VARIATIONS IN NATIONAL REGULATIONS WITH RESPECT TO BIOMETHANE GRID CONNECTION

GREENMEUP

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1. Introduction

The European gas connection grid is proof of a sustainable energy practice and the ongoing transition towards a greener future. However, the state of play for grid connection of biomethane plants and biomethane injection varies across different countries. Factors, gas quality requirements, the application of injection fees and cost-sharing agreements between grid operators and biomethane producers play a crucial role in the development of biomethane plants. This briefing provides an overview of the existing gas infrastructure in Europe and an analysis of current EU regulations on biomethane injection, highlighting their importance for access to gas networks. It also covers upcoming policy revisions that aim to reduce the current barriers for biomethane injection. Additionally, insight into country-specific situations on cost-sharing, injection fees, and the metering system in place for gas quality measurements are discussed further in the following sections.

1.1 Biomethane in the European gas grid

In Europe, there are two types of gas grids: the transmission grid and the distribution grid. The transmission grid consists of high-pressure pipelines that transport gas over long distances, often between countries. On the other hand, the distribution grid is made up of low-pressure pipelines that deliver gas to homes, businesses, and industrial facilities within a specific area. While Transmission System Operators (TSOs) are responsible for the transmission grid, Distribution System Operators (DSOs) oversee the distribution grid.

Biomethane plants can be connected either to the distribution grid or the transmission grid, or they can be set up without a grid connection. According to EBA's database, 58% of the biomethane plants currently active in Europe are connected to the distribution grid and 17% are connected to the transport grid. 9% of European biomethane plants do not have a grid connection, and the grid status of the remaining 16% of Europe's plants is not recorded (figure 1). The choice of whether to connect a plant to the distribution or transmission grid is influenced by several factors. Firstly, the vicinity of the relevant grid to the plant's location is of importance, as the connection costs are determined by the distance between the plant and the grid. Connection to the transport grid can be of particular interest to larger biomethane plants, as the transport grid has higher capacities and can therefore handle larger volumes.

Biomethane plants also have the option of producing Bio-CNG or Bio-LNG on-site and avoiding the need for a grid connection altogether. Bio-CNG or Bio-LNG can be delivered to a filling station and sold as a transport

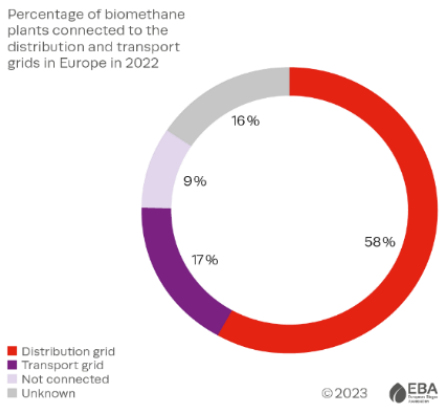

Figure 1

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fuel or sent via truck to its final end-users. Off-grid biomethane production is of particular interest in rural areas with limited access to the gas grid.[1]

1.2 EU Regulations for Grid connection

At the time of writing (February 2024), the EU legislation does not provide a legal basis for grid connection of biomethane producers. Historically, the natural gas system has been designed to operate from a few centralized injection points at LNG terminals and at interconnection points. This has been long reflected in the EU legislation on gas networks and the EU gas markets, namely the Directive 2009/73/EC ("Gas Directive")[2] and the Regulation 2009/715/EC ("Gas Regulation")[3]. In there, connection requests are addressed regarding connecting consumers, not decentralised producers of gaseous fuels.

These two EU laws do not provide provisions enabling grid connection of biomethane production facilities to the gas grids. In particular, the following gaps are observed:

a. No obligation for networks operators to address a connection request, to make a feasibility study and to build the connection.
b. No rule establishing clear, transparent, non-discriminatory rules about addressing and implementing connection requests.
c. No rule of the cost sharing of the building of grid connections.
d. No obligation for network operators to ensure firm capacity to biomethane producers.

Grid connection had to be addressed in national legislation and by decisions of national regulatory authorities. Therefore, there have been considerable discrepancies between Member States in their legal framework for developing grid-connected biomethane production plants, with some countries having a right to injection, while in others, there is no legal security for grid operators and project developers to agree on grid connection. Grid operators are regulated entities and as such, their expenditures and the tariffs of their services should be examined and validated by the designated national regulatory authority (NRA).

As part of the EU Green Deal, the European Commission put forward in December 2021 a proposal for revision of both the Gas Directive and the Gas Regulation ("Gas Package"). Their proposal included a new right to injection for producers of low-carbon and renewable gases. The co-legislators struck a political agreement on the Gas Package on 8 December 2023 and the formal adoption of the revised laws is expected by end of April 2024. At time of writing of this briefing, it is confirmed that the final deal included a new right to injection made up of two principles: a) an obligation for grid operator to address connection requests, including when located outside gas-served areas; b) Use of transparent economic and technical criteria to assess feasibility of the requests. On top of this, TSOs and DSOs have the obligation to cooperate to address connection requests.

Once the revised Gas Directive is transposed into national law, and the Gas Regulation implemented by Member States, NRA and grid operators, project developers should be able to use the right to injection in all Member states.

[1] EBA Statistical Report 2023
[2] Directive 2009/73/EC of the EP and the European Council of 13 July 2009 concerning common rules for the internal market in gas and repealing Directive 2003/55/EC.
[3] Regulation 2009/715/EC of the EP and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005.

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2. Grid Connection Cost and Investment.

As regulations with respect to enabling grid connection for biomethane plants are mostly addressed at the national level, diverse approaches exist between countries. In the following, an overview is given on the differences between countries when it comes to grid connection cost sharing, applied injection fees for biomethane and gas quality assurance. The variation in the application of injection fees can directly affect the operational costs for biomethane producers, potentially influencing investment decisions and the overall competitiveness of biogases as an energy source in different national contexts. The data presented was compiled as part of the GreenMeUp project, through a questionnaire of 28 countries (EU27+UK). The responses were collected from various stakeholders, including biomethane producers, grid operators, and national biogas associations. The questionnaire aimed to gather information on the policies and practices related to biomethane grid connection. The data was then analyzed to provide insights into these aspects across the European Union. The sections below highlight examples from various countries, while the full results can be found in the annex.

Figure 2 Distribution of cost sharing for grid connection in Europe.

2.1 Grid connection cost sharing for biomethane

Grid connection costs refer to cost for injection station and the cost for constructing gas pipelines from biomethane plants or projects to the existing infrastructure of the gas grid network. The cost of a grid connection depends on several factors, including the location of the project, the size and capacity of the plant, and the extent of coverage of the existing infrastructure of the network. The principles of grid connection cost sharing vary among EU countries. Out of 27 EU countries, 10 countries have grid connection costs shared between the biomethane producer and grid operator, 10 countries do not share connection cost hence the cost is attributed to the biomethane producer, and in 8 countries the situation is unknown, see figure 2.

In France, since 2018, the involved grid operator, either TSO or DSO, takes 40% of the cost of connection of biomethane plants. In 2022, the contribution of the operator increased to 60%, with limit of 600 000€. In 2023, this mechanism was extended to all renewable and low-carbon gases, and application orders are still pending. The costs for the biomethane injection into the gas grid in Germany is shared, with the plant operator taking 25% of the construction cost and the gas grid operator takes 75%. In case the length of the connecting pipe is less than 1,000m, the share of the biomethane plant operator must not exceed 250,000 EUR. If the connecting pipe is longer than 10km, the plant operator bears 100 percent of the additional costs. Also, the connecting pipe, including the injection unit, is the property of the gas grid operator.

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In Belgium (Wallonia) the injection station, the costs of odorization and quality control are for the grid operator. The rest of the injection costs, including any remaining cost for the injection station, is to be charged to the biomethane producer (ranging between €130.000 to €250.000). If necessary, grid extension is also charged to the biomethane producer. On the other hand, countries like the Czech Republic and Lithuania do not have grid connection cost sharing, placing the financial burden solely on the biomethane producer.

2.2 Injection Fees

The data also reveals a diverse approach in terms of injection fees across various countries. Injection fees refers to the charges associated with injecting biomethane into the gas grid. The charges can be related to the installation and maintenance of metering and measurement systems, grid access charges and costs for ensuring gas quality. This fee is applicable in 11 out of the 27 EU countries, 9 countries do not have injection fees and for 8 countries no data is available.

In countries like Sweden, the TSOs and DSOs charge injection fees. However, the height of the fee can be reduced if the biogas producer chooses to pay a larger connection fee. If the biomethane producer covers all the connection cost, the injection fee is zero. The TSO will also charge a pressure increase fee if the connection of biomethane production will result increasing the grid pressure. In Hungary, biomethane injection fees depend on the producer's assurance of gas injection. This gurantee results in an injection fee equal to the construction cost to the distribution line. Without an injection assurance the connection fee will be determined in view of the cost of the construction of the connection point, network upgrading, and equipment costs for measuring technical parameters, all covered by the biomethane producer. Whereas in Latvia, the biomethane operator is obliged to bear all costs charged by the transmission system operator, which currently stand at 2.97 EUR/MWh (transmission system entry-exit fee). Countries like Germany, Estonia and Czech Republic do not have any injection fees applied.

Figure 3 Distribution of Injection Fee Applied for biomethane in EU countries.

2.3 Gas Quality Assurance and the metering system

The gas quality measurement and metering system operation, ownership and maintenance is also differs from on country-basis. Gas quality measurement refers to the process of determining the physical and chemical properties of biomethane, such as its composition, and impurities. This information is crucial for assessing the suitability of biomethane for injection into the gas grid and for monitoring the quality of the gas during its transportation and distribution. The metering system is responsible for accurately measuring

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the volume and energy content of the biomethane being injected into the gas grid. This information is used to ensure that the biomethane meets the requirements of the gas network and to bill the biomethane producers or consumers for the amount of gas injected or consumed. In most cases the gas quality measurement is done by the biomethane producer but in some countries the gris operator is in charge. The metering system, to a greater extent operated by the grid operator - Italy for example. See figure 4 below.

In Lithuania, the biomethane producer installs, owns, and operates all equipment, related to measuring of biomethane parameters. All the measured data is made available to the grid operator. The biomethane producer and TSO sign the act on liability limits, where the boundaries between ownerships are defined. Grid operators in Ireland require biomethane producers to install gas chronometers to measure the gas quality and provide the measurement data. Also, before a new plant or new source of gas is injected, the grid operator must be provided with gas quality samples. The meter ownership is currently subjected to a regulatory consultation and the draft decision of the regulator is that the network operator will own the meter. In Portugal the monitoring responsibility is shared between the producers and the grid operators and in Switzerland it is subjective to the agreement between the grid operator and the biomethane. In Poland the biomethane producer is responsible for both gas quality measurement and owns the metering system.

The disparity in gas quality assurance policies can have implications for the consistency of biomethane as a renewable energy source across different national markets. This is also an important parameter in cross-border trading, especially the oxygen tolerance amongst countries being addressed by the biomethane standards for injection currently undergoing revision.

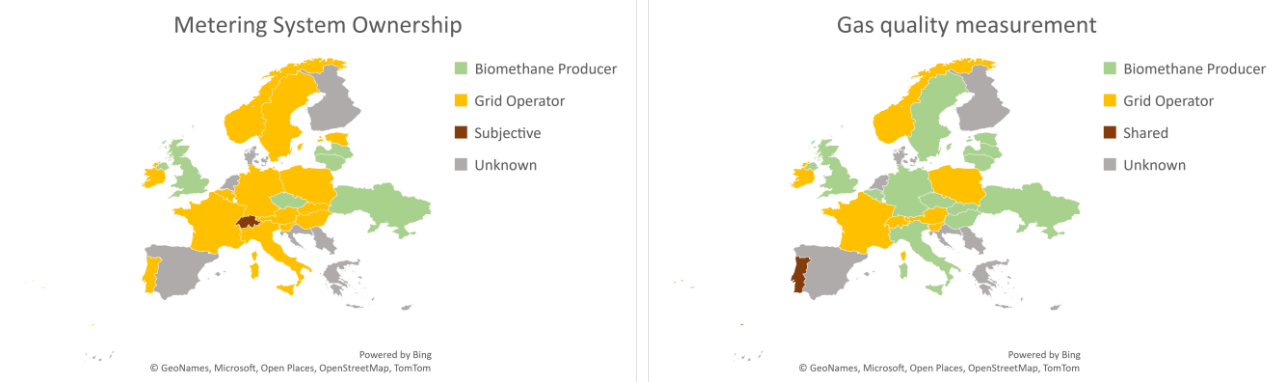

Figure 4 Distribution of the on Gas quality measurement and metering system in Europe.

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Annex – Overview on grid connection.

Country	Are the grid connection investment costs shared between biomethane producer and grid operator? YES/NO If yes, how much costs the grid operators may bear? Please specify if it is applicable to TSOs and/or DSOs If yes, under which conditions? If yes, what is the legal reference? (please cite the Law/Decree/Order)		2) Are there any injection fees applicable? (payments to TSO or DSO that allow for the biomethane grid injection)		3) Who is responsble for gas quality measurements? (biomethane producer or grid operator)	4) Who owns and operates the connection and the metering? (biomethane producer or grid operator)
Croatia	No Data	Unknown	YES/NO	Unknown	Unknown	Unknown
Cyprus	No data	Unknown	YES/NO	Unknown	Unknown	Unknown
Czech Republic	NO	Current situation: the connection to the extraction pipeline is arranged by the investor with the possibility of selling it to the distribution company upon completion. In progress: The Biomethane producer would invest all what is related to the grid connection. The grid operator would invest all what is related to the grid update. Neither TSO or DSO incurs costs. The DSO has to purchase the extraction pipeline when the biogas plant operator calls. The obligation on buyout is in Act No. 165/2012 Coll. - Act on Supported Energy Sources and on Amendments to Certain Acts. Details are in the price decision on regulated prices RELATING TO GAS SUPPLY of the Energy Regulatory Authority	NO	A gas input tax is being considered but the act has not yet taken in effect	Biomethane Producer	Biomethane Producer
Denmark	YES/NO	Unknown	YES/NO	Unknown	Unknown	Unknown
Estonia	YES	The grid connection investment costs are shared between the grid operator and biomethane producers in following way: the biomethane producer will pay the grid injection cost (project design, pipes, safety, etc) in 2 steps. First step is directly the injection related cost till the border of its property plot. Grid operator provides the technical requirements for this. Secondly, biomethane producer pays to the grid operator the gas pipeline network connection fee according to the agreement between biomethane producer and grid operator. Then grid operator builds the connection from producer's property till gas pipe network, installs the measuring equipment and requires the installment of biomethane on-line quality control (gas chromatograph) or access to the gas chromatograph data, if the chromatograph is installed to the producers site in distance in the case of virtual pipeline.	NO	No application injection fee	Biomethane Producer	Grid Operator Link:https://www.riigiteataja.ee/akt/130122021016?leiaKehtiv
Finland	YES/NO	Unknown	YES/NO	Unknown	Unkown	Unknown
France	YES	The grid investment costs were until November 2019 borne by the first producer to ask for the new connection to be made. A new scheme is being enforced, where other ongoing projects are considered to share the cost between them. Since 2018, the involved grid operator, either TSO or DSO, takes 40% of the cost of connection of biomethane plant. In 2022, the contribution of the operator was increased to 60%, within the limit of 600 000€. In 2023, this mechanism was extended to all renewable and low-carbon gases, and application orders are still pending. Since 2019, the "Right to Inject" regulation also enables grid operators to make the necessary adaptation of the existing grid and invest in new infrastructure to facilitate injection for new biomethane projects (meshing distribution grids, reverse flow station from low pressure distribution grid to high pressure transport grid). These reinforcements follow optimal territorial zonings based on a technical and economic criterion (Reinforcement Investment/Additionnal Volume of injected biomethane). Based on this ratio, the cost of reinforcement can be fully or partially borne by the grid operator, the rest-to-pay being charged to the biomethane producer. A variable fee ranging between 0 to 0.7 €/MWh is applied by network operators to the producers who benefit from the reinforcement **Legal references:** **60% discount on connection** - Articles L452-1 & L452-1-1 of Energy Code for TSO and DSO, respectively; introduced by the "Climate & Resilience Law" published on 24th August, 2021; and extended to all renewable and low-carbon gases in the "Acceleration of Renewable Energies Production Law" published on 10th March, 2023 - Application orders published on 2nd March, 2022 for biomethane, and still pending for other gases (https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000045331779) **Right to inject scheme (grid reinforcement)** - Article L453-9 of Energy Code introduced by the "Agriculture & Food Supply Law" of 30th October, 2018; and extended to all renewable and low-carbon gases in the "Acceleration of Renewable Energies Production Law" published on 10th March, 2023 - Application orders still pending for other gases than biomethane	YES	The injection fee for biomethane injection includes injection skid rental (exploitation & maintenance), gas quality metering, and gas odorisation. All cost are given including taxes. - DSO: approx. 15k€ /trimester, i.e. 45k€/year (installation cost is included) - TSO: approx. 450k€ for injection skid installation (which can benefit from the 60% discount) + 41k€/year	The grid operator is reponsible for gas quality measurements prior to injection.	The grid operator owns and operates the connection and the metering, including the injection skid. Legal reference - Article R554-41 of Environmental Code

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Germany	YES	Cost division local DSO / producer is regulated. When connecting to the transmission grid, most of CAPEX is made by the TSOs Injection skid paid by grid operators (TSOs and DSOs).The costs for the biomethane injection into the gas grid will be shared between the plant operator and the gas grid operator in the proportion 25%/75% accordingly. In case the length of the connecting pipe is less than 1,000 m, the share of the biomethane plant operator must not exceed 250,000 EUR. If the connecting pipe if longer than 10 km, the plant operator bears 100 percent of the additional costs. The connecting pipe including the injection unit is the property of the gas grid operator. **OPEX** is 100 % at the TSO/DSO. The costs are socialised: all gas customers in Germany pay a "biogas charge" when getting gas from the grid. **Sources:** Gasnetzzugangsverordnung (Gas grid access regulation; https://www.gesetze-im-internet.de/gasnzv_2010/); FNR (2014): C3	NO	**See Details:** Sources: Gasnetzzugangsverordnung (Gas grid access regulation; https://www.gesetze-im-internet.de/gasnzv_2010/); FNR (2014): C3	Plant operator, i.e. the biomethane producer for minimum requirements according to: DVGW-Arbeitsblätter G 260, G 262 and G 685. **Source**: https://www.eamnetz.de/fileadmin/user_upload/Fuer_Einspeiser/PDFs/Einspeisung_von_Biogas/Technische_Mindestanforderungen_zur_Einspeisung_von_Biogas.pdf Any additional quality requirements: grid operator is responsible. Source: Leitfaden Biogasaufbereitung und -einspeisung. **Available from** https://www.fnr.de/fileadmin/Projekte/2021/Mediathek/leitfaden_biogaseinspeisung-druck-web.pdf C3	Grid operator (for details, see picture in the Excel sheet "CAPEX sharing" - Germany). **Source:** https://www.eamnetz.de/fileadmin/user_upload/Fuer_Einspeiser/PDFs/Einspeisung_von_Biogas/Technische_Mindestanforderuerngen_zur_Einspeisung_von_Biogas.pdf
Greece	YES/NO	Unknown	YES/NO	Unknown	Unknown	Unknown
Hungary	NO	Costs is borne by biomethane producers	YES	If the transmission of natural gas/biomethane injected by the natural gas/biomethane producer can be ensured, the connection fee is equal to the cost of the construction of the connection point to the distribution line. If the transmission of the natural gas/biomethane injected by the natural gas/biomethane producer cannot be guaranteed, the connection fee will be determined in view of the cost of the construction of the connection point + the cost of the network upgrading on the existing pipeline system + the equipment necessary to measure the technical and quality parameters of the natural gas/biomethane to be injected.	Biomethane Producer	Grid Operator
Ireland	YES	**Yes (Subject to an economic test)** This is applicable to both TSO and DSO. The developer is charged a minimum of 30% of the connection construction cost. An economic test is applied whereby the volume of gas produced is assessed and the valued of tariffs collected by the DSO/TSO from this gas over a 10 year period is computed. If the value of these tariffs in Net Present Value terms is equal to or greater than 70% of the cost of the connection construction costs then the producer is charged 30%. If the value is less than that 70% then the producer has to make up the difference. A standard contribution of 30% of the estimated costs for the connection assets. A supplemental "economic test" contribution to provide for any shortfall in the capital costs of the connection not recovered through attributable tariff payments. The connections policy also incentivises connecting parties to the 'least cost' or most efficient solution - for instance, a transmission connection is only viable for a very large customer. When the cost of connecting fully meets the economic test a producer pays 30% of the upfront capital cost of connecting infrastructure. If, however, the biomethane plant is a significant distance from the existing gas network the producer pays an amount in excess of 30% increasing with distance and associated connection cost. The policy is set out in the Gas Networks Ireland Connections Policy Document Effective from 15 October 2018 Revision 5.0. The policy was approved by the Commission for the Regulation of Utilities which is responsible for regulation of natural gas undertakings, under the Electricity Regulation Act 1999, as amended.	YES	There is a TSO injection fee for biomethane. A DSO injection fee has not been developed, as yet	As part of the connection design a Gas Chronometer is installed and data from this is available to the producer and Gas Network Operator. If the quality of gas falls outside the specified standard a valve will automatically be closed and the gas will be diverted away from entering the grid until or unless it meets the standard again. This is a requirement imposed by the Gas Network Operator. Also before a new plant or new source of gas is injected, the Gas Network Operator has to be provided with gas quality samples. Also, if a biomethane producer is making a substantial change in sources of feedstock the gas network operator has to be notified. The Ownership of the Gas Chronometer is currently the subject of a regulatory consultation, and the draft decision of the regulator is that the network operator will own the Gas Chronometer, but the final decision is only excepted in the coming weeks and is not certain.	The Ownership of the connection is the Network Operator either DSO or TSO. The Meter ownership is currently the subject of a regulatory consultation, and the draft decision of the regulator is that the network operator will own the meter, but the final decision is only excepted in the coming weeks and is not certain.
Italy	YES	There may be cases in which all costs are borne by the network operator when the distance between the system and the connection point is limited. In general, connection costs are calculated on the basis of tables provided by the network code (in the case of transport networks) or other regulations (in the case of distribution networks). Below a certain spending threshold the amount could be entirely borne by the network manager, above this threshold, there is expected to be a share borne by the producer. The network manager pays until the threshold is reached, the remaining part is borne by the producer. Provided that the producer accepts the connection quote. Also provided the connection is made. If the producer renounces making the connection after accepting the connection estimate, he must pay everything spent by the network operator. The SNAM network code and various ARERA resolutions approving network codes apply	NO	There are no injection fees	The biomethane producer	The network operator (on request, the manufacturer can manage the measurement itself but this never happens).
Latvia	YES	The biomethane producer is accountable for all associated connection costs	YES	The biomethane operator is obliged to bear all costs charged by the transmission system operator, which currently stand at 2.97 EUR/MWh (transmission system entry-exit fee). The Association has put forth a proposal advocating for a 50% reduction in this fee over the coming six years	The biomethane producer bears full responsibility for ensuring the gas meets quality standards. If the biomethane fail to conform to the quality parameters, it will not be accepted.	In the current TSO plan, it is proposed that the injection point with metering will be transferred from the biomethane producer to the Transmission System Operator (TSO). However, the association is unwilling to accept this change without a guarantee for the reimbursement of equipment costs.
Lithuania	NO	All costs, related to connection to transmission system, are covered by biomethane producer.	YES	At TSO only standard tariffs for using transmission system are applied. Tariffs for commercial green gas (biogas) are applied as to any Entry point. All biomethane injection points are under "Domestic Entry point" - entry point into the transmission system that does not have a defined physical location in the transmission system. Here are information on tariffs : https://ambergrid.lt/en/for-clients/services/tariffs-and-prices/637	Biogas producer installs all equipment, needed to measure all required gas parameters. While all biogas parameters are measured by the biogas producer, all the data is made accessible to the TSO.Quality of biomethane injected into the transmission system must comply with the Order of the Minister of Energy of the Republic of Lithuania on the Approval of Natural Gas Quality Requirements.	Biogas producer installs, owns and operates all equipment, related to measuering of biogas parameters. However, despite biomethane producer covers all the costs, related to connection to transmission system, new valve site and new pipeline, connecting new valve site and TSO's transmission system, are owned and operated by TSO. Biomethane producer and TSO sign the act on liability limits, where the boundary between ownerships is defined.
Netherlands	YES/NO	Unknown	YES/NO	Unknown	Unknown	Unknown
Norway	NO	In general in Norway the biogas plant sells raw gass, the gas company owns the upgrading unit and the grid if any close by	NO	There are no specific fees	The grid operator because they are in charge of the upgrading unit	The grid operator because they are in charge of the upgrading unit

Poland	NO	Cost fully borne by bioemthane producers	NO	There are no fees	Grid Operator	Grid Operator
Portugal	NO	The producer(s) will pay for the complete connection CAPEX (pipeline, injection station, etc) - Article 72(1) of Decree-Law No. 62/2020, of 28 August. If the network operator proposes the oversizing of the connection and related infrastructures, with the aim of obtaining an overall more economical solution for all possible uses of the connection, it has to contribute to the respective constitution costs, under the terms to be established by the National Regulatory Authority - Article 72(2) of Decree-Law No. 62/2020, of 28 August.	YES	The existence of fees for the access to transmission and to distribution networks is established under Article 16(1) of Regulation No. 407/2021, of 12 May, of the National Regulatory Authority.	The responsibility for monitoring the quality of the biomethane to be injected in the grid is shared between producers and network operators - Article 39 (2) and (6) of Regulation No. 826/2023, of 28 July, of the National Regulatory Authority, respectively.	Network operators own and operate renewable gas mixing and injection stations, in accordance with Article 16(3) of Order No. 806-B/2022, of 19 January 2022, and with Article 16 of Order No. 806-C/2022, of 19 January 2022.
Serbia	YES/NO	Unknown	YES/NO	Unknown	Unknown	Unknown
Slovakia	YES	Based on a written request, the operator of the distribution network (SPP-Distribúcia) is obliged to preferentially connect the biomethane producer to the distribution network. The costs of building a connection to the distribution network are borne by the distribution network operator to the extent of 75% of the actual costs. The biomethane producer installs the connection at his own expense and then sells it to the SPP-D for 75% of the value (value based on an expert opinion), but a maximum of 250,000 EUR. If the length of the connection that needs to be built exceeds four kilometers, the biomethane producer will cover the costs associated with building the connection over four kilometers in full. The biomethane producer's written application for connection to the distribution network contains data on the amount of biomethane to be distributed and the applicant's proposed connection point. § 11a par. 4 of Act no. 309/2009 Coll. on the support of renewable energy sources and highly efficient combined production as amended by Act no. 136/2011 Coll.and the Technical Conditions of SPP – Distribúcia.	YES	No further information available	According to the rights and obligations of the producer of renewable gas, the producer of renewable gas must ensure continuous measurement of the quantity of renewable gas and the quality of renewable gas, including the evaluation and transmission of the necessary data to the operator of the distribution network, unless otherwise agreed with the operator of the distribution network. According to point 3.6.1.4 of the Technical Conditions of SPP – Distribúcia, the producer of biomethane is obliged to a) measure the quality parameters, temperature, pressure, flow and overflow of the amount of biomethane delivered into gas grid, b) demonstrate the hygienic safety of the biomethane before starting the transfer of biomethane to the distribution network and at every change in the production technology of biomethane. In case of failure to demonstrate hygienic suitability according to the previous sentence, or if there is a risk of transferring hygienically objectionable biomethane to the distribution network, SPP-D has the right to disconnect or interrupt the distribution of biomethane from biomethane plant.	Grid Operator - SPP-Distribúcia
Slovenia	NO	The costs of the gas pipeline to the MRP (measuring and regulating station) metering and regulation station next to the biogas plant will be borne by the system operator. It is likely that there may be different approaches to cost sharing between biogas plants and natural gas grid system operators agreements or regarding investment value.	NO	No legal regulations regarding the costs of entering the distribution system, which should be settled by the biomethane producer on the basis of the access contract (for entry) concluded with the DP-SODO system operator of the grid distribution.	The grid manager who receives the biomethane is responsible for the final quality measurements of the biomethane before injecting it into the network. Pre-measurements are (optionally) carried out by the biomethane producer, only for the purpose of their own inspection of the biomethane quality.	The operator of the grid in the measurement and regulation station, which he implements and which he owns and maintains, with a gas chromatograph for measuring the quality of biomethane.
Spain	YES/NO	Unknown	YES/NO	Unknown	Unknown	Unknown
Sweden	Yes	Cost sharing isn't regulated in detail in Swedish legislation, see extracts from The Natural Gas Act (2005:403) below. The law stipulates that the propietor of a natural gas pipeline is obliged to connect to his gas pipeline , on reasonable terms. (chapter 3, §5). The charges and other conditions for connecting a natural gas company or an entitled customer to a natural gas pipeline shall be reasonable, non-discriminatory and shall be drawn up on objective grounds. (chapter 6, §1).The method used to decide the terms for connecting must be approved by the supervisory authority ex ante and published. (chapter 6, §1a-b). We therefore provide a description of how it works in practise for the Swedish TSO grid. The connecting biomethane producer pays a connection fee that covers a part of the connection investment. The size of the connection fee depends on the size of the connection investment and expected future injection fees. Higher expected future injection fees will lower the connection fee. The TSO also has an option where the connection fee equals the connection investment, and the injection fee is zero. When connecting biomethane production to the natural gas grid, the biomethane producer bears the cost of the connection investment. If the producer pays the entire investment in connection fee, the transfer fee is zero. Alternatively, a part of the investment is paid as connection fee, and the transfer fee is applied. The TSO owns and operates the connection and the metering as a minimum, but could also take a larger responsibility of pressurizing equipment etc. The producer is responsible for gas quality measurements. At local/regional grids there may be other procedure (up to the grid owner).	Yes	TSO and DSO has injection fees. The TSO has an alternative of a reduced injection fee if the biogas producer choose to pay an larger connection fee. If the connection fees equals the connection investment, injection fee is zero. The TSO will also charge a pressure increase fee if the connection of biomethane production will result in cost for increasing the pressure.	The biomethane producer is responsible to fulfil gas quailty requirements. The grid operator is responsible for gas measurement for debet and balancing reasons. But it is not regulated in law who is responsible for the measurement needed to secure fulfilment of the gas quality specification. Operating and owning of measurement for gas quality can be done by the grid operator or the biomethane producer.	Grid Operator owns and operates the connection including the metering needed for debet and balancing reasons.
Switzerland	YES	The costs must be paid by the producer. In some cases, the grid operator might be interested to finance the grid, for e.g. if he can connect new customers on the way to the biomethane plant. But these are exceptions.	NO	No injection fees applicable	Basically, the grid operator is responsible for the quality of the gas in his grid,but he can ask the producer to do the measurements.	Depends on what has been agreed between operator and producer.

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United Kingdom	NO	Biomethane installations must pay for the full cost of connecting to the natural gas network. The cost is determined on a site by site basis and varies considerably between different grid operators. The industry is pushing for this process to be standardized and costs reduced.	YES	There are charges for the use of the system, both transmission and distribution networks. These charges are levied on the gas shippers (ie the party to whom the biomethane producer sells their gas) and are deducted from the gas sales income received by the producer	The biomethane producer must install and maintain the equipment that demonstrates this. The systems are automated and if not satisfactory the gas network will not allow the gas to be injected	The biomethane producer must pay for the physical grid connection (as well as the network operator's time in approving it) and the metering equipment. Once operational, the grid connection is 'adopted' by the network - it transfers into the network's ownership. The metering equipment remains the property of the biomethane producer, with a few minor exceptions that vary between grid operators.
Ukraine	NO	Ukraine has developed infrastructure for natural gas transport including both main pipelines and distribution pipelines network, providing gas access to 75% of the population of Ukraine. Gas supplier should cover total cost of grid connection. It could be gas extraction enterprises, producers of biogas (biomethane) and other gas from alternative sources, who deliver their gas to the transmission system at the entry point. It is also the responsibility of the supplier to install all monitoring equipment and cover all the cost associated with measurement procedure.	YES	The cost of connection services provided by the Operator of GDN/GTS consists of the cost of connection of the Client's facility to GDN/GTS and individual services (works) related to the connection and current activity of the Operator of GDN/GTS. The cost of connection of the Client's facility is determined by the Operator of GDN/GTS in the connection agreement in accordance with the Methodology for setting a fee for connection to the gas transmission and distribution systems, approved by the Regulator's Resolution No. 3054, dated 24.12.2015. The standard connection fee includes, in particular, the service of installing a metering unit at the metering point to ensure its protection from adverse weather conditions and unauthorized access, as well as services for connecting external and internal gas supply networks, and commencement of gas injection.	Measurement data of the GDN operator are accepted for commercial accounting when biomethane is delivered from the biomethane producer to the GDN. In the event of the absence of measurement point of GDN operator the data from the commercial accounting of biomethane producer is accepted. For GTS measurements (commercial accounting) is based on the monitoring data of of the gas supplier (biomethane producer) by default.	Commercial gas quality monitoring stations for new projects may be owned by biomethane producers. Although it is possible to transfer the monitoring point into ownership of the gas network operator.
Belgium	YES	**Wallonia:** The investment cost is charged to all users of the distribution network. The operational cost is charged to the biomethane producer. The grid connection costs, specifically from the cabin to the network, are the responsibility of the project bearer, amounting to 5,000€.	YES	There is an injection fee for Transmission System Operators (TSO) / Distribution System Operators (DSO), which averages to 1 €/MWh injected with a cap of 50,000€ per year. DSO and TSO carry most of the costs for injection, such as gas quality control and odorization.	The injection point with quality control is installed by the local DSO.	Grid connection and metering responsibilities fall to the DSO. This marks the boundary of the company's responsibility. Quality control is the producer's responsibility.
	YES	**Flanders TSO:** In Belgium the connection for injection exists of (1) the pipe connection itself, the gatekeeper and evt. compression). The connection is build (property) and operated by the operator. Both for connection on the distribution grid and transport grid, the DSO/TSO bear in average 50% of the investment cost. Operational cost for the connection are at the expense of the producer. The price-impact of the contribution of the producer related to the investment is less than 1 €/MWh over a period of 15 years production. Operational cost are higher when there is a compression (TSO case) Note that, the pipe-line construction from the nearest gas-grid pipe to the connection point is not included in this and is at cost of the producer, following the regulatory rules in force (as approved by the competent regulator). The approach (conditions) for connection is as follows (in order of preference): (1) on the low pressure grids; (2) in case restrictions of the flow in the summer TSO and DSO investigate a 'recompression'; (3) for injection flows above 1000 m³(n) TSO grid with compression; (4) when only the TSO grid is nearby, and the flow is not too low (economically feasible). Note that there is no obligation to connect if the gas-grid is to far away or if it is economically not feasible. Besides the fact that the producer has to contribute to get connected, in case of dispute the competent regulator will decide on the matter, and its conditions. Tariffs and conditions for connections are approved by the competent regulators (regional for DSO and national for TSO). They are reflected (or referred to) in the connection agreement between producer and the operator. Relevant tariffs are yearly indexed and published on the relevant operators website.	Yes	Both for DSO and TSO there is an injection tariff applicable (which is approved by the relevant regulator). Today tariffs in Wallonia are around 1€/MWh while in Flanders and national (TSO only) they are around 0,7€/MWh. Tariffs are published on the website of the respective DSO's and TSO.	The producer is responsible for the delivery of the biomethane within the specification of the Synergrid norm G8/01 (Belgian norm). In this respect the producer shall install the necessary equipment to fulfil his obligations. However the DSO's or TSO install a gate keeper. Besides the odorization (DSO only), security valves, a three way-valve and flow meter, the gate keeper consist of counterfactual gas quality measurements which are on-line metered . In case of off-spec gas measured by the DSO/TSO the biomethane is returned to the biogas plant (via the three way-valve) for re-upgrading.	The connection itself, consisting of the gate keeper (including the measurements) and evt. compression (only in case of TSO) is owned, maintained and operated by the operator. The producer will provide the necessary energy for the utilities and compression (where applicable)
		Flanders DSO: Yes, for the injection station, the costs of odorisation and quality control are for the DSO. The rest of the investment costs for the injection station will be charged to the producer (€130.000 to €250.000). The grid connection and (if necessary) grid extension is also charged to the producer.	YES	An injection fee is charged for operating the injectionstation (maintenance, processing measurement data, calibrations, sampling and interventions). This tariff is determined by the VREG (Flemish gas market regulator) and amounts to ±€0.64/MWh (for 2023). Iveka distributienettarief injectie aardgas 01/01/2023 - 31/12/2023 | Fluvius	The producer is responsible for the gas quality and also needs equipment to monitor this during the process. The final quality control which decides whether or not to inject into the network is the responsibility of the DSO.	The connection and the metering are owned and operated by the DSO.
Austria	YES	In accordance with §75 (3) Gaswirtschaftsgesetz (GWG) 2011: Up to a grid connection quotient of 60 lfm/m³ CH4-eq/h.The grid operator bears the following costs 1. grid access for the feed-in of renewable gases (new plants: max 10km;existing plants: max 3 km), 2. quantity measurement, 3. the quality check, 4. any odorisation, 5. compressor stations or pipelines required for continuous compressor stations or pipelines required for continuous feed-in.	NO	No information available	Grid Operator	Grid Operator

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