European Biogas Conference

26 OCTOBER 2021

FUELLING THE RENEWABLE GAS MIX

EBA
European Biogas Association

26–27 October 2021, Brussels

EBA Conference – 26 October

Opening speech

PIERO GATTONI
Acting President, European Biogas Association

EBA
European Biogas Association

26–27 October 2021, Brussels

We sadly announce the decease of the EBA President

EBA Conference – 26 October

Opening speech

HARMEN DEKKER

Director, European Biogas Association

EBA
European Biogas Association

26–27 October 2021, Brussels

The EBA has a new visual identity!

EBA Conference – 26 October

Opening speech

ALEKSANDRA TOMCZAK

Cabinet of Vice-President of the EC Frans Timmermans

EBA
European Biogas Association

26–27 October 2021, Brussels

SESSION 1: BIOMETHANE AVAILABLE AND SCALABLE

Moderated by TV & Radio presenter Sasha Twining

Peter Zeniewski, International Energy Agency

Anthony Lorin, European Biogas Association

Boyana Achovski, Gas Infrastructure Europe

Mieke Decorte, European Biogas Association

Taco van Hoek, Economic Institute for Construction and Housing

Luca Vailati, SHV Energy

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Do renewable gases and especially biomethane have a "long term" future and why?

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The outlook for biogas and biomethane

PETER ZENIEWSKI
Energy Analyst, International Energy Agency

EBA
European Biogas Association

26–27 October 2021, Brussels

The outlook for biogas and biomethane

26 October 2021, European Biogas Conference

Peter Zeniewski, Energy Analyst, World Energy Outlook

International Energy Agency

FL

Fanny Lamon

EBA Conference – 26 October

Biogas & biomethane: Fit for 55

ANTHONY LORIN

Policy Officer, European Biogas Association

EBA European Biogas Association

26–27 October 2021, Brussels

01

High-level general assessment

The Package rightly sets a higher renewable energy ambition, but misses great opportunities to leverage the potential of biomethane for the achievement of energy and climate objectives

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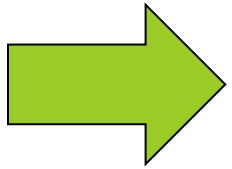
European Biogas Association

The Fit for 55 Package: EBA's position

The increased ambition in renewable energy penetration in all sectors is positive, but opportunities in end-use sectors remain to be determined by sectoral legislation

The Package does not provide the support that biomethane deserves as the most readily available renewable gas – instead the Package has much greater focus on green hydrogen

The EBA's recommendation



Give a strong political signal by setting a target of renewable gas in consumption in 2030 (Renewable Energy Directive) **and raise the ambition for biomethane in sectoral legislation**

02

Production and trade

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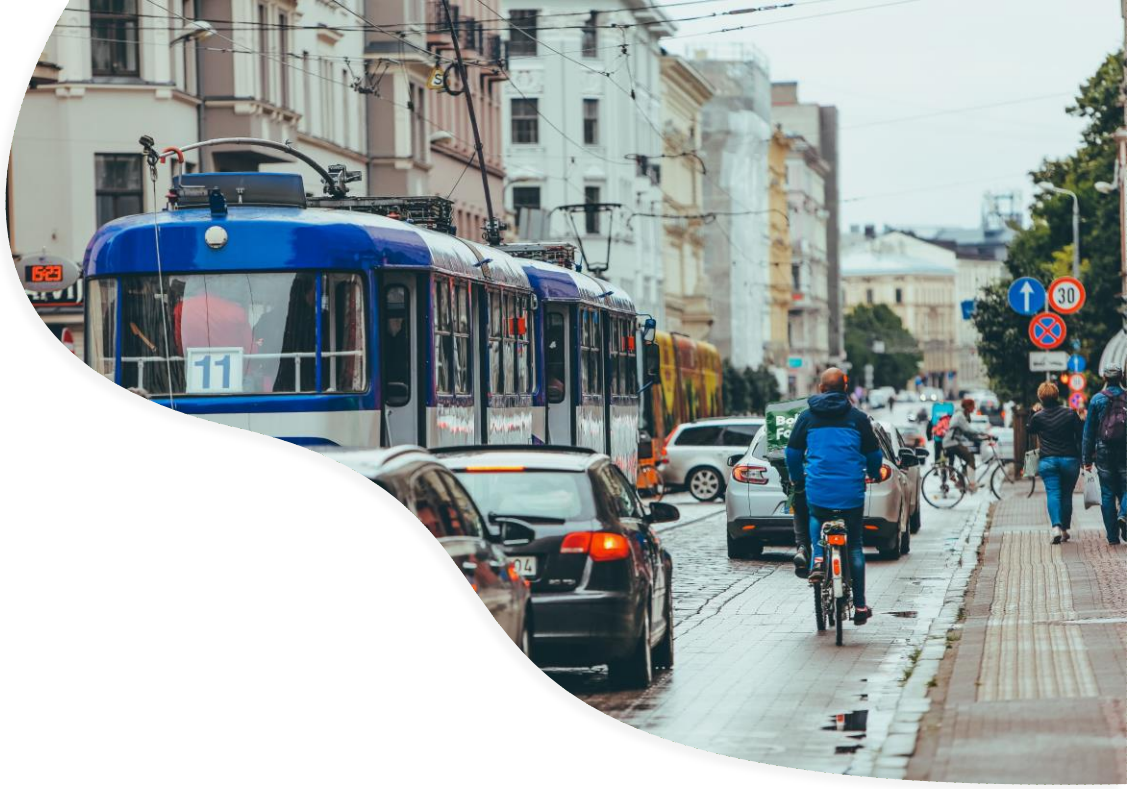
The Fit for 55 Package: EBA's position

The EBA's recommendations

- **Ensure the recognition of the climate value of biomethane by setting up a clear European-wide certification system** based on the integration of Guarantees of Origin and sustainability certification systems
- **Enable free trade of biomethane in the Internal Energy Market** with rules for monitoring, reporting and verification applicable to gaseous fuels injected in the gas networks
- **Include silage crops grown in a sequential cropping system in the list of feedstocks for "advanced biogas"** (Annex IX – Part A of RED II)
- **Secure the contribution of existing biogas facilities** to the renewable energy targets by providing support for their modernization
- **Submit the biomass cascading principle to impact assessment and legislative procedure** to ensure it is well thought out and consensus-based

03



Use in transport

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The Fit for 55 Package: EBA's position

Overall lack of ambition for biomethane in transport and strong preferential allocation to maritime transport

Regulatory incentive to the use in the maritime sector through a decreasing cap on fuel emissions based on a well-to-wake approach, as well as through an extension of the ETS where biogas is a zero-emission fuel (FuelEU Maritime Regulation, ETS Directive)

Uncertainty of the medium and long-term ambition for road LNG refueling stations (Alternative Fuels Infrastructure Regulation)

Exclusion of biomethane from light road vehicles from 2035 (CO2 performance standards) and no more support to CNG stations (Alternative Fuels Infrastructure Regulation)

The Fit for 55 Package: EBA's position

The EBA's recommendations

- **Increase the target for GHG intensity reduction of the transport sector and the ambition for advanced biofuels and biogas**, knowing biomethane can contribute much more that what is proposed (Renewable Energy Directive)

- **Set up a level-playing field between electricity and renewable gases**, incl. biomethane, **by a well-to-wheel approach to CO2 emission performance standards** in light road transport (CO2 performance standards Regulation)

- **Keep strong support to CNG and LNG refueling stations and make this conditional to national commitment to a decarbonization** pathway of the gas mix (Alternative Fuels Infrastructure Regulation)

04

Use in the heating sector

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The Fit for 55 Package: EBA's position

Uptake of biomethane in the ETS remains hampered by uncertainty of the proof of purchase that must be used for carbon reduction claims

No specific positive provision for the use of biomethane in buildings that remains dependent on other reforms (Revision of the Energy Performance of Buildings Directive, Eco-design Directive, Energy Labelling Regulation)

The Fit for 55 Package: EBA's position

The EBA's recommendations

- **Consider enlarging the target of green hydrogen in industry to all renewable gases, supporting biomethane uptake** and quick emission reduction (RED II)

- **Ensure a role for biomethane in renewable heating and cooling when it is supplied through gas grids and off-grids delivery**

Our call to EU institutions:

Seize the opportunity of this Package to set up a framework that promotes the production and market uptake renewable gases

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Gas infrastructure: Fit for 55

BOYANA ACHOVSKI
Secretary General, Gas Infrastructure Europe

EBA
European Biogas Association

26–27 October 2021, Brussels

Gas Infrastructure Europe

Gas infrastructure: Fit for 55!

By Boyana Achovski – GIE Secretary General

Session 1: Biomethane available & scalable

EBA Annual Conference 26 October 2021

Gas Infrastructure Europe

Agenda

Our DNA

GIE is the association of the European gas infrastructure operators

⇒ Gas transmission networks
⇒ Storage facilities
⇒ LNG terminals

GIE members are committed to delivering the EU's 2050 carbon neutrality objective

We providing citizens with more than fifty thousand jobs.

GIE Members:

- Work & innovate with renewable & low-carbon molecules, including hydrogen & bioLNG.
- support the regions in their transition.
- Enhance the decarbonisation of hard-to-abate sector
- Support the development of hydrogen.
- And we can help EU to become first carbon-neutral economy. But to unleash our full potential, we need the right policy framework.

Europe on its way to become climate-neutral by 2050

FINANCIAL TIMES

Opinion **European Union**

Europe's Green Deal could be the most important in a generation

EU leaders must take this opportunity to set a new course for growth, climate change and inequality

The New York Times

E.U. Agrees to Slash Carbon Emissions by 2030

The agreement calls for European Union countries to cut their collective greenhouse gas emissions by 55 percent from 1990 levels, a more substantial reduction than previously proposed.

The Guardian

For 200 years, a

The Guardian

Proposed EU-wide 'climate law' would set net-zero carbon target by 2050

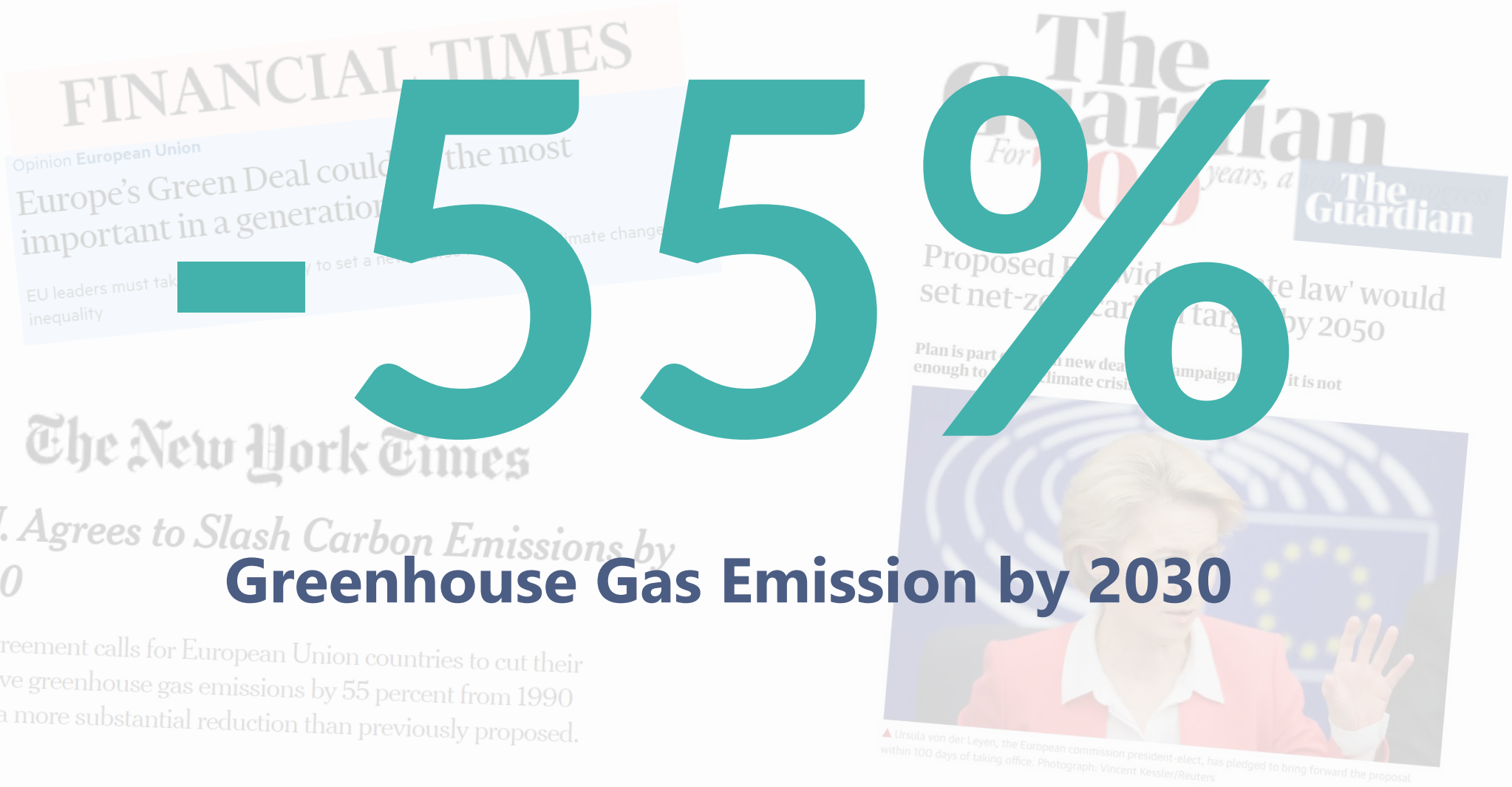
Plan is part of 'green new deal' but campaigners say it is not enough to tackle climate crisis

▲ Ursula von der Leyen, the European commission president-elect, has pledged to bring forward the proposal within 100 days of taking office. Photograph: Vincent Kessler/Reuters

Europe on its way to become climate-neutral by 2050

0 Net Emissions by 2050

Europe on its way to become climate-neutral by 2050



-55%

Greenhouse Gas Emission by 2030

How gas infrastructure can support the EU 2030 climate target?

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Fostering collaboration between regions, sectors, energy carriers & infrastructures

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Ensuring security of energy supply by relying on well-developed gas infrastructure

How gas infrastructure can support the EU 2030 climate target

Fostering collaboration between regions, sectors, energy carriers & infrastructures

Integrating new gases, following different pathways, considering regional specifics

Ensuring security of energy supply by relying on well-developed gas infrastructure

How Fit-for 55 Package: can support infrastructure operators to deliver 2030 targets?

Fit-for 55 Package at a glance from infrastructure operator perspective

1. Hydrogen and Decarbonised Gas Directive
2. Revision of the Renewable Energy Directive (RED II)
3. Revision of the EU Emission Trading System (EU ETS)
4. Revision of the Energy Efficiency Directive
5. Revision of the Alternative Fuels Infrastructure Directive/Regulation

LNG Terminals:
on their way to decarbonise Europe

GIE

LNG & its infrastructure: Let’s look at some of their benefits

LNG & its infrastructure:
Let's look at some of their benefits

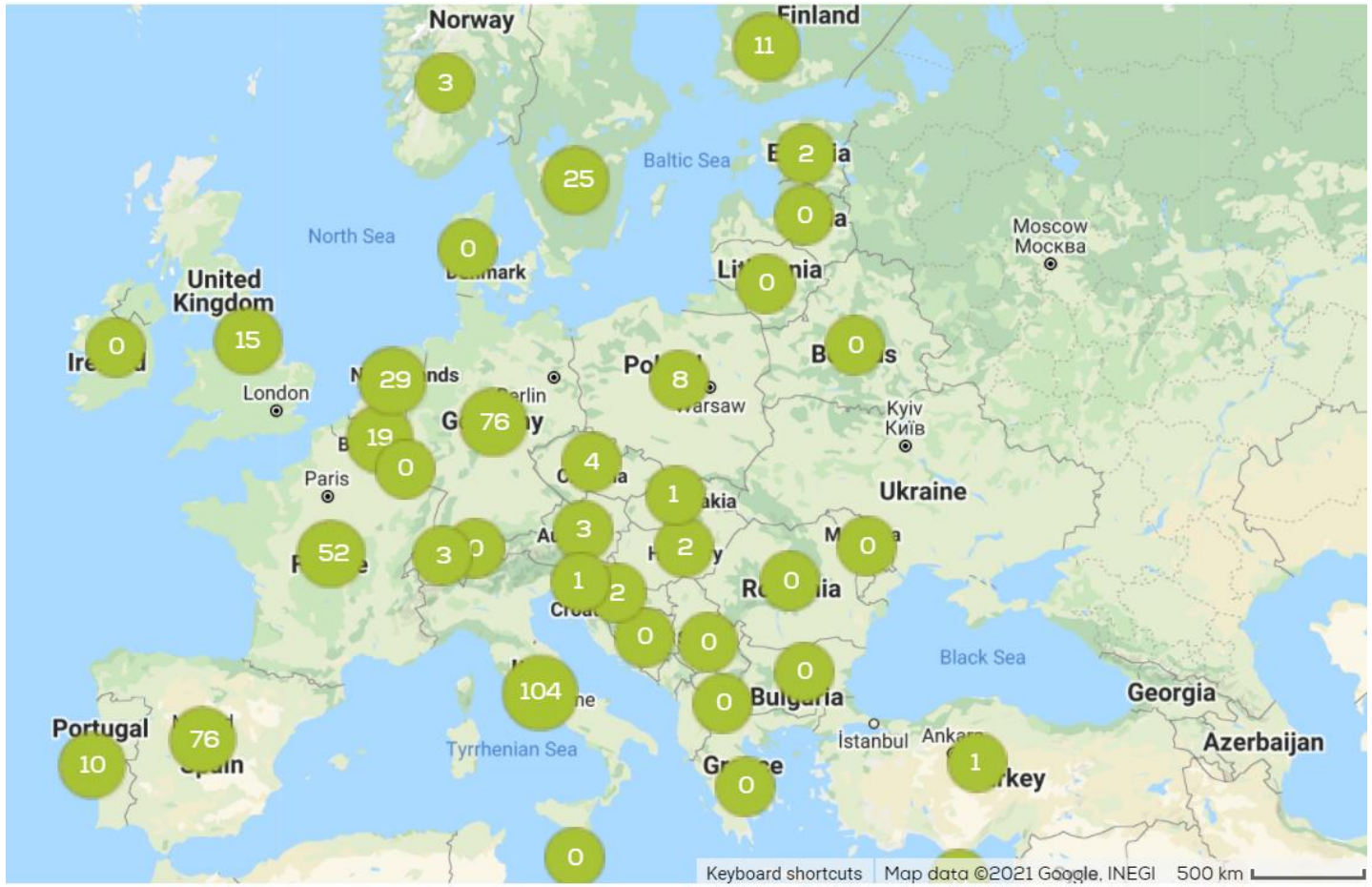
LNG truck loading increase:
→ 12% per year over the last 4 years

LNG Small-Scale Ship loadings:
→ more than 150 operation in 2020

Lower carbon footprint than fuel oil & diesel:
→ improving air quality & health

State of Play in Europe

Existing LNG refuelling network supports Bio-LNG uptake



Source: [NGVA Europe | Stations map - NGVA Europe]

How can we strengthen the role of bio-LNG?

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5. Create a single market for biomethane and bio-LNG by facilitating trading of volumes and certificates across borders

Which regulatory framework to unleash gas infrastructure's potential?

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5. Facilitate **sector coupling**

Thank you for your attention

BRN Meeting - 20 October 2021

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vimeo.com/gievideo

EBA Conference – 26 October

Growth prospects and solutions for the future

MIEKE DECORTE
Technical and Project Manager, EBA

EBA
European Biogas Association

26–27 October 2021, Brussels

European Biogas Association

Growth Prospects and solutions for the future

Mieke Decorte

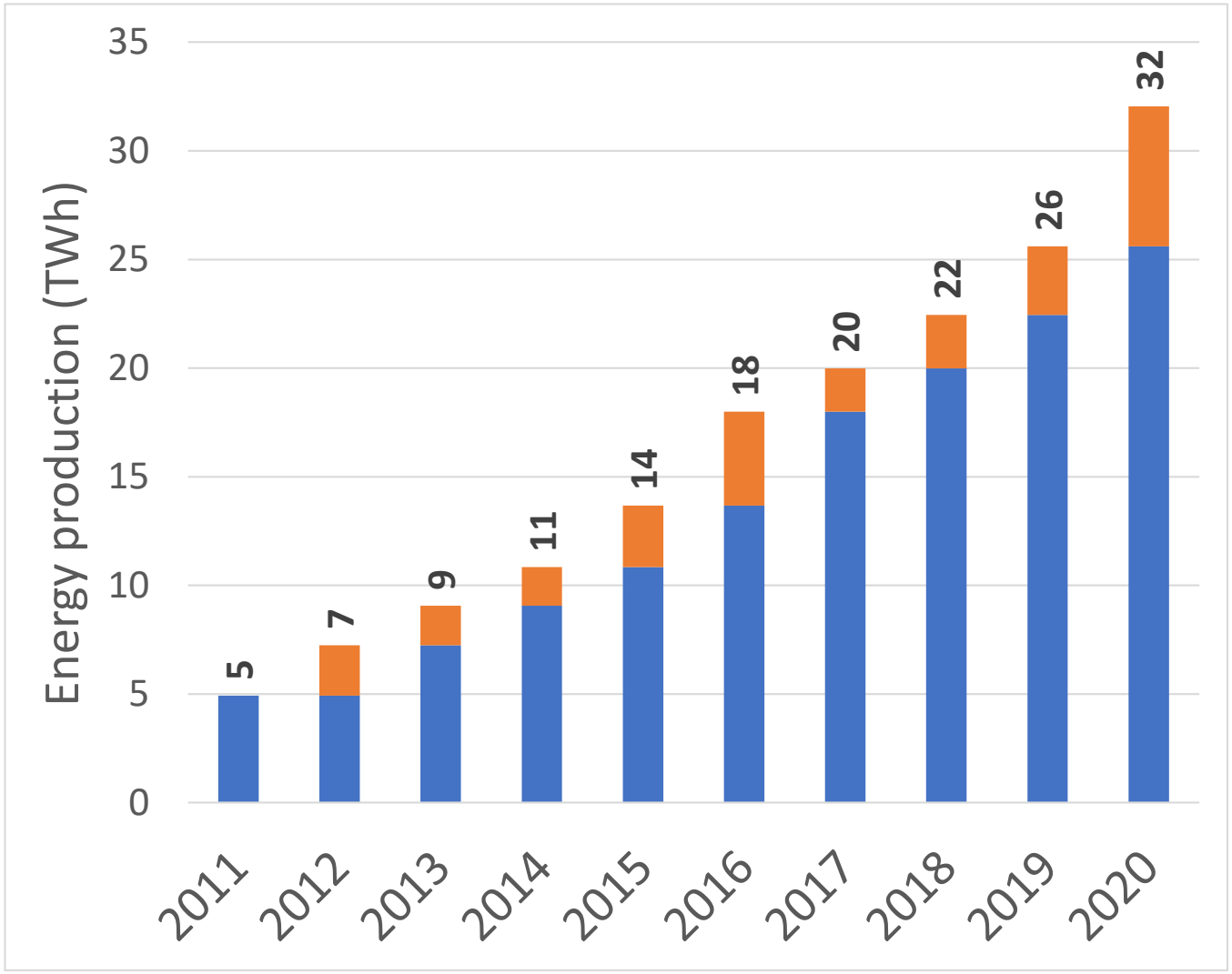
e
ture
business model

EBA
European Banking
Association

The combined biogas and biomethane production in Europe in 2020 was **191 TWh**.

Especially the **share of biomethane is steeply increasing**. Growth in 2020 was double the growth of 2019.

Biomethane production in TWh



Share of biogas and biomethane in Europe's gas demand

4.6% in 2020

- The combined biogas and biomethane production can cover today **4.6% of EU gas demand**.
- This is already higher to the natural gas consumption of **Belgium**.

11% in 2030

- The gas for climate consortium calls for a **binding target of 11% renewable gas by 2030**.
- This is confirmed to be feasible by EBA calculations.

30 – 40% in 2050

- Taking into account **decreasing gas demand**, renewable gases can cover **30 – 40% of the gas demand** by 2050.

This graphs shows the percentage of the gas consumption which could be covered with biomethane **if all biogas were upgraded**.

For several countries significant shares are already reached.

Energinet reports **Denmark already reaches 25%** by October 2021.

Biomethane and biogas production in relation to the country's total gas demand

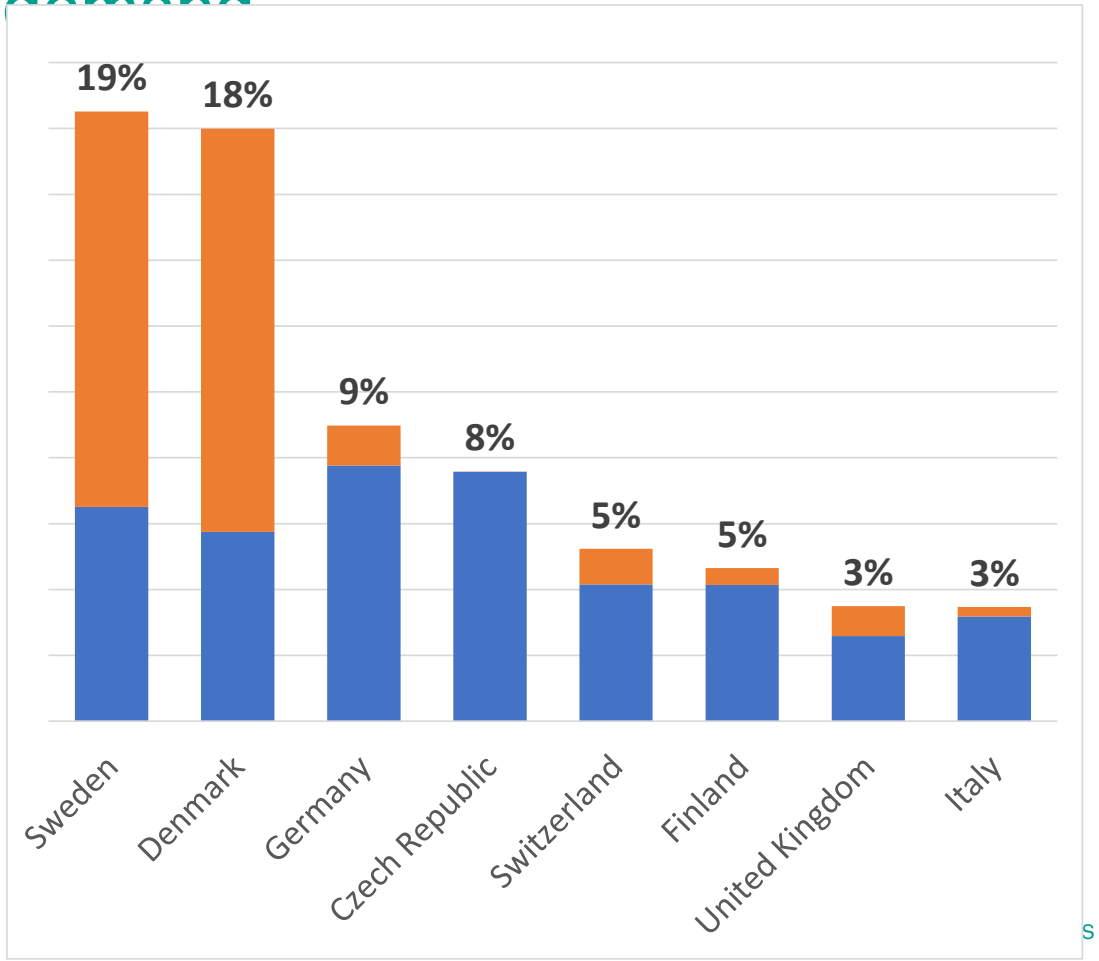
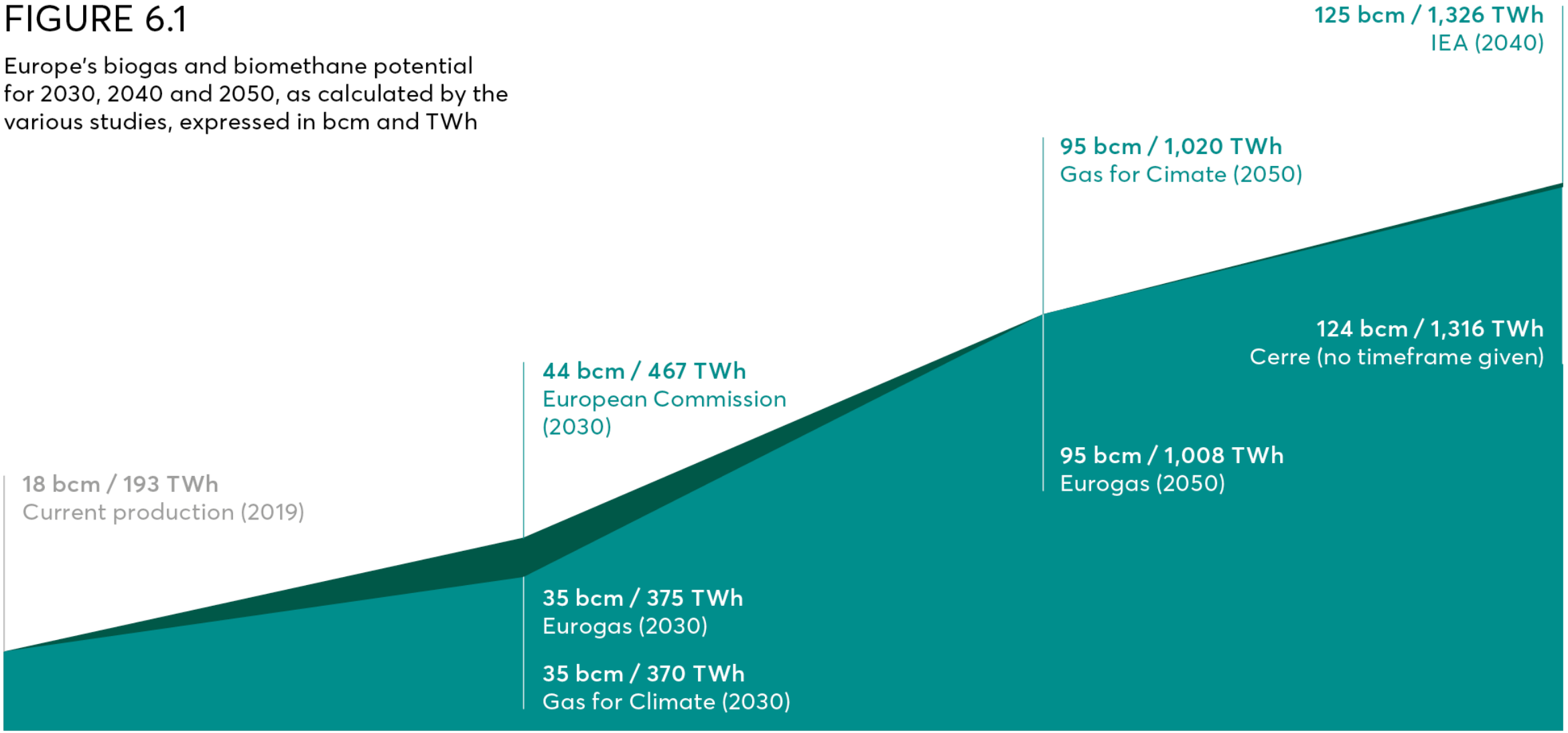


FIGURE 6.1

Europe's biogas and biomethane potential for 2030, 2040 and 2050, as calculated by the various studies, expressed in bcm and TWh



Apart from total potentials, most potential studies provide a distinction between feedstock types.

Not all studies consider all feedstock types.

When the averages per feedstock type are summed up, the total biomethane potential reaches 1,673 TWh.

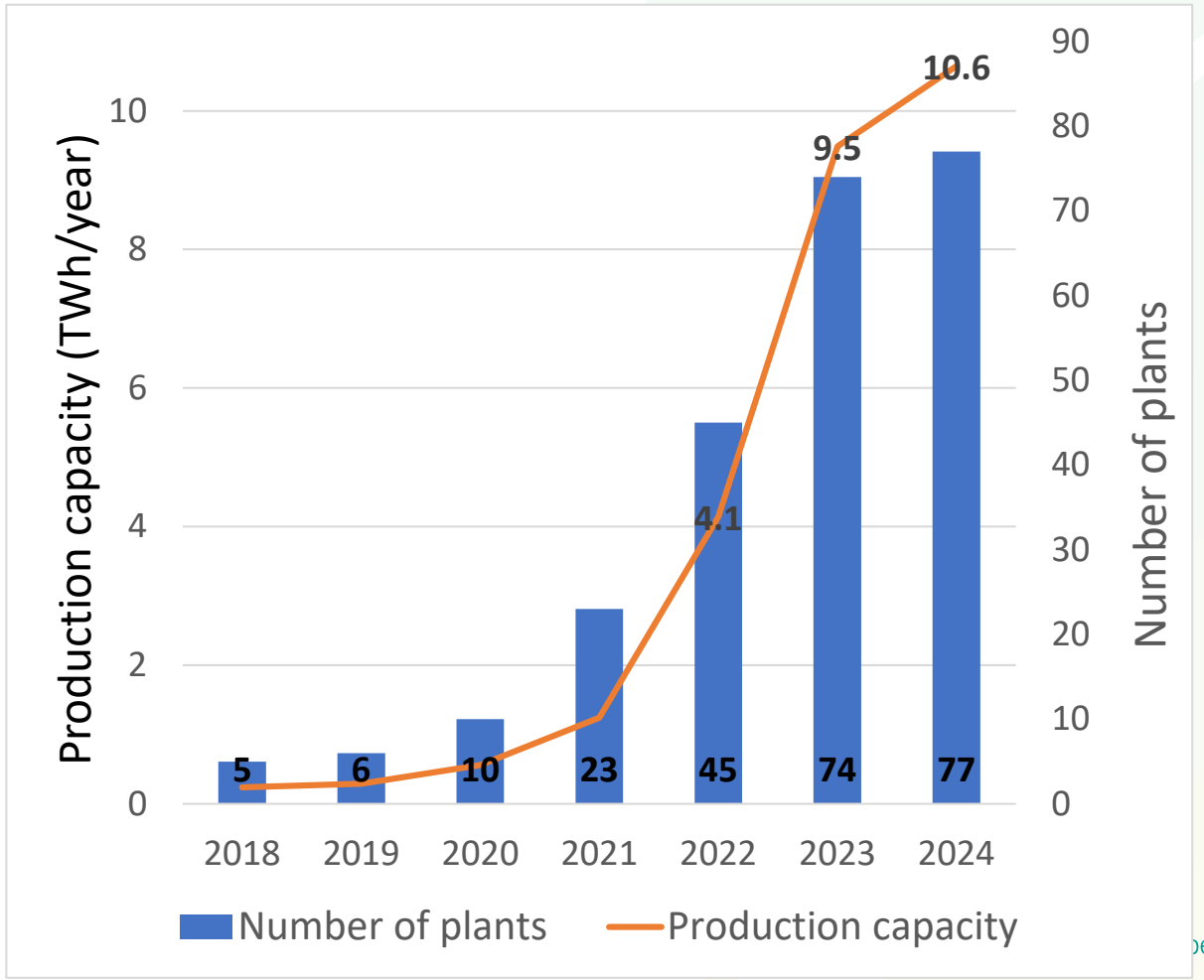
	Calculated potential per feedstock type by various studies (TWh)					
	GfC	IEA	Cerre	UGhent	EBA working group wastewater	Average
Sequential crops	434	456	/	487	/	**459**
Agricultural residues	53		537	/	/	**295**
Manure	159	393	185	/	/	**246**
Food waste	21	216	/	/	/	**119**
Industrial wastewater	/	/	/	/	142	**142**
Sewage sludge	2	57	/	/	/	**30**
Gasification	350	204	594	/	/	**383**
Total	**1,020**	**1,326**	**1,316**	**487**	**142**	**1,673**

The Bio-LNG production capacity by 2024, considering only confirmed plants, adds up to 10.6 TWh per year.

With this volume, almost 25,000 LNG trucks can be fuelled year-round.

In comparison, NGVA expects increase in LNG trucks from 12,000 today to 280,000 by 2030.

Number of Bio-LNG plants and Bio-LNG production capacity by 2024



Infrastructure for the future: reverse flow facilities

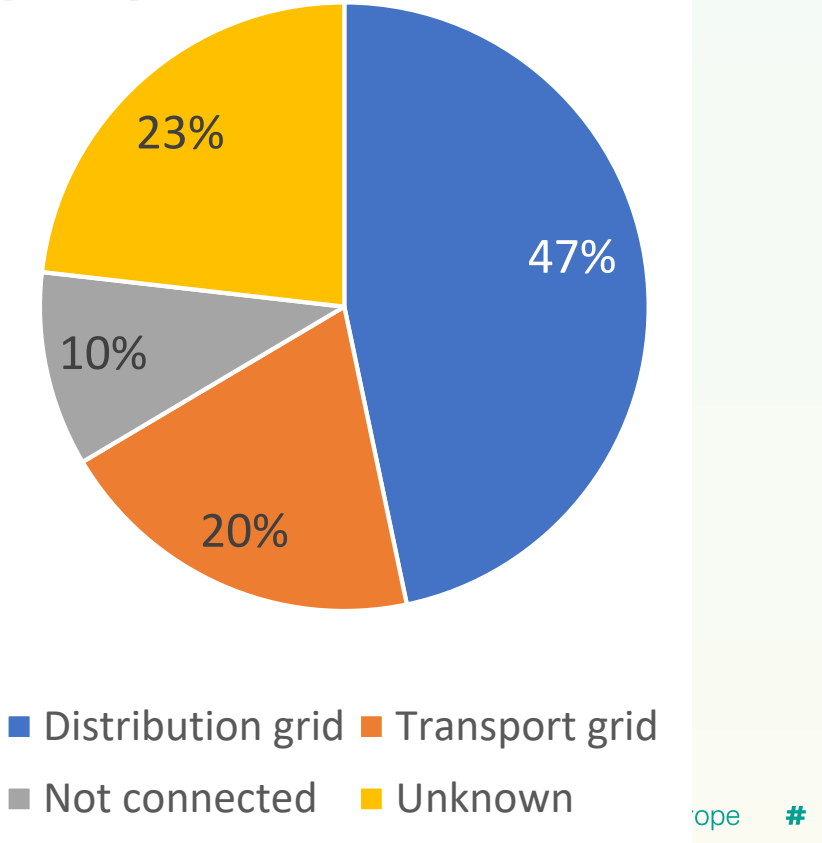
A transition is taking place from **centralised gas production** to a **decentralised approach**.

Most biomethane plants are connected to the distribution grid.

If too much biomethane is injected in the low-pressure distribution grid, **reverse flow facilities** will compress the biomethane and inject it into the high-pressure transport grid.

There are **11 facilities operational,** 23 under development and 16 feasibility studies announced.

Share of biomethane plants connected to distribution and transport gas grid in 2020.



Infrastructure for the future: smart gas grids

Biomethane has a **slightly different composition** than natural gas.

Smart gas grids can measure in **real time the gas composition**.

The end users in turn can **adjust their gas application devices** to the gas composition delivered.

Infrastructure for the future: synergies with hydrogen

Biomethane can cover **30 – 40% of gas demand** by 2050. The remaining part could be covered with **green hydrogen**.

Green hydrogen can be **mixed** to some extend with methane, but when large volumes become available, a **separate grid** will be necessary.

It is thus important to develop a vision on how **biomethane and hydrogen will integrate with each other**.

- Bio–hydrogen production from biomethane in rural areas
- Combining hydrogen with raw biogas to increase the methane yield

Redesigning the biogas business model

Due to an **improper basis of comparison**, biomethane is often **perceived as not cost competitive**.

Producers only get rewarded for the energy they produce.

Other **societal benefits are undervalued in terms of economic value**.

These additional societal benefits need to be translated into **market signals**, which will put renewable gas production on the correct **level playing field**.

It will in turn stimulate the plants to **optimize those services**.

EBA statistical report 2021

- To be published by November
- Free for EBA members
- For sale for non-members

EBA
European Biogas
Association
life
you

EBA Conference – 26 October

Cost-competitiveness of biomethane to decarbonise the housing sector

TACO VAN HOEK
Director, Economic Institute for Construction and Housing

EBA
European Biogas Association

26–27 October 2021, Brussels

Cost-competitiveness of biomethane to decarbonise the housing sector

Taco van Hoek
Director of the Economic Institute for Construction and Housing (EIB)

Three questions

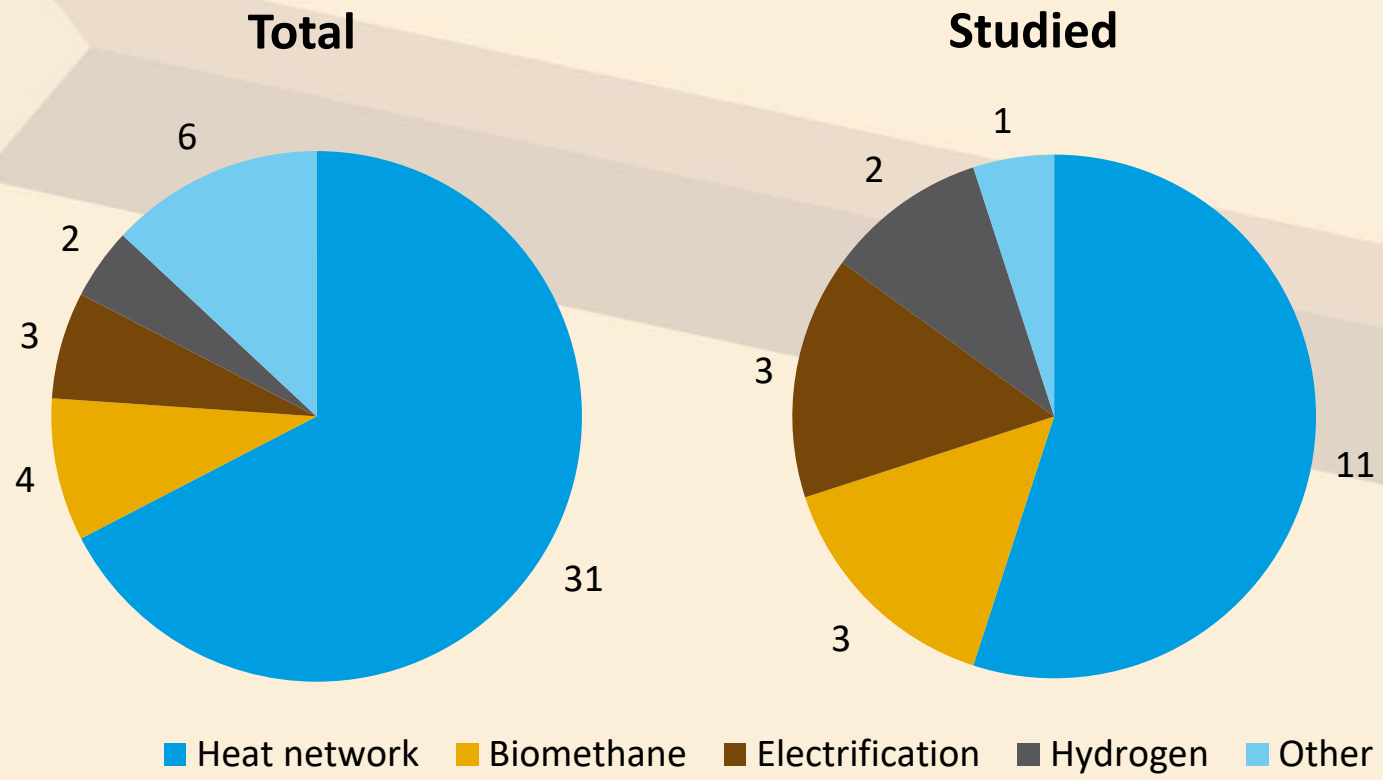
- What is the Dutch approach to decarbonise the housing sector?
- What are the main results from our study?
- What does this imply for the biomethane technology?

“Program natural gas free neighbourhoods”

- Aim is to investigate how to efficiently decarbonise the housing sector using testing grounds
- Municipalities develop plans and business cases
- Subsidies granted by the government
- 46 subsidized testing grounds, using heat networks, electrification, biomethane, or hydrogen alternatives

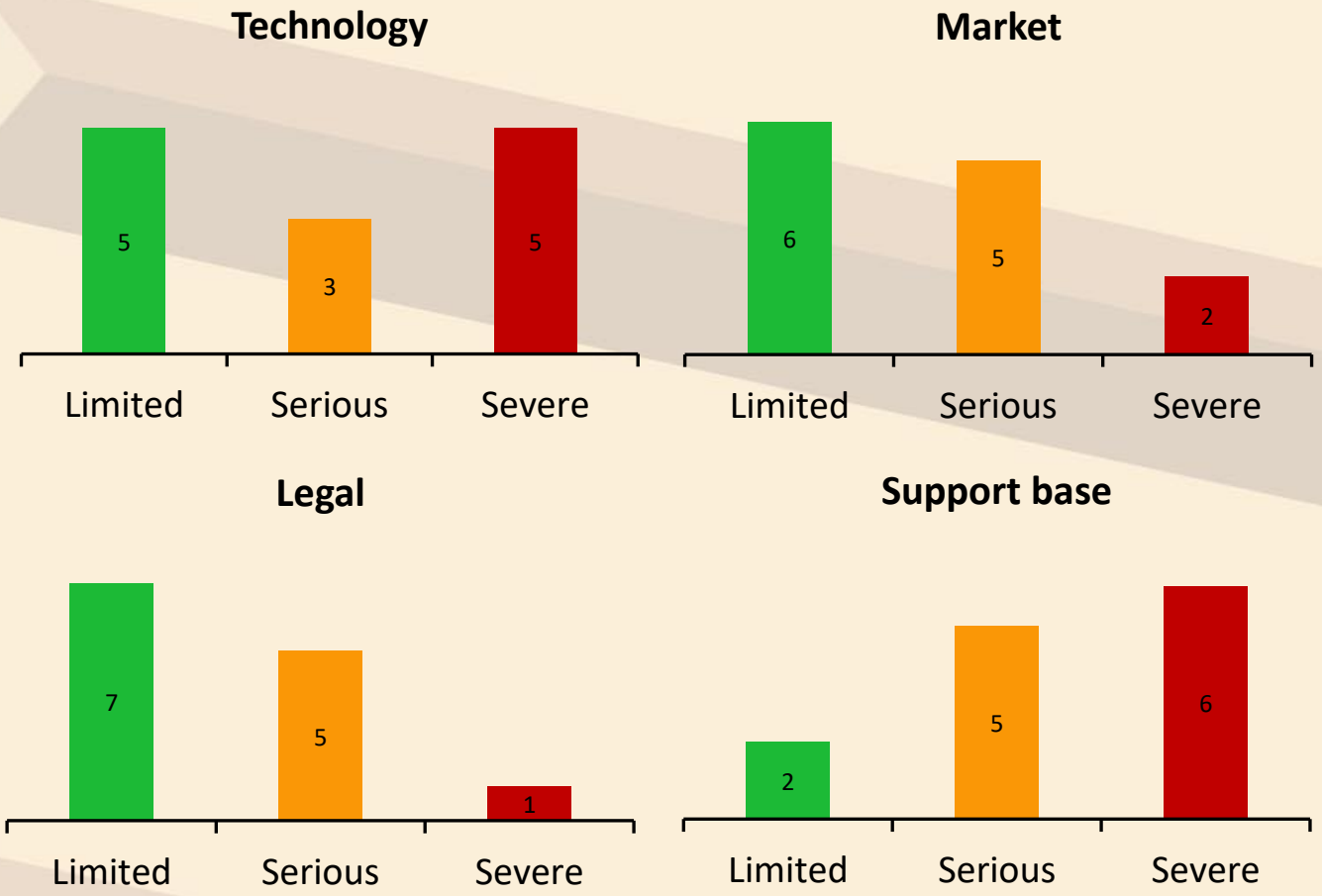
Studying the Dutch approach

- Analysing 20 testing grounds in time with respect to the process and financial results

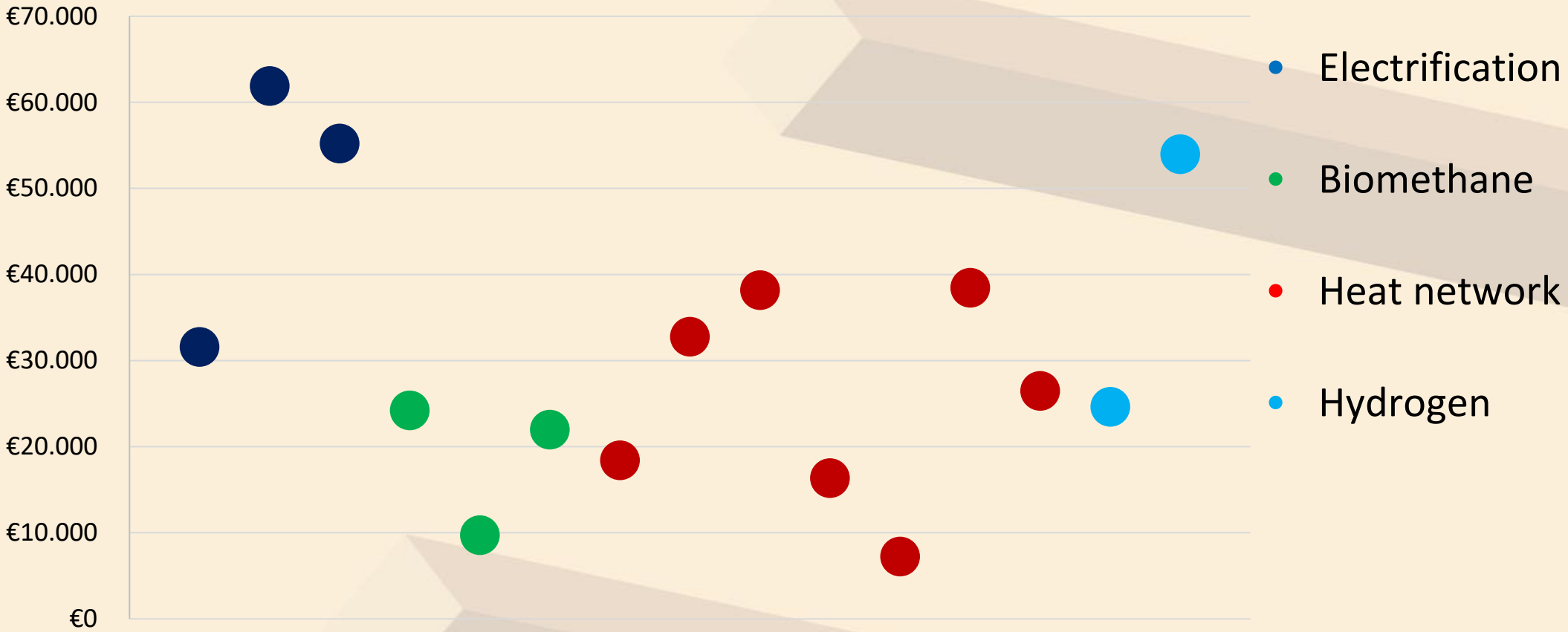


Organizational bottlenecks

- Implementation of natural gas free neighbourhoods comes with bottlenecks in four different areas



Estimated costs per dwelling



Financial results

- Heat networks
  - Drastic changes to infrastructure needed, costs depend on local factors
  - Support base: significant challenge
- Electrification
  - High investment costs from both installations and insulation requirements

→ Large financial deficits: significant public funds required

Financial results (2)

- Biomethane
  - Possibility to use existing infrastructure lowers costs
  - Financially attractive for users
  - Comfortable implementation for households
- Hydrogen at an early development stage
  - Current cost effectiveness relatively low
  - Potential for serious cost reductions in the long run

Results for biomethane

- High cost effectiveness, infrastructure already present
- Strong support base
- Key challenge: availability raw materials

  → Shrinking livestock

  → Sustainable use of biomass
- Market organisation is an issue

Conclusions

- Heat networks and electrification play an important role in the decarbonising approach, but the cost effectiveness turns out considerably lower than expected
- Hydrogen offers a promising angle, but not yet in the short term
- Biomethane gives perspective, availability raw materials is bottleneck
- Cost effectiveness of the overall strategy can significantly increase by a pragmatic approach

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Success stories from the renewable gas sector

LUCA VAILATI

Product Development Manager for Alternative Fuels,
SHV Energy

EBA
European Biogas Association

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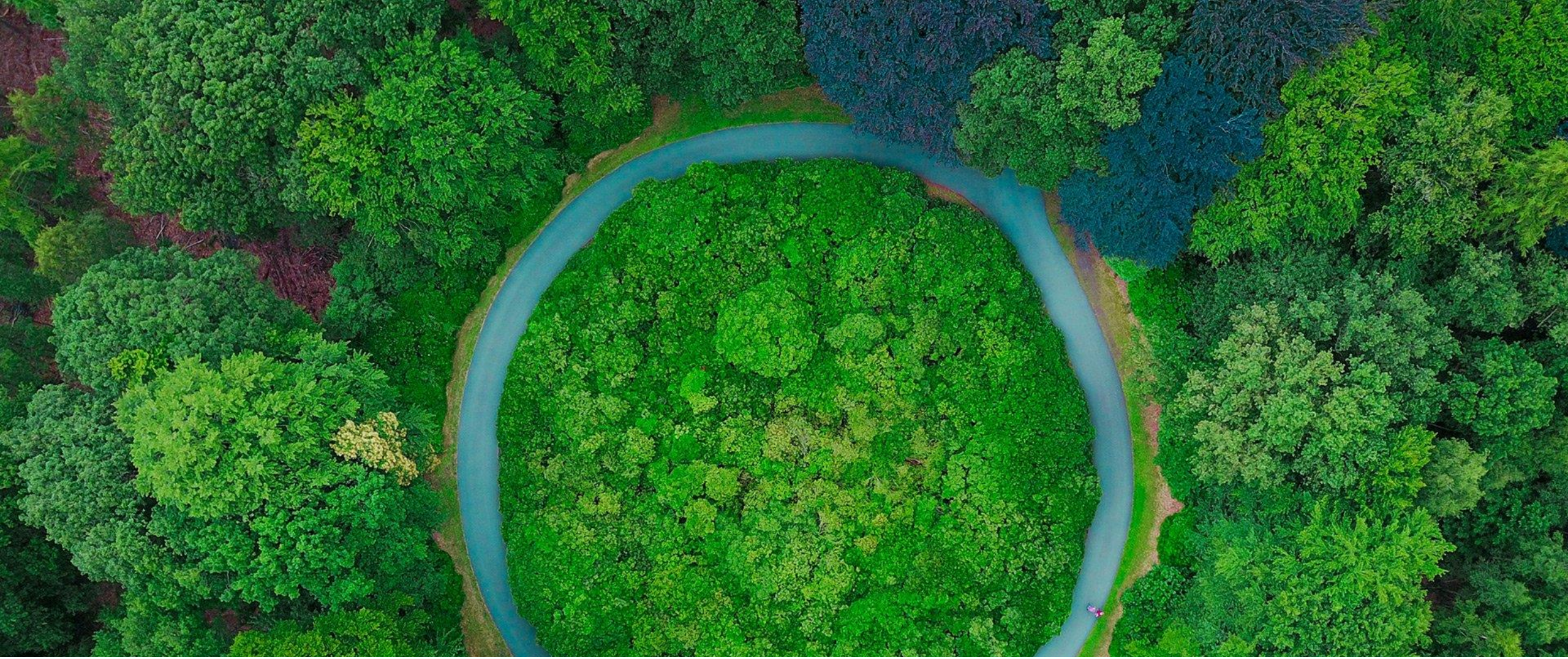


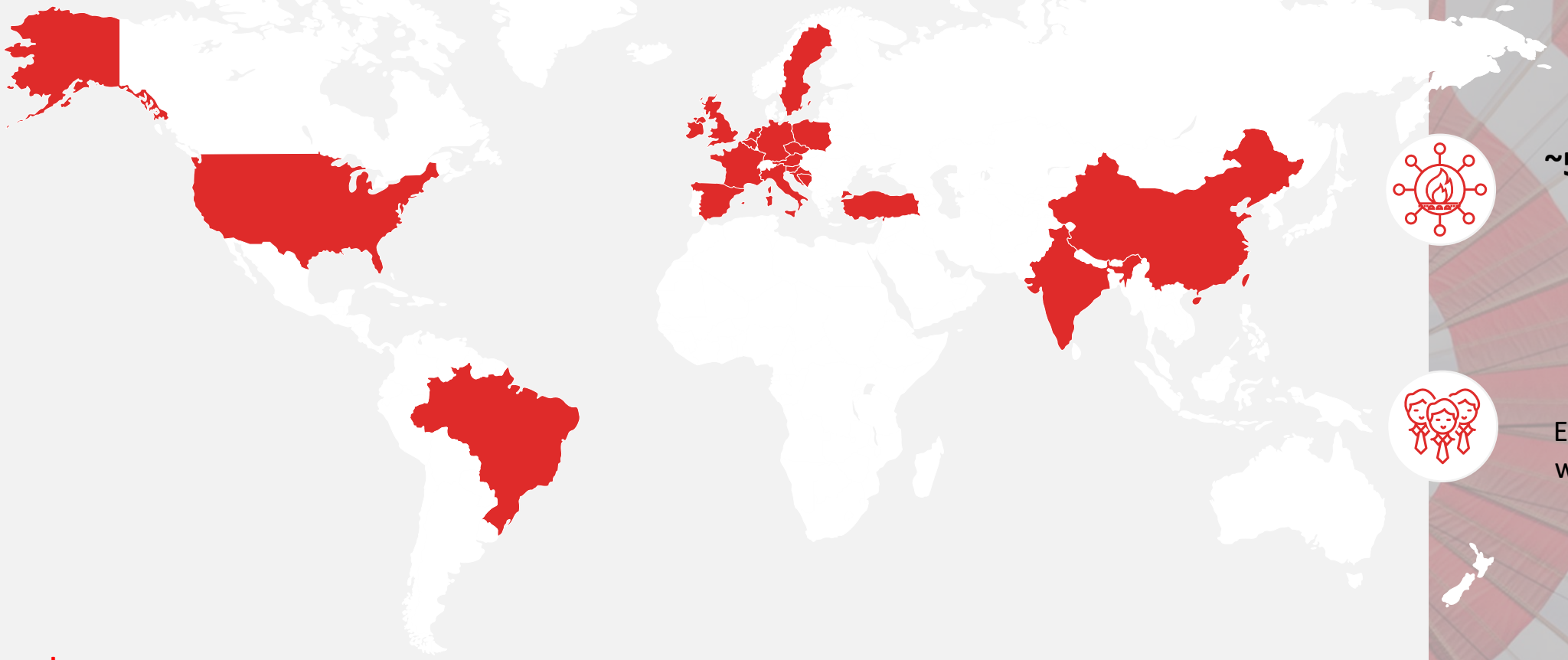
Success stories from the renewable gas sector

Renewable gases: Creating impact on and off-grid

SHV ENERGY

Luca Vailati, Sustainable Fuels

SHV Energy operates in 25 countries with over 30 million customers



~5.4 million mT
retail sales
~10.4
billion gallons

~5.1 million mT
3rd party
~10 billion
gallons

17,000
Employees
worldwide

Our brands

SHV ENERGY
SUPERGASBRAS
PRIMA LNG
PRIMAGAZ
PRIMAGAS
GASPOL
SUPERGAS
EM3
SunSource ENERGY
SOLAR FROM THE CORE
PINNACLE
CALOR
SHV ENERGY SUPPLY & RISK MANAGEMENT
PRIMAGAS
LIQUIGAS
iPRAGAZ
喜威中国

SHV ENERGY

Our Vision

Advancing **Energy**
>> Together

Our commitment

5 million tonnes of CO2
reduction by 2025

Our bold ambition

100% of our energy products to be
from renewable sources in 2040

JUST TRANSITION – LEAVING NO ONE BEHIND

We support the European Commission's Long-Term Vision for Rural Areas, focused on building the future of rural areas together with public authorities and Stakeholders

The 'Fit for 55 package' needs to help rural communities and businesses reach their full potential. At SHV Energy, we act on the needs and aspirations of rural residents and energy users.

A long-term vision for the EU's rural areas

Building the future of rural areas together

A vibrant tapestry of life and landscapes, Europe's rural areas provide us with our food, homes, jobs, and essential ecosystems services.

To ensure that rural areas can continue to play these essential roles, a European Commission communication sets out a **long-term vision for the EU's rural areas up to 2040**. It identifies areas of action towards stronger, connected, resilient and prosperous rural areas and communities.

A **Rural Pact** will mobilise public authorities, and stakeholders to act on the needs and aspirations of rural residents. The accompanying **EU Rural Action Plan** will foster territorial cohesion and create new opportunities to attract innovative businesses, provide access to quality jobs, promote new and improved skills, ensure better infrastructure and services, and leverage the role of sustainable agriculture and diversified economic activities.

PAGE CONTENTS

A vision for rural areas towards 2040

"Rural areas are the fabric of our society and the heartbeat of our economy. They are a core part of our identity and our economic potential. We will cherish and preserve our rural areas and invest in their future."

SHV ENERGY

114 million EU citizens lives in rural areas that are often not connected to a gas grid

114 MILLION

EU citizens live in rural areas

OFF-GRID

Off-gas grid homes are typically older and less energy-efficient

45%

of rural heat comes from heating oil and coal (off-the-gas-grid & non-electrical)

DIVERSE

The off-grid building stock is diverse in characteristics

24%

of people in rural areas are at risk of poverty or social exclusion

72%

of heating & cooling demand of single-family homes is consumed in rural areas

The Future of Rural Energy in Europe (FREE) initiative was created by SHV Energy in 2010 to promote the use of sustainable energy within rural communities. FREE is supported by a variety of stakeholder groups, together giving a voice to all those who believe that rural energy needs are important, and aiming to add new perspectives to the EU's energy and climate debate. Identifying untapped potential in Europe's rural areas to decarbonise and improve air quality in a cost-effective manner. Filling in rural energy data gaps. Engaging and supporting rural communities is essential if government energy, climate and environment policies are to be realised.

European Commission

Commissioner for Energy, Kadri Simson

"To match the challenge of the century, we need both long-term vision and immediate action [...]

There are still 40 million Europeans that struggle to keep their homes warm during the heating period. This is unacceptable. While renovation can reduce energy bills, the policies have to be designed in a way that makes it also possible for the less privileged to take advantage of them."

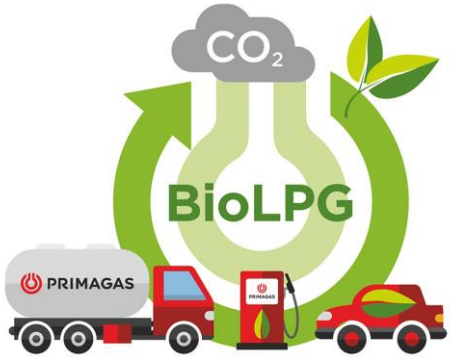
SHV ENERGY

‘Investing in BioLPG shows customers and stakeholders that we are a partner in their sustainability goals’

A recent quote from a bioLPG customer

SHV Energy – bioLPG available **today** in 10 European countries

Easy to switch without extra cost and taken up as an energy source across key sectors

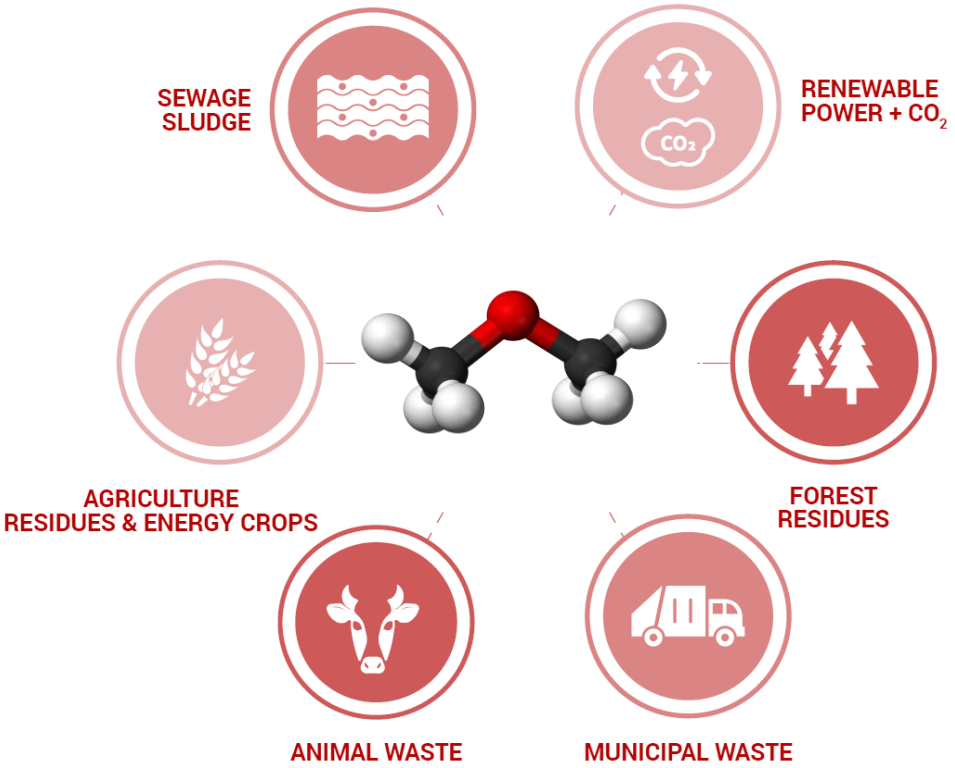


BioLPG is identical in use and performance to fossil LPG: it is a **drop-in solution**

Produced from **renewable sources** it offers reduced greenhouse gas emissions by up to 80%

SHV ENERGY

Why is rDME* so important to the LPG industry?

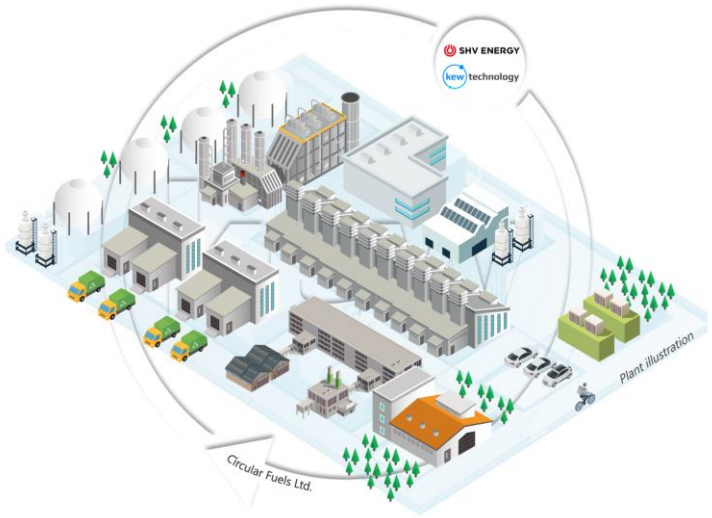


- ✓ **Volumes of bioLPG via HVO are limited:**
  - Constrained by volume and price of feedstock
  - Alternative routes to bioLPG are in development – but will take at least 5 years to get to maturity
- ✓ **rDME is (potentially) available today:**
  - rDME production technologies are already available
  - rDME as main product
  - Different abundant feedstocks can be used: manure, MSW, biomass + intermediates (biogas / rMeOH)
- ✓ **rDME is very similar (but not identical) to LPG:**
  - It can be used blended (e.g. 20%w) or pure (100%) with limited modifications to existing LPG industry infrastructure
  - CO_2 and pollution reduction similar compared to bioLPG (dependent on processes / feedstocks)

rDME = renewable dimethylether (C_2H_6O)*

SHV ENERGY

Scale-up production of rDME: 300.000 ktons by 2027



1. Circular Fuels Ltd (CFL): A new joint venture between KEW technology and SHV Energy*.
Aims: CFL is the DevCo to develop rDME production plants through SPVs.
Technology: Gasification + catalytic DME synthesis
First commercial plant: 50 ktons / year rDME production from MSW in the UK

2. Proposed joint-venture between SHV Energy and UGI Corporation:
Two of the largest LPG distributors in the World.
Aims: Bring **scale and critical mass** to the rDME market; Develop opportunities for investment in **production capacity**; Promote the use of rDME by driving efforts for **market acceptance** (end-use technologies, infrastructure, regulations & standards)

SHV ENERGY

UGI INTERNATIONAL

*The intention is to transfer CFL to SHVE / UGI JV as soon as established

SHV ENERGY

BioLNG in Italy: Liquigas partnership with Air Liquide

5 years agreement signed in March 2021 between Liquigas and Air Liquide

- Biogas from agricultural residues
- Supply from 2 Air Liquide plants in Northern Italy – Q3 2021
- Main application: transport sector for heavy duty vehicle fleets

SHV ENERGY

Renewable gas can facilitate the agriculture sector to de-fossilize and contribute to the rural economy

Production of renewable **gas** & agriculture

Agricultural feedstocks → **Production routes** → **Biobased and renewable fuel**

Gasification

Anaerobic digestion

Biorefining

BioLPG, rDME, bioLNG

CO2 reduction

Increased biodiversity

Improved rural economy

- Production of renewable gas is possible through multiple production pathways using a variety of **agricultural feedstocks** such as cereal straw, manure, biowaste, etc.
- Just like biomethane, **bioLPG**, rDME and bioLNG have a positive impact on emission reductions, it helps **protect biodiversity and preserve healthy soils.**
- The production of renewable gas offers new revenue streams for farmers for their waste and residues generated on farm, thus, contributing to **rural economy**.

Uses of renewable gas & agriculture

Heating

Furnaces & Boilers

for heating of greenhouses, stables, drying of grains, etc.

Transportation

Trackers

Forklift trucks

Lawn mowers

CO2 savings

Improved local air quality

- **Gas offers a clean and low carbon alternative** to more polluting liquid and solid heating fuels such as **coal and oil**.
- On farm machinery and transportation including tractors and forklift trucks can use renewable gas as **bioLPG** as an alternative low carbon fuel to diesel thus contributing to **reduction in process energy emissions** in the agriculture sector.
- **Switching to renewable gas like** does not require consumers to change heating appliances or vehicle engines and offers further CO2 reductions.

This is just the beginning… Our ambition is BIGGER!

We are actively working to increase our supply of sustainable fuels in line with our overall brand promise to offer our customers the cleanest energy possible.

Collaboration with valued partners is essential to make this happen.

sustainablefuels@shvenergy.com

We are interested to find

- **Innovative projects** to explore conversion routes
- **Feedstock availability** and sustainability processes
- **And other interesting collaboration opportunities!**
- **New technology solutions** & providers
- **Circular economy solutions** for energy transition

SHV ENERGY

sustainablefuels@shvenergy.com

SESSION 1: BIOMETHANE AVAILABLE AND SCALABLE

PANEL DISCUSSION with comments from **Eva Hoos**, Policy Officer in the Renewable Energy Unit of DG ENERGY, European Commission

Peter Zeniewski, International Energy Agency

Boyana Achovski, Gas Infrastructure Europe

Mieke Decorte, European Biogas Association

Taco van Hoek, Economic Institute for Construction and Housing

Luca Vailati, SHV Energy

Session 2: TOWARDS NEGATIVE EMISSIONS MOBILITY

Moderated by TV & Radio presenter Sasha Twining

Marco Buffi, European Commission Joint Research Centre

Farid Trad, CMA–CGM

Jonas Strömberg, SCANIA buses and coaches

Maximilian Kurth, bmp greengas

EBA Conference – 26 October

When we use biomethane as fuel we release some CO2. How is then possible to achieve negative emissions with biomethane?

EBA
European Biogas Association

26–27 October 2021, Brussels

EBA Conference – 26 October

Well-to-Wheel integration: assessing the impact of the road transport sector

MARCO BUFFI

Scientific Project Officer, European Commission Joint Research Centre

EBA European Biogas Association

26–27 October 2021, Brussels

WELL-TO-WHEEL INTEGRATION: ASSESSING THE IMPACT OF THE ROAD TRANSPORT SECTOR

Buffi M.,
Prussi M., Hurtig O., Scarlat N.

EC-JRC *- Unit C.2*
Ispra (IT)

The views expressed here are purely those of the authors and may not, under any circumstances, be regarded as an official position of the European Commission.

Summary and Disclaimer

- The **Joint Research Centre** (JRC) is the Commission's science and knowledge service, and our group is based in Ispra, northern Italy.
- We provide **scientific policy support** to Commission policy DG's; ENER, CLIMA, MOVE, etc.
- Our work provides bioenergy, biofuels and alternative fuels assessments, including **energy balance and GHG emission accounting**
- We are also collaborating with International agencies and initiatives such as IEA, IPHE, etc.

European Commission

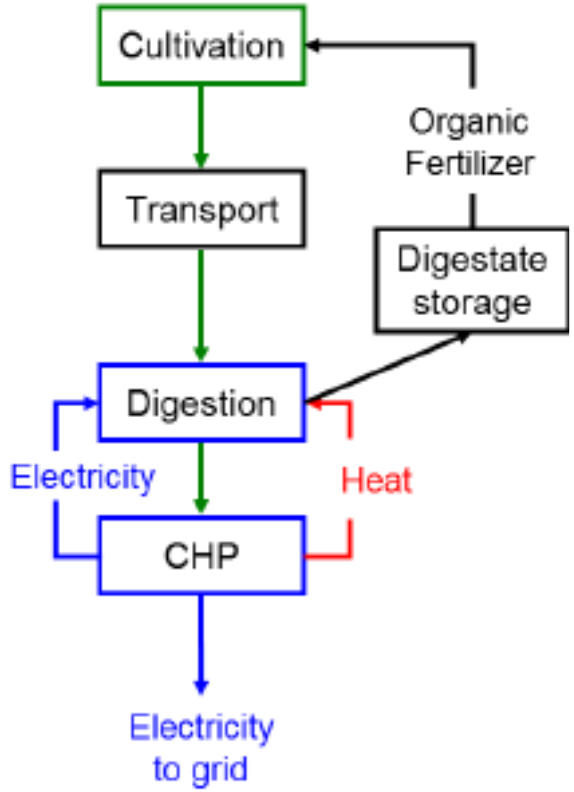
Background & context

- **Fit for 55**' package updated the EU's 2030 climate target of at least 55% GHG reduction, according to the **EU Green Deal**' strategy.
- The proposed **Renewable Energy Directive Recast** (2018/2001)' **revision** replaces the 14% target for renewable energy in transport with a **13% GHG intensity reduction target for transport for 2030**, compared to a liquid fossil fuel baseline GHG intensity.
- All fuels are required to pass a GHG reduction threshold to be considered eligible. These requirements are **50-65% for biofuels**, depending on date of facility construction, **70% for RFNBOs & RCFs**.
- The comparator of **94 gCO_2e/MJ** for all other transport fuels represents the **GHG intensity of the average liquid fossil fuel mix in the EU**, whereas **183 gCO_2e/MJ** represents the **GHG intensity of fossil-derived electricity**

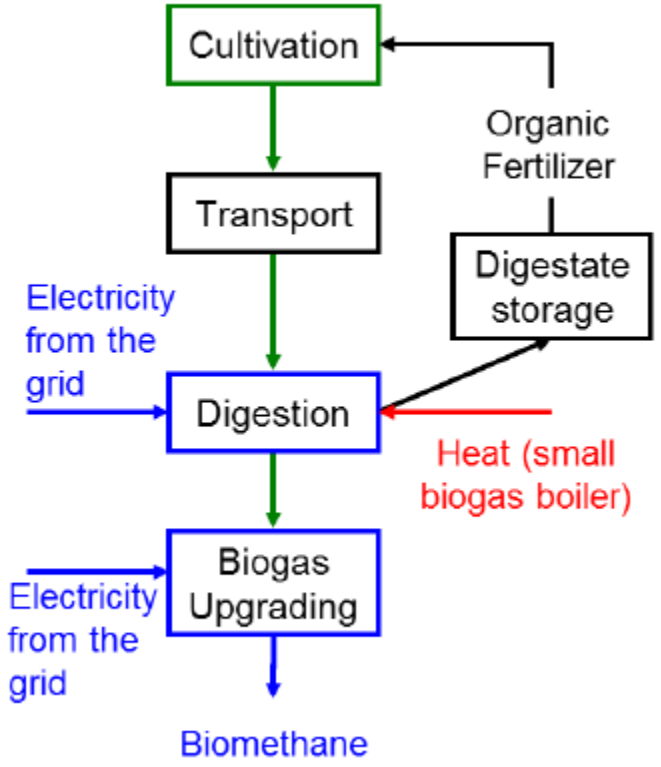
RED II

Calculations of energy consumptions and GHGs emissions for solid and gaseous biomass for power and heat production

Biogas production and use pathways



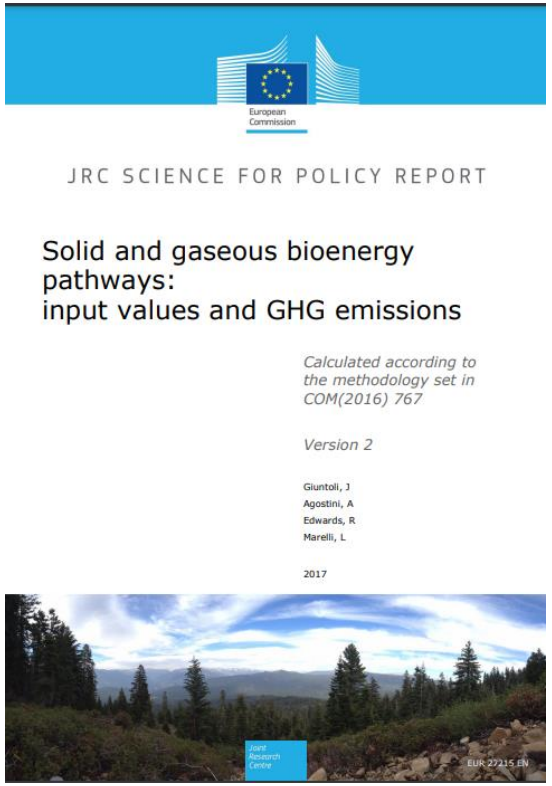
Production of electricity and heat



Production of biomethane

Existing calculations

- **Default and typical values** of CO_{2eq} emissions are available in the RED II according to the proposed GHGs calculation methodologies for solid and gaseous fuels by JRC .
- Emissions are reported in gCO_{2eq}/MJ_{biogas} for each step of the supply chain for both “biogas for electricity” and “biomethane” pathways.
- The calculation model considers also savings and credits generated by closed storage facilities and use of manure, respectively.



$$\mathbf{E = e_{ec} + e_{l} + e_{p} + e_{td} + e_{u} - e_{sca} - e_{ccs} - e_{ccr}}$$

Giuntoli J, Agostini A, Edwards R, Marelli L. Solid and gaseous bioenergy pathways : input values and GHG emissions. Calculated according to the methodology set in COM(2016) 767 (EUR 27215). Ispra, Italy: 2017. https://doi.org/10.2790/27486.All.

European Commission

Biogas upgrade to biomethane – disaggregated values

Table 102. Disaggregated values for biomethane injected into the grid. Values are expressed on the basis of the biogas produced. Total emission values can be found in Table 100.

Biomethane – Disaggregated values	Raw material	Technological option		TYPICAL [$gCO_{2\ eq.}/MJ$]						DEFAULT [$gCO_{2\ eq.}/MJ$]					
				Cultivation	Processing	Upgrading	Transport	Compression at filling station[a]	Credits	Cultivation	Processing	Upgrading	Transport	Compression at filling station[a]	Credits
	Wet manure	Open digestate	no off-gas combustion	0.0	84.2	19.5	1.0	3.3	-124.4	0.0	117.9	27.3	1.0	4.6	-124.4
			off-gas combustion	0.0	84.2	4.5	1.0	3.3	-124.4	0.0	117.9	6.3	1.0	4.6	-124.4
		Close digestate	no off-gas combustion	0.0	3.2	19.5	0.9	3.3	-111.9	0.0	4.4	27.3	0.9	4.6	-111.9
			off-gas combustion	0.0	3.2	4.5	0.9	3.3	-111.9	0.0	4.4	6.3	0.9	4.6	-111.9
	Maize whole plant	Open digestate	no off-gas combustion	18.1	20.1	19.5	0.0	3.3	-	18.1	28.1	27.3	0.0	4.6	-
			off-gas combustion	18.1	20.1	4.5	0.0	3.3	-	18.1	28.1	6.3	0.0	4.6	-
		Close digestate	no off-gas combustion	17.6	4.3	19.5	0.0	3.3	-	17.6	6.0	27.3	0.0	4.6	-
			off-gas combustion	17.6	4.3	4.5	0.0	3.3	-	17.6	6.0	6.3	0.0	4.6	-
	Biowaste	Open digestate	no off-gas combustion	0.0	30.6	19.5	0.5	3.3	-	0.0	42.8	27.3	0.5	4.6	-
			off-gas combustion	0.0	30.6	4.5	0.5	3.3	-	0.0	42.8	6.3	0.5	4.6	-
		Close digestate	no off-gas combustion	0.0	5.1	19.5	0.5	3.3	-	0.0	7.2	27.3	0.5	4.6	-
			off-gas combustion	0.0	5.1	4.5	0.5	3.3	-	0.0	7.2	6.3	0.5	4.6	-

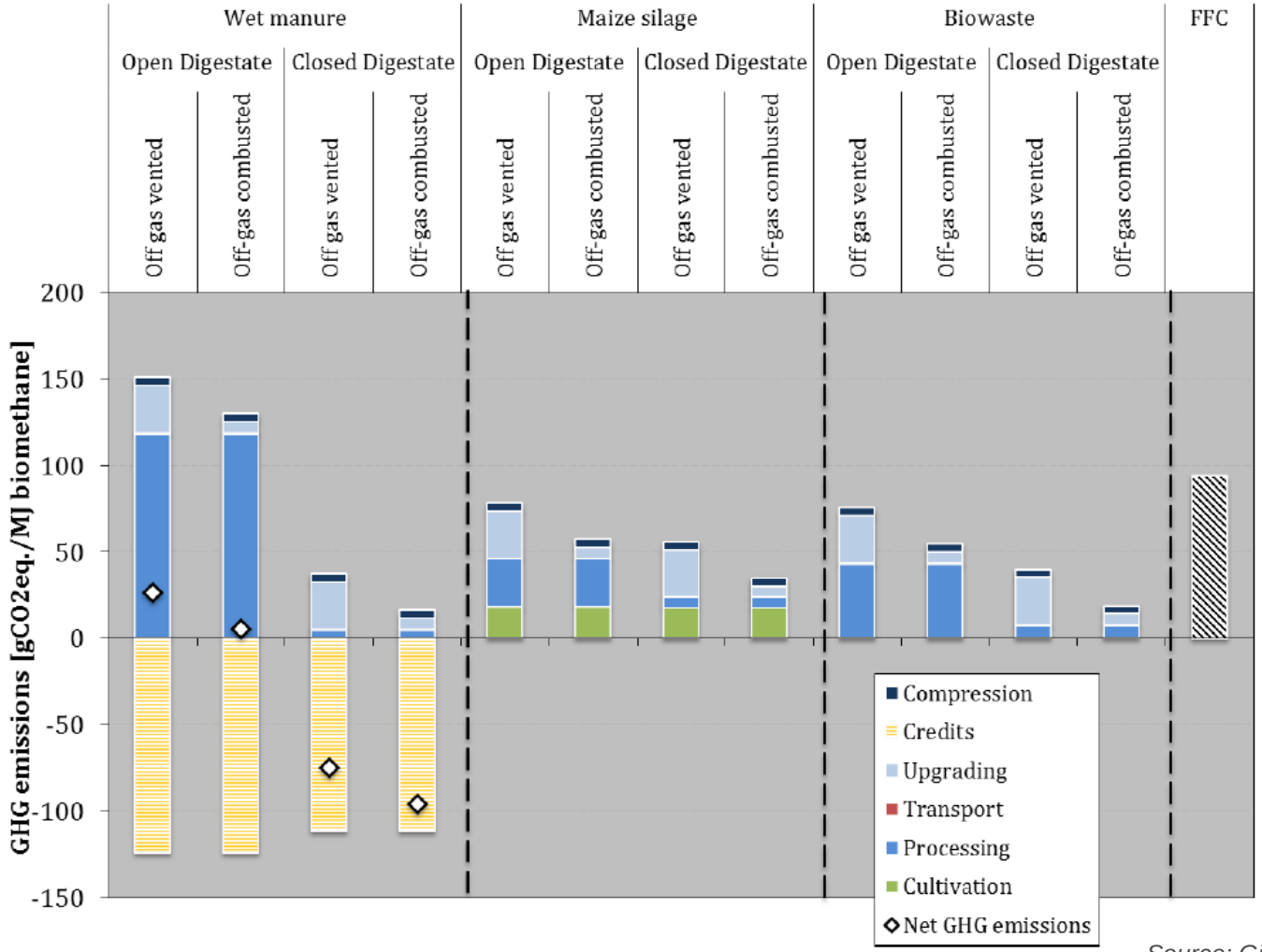
([a]) This value is not included in the total GHG emissions in Table 100. These values should only included when biomethane is used as a transport fuel.

Source: Giuntoli et al, 2017

European Commission

Biogas upgrade to biomethane – default emissions for CBM

Figure 8. Default GHG emissions values for the production of compressed biomethane. FFC considered is equal to 94 $gCO_{2\ eq.}$/MJ. Substrate characteristics are the ones detailed in Part Three of this document.



Source: Giuntoli et al, 2017

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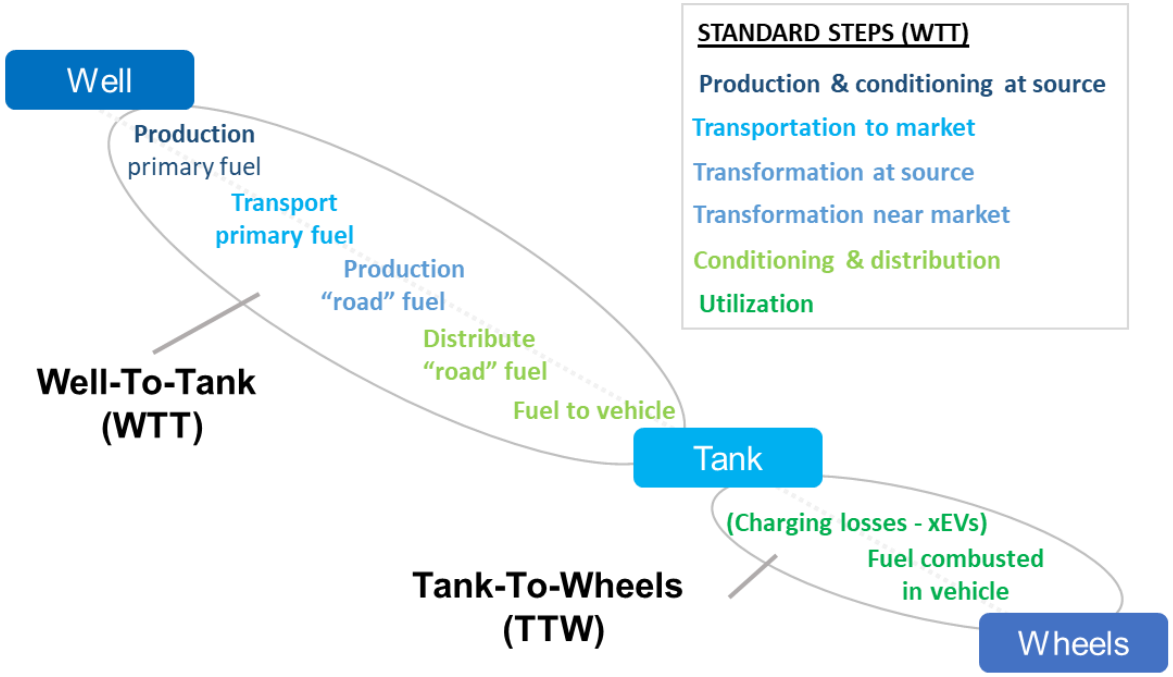
JECv5

JRC-EUCAR-Concawe Well-to-Wheel study version 5

European Commission

JEC WTW - Goals



Establish

in a **transparent** and **objective** manner

a consensual **Well-to-Wheels assessment** of:

- energy use

and

- GHG emissions

for a **wide range** of **automotive fuels** and **powertrains**, relevant to Europe in 2025+

Analysis updated as technologies evolve

Common methodology and data-set

WTT > 250 Resource to fuel pathways
TTW > 60 powertrains solutions

WTW > **1500** potential combinations!

European Commission

Co-products in JEC vs REDII

A given (fuel) production process may produce multiple products*

* Co-products
Different routes can have very different implications in terms of energy, GHG, or cost
…and it must be realised that economics – rather than energy use or GHG balance – are likely to dictate which routes are the most popular in real life.

RED and RED Recast

- **allocate GHG emissions to biofuels and co-products by energy content** (LHV) **using an ALCA**, i.e.:
  - Emissions are allocated to the main product and on co-products on the basis of their respective energy contents

☑ **Allocation methods simpler to implement**
☒ No accounting of what the by-product substitutes

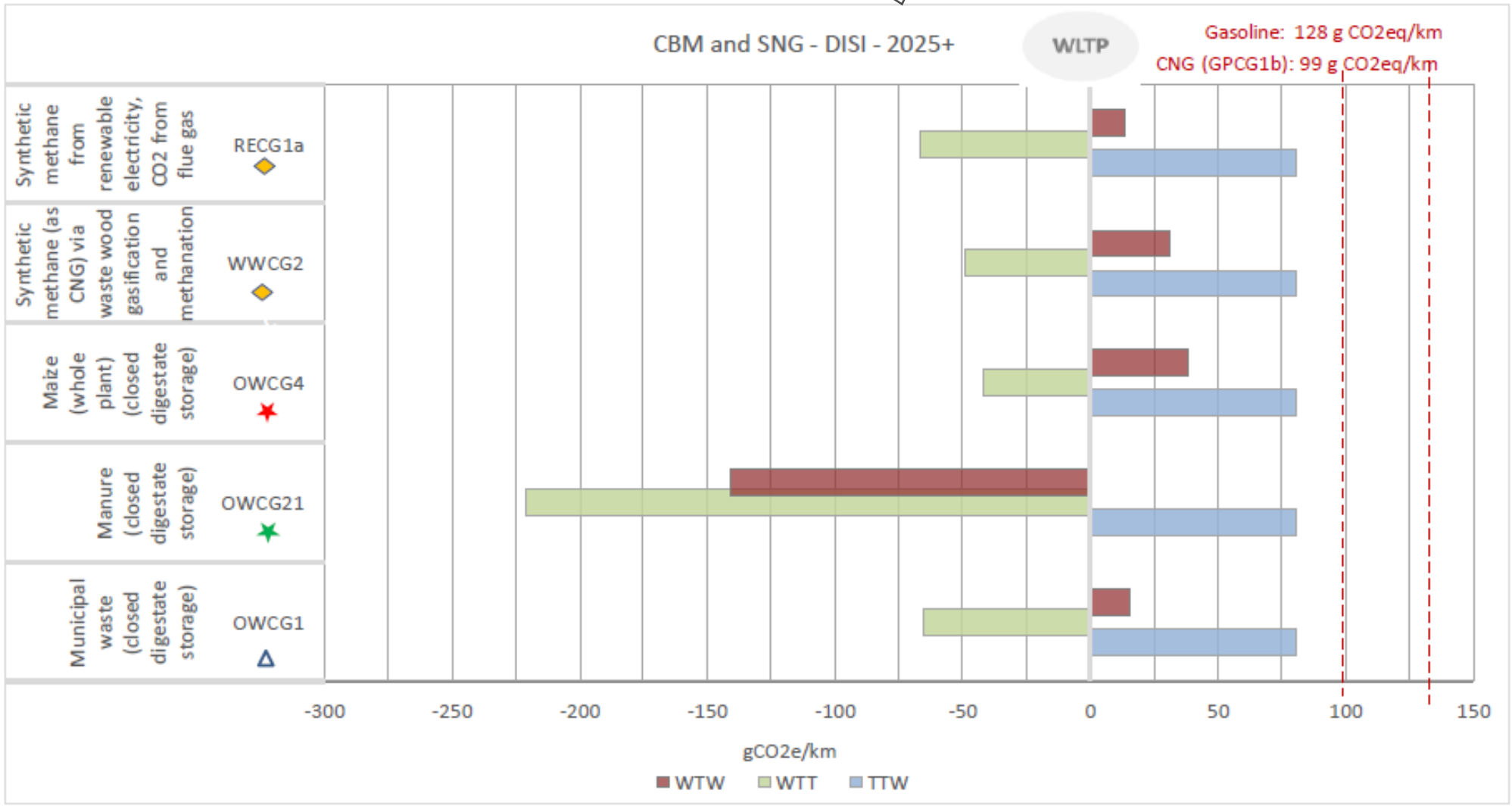
JEC WTW

- **JEC methodology uses a substitution method (system expansion) since it is a CLCA**, i.e.:
  - All energy and emissions generated by the process are allocated to the main or desired product;
  - The co-product generates an energy and emission credit equal to the energy and emissions saved by not producing what the co-product is most likely to displace.

☑ **Closer representation of "real-life": economic choices of stakeholders**
☒ Uncertainty: outcomes dependent on fate of co-products

WTW Results

4-stroke, Direct-Injection, Spark-Ignition. (DISI)



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Disclaimer

The JEC Well-to-Wheels study is a technical analysis of the energy use and GHG emissions of possible road fuel and powertrain configurations in the European context for a time horizon of 2025+.

This study is not intended to commit the JEC partners to deliver any particular technology or conclusion included in the study.

We invite JEC readers and LCA practitioners not to directly apply JEC results without taking into consideration the methodological approach chosen.

***

For a **full description of the study** including assumptions, calculations and results, please consult the full set of reports and appendices available at:

https://ec.europa.eu/jrc/en/jec

European Commission

Open issues on biomethane GHGs' accounting

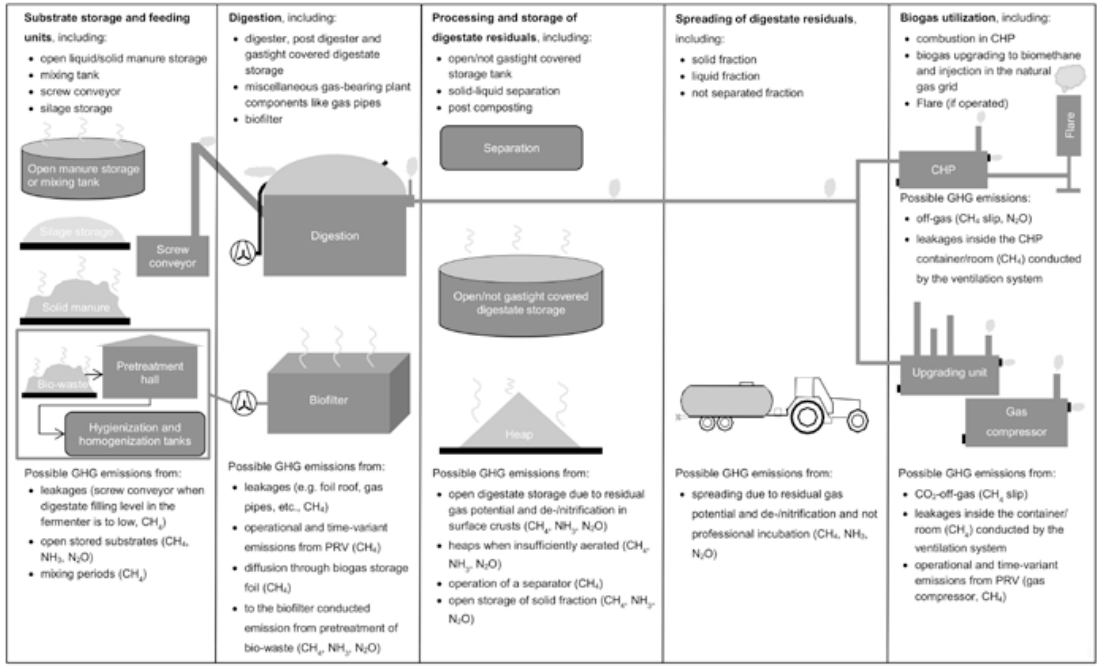
The methane fugitive emissions

An overarching legislative framework

- **EC** is accelerating the **EU climate and environmental legislation** and supports the development of the market for **biogas from sustainable sources**.
- **Operators** have the opportunity either to deliver **calculations** of actual GHGs savings of their production, or to use the default values (which include benefits and credits).
- On 14 October 2020, the EC released the **EU Strategy to Reduce Methane Emissions**, including the fugitive emissions from the extraction, processing and distribution infrastructures of the entire oil, gas and coal supply chains, including liquefied natural gas (LNG), gas storage and biomethane introduced into gas systems.
- Moreover, **EU** and **US** recently announced the **Global Methane Pledge**, an initiative to reduce global methane emissions to be launched at the **UN Climate Change Conference** (COP 26) in November in Glasgow.
- **Methane** causes a global warming potential **28 times** higher than **CO_2** (according to IPCC AR5) over a 100-year period.

Fugitive emissions in the biogas sector

- IEA (Liebetrau et al, 2017) provided a classification of fugitive emissions as:
  - **structural (the technologies deployed);**
  - **operational (plant management).**
- The most important sources: **open manure storage, open storage of the digestate**; the combined heat and power **(CHP) engine**; **leaks**; the Pressure Release Valve (**PRV**), etc.



Liebetrau J, Reinelt T, Agostini A, Linke B, Murphy JD, IEA Bioenergy Task 37. Methane emissions from biogas plants : methods for measurement, results and effect on greenhouse gas balance of electricity produced. 2017.

European Commission

Methane losses in the default values

- According to the current GHGs calculation methodologies for solid and gaseous fuels in the RED II, **methane fugitive emissions** are included to some extent.
- For both biogas for electricity and biomethane production, **closed storage** system generate **GHGs savings** and the use of **manure** generates **credits**.
- For biomethane production, fugitive emissions in the “upgrading” section are due to the **off gas which is not combusted**.
- Default values of “processing” and “off gas” section have been increased by **40% with respect to the typical values** to consider other potential factors that could increase the emissions as well.

Impact of fugitive emissions on GHG savings

S. Bakkaloglu, D. Lowry, R.E. Fisher et al. Waste Management 124 (202

Table 4
Estimated methane emissions rates obtained from Gaussian plume modelling, methane losses relative to calculated production rates and emission factors calculated a emission rates divided by annual feedstock amount.

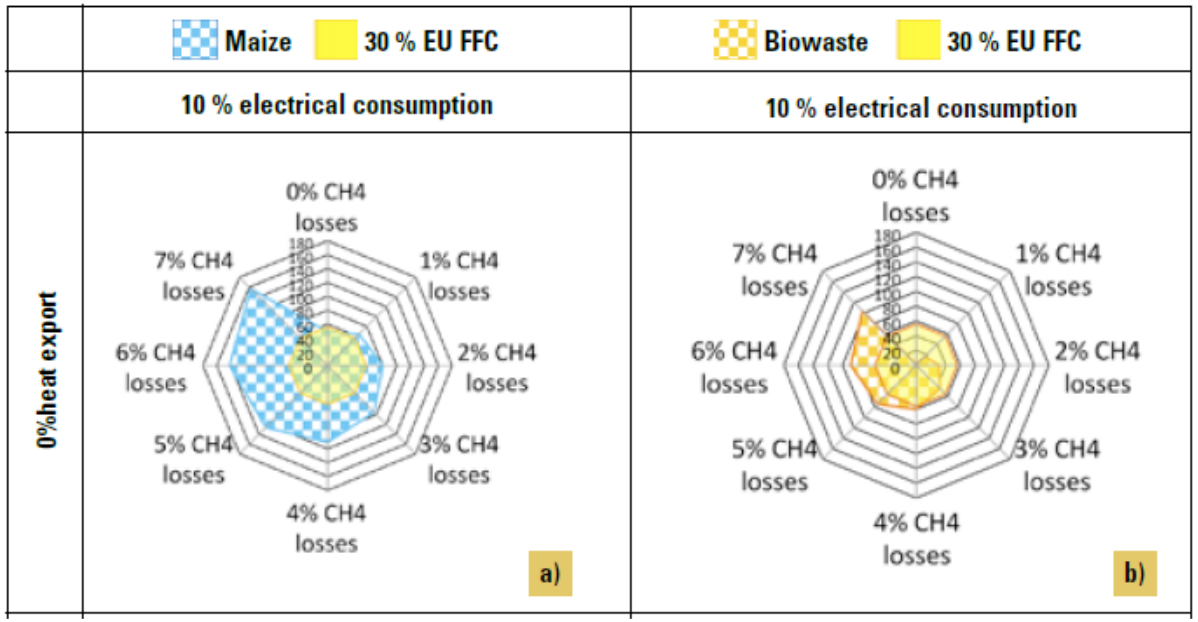
Name	Biomethane capacity (Nm^3/hr)	Calculated average CH_4 production rate (kg CH_4 h^{-1})	Estimated total CH_4 emissions (kg CH_4 h^{-1})	CH_4 loss relative to calculated production rates (%)	Emission factors (kg CH, emitted/ tonnes of feed
A	N/A	970[b,c]	12.6 ± 3.8	1.3 ± 0.4	2.5 ± 0.7
B	N/A	861 [a,c]	58.7 ± 25	6.8 ± 2.9	10.3 ± 4.4
C	N/A	654 [a,c]	0.1 ± 0.02	0.02 ± 0.003	0.02 ± 0.004
D	990	709	2.8 ± 0.8	0.4 ± 0.1	0.5 ± 0.1
Plant average CH_4 loss and EF, **food waste**: 2.1% and 3.3, respectively					
Production weighted average CH_4 loss and EF, **food waste**: 2.3% and 3.4, respectively					
E	550	394	21.9 ± 6.2	5.6 ± 1.6	10.0 ± 2.8
F	N/A	425 [a]	14.3 ± 4.2	3.4 ± 1.0	6.3 ± 1.8
G	N/A	215 [a,c]	17.5 ± 3.7	8.1 ± 1.7	15.3 ± 3.2
H	N/A	198 [a]	0.5 ± 0.1	0.3 ± 0.1	1.5 ± 0.3
I	N/A	439 [a,c]	14.0 ± 3.9	3.2 ± 0.9	2.2 ± 0.6
J	N/A	209 [a,c]	16.6 ± 4.1	7.9 ± 0.02	11.4 ± 2.8
Plant average CH_4 loss and EF, **farm waste**: 4.8% and 7.8, respectively					
Production weighted average CH_4 loss and EF, **farm waste**: 4.5% and 6.1, respectively					
All biogas plants					
Plant average CH_4 loss and EF, all: 3.7% and 6.0, respectively					
Production weighted average CH_4 loss and EF, all: 3.1% and 4.4, respectively					

[a] results estimated by interpolation; [b] results found in public reports; [c] methane content of 60% and normal co ions (25 °C and 1 atm); CH_4 density = 0.7157 kg normal conditions (25 °C and 1 atm); EF: emission factor; plant average is equal to the sum of CH_4 losses divided b e number of the plants and weighted average is the sum of the all estimated CH_4 emissions rates divided by the sum of calculated production rates.

Plant average CH_4 loss of 3.7%

Bakkaloglu S, Lowry D, Fisher RE, France JL, Brunner D, Chen H, et al. Quantification of methane emissions from UK biogas plants. Waste Manag 2021;124:82–93. https://doi.org/10.1016/j.wasman.2021.01.011.

GHG emissions (g CO_2eq $MJel^{-1}$)



Between 1% and 4% of fugitive emissions, biogas (only from biowastes) has less GHG savings than 70% FFC

Liebetrau J, Reinelt T, Agostini A, Linke B, Murphy JD, IEA Bioenergy Task 37. Methane emissions from biogas plants : methods for measurement, results and effect on greenhouse gas balance of electricity produced. 2017.

European Commission

Conclusions

Take home messages

European Commission

Conclusions

- **EU climate targets** and **the recent increase of NG' price** encourage the market uptake of biomethane.
- **RED II** default values and **JECv5** offer an overview and guidelines of the current GHGs emissions of biomethane production.
- A continuous updating of the input data of GHGs calculations, and the extension to new conversion pathways (new feedstock, technologies) will help the biogas sector to demonstrate its **sustainability towards RED II updated targets**.
- **Operators** have the opportunity to deliver their own calculations of actual GHGs savings of their production, including benefits and credits due to closed digestate storage and the use of manure as feedstock respectively.
- Recent studies highlighted the importance of **considering methane fugitive emissions** in the biogas plants.

Keep in touch

EU Science Hub: ec.europa.eu/jrc

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Thank you

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The views expressed here are purely those of the authors and may not, under any circumstances, be regarded as an official position of the European Commission.

European Commission

EBA Conference – 26 October

Defossilising the shipping industry

FARID TRAD
Head of Energy and Financial Markets, CMA–CGM

EBA
European Biogas Association

26–27 October 2021, Brussels

EBA Conference – 26 October

Heavy-road mobility fuelled with renewable gas

JONAS STRÖMBERG
Sustainability Director, SCANIA buses & coaches

EBA
European Biogas Association

26–27 October 2021, Brussels

sustainable transport

biomethane as a bus and truck fuel






JONAS STRÖMBERG
Sustainability Director, Buses and Coaches
jonas.stromberg@scania.com

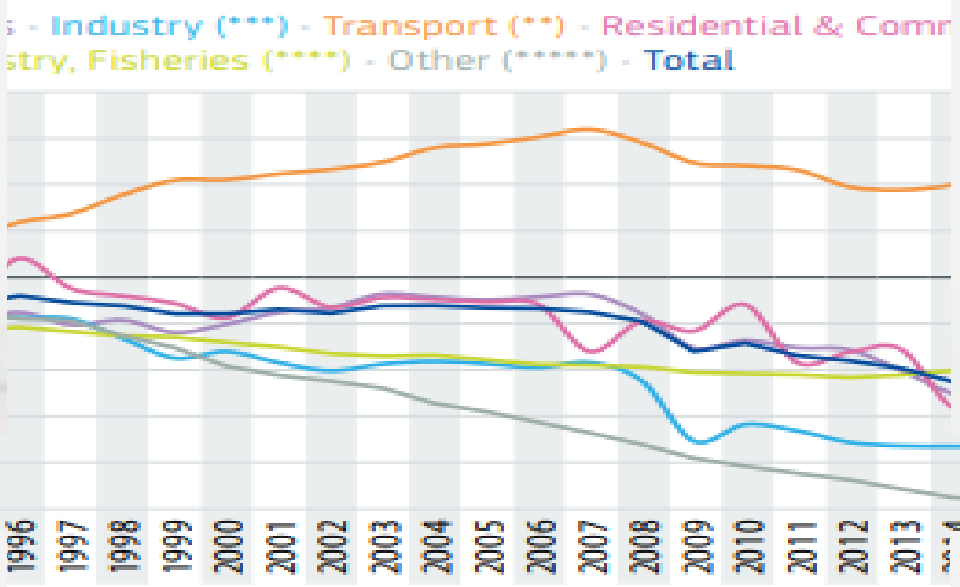
SCANIA

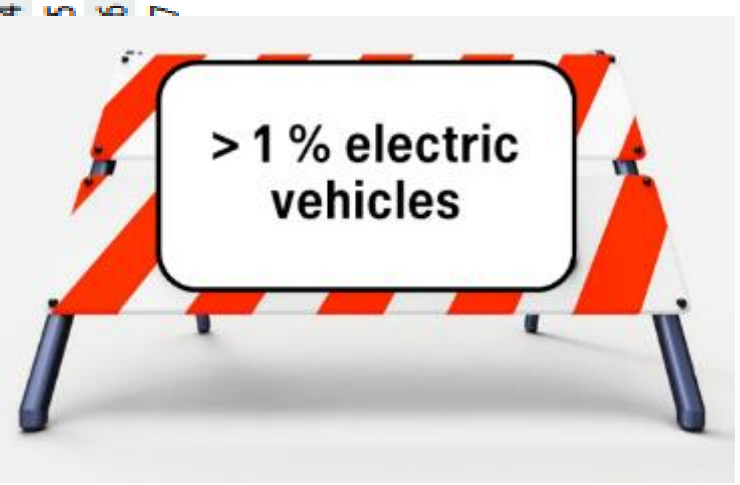
Agenda

1. sustainability at scania and the science based targets
2. low carbon transport solutions
3. gas and biogas in heavy duty
4. European outlook and fit for 55
5. Discussion and Q&A

Decarbonisation is not going fast enough for the transport sector

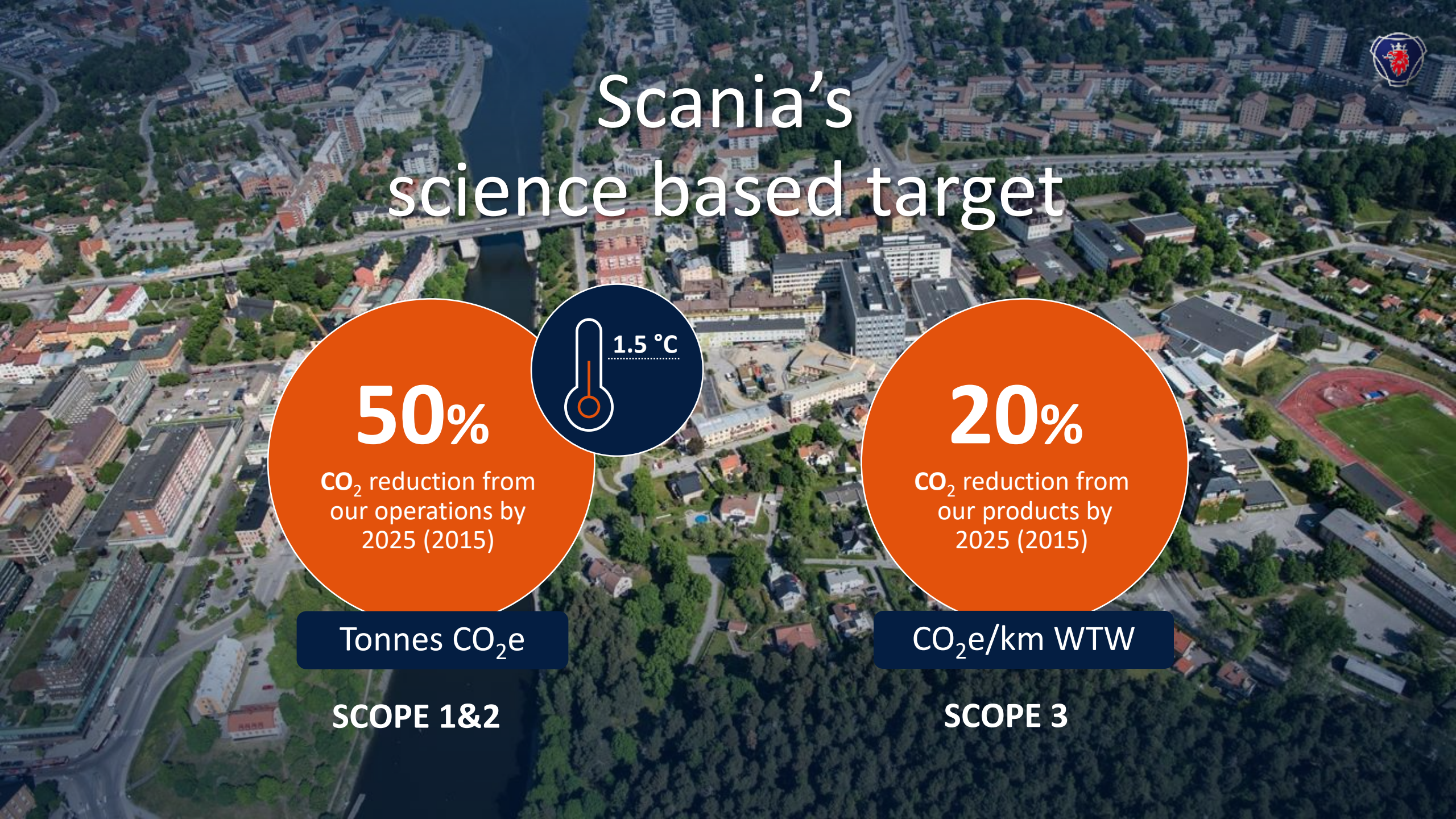
many challenges for the heavy duty transport sector





Sustainability at Scania

Scania's science based target



Main levers

Many activities to drive towards the 20% target

20%

CO_2 reduction from our products by 2025 (2015)

CO_2e/km WTW

2015 BASE LINE

Biodiesel blends

Combustion engine improvements

Driver Coaching

Spec. optimization

Air drag, weight tyres

Electrification

Green Energy & Biofuel Partnerships

2025 TARGET (-20%)

no silver bullet - different solutions for different transport missions

complete portfolio for optimizing co_2 reduction

HVO

BIOETHANOL

BIOGAS

biodiesel

Battery Electric

City
Suburban
Intercity/Regional/coach/BRT
Long haulage
Tough terrain

Clean
Low Carbon
Commercial
Outcompete diesel

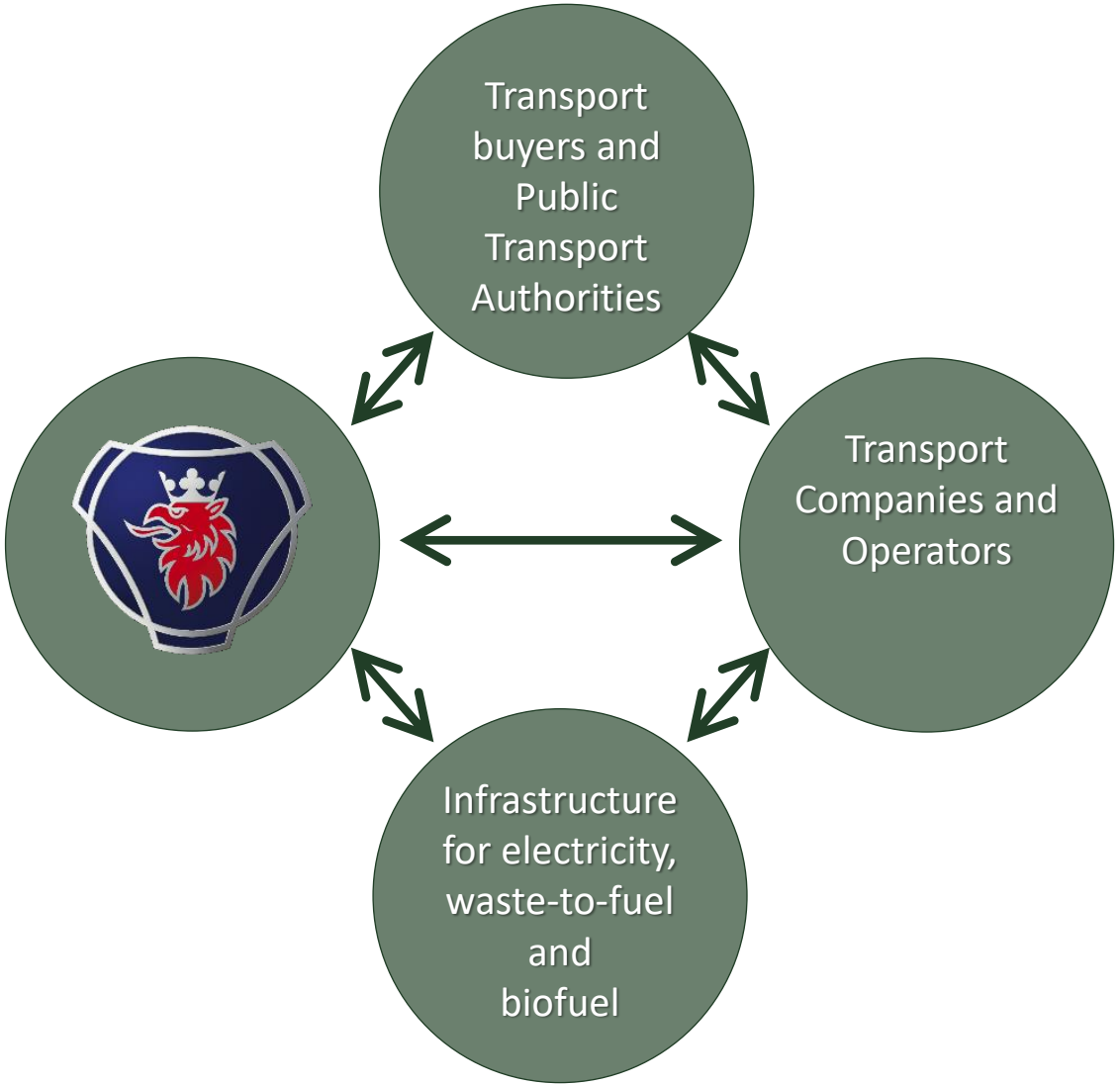
Possible CO_2 reduction here and now

Typical Well-to-wheel CO_2eq reduction

1. From Waste-based feedstock
2. From Current EU electricity mix
3. With most common usage

CBG - biogas	LBG - biogas	HVO	Biodiesel/FAME	BEV – battery electric
80%[1] (50-90%)	70%[1] (50-90%)	83%[1] (50-90%)	60%[3] (50-80%)	55%[2] (53-99%)

clean energy partnerships for ready to go package solutions

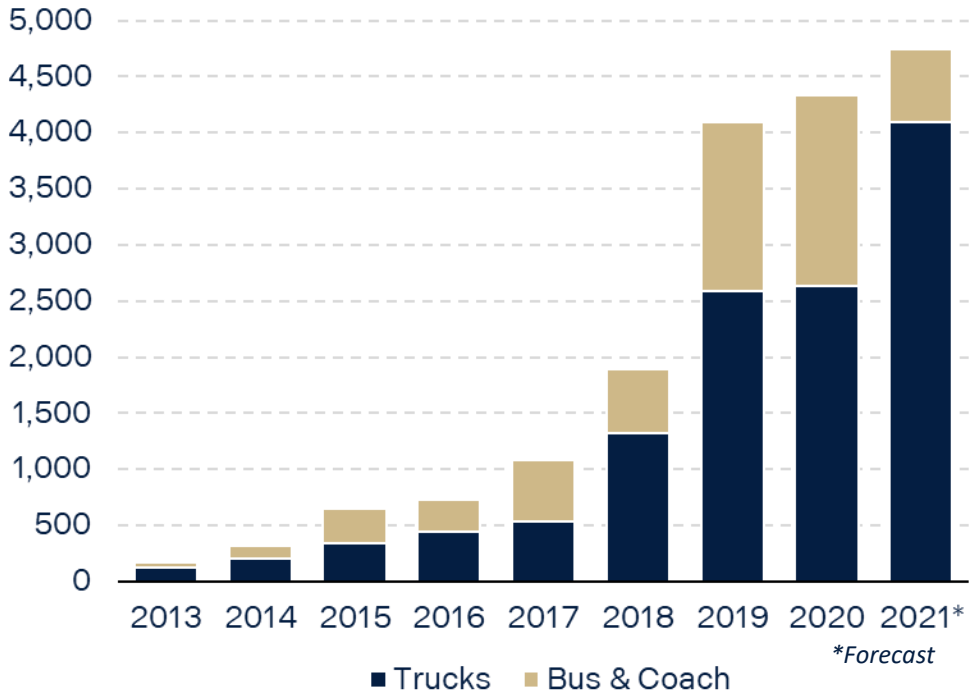


Euro 6 gas buses and trucks for all applications

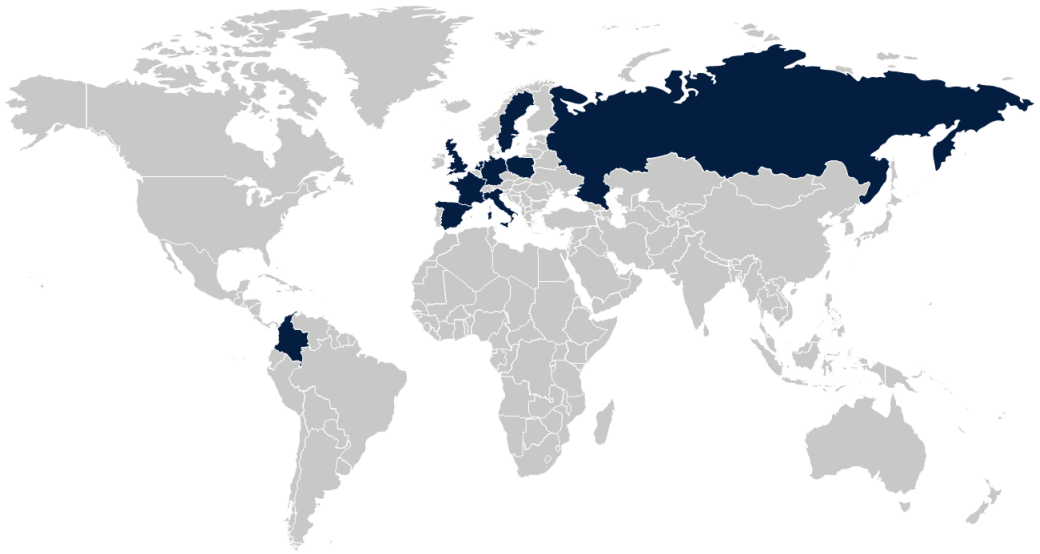
City, suburban, Intercity, coach & BRT, haulage

Sales of gas vehicles

Development 2013-2021



Top 10 markets 2020



CLEAN AND LOW CARBON AROUND THE WORLD

Nottingham and Reading, United Kingdom

Stockholm, Sweden

Vaasa, Finland

Kalmar region, Sweden

Bordeaux, France

Madrid, Spain

Melbourne, Australia

Bogota and Cartagena, Colombia

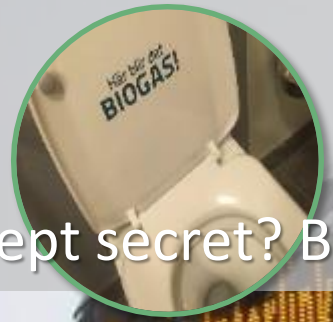
Virginia, South Africa

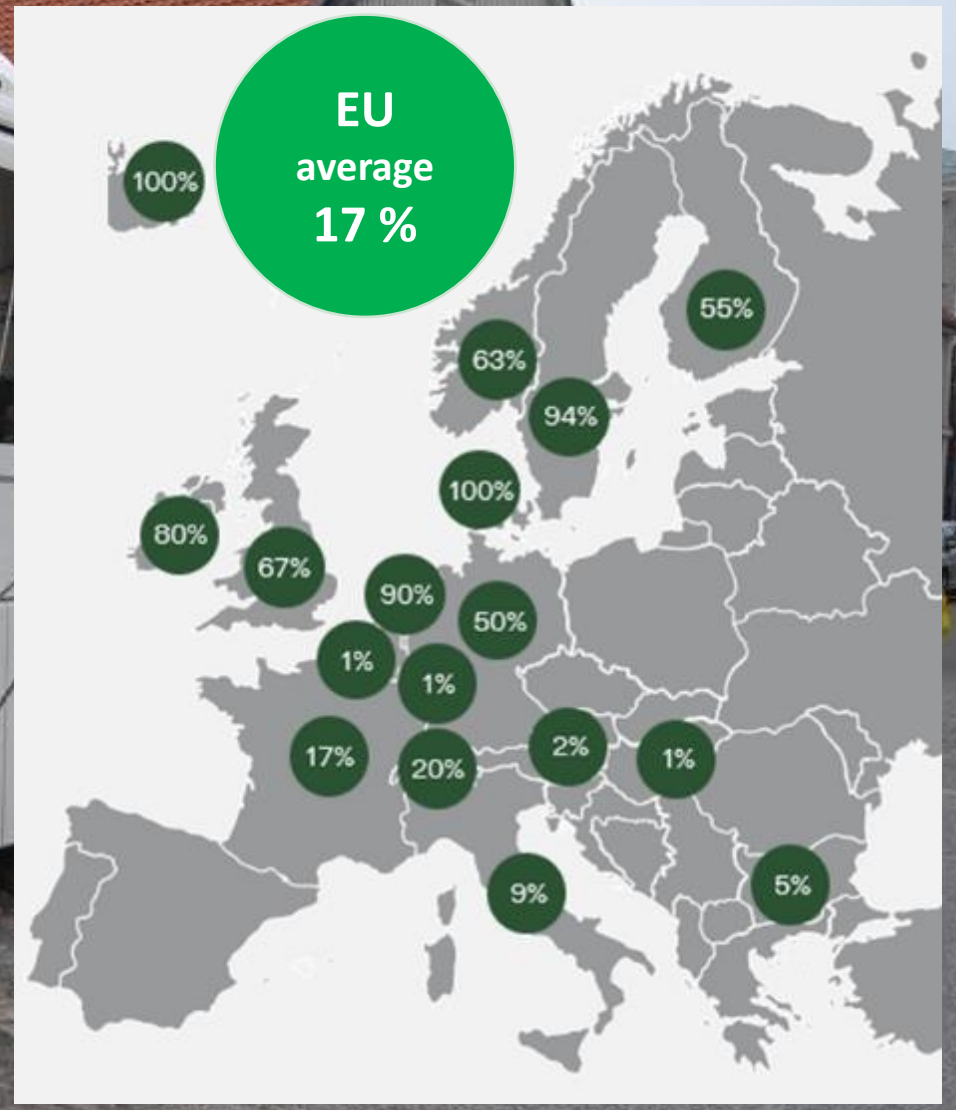
Jakarta, Indonesia

Biomethane for transport

World's best

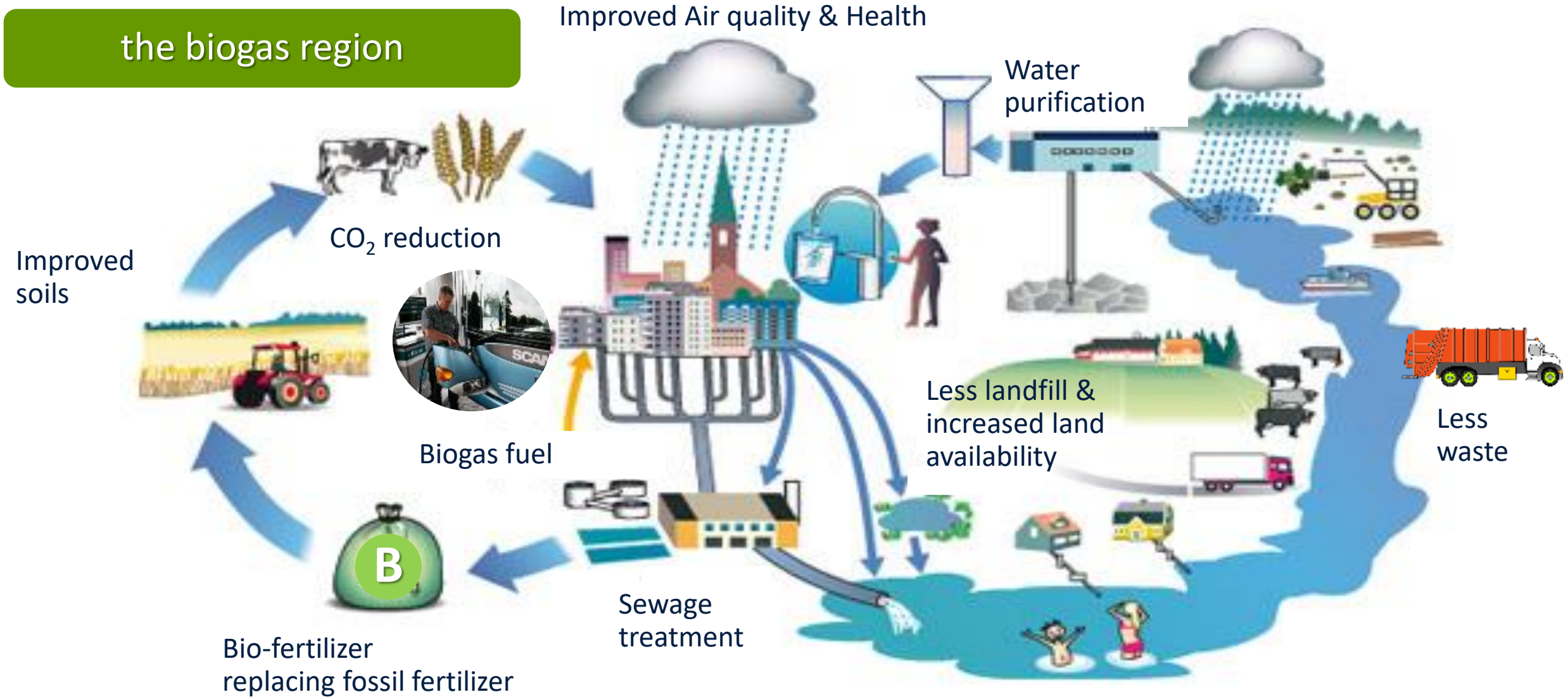
kept secret? But best business case for biogas use!





A pre-requisite for a circular economy

BIOgas has many benefits for the region – often unaccounted for



DID you know?

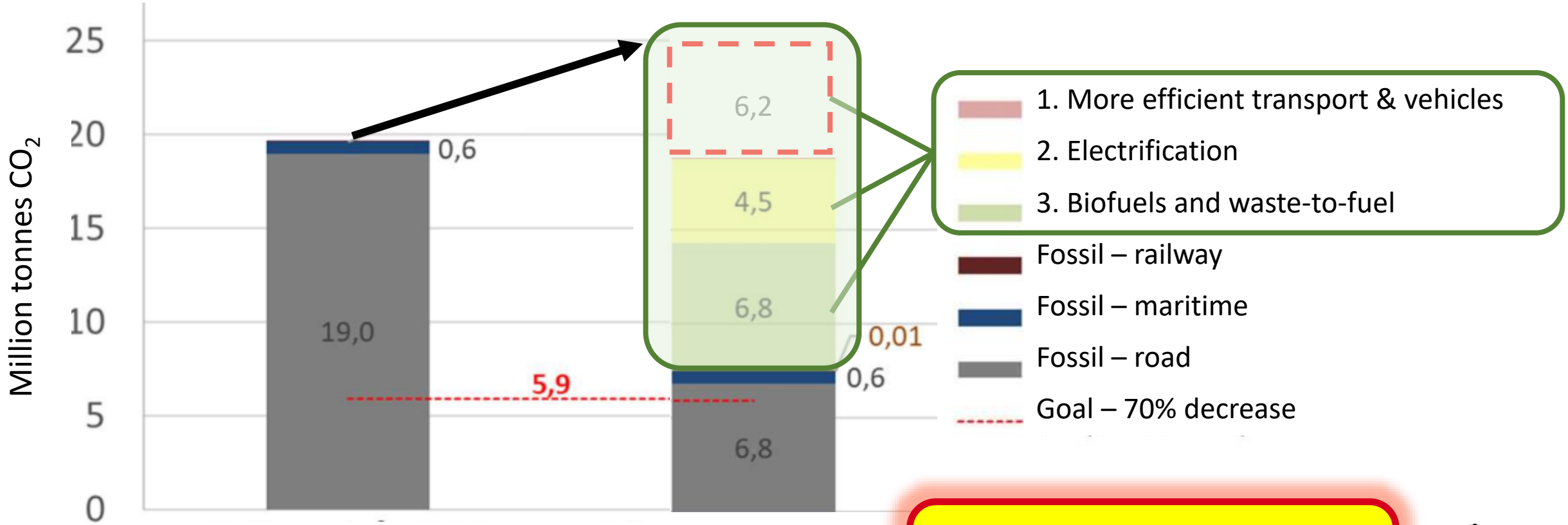
Waste from 1 000 citizens could power a biogas bus for a year!

… and one biogas bus provides 1-3 additional jobs/year in the region!

3 key tools for decarbonisation of transport

the Swedish example

WWF and IVL scenario for reaching the Swedish 2030 goal (-70% CO_2) for decarbonisation of transport



Swedish heavy duty: ~20 TWh
Swedish biogas today: ~4 TWh
Swedish biogas 2030: ~7 TWh

Sweden’s two major cities

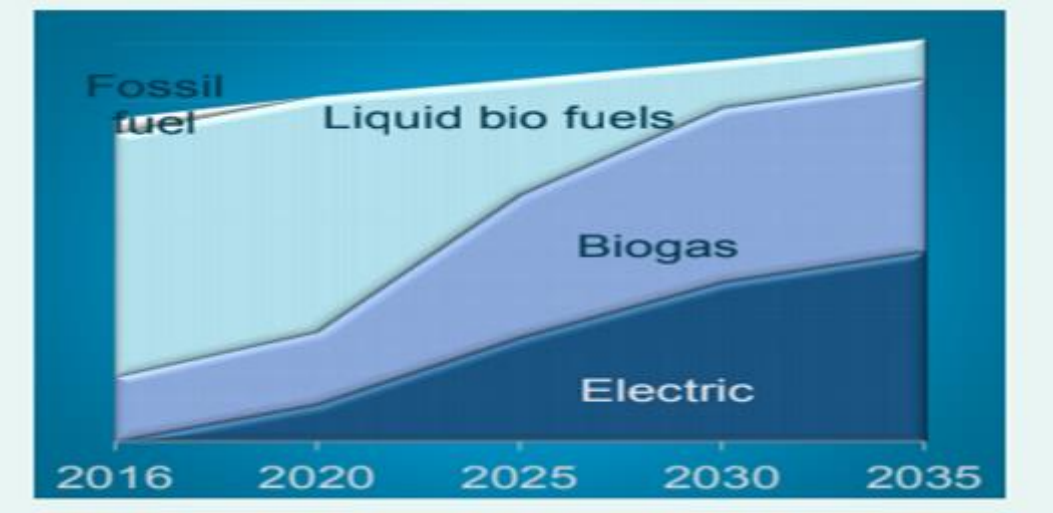
Stockholm region reached 100% fossil free public transport in 2018

2 300 fossil free
city, suburban & regional buses

world’s largest biogas bus fleet

gothenburg region outlook 2035

50% biogas – 50% electric
biogas/regional - electric/city



European possibilities?

Background

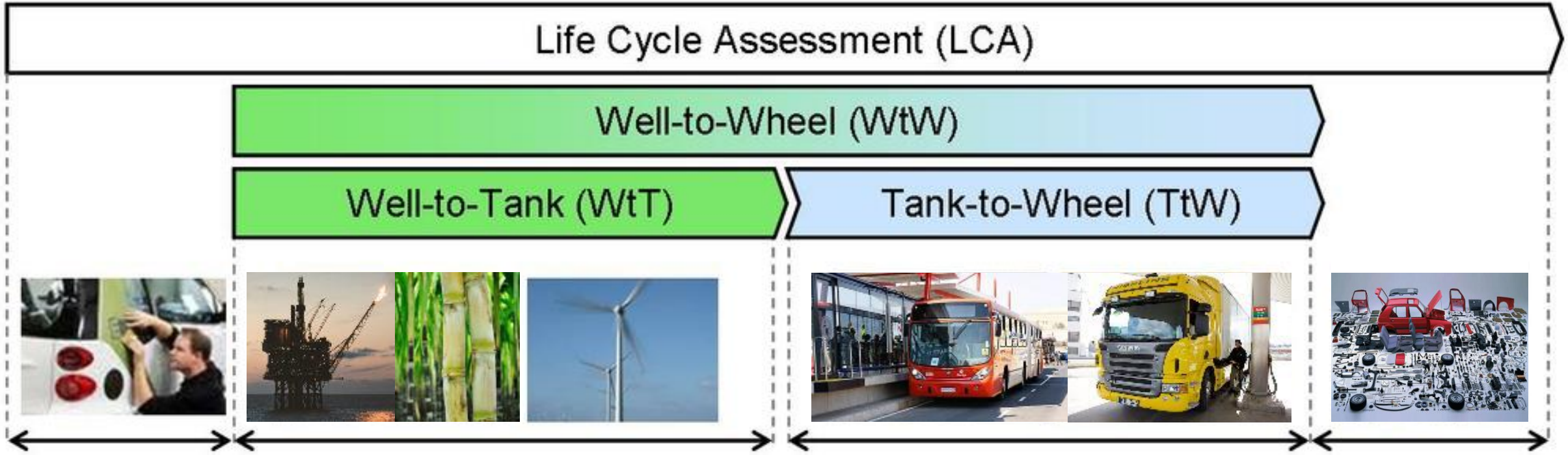
- 5000 TWh/y NG
- 200 TWh/y biogas
- ~30 TWh upgraded
- ~4 TWh used in vehicles
- 1 TWh/y → 2 500 trucks/buses
- Historic growth ~15 %
- Much better business case for upgrading for vehicles than for heat or electricity

Possibilities

- 15% increase/y → 60 TWh 2025
- 50% use in vehicles → 30 TWh
- Could power 75 000 trucks/buses
- Today ~25-30 000 HD gas vehicles
- Possible sales potential 2025 could be up to 30 000/y 2025
- Would mean a fleet of 150 000 in EU
- *(NGVA assumes 280 000 2030)*
- 50% biogas powered
- Certificates…

regardless of technology – it's real cuts of co_2 that matters

What is wtw, TTW and WTT?



Vehicle production (incl battery)

Fuel or Energy production

Vehicle operation

Recycling

POLICY

(VECTO*/Taxonomy…)

"*…shall from Jan 1st 2019 be used for determining CO_2 emissions and Fuel Consumption from Heavy Duty Vehicles.."

fit for 55

many uncertainties remain…?

SCANIA'S 4 PRIORITIES

- Alternative Fuel Infrastructure Regulation
- EU Emission Trading System
- Energy Taxation Directive
- Renewable Energy Directive III

AFIR:

- Key enabler I - for both biogas and electrification
- Biomethane?
- Capacity too low/MS minimum req.?
- Link to CO_2 targets?

ETS:

- Key enabler II.
- Proper carbon price vital for TCO parity.
- How will biofuels be priced vs diesel?

RED:

- Low ambition (13%)
- Definitions will be key (annexes).
- Combination with AFIR and CVD?
- Targets beyond 2030?

ETD:

- Proper carbon price vital for TCO parity.
- Phase-in of natural gas?
- Lower tax for biomethane – how about other biofuels?
- Member state levels?
- Unanimous in the Council?

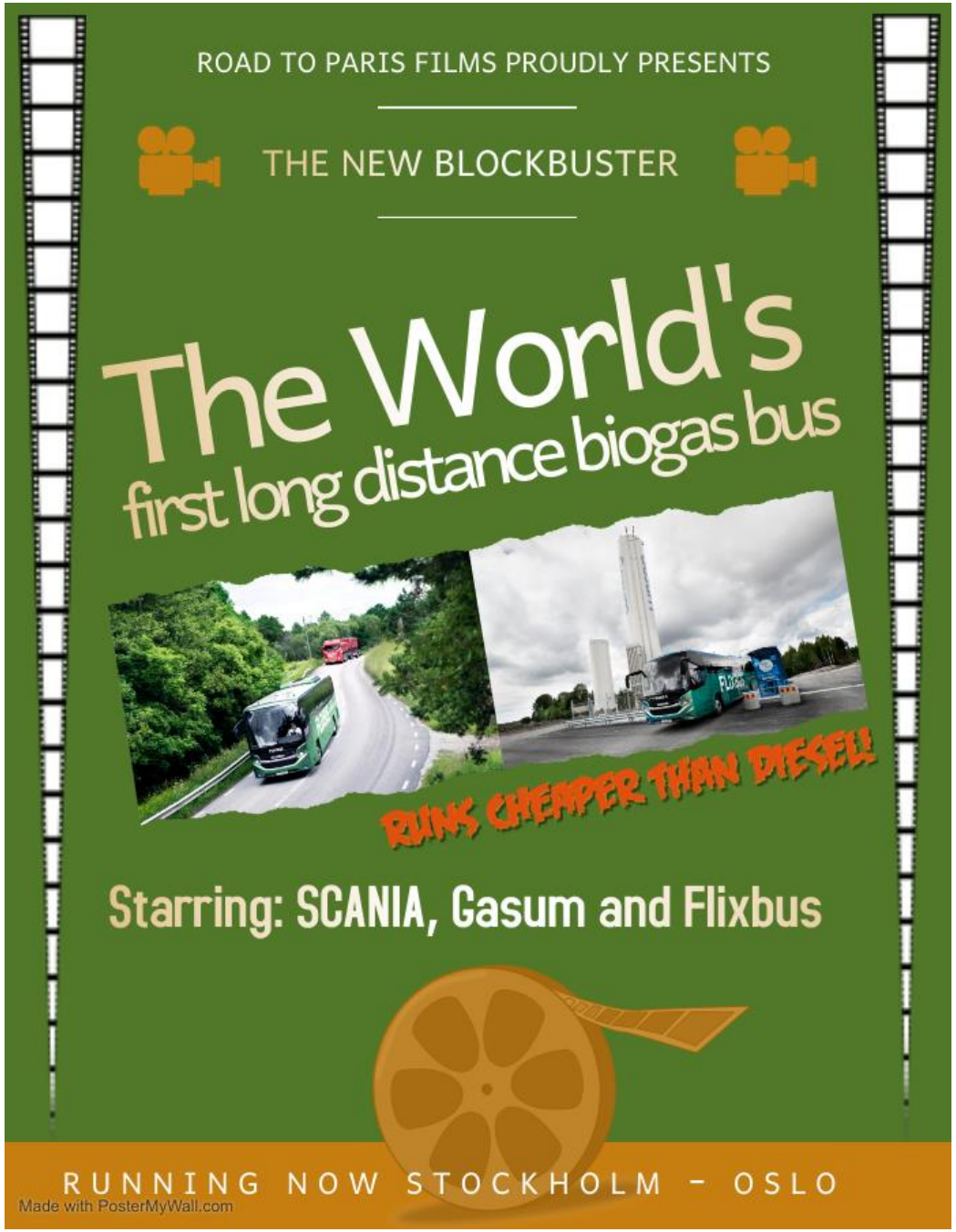
summary & conclusions

- **Biogas is an excellent, very clean motor fuel - with the highest CO_2 reduction;**
- **Biogas is a key tool for decarbonising the heavy duty sector. Both now and in the future for more hard-to-decarbonise applications;**
- **With existing gas infrastructure, biogas is the most cost efficient way to move to sustainable transport;**
- **From waste problems to sustainable transport, local jobs, clean air, bio-fertilizer and energy security.**

Biogas is the Swiss Army knife of sustainability and circular economy!

→ Most CO_2 cuts for each € invested!

https://youtu.be/y9_CC6_0MVw



https://www.youtube.com/watch?v=SWGvfsLq7gY

sustainable transport is not difficult






it is here and now

SCANIA

Extra material

more on scania’s sustainability work and other good examples

CTRL + CLICK on the links to open the YouTube clips!

This is a bus >>

Waste to fuel >>

Electrification >>

Biogas buses on Iceland >>

Nottingham biogas I >>

NOTTINGHAM biogas II >>

Danish biogas intercity >>

World’s first long distance biogas bus >>

The poo bus >>

Norwegian biogas buses >>

gas trucks in spain >>

IVL Biogas Film >>

BONUS:
World’s fastest bus
cow powered…

Alternative fuels >>

Diversity >>

Connectivity >>

Automation >>

Autonomous trucks >>

the nxt city vehicle >>

Partnerships >>

BUS SYSTEMS >>

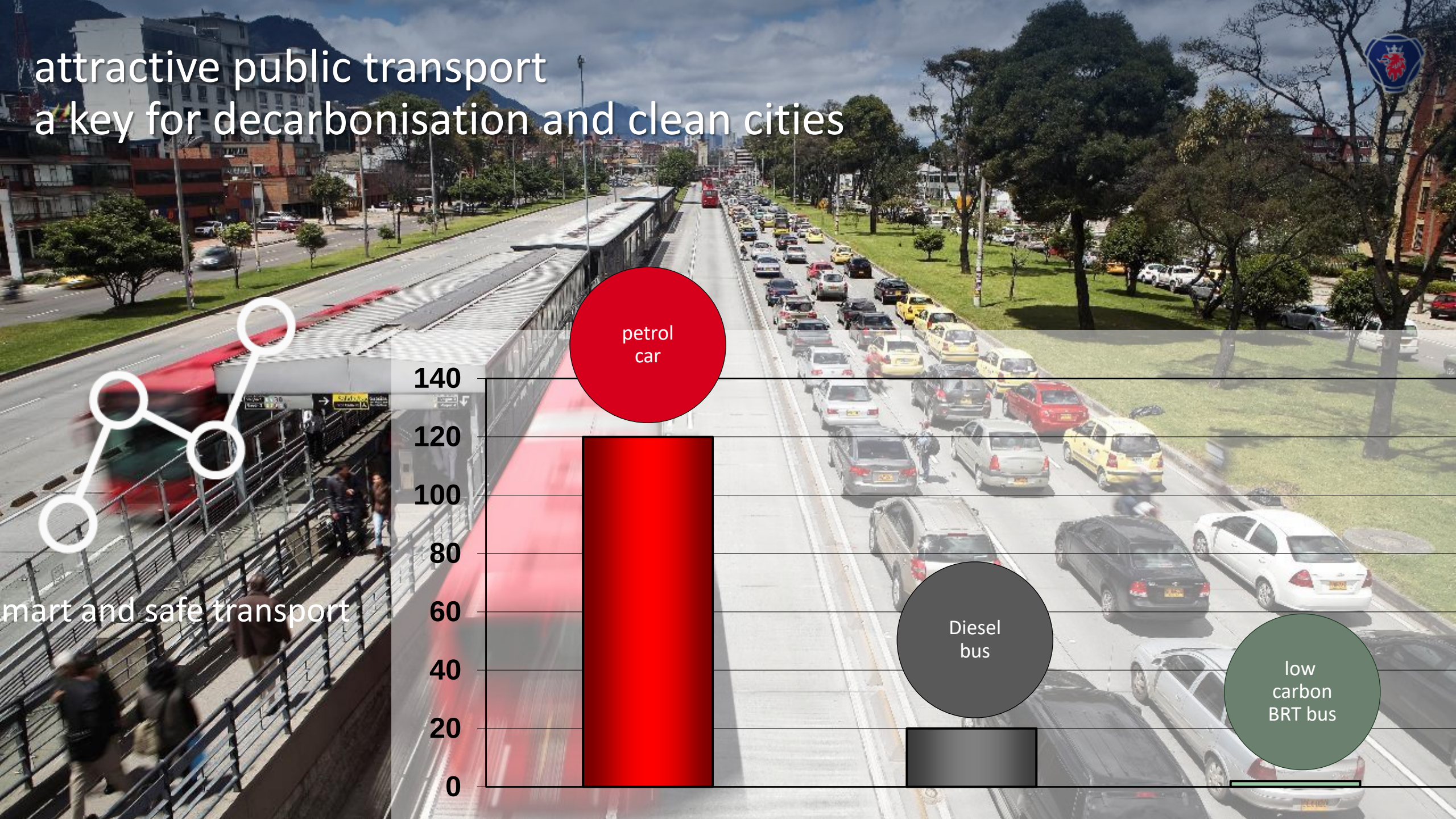
Johannesburg BRT >>

cartagena gas brt >>

Fishy bus-iness >>

ethanol buses in France >>

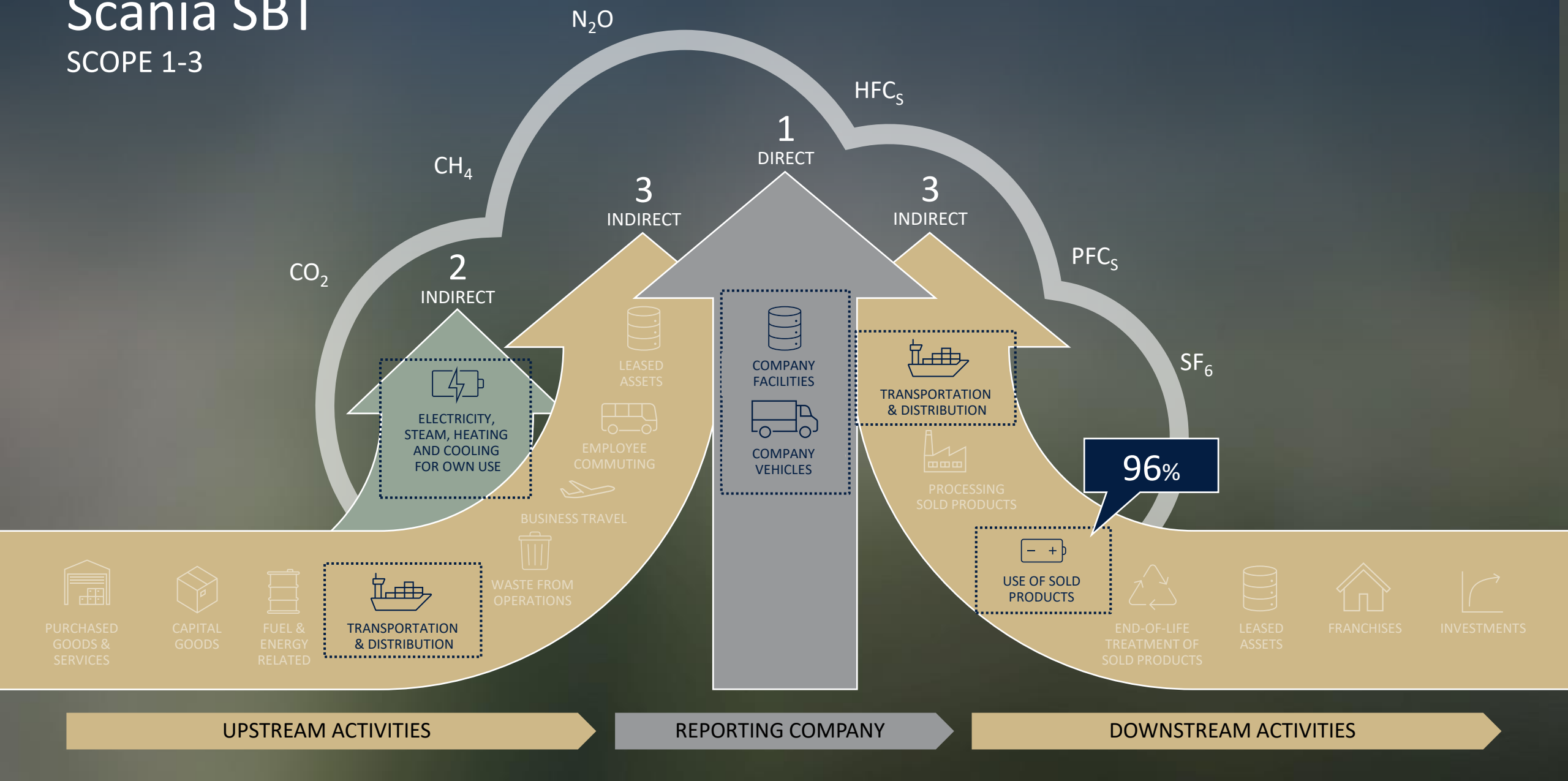
attractive public transport
a key for decarbonisation and clean cities



mart and safe transport

Scania SBT

SCOPE 1-3



EBA Conference – 26 October

Fuelling road mobility with biomethane

MAXIMILIAN KURTH
Sales Department, bmp greengas

EBA
European Biogas Association

26–27 October 2021, Brussels

Fuelling road mobility with biomethane

Maximilian Kurth
Sales – Renewable fuels
bmp greengas GmbH

Speaker

Maximilian Kurth

Sales – Renewable fuels

Agenda

1. bmp greengas – about us
2. Mobility emissions in Europe
3. Biomethane in Europe
4. Bio-CNG and Bio-LNG

bmp greengas

Profile

Specialist in
sale of biomethane
and expert for
green gases

More than **3,0 TWh**

portfolio volumes
per annum

bmp

The partner for
reliable transportation,
smooth balancing
and fail-safe delivery
of green gases

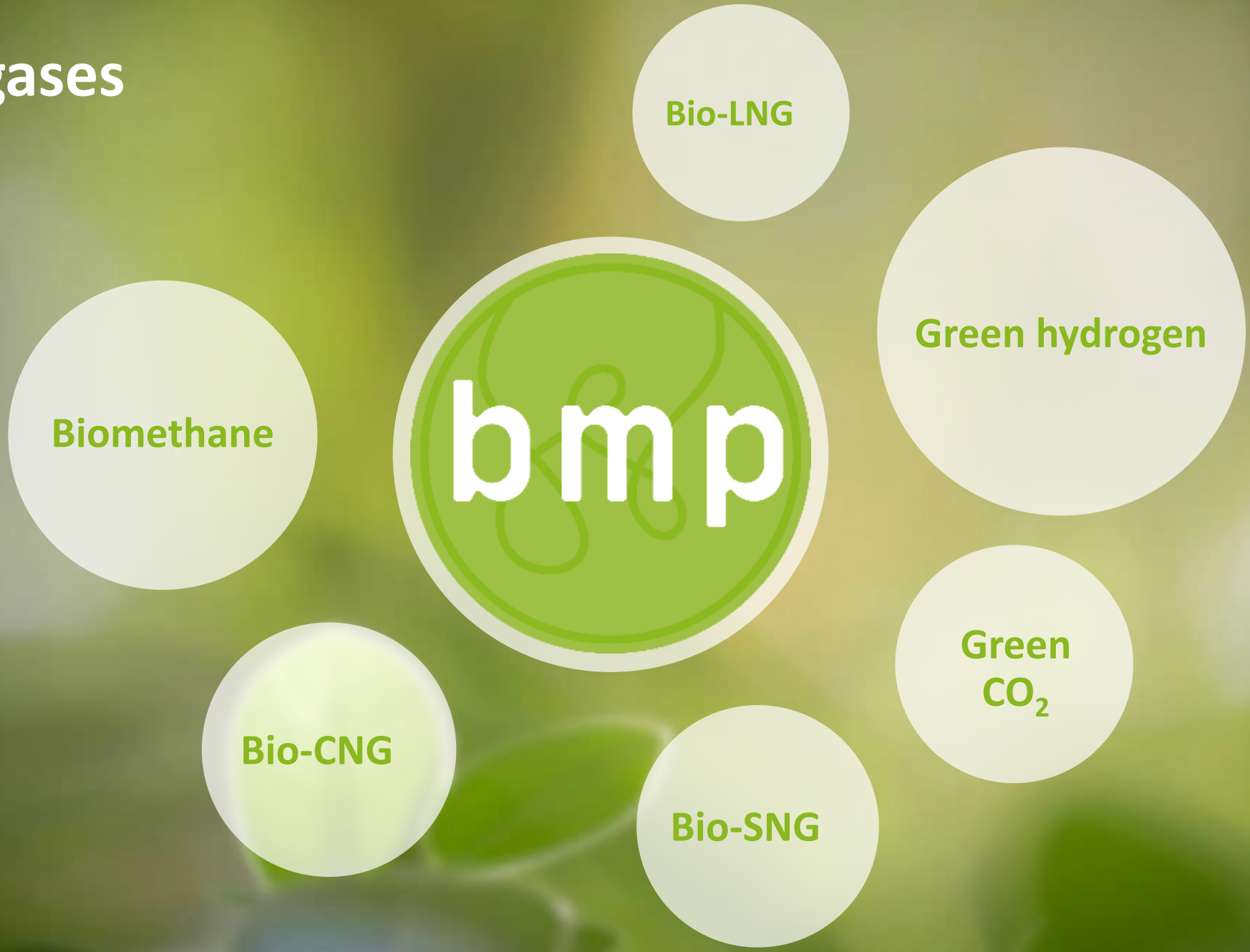
Large and
diversified
portfolio

International active
Based in Munich
More than 50
employees

Professional
consulting
and support

Green gases

Overview



Mobility Emissions Europe

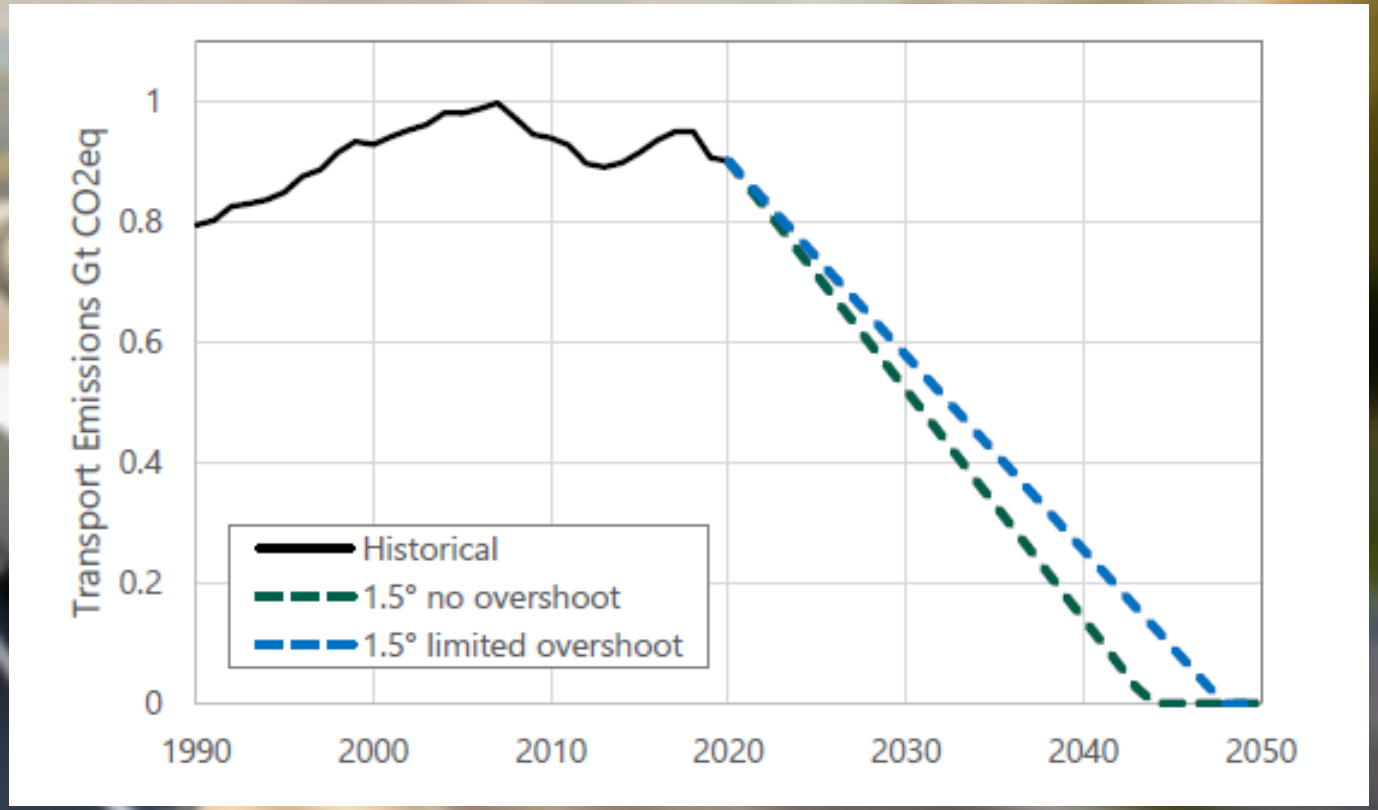
Status Quo

Ranking by country – Shares of energy from renewable sources used in transport in Europe

Source: EEA Europe

Mobility Emissions Europe

Goals



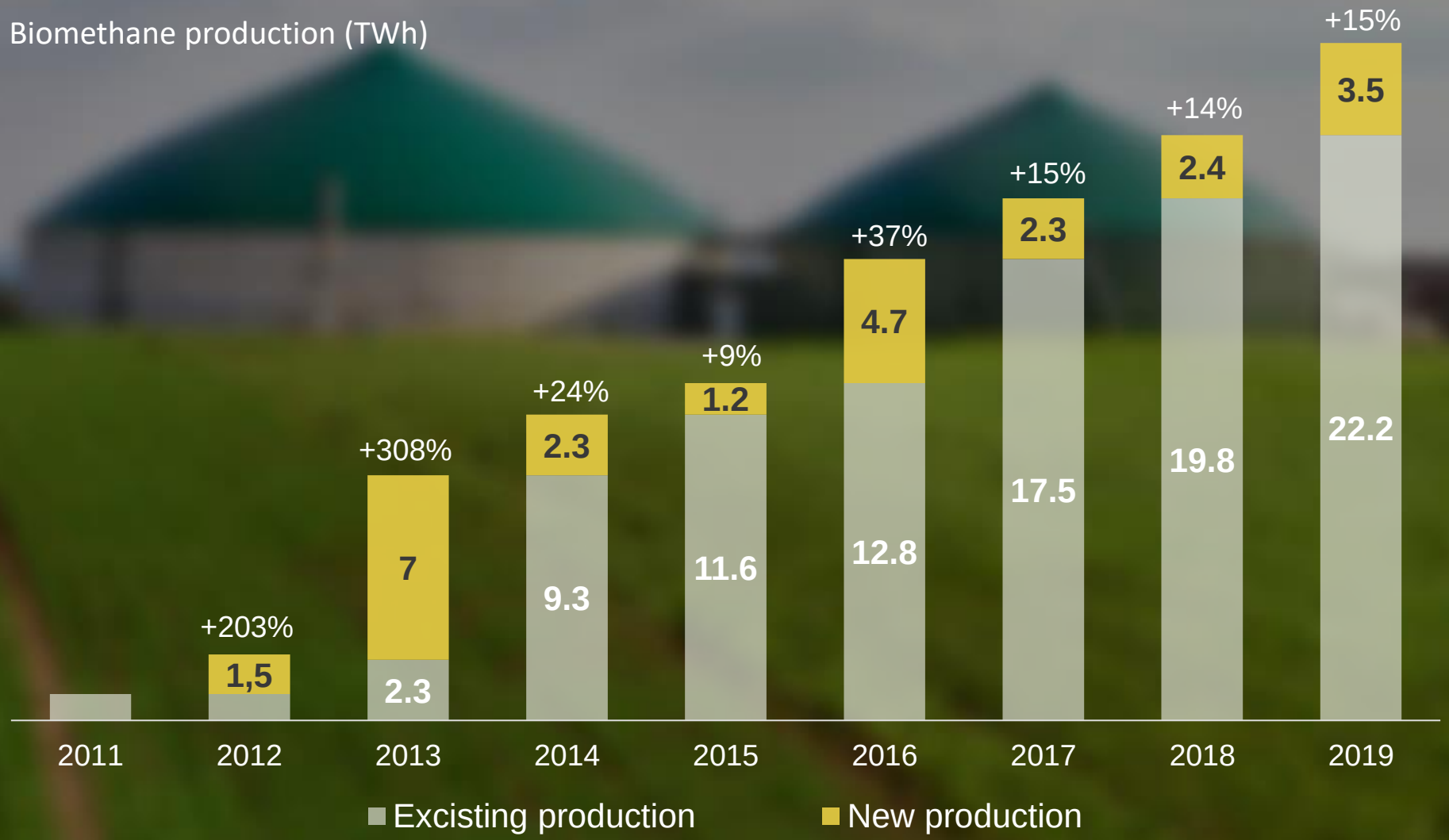
Source: Frauenhofer ISI

Biomethane

Ecological balance of fuels

Source: dena 2011, Oxford Institute for Energy, 2014, ES Paper: NG 84

Development of European biomethane



Source: EBA Statistical Report 2020

Potential of biomethane and biogas in Europe

292 TWh
expected in 2030

940 TWh
biomethane potential

Bio-CNG and Bio-LNG

CNG and Bio-CNG in Europe

- Over 4000 CNG stations (end of 2020)
- Share of biomethane = 25%
- By 2030 about 40% biomethane with about 10.000 CNG stations (=GHG reduction about 55%)

Source: https://www.ngva.eu/stations-map/

CNG and Bio-CNG in Germany

798 CNG fueling stations in Germany

349

CNG

449

100 % Biomethane

Source: Zukunft Erdgas

LNG and Bio-LNG in Europe

- Over 400 LNG fueling stations (end 2020)
- Several Bio-LNG liquefactions planed

Source: https://www.ngva.eu/stations-map/

Digression: Liquefication Alternoil and Erdgas Südwest / bmp

Der Tankstellenbetreiber Alternoil setzt an seinen Stationen zunehmend auf Bio-LNG. (Foto: Alternoil)

ERDGASMOBILITÄT

Anlage für Bio-LNG soll Tankstellen beliefern

12.04.2021 - 12:04 Mareike Teuffer

Steinfeld/Ettlingen/München (energate) - Erdgas Südwest baut gemeinsam mit Partnern in Hessen eine Biomethan-Verflüssigungsanlage. Es ist bundesweit eine der ersten Anlagen für die Produktion von Bio-LNG. Kürzlich sei der Startschuss für das gemeinsame Projekt mit dem Biomethanhändler BMP Greengas und dem Tankstellenbetreiber Alternoil gefallen, teilte der Versorger aus Ettlingen mit. Bis Ende 2022 soll die Anlage fertiggestellt sein und dann pro Jahr rund 35.000 Tonnen Bio-LNG für die Alternoil-Standorte produzieren, wie eine Unternehmenssprecherin von Erdgas Südwest auf energate-Nachfrage sagte.

Das hierfür notwendige Biomethan wird die Handelsgesellschaft BMP Greengas, ein Tochterunternehmen der Erdgas Südwest, liefern und zum einen über vorhandene Verträge mit seinen Bestandslieferanten in Deutschland beschaffen. "Andererseits führen wir Gespräche mit potenziellen Lieferanten, um diese bei einer Umstellung von Substraten zu beraten und bei der erforderlichen Zertifizierung für den Kraftstoffmarkt zu unterstützen", so die Sprecherin weiter. Die Basis für die künftige Zusammenarbeit der drei Unternehmen soll eine gemeinsame Projektgesellschaft bilden, an der Alternoil und Erdgas Südwest jeweils 50 Prozent der Anteile halten. Über die Höhe der gemeinsamen Investition in die Verflüssigungsanlage hätten die Unternehmen Stillschweigen vereinbart. Inwieweit die neue Gesellschaft mit Personal ausgestattet wird, sei noch zwischen den Partnern zu klären, so die Sprecherin. Dazu gehörten etwa auch Details zur Geschäftsleitung.

Alternoil will Tankstellenstandorte auf Bio-LNG umstellen

Nach seiner Verflüssigung in der neu zu errichtenden Anlage soll das grüne Gas bundesweit als Kraftstoff für LKW an den Tankstellen des Betreibers Alternoil zur Verfügung stehen. Das 2007 gegründete Unternehmen Alternoil mit Sitz im niedersächsischen Steinfeld betreibt aktuell 17 LNG-Tankstellen. Seit Jahresanfang bietet der Betreiber dort neben LNG auch den Bio-Kraftstoff "Reefuel" an. Bis zum Jahresende will Alternoil 40 weitere Tankstationen auf Bio-LNG umstellen. "Der Schwerlastverkehr muss einen aktiven Beitrag zur Erreichung der Klimaschutzziele leisten. Das gelingt langfristig mit Bio-LNG", sagte Jürgen Muhle für die Holding der Alternoil. Der Tankstellenbetreiber beteiligt sich zudem seit dem vergangenen Jahr an einem vom 3N Kompetenzzentrum Niedersachsen initiierten Modellversuch für den Aufbau einer regionalen Bio-LNG-Versorgung .

"Rahmenbedingungen im Kraftstoffmarkt haben sich geändert"

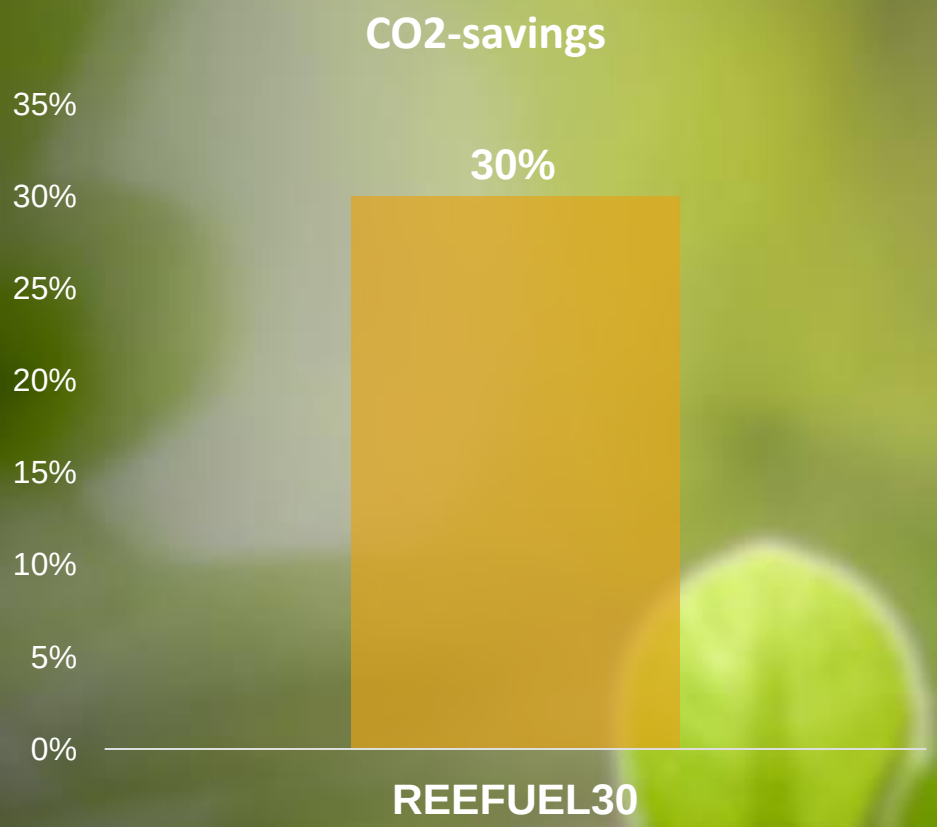
Für Erdgas Südwest ist es derweil nicht der erste Anlauf in Richtung Biomethan-Verflüssigung. Schon 2017 hatte das Unternehmen an entsprechenden Plänen für den Energiepark Hahnennest gearbeitet . Allerdings hatte sich das Unternehmen dann 2019 aus wirtschaftlichen Gründen von entsprechenden Plänen verabschiedet . "Die Rahmenbedingungen im Kraftstoffmarkt haben sich zwischenzeitlich allerdings geändert", so die Sprecherin. So hat die Bundesregierung etwa erst im Februar eine Verschärfung der Minderungsquote für Treibhausgase (THG) im Verkehrssektor beschlossen .

Das Vorhaben soll zugleich auf die Nachhaltigkeitsstrategie des baden-württembergischen Energiekonzerns EnBW einzahlen, zu dessen Beteiligungen Erdgas Südwest und BMP Greengas gehören. Denn das Unternehmen will bis 2035 Klimaneutralität erreichen und hat dies auch in seiner Konzernstrategie verankert . /ml

energate messenger+

GAS & WÄRME

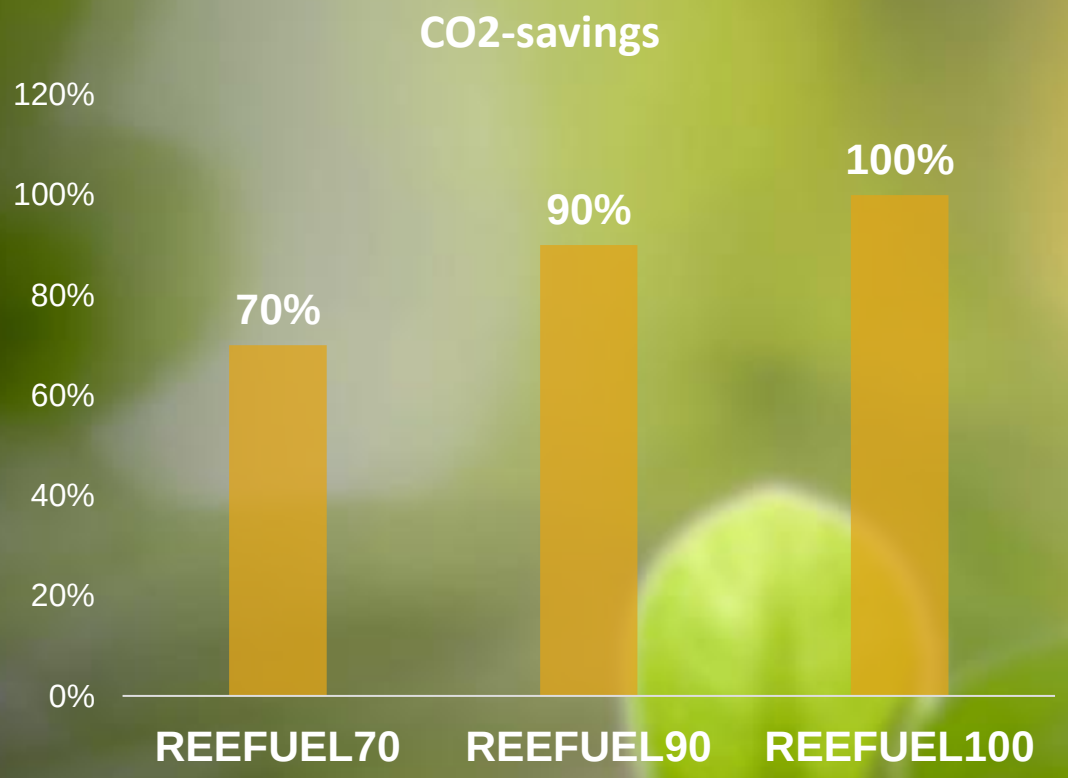
REEFUEL - Today



- Renewable Bio-LNG for use in the transportation market
- REEFUEL can be refueled in any LNG-truck
- REEFUEL consists of two components: Fossil LNG and renewable LNG
- Proportion of renewable LNG is accounted for and certified according to current EU standards
- From 2023, REEFUEL will enable CO2 savings of up to 100%
- Actual amount of renewable gas share is determined individually by customer agreement

REEFUEL - Future

Well-to-wheel 2023



- REEFUELERY plant enables scaling of Bio-LNG volumes
- High quality biomethane increases CO2 savings
- CO2 savings of 100% are already possible with 45% Bio-LNG


bmp greengas
Let us work together for a
CO2-neutral and economical energy future!

Let us work together for a CO_2-neutral and economical energy future!

Maximilian Kurth

Sales – Renewable fuels

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Sources

Mobility Emissions Europe
https://www.eea.europa.eu/data-and-maps/indicators/use-of-cleaner-and-alternative-fuels-2/assessment
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwihxN7kktbzAhXohP0HHf6cD-QQFnoECAoQAw&url=https%3A%2F%2Fwww.isi.fraunhofer.de%2Fcontent%2Fdam%2Fisi%2Fdokumente%2Fcce%2F2021%2FEU_Transport_policybrief_long.pdf&usg=AOvVaw1no-Th1Z_KpgNwfDQy-GEV

Development and potential of European biomethane
EBA statistical report 2020, p. 34
EBA annual report 2020, p. 17

Liquification Alternoil
https://www.energate-messenger.de/news/211244/anlage-fuer-bio-lng-soll-tankstellen-beliefern

CNG and Bio-CNG in Europe and Germany
https://www.ngva.eu/stations-map/
https://gas.info/presse-publikationen/gas-statistik/kenndaten-mobilitaet

LNG and Bio-LNG in Europe and Germany
https://www.ngva.eu/medias/ngva-europe-has-published-2020-gas-vehicle-statistics-and-europe-has-reached-a-new-gas-refuelling-infrastructure-milestone/
https://gas.info/die-initiative-zukunft-gas/plattformen-zukunft-gas/lenkungskreis-lng

LNG Fueling Station Network
www.dena.de/themen-projekte/projekte/mobilitaet/lng-taskforce-und-initiative-erdgasmobilitaet/

Session 2: TOWARDS NEGATIVE EMISSIONS MOBILITY

PANEL DISCUSSION

Marco Buffi, European Commission Joint Research Centre

Farid Trad, CMA–CGM

Jonas Strömberg, SCANIA buses and coaches

Maximilian Kurth, bmp greengas