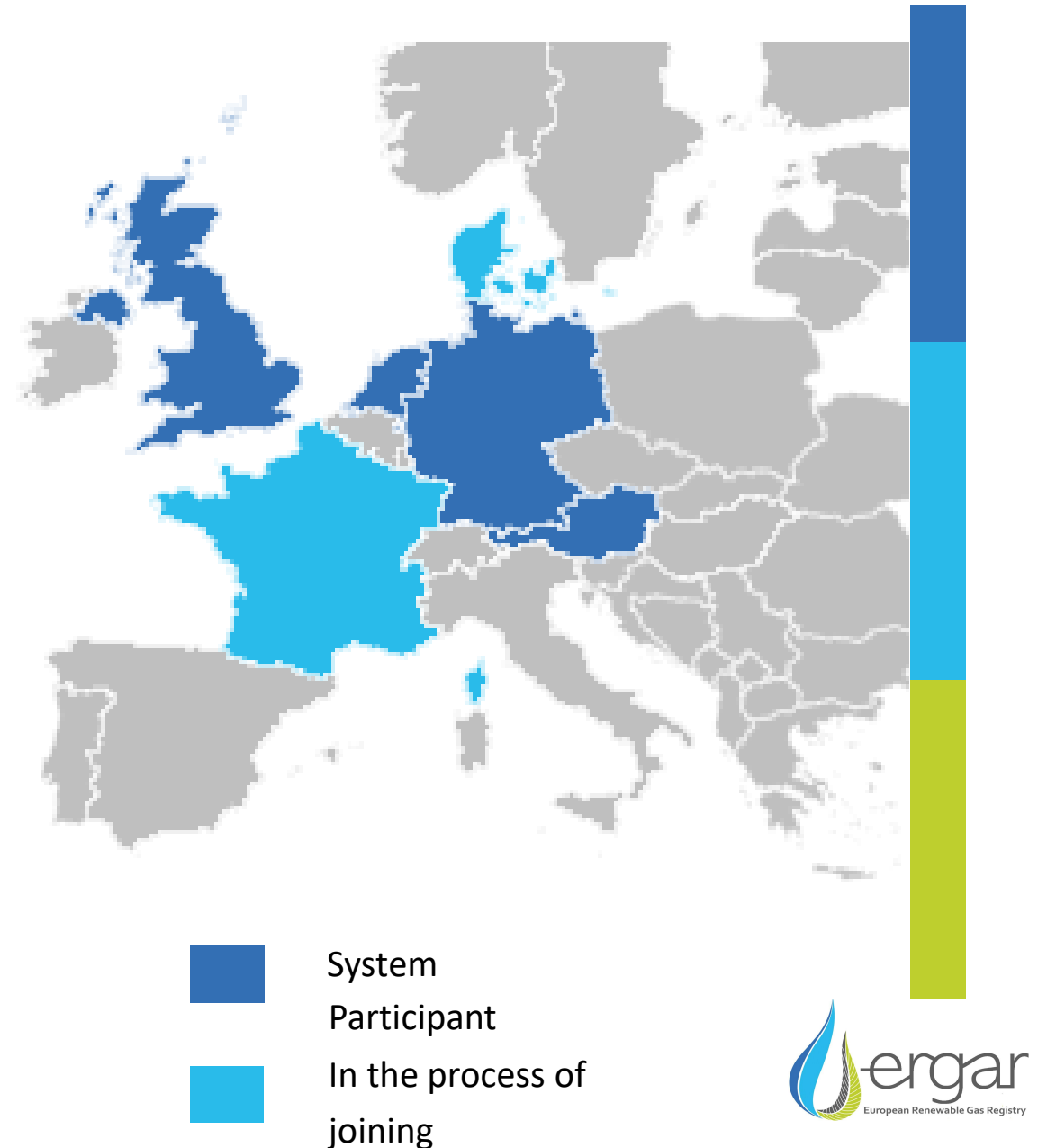
- AGCS (AT)
- Dena (DE) \*
- GGCS (UK)
- Vertogas (NL)

## In the process of joining the CoO Scheme:

- Energinet (DK)
- GRdF (FR)

- 2 transfers took place between NL and UK in Q3
- The 6 registries represent more than 2/3 of European grid-connected biomethane production capacity

\* Approved by ERGaR Board



# Summary

- Different elements, which facilitate cross-border transfers, have been developed recently and are in the process of implementation on national and European level, e.g. extension of GO rules to gases, launch of European Schemes.
- The different pieces of the European framework still need to be shaped to fit to each other on national and European level.
- The implementation of the framework takes place on different speeds at Member States.

# Thank You!

**Matthias Edel**, Secretary General

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[www.ergar.org](http://www.ergar.org)



[/company/ergar/](https://www.linkedin.com/company/ergar/)



[@ERGaR\\_GreenGas](https://twitter.com/ERGaR_GreenGas)



# EBA Conference – 26 October

*Greening gas distribution grids*

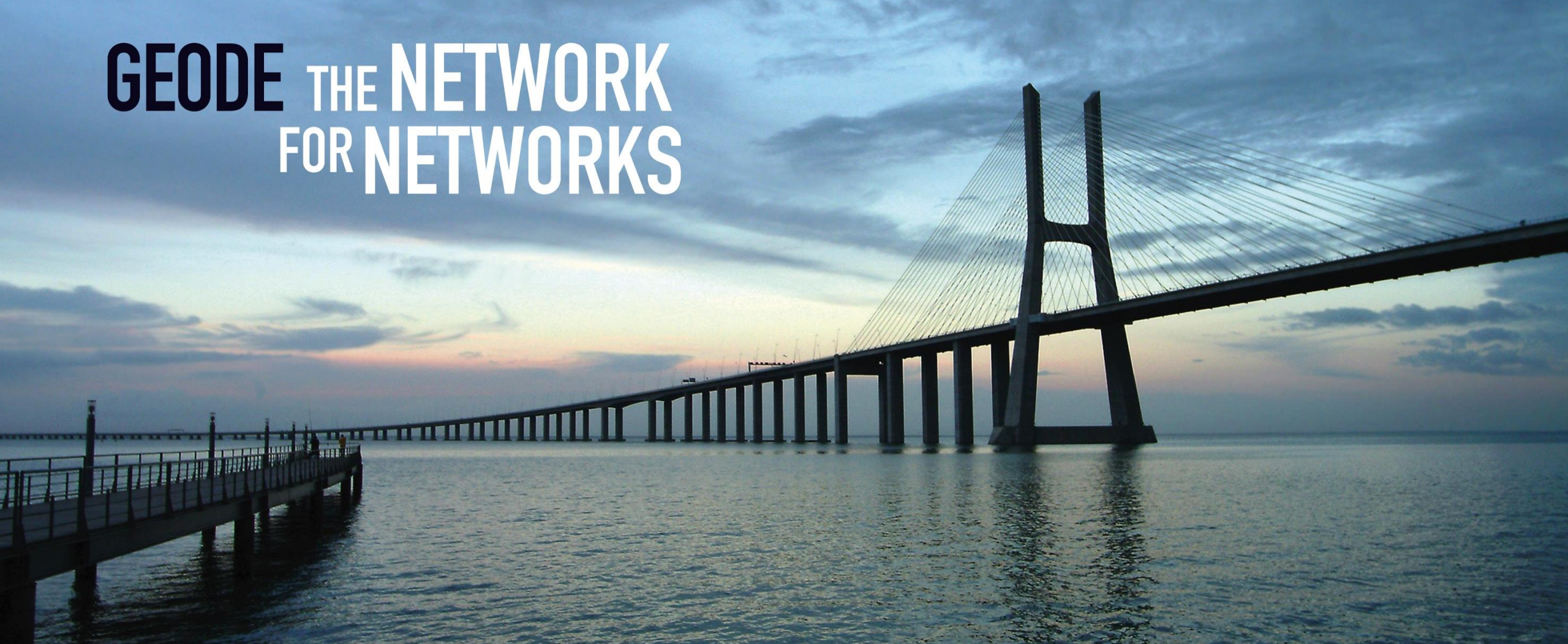
**PETER KRISTENSEN**  
Board Member, GEODE



26–27 October 2021, Brussels



# GEODE THE NETWORK FOR NETWORKS

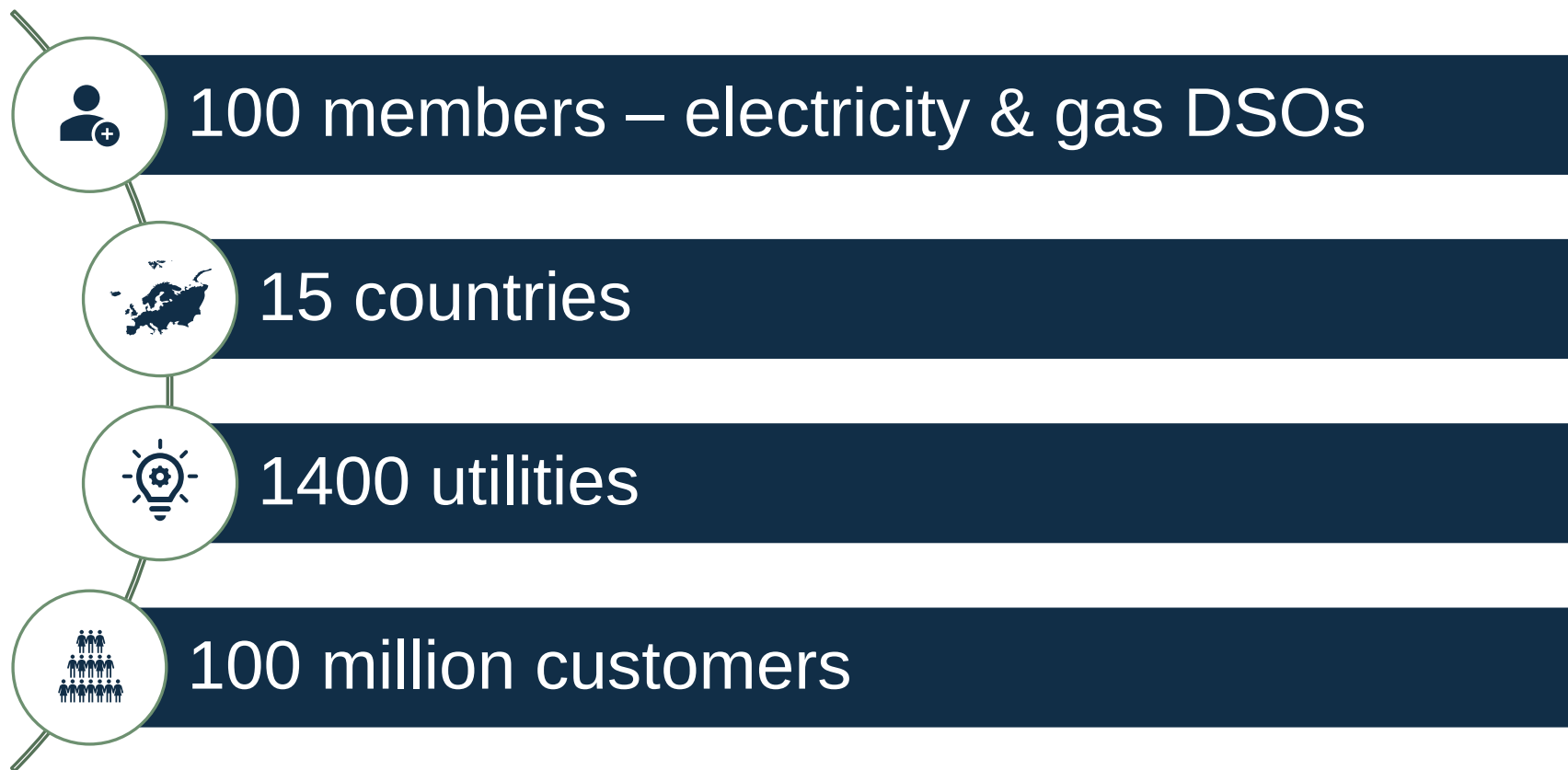


## **EBA Annual Conference 2021 Greening gas distribution grids**





# GEODE: Smart distribution systems since 1991



# Potential for biomethane



- Biogas production volumes estimated to reach over 1000 TWh by 2050\*
- Delivering on the potential will support the decarbonization of sectors such as heavy industry, heating & transport
- Needed: an **enabling EU framework encouraging the injection of biomethane and its interaction with other renewable gases – in particular H2 – as well as integration with the electricity system**
- **Distribution System Operators (DSOs)**, as the facilitators of the uptake of biomethane, will play a **key role in maintaining the liquidity and interoperability of Europe's gas market, while ensuring decarbonization comes at minimal cost**

\*EBA figures presented at the 35th European Gas Regulatory Forum

# GEODE fact sheet on biogas & biomethane



- Launched in June 2021 (pre-Fit for 55 package)
- Outlines a set of policy & regulatory recommendations to help expediate biomethane development ➡

# GEODE recommendations (I/II)



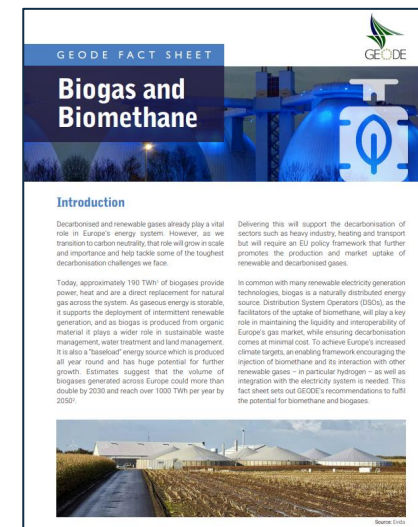
An EU framework for renewable gases which includes a European target for renewable gases to support the Fit for 55 vision

Energy policy should actively support biomethane & biogas production

- Recognize the role it can play in decarbonizing a range of sectors
- National level: Consider the relative strategic benefits of biomethane to determine the right levels of support

Regulation for distribution networks should recognize that biomethane growth leads to more decentralized gas production → investment required to ensure capacity is provided for new developers

Closely related, innovation, good planning & legal framework conditions should support synthetic methane. Synthetic methane a reliable zero carbon option for sectors which may not have others, e.g. chemical industries which use methane as feedstock rather than fuel



# GEODE recommendations (II/II)



Sustainable H2 should be further developed in parallel with biogas & biomethane sectors, incl. blending H2 with biomethane in the gas grids

- → will help create a market for H2, solving the “chicken & egg problem” when implementing new tech & products

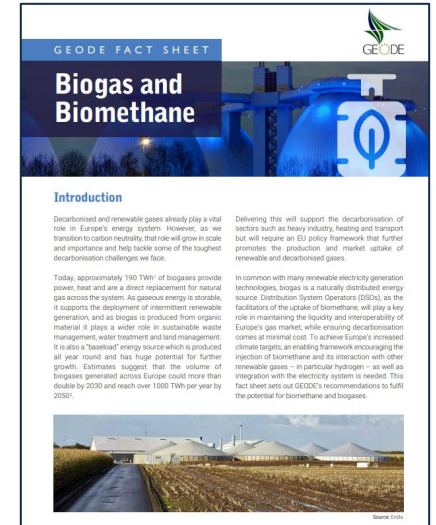
Policymakers & NRAs should work with the DSOs to plan for biomethane, H2 blending & H2 conversion:

- Set up a strategic plan for each region, depending on local potential for supply & demand

Dedicated policy support for CCUS for biomethane & biogas production which will ultimately realize additional climate benefits

Take a whole life cycle approach to biogas in transport, i.e. using the ‘well to wheel’ rather than the ‘tailpipe’ method

- → will ensure that the benefits of biogas are reaped as a vehicle fuel





# How biomethane, H2 & synthetic methane can work together



- Both biomethane & H2 are needed now to green the gas sector, but so is synthetic methane
- Synthetic methane injections into existing gas infrastructure will create a demand for H2 while also producing a focus on developing biomethane & synthetic methane as a facilitator for developing a European H2 system & market
- Blending H2 into the methane grid will also bring about such change
- Existing gas networks can transport green energy cost-efficiently while connecting important parts of the value chain → smooth & quick transition towards renewable alternatives
- Supporting gas DSOs to develop & operate a H2 sector based on existing infrastructure will also leverage existing skills and expertise as well as the physical assets of the grid

# Biogas & biomethane lessons from DK

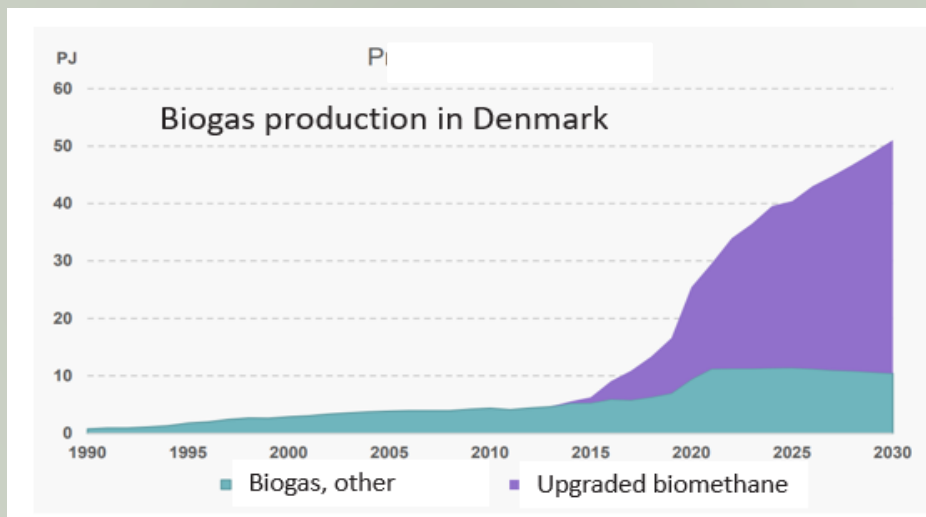
## Denmark worldleading in biomethane production

- Highest share of biomethane in the gas grid
- Evida has moved from customized to standardized biomethane injection
- Biomethane enables a green transition with existing infrastructure & plants

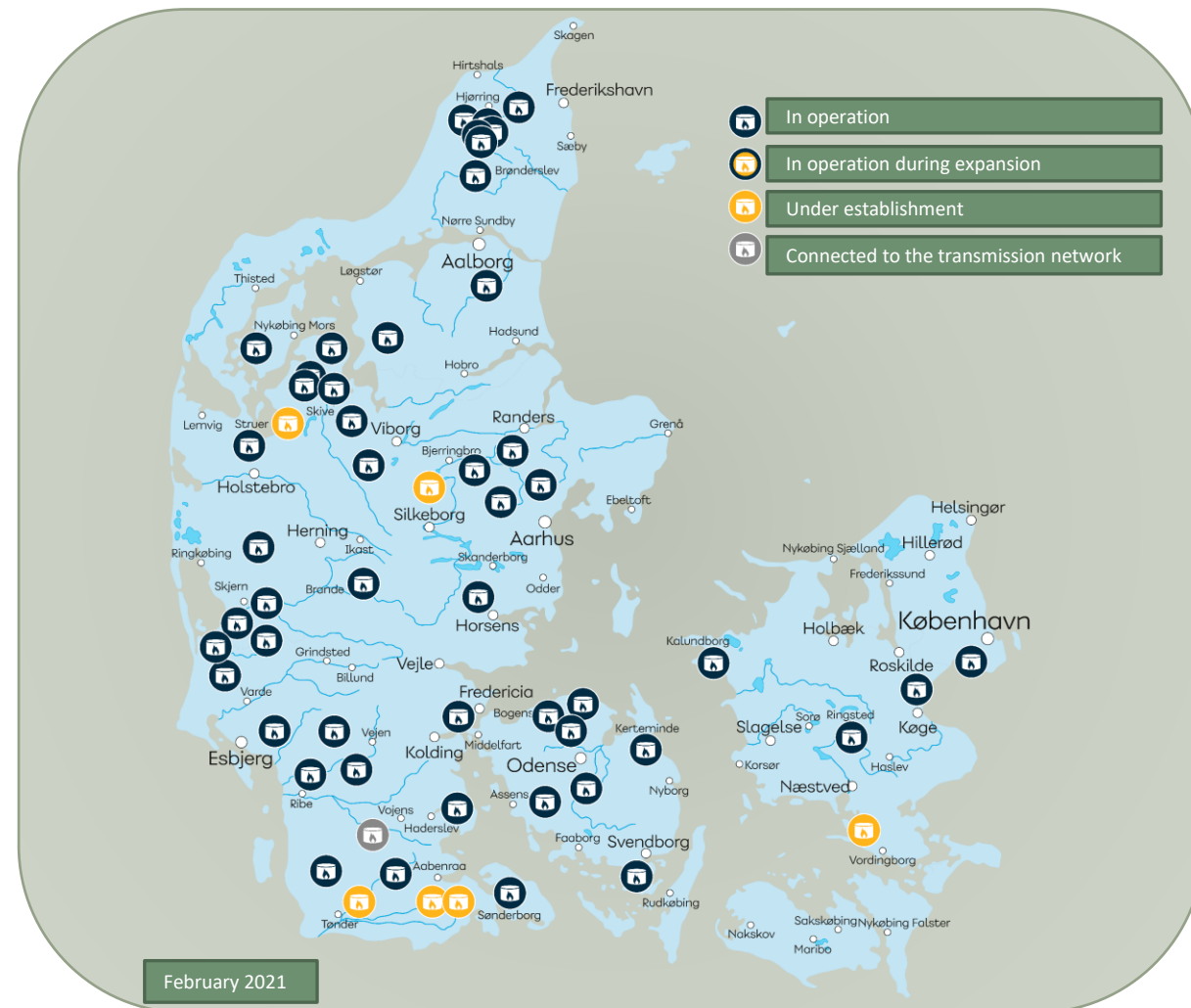


# Denmark towards 70% biomethane in 2030

- More than 40 PJ of biomethane in 2030
- Electrification reduces the gas consumption, but increases the need for peak load
- Biomethane is the safety net

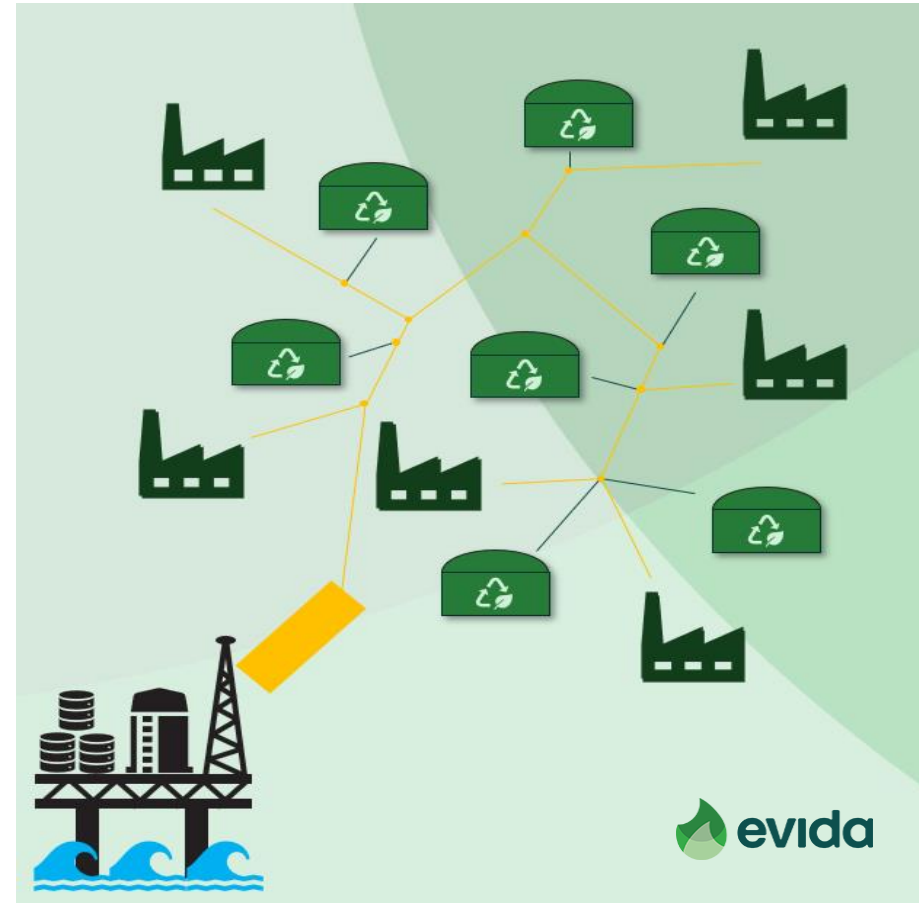


Danish Energy Agency, Klimafremskrivning 2021



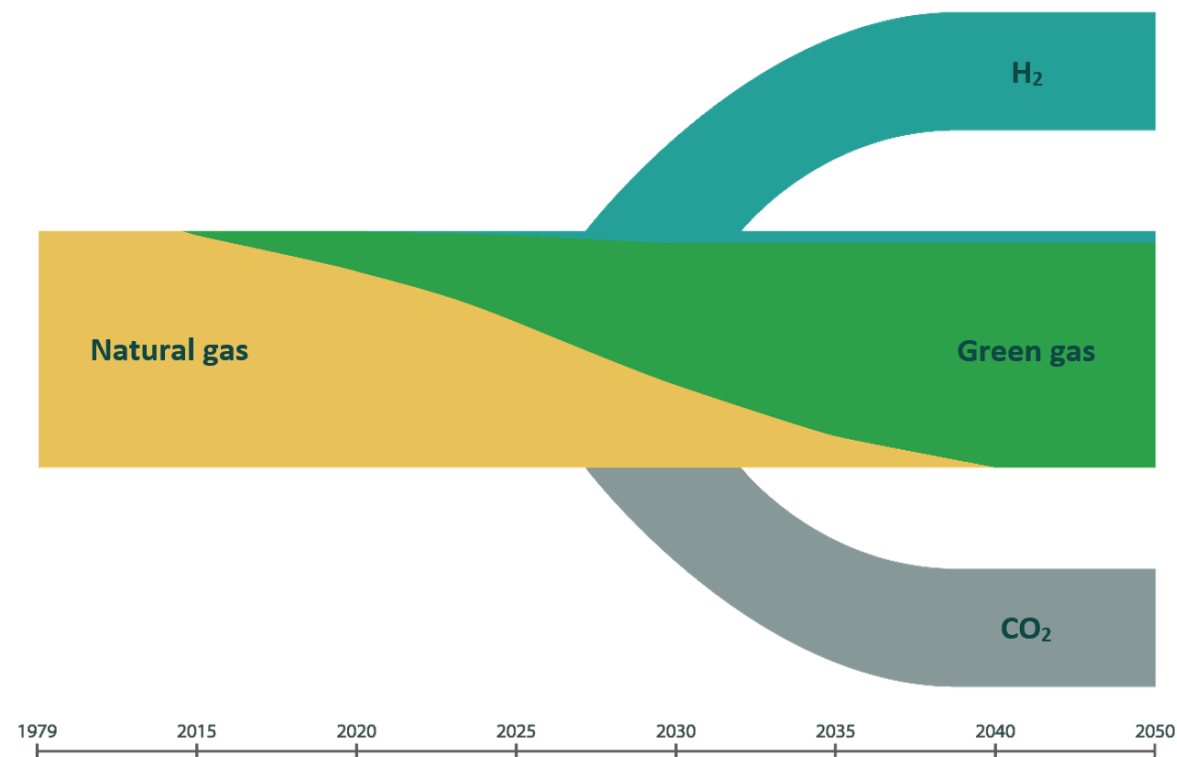
# Decentralized gas production

- From one injection point in the North Sea to several biomethane producers
- Grid balance
- Gas quality
- Metering
- Storage
- Similarities with decentral hydrogen grids
- DSOs ready to live up to their responsibility



# The future role of DSOs

- From few large gas suppliers to thousands of smaller ones
- From only methane to several gases
- Small grids might not be connected at first
- Ensure the grids can connect later
- Need for regulation & standardized solutions







# Thank you!

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# BREAKOUT SESSION: SHAPING THE EU BIOMETHANE MARKET

## Question & Answer Session



Olivier Aubert, SWEN Capital

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Leonardo d'Acquisto, GD4S

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Matthias Edel, ERGaR

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Peter Kristensen, GEODE

# BREAKOUT SESSION: FUELLING THE EU INDUSTRY WITH BIOGAS

Moderated by EBA Director Harmen Dekker



Hans Korteweg, Cogen Europe

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Małgosia Rybak, CEPI

---

Marie Esteve, BIOTHANE

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Ismaël Charbagi, Air Liquide Biogas division

# EBA Conference – 26 October

*Efficient power & heat production  
from biogas*

**HANS KORTEWEG**

Secretary General, Cogen Europe



26–27 October 2021, Brussels



# COGEN EUROPE

Efficient Power & Heat Production from Biogas



**COGEN**  
EUROPE

European Biogas Conference  
26 October 2021



# Our Mission

## Cross-sectoral voice of the cogeneration industry

Work with EU Institutions and stakeholders to shape better policies by:



Building a robust evidence-base demonstrating the benefits of cogeneration.



Using the expertise of our membership.



Establishing strong coalitions and partnerships.

# Members

## National Associations



## Corporate Members



# Our Vision

The cogeneration sector is committed to creating a resilient, decentralised, carbon neutral European energy system by 2050, with cogeneration as its backbone:



**empowering European citizens and industry to generate their own efficient, reliable and affordable clean heat and power locally**



**bringing together heat, electricity and gas networks, allowing the efficient integration of substantial amounts of renewable energy and providing energy when and where needed**



**enabling an integrated energy system and a cost-effective transition towards a sustainable future**

# Cogeneration

Single Input

Two Outputs



**Cogeneration transforms 90% of the energy into useful heat and electricity for factories, offices, public buildings and homes.**

# Cogeneration: Benefits of Efficiency

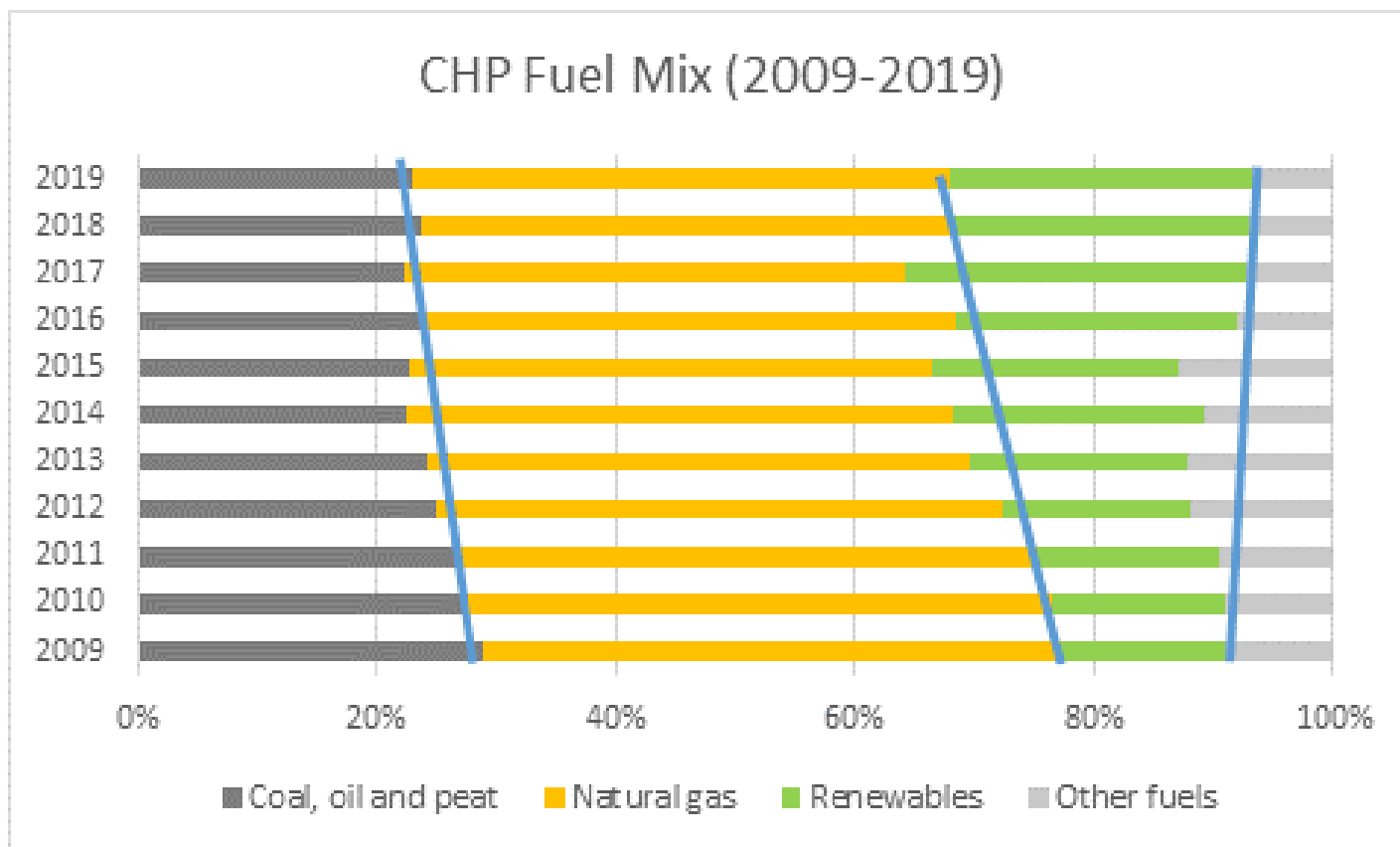


- Transforms more than 80% of the energy into useful heat and electricity for factories, offices, public buildings and homes.
- Saves up to 40% energy compared to the separate supply of electricity and heat from conventional power stations and boilers.





# Cogeneration Fuel Mix



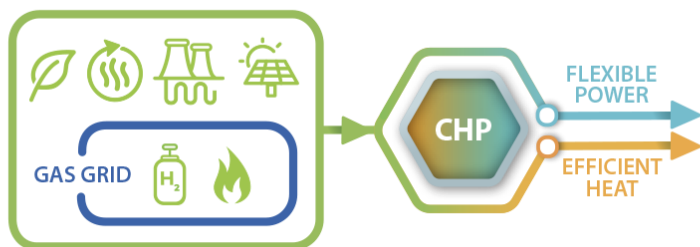
Source: Eurostat (2021)

CHP fuel mix influenced by fuel price dynamics, support schemes and availability of renewable fuels at local level.

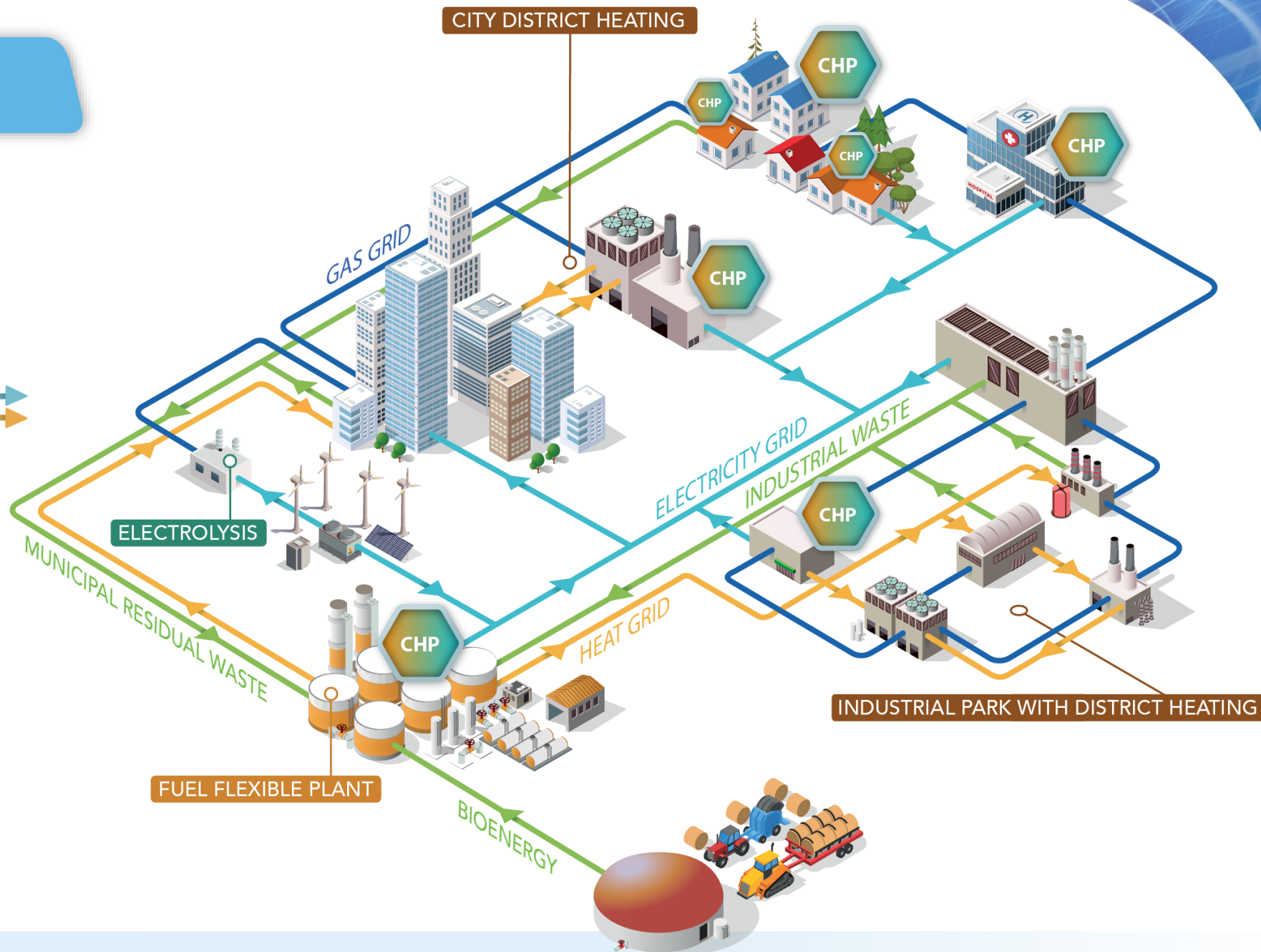
- Stable share of natural gas use in CHP.
- Rapid increase of RES, reaching close to 26% in 2019 (from 13% in 2009).
- Steady decline in solid fossil fuels and oil use in CHP.

# System Focus

**Cogeneration:**  
backbone of local and  
integrated energy

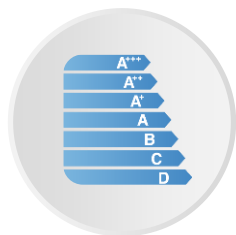


CHP enables the **integration of the energy system** by efficiently linking electricity, heat and gas at the local level and **providing energy when and where needed**.



# CHP: Beneficial to Consumers in All Sectors

CHP enables the **most energy-efficient & cost-effective** pathways to decarbonisation in a **consumer-empowering** way.



**220 TWH**

OF PRIMARY ENERGY SAVINGS

OR 2.5 x annual electricity consumption of Belgium\*



**5.5 MT**

OF REMAINING CO<sub>2</sub> EMISSIONS AVOIDED

OR Annual CO<sub>2</sub> emissions of 3 million petrol cars

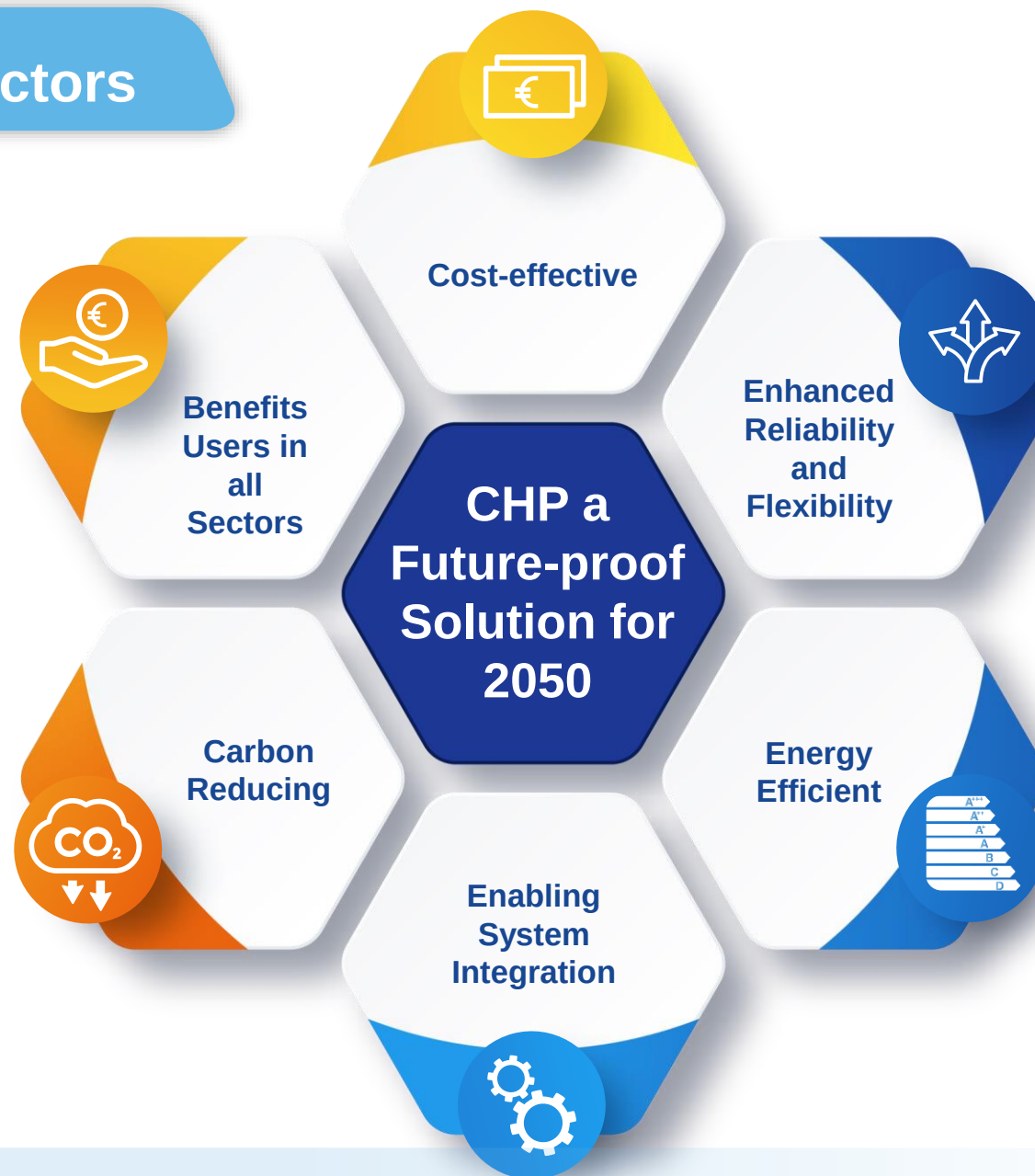


**8.2 BN €**

SAVED YEARLY

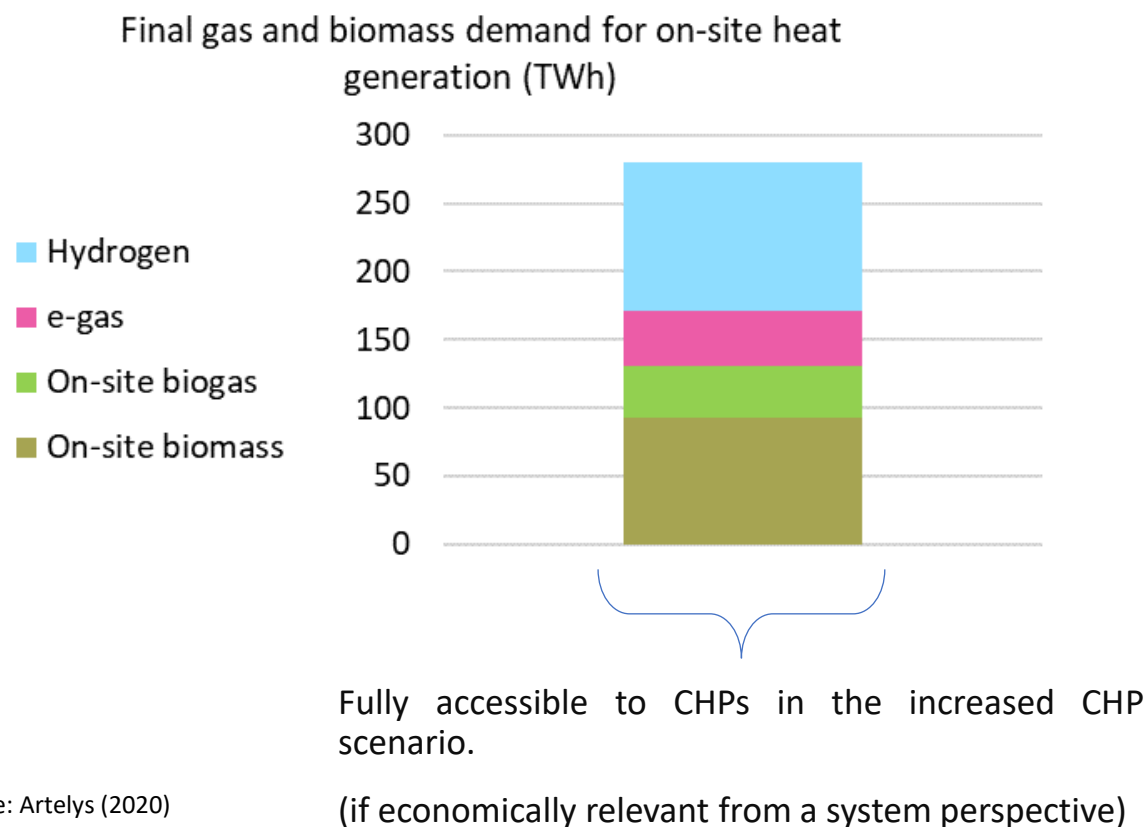
OR 9.5 x of LIFE Climate Action funding

\* IEA 2019

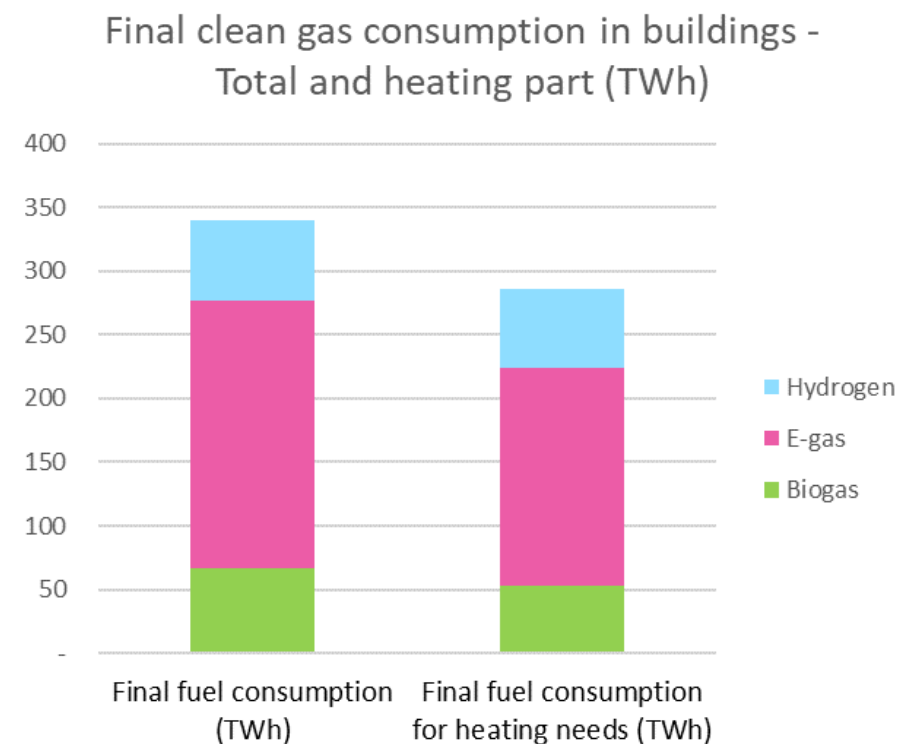


# Role of Biogas CHP in 2050

## Industrial Heat Demand



## Building Heat Demand



Source: Artelys (2020)

# Ochain Energie Biogas Plant Project (BE)

Supplying a local community with green heat and electricity.



“It all started very simply, we wanted to find another source of income for the family farm. However, we did not want to embark on the path of industrial automation in livestock farming. Agriculture must be approached with respect, with an open mind and one must also be prepared for new trends in this field. Biogas in combination with cogeneration is beautiful proof of that.”

Mr. Grégory Racelle (owner of the family farm)

## Benefits of cogeneration



About 6,000 tonnes of CO<sub>2</sub> saved per year



3,000 households supplied with green electricity  
Local nursing home supplied with green heat



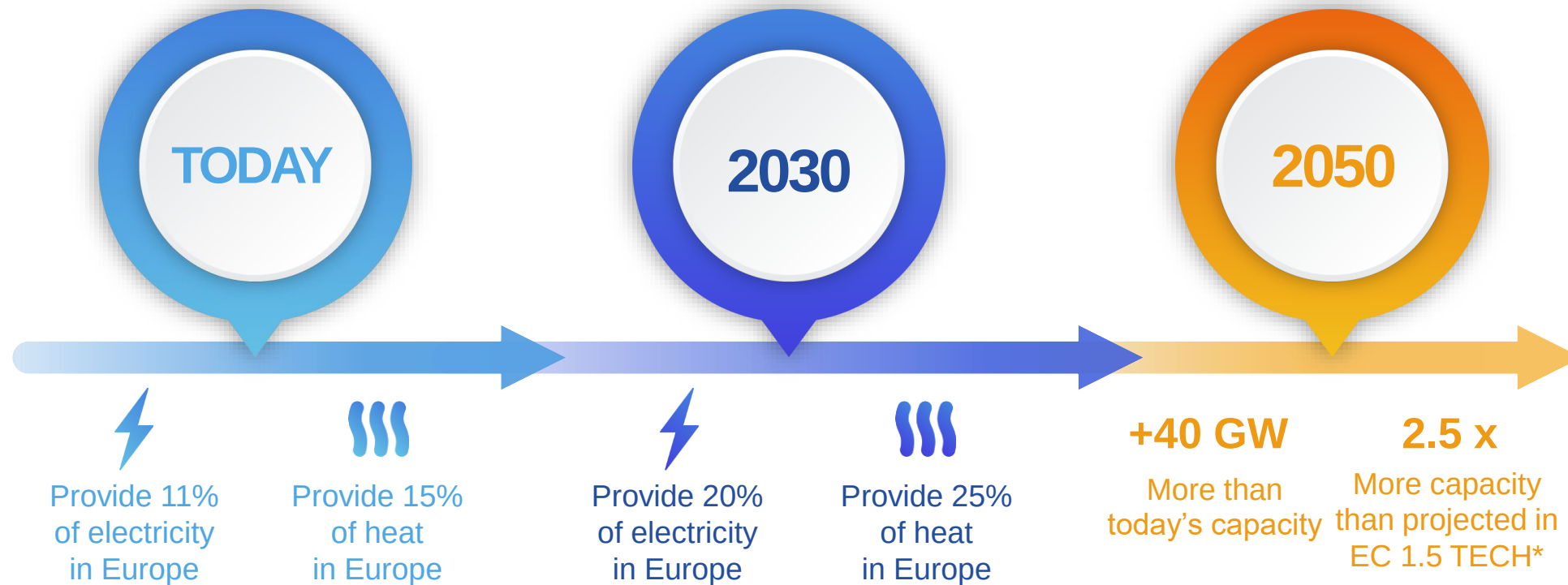
1200 kWe Electrical output  
89 % Overall efficiency



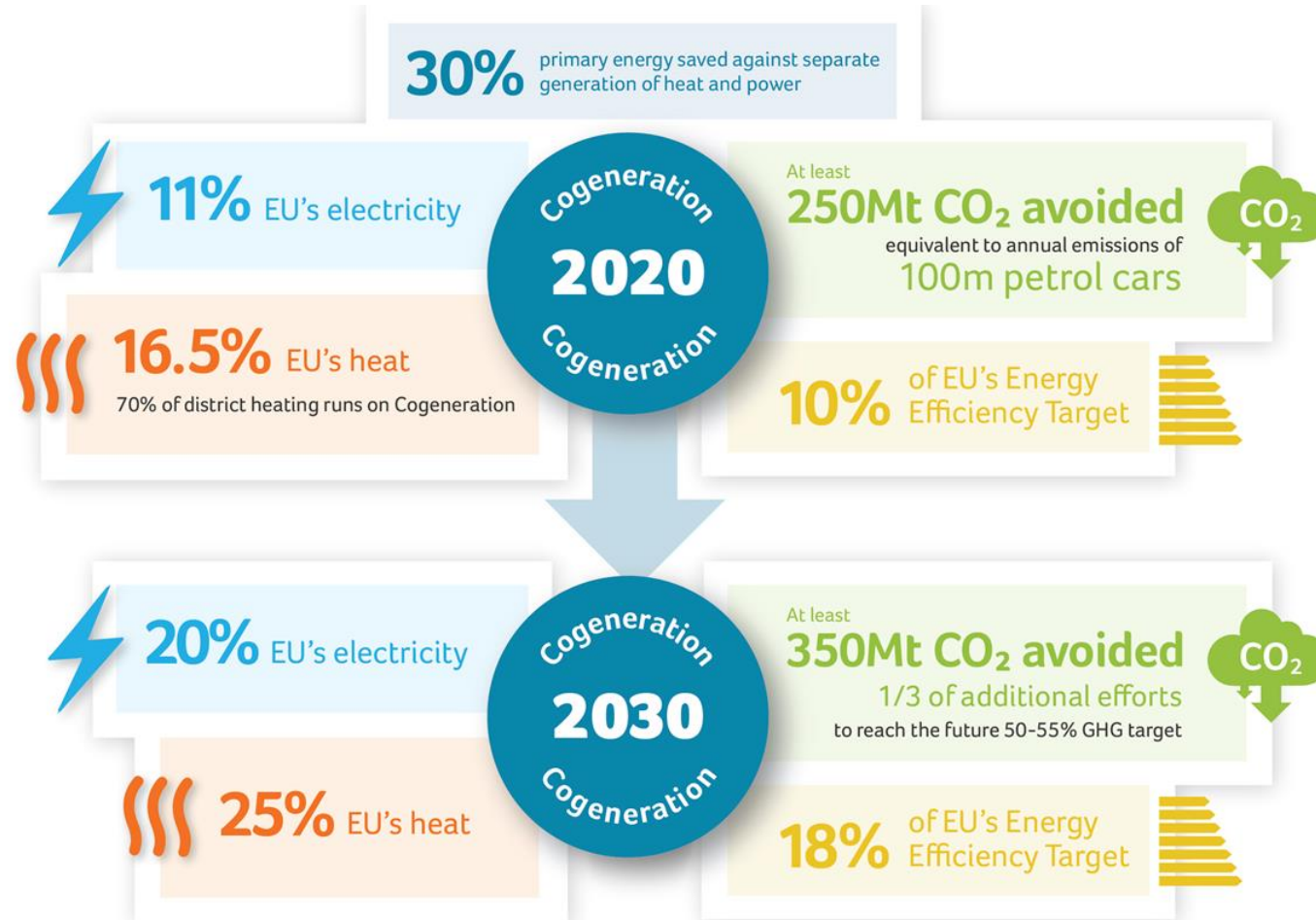
# Our Call to Action

An **ambitious and predictable regulatory framework** must be set in place to fully reap the benefits of cogeneration for citizens, businesses and the energy system between now and 2050.

**Prioritise cogeneration** for all thermally generated heat and power, to avoid wasting valuable energy.



# CHP's Contribution to Fit for 55



#### Sources

Latest EU statistics and EU funded CODE2 project on the Cogeneration potential in 2030



#thepowerofheat

# COGEN Europe

## Virtual Annual Conference

18-19 November 2021 | Virtual Event

### OUR SPONSORS



Engineer - Install - Maintain



### MEDIA PARTNERS



[www.cogenerationchannel.com](http://www.cogenerationchannel.com)



# COGEN

WORLD COALITION

Building a **resilient**, **decentralised** and **carbon neutral** global energy system.

### ASSOCIATIONS



### Corporate



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**COGEN Europe • The European Association for the Promotion of Cogeneration**  
Avenue des Arts 3-4-5, 1210 Brussels, Belgium • T +32 (0)2 772 82 90 F +32 (0)2 772 50 44 [info@cogeneurope.eu](mailto:info@cogeneurope.eu) • [www.cogeneurope.eu](http://www.cogeneurope.eu)



# EBA Conference – 26 October

*Circular trends in the paper industry*

**MAŁGOSIA RYBAK**

Climate Change & Energy Director, CEPI



26–27 October 2021, Brussels



# EBA Conference – 26 October

*Resourcing the industry with biogas*

**MARIE ESTEVE**

Sales Manager Biogas Upgrading, BIOTHANE



# EBA Conference 2021

Resourcing the industry with biogas

*Marie ESTEVE - 26/10/2021*



# VEOLIA GROUP

## LEADER IN OPTIMIZED RESOURCE MANAGEMENT

With nearly **179,000 employees** worldwide, Veolia Group designs and provides water, waste and energy management solutions which contribute to the sustainable development of communities and industries.

Through its three complementary business activities, Veolia helps to develop access to resources, preserve available resources, and replenish them.



**95 million**

people with drinking water



**62 million**

people with wastewater service



Produced nearly

**43 million**

megawatt hours of energy



Converted

**47 million**

metric tons of waste

# VEOLIA GROUP

## OUR MISSION - RESOURCING THE WORLD

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### IMPROVING ACCESS TO RESOURCES

Veolia offers operational solutions that consume fewer environmental resources that are more economically efficient to expand both the potential and accessibility of our resources.



### PRESERVING RESOURCES

Veolia develops solutions to conserve resources and optimize their use, while protecting their quality and efficiency throughout the usage cycle.



### REPLENISHING RESOURCES

Veolia provides solutions for creating new secondary resources that will gradually offset the increasing scarcity of natural primary resources, to generate new opportunities for social and economic development that protect the environment.

DSM

BRIGHT SCIENCE. BRIGHTER LIVING™

A science-based company active in **Nutrition, Health & Sustainable Living**

- Innovation
- Sustainability
- Circular economy
- Renewable energy

**CircularGaz Project :**

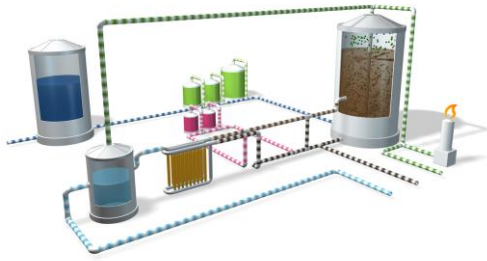
- Joint-Venture of DSM and AVRIL (F&B french group)
- Located in Dieppe, FRANCE
- Creation of an innovative protein CanolaPRO® production plant from rapeseed oil production residues





# FROM CONCEPT TO FULL-SCALE FOR WWTP

## FOCUS ON INNOVATION



**CONCEPT**



**PILOT TESTS**



**FULL-SCALE**

Regulatory compliance to ensure the license to operate

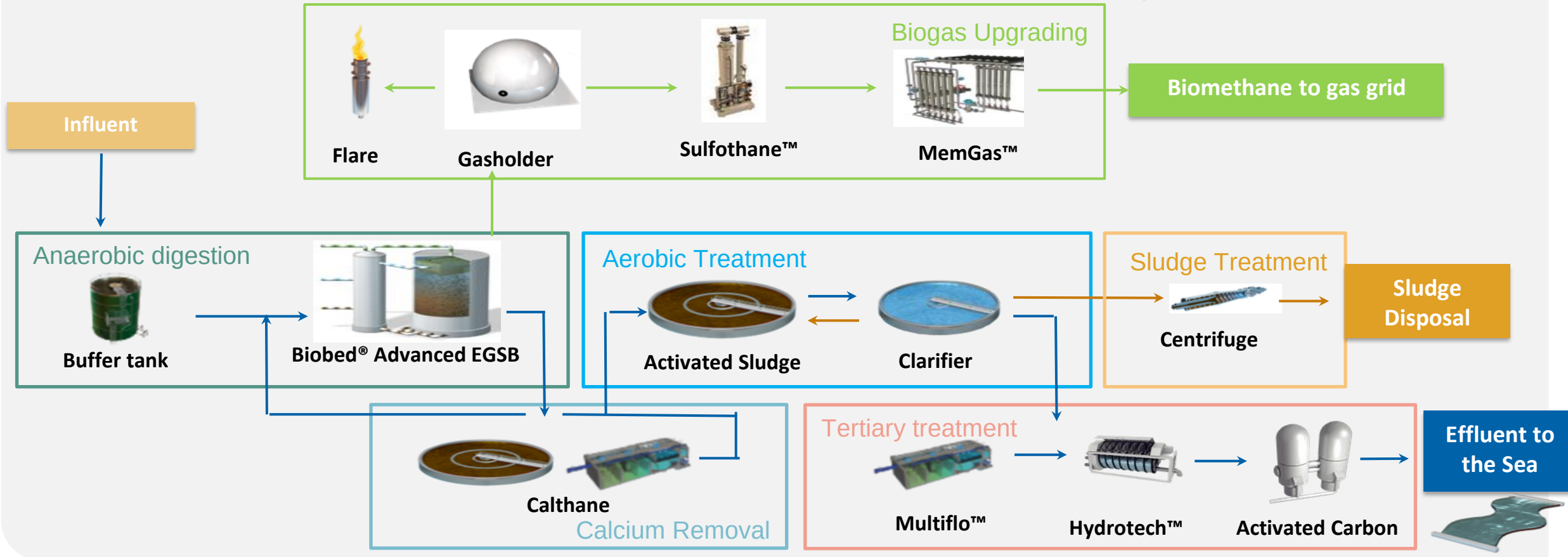
High loaded wastewater with stringent discharge limits into the sea

Reduction of the environmental impact (odors, noise, footprint...)

Resource recovery

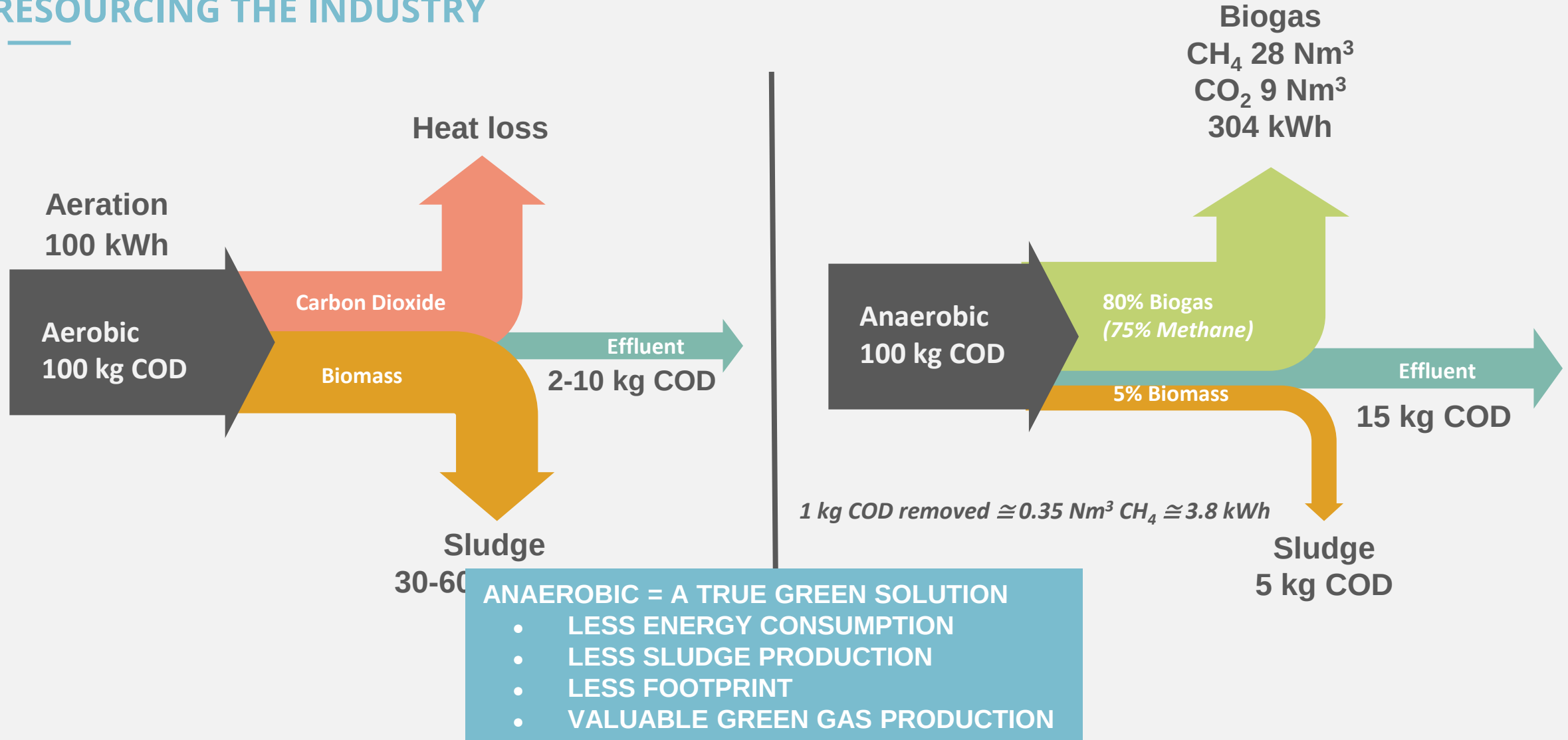
# GLOBAL TREATMENT PROCESS TECHNOLOGIES

- Biobed® Advanced EGSB
- Sulfothane™
- MemGas™
- Multiflo™
- Hydrotech™ Discfilter



# THE VALUE OF ANAEROBIC TECHNOLOGY VS AEROBIC TECHNOLOGY

## RESOURCING THE INDUSTRY



## CIRCULARGAZ KEY FIGURES



**10** YEARS OF OPERATION BY VEOLIA



**4 000 T COD** TREATED PER YEAR



**1 000 000 Nm<sup>3</sup>** OF BIOMETHANE PRODUCED PER YEAR



**11 GWh** OF GREEN GAS INJECTED TO THE GAS GRID PER YEAR



ABOUT **2 000 T CO<sub>2</sub> AVOIDED** PER YEAR\*

\*only biomethane production





## CONCLUSION

Together with DSM & Avril , we contribute to the sustainable development of the industry and help reach climate neutrality because we :

- **Produce a new vegetable protein,**
- **Create local employment,**
- **Create circular economy from agriculture to local energy production,**
- **Treat the water and protect the resource,**
- **Produce green gas from wastewater,**
- **Reduce the Carbon Footprint.**





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Sales Manager



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# EBA Conference – 26 October

*Decarbonizing the EU industry  
through biogas*

**ISMAËL CHARBAGI**

Business Developer, Air Liquide Biogas division



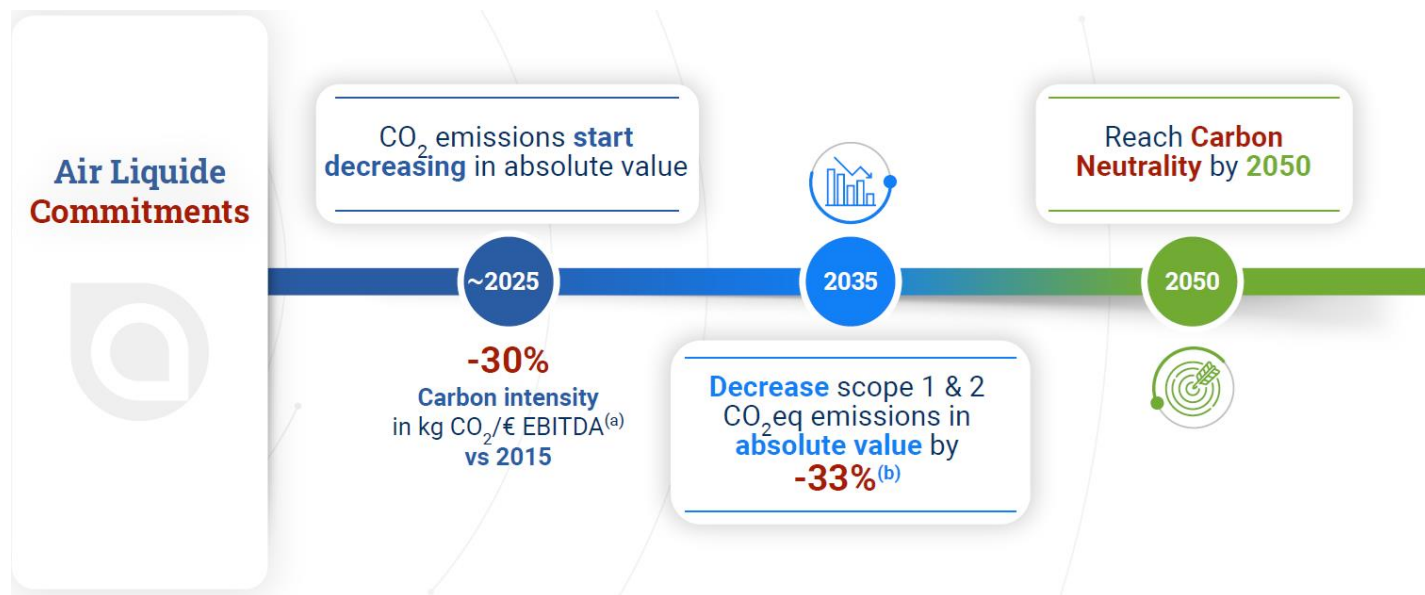
26–27 October 2021, Brussels





# Air Liquide: Biogas to decarbonize the EU Industry

# Air Liquide, a committed gas provider to the industry

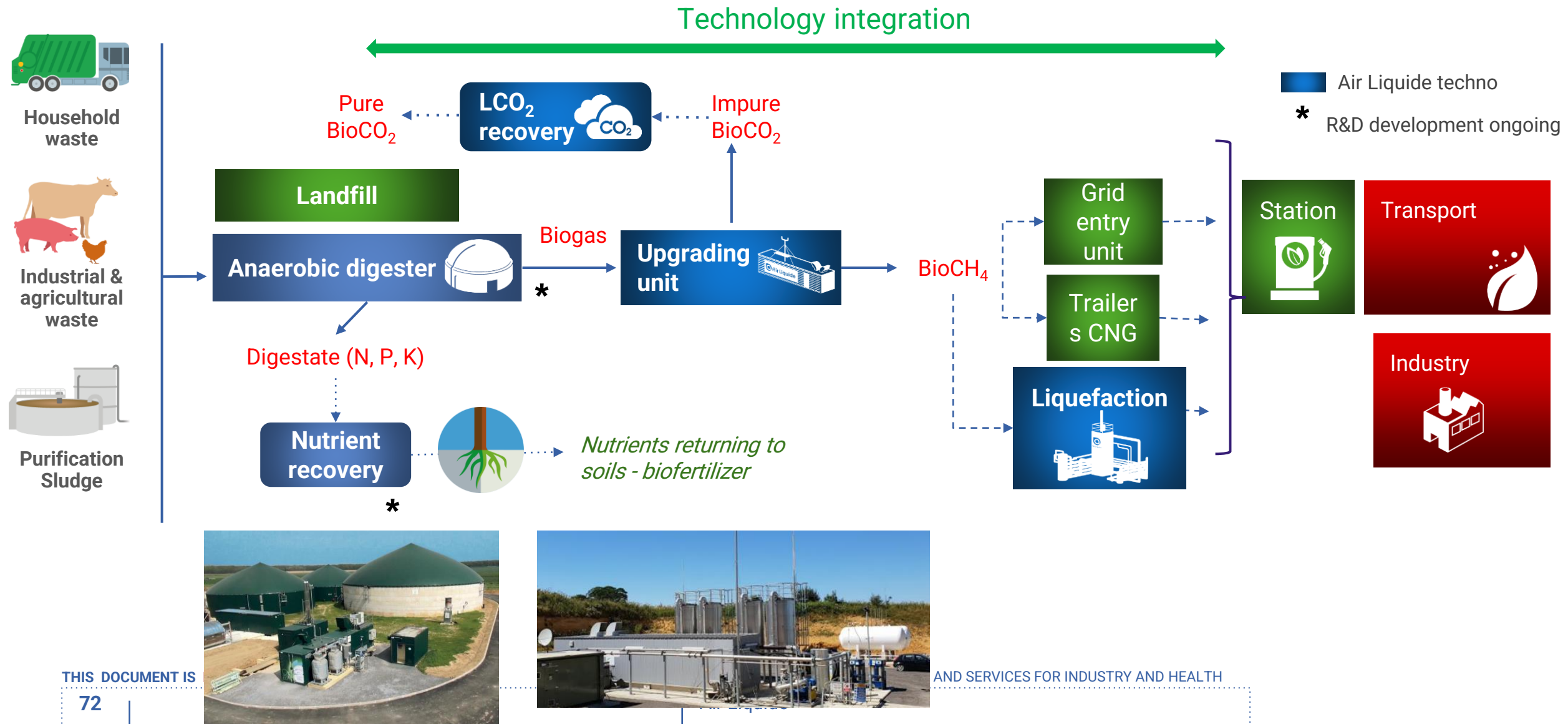


## CUSTOMERS

Support hard-to-abate industrial sectors with low carbon offers



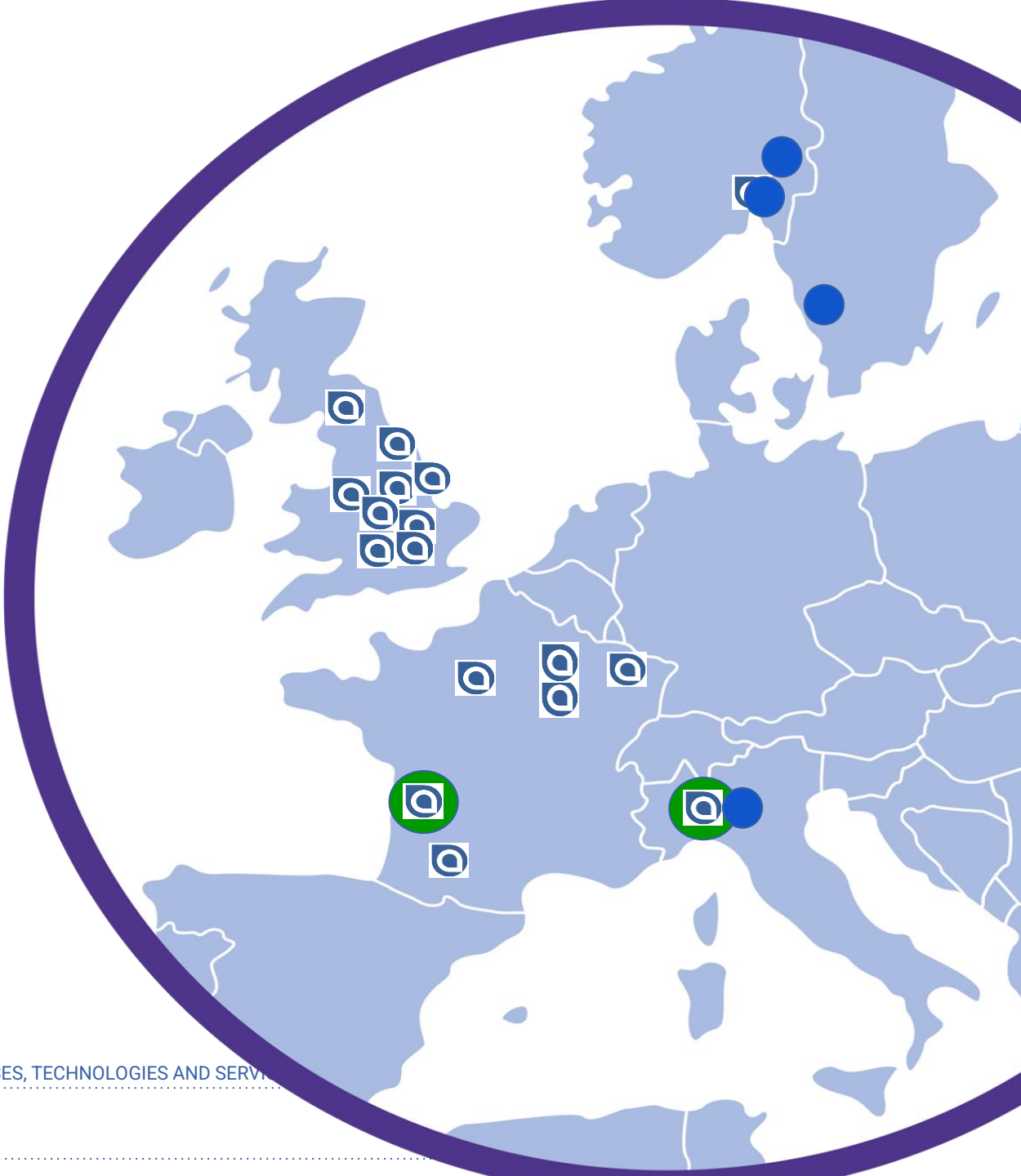
# Techno leadership & presence across the value chain



# ~1 TWh/y Biomethane production capacity in Europe



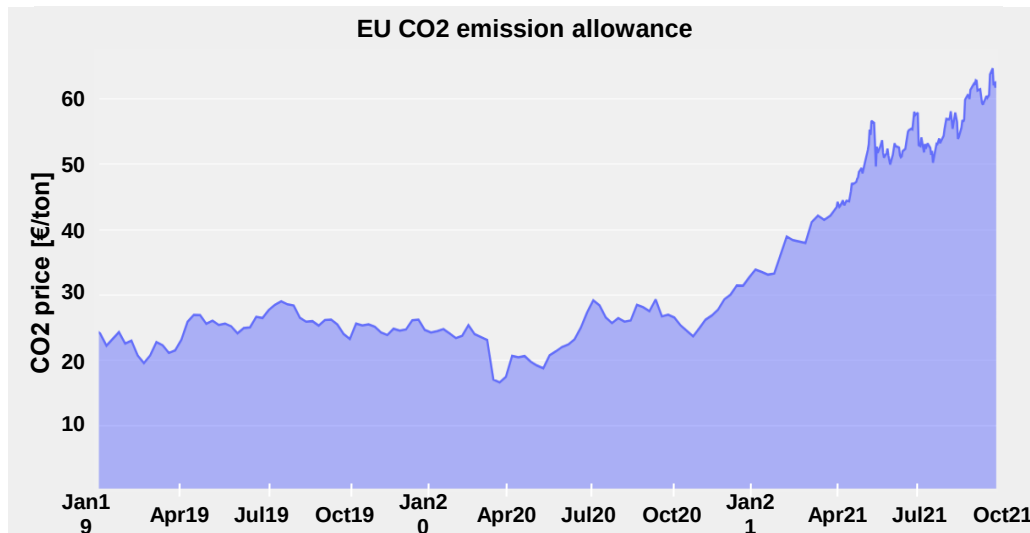
-  Digester & upgrading
-  Liquefiers
-  Upgrading



# Rising CO2 prices for Industries

## ETS

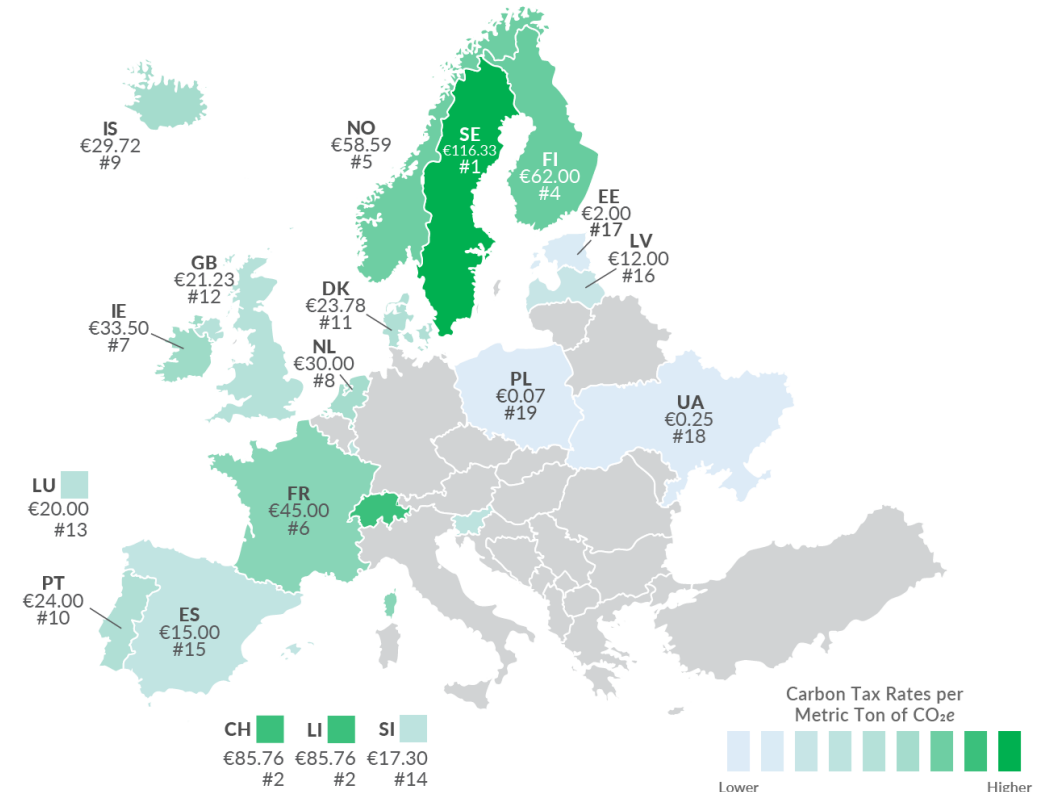
- covers **45% of the EU GHG emissions** from 11,000 sites
- Price 2021:** EuA ~ 60€/T CO2



## National CO2 tax

### Carbon Taxes in Europe

Carbon Tax Rates per Metric Ton of CO<sub>2</sub>e, as of April 1, 2021



# Air Liquide industrial references

JOH. JOHANNSON KAFFE AS  
– kjent for god kaffe siden 1866



GLENMORANGIE  
SINGLE MALT SCOTCH WHISKY

OCI

PEAB  
Peab Asfalt

Peterson

DIAGEO

uponor

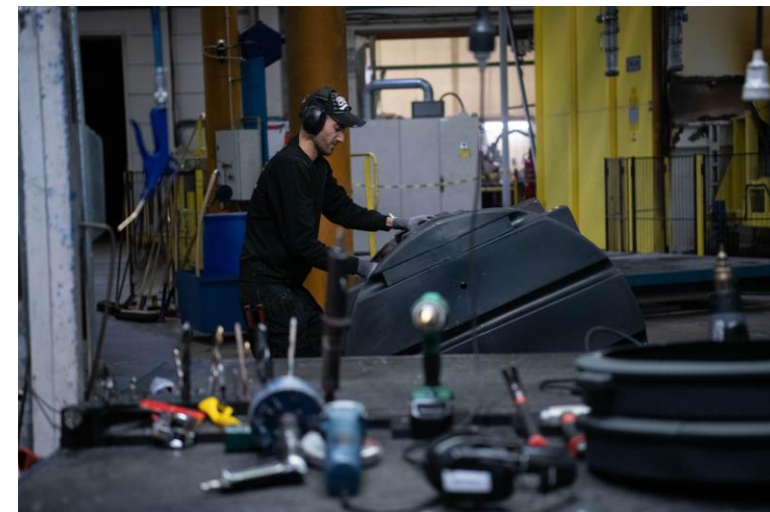




# Uponor case study in Sweden (1)



# Uponor case study in Sweden (2)



→  
30 km



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TECHNOLOGIES AND SERVICES FOR INDUSTRY AND HEALTH

# BREAKOUT SESSION: FUELLING THE EU INDUSTRY WITH BIOGAS

## Question & Answer Session



Hans Korteweg, Cogen Europe

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Małgosia Rybak, CEPI

---

Marie Esteve, BIOTHANE

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Ismaël Charbagi, Air Liquide Biogas division