Biomethane in Sweden – market overview and policies

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2023-01-12

ENERGIGAS SVERIGE

Preface

The aim of this document is to give an overview of the Swedish biomethane/biogas market. It describes some statistics of the use and production of biogas and biomethane as well as the main policies and drivers for biogas and biomethane in Sweden. We also briefly describe how the green gas concept and the sustainability criteria scheme is working and possibilities for cross border trade.

Table of contents

Energy gases in Sweden

In Sweden only about 4 % of the total energy supply of 498 TWh is energy gases (Figure 1), which is rather low compared to many other countries in EU. Of the total energy use (370 TWh) about 3 % is energy gases, mainly used in industry.

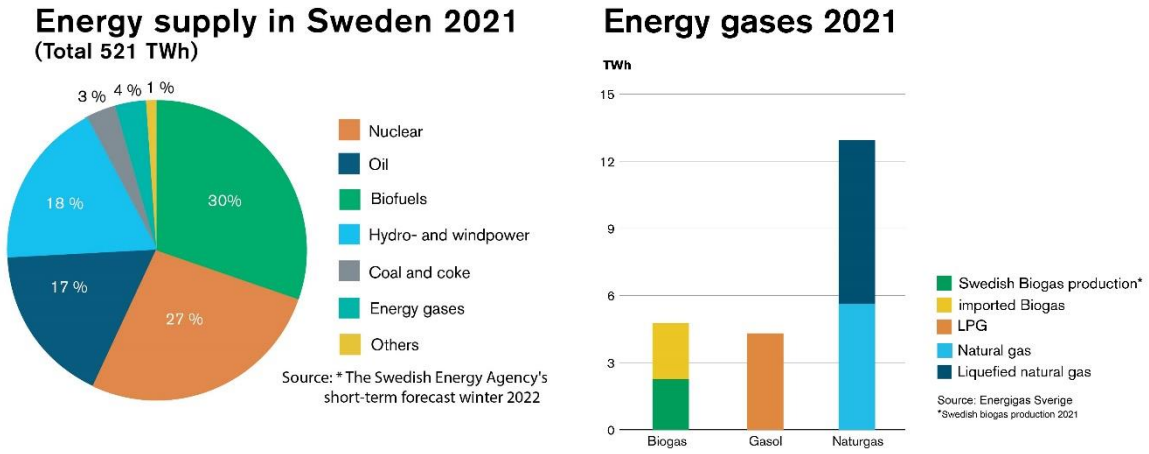

Figure 1 Total energy supply and deliveries of energy gases in Sweden 2021. Source: Swedish Energy Agency and Swedish Gas Association.

The use of energy gases 2021 is 21.8 TWh of which approx. 79 % fossil gases (17.2 TWh Natural gas, LPG and LNG) and about 21 % biogas/biomethane (4.8 TWh). Biogas and LNG use has increased, and natural gas use has decreased over the last 10 years (Figure 2). Most of the biogas is upgraded and used in the transport sector.

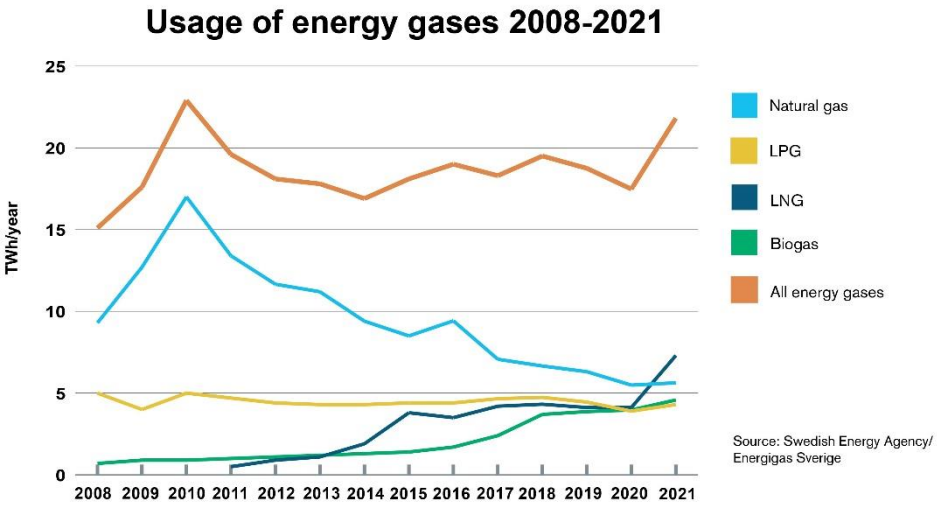

Figure 2 Use of energy gases in Sweden 2006-2019 (TWh per year). Gasol = LPG. orange line = total. Source: Swedish Energy Agency and Swedish Gas Association.

The share of renewable energy in total energy use in Sweden exceeded 60% 2020 and for transport the renewable share exceeded 32 % 2020 according to the renewable energy directive methodology. The recent years´ large increase of biofuel use is mainly due to a rapid increase of HVO at the Swedish market since 2011. The total use of methane for transport (CNG/CBG) was

1.6 TWh 2021, which is about 2 % of the total energy use for transport. The average biomethane share 2021 in the CNG/CBG used for transport was 96 % and 65% for LNG/LBG.[1]

Natural gas is mainly used in heavy and small industry (85%), as shown in Figure 3.

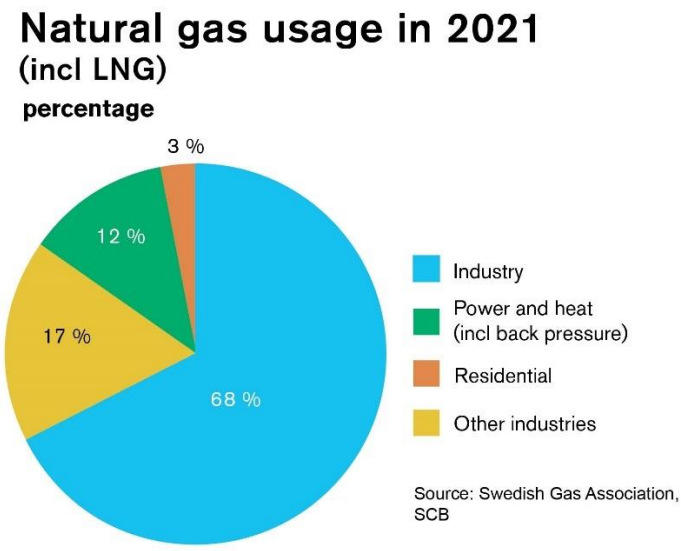

Figure 3 Distribution of natural gas use in Sweden 2021. Source: SCB.

Production and use of biogas/biomethane

There were 281 biogas plants producing in total 2.3 TWh of biogas 2021, an increase by 4.8 % from 2020. Most of the biogas is produced from different types of biowaste and residues in co-digestion plants (53 %) and from sewage sludge in 132 wastewater treatment plants (31 %) as shown in Figure 4.

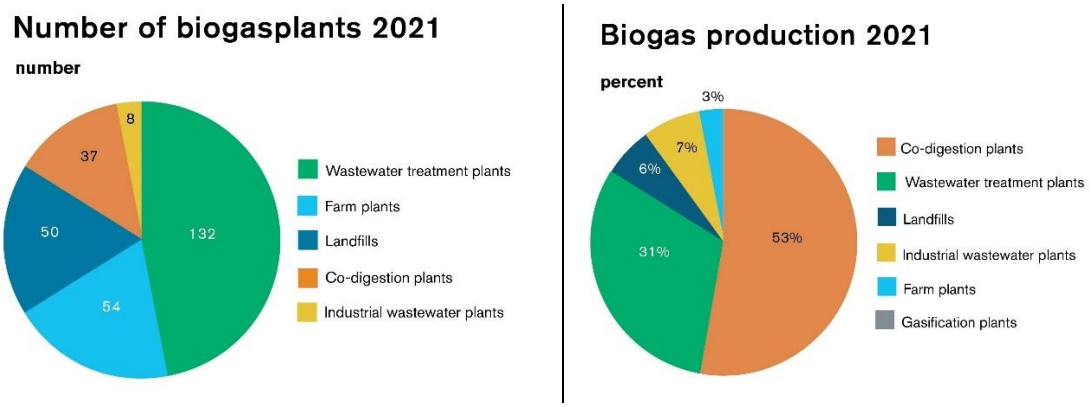

Figure 4 Number of biogas plants and share of biogas production for different plant types in Sweden 2021. Source: Swedish Energy Agency/Swedish Gas Association.

Biogas and biomethane is mainly produced by various organic wastes and residues, such as sewage slugde, organic household waste (food waste), manure, waste from food industries and slaughterhouses (Figure 5).

[1] Source: SCB and Swedish Energy Agency

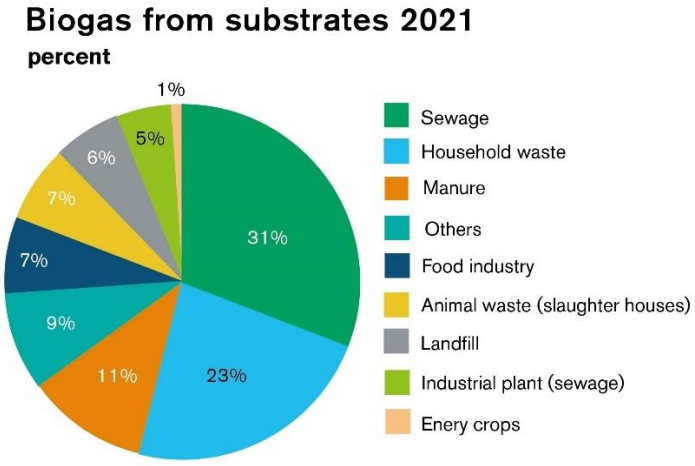

Figure 5 Share of the biogas and biomethane production from different substrates (raw materials) in Sweden 2021, calculated from the amount of used substrates (ton wet material) and estimated biogas yields.

The share of biogas that is upgraded to biomethane has increased rapidly over the last 10 years, whereas the use for heating has decreased. In 2021 67% of the produced biogas was upgraded to biomethane of which most (74%) is used for transport (Figure 6).

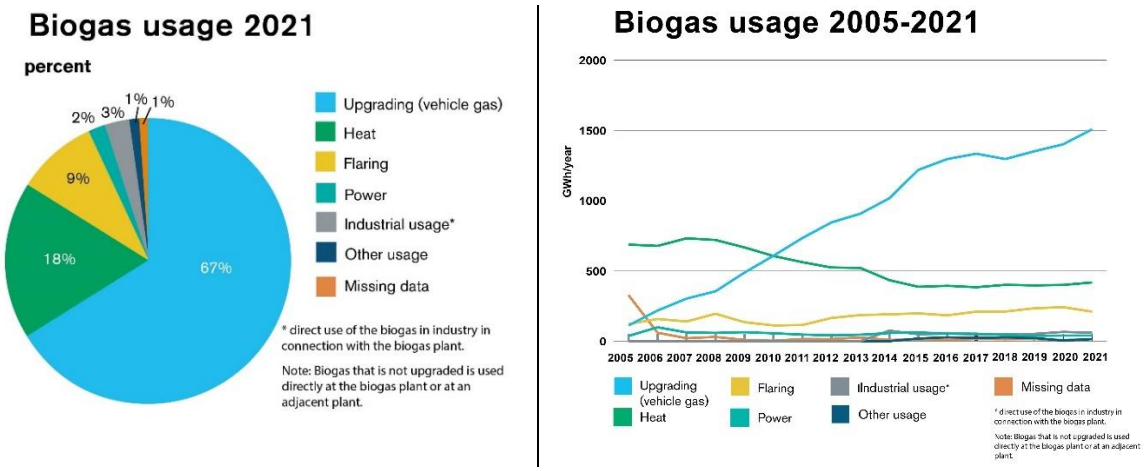

Figure 6 Use of produced biogas in Sweden 2021 and development since 2005. Source: Swedish Energy Agency/Swedish Gas Association.

There were 71 biomethane upgrading units producing about 1.4 TWh biomethane 2021[2]. About 0.6 TWh of this is injected to the south-western gas grid (connected to the European gas grid) and in the Stockholm gas grid. The rest is used locally or trucked to filling stations.

A rapidly increasing share of biogas is liquified to LBG. In 2021 there were three LBG plants producing 95 GWh[3]. Most of the planned new biogas production capacities are LBG plants, and a large part of new production will be manure based.

[2] Note that this is part of the total biogas production 2.3 TWh.
[3] Part of the 1.4 TWh biomethane produced

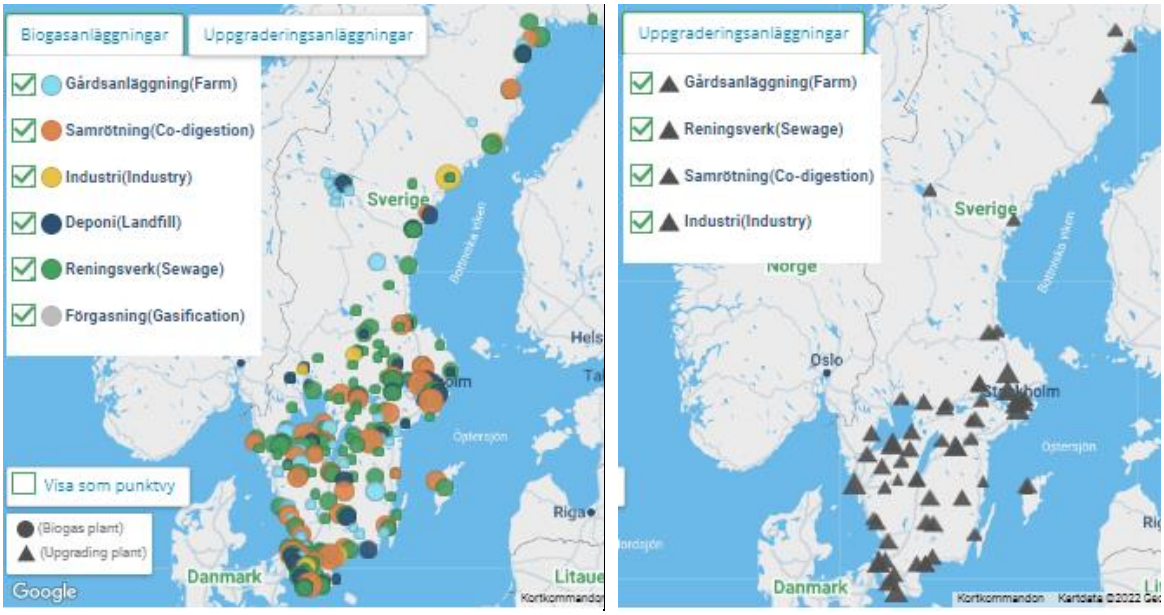

Figure 7 Map of biogas plants and biomethane upgrading units in Sweden 2021. Source: [Karta biogasanläggningar - Energigas Sverige]

Total use of biomethane and biogas including net imports

The import of biomethane through the gas grid has increased rapidly since 2015 from about 0.2 TWh 2016 to 2.5 TWh 2021. About 95% of the import is from Denmark. Most of the import is used for substituting natural gas in industry and heating. The export is still small but is expected to grow.

The total biogas and biomethane use in Sweden 2021 including net imports was 4.8 TWh, an increase with 18 % compared to 2020. The total biogas and biomethane use have increased by 145% since 2015 while the production has increased with 17 % during the same period (Figure 8).

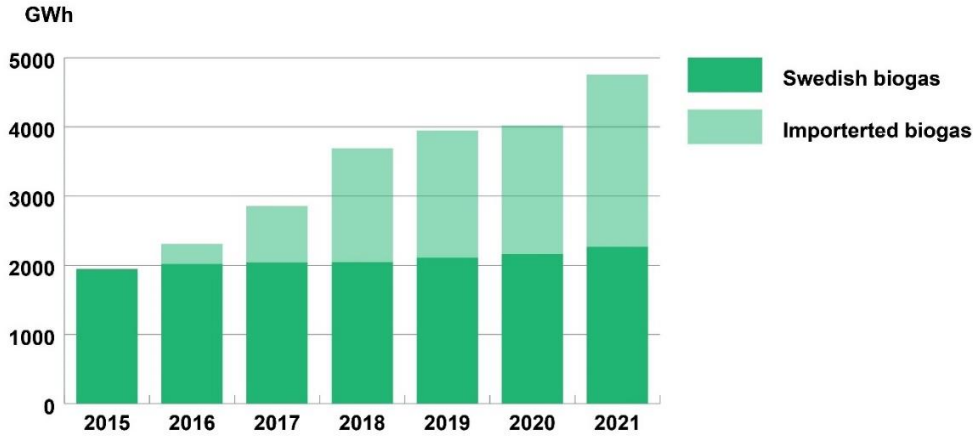

Figure 8 Total biogas use (GWh) in Sweden 2015-2021.

The biomethane market in Sweden

The Swedish biomethane market is to a large extent off-grid with several small local and regional grids or stand-alone biogas plants and filling stations. A large part of the biomethane in Sweden is transported on the road as compressed gas (200/260 bars) and to a small but steeply increasing

extent as liquefied gas (LBG). Also local and regional gas grids gain more attention aimed to connect industries, cities and biomethane production plants with an LNG-terminal at the coast.

The gas pipeline infrastructure is limited to the south-western part of Sweden where the transmission network is connected to European gas network via exit Dragör (connection with Denmark). There is also a regional gas network in Stockholm, fuelled with locally injected biogas and shipped LNG/LBG. See Figure 9.

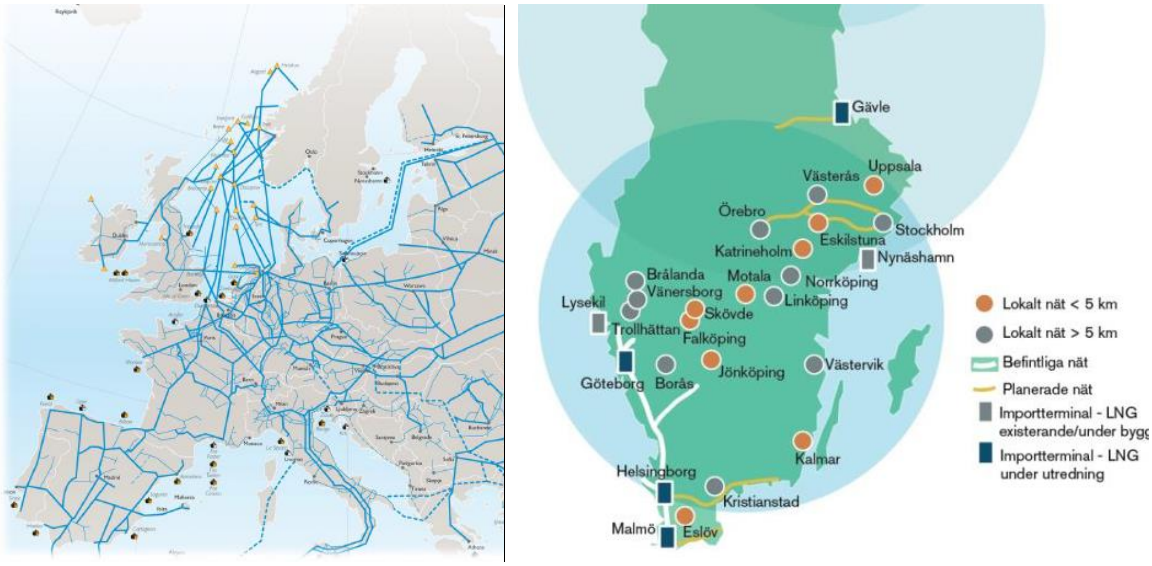

Figure 9 Gas pipeline infrastructure is limited to south-western Sweden and small local gas grids. There are two existing LNG import terminals and a couple of more planned. There is also one LBG plant.

Biomethane in transport

Most of the produced biogas (67 %) is upgraded and to a large extent used for road transport due to favourable support system. The market for biomethane as transportation fuel is now rather developed in Sweden. The use of methane in transport increased rapidly up to 2014 but has since then stabilized at around 1.6-1.7 TWh the last years (Figure 10). The biomethane share has however continued to increase and was 96 % 2021.

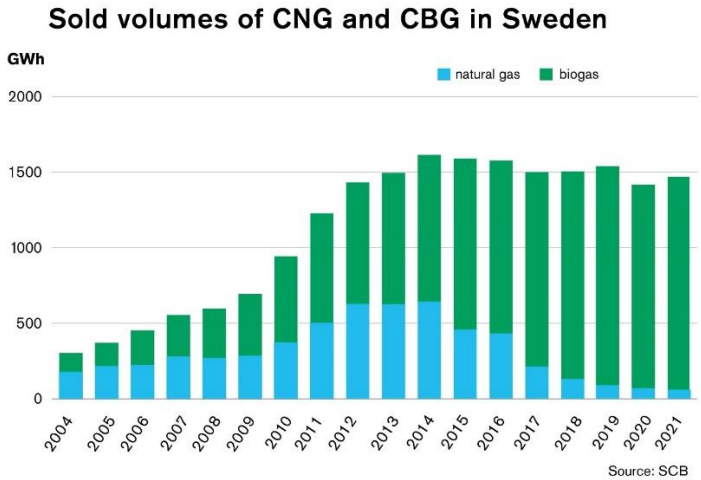

Figure 10 Sold volumes of CNG and CBG in Sweden 2004-2021 (GWh).

The number of gas filling stations has increased in a steady rate from less than 20 in year 2000 to about 212 stations end of 2021, plus 60 non-public stations (Figure 11). The number of gas vehicles has during the same period increased from just a few hundred to in total 52 635 in the end of 2021. In total 2 766 of these were buses (about 18 % of all buses) and 1 426 trucks and the rest passenger cars and other light vehicles (Figure 11). The number of gas passenger cars has declined somewhat the last years, but heavy-duty vehicles are increasing rapidly.

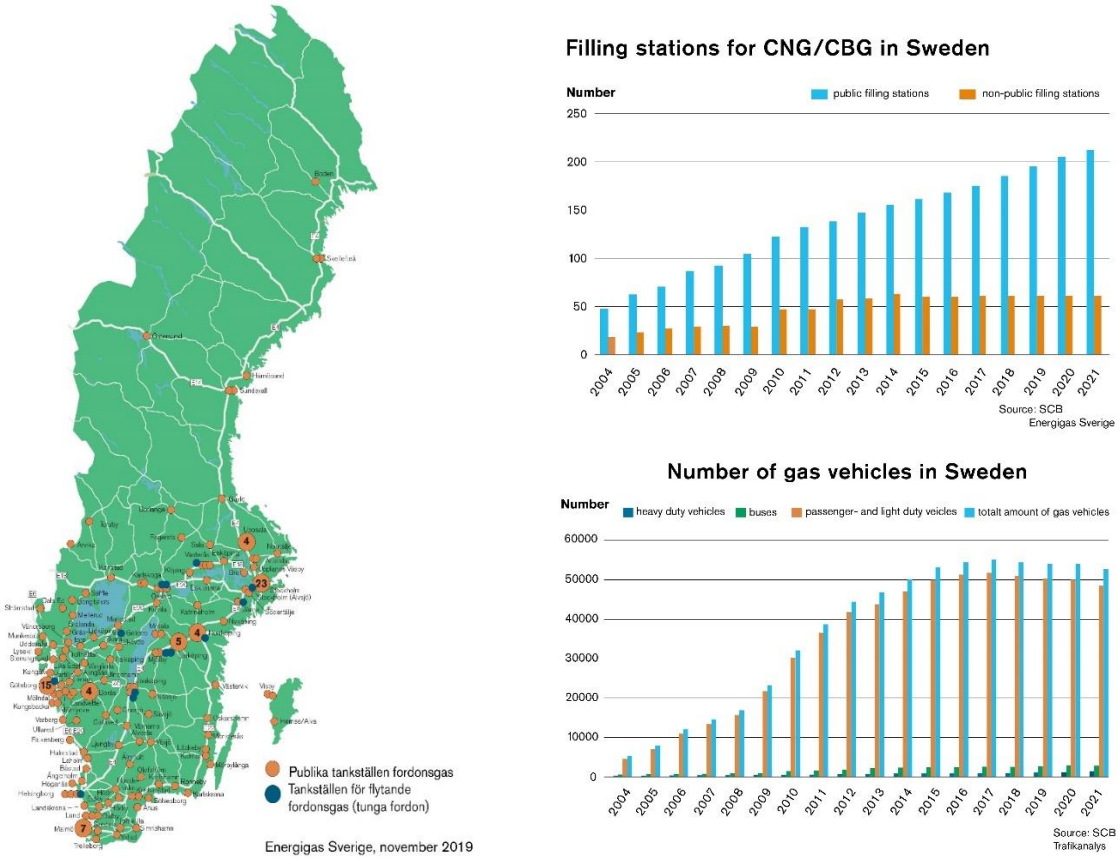

Figure 11 Map of filling stations (Nov 2019) and development of the number of CNG/CBG filling stations and gas vehicles in Sweden 2004-2021. Source: SCB, Transport Analysis and Swedish Gas Association.

Liquid biogas for long haul heavy-duty vehicles is increasing rapidly

The interest for liquified biogas is large and the market is growing. The number of LNG heavy-duty vehicles are increasing rapidly in Sweden, which is also the case for number of filling stations and sold volumes (Figure 12). The share of bio-LNG is increasing and was 65% as an average 2021. In 2022 the sales seem to increase even more (+268% Jan-Aug compared to Jan-Aug 2020) and the bio-LNG share is also increasing – 93% Jan-Aug 2022 (*Source: SCB*). Beside the HDV sector there is also an increasing demand for LBG in off grid industries substituting their LNG use and there is growing interest for LBG in the maritime sector.

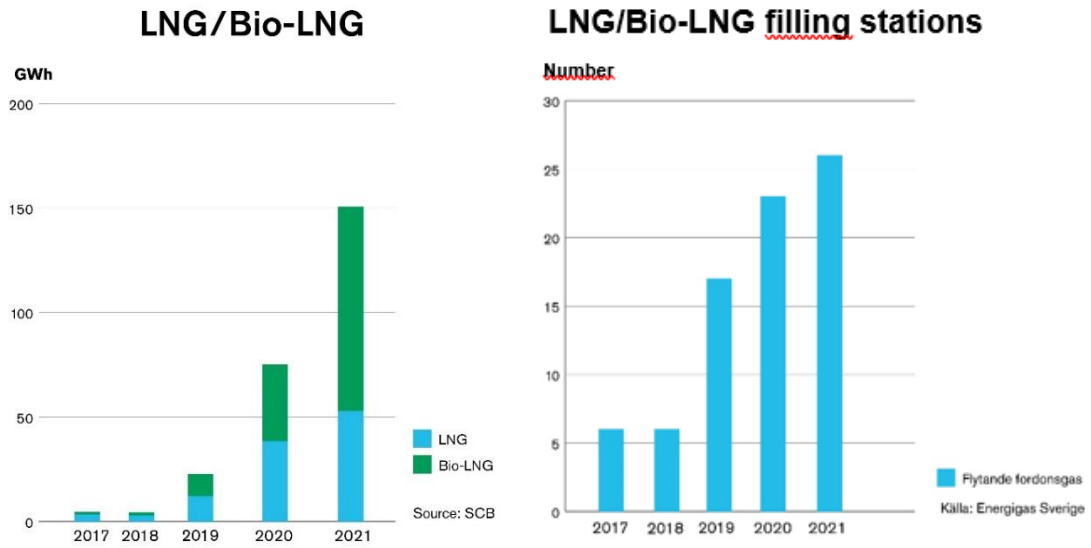

Figure 12 Sold volumes of LNG/Bio-LNG for transport and number of filling stations in Sweden 2017-2021.

Long-term energy and climate policy

The climate act sets long-term ambitious GHG targets for 2030 and 2045

Ambitious energy and climate goals push for increased renewable energy, especially in transport. The government 2020 goals for renewables are already reached by far: 50 % of the total energy utilisation and 10 % goal in transports.

More important are the climate law and the ambitious long-term climate and energy goals that were adopted by the parliament in 2017:

- Climate neutral energy sector 2045 of which at least 85 % GHG emission reduction in Sweden. From 2045 negative emissions.
- 100 % renewable electricity production 2040 (agreement between 5 of 8 parties in the parliament)
- 63 % GHG emission reduction in non-EU ETS sector in 2030 and 75 % 2040 compared to 1990
- 70 % GHG emission reduction in domestic transport (excl. aviation) 2030 compared to 2010

There is still no overall government strategy for meeting these goals, but a few important steps and policies have been implemented or are being investigated in addition to the existing high CO_2 tax on fossil fuels and the green electricity certificate system as main drivers. As stated in the climate law a climate policy council will analyse the current climate policies and make recommendations. The climate policy council presented their first annual report early 2019, which indicated that policies are not enough to reach the goals. The government is also committed to present a climate policy plan every 4 years. The first was presented late 2019, and the new government from October 2022 will present the next climate policy plan in 2023.

Roadmaps and visions in the gas industry

There is so far no official strategy or goals for biomethane or energy gases in Sweden. However, in 2018 the Swedish biogas industry launched a proposal for a National Biogas Strategy 2.0 with a specific target of 15 TWh biomethane/biogas use in 2030. Most of this biomethane should be

produced in Sweden, with a production goal of 7 TWh biogas digestion from various organic waste and residues that should be realised in a first step. The techno-economic potential to 2030 is estimated to 30-37 TWh biomethane[4], but includes more agro-biomass, gasification of forest residues and other production routes such as Power-to-methane. The aim of the biogas strategy is that the government will implement a National Biogas Strategy and adopt the proposed policies and measures. Since then, the Government has appointed a broad biogas market inquiry which presented their report in December 2019, see below.

In 2020 the Swedish gas industry through the Swedish Gas Association published a roadmap on how to achieve fossil free energy gases by 2045, within the governmental initiative Fossilfritt Sverige. Roadmap for fossil free competitiveness of the Gas Sector sets targets for the entire gas market up to 2045 and includes 8 policy recommendations and 11 industry undertakings. The roadmap will be upgraded 2023.

THE GAS INDUSTRY´S JOINT VISION:

- All energy gases used in Sweden will be completely fossil free by 2045 at the latest.
- The potential for producing renewable gas will be realised.

The GAS INDUSTRY OBJECTIVES THROUGH TO 2023 AND 2030

- 2023: All CNG (Compressed Natural Gas) for transport will be biomethane.
- 2030: Liquefied gas used to power vehicles will reduce greenhouse gas emissions by an average of 70–90 per cent compared to fossil fuels such as petrol and diesel.
- 2030: All energy gases in the power and heating generation sectors will be completely fossil free.

[4] The techno-economic potential to 2030 according to the governmental inquiry Mer biogas! För ett hållbart Sverige SOU 2019:63

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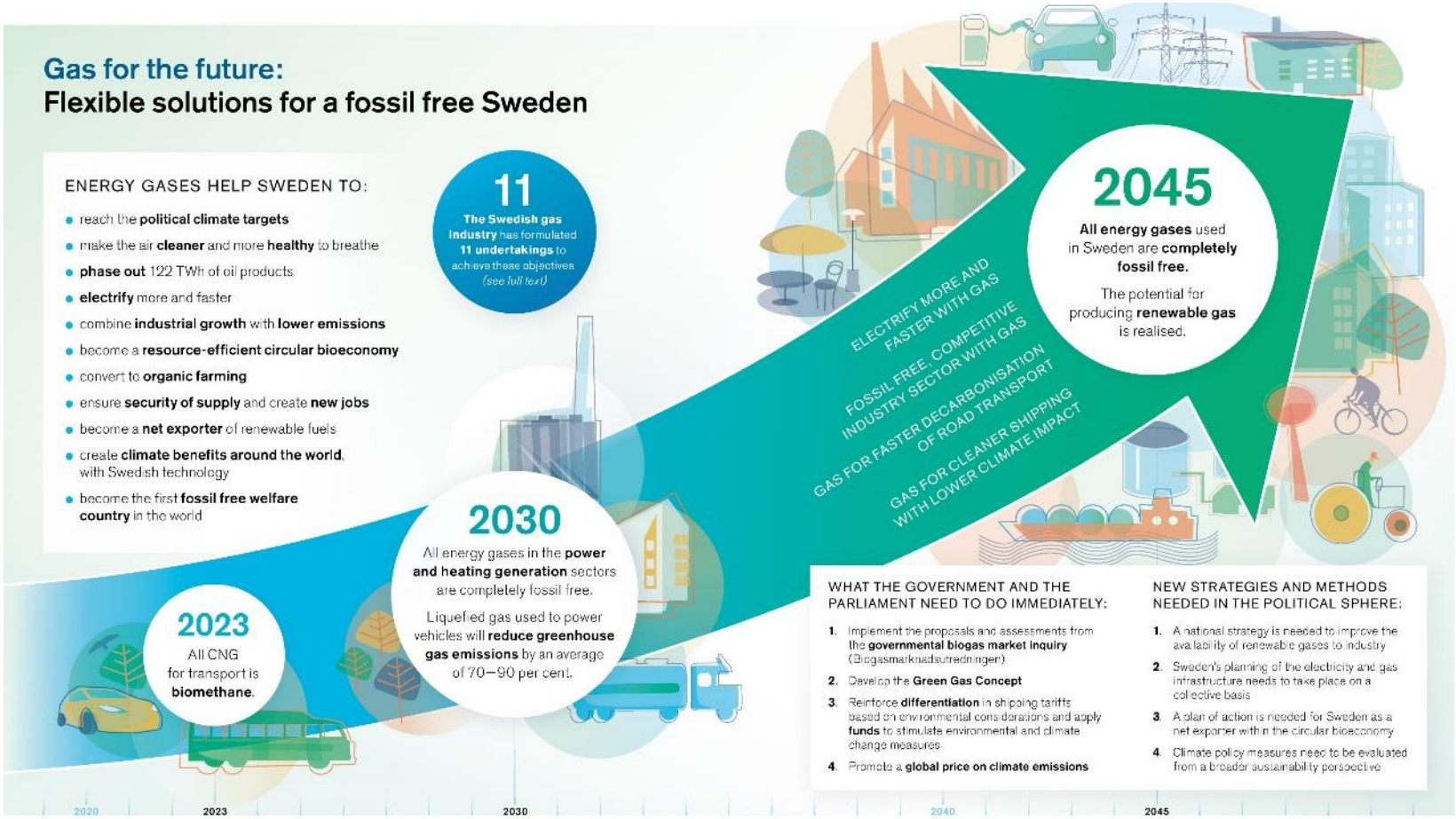

Regulatory framework, support systems and drivers for biomethane market

In Sweden general economic incentives in terms of high CO_2 and energy tax on fossil fuels and tax exemption for renewables have been the main drivers for decarbonising since the 1990's and is still a main driver for biogas and biomethane. Since the taxes are highest in the transportation sector, most of the biomethane has been used for road transport, but also to some extent for heating. In other sectors, such as industry with high natural gas use, the tax advantage for renewables is generally much lower. It is only during the last 2-3 years that the biomethane demand in industry has risen dramatically due to imported biogas mainly from Denmark which has been more competitive with natural gas due to favourable production support.

The biomethane production has increased steadily since 2005 mainly driven by investments by municipalities and regions in biomethane driven public transport (buses) and new biogas plants with upgrading for recycling of organic household waste (co-digestion plants). Biogas production has occurred for several decades in many sewage plants but since 2005 the share of biomethane upgrading has increased. There have been several investment support programmes that have facilitated this development. In the recent years, a large part of new production is run by private companies mainly focusing on agricultural and industrial organic waste and residues such as manure and waste from food industry and slaughterhouses. It is also in the private sector where most of the additional production capacity investments are foreseen in the future.

Existing policies and drivers

Fiscal incentives – CO_2 and energy tax exemption (temporarily revoked*)

- Transportation:
  Exemption from CO_2 and energy tax for biomethane as transportation fuel is approved by the EU Commission until the end of 2030. Natural gas for transportation is exempted from energy tax and only pay CO_2 tax. The CO_2-tax rate 2023 corresponds to 2840 SEK/1000 Nm^3 (~24 €/MWh). The value of the biomethane tax exemption can be estimated with the corresponding tax for petrol. The CO_2-tax for petrol is 2.87 SEK/litre (~29 €/MWh) and the energy tax is 3.44 SEK/litre (~34 €/MWh).

- Heating fuel (including industrial use):
  Exemption from CO_2 and energy tax for biogas or biomethane for heating (including industrial use) is approved by the Commission until end of 2030[5]. Corresponding tax on natural gas is 3946 SEK/1000 Nm^3 (~33 €/MWh). The former partial exemption from energy tax for fossil fuels used in the manufacturing process in industrial activity (for other purposes than use in motor vehicles) was phased out in July 2021. For industrial activities included in the EU ETS, is exempted from 100 percent of the CO_2 tax.

- Heat or CHP plants:
  Exemption from CO_2 and energy tax for biogas or biomethane when used in heat or combined heat and power plants. Natural gas, and other fossil fuels, for such use within the EU ETS, are exempted from 100 percent of the CO_2 tax from 1 January 2023.

[5] Also bio-LPG is exempted from carbon and energy tax until end of 2030

* The state aid approval for the Swedish tax exemption 2021-2030 for biogas and bio-LPG for transport or heating has been revoked by a EU General Court ruling (Landwärme vs Commission Case T-626/20) in 21st of December 2022. The state aid approval process is now re-opened and the Commission needs to perform a more comprehensive investigation before new approval can be given. The Swedish Tax authorities has announced that no tax exemption is granted from 7th March 2023 and onwards.

Production support/premium

- Up to 0.40 SEK/kWh (~40 €/MWh) support for biogas produced from manure to reduce methane emissions from manure until end of 2023. Given to the biogas producer. Continuous yearly applications, no guaranteed period based on contracts etc. Expected to be pro-longed and integrated as part of the biomethane production support scheme below, but no decisions taken.

- New production support scheme for upgraded biogas (biomethane) and liquified biogas from 1 July 2022: max 0.30 SEK/kWh for biogas upgraded to biomethane and an additional max 0.15 SEK/kWh for biogas that is liquified to LBG[6]. The scheme is administered by the Swedish Energy Agency and support is given to the raw biogas producer based on continuous yearly applications. There is no guaranteed support or period based on contracts etc, but the aim is long-term support of about 10 years. Support can be combined with other support (such as the support for manure-based biogas) but is subject to annual overcompensation assessment. Eligible for biomethane from all substrates except landfill gas and food and feed crops. Eligible also for biomethane produced with other technologies than anaerobic digestion such as biomass gasification. The support is so far limited to biomethane used in transport but is expected to be expended to all uses in 2023, subject to proposed changes in EU state aid rules.

Investment support

- Local climate investment programme:
  Investment support (up to approx. 45 %) for all types of investments or measures that leads to high GHG emission reductions, 2015-2026. The budget for 2022 is 2.7 Billion SEK/year (~0.27 Billion €). A significant part of the investment support so far has been granted to biomethane investments (many biogas plants, several CBG and LBG filling stations and LBG-trucks) but also other measures such as EPV charging infrastructure.

Previous (ended) investment support programmes:

- Drive LBG - 200 MSEK support 2018-2021 for the establishment of an LBG innovation cluster – for promotion and demonstration of the whole production and utilisation chain in a region for LBG in heavy road and sea transport. Drive LBG was co-ordinated by the Swedish Gas Association in cooperation with regional biogas organisations. Investment support for various LBG investments have been granted within the project, including biomethane liquefaction plants, filling infrastructure and long-haul HDVs.
- Investment grants for marketing of new technologies and new solutions for biogas during 2010-2016. Maximum 45 % or 25 MSEK (~2,5 M€) of the investment cost.
- Climate investment grant for municipalities: Total budget 1925 MSEK (~190 M€) until the end of 2018.

[6] The new production support scheme has replaced a temporary and more limited biomethane production support in place from October 2018 until end of 2021.

Economic incentives and other regulations for low emission road transport, including biomethane

- A Bonus-malus taxation system for light vehicles since 2018. Bonus up to 70 000 SEK (~7000 €) when purchasing new low emission cars (EV or PHEV). Gas vehicles is granted a bonus of 10 000 SEK (~1000 €). The new government has declared that bonus will no longer be granted for vehicles purchased after November 8th 2022, meaning that the bonus is being phased out. Malus in terms of increased CO_2-based vehicle tax first three years for high emission cars (gasoline and diesel cars).

- Climate purchase premium for HDVs and working machines, including gas vehicles, of up to 20 % of purchase cost. The bonus is granted by the Swedish Energy Agency.

- New legislation for environmental zones in cities from 1st of January 2020. Cities can put up restriction zones for polluting (noise and emissions) vehicles in three different restriction levels. Only Euro 6 gas vehicles (NGVs), hydrogen and all-electric vehicles are allowed in all three zones. On the heavy-duty side, Euro VI plug-in hybrid electric vehicles (PHEVs) are also allowed. This may become a driver for gas vehicles but has so far not been used.

- Requirement since 2005 for larger filling stations to provide renewable fuels (pumplagen[7]), such as E85 or CBG. However, this requirement has created a strong incentive mainly for the building of filling stations for E85.

Other policies and regulations with positive effect on the biomethane market

- Environmental information about all transportation fuels must be displayed at the filling station, including origin and CO_2 reduction from 1st Oct 2021.

- Rules and environmental criteria for public procurement of fuels and vehicles

- Municipalities must provide systems for separation and collection of organic waste from households from 2024. The national goal of collection and recycling of nutrients and with energy recovery (digestion) from 40% of all organic waste from households, commercial kitchens, grocery stores and restaurants, which was reached. The new national goal is 75% nutrient and energy recovery (digestion) by 2023, which will likely not be reached.

- Sea transport: International environmental legislation (sulphur and nitrogen oxide limits) together with some environmental-differentiated port fees push for more LNG ships. However, no energy or CO_2 tax on maritime fuels means no economic incentives for renewables at this point. Incentives are however expected in a few years, following proposals in the EU Fitfor55-package.

Some policy barriers for further development

- The long-term policy conditions have been too uncertain for biomethane production to take the next step. The biomethane use has increased rapidly the last years due to increased biomethane imports, but the production has not. However, some important barriers have been removed the last years and with the 10-year approval of the tax exemption and the new long-term production support for biomethane that followed a Governmental Biogas Market inquiry in 2019 an important missing piece is now in place. The production support must, however, be granted for biomethane also for other uses than transport (which is likely to happen during 2023) and a long-term decision of the support for manure-based biogas after 2023 is needed. If existing policies is embraced also by the new government

7 Lag (2005:1248) om skyldighet att tillhandahålla förnybara drivmedel

and fully developed, it has a real potential to boost biomethane production the years to come.

- Implementing a biogas strategy and setting a target for biomethane would decrease the political uncertainty and further strengthen the investor confidence.
- The green gas concept in the tax legislation (that the biogas share in gas purchased through the gas grids is based on agreements and mass balance principle) has so far not been accepted or applicable in important support systems such as EU ETS, power reserve procurement and local climate investment programme (Klimatklivet). This has been a barrier for large biomethane expansion. However, for users within EU ETS this barrier is now removed. Following a revision of the EU ETS regulation, from 1st of January 2022 emission allowances are no longer required for biogas purchased from gas grids and the biogas share is decided based on purchase records, proof of sustainability and records from a biogas registry/Guarantees of Origin (if available). Until a biogas registry/Guarantees of Origin for biogas is implemented in Sweden other proofs are accepted.
- There are a couple of taxation rules that are disadvantageous for biomethane, for instance that taxation now is based on volume instead of energy content. Some of these are under review by the ministry of finance and may be changed in the future.
- The phasing out of the internal combustion engine – particularly in the CO2 emission regulation for light vehicles – will negatively affect the development for biomethane in road transport. Potential lack of local biomethane demand in a country with limited gas grid infrastructure will be a challenge for many biomethane producers. Liquefaction to LBG will be key to reach potential large gas users in industry, long haul heavy road transport or maritime transport in the future.

Regulation on sustainability criteria, mass balancing in gas grids, cross border trade and tracking systems

Green gas concept allows for mass balancing in gas grids for tax purposes

There is no biogas registry or independent certification system currently in place in Sweden, but mass balancing is possible for biomethane in gas grids since 2011 in the taxation regulation as well as in the sustainability criteria scheme. The Tax Authority, however, has the possibility to request full documentation from all taxable companies using the green gas concept. All companies are using in-house accounting to make sure that they inject (or that it is injected for their account) as much biomethane as they take out and put into market for energy purposes. Some companies use third party auditing for this.

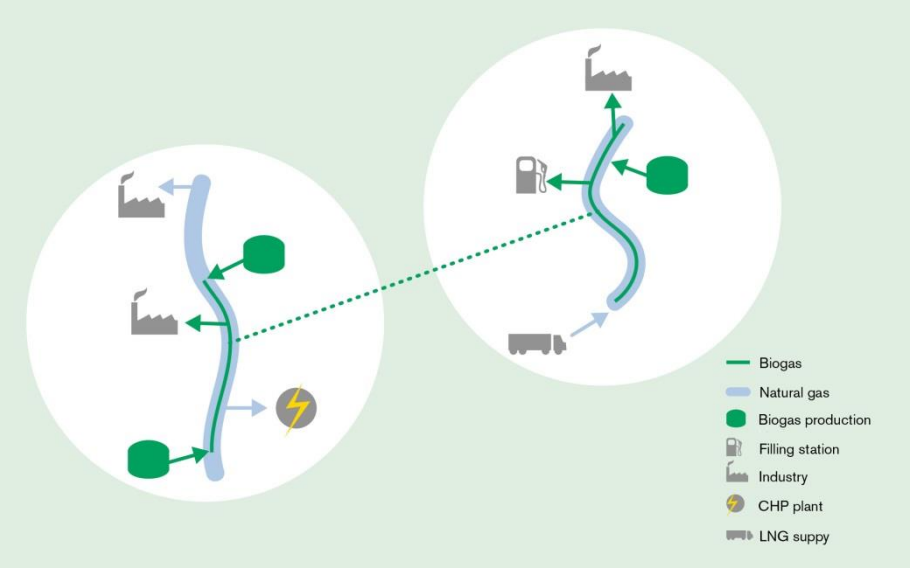

Figure 13 The green gas concept in Sweden. 100 % biomethane can be purchased and claimed as biomethane from the gas network or local gas grids through the mass balance principle and is eligible for exemption of energy and CO_2 tax. Full in-house documentation and a purchasing contract between the user and the supplier is required.

In the Act (1994:1776) on energy taxes[8] the green gas concept was introduced in 2011, which means that biomethane users connected to the gas grid or in a local grid can buy and claim any share of biomethane even though it is a physical mix of natural gas and biomethane. Biomethane from gas grids is eligible to full energy tax and CO_2 tax exemption. The biomethane content shall be decided by the purchasing contracts between the user and the supplier, and the supplier must assure that the same amount has been injected to the grid. If the biomethane is bought in another country, and transported to Sweden from Denmark through the grid, transmission capacity from the injection point must thus be booked.

The green gas concept is applicable for both imported and domestic biomethane and is possible also between gas grids in Sweden that is not physically connected.

[8] Lagen (1994:1776) om skatt på energi (Chapter 2, 2 a §)

RED sustainability criteria

The national sustainability criteria scheme is regulated by the Sustainability Act (2010:598)[9] and is supervised by the Swedish Energy Agency. All suppliers of biofuels (including biomethane aimed for transport) eligible for taxation must apply for a Sustainability Decision (Hållbarhetsbesked) by the Swedish Energy Agency. From 1st July 2021 the sustainability criteria apply also to other energy purposes than transport (electricity, heating and cooling), including all biogas and biomethane used in installations > 2 MW. The already existing national RED sustainability criteria scheme continues with the same set up, but now extended to all biomass fuels.

To be eligible for tax exemption or to be counted for in other support systems, such as the GHG reduction obligation for gasoline and diesel, green electricity certificates or EU ETS, all liquid and gaseous biofuels and liquid biomass fuels must meet the sustainability criteria, which is proven by a valid Sustainability Decision.

To get a Sustainability Decision, the supplier must set up a control system covering the whole production and supply chain with routines – including agreements with sub-suppliers, regularly sampling and auditing, and a mass balance system – that assures that biofuels supplied meet the sustainability criteria. A statement from an independent auditor assuring that the control system fulfils the requirements must be sent to the Swedish Energy Agency, together with the application. The supplier must in April every year report to the Swedish Energy Agency the amounts of sustainable biofuels delivered and their sustainability characteristics. The Sustainability Decision is reviewed every second year or so by the Swedish Energy Agency, based on independent auditing of the control system including samples of actual biofuels consignments delivered. All suppliers of biofuels must have a sustainability decision, but an alternative to show that all requirements in the national regulations are met is to refer to certification by a Voluntary scheme (VS) approved by EC. Biofuels covered by certification from a VS is always compliant with the sustainability criteria in Sweden.

For biomethane export (which so far is very limited) Swedish producers normally use voluntary scheme certifications. For imports voluntary scheme certificates are usually used to prove compliance in Sweden, but it is not necessary if the supplier´s control system have sufficient routines that can assure RED compliance through the whole production chain and if this was described to the Swedish Energy Agency in the Sustainability Decision application.

Mass balancing in the gas grids and cross border

Just like the green gas concept in the tax regulation mass balancing is recognised within the Swedish national gas networks and local grids, based on purchasing contracts and proofs of injection of the same amount of biomethane into the grids. Up to summer 2017 it has been possible to comply with the sustainability criteria for imported biomethane through the gas grid (and to be eligible to tax exemption) only if the biomethane was certified by a Voluntary Scheme approved by the European Commission, or of course imports of biomethane with truck or ship. After the European Court of Justice sentence[10] in summer 2017 (see following chapter) there is no such barrier in the national scheme for cross border mass balancing of biomethane in the gas network, imported biomethane and domestic biomethane are treated the same.

[9] Lag (2010:598) om hållbarhetskriterier för biodrivmedel och flytande biobränslen (hållbarhetslagen)
[10] the E.ON – Energimyndigheten case C 549/2015

Biogas registry / Guarantees of Origin for gas

So far there is no national biogas registry or centralized system for register and tracking biomethane in Sweden. As mentioned above the most important driver for biomethane – exemption from energy and CO_2 tax – is already possible through the green gas concept which is supervised by the Tax Authority. The Swedish biomethane market is mainly off grid and only a small part of southwestern Sweden is connected to the European gas network, and there is a regional gas network in Stockholm. There are some local grids or just stand-alone plants and gas filling stations. This is another reason why biogas registry has not been prioritized in Sweden until now.

However, establishment of a national biogas registry and/or system for guarantees of origin (GO) has gained more interest recent years and the Swedish Gas Association is actively working to make this happen. The increased cross border trade through the gas grid, the increasing use of biomethane in industry and the ongoing integration of energy systems highlight the need for a harmonised European tracking system for energy and renewable gases. According to the REDII Article 19 the Member states are requested to grant GO also for renewable gases from 30 June 2021. As mentioned above a registry or GO system is requested also for zero-emission compliance for biogas from the gas grid within EU ETS.

GO system for gas is being implemented but delayed

A national Guarantees of Origin (GO) system extended to renewable gases is currently being prepared and will be implemented by the Swedish Energy Agency. The legal act for the extension to gas, heating and cooling was adopted by the parliament in 2022 but will not come into force until the Government decides. The final implementation (and the detailed regulations) is awaiting the ongoing revision of the CEN standard EN 16325 for GOs, which is delayed.