

SIAPARTNERS

7th European Biomethane Benchmark

*Amid significant regulatory shifts in a swiftly evolving landscape,
over 1200 biomethane plants are currently operational*

Executive Summary



Current situation

By the end of 2022, **over 1200 biomethane plants** were officially registered across the key biomethane-producing nations in Europe. These production sites totalled a production capacity of **44 TWh of biomethane**, 90% of which was injected into the gas grid. A substantial opportunity for the expansion of biomethane production still exists, given that **only 6% of biogas plants in Europe have registered the biogas upgrading units** required for biomethane production. The primary feedstock for most biomethane plants is **agricultural residues**, which encompasses manure, crop residues and sequential crops. Biomethane production in Europe, on average, is sourced at 43% from agricultural residues, 27% from dedicated energy crops and 21% from organic waste.



Trends

The sector has grown steadily in recent years with an average **growth rate of biomethane production capacity of 21%** over three years. This increase is primarily driven by **strong growth in leading biomethane countries** like France as well as smaller players such as Italy and Finland, that have less mature biomethane industries but are experiencing comparable levels of growth. Certain countries - including major producer Germany, alongside Austria, Switzerland and Sweden - are facing stagnation within the sector. Changes have also been observed in the use of feedstocks: the use of dedicated energy crops has plateaued in recent years, while the use of **agricultural residues is on the rise, reflecting sustainability concerns within the sector.**

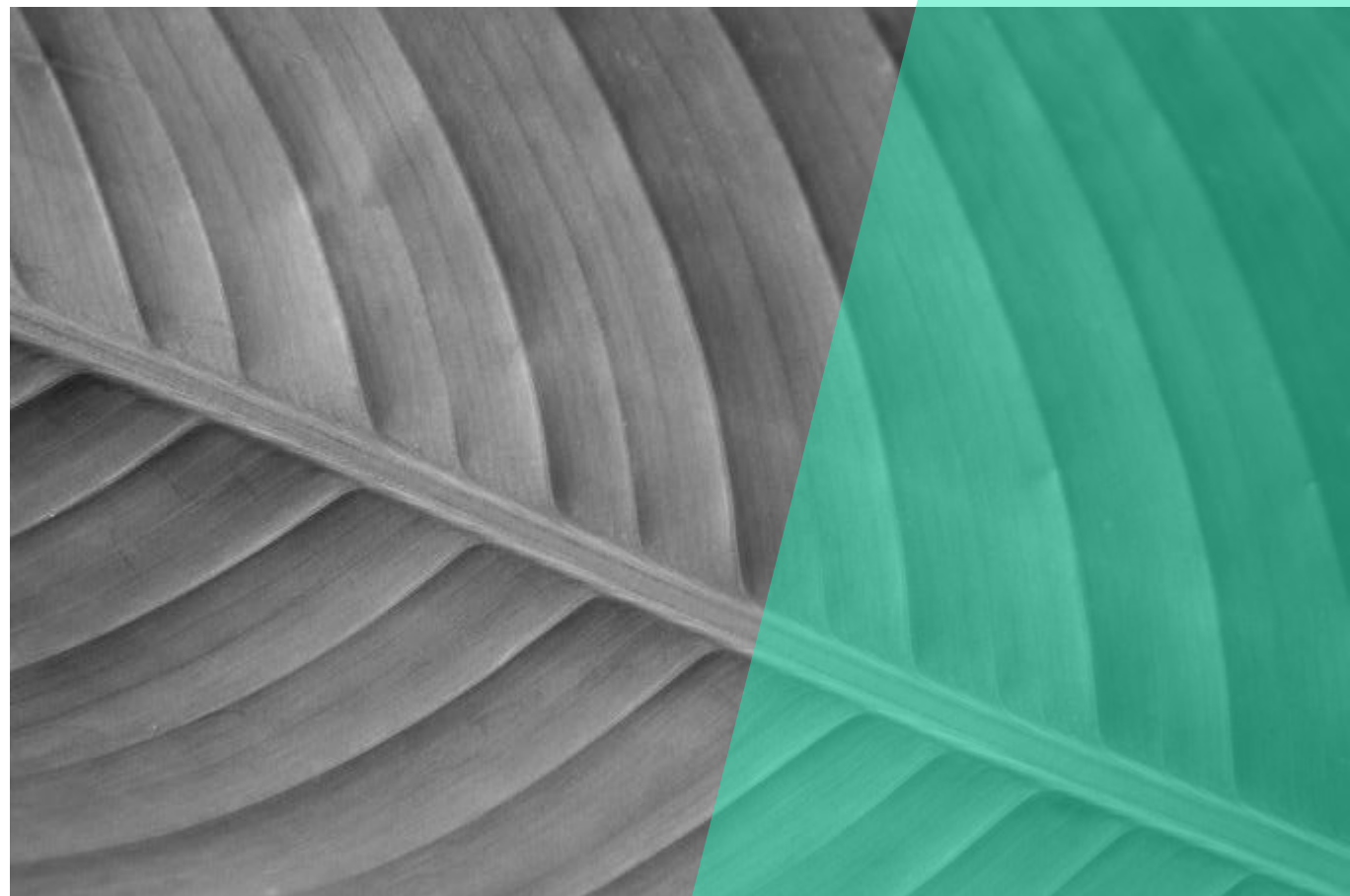


Regulatory Outlook

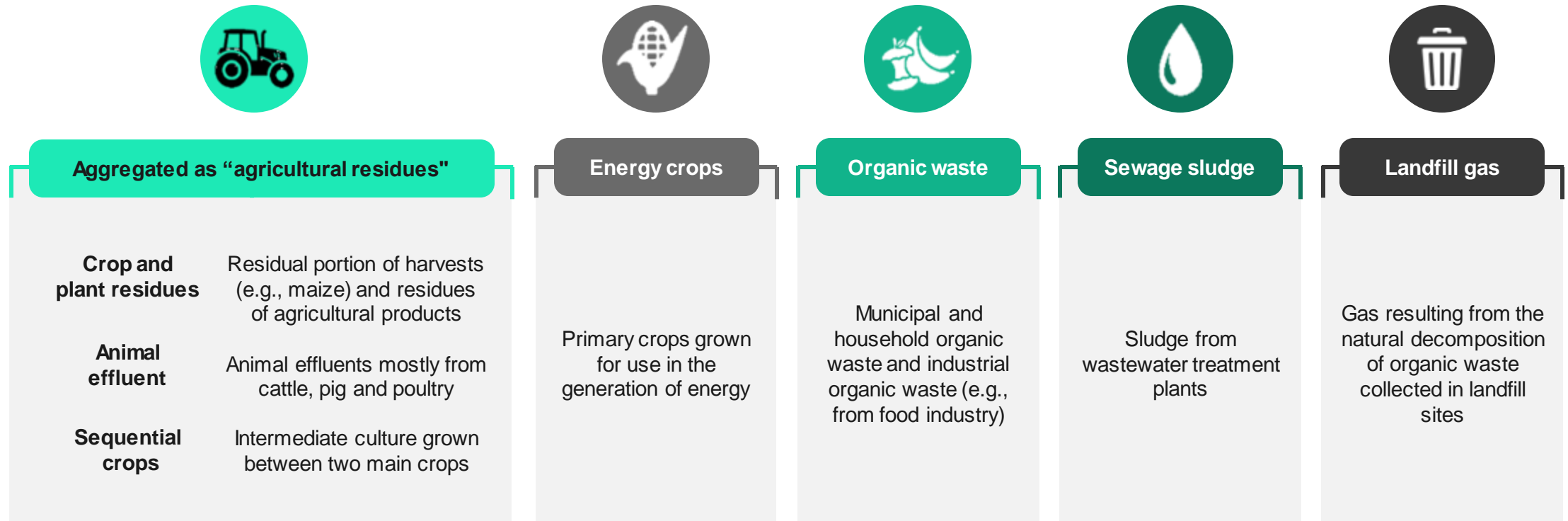
Countries with developed biomethane industries are shifting from investment subsidies and feed-in tariffs to **tendering systems**, in the hopes of reducing dependency on support mechanisms. Simultaneously, countries are also implementing **biomethane quotas** for energy suppliers, which is expected to be an effective measure to increase the integration of biogas systems in the energy mix. Furthermore, countries are also promoting the use of biomethane as a fuel by providing **consumption and carbon tax exemptions**, as well as by increasing **quotas for renewable fuels** as laid out by the Renewable Energy Directive (RED II). Recognizing the use of biomethane in the **Emissions Trading Scheme (ETS)** encourages the development of **Biomethane Purchase Agreements** between producers and industrial consumers. 2022 saw the launch of the **Biomethane Industrial Partnership (BIP)**, a collaborative initiative that involves various entities along the biomethane value chain with the purpose of accelerating the development of the biomethane sector on a European scale.

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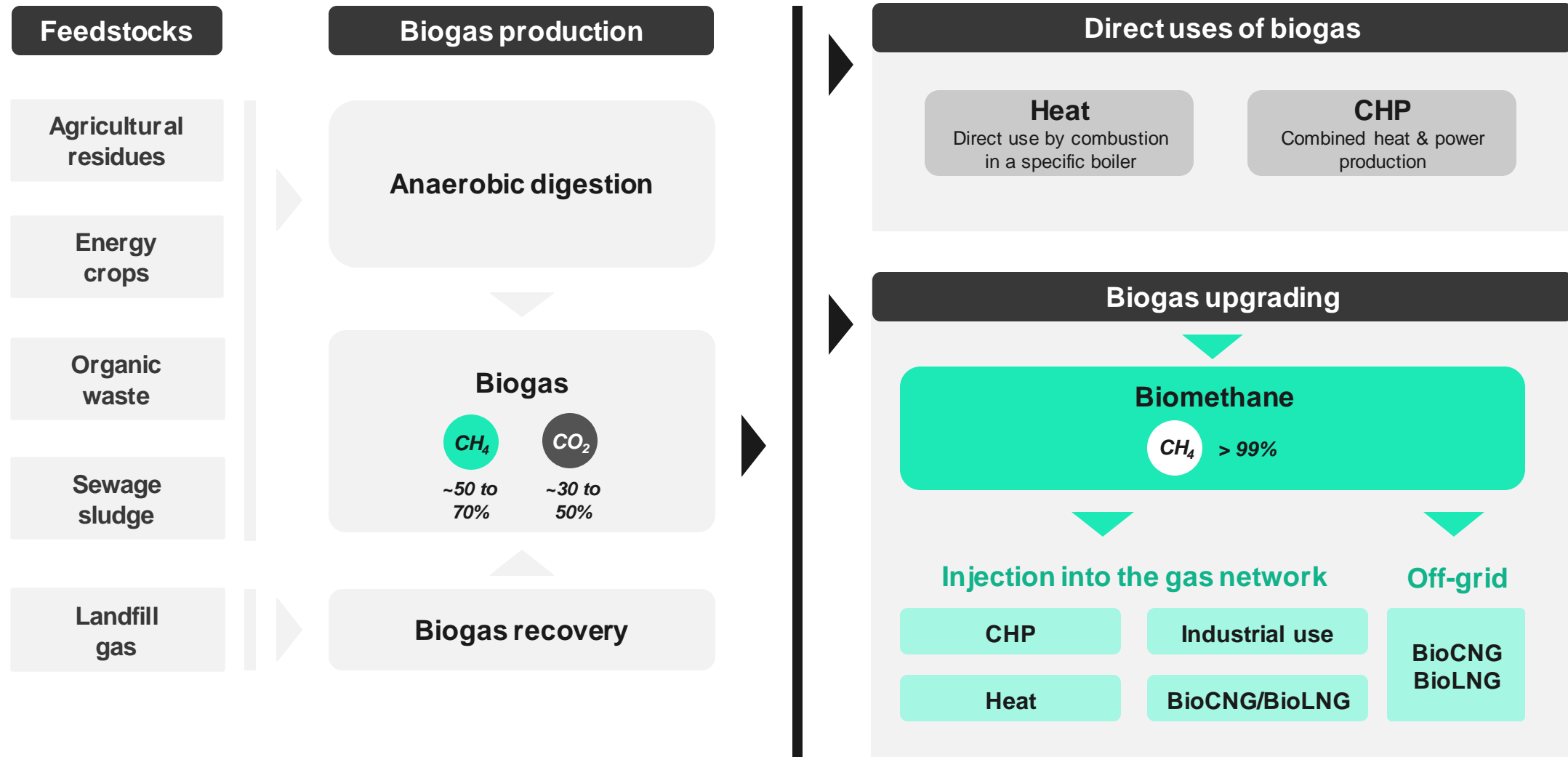
Introduction



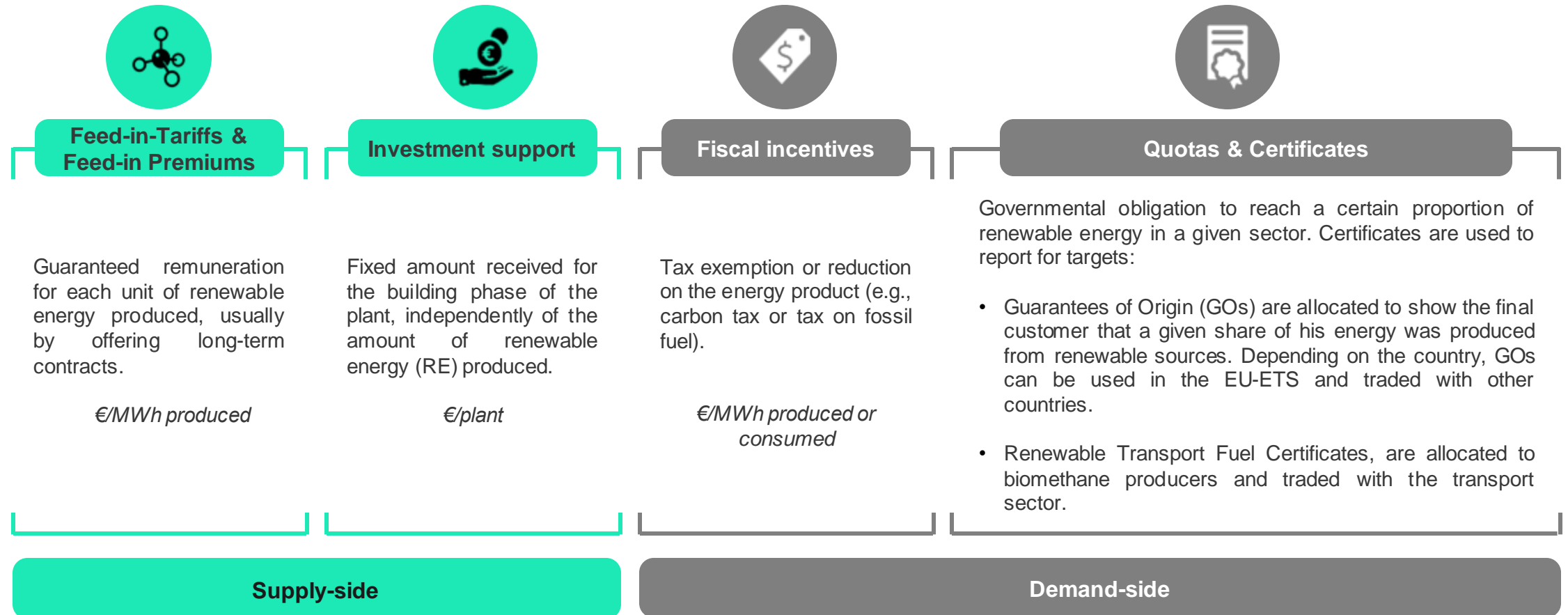
Introduction | Feedstock types for biogas production



Introduction | Biogas and biomethane production and valorization



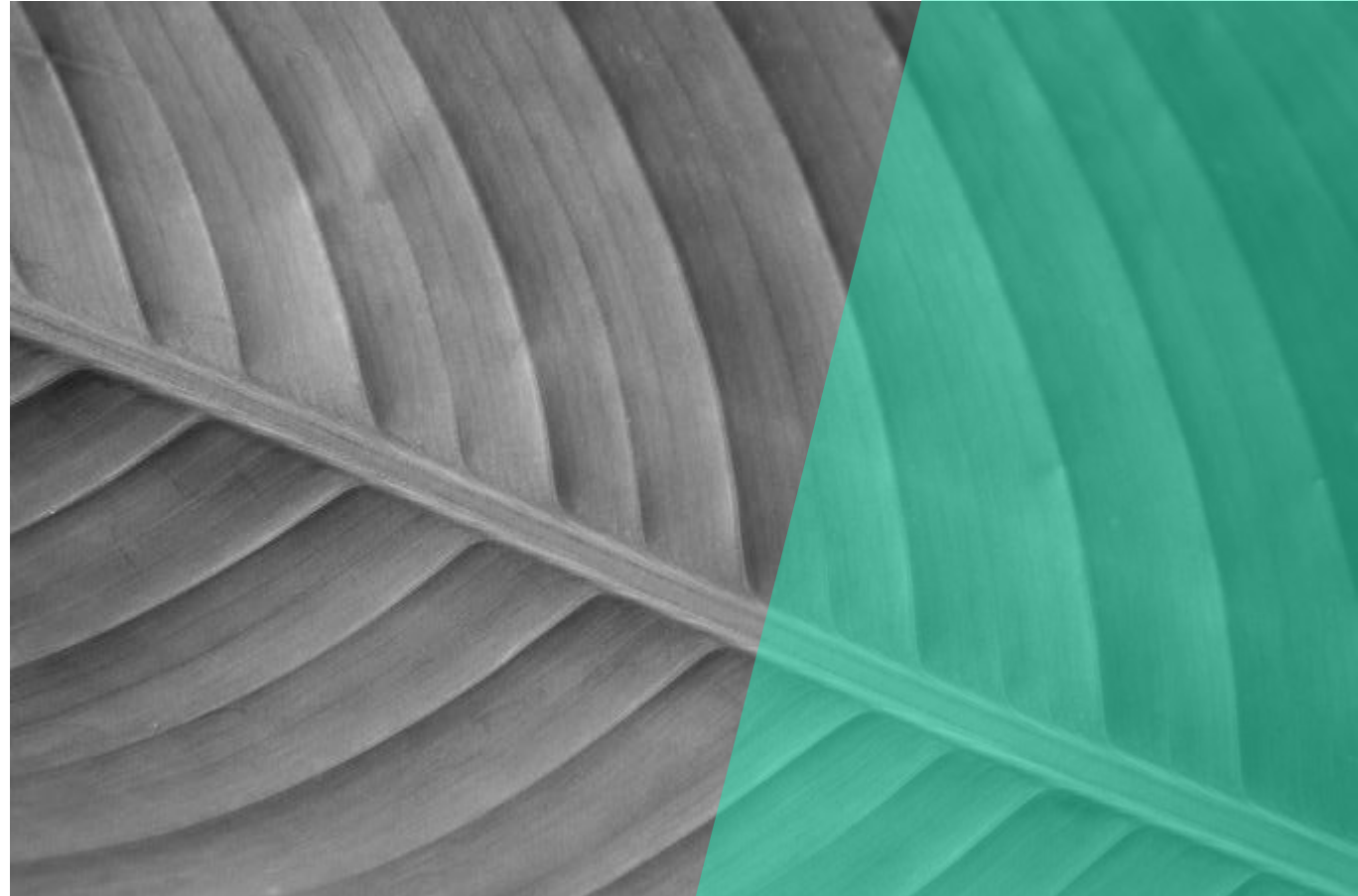
Introduction | Main support schemes



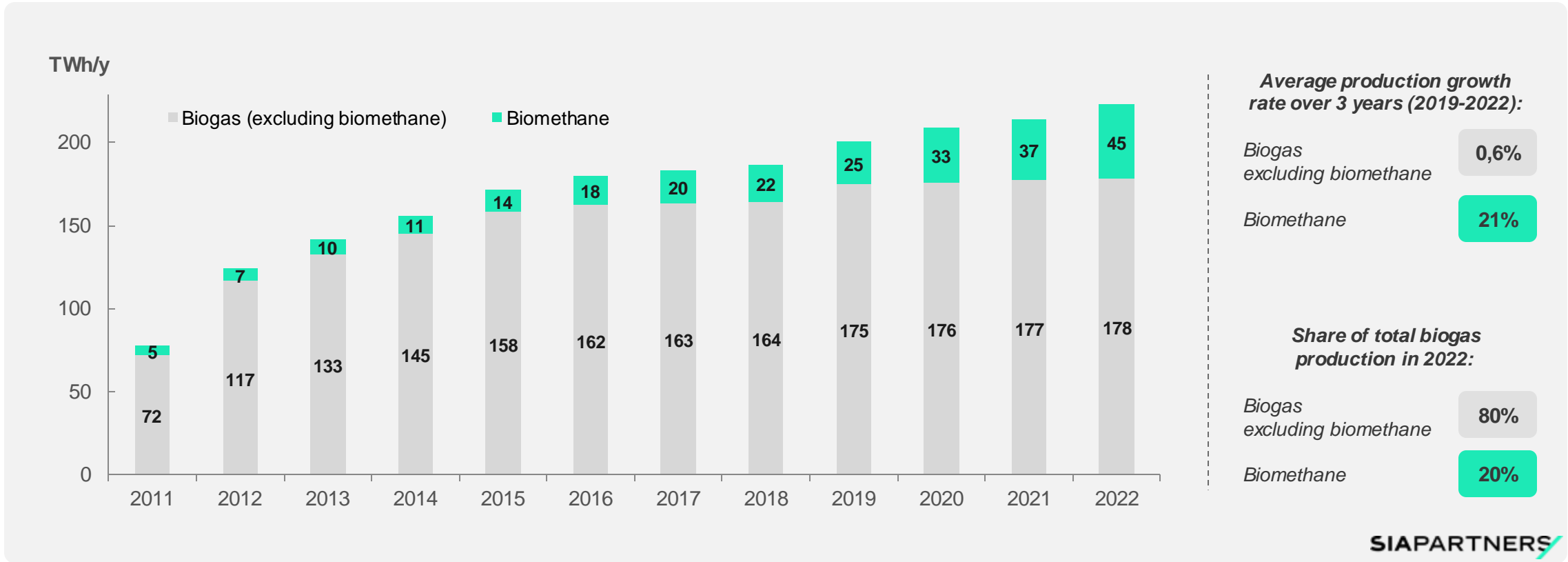
Other support mechanisms can complete the list such as vehicle incentives, etc.

2

Overview of biogas and biomethane production in Europe

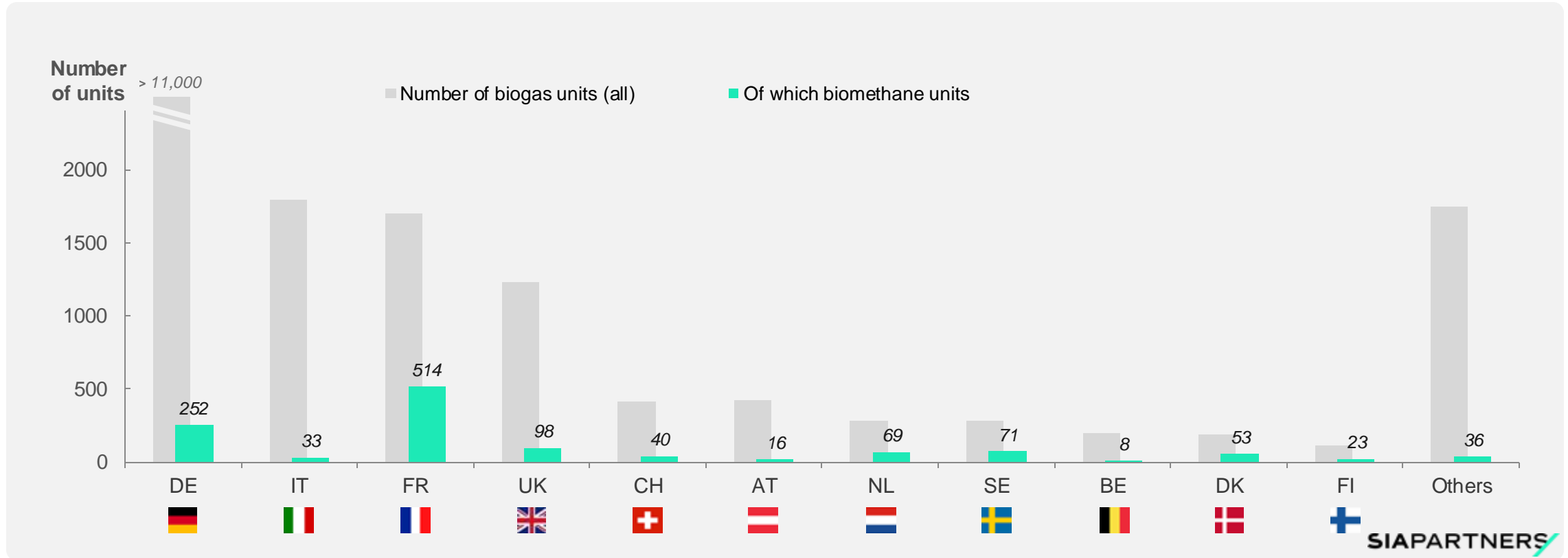


Europe | Growth in biogas and biomethane production



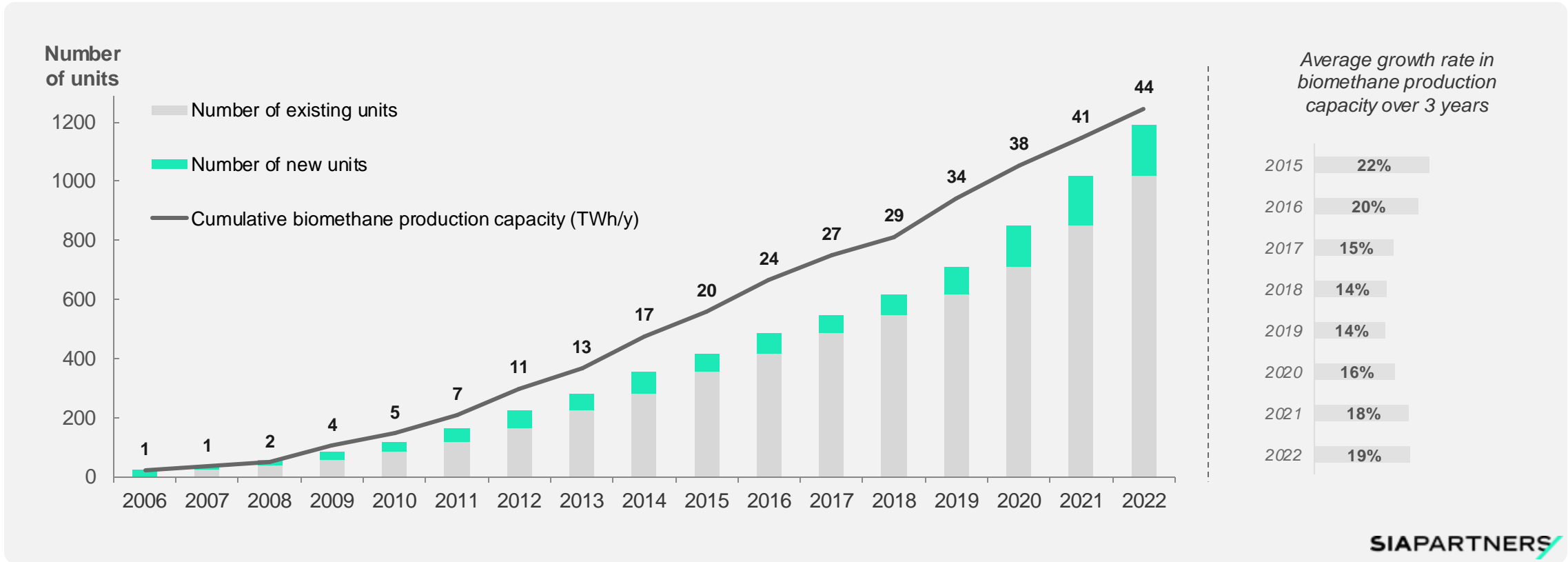
Initially concentrated in Germany, biogas production is being increasingly adopted across Europe. The industrialization of biogas upgrading and the implementation of national policies to promote biomethane have brought about significant changes in the last ten years. Raw biogas, primarily used for combined heat and power, has remained steady at approximately 175 TWh, while biomethane has surged sixfold during the same period.

Country comparisons | Number of biogas and biomethane plants



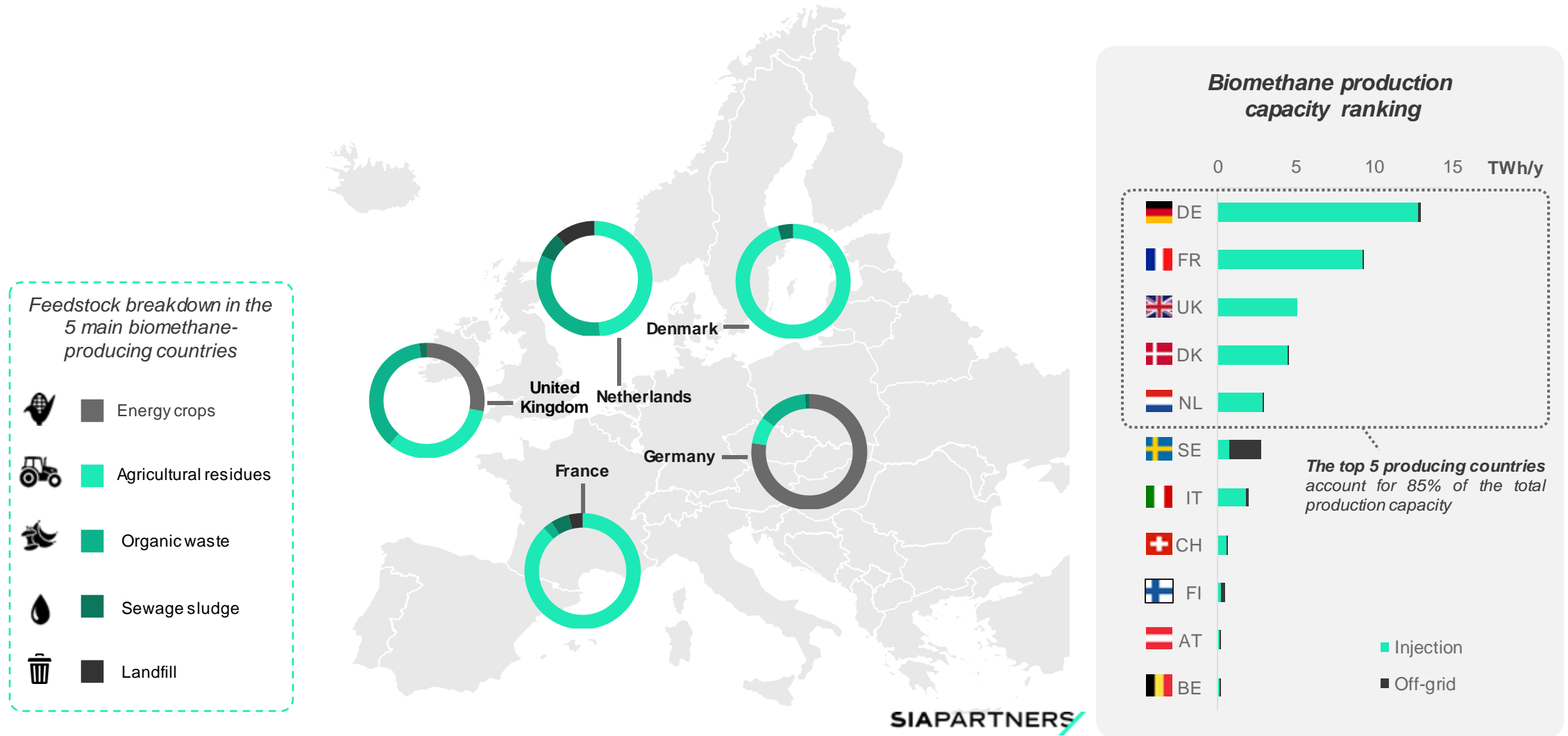
Germany and Italy have many biogas plants, but when it comes to biomethane facilities, they lag behind France. Among the other countries with a significant number of biogas and biomethane units, the Western and Nordic countries also have a notable presence. Other countries, such as Spain, should feature in this ranking next year, thanks to the promising growth of their biomethane sector.

Europe | Biomethane facilities and production capacity in the 11 main countries

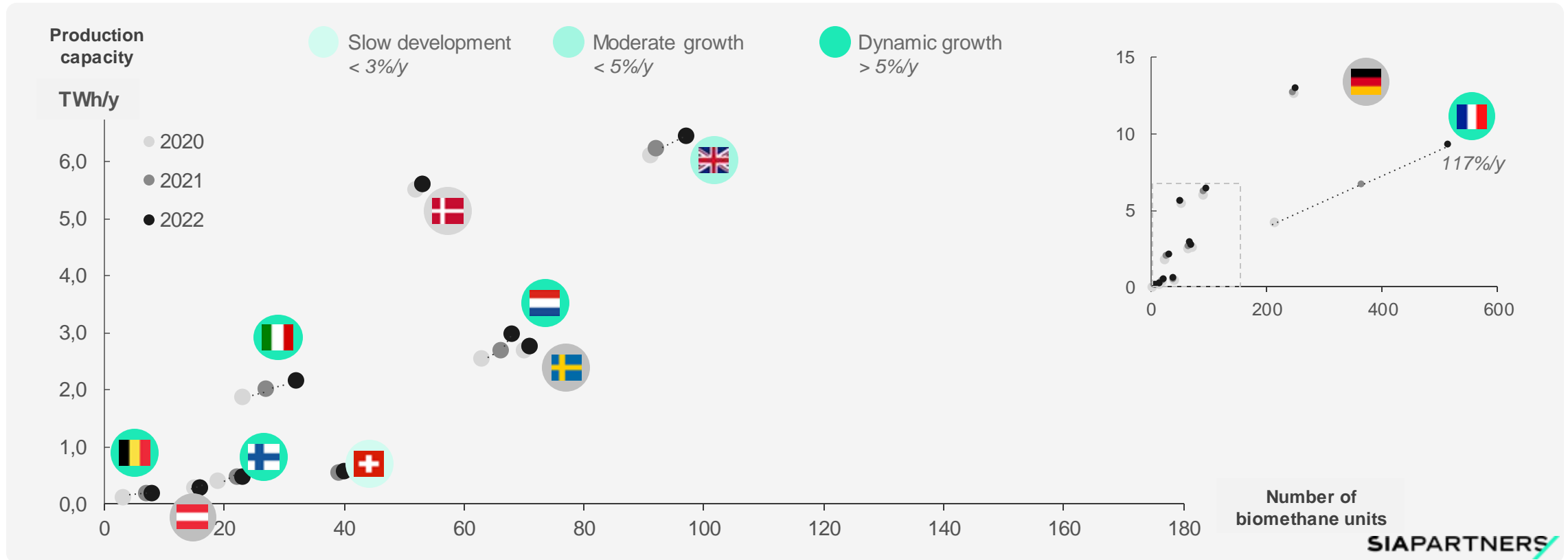


Over the past 15 years, biomethane production capacity has increased significantly to reach around 44 TWh/year by the end of 2022, while the number of biomethane production units has risen from around 25 in 2012 to over 1,200 units by the end of 2022. Following a period of stagnation from 2015 to 2018, growth resumed, boasting ever-increasing growth rates, averaging around 20% per year.

Country comparisons | Overview of European biomethane production capacity in 2022

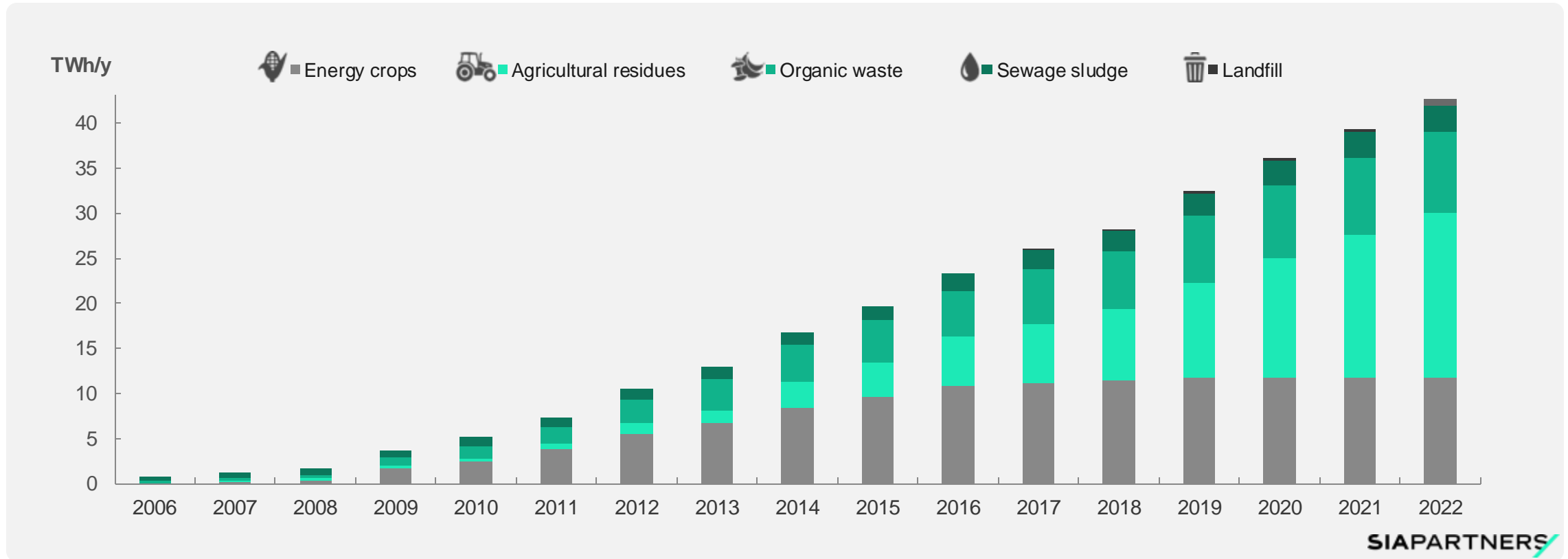


Country comparisons | Evolution of biomethane plants number and capacity over 3 years



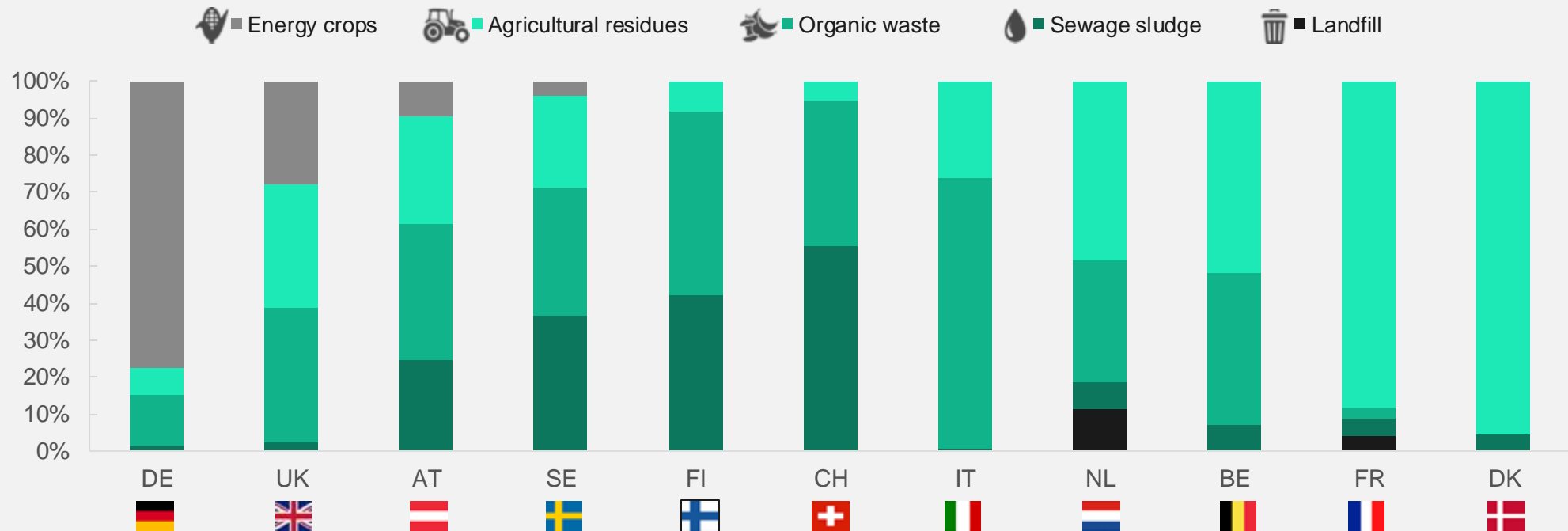
Countries show varying trajectories in the development of their biomethane production. The sector is stabilizing in Germany, Austria, Switzerland, and Sweden with minor changes. On the other hand, France, the Netherlands, Italy, and Finland are seeing significant growth, followed to a lesser extent by the United Kingdom and Denmark.

Europe | Evolution of the feedstock mix for biomethane production



The use of dedicated energy crops remains stagnant, as these environmentally controversial resources do not meet the sustainability criteria of RED II. They are either restricted or banned in various national schemes for use in the biomethane sector. Agricultural residues and organic waste are being used more extensively, highlighting a shift towards using waste for biomethane production as opposed to energy crops.

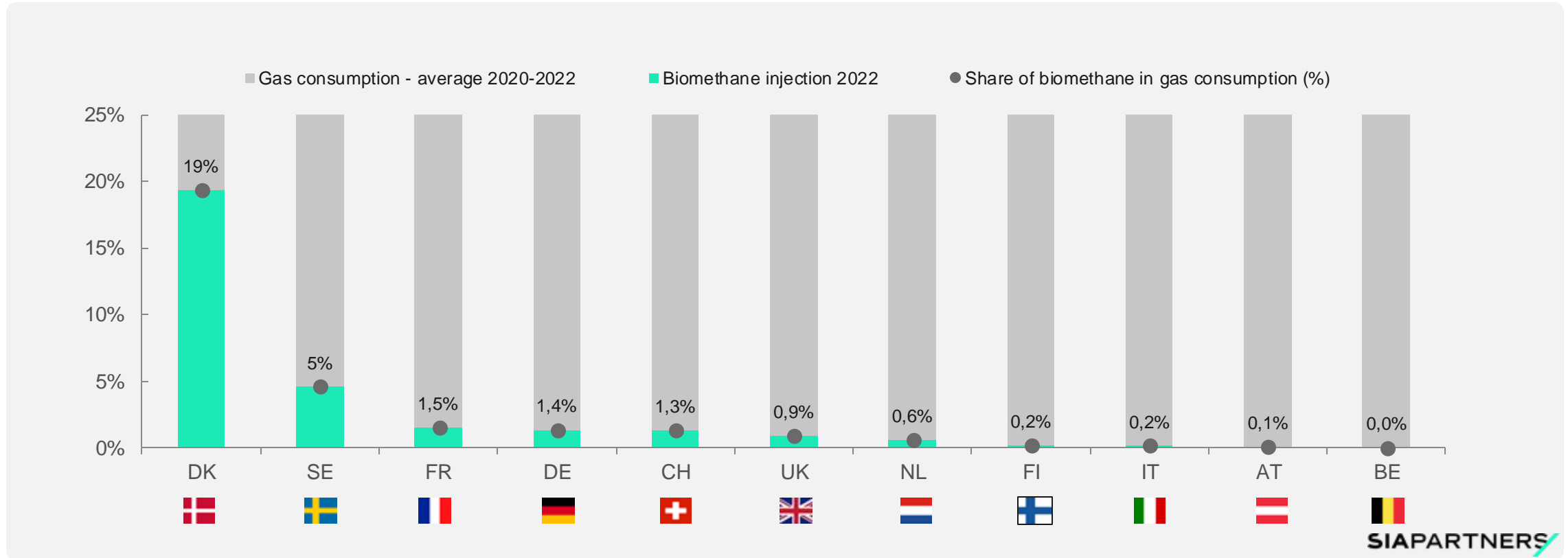
Country comparisons | Share of main feedstocks used by country



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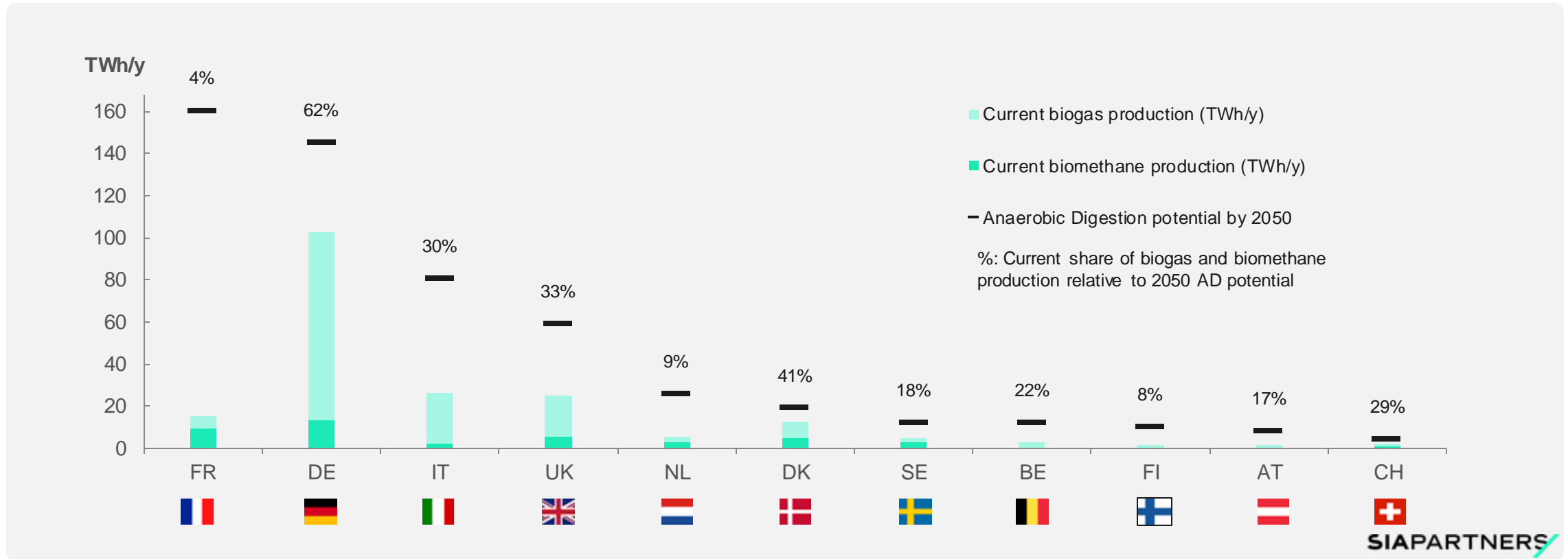
France, the Netherlands, Denmark, and Belgium mainly rely on agricultural residues to produce biogas. These feedstocks, accounting for 43% of the total mix used in 2022, represent a promising way to reduce methane emissions from agriculture. Dedicated energy crops are still widely used in Germany and the UK. Since their introduction in 2017, landfill gas usage has more than quadrupled but remains marginal.

Country comparisons | Share of biomethane in gas consumption



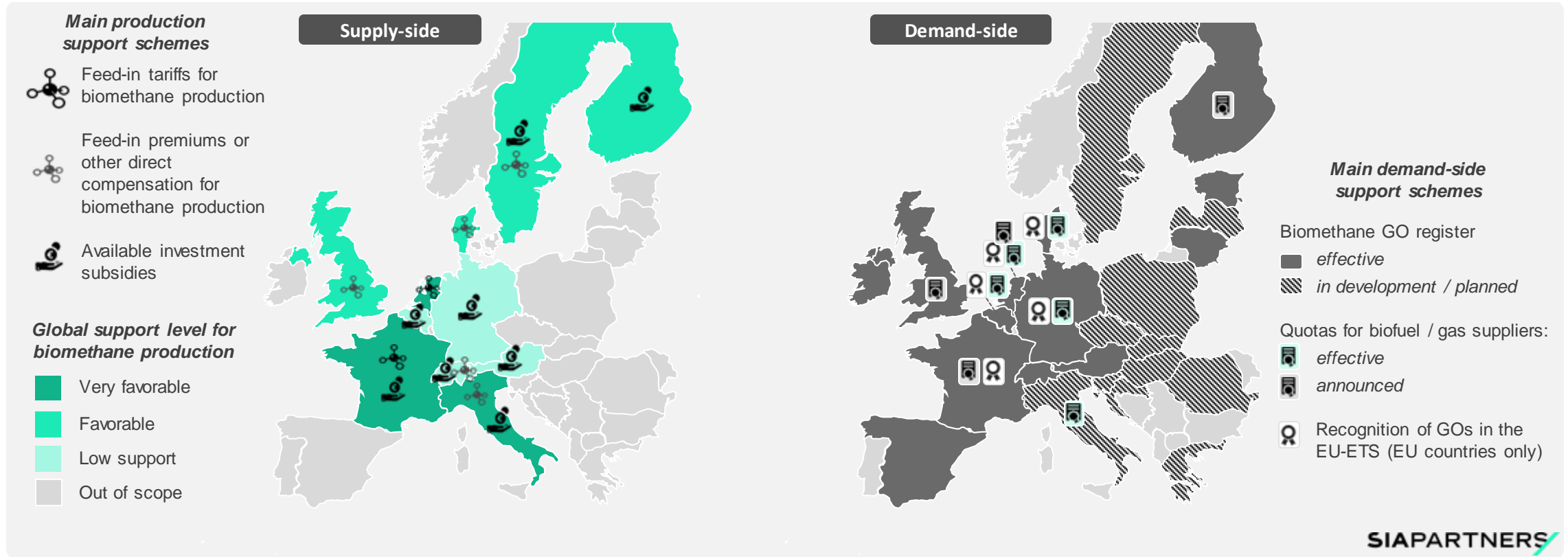
Denmark stands out for its already high proportion of injected biomethane in relation to its national gas consumption, with 19% in 2022, followed by Sweden with around 5%. In other countries, biomethane accounts for less than 2% of national gas consumption. However, some countries are making great progress, such as Denmark, which has reached almost 40% by 2023, and France, which had already exceeded 2%.

Country comparisons | Biogas and biomethane production compared to AD 2050 potential



Biomass deposits vary across countries, and the degree of their utilization hinges on the biomethane sector's maturity. Germany stands out with a high utilization rate of deposits, exceeding 60% of the expected potential in 2050. Additionally, Switzerland, Denmark, Italy, and the UK are noteworthy, as they already capture between 30% and 40% of their AD potential.

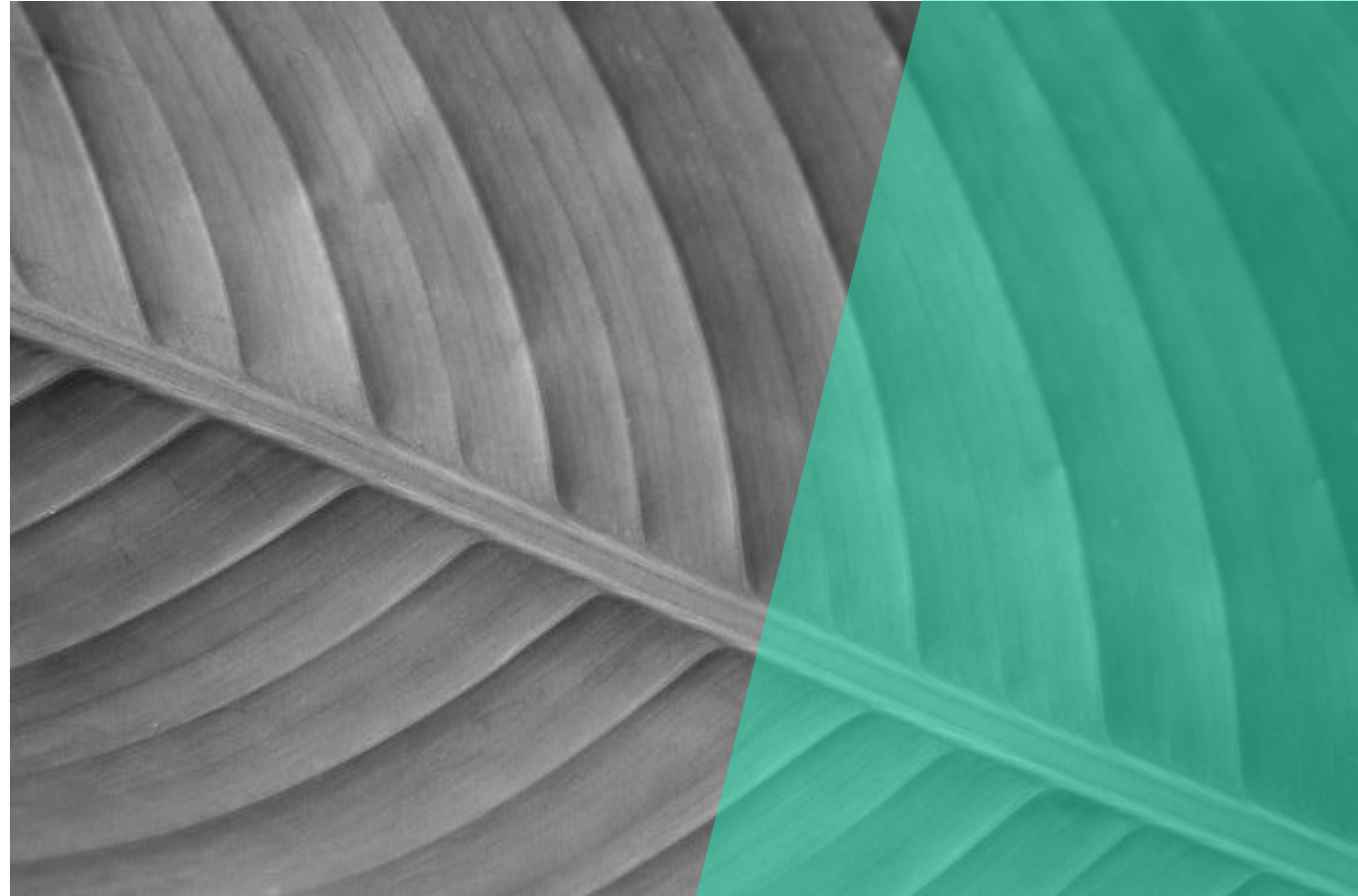
Country comparisons | Regulatory support schemes in the 11 main countries



European countries are following different biomethane support strategies. While some countries have decided to focus on supporting supply by setting up feed-in tariffs or investment subsidies, most countries are generalizing demand-side incentives, notably through quotas and by organizing the GO market. The recent record gas prices and the ambition to produce 35 bcm by 2030 have accelerated the development of various support schemes.

3

Country factsheets

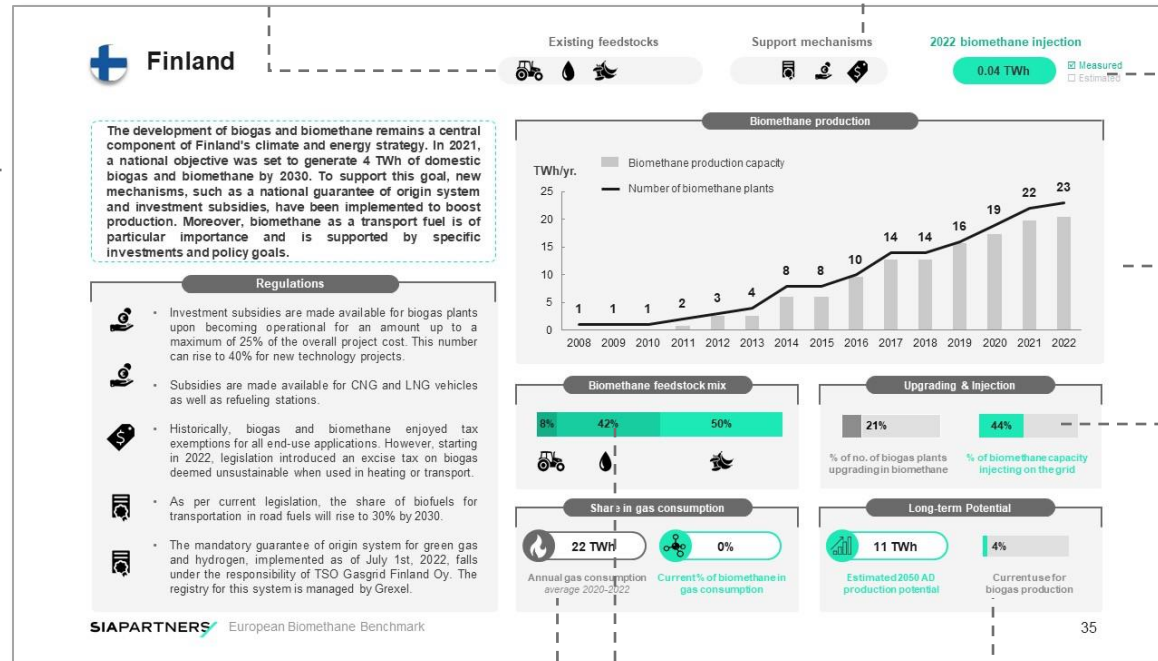


Country factsheets: how to read



Synopsis of the current situation of biomethane sector in the country

Description of the regulatory system and support mechanisms helping biomethane production and demand



Biomethane volume injected into the gas network (TWh/y)

Number of biomethane plants and capacity evolution over the past 10 years (production capacity in TWh/y)

Biogas upgrading rate (Number of biomethane plants / Total number of biogas plants)

Grid injection rate (Injecting biomethane capacity / Total biomethane capacity)

Annual gas consumption

Biomethane in gas consumption (Injected biomethane / Gas consumption)

Breakdown of biomethane units based on the main type of feedstock

Estimated AD production potential

Use of 2050 potential for current production (Biomethane production capacity / Estimated AD potential)



Austria

Existing feedstocks



Support mechanisms



2022 biomethane injection

0.1 TWh

Measured
 Estimated

In recent years, growth in the Austrian biomethane sector has plateaued. Despite stated commitments to support the sector, the incentives currently in place lack appeal for producers. The Law on the Expansion of Renewable Energies (EAG), which came into force in 2021, is expected to inject fresh dynamism into the industry

Regulations



Austria has had a feed-in tariff scheme in place since 2012 for electricity producers who use biogas to produce electricity. With the EAG, for the first time, direct incentive schemes will be introduced for biomethane injection into the gas grid.



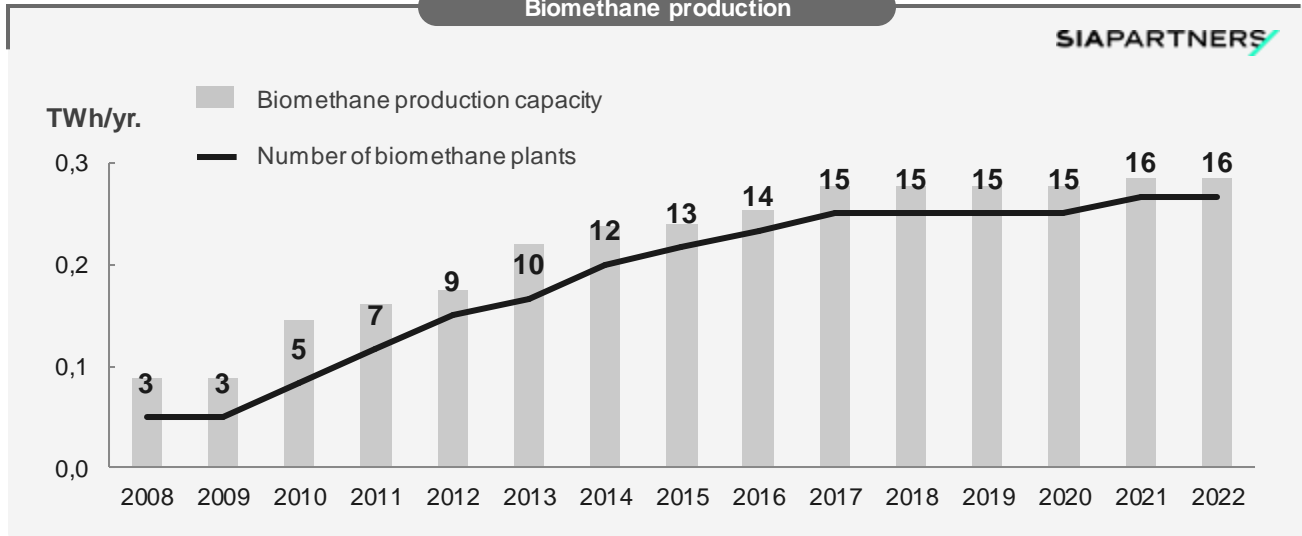
Plants relying on previous FiTs will receive investment support to convert large plants into biomethane injecting plants. A follow-up premium will be introduced for 30 years for plants with a capacity $\leq 250\text{KWe}$. For plants $\geq 250\text{KWe}$ located around a gas grid ($\leq 10\text{km}$), the premium will be granted for 24 months.



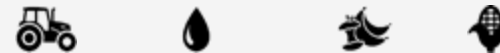
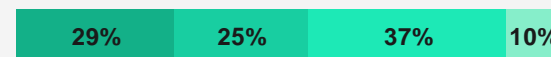
Guarantees of Origin are monitored by the AGCS (Austrian Biogas Register). International agreements have been established to enable the trade of GOs with Denmark, Germany and the UK.

Note : To ensure sustainability, there will be an annual limit on the proportion of energy crops.

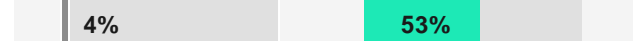
Biomethane production



Biomethane feedstock mix



Upgrading & Injection



% of no. of biogas plants upgrading in biomethane % of biomethane capacity injecting on the grid

Share in gas consumption



Annual gas consumption average 2020-2022 Current % of biomethane in gas consumption

Long-term Potential



Estimated 2050 AD production potential Current use for biogas production









0.1 TWh

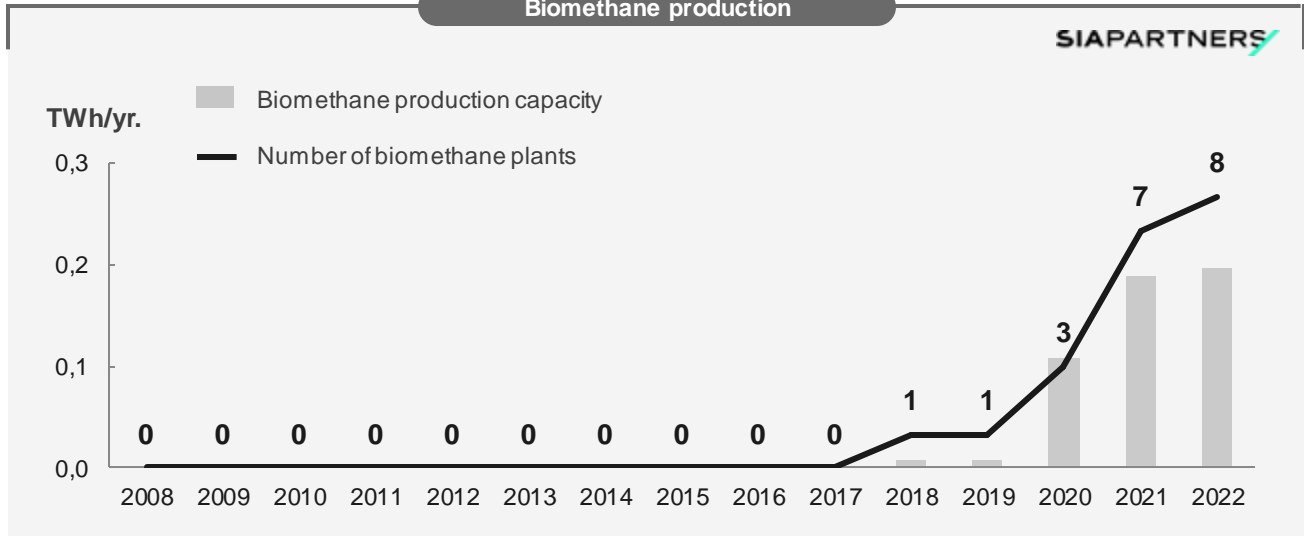
Measured
 Estimated

The Belgian biomethane sector is experiencing growth, although it is still in its early stages. The country benefits from limited support mechanisms. In Flanders, the focus continues to be on the production of electricity from biogas, despite the availability of GOs and the potential to use them within the EU-ETS. Wallonia is catching up and has demonstrated its intention to investigate activation methods to encourage the deployment of biomethane.

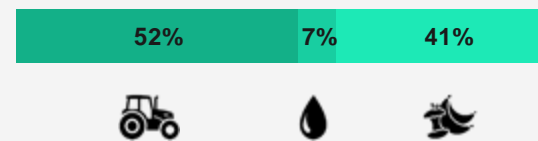
Regulations

-  A system of Guarantees of Origin (GOs) has been introduced by the Flemish regulator (VREG). GOs can be traded with foreign European countries following specific rules.
-  The 'Guarantees of Origin Labels' (LGO) handled by the Walloon administration (SPW) currently supports local CHP installations. The government has announced its intention to reform the certification system, notably by introducing a biogas GO register and a renewable gas incorporation rate for energy suppliers.
-  In Wallonia and Flanders, investment support schemes exist but remain fairly limited¹. The lengthy permit acquisition process is a notable obstacle to new projects.
-  Both regions support CNG and LNG for duty vehicles².
-  Minimum quotas for biofuels are imposed for transport (RED II). Being an advanced biofuel, biomethane can be counted twice. Penalties are imposed for failing to meet quotas.
-  GOs can be used in Flanders to reduce EU-ETS allowances.

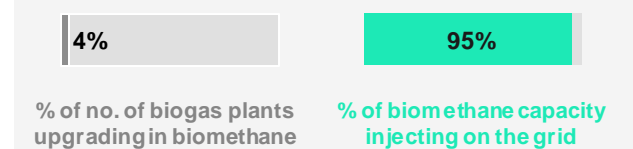
Biomethane production



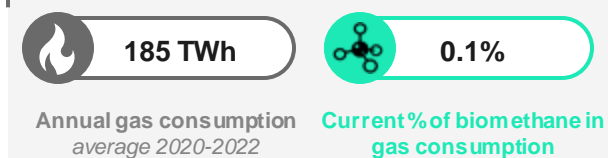
Biomethane feedstock mix



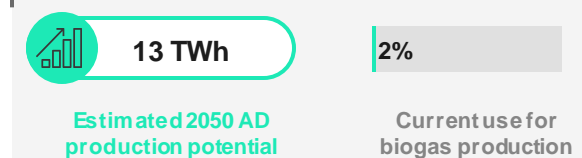
Upgrading & Injection



Share in gas consumption



Long-term Potential





5.6 TWh

Measured
 Estimated

The Danish biomethane sector has experienced fast growth since the introduction of feed-in tariffs in 2012. In 2022, the amount of biomethane injected into the gas system reached 19% of national gas consumption. In September 2023 as much as 39% of national gas consumption consisted of biomethane. The Danish Government aims to substitute 100% of natural gas consumption with biomethane before 2030.

Regulations



- A new fixed support tariff is set to launch in 2023 for new plants commissioned after 2020. The Danish Energy Agency is currently working on the framework for the new tariff, with a first tender set to open in 2023. Production plants in operation in 2020 will continue to receive the feed-in tariffs guaranteed from subsidies for at least 20 years after their commissioning or until 2032.



- Minimum quotas for biofuels are imposed for transport (RED II). Since biomethane is considered an advanced biofuel, it can be counted twice. Fuel suppliers failing to fulfil the GHG reduction quotes may be fined.

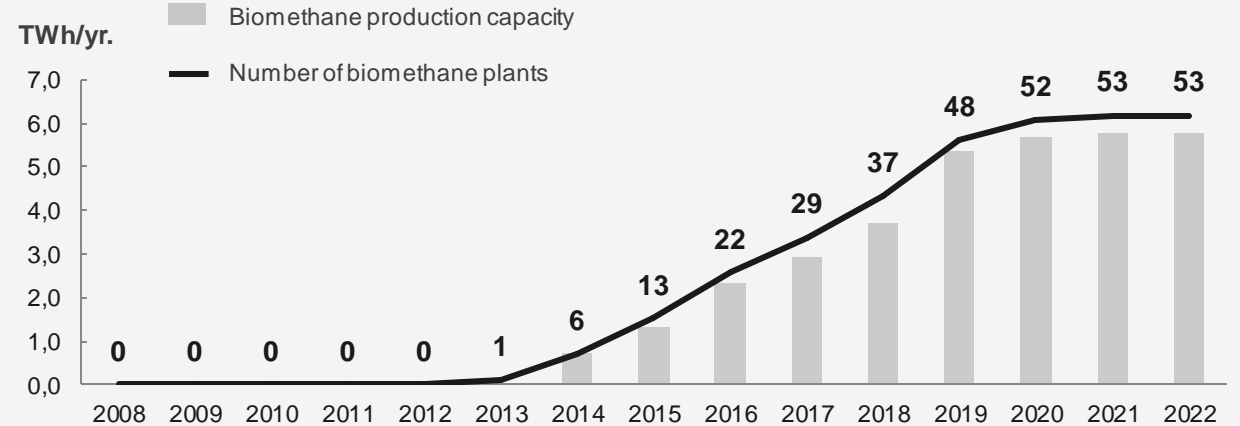


- Energinet manages the GO registry: it registers and issues Guarantees of Origin to biogas producers that inject biomethane into the gas grid. These GOs can be transferred to other European countries, with a majority being exported to Sweden and Germany.

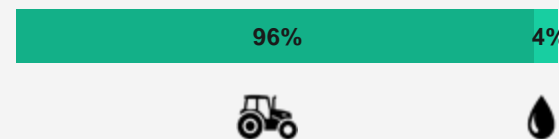


- The GOs are recognized in the EU-ETS.

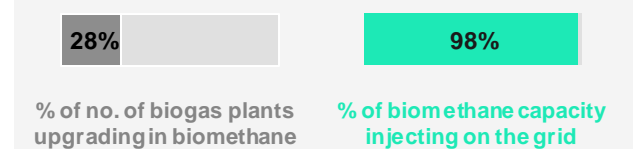
Biomethane production



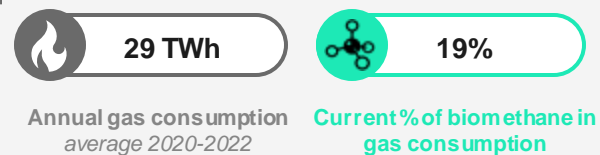
Biomethane feedstock mix



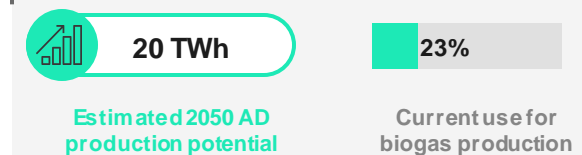
Upgrading & Injection



Share in gas consumption



Long-term Potential





< 0.1 TWh

□ Measured
 ☑ Estimated

The development of biogas and biomethane is a key component of Finland's climate and energy strategy. In 2021, a national objective was set to generate 4 TWh of domestic biogas and biomethane by 2030. To support this goal, new mechanisms, such as a national GO system and investment subsidies, have been implemented. Special attention is given to the use of biomethane as a transport fuel, with specific investments and policy objectives.

Regulations



- Investment subsidies of up to 25% of the overall project cost are made available for biogas plants upon becoming operational. This number can rise to 40% for new technology projects.



- Subsidies are made available for CNG and LNG vehicles as well as refueling stations.



- Historically, biogas and biomethane have been eligible for tax exemptions for all end-use applications. However, from 2022 onwards, an excise tax will now be applied to biogas considered unsustainable for heating or transportation.

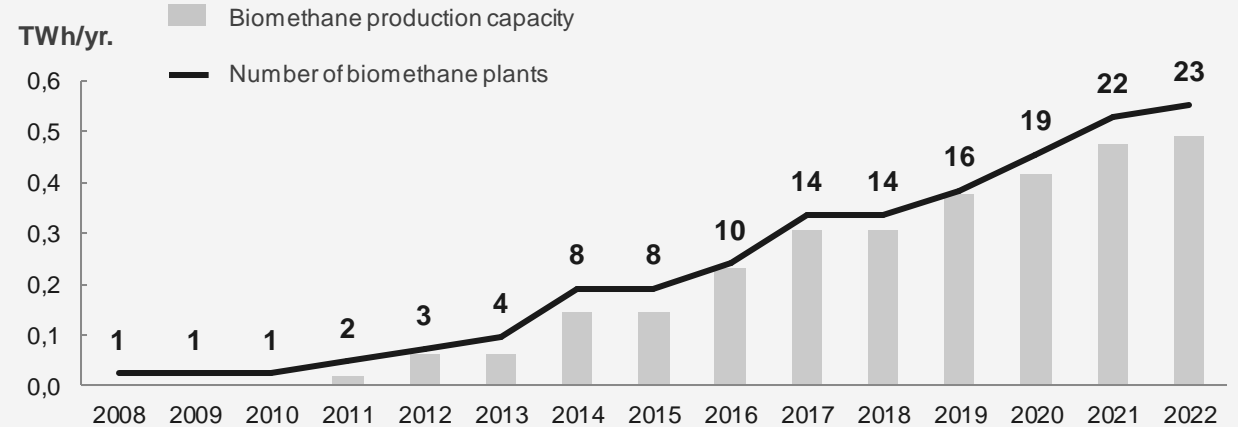


- Current legislation states that the share of biofuels for transportation in road fuels will rise to 30% by 2030.



- The mandatory Guarantee of Origin system for green gas and hydrogen, implemented as of July 1st, 2022, falls under the responsibility of TSO Gasgrid Finland Oy. The registry for this system is managed by Grexel.

Biomethane production



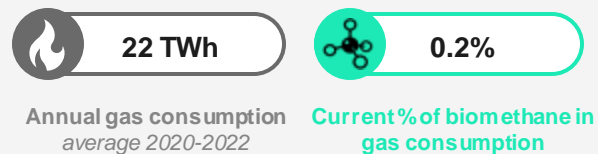
Biomethane feedstock mix



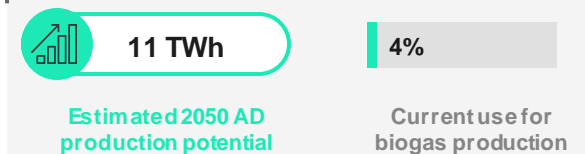
Upgrading & Injection



Share in gas consumption



Long-term Potential










6.9 TWh

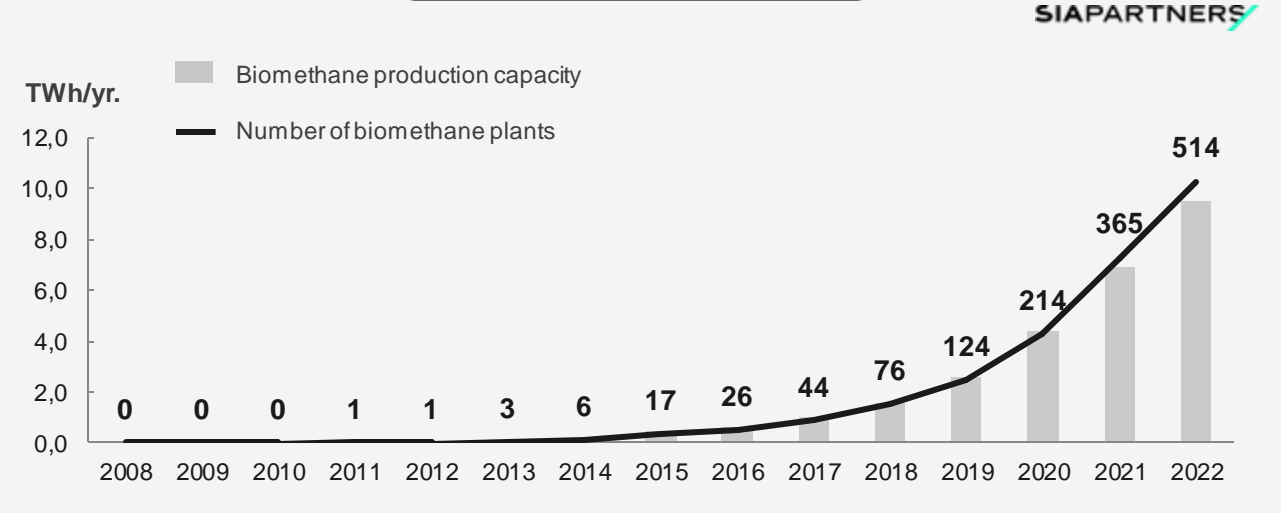
Measured
 Estimated

The French biomethane industry is witnessing significant growth, solidifying its leading position in Europe. Biomethane capacity is expected to continue to increase until 2024, but new measures will be necessary to guarantee sustained growth in the sector beyond that point. New measures are being studied to achieve this. The sector has revised its target to 20% renewable gas by 2030.

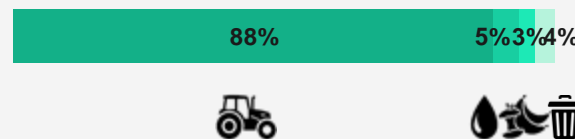
Regulations

-  DSOs and TSOs contribute up to 60% of the connection costs to the distribution and transmission grids.
-  FiT, reserved for small projects under 25 GWh/year, have been raised to account for inflation. Calls for tenders for larger projects have not yet been published.
-  The Biogas Production Certificates scheme announced by the government is becoming more detailed : natural gas suppliers will need to incorporate unsubsidized biogas starting in 2026.
-  The GO registry is to be managed by a new operator (EEX) and is currently being revised to enable trading with other countries as well as the recognition of GOs in the EU-ETS
-  Local grants and subsidies are available to help funding biogas/biomethane projects.
 - Note 1: Plants are currently being certified to meet the sustainability criteria defined in RED II.*
 - Note 2: Energy crops are limited to 15% per plant.*
 - Note 3: There is no longer any tax exemption (TICGN).*

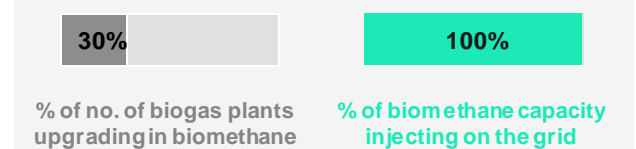
Biomethane production



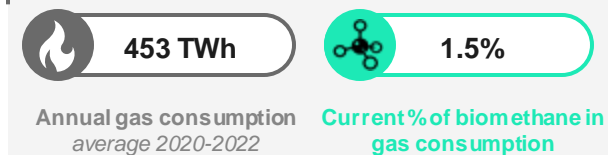
Biomethane feedstock mix



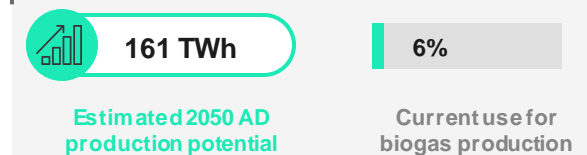
Upgrading & Injection



Share in gas consumption



Long-term Potential





Germany

Existing feedstocks



Support mechanisms



2022 biomethane injection

12.8 TWh

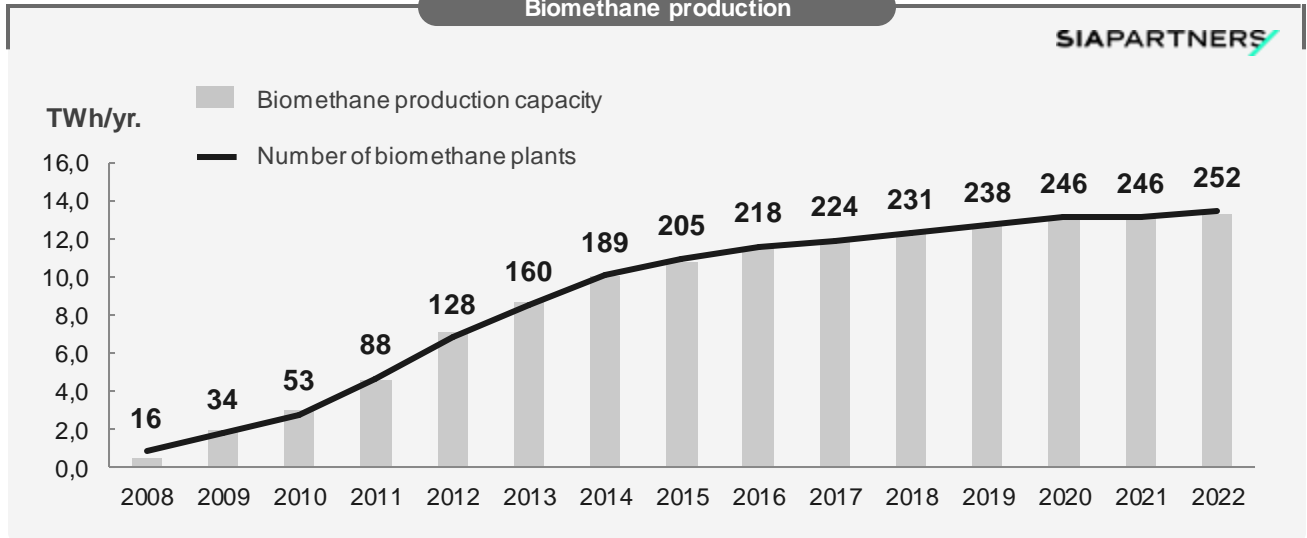
Measured
 Estimated

Germany maintains the highest biogas and biomethane capacity in Europe. However, the lack of direct support has hindered new initiatives. Growing efforts in fuel decarbonization are prompting producers to shift to biofuels. The current Renewable Energy Act (EEG) supports electricity and heat production from biogas and biomethane under strict rules. Regulation is increasingly focusing on small installations and sustainable feedstocks.

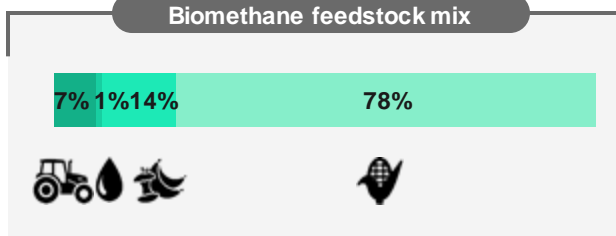
Regulations

- The Federal Immission Control Act (BImSchG) mandates GHG-based quotas for fuel suppliers, targeting reductions from 8% in 2023 to 25% in 2030.
- Upstream emission reduction certificates (UERV) are used in a register overseen by the Federal Environment Agency (UBA).
- GOs can be used by manufacturers in the EU-ETS and in the national ETS system (nEHS) covering transport.
- Operators pay up to €250,000 to connect biomethane plants located less than 1 km from the gas grid.
- As part of the EEG 2021, special tenders (200 - 600 MW) are available for new "flexible" plants in southern Germany that use biomethane for electricity production by CHP. A bonus is granted to small installations recovering livestock effluent.
For CHP as end uses
- A tax exemption exists for gaseous fuels, including BioLNG
- Note: Corn and grains are limited to 40% for biomethane installations*

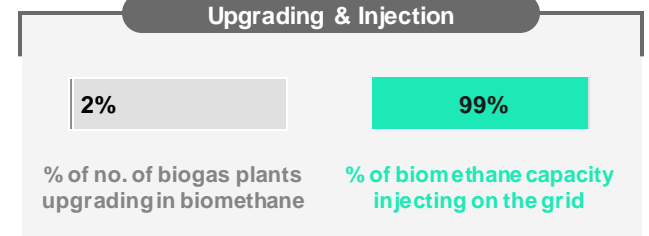
Biomethane production



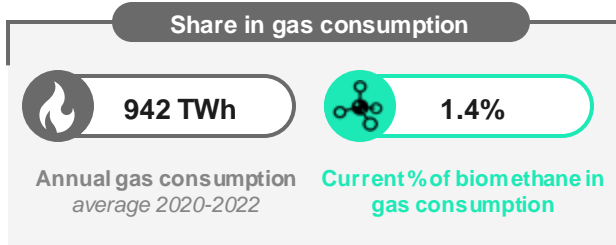
Biomethane feedstock mix



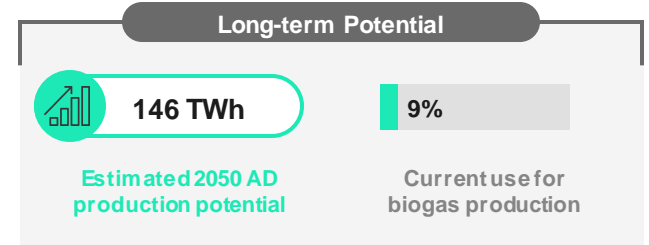
Upgrading & Injection



Share in gas consumption



Long-term Potential










1.2 TWh

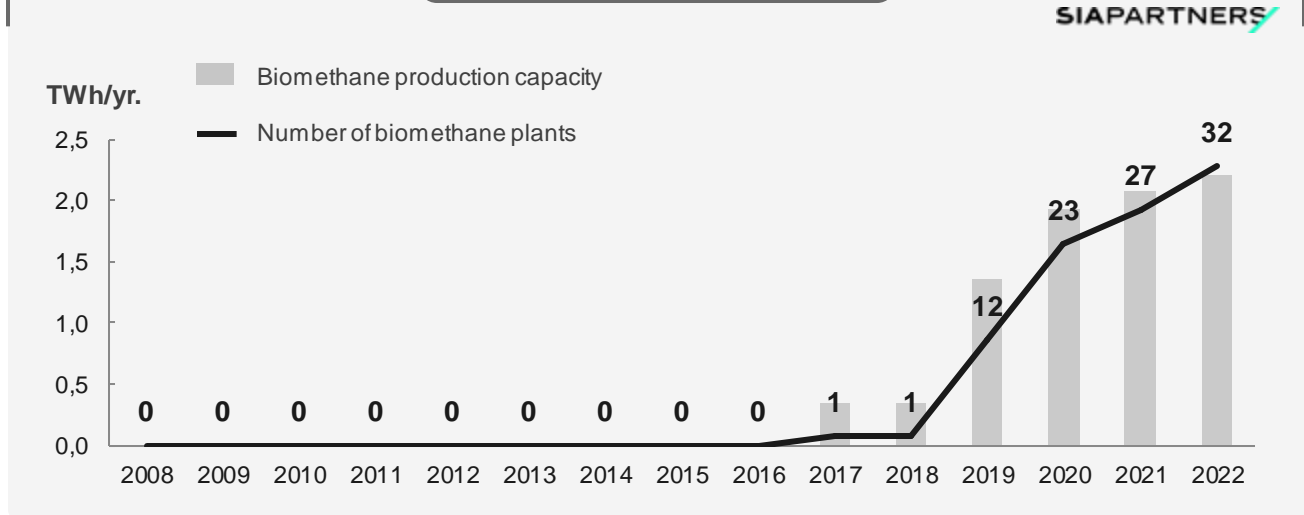
Measured
 Estimated

Within the framework of the post-Covid National Recovery and Resilience Plan, Italy has allocated almost 2 billion euros to spur the development of biomethane. In accordance with this plan, the new Biomethane Decree of September 2022 introduced two new financial mechanisms to boost biomethane production in Italy: a capital investment support scheme and a new incentive tariff mechanism.

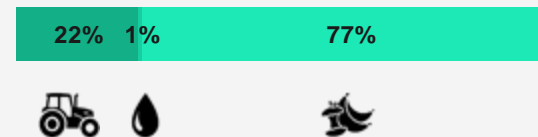
Regulations

-  In 2022, fuel suppliers are required to include 10% biofuels in their products, and out of this, 2% must be biomethane. To meet these targets, fuel suppliers can buy Certificates of Supply for Consumption (CICs).
-  Biomethane producers receive CICs based on the quality of their biomethane. For biomethane from advanced feedstocks, the value of the CICs doubles. Additionally, a 20% bonus in CICs is given for compression or liquefaction infrastructures.
-  Biomethane producers can obtain Guarantees of Origin, if they do not already receive CICs.
- The new Italian Biomethane Decree of September 2022 introduces two new financial support systems to boost biomethane production:
 -  A capital grant of up to 40% of construction costs for new biomethane plants.
 -  An incentive tariff applied to the net production of biomethane for a period of 15 years.
- Note that these incentives are tied to a tender process.*

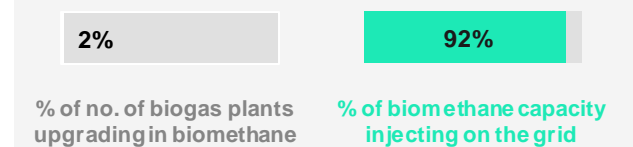
Biomethane production



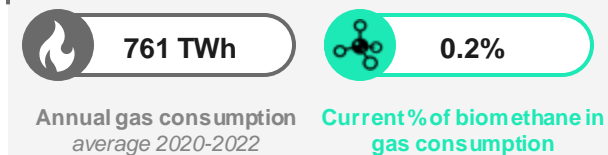
Biomethane feedstock mix



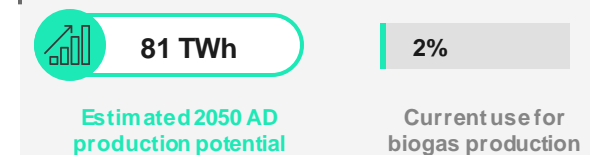
Upgrading & Injection



Share in gas consumption



Long-term Potential



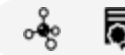


Netherlands

Existing feedstocks



Support mechanisms



2022 biomethane injection

2.3 TWh

Measured
 Estimated

The Dutch sector is steadily growing, driven by the country's goal to reach its production target of 2 bcm (21 TWh) by 2030. Producers are set to benefit from rising quotas in the Renewable Fuel Units (HBE) trading system. Furthermore, a FiT is in place to encourage the sector's growth. However, the country believes it cannot reach its objectives for biomethane through these incentives alone. A legislative proposal aims to tackle this by mandating a blending obligation.

Regulations



The SDE++ scheme offers a feed-in tariff that covers the non-profitable portion of production costs for 12 to 15 years via a tendering system. This feed-in tariff compensates the difference between the production costs and the market prices of the competing non-renewable energy.



In 2023, a legislative proposal introduced a blending obligation that will come into force in 2025. This blending obligation states that energy suppliers are obliged to supply 1.6 bcm of biomethane to the households and the service sector in 2030.



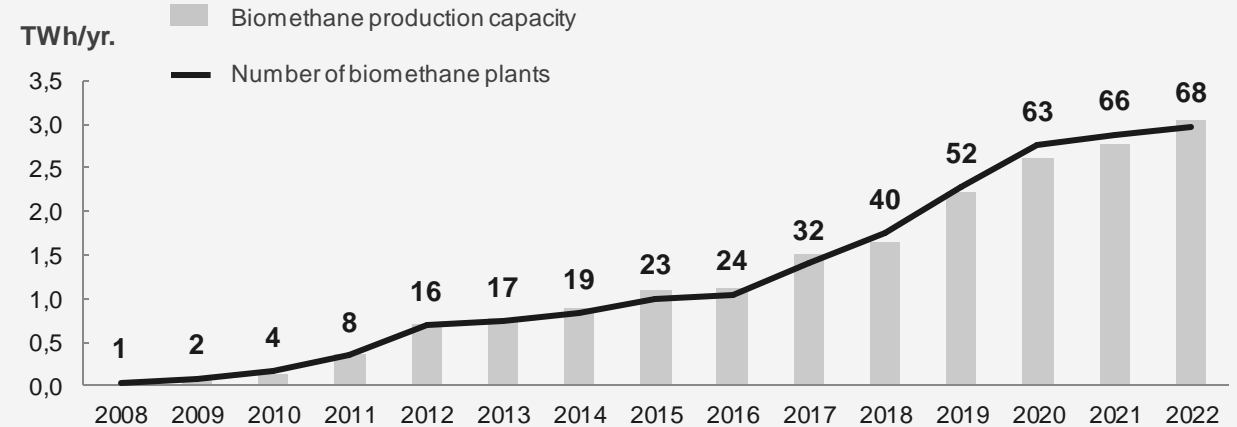
As of January 1st, 2022, Guarantees of Origin (GOs) can be used within the EU ETS.



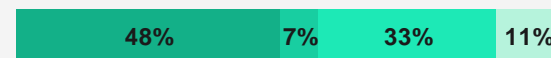
The Renewable Fuel Units (HBE) trading system (1 unit = 1GJ) forces fuel suppliers to increase the share of green fuel from 18.9% in 2023 to 28% in 2030. Biomethane producers cannot benefit from HBE and the SDE++ scheme at the same time.

Biomethane production

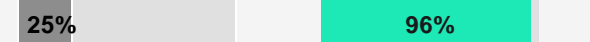
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Biomethane feedstock mix



Upgrading & Injection



% of no. of biogas plants upgrading in biomethane % of biomethane capacity injecting on the grid

Share in gas consumption



Annual gas consumption average 2020-2022 Current % of biomethane in gas consumption

Long-term Potential



Estimated 2050 AD production potential Current use for biogas production



0.6 TWh

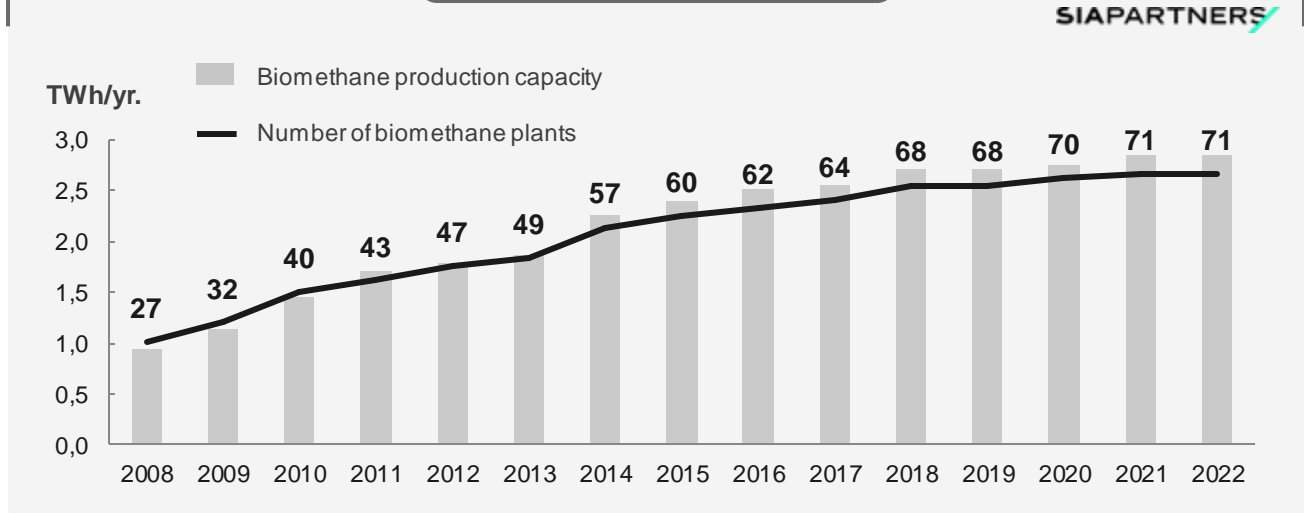
Measured
 Estimated

Sweden boasts a well-developed biogas and biomethane sector, despite most plants being off-grid. The transport sector stands out as the primary consumer of biomethane. The Swedish government is expected to announce a new strategy, including long-term support measures and a 10 TWh biomethane production target for 2030. However, a recent decision by the EGC, revoking the tax exemption for non-crop-based biogas, may pose a threat to future development.

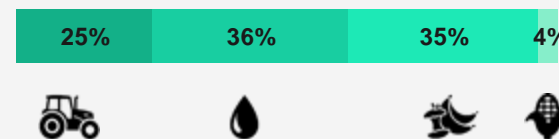
Regulations

- Historically, both biogas and biomethane have been exempt from CO₂ and energy taxes when used for heat, in CHP plants or for industrial purposes. However, a judgement by the General court of the EU in December of 2022 has annulled the exemption from energy and carbon taxes for non-crop-based biogas and bio-LPG.
- A new production scheme for upgraded biogas and BioLNG was introduced mid-2022. The feed-in premium has been raised up to 25 €/MWh of upgraded biogas to 40 €/MWh for BioLNG used for transportation
- The Swedish Energy Agency is working on a national Guarantee of Origin program for renewable gases, but its rollout has faced delays.
- The Local Climate Investment Program (2015-2026) provides investment support of up to 45% for all types of GHG reduction measures, including support for biogas plants as well as BioCNG and BioLNG filling stations.

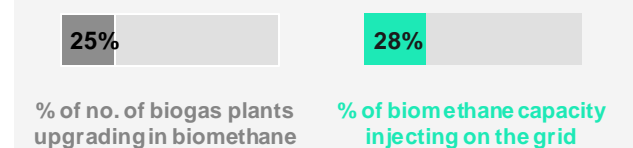
Biomethane production



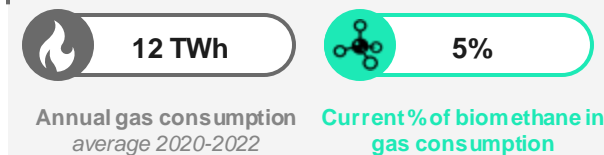
Biomethane feedstock mix



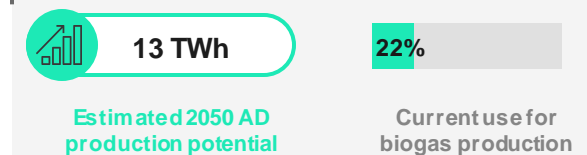
Upgrading & Injection



Share in gas consumption



Long-term Potential





0.4 TWh

Measured
 Estimated

The national biomethane sector remains stagnant. Despite support from the Swiss Gas Industry Association (VSG), the lack of strong subsidy schemes is holding back the large-scale development of the industry. With limited domestic deposits, the sector relies on imports. Although demand for BioCNG is significant and already results in massive GOs imports, the lack of clear regulations on carbon accounting is hindering its widespread use.

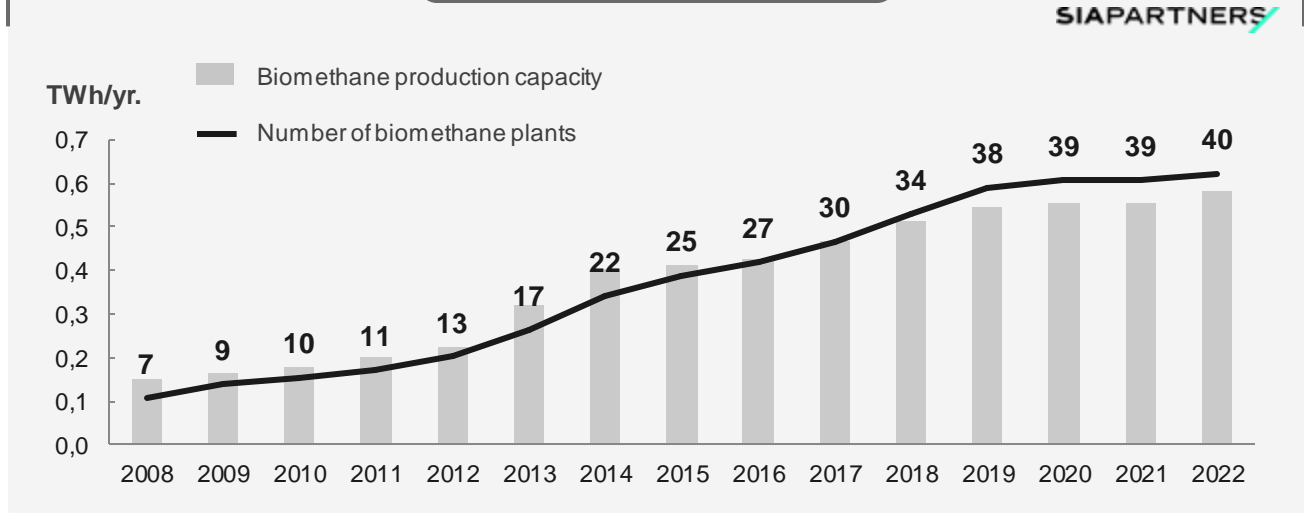
Regulations



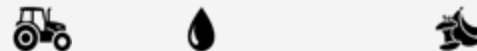
- VSG has created a fund to support new or expanded biomethane plants through:
 - An investment grant per Nm³/h,
 - A support per kWh for the first 36 months of injection,
 - An additional support per kWh from the grid operator for the first 36 months of injection.
- A carbon tax exemption exists for biomethane consumption for combustion or as a vehicle fuel.
- Note: A federal subsidy scheme exists for biogas used to produce electricity. Biomethane plants that inject into the gas grid are not eligible.*



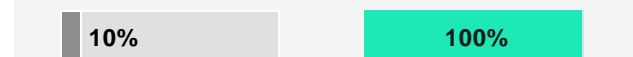
Biomethane production



Biomethane feedstock mix



Upgrading & Injection



% of no. of biogas plants upgrading in biomethane % of biomethane capacity injecting on the grid

Share in gas consumption



Annual gas consumption average 2020-2022 Current % of biomethane in gas consumption

Long-term Potential



Estimated 2050 AD production potential Current use for biogas production



United Kingdom

Existing feedstocks



Support mechanisms



2022 biomethane injection

6.5 TWh

Measured
 Estimated

The biomethane sector in the UK is expected to sustain the growth it has experienced in recent years, supported by various mechanisms and the recently implemented Green Gas Support Scheme. However, the cross-border trading of Guarantees of Origin is currently hindered by the EU's lack of recognition of UK GOs, a consequence of Brexit.

Regulations



The Green Gas Support Scheme (GGSS) provides a tariff-based support for biomethane produced via anaerobic digestion and injected into the grid. The scheme will run from November 2021 to November 2025 and be financed by the new Green Gas Levy (GGL), which places an obligation on all licensed fossil fuel gas suppliers in Great Britain to pay a quarterly levy.



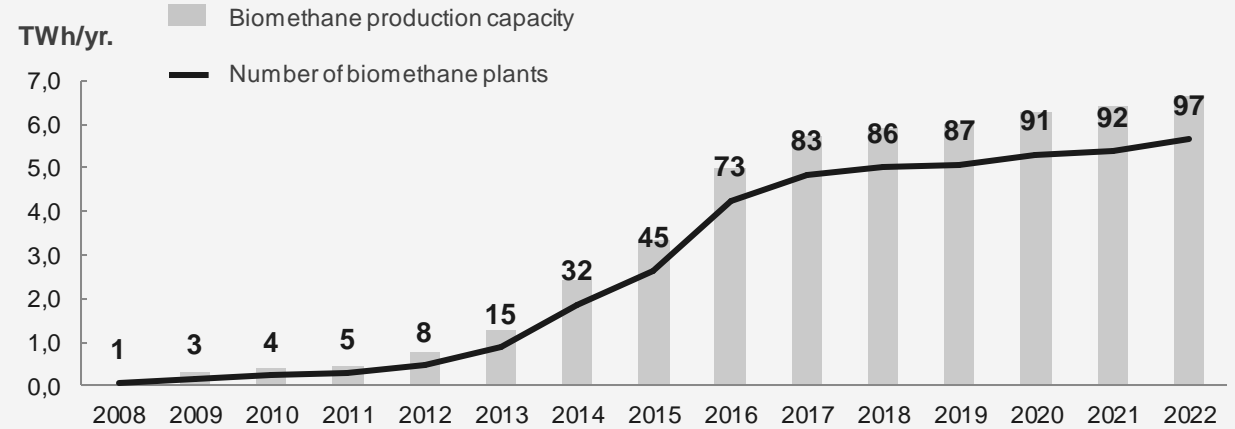
Renewable Gas Guarantees of Origin (RGGOs) are unique identifiers for each kWh of biomethane injected into the grid and are registered with the Green Gas Certification Scheme. Since 2021, the EU no longer recognizes UK RGGOs.



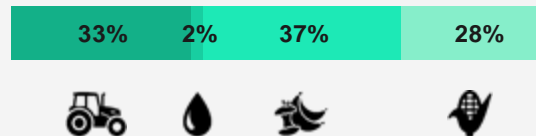
Biomethane use in transportation is supported by a quota system called the Renewable Transport Fuel Obligation (RTFO).

Biomethane production

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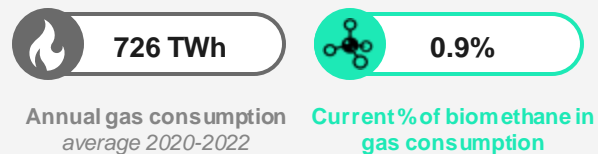
Biomethane feedstock mix



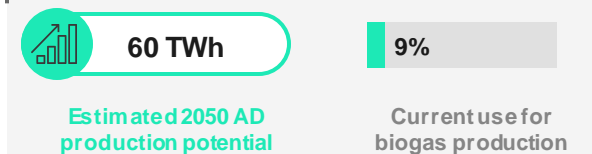
Upgrading & Injection



Share in gas consumption

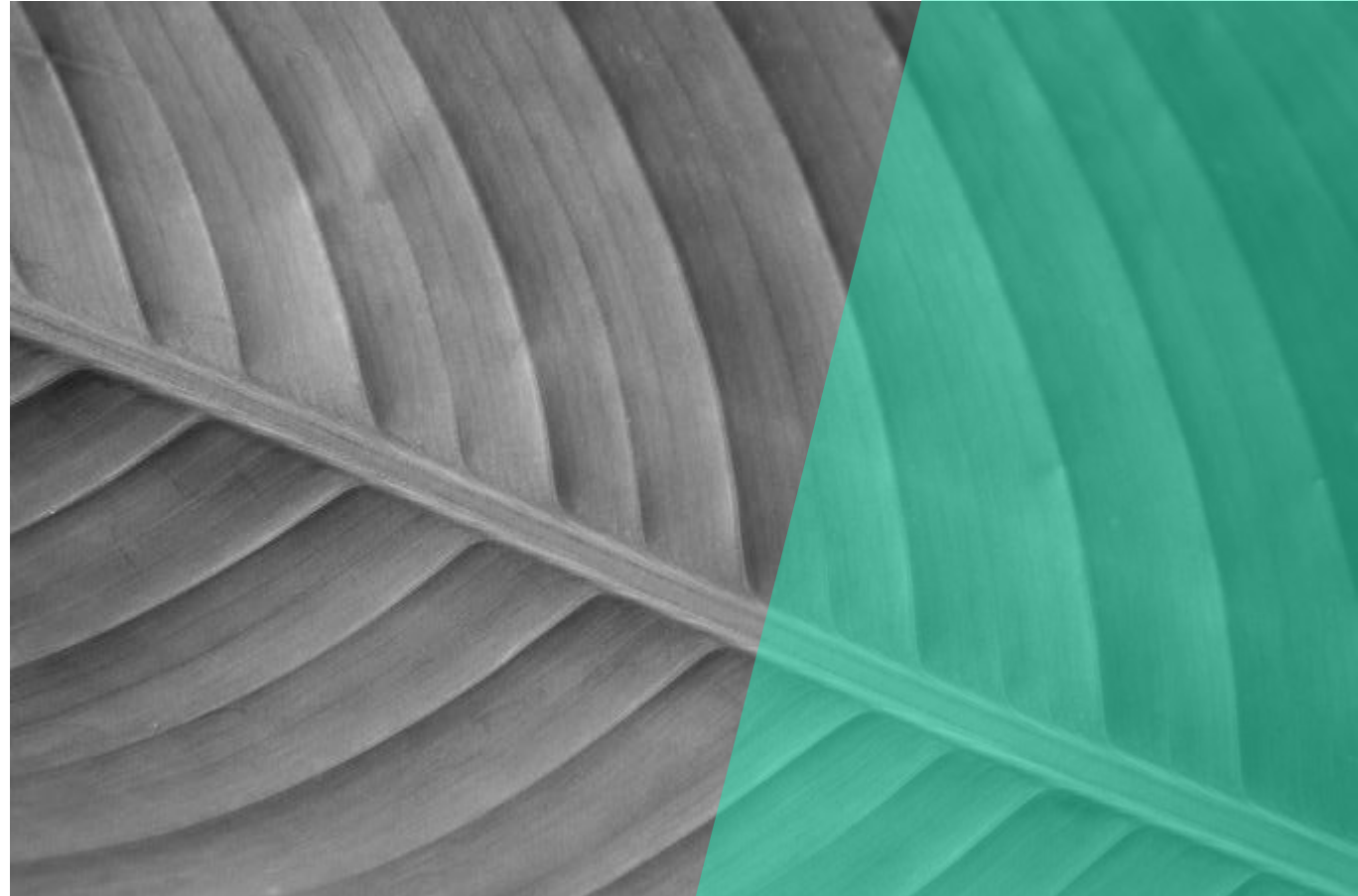


Long-term Potential



4

Appendices



Appendix | Glossary

Acronyms & units	Signification
AD	Anaerobic Digestion
bcm	billion cubic meters. 1 bcm = 10.6 TWh of biomethane
BioCNG	Bio Compressed Natural Gas
BioLNG	Bio Liquified Natural Gas
EU ETS	European Union Emission Trading Scheme
GO	Guarantee of Origin
FiP	Feed-in Premium
FiT	Feed-in Tariff
Nm ³ /h	Normal cubic meter per hour
RED II	Renewable Energy Directive II

Appendix | Scope, sources and methodology

Scope

This benchmark covers the 11 main biomethane-producing countries on the European continent at the end of 2022: **Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Sweden, Switzerland and the United Kingdom**. All together, these countries account for 98% of the number of biomethane units on the continent and of the estimated production by the end of 2022. The other producing countries have only a limited number of biomethane production units: Norway, Spain, Czech Republic, Ireland, Latvia, Iceland, Hungary, Luxembourg, Poland, Estonia, Portugal, Serbia, Ukraine, Slovenia, Greece, Slovakia. They are included in the aggregate figures but not in the detailed country factsheets.

Sources

The data and information provided by Sia Partners are the results of internal **analyses based on open public information**. Sia Partners provides this material for informational purposes only and cannot be held responsible for the accuracy of the data. The sources used are listed on the relevant slides. In the following order of priority, the sources used are state or official sources (government agencies, regulatory texts, regulators, etc.), sources from associations related to the biogas/biomethane sector and stakeholder organizations (in particular EBA, Gas for Climate and Regatrace), as well as TSO/DSO data, and finally, all open-access public data sources.

Methodology

Sia Partners regularly updates its **internal database** of production units in Europe and their characteristics (inputs, capacity, etc.). The data sources are verified to secure a reliable consolidation of the data and to ensure that the most up-to-date version of the data is available regarding the countries' production facilities.

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