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Pipelines of Uncertainty

The Need for Full Emissions Transparency in Europe's Midstream Gas Sector

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European gas transmission system operators (TSOs) continue to exclude downstream emissions from transported gas in their Scope 3 reporting, contrary to guidance from disclosure platform CDP and target-certifier the Science Based Targets initiative.

These "transported" emissions are on average about 150 times larger than TSOs' total reported Scope 1-3 emissions — and are currently unreported and unavailable to investors.

Of the six TSOs analysed in this report, only two disclose estimates of these emissions, despite making bold claims about decarbonising their grids by transporting lower-carbon gases in future.

In IEEFA's view, TSOs should integrate transported emissions into their Scope 3 reporting. This would increase the credibility of their long-term strategic vision and enable stakeholders to objectively track TSOs' decarbonisation progress over the coming decades.

Executive Summary

Every year, European gas transmission system operators (TSOs) pump vast amounts of natural gas through their networks towards final use, typically to be burnt as a fuel to generate heat and power for industry and households. This releases huge volumes of carbon dioxide into the atmosphere — amounting to about 800 million tonnes, or 29% of the EU's total fuel combustion emissions, in 2022.[1] With their dedicated networks of pipelines, liquefied natural gas terminals and gas storage facilities, these regulated monopoly companies are responsible for the regasification, compression, transportation and storage of gas.[2]

The ongoing energy transition and accompanying move away from gas consumption have presented gas TSOs with an existential threat. Their regulated business model, which has traditionally attracted billions of euros in low-risk, long-term investment and financing each year, will no longer be viable as gas is gradually displaced from the energy mix. This could lead, at some point, to investor flight and a downward rerating of equity valuations in the sector.

Gas TSOs' combined response has been to aggressively pivot and rebrand, collectively promoting the vision of a "multi-molecule" transmission grid by 2050 to European governments. In their vision, today's polluting fossil methane will be replaced by a combination of lower-carbon gases, such as biomethane, green and low-carbon hydrogen, and captured carbon dioxide, meaning the transport of molecules for fuel and feedstock would still be needed and regulated (and TSOs' business saved).

For this to manifest, entirely new energy systems and value chains for hydrogen and carbon dioxide will need to be developed. Assuming the substantial techno-economic challenges can be overcome, TSOs aim to own and operate these new networks by constructing new pipelines and facilities, including repurposing some of their existing gas networks. TSOs have so far been very successful at gaining political support for their vision, avoiding (or at least delaying) discussions about a managed phasedown of their gas assets and thereby preserving their business model for a number of years. However, as their conceptual vision meets the realities of implementation (including stubborn physics, chemistry and energy economics), they are clearly making an ambitious bet. Progress towards their multi-molecule vision is already delayed, especially when it comes to green hydrogen and carbon capture technologies.[3,4]

In IEEFA's view, TSOs cannot credibly claim that they (and their vision) are part of the European energy transition story without fully disclosing annual emissions from the final use (combustion) of the gas they transport. These "transported emissions" are by far the largest emissions category in

[1] International Energy Agency. What are the main sources of CO2 emissions in Europe?
[2] Fossil gas, marketed as natural gas, predominantly comprises methane, a greenhouse gas with significant global warming potential when vented or leaked directly into the atmosphere. When combusted for use, methane reacts with oxygen in the air to form carbon dioxide and water. In 2023, approximately 3,335 terawatt-hours or 318 billion cubic metres of gas was injected into the EU gas grid, according to Eurostat data.
[3] Gas Outlook. Most European hydrogen projects show very little progress: report. 30 January 2025.
[4] Green Hydrogen Organisation. The European Commission wants a 90% cut in emissions by 2040 – it won't get there without green hydrogen.

their value chain, orders of magnitude larger[5] than their reported Scopes 1-3 emissions combined. But to date, TSOs have excluded them from Scope 3 reporting, citing the technicality that they do not own or sell the gas, only transport it. This clearly contradicts their marketed role as energy transition partners committed to reducing transported emissions by shifting to multi-molecule low-carbon gas networks. Global ratings agencies Moody's and S&P have also noted this issue in their assessments of TSOs Snam's and Gasunie's sustainable finance frameworks, as has the think tank Anthropocene Fixed Income Institute.

This loophole has formed thanks to a lack of clear guidance from standard-setter the Greenhouse Gas (GHG) Protocol, which currently sees three possible (and contradicting) interpretations of its Scope 3 standard in this context. One interpretation upholds the technicality of exclusion based on non-ownership or non-sale of gas. But the other two interpretations and the guidance of reputed data disclosure platform CDP all recommend reporting transported emissions given the clear materiality of this category.[6] The Science Based Targets initiative (SBTi), a standard-setter for emissions reduction targets, had also encouraged TSOs to report these emissions before it withdrew its coverage of oil and gas companies and paused development of its oil and gas standard.[7] Likewise, development of the European Sustainability Reporting Standards (ESRS) sector-specific guidance was put on hold to prioritise work on the EU's new Omnibus simplification agenda.

Thus, due to zero enforcement of CDP's guidance, a lack of clarification from the GHG Protocol and the delay of relevant standards from ESRS and SBTi, there has so far been insufficient pressure on TSOs to improve their transparency. Instead, gas TSOs continue to report far smaller Scope 3 emissions, which focus on much less material categories such as upstream emissions from purchased goods and services, fuel and energy, emissions from associate/affiliate companies and even employee business travel. In some cases, TSOs have announced emission reduction targets for these categories. Separately, some TSOs also make claims around future "avoided emissions", without reporting the emissions they are enabling today.

Ultimately, this reporting practice makes gas TSO businesses look far less polluting on paper to financial market participants. It could potentially lead to misallocations of capital, mispricing or underestimation of transition risk, and increased concentration of financial risk. Ongoing resistance to report these emissions demonstrates that TSOs' leadership teams believe a higher emissions profile, even on Scope 3, might negatively impact their access to capital or cost of capital, and ultimately their shareholder value. This was referenced explicitly by industry association Gas Infrastructure Europe in a position paper published in August 2025 to defend the status quo: "Investors may be reluctant to fund projects of the system operators." In IEEFA's view, it should not be difficult for all gas TSOs to estimate and report their transported emissions as part of their Scope 3 reporting — rather it should be mandatory for a sector claiming to be integral to the energy

[5] ~40 to 360 times larger for the companies analysed in this report. See Table 6 in Results section.
[6] CDP. Guidance methodology for estimation of Scope 3 category 11 emissions for oil and gas companies. 28 June 2024.
[7] Science Based Targets initiative. Oil and Gas Project: Expert Advisory Group Review Evaluation Report. January 2023.

transition. This reluctance of TSOs to acknowledge their existing role in gas-use emissions, albeit indirect, should give stakeholders cause for concern.

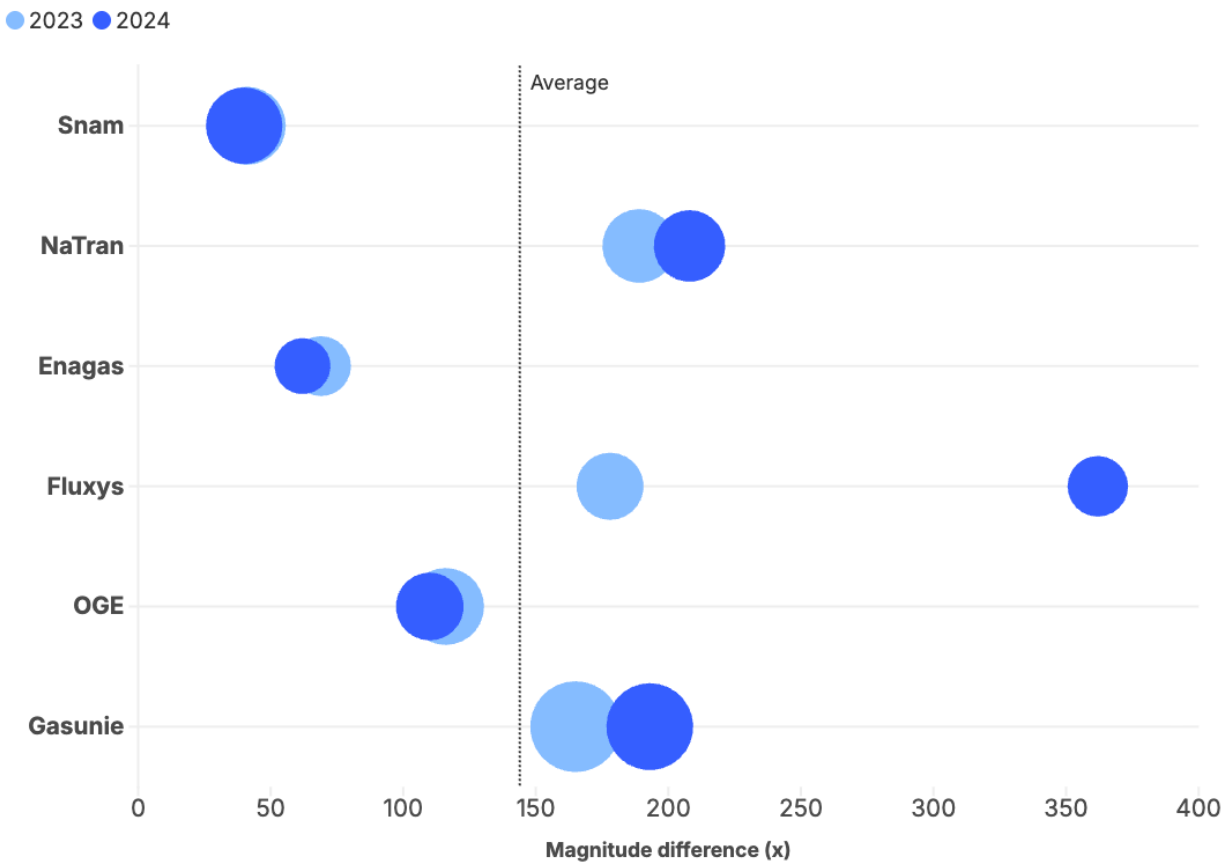
This report delves into a shortlist of six major European gas TSOs: Snam, NaTran, Enagás, Fluxys, Open Grid Europe (OGE) and Gasunie. It summarises their operations and strategies, and presents historical data on their reported Scope 1, 2, and 3 emissions alongside estimates of their transported emissions. The analysis quantifies and highlights the stark contrast between the emissions gas TSOs currently report and the full emissions impact of their value chain. The report also summarises the latest guidance and comments from disclosure platforms, standard-setters and ratings agencies on this topic. Some, such as CDP, SBTi and Moody's, have explicitly highlighted this issue, while others such as the GHG Protocol remain noncommittal or silent on the topic. We urge the GHG Protocol (and others) to publicly clarify this point in their next Scope 3 guidance revisions, ideally in 2026. We also recommend that regulators and investors demand that TSOs quantify and disclose transported emissions within their Scope 3 reporting as soon as possible, to close this reporting loophole and deliver full transparency.

In IEEFA's view, the current cakeism exhibited by gas TSOs — marketing themselves as energy transition partners to financial markets and policymakers while simultaneously shrugging off their ongoing role facilitating substantial GHG emissions — cannot credibly continue.

Key Findings Across Six Major European Gas TSOs

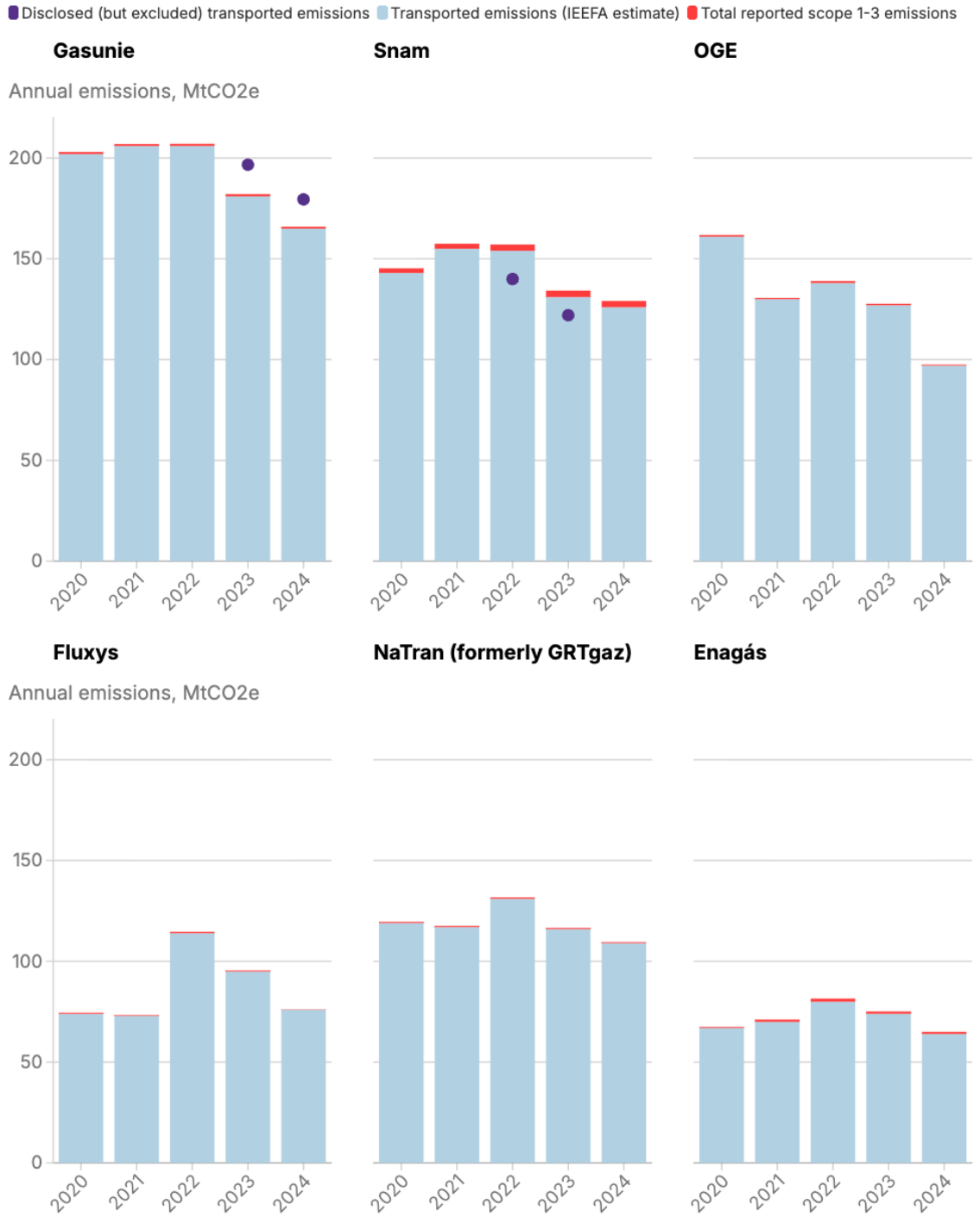
- Transported emissions are on average about **150 times larger** than total reported emissions.
- All the TSOs exclude these emissions from their Scope 3 reporting, ignoring guidance from CDP and SBTi that they should include them as Scope 3 category 11 emissions.
- Only two TSOs publish estimates of transported emissions (Snam and Gasunie).
- Data from some TSOs for some years is incomplete or unavailable. In these cases, IEEFA has used estimates.

Gas TSOs' transported emissions can be hundreds of times larger than their reported Scope 1+2+3 emissions



Sources: TSO annual and sustainability reports, energy regulator reports, responses to IEEFA data requests, IEEFA estimates.

European gas TSOs' transported emissions relative to their reported Scope 1+2+3 emissions



Sources: TSO annual and sustainability reports, energy regulator reports, responses to IEEFA data requests, IEEFA estimates.
Note: $MtCO_2e$ = million tonnes of carbon dioxide equivalent.

Background and Context

The Privileged Position of European Gas TSOs

Gas transmission system operators (TSOs) own and operate the high-pressure pipeline networks, liquefied natural gas (LNG) terminals and gas storage assets that form the backbone of Europe's natural gas supply. They are "midstream" entities, crucially linking upstream gas producers and importers with downstream distributors and major consumers, such as gas power plants and large industrial users. While the major integrated oil and gas companies like Shell, BP or TotalEnergies are household names and often dominate public discourse on fossil fuels, TSOs tend to keep a lower profile, with one non-profit describing them as "the biggest gas companies you've never heard of".[8] But despite their relatively low public profile, their influence is significant because of their substantial financial and operational scale.

The six companies analysed in this report collectively control over 100,000km of gas pipelines and control or hold significant equity stakes in more than half of the EU's LNG terminals. The companies are mostly state-owned or state-linked entities, some have publicly listed shares, and they each manage asset bases worth hundreds of billions of euros. As regulated monopolies in their geographical service areas, the TSOs do not compete in commercial markets to win market share. Instead, national energy regulators set their remuneration mechanisms, which consumers fund through tariffs levied on their bills. This is a crucial point, as without market competition, maximum transparency is needed to ensure that TSOs' investment plans, incentives and rate-setting decisions can be scrutinised and challenged, to ensure consumers are getting a reasonable deal. Larger asset bases typically translate into higher profits for a TSO. This means that publicly listed TSOs in particular are financially incentivised to overbuild their domestic networks and expand into other regulated and non-regulated assets to boost shareholder returns. This is an issue which IEEFA has highlighted in previous reports.[9,10]

Business Model

The regulated gas TSO business model has traditionally attracted low-risk, long-term investment from financial markets and governments. The TSO shareholder proposition is centred on stable and growing dividends, underpinned by reliable cash flows. TSO networks provide critical energy to consumers, who in turn pay tariffs that generate these cash flows and a near-guaranteed rate of return for TSOs' owners. National regulators set the tariffs, remuneration rates and eligible investments for multi-year periods in advance, providing good forward visibility and making TSOs appealing to institutional investors.

[8] Corporate Europe Observatory. Who Owns All The Pipelines? 11 September 2019.
[9] IEEFA. Gas in Spain: Still oversupplied and overcompensated. 19 September 2022.
[10] IEEFA. Italy's soaring gas investments ignore falling demand. 27 January 2025.

But in recent years, with the ongoing "electrotech" revolution, volatile gas markets, geopolitical instability and climate commitments, Europe's gas demand has been steadily decreasing.[11,12] As the energy transition progresses and gas is displaced from the energy mix, this is set to continue. Over time, gas TSO infrastructure will be used less and less, with investment costs spread over a shrinking consumer base. This means that, at some point, TSOs will no longer be able to offer shareholders the stable and growing dividends they have in the past. These were largely driven by relatively stable regulatory frameworks, outdated demand forecasting and political tailwinds which together enabled and rewarded the expansion of their networks.[13] This shift away from gas will lead to some level of capital flight, as the TSOs are required to downsize and decommission some of their assets, likely causing a downward rerating of equity valuations (a significant drop in share prices) across the sector.

The energy transition has thus presented the midstream gas sector with an existential threat — to which TSOs have responded aggressively over the last decade by envisioning a new role for themselves. They have collectively rebranded as indispensable partners of the energy transition, uniquely positioned to transport low-carbon molecules in a reimagined future carbon-neutral economy. Under this narrative, TSOs' business model can continue on a similar basis into the future, with their natural gas networks repurposed and expanded to transport low-carbon gases, such as green and low-carbon hydrogen, biomethane, synthetic methane and captured carbon dioxide (CO_2). With this move, European TSOs have seemingly flipped the existential threat of a region transitioning away from gas into a new, multi-decade investment opportunity, which they have successfully marketed to governments and financial markets alike. This is despite the lack of scalable markets or supply chains for these low-carbon gases today, mainly because they are too expensive, too inefficient or too experimental for their proposed applications. In IEEFA's view, this repositioning has only been possible because of TSOs' incumbent privileged role within the European decision-making system.

Political Influence

It is important to emphasise that gas TSOs are not simply passive conduits of third-party gas, which is how they sometimes present themselves when it comes to emissions reporting. They are powerful corporate actors that actively shape energy policy, both nationally and at the EU level. Through their industry association, the European Network of Transmission System Operators for Gas (ENTSO-G), they hold a formal, EU-mandated role in providing projections of gas demand and advising the European Commission on which infrastructure projects should be designated as Projects of Common Interest, making them eligible for public funding and political prioritisation. Despite their clear conflict of interest (to favour molecules over electrons), TSOs continue to act as trusted energy

[11] Ember. The Electrotech Revolution. 16 September 2025.
[12] IEEFA. European LNG Tracker. October 2025.
[13] Regulatory Assistance Project. Planning and regulating Europe's gas networks: breaking up with fossil gas. 30 October 2024.

advisors to the EU and use their platform to advocate for the continued expansion and long-term use of gas infrastructure assets in the European economy.[14,15]

> **Gas TSOs are not simply passive conduits of third-party gas — they are powerful corporate actors that actively shape European energy policy.**

Beyond ENTSO-G, European gas TSOs also wield political influence through other initiatives, such as Gas Infrastructure Europe (GIE), Gas for Climate, and European Hydrogen Backbone, among others.

Table 1: Gas TSO membership of influential industry bodies in the EU (not exhaustive)

Name	Focus	Membership
ENTSO-G	Both an industry association representing its members and an official advisory body to the European Commission, mandated by EU law to perform specific tasks such as under the recent Gas Package.[16]	43 TSO members, one associated partner and nine observers. Includes **all six gas TSOs in this report**, with five of the six (all except Open Grid Europe [OGE]) represented directly on the ENTSO-G board.
Gas Infrastructure Europe	To strengthen the development of European gas infrastructure operators. It promotes the vision of gas infrastructure (pipelines, storage assets and LNG terminals) as the backbone of a new innovative energy system by 2050.	72 member companies from 25 countries, all operators of gas infrastructure across Europe: transmission pipelines, storage facilities and LNG terminals. Includes **all six gas TSOs in this report**.
European Hydrogen Backbone	Promotes the role of hydrogen infrastructure in Europe's decarbonisation by advocating for a hydrogen "backbone" network that would position today's gas TSOs as tomorrow's hydrogen network operators. It also calls for public funding to support hydrogen	33 energy infrastructure operators. Includes **all six gas TSOs in this report**.

[14] Friends of the Earth Europe. On The Inside: How the gas lobby infiltrates EU decision making on energy. July 2020.
[15] Global Witness. The gas subsidy pipeline. 5 November 2021.
[16] EUR-Lex. Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets for renewable gas, natural gas and hydrogen. 15 July 2024.

	network development (and gas TSO returns).	
Gas for Climate	Advocates for the role of renewable and low-carbon gas in the future energy system, specifically hydrogen and biomethane.	11 European gas TSOs and three renewable gas industry associations. Includes **all six gas TSOs in this report**.
CCS Europe	Promotes carbon capture technologies and underground storage as the solution to CO_2 emissions from energy-intensive and industrial sources. Aims to achieve negative emissions by removing CO_2 directly from the atmosphere or indirectly from biofuel-based emissions.	A group of 12 organisations, including industrial companies, NGOs and three gas TSOs. **Directly includes two of the six gas TSOs in this report** (Fluxys and OGE). Greek TSO DESFA is also a member. It is part-owned by Snam, Enagás and Fluxys, **indirectly including two more**.

For example, gas TSOs successfully wielded their influence to beat back a number of NGO demands related to the EU Hydrogen and Decarbonised Gas Market Package, which the EU adopted in 2024. The package cements TSOs' position in the EU's future integrated energy system, giving them a core role in the design and operation of a future European hydrogen network. It also blurs the lines significantly between TSOs' existing natural gas network and future hydrogen and low-carbon gas activities. This gives them the financial and operational flexibility they sought to maintain and possibly grow their asset bases, supporting market share and shareholder returns for decades to come.[17,18,19,20]

The Role of Gas and Molecules in the European Energy Transition

The EU remains committed to achieving climate neutrality by 2050, despite significant political pressure and a change in focus at the EU Commission away from climate issues and towards international competitiveness. In November 2025, the EU Council agreed its position on a new 2040 climate target to reduce net greenhouse gas (GHG) emissions by 90% compared to 1990 levels, in addition to the existing EU target of 55% by 2030. However, it seeks greater flexibility in the 2040

[17] European Network of Transmission System Operators for Gas. High-level position on hydrogen and decarbonised gas market package. 24 February 2022.
[18] Gas Infrastructure Europe. GIE Narrative on the Hydrogen and Gas Market Decarbonisation Package. 17 May 2022.
[19] Norton Rose Fulbright. The EU Gas and Hydrogen Package. July 2024.
[20] White & Case. The European Hydrogen and Decarbonized Gas Market Package. 28 May 2024.

target by allowing carbon credits, carbon removals, carbon transfers and other measures including a regular target review.[21]

Meeting this commitment requires an economy-wide transformation of how energy is produced and used in the EU. Within this transformation, the future role of natural gas has been a hotly contested topic. Gas has been a cornerstone of Europe's energy mix for decades. It has been valued for dispatchable power generation, its cost and convenience (given the high volumes of relatively low-price pipeline supply from Russia), its role as both fuel and feedstock in many industrial processes, and its prevalence in heating residential and commercial buildings.

Gas-Fired Power and Heat Generation

Proponents of its continued use in power and heat generation argue that gas is a necessary "transition fuel", a less carbon-intensive alternative to coal that can provide stability as intermittent renewable energy sources like wind and solar are scaled up. By building new "hydrogen-ready" infrastructure and equipment, they believe that over time natural gas could be replaced by blue hydrogen (or other types) and eventually green hydrogen — though they do not commit to binding deadlines for this switch. In some cases, carbon capture and storage technology is promoted as an alternative way to reduce the emissions from gas power or heat plants. However, the technology remains unproven, with high costs and uncertainty over suitable storage sites.[22]

Meanwhile, opponents counter that gas-fired power may actually be more polluting than coal-fired power when upstream methane leaks are taken into account (for example, if the gas has been imported as LNG on ships from the US).[23] They also argue that because of the uncertainty and techno-economic challenges of future hydrogen development, any new gas projects would more likely lock in natural gas use for decades to come, further jeopardising the Paris Agreement goal to limit global warming to well below 2°C. From this perspective, the priority should be to accelerate the deployment of renewable power generation, energy storage, demand response, grid interconnections and other grid flexibility solutions. Taken beyond the power sector, this approach means urgently reducing dependency on all fossil fuels, including gas, in all sectors by prioritising direct electrification, energy efficiency, and demand reduction where possible (one example being the electrification of heating). For applications where this is not possible, such as where gas is used for chemical feedstocks, the focus should be on developing new processes and solutions, which may or may not require alternative low-carbon gases.

The former narrative is championed by the gas industry's key players, including the TSOs. Their argument for more gas-fired power generation capacity has in some cases been boosted by coal and nuclear power plant closures, the slow build-out of electricity grids, storage and flexibility, changing

[21] Linklaters. EU: Council reaches agreement on new 2035 and 2040 climate targets. 10 November 2025.
[22] IEEFA. Carbon Capture and Storage. December 2023.
[23] Energy Science & Engineering. Howarth, R. W. The greenhouse gas footprint of liquefied natural gas (LNG) exported from the United States. 3 October 2024.

weather patterns made worse by climate change, and forecasts of increasing power demand for new artificial intelligence datacentres. All of this means that some countries plan to significantly expand their gas-fired power capacity, on top of already large operating fleets. For example, Germany and Italy combined are planning up to 27 gigawatts of new gas-fired power, in addition to 75 gigawatts of existing capacity.[24]

However, climate scientists, environmental advocates and market analysts are increasingly challenging the narrative of gas as a transition fuel. They point to its lifecycle emissions, high costs and the slow uptake of gas-transition-enabling technologies, such as low-carbon hydrogen, and carbon capture and storage.

The Loophole Problem: What Are "Transported Emissions" and Why Do They Matter?

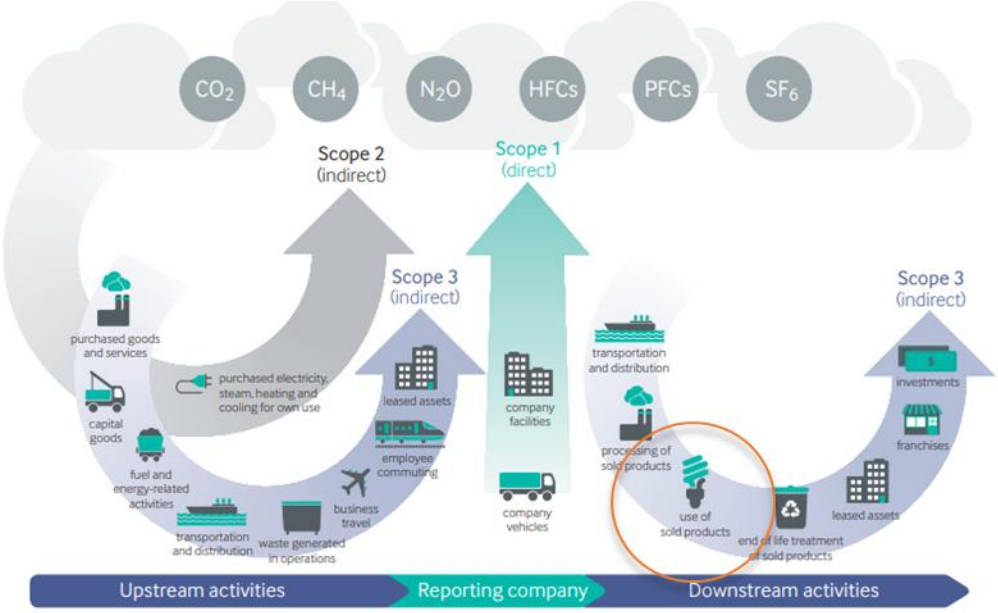
What Are Transported Emissions?

Companies tend to use the GHG Protocol's framework when reporting GHG emissions. This categorises a company's emissions into three "scopes":

- Scope 1: Direct emissions from owned or controlled sources (such as methane leaks from pipelines and CO_2 from gas combusted at compressor stations and at LNG regasification terminals).
- Scope 2: Indirect emissions from the generation of purchased energy (primarily electricity used to power TSO facilities).
- Scope 3: All other indirect emissions that occur in a company's value chain. The GHG Protocol separates Scope 3 into 15 categories, which are designed to give a generalised view for companies (see infographic below).

[24] Beyond Fossil Fuels. Gas Database. Updated October 2025.

Figure 1: GHG Protocol scopes and emissions across the value chain



Source: GHG Protocol.

Although the framework is widely used and well established (the first corporate standard was published in 2001, revised in 2004 and has a third revision currently in development), it is generalised in nature, leaving significant room for interpretation and decision-making at the entity level. While the GHG Protocol has published some sector-specific guidance (such as for the aerospace industry and the information and communication technology sector), there is no such guidance for the oil and gas sector.[25]

For an oil and gas producer or retailer, it is clear they should report the emissions from final use of any gas which they produce and sell under Scope 3 category 11: use of sold products (circled in the chart above). This category is designed to account for the emissions generated when a company's customers use its products. Category 11 typically represents 91% of oil and gas companies' total Scope 3 emissions and 81% of their Scope 1+2+3 emissions, according to analysis by data disclosure platform CDP.[26]

For a manufacturer of petrol/gasoline-fuelled cars, for example, this category 11 includes exhaust emissions from the cars it sells, over the lifetime of their use. However, the GHG Protocol does not explicitly define the reporting of Scope 3 category 11 emissions for gas TSOs, creating a loophole. It is in this context that we define **"transported emissions"** as the **emissions from the final use of**

[25] Greenhouse Gas Protocol. Guidance Built on GHG Protocol.
[26] CDP. Guidance methodology for estimation of Scope 3 category 11 emissions for oil and gas companies. 28 June 2024.

gas which a TSO transports through its infrastructure. This final use is primarily combustion, whereby the (predominantly) methane gas is burnt, releasing CO_2 into the air.

Why Do Transported Emissions Matter?

Omitting transported emissions from Scope 3 reporting means that any investor (or other stakeholder group) that reviews gas TSOs' published emissions data would gain the false impression that they are a low-carbon investment/entity which is somehow distinct from (and unexposed to) the fossil fuel value chain. This matters, as it is likely to significantly distort stakeholders' decision-making — whether about capital allocation, the pricing of financial risk or their own sustainability reporting.

This then creates further potential for greenwashing and unpriced risk at the financial institutions that serve these gas TSOs, as well as their products in the broader financial markets, as these material emissions effectively remain off the books. This distortion would be less pronounced if all gas TSOs at least estimated and disclosed their transported emissions in their annual reports and explained why they exclude them from Scope 3. This would enable stakeholders to easily quantify the full value chain emissions for consideration in their decision-making. Only two TSOs covered by this report do that, Snam and Gasunie. In our view, this is a step forward which others should follow. But it does not go far enough.

> **The transported emissions loophole creates an accountability gap, allowing gas TSOs to claim they are on a path to climate neutrality.**

The market distortion would be eliminated entirely if all gas TSOs simply included and reported transported emissions within their Scope 3 category 11. This would give stakeholders the information they need to make informed assessments and to track the decarbonisation of gas TSO infrastructure over the coming years — in other words, to hold them to account.

As it stands, the transported emissions loophole creates an accountability gap, allowing gas TSOs to claim they are on a path to climate neutrality while their core business continues to facilitate hundreds of millions of tonnes of CO_2 emissions annually.

TSOs' infrastructure has been designed specifically for natural gas, and they are heavily invested in its continued use. Without final use of transported gas, TSOs would not exist, and without their services, the fossil fuel would not be able to reach its ultimate consumers. TSOs are a crucial part of the natural gas value chain. Seen from this broader perspective, their largest contribution to GHG emissions is, by far, use of the gas which they transport on behalf of their customers. Yet, to date, this does not show in their reported Scope 3 emissions.

This is a fundamental flaw in climate accounting (and target setting) for the midstream gas sector, as IEEFA has previously argued.[27] It enables gas TSOs to attract capital and other resources that might otherwise flow to greener investments, distorting the market. The broader system risk is that this reporting loophole ultimately helps to delay the electrification of gas-consuming sectors and the broader transition away from fossil fuels.

Closing The Loophole: Why Transported Emissions Belong in Scope 3

IEEFA contacted the GHG Protocol for clarification on the application of its Scope 3 standard to gas TSOs. GHG Protocol provided three potential interpretations of the existing guidance, which give contradicting positions on the inclusion of transported emissions in category 11:

- One interpretation would allow gas TSOs to exclude their transported emissions, based purely on the technicality that they do not own or sell the gas molecules themselves. Instead, they are selling gas transportation capacity and related services to the owners and sellers of the gas.
- The other two interpretations would lead to gas TSOs including transported emissions in Scope 3 category 11, either because:
    i. "Downstream emissions also include emissions from products that are distributed but not sold,"[28] or
    ii. "The [GHG Protocol] Scope 3 Standard does encourage reporting companies to rely on sector-specific guidance … some emissions could be 'relevant' and therefore should be reported, if they have been identified as significant by sector-specific guidance." In IEEFA's view, this requirement is fulfilled by technical guidance methodology from CDP, which it updated for this specific point in 2022.[29]

Depending on which of these interpretations a gas TSO chooses to apply, it could either include or exclude emissions from final use of transported gas. Unsurprisingly, European gas TSOs have chosen to follow the first interpretation — thereby reducing their reported Scope 3 emissions by hundreds of millions of tonnes of CO_2 each year.

[27] IEEFA. Hiding in plain sight — European gas pipeline companies' greenhouse gas emissions. 1 December 2020.
[28] Greenhouse Gas Protocol. Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Page 57.
[29] CDP. Guidance methodology for estimation of Scope 3 category 11 emissions for oil and gas companies. 28 June 2024.

Gas TSOs: More Heathrow Airport Than Maersk

TSOs are benefitting from this reporting flexibility even though their infrastructure has been designed to transport a single high-carbon product. It makes little sense to separate gas TSOs from the downstream use of the gas they transport when it has been their sole product, since inception. In IEEFA's view, this exposes a glaring weakness in the general nature of the GHG Protocol guidance.

A gas TSO is different to, say, a freight company that provides a product-neutral transport service for many different products with differing use-phase emissions. In this case, one can see how a freight company might claim a level of separation from the downstream emissions of the products it transports. Maersk, the global shipping firm, does not generally account for the carbon contents of its cargo shipments. Maersk also has an oil trading arm that buys and sells marine fuel. It accounts for that by reporting Scope 3 category 11 emissions for GHG-emitting fuels which it distributes. The company said the following in a recent report: "Category 11 – use of sold products, is based on activity data for fossil fuels distributed by Maersk to third parties, estimated fuel use of liners calling APM Terminals, and estimated emissions from the use of refrigerated containers produced by Maersk Container Industry."[30] TSOs have so far mimicked this reporting approach.

Consider another example: a toll road owner, which provides a transportation capacity service to a range of vehicles, regardless of where they are travelling from or how their engines are powered. The road is a fixed physical structure, designed only for road-legal vehicles, not planes or trains. In the past, all road traffic was high-carbon, producing GHG emissions as they travelled. But now and in the future, this traffic is gradually shifting towards an increasing proportion of electric vehicles, with lower emissions. The road owner does not own or sell the cars or the fuel they use; it simply provides a transportation route and allows refuellers to build and operate stations along the route. It may invest to support the transition of its users, such as by enabling electric vehicle chargers to be built along the route, in addition to existing fuel stations, but it does not operate them or sell their energy. VINCI is such a company, owning motorways, airports and other infrastructure assets around the world. On Scope 3, VINCI's reduction target of 20% by 2030 (compared to 2019) covers "all of the emissions categories, upstream and downstream, classified by the GHG Protocol" and "goes beyond the requirements of the Science Based Targets initiative by **including emissions from motorway traffic**, which are classified as indirect use-phase emissions of sold products".[31] We note this is despite the difficulty in estimating such emissions and limited influence over which types of vehicles will use its roads in future. However, this example differs from a gas pipeline network as these indirect emissions occur during use of the infrastructure, rather than afterwards.

A third example is Heathrow Airport, in London, UK. It provides an infrastructure service to airlines and their customers. It does not own the planes or the fuel they use, but it does provide enabling infrastructure. It recognises that without this service, the airlines would not fly the routes they do and

[30] Maersk. Annual Report 2024.
[31] VINCI. Extract 2024 Universal Registration Document Sustainability Report.

produce the associated GHG emissions. Like TSOs, Heathrow is working with other organisations across the value chain and on national policy to promote alternative fuels. But unlike TSOs, it transparently acknowledges its role in facilitating these emissions. It reports, within Scope 3 category 11, not just the emissions from aircraft on the ground, or during landing and take-off, but also **the cruise emissions for all departing flights.** In 2024, these cruise emissions alone made up 89% of Heathrow's total Scope 1+2+3 emissions.[32]

While these three examples are provided for wider reporting context and comparison, we would argue that a gas TSO is much more akin to a Heathrow Airport, or even to a VINCI, than to a Maersk. This is not reflected in the current reporting.

Table 2: Cross-sectoral comparison of approaches to Scope 3 category 11 reporting

Reporting company (A)	Maersk	VINCI	Heathrow Airport	Gas TSO
Comparable sold product	Shipping and logistics service. Transporting third-party goods via a mix of owned and chartered (third-party) ships	Road capacity for third-party road vehicles to transport third-party goods/ passengers	Runway/terminal capacity for third-party aircraft to transport third-party goods/ passengers	Gas pipeline/terminal capacity for third-party molecules (gas) to transport third-party energy (or the gas itself when used as feedstock)
Does (A) own or sell the transported goods?	No. Producers and retailers own goods	No. Drivers or other third parties own vehicles and their contents	No. Airlines own aircraft and fuel	No. Shippers and retailers own the gas
Does (A) report the use-phase emissions in Scope 3?	No, unless it sells marine fuel goods, in which case it does report associated emissions as category 11 For owned ships, it reports fuel use emissions directly as Scope 1. For third-party ships, it reports as Scope 3 category 4	Yes, as category 11 indirect use-phase emissions of sold product	Yes, as category 11 indirect use-phase emissions of sold product	No **(In IEEFA's view, should be yes)**

[32] Heathrow Airport Holdings Limited. Annual Report 2024.

	(upstream transportation and distribution emissions). These are its two largest categories of emissions			
Logic	Transports a highly diversified range of multi-purpose goods. Therefore not reported as can justifiably claim significant independence from, and lack of control over, any single good and its end use	Enables transport via road vehicles only, most of which generate material use-phase emissions Acknowledges its role in use-phase emissions and their future reduction	Enables transport via aircraft only, which generate material use-phase emissions (including after they have left the airport) Acknowledges its role in use-phase emissions and their future reduction	Not reported because of non-ownership/non-sale of gas and claimed lack of influence over the molecular mix **(In IEEFA's view, this is flawed. Should be reported as it enables transport via/of certain molecules only, which generate material use-phase emissions)** Does not acknowledge its role in use-phase emissions, yet claims to play a key role in their future reduction (and seeks finance on this premise) **(In IEEFA's view, should be: Acknowledges its role in use-phase emissions and their future reduction)**
Total Scope 1+2+3 reported emissions, $MtCO_2e$	83.5	50.3	19.5	1.1*
Scope 3 reported emissions, $MtCO_2e$	49.2	48.0	19.4	0.6* **(~106 if transported emissions are included)**
Scope 3 % of total emissions	59%	95%	99.6%	55%* **(~99% if transported emissions are included)**

Sources: Maersk, VINCI, Heathrow Airport Holdings Limited, TSO annual reports, IEEFA analysis.
*Notes: *Average total emissions of six TSOs analysed in this report. $MtCO_2e$ = million tonnes of CO_2 equivalent.*

Gas TSOs All Began As Integrated Gas Companies

To further evidence their singular purpose linked to the downstream combustion of gas, all six gas TSOs reviewed in this report started out life as part of vertically integrated gas companies — when they did own and sell the gas themselves. The legal separation from ownership or sale of the gas has only occurred over the last 10-20 years. TSOs have gradually been unbundled from their original producer/seller companies to increase competition among different gas sellers, create a more efficient European gas market, increase supply security and reduce prices for consumers. The EU's Third Energy Package mandated the unbundling of gas TSOs from gas producers and suppliers by March 2012. While this has created a source-neutral network for gas transport, **it is very different to a molecule-neutral network for energy** with no discrimination towards which molecules it transports. In the TSO example, all sources deliver the same (fossil) molecular mix: natural gas. All infrastructure and downstream usage equipment is designed precisely for the physical and chemical properties of that energy carrier. Since unbundling, gas TSOs have predominantly operated as independent companies, though in some cases they may retain the ownership of their integrated parent company (such as France's NaTran, which remains a subsidiary of Engie).

Table 3: The six gas TSOs and their unbundling from original integrated gas companies

	Snam	NaTran	Enagás	Fluxys	OGE	Gasunie
Original integrated company	Eni	Engie (formerly Gaz de France)	Naturgy (formerly Gas Natural Fenosa)	Engie (formerly Distrigas)	E.ON	N.V. Nederlandse Gasunie
Year of unbundling	2012-2013	2005	2002	2001	2010-2012	2005
Remaining legal ownership link to the original company (if any)	No direct ownership. Eni and Snam have a joint venture (50.1%/49.9 %) called SeaCorridor which manages gas pipelines and imports from Algeria. Eni and Snam are also collaborating on the Ravenna CCS project in Italy.	Engie remains the majority shareholder of NaTran, owning ~61% of the company.	Naturgy still owns a 5% stake in Enagás, with no controlling rights. This is the maximum permitted by law.	Engie remains a minority shareholder in Fluxys SA.	No legal link. OGE was sold to a consortium of infrastructure investors in 2012. Fluxys owns ~24% of OGE (since 2023).	No legal link. Gasunie is 100% owned by the Dutch state. The rest of the original company was renamed to GasTerra, which is being wound down gradually following the decision to stop gas production from the Groningen field in the Netherlands.

Sources: Company information.

This unbundling has led to gas TSOs citing this legal separation of activities as justification for the exclusion of transported emissions from their emissions reporting. They state that they have no influence or control over the sources and uses of the gas, and that as regulated entities they have no choice but to transport it under externally imposed regulatory frameworks and network codes.[33] In IEEFA's view, this is a **disingenuous understatement of TSOs' collective influence**. TSOs may not have control over the exact volumes, composition, sources and uses of gas in any given year. However, they do have a clear, significant and highly active role in shaping policy direction and the planning, funding and delivery of future infrastructure projects, both at national and regional levels. They can also influence regulations that apply to them and appeal the decisions of their regulators.

[33] For example, see page 284 of Snam's 2024 Annual Report. Emissions from the use of transported gas. 10 April 2025.

For example, TSOs are deeply involved with developing regulatory frameworks and network codes for hydrogen transport in Europe. More importantly, TSOs' core function remains providing transport capacity to enable the downstream combustion of gas.

In short, despite legal unbundling from the owners and sellers of the product they transport, gas TSOs remain a core and crucial link in the natural gas value chain. They should report their Scope 3 emissions accordingly.

Challenging the GIE Position Paper

GIE, one of the gas TSO influence groups mentioned above, published a position paper in August 2025 calling for the transported emissions reporting loophole to be kept open.[34] In it, GIE repeats the same flawed argument that "as they don't own or sell the gas, the system operators shouldn't be held accountable for emissions from the burning of the gas by consumers". As explained above, ownership and sale of a product are **not the only valid reasons for reporting** emissions from its use in Scope 3 category 11, per the GHG Protocol.

The GIE paper emphasises TSOs' "vital role in ensuring the security and reliability of energy supply. Additionally, we have taken on a central role in facilitating and contributing to a sustainable energy transition by supporting the development of renewable and low-carbon gases, as well as CO2, and preparing our infrastructure to transport/store those gases." We note this can all be true while **simultaneously acknowledging** that, by ensuring today's energy supply, TSOs are enabling vast GHG emissions from consumption of that energy.

The paper highlights the "misalignment of available guidance from SBTi and GHG Protocol" which is "confusing for all users of the information as disclosed by the system operators". We agree with the need for clarification. But the paper then goes on to suggest that the GHG Protocol only has one interpretation, which is **factually incorrect, as explained at the start of this section**. Again GIE repeated: "As the system operators do not own nor sell commodities, they do not report the emissions under this category."

The paper then **conflates emissions accounting with target setting,** seeking exemption from the former just because it makes the latter more difficult for a gas TSO, potentially making their existing Scope 3 targets less meaningful to investors. It claims that an obligation to report transported emissions (for Scope 3 emissions reduction targets) would conflict with TSOs' regulatory obligations of "the third-party access rules" and "security of supply", as they could only meet these targets by refusing to provide services to fossil gas companies. If this were truly the case, then the solution is to **simply admit they cannot set meaningful Scope 3 targets** or to **transparently set partial Scope 3 targets**, quantifying what proportion of value chain emissions they believe they can realistically influence in a given timeframe. TSOs do not want to do this because it undermines their narrative of

[34] Gas Infrastructure Europe. Position paper on Scope 3 reporting obligations for infrastructure operators. 14 August 2025.

being key players in the energy transition, in IEEFA's view. This concern is raised in the GIE paper: "Including transported/stored gas in the system operators' scope 3 emissions reporting would dramatically inflate their total emissions, overshadowing any other relevant emission sources such as emissions from supply chain, mobility, waste, etc." It is not clear how being honest about the true size and shape of a problem undermines efforts to address it. In fact, it is likely to lead to more effective climate action, in our view.

The paper goes on to claim TSOs' lack influence over consumers due to regulations: "Within the regulatory framework the system operators have no commercial link with end consumers. Consequently, they have no influence on user behaviour or decisions related to reducing gas consumption or switching to renewable or low-carbon gases. […] Holding them accountable for these emissions misrepresents their role in the energy value chain." While this may be true within gas TSOs' regulated framework and activities, it is **patently not true for TSOs' broader business interests and activities**. A wider discussion of TSOs' non-regulated activities is beyond the scope of this report, but we include some notable examples of TSOs' marketed downstream influence, in addition to the significant political influence and planning power outlined elsewhere in this report:

- Enagás invests in start-ups across the value chain through its corporate venture programme, Enagás Emprende. Some investments are included below. The full list can be found on the company's website.
  - Scale Gas, an Enagás subsidiary which signed an agreement with BP in 2020 to develop points of sale of LNG and compressed natural gas at BP service stations in Spain. At the time, Enagás said the agreement "aims to support […] the production and encouragement of the consumption of renewable gases".[35]
  - Hygen, which focuses on sustainable gas-based mobility and promotes "the expansion of the carbon-neutral vehicle market powered by biomethane".[36]
  - SEaB, a UK-based startup which designs small-scale plants "generating a renewable fuel for the generation of electricity and heat". Enagás said it seeks to establish SEaB technology in Spain.[37]
- Snam
  - Owns biomethane production company Bioenerys (see later section on Inconsistent Emissions Reporting for more information).
  - Owns energy efficiency company Renovit which received €100 million from the European Investment Bank in 2024 to support "energy improvement projects in public buildings and energy efficiency measures for industrial activities".[38]
  - Since 2017, the Snam Foundation has run initiatives, including on energy poverty, "to help people reduce their energy consumption and, together with them, promote the energy upgrading of social buildings".

[35] Enagás. Enagás and bp are teaming up to promote emission reduction in Spain. 2 July 2020.
[36] Enagás Emprende. Hygen.
[37] Enagás Emprende. SEaB Energy.
[38] European Investment Bank. Italy: From the EIB €100 million to Snam to support energy efficiency. 2 July 2024.

- NaTran
  - Co-launched an app, Ecogaz, in France during the energy crisis to help consumers reduce their gas consumption."[39]
  - Collaborates on Open Data Réseaux Énergies, a data platform for local authorities, consumers and producers of biomethane. The platform includes gas consumption data, zoning maps and capacity registers. These help to de-risk the development process for biomethane projects and to track the sector.[40,41,42]
- Gasunie
  - Collaborates via initiatives such as New Energy Coalition and Missie H2 to develop and promote a hydrogen economy in the Netherlands,[43] for example by delivering hydrogen masterclasses to Dutch Olympic champions[44] or by supporting the Waterstof Hoogeveen pilot project for hydrogen home heating.[45]
- Fluxys
  - Like Enagás, Fluxys has provided up-front investment to build LNG filling stations in partnership with hauliers."[46]
- OGE
  - OGE has run education and communication initiatives in German towns and villages to educate the public, present its view and influence consumers to accept and support hydrogen pipelines.[47]

These activities clearly contradict GIE's claims that TSOs "have no commercial link with end consumers" and "no influence on user behaviour or decisions related to reducing gas consumption".

The GIE paper also claims that the transported emissions reporting loophole "mirrors established practices in other sectors", but without providing any specific company examples. It references transport/logistics operators in general. But we have explained above why a gas TSO should have more in common with Heathrow Airport than with Maersk, from an emissions reporting standpoint. The GIE paper refers to electricity TSOs, disregarding that electricity is not a fossil fuel, nor does it inherently require combustion (producing greenhouse gases) at its point of use. Therefore, when electricity is used as an energy carrier, it does not have the same inherent material use-phase emissions as gas, though it may have significant upstream emissions from its generation (for example, coal-fired power).

[39] NaTran. Reinforced Ecogaz scheme.
[40] Natran. Open data: premier indicateur Gaz Renouvelable. May 2021.
[41] Open Data Réseaux Énergies.
[42] Gaz Réseau Distribution France. Evolution de la production de gaz renouvelable en France : les données et outils disponibles en accès libre. 30 May 2024.
[43] IO+. Missie H2 is all in for giving impulse to the hydrogen economy. 2 December 2024.
[44] New Energy Coalition. NEBS gives hydrogen masterclass to Olympic champions. 23 August 2023.
[45] New Energy Coalition. First hydrogen-powered houses in Hoogeveen. 13 November 2025.
[46] Fluxys. Fluxys and Mattheeuws open LNG fuelling station for trucks in Houdeng. 16 December 2019.
[47] OGE. OGE im Dialog: Projekt Nordsee-Ruhr-Link III, Bunde-Wettringen.

The paper finally raises concerns about "favourable financing". GIE wrote: "Including these emissions […] risks undermining their climate targets and investment potential. […] Due to the uncertainty linked to emissions by consumers from combustion of transported/stored gas, the science-based targets for the scope 3 emissions of the system operators are being challenged, and investors may be reluctant to fund projects of the system operators."

While there is some uncertainty in estimating combustion emissions from gas use, the emissions are certain enough to be meaningful and included. We refer again to the examples provided above of VINCI and Heathrow Airport. If a Scope 3 target omits the majority of Scope 3 emissions, then an investor should be free to challenge the target or its labelling, so it can be improved. The existing reporting loophole does not serve the efficient functioning of capital markets or the needs of sustainable investing, in IEEFA's view. Investors may change their investment decisions once presented with greater transparency on value chain emissions, or they may not. But financial market participants need access to that information as a baseline to evaluate investment risk and return, to make informed decisions and allocate capital appropriately. Gas TSOs could benefit from this increased disclosure, longer term, if it refocuses investors and other stakeholders away from low-impact targets and towards **accelerating system-level change**. This could include, for example, new policy or regulations which better align gas TSO governance and financing with national climate targets, or which explicitly incentivise/plan the phasing down of natural gas consumption in a more equitable and cost-efficient way.

Lastly, as outlined in this report, TSOs are currently not low-carbon gas infrastructure companies, despite their rebranding. GIE describes itself in the position paper as an "association of infrastructure operators for renewable, low-carbon, and natural gases, including hydrogen and biomethane". This may be its vision for the future, but stakeholders should be asking what proportion of its members' infrastructure actually transports each of these different gases today? What volumes of each of these gases are being transported, compared to fossil methane, to warrant their use in GIE's description? In IEEFA's view, this kind of **misleading emphasis** borders on greenwashing. Legal rulings are finally beginning to catch up with fossil fuel industry marketing. While TSOs do not sell gas to consumers, we nonetheless note the recent court ruling against TotalEnergies in Paris which found that the company misled in its marketing "by giving the impression that it is part of the solution to climate change despite continuing to promote and sell more fossil fuels".[48]

[48] ClientEarth. Historic win against greenwashing as Court rules TotalEnergies misled consumers on net zero. 23 October 2025.

Analysis of Gas TSO Disclosures

Selected TSO Shortlist

For this analysis, six major European gas TSOs have been selected based on network size, gas throughput, market influence and data availability. This list is by no means exhaustive (there are 43 EU TSO members of ENTSO-G), and a different selection could have been taken. In IEEFA's view, these six leading operators provide a sufficiently useful snapshot of current practice in the EU midstream sector, in the context of emissions reporting as well as business strategy and narrative.

- They are each the sole or largest operator in their respective country, own and operate tens of thousands of kilometres of pipelines, employ over 1,000 people and generate annual revenues of at least ~€1 billion.
- All six are members of ENTSO-G, GIE, Gas for Climate and the European Hydrogen Backbone initiative (among others). Two are direct members of CCS Europe (and two more indirectly participate via their ownership stakes in the Greek TSO DESFA).
- All are members of the pre-ENNOH group of future hydrogen transmission network operators and have either been nationally authorised, or are expected to be in due course, as regulated hydrogen operators.
- All but one of the TSOs retain some level of national or regional government ownership, either directly (such as Gasunie, which is 100% owned by the Dutch government) or indirectly via other state-owned financial institutions or companies. The balance of shares is typically owned by private institutional investors.
    - OGE is the exception, with its private ownership shared by foreign state-linked investors (from Canada and the United Arab Emirates), including some cross-TSO ownership by Belgium's Fluxys. Yet Germany still monitors OGE's ownership, as it is a nationally strategic asset. In November 2025, the German economy ministry blocked Snam from acquiring a stake in OGE because of Snam's ~11% indirect Chinese ownership (State Grid Corporation of China owns 35% of CDP Reti, which owns ~31% of Snam).[49]
- At least four of the six companies have disclosed sustainability information via the CDP disclosure platform in recent years.

[49] Reuters. Italy's Snam scraps German gas deal amid Berlin's concern over China. 14 November 2025.

Table 4: Summary data of the six major gas TSOs reviewed in this report

TSO	Snam	NaTran (formerly GRTGaz)	Enagás	Fluxys	OGE	Gasunie
Domestic (primary) regulated market	Italy	France	Spain	Belgium	Germany	The Netherlands
Domestic national regulator	ARERA	CRE	CNMC	CREG	BNetzA	ACM
Gas transportation network size	32,900km	32,800km	11,000km	28,000km (4,000 in Belgium)	12,000km	17,500km (4,600 in Germany)
Number of employees	3,900	3,900	1,400	1,300	2,000	2,500
2024 revenue	€3.6bn	€2.1bn	€900mn	€1.3bn	€1.5bn	€1.3bn
2024 net profit	€1.257bn	€263mn	-€299mn (€343mn in 2023)	€337mn	€295mn	€70mn (€483mn in 2023)
Notes	Europe's Largest TSO. Owns pipelines, storage capacity and LNG terminals in Italy and other countries. Very active in sustainable finance markets (86% of committed capital and ~€6bn in labelled debt).	Europe's second largest TSO and France's largest. Owned by integrated energy company Engie and rebranded from GRTGaz to NaTran in 2025.	Spain's monopoly TSO. Owns pipelines, six LNG terminals and three storage facilities, as well as other assets internationally.	Belgium's monopoly TSO. Owns pipelines and LNG terminals in Belgium and Northwest Europe. Also owns a stake in OGE.	The largest of 16 TSOs operating in Germany.	The Netherlands' monopoly TSO. Also owns a network in northern Germany, joint projects such as the BBL pipeline (NL-UK), LNG terminals in the Netherlands and Germany, and the Porthos CO2 project in Rotterdam.
Ownership (private/public/ mixed)*	Mixed (~33% state-linked) Publicly listed company	Mixed (~54% state-linked) Private subsidiary of Engie	Private (~5% state-linked) Publicly listed company	Public (~80% state-linked). Publicly listed company	Private (~0% state-linked) Private consortium ownership	Public (~100% state-linked) Owned by Dutch government

Sources: Company information and IEEFA analysis.
*Notes: Includes rounded values. *State-linked percentage based on estimated direct and indirect ownership of shares by the company's domestic government.*

A Shared Vision for the Future

Over the last decade, Europe's gas TSOs have organised behind a shared strategy to steer the European energy transition in a way that protects their market position and role as regulated network operators.[50] This rebrand repositions and reframes their role from owners of a legacy fossil fuel-centred system — one that would otherwise face a managed (decades-long) phase-down and decommissioning — to government partners in the energy transition and future owner-operators of an imagined multi-molecule network of low-carbon gases. This future is based on the commercial development and scaling of technologies that do not currently exist but that TSOs claim can be achieved with sufficient regulatory incentives and both public and private funding.

Quotations from TSO leadership and recent company publications demonstrate this shared pursuit (Figure 2). We note that, confusingly, TSOs still inconsistently use the term "green gas". For some it means only biomethane and e-methane, while others expand the term to include CO_2, hydrogen (green/blue/other), hydrogen-methane blends and even hydrogen derivatives.

In IEEFA's view, European TSOs' shared focus on these molecules shows that, contrary to any claims of lack of influence or control over the gas they transport through their networks, the companies are actively and purposefully working to shape the future mix of that gas (and in some cases have been for many years). It follows logically that they should be fully recognising the carbon emissions from the final use of transported gas in their Scope 3 emissions reporting, regardless of who owns it or sells it.

[50] IEEFA previously documented the example of Snam pivoting towards hydrogen in some detail in this 2021 report.

Figure 2: Selected quotations from gas TSOs' leadership and publications

Snam

CEO, strategy presentation, 22 January 2025: *"Our investments are not only aimed at building a multi-molecule infrastructure for the country, but also for promoting this vision at the European level throughout our Associates..."*

Enagás

CEO, annual report 2024: *"Green hydrogen presents a significant opportunity for both Spain and Enagás' growth [...] In 2024, we established the Hydrogen Technology Observatory to drive innovation, facilitate the exchange of technical knowledge, and accelerate the rollout of this energy carrier. This initiative has already attracted 40 partners from across the value chain."*

Fluxys

Annual report 2024: *"CO_2 emissions must drop drastically. We are therefore expanding our infrastructure into a multi-molecule system with hydrogen and CO_2 highways to decarbonise the economy. This is how we make an essential contribution to the climate targets."*
Annual report 2023: *"With our investment plans for hydrogen and CO_2 infrastructure, we're developing solutions for the large-scale decarbonisation that society needs [...] Since 2020, Fluxys Group companies have been working together with other infrastructure companies within the European Hydrogen Backbone initiative."*

NaTran

Press release from GRTGaz, February 2025: *"Twenty years since it was founded, GRTgaz is embarking on a new chapter and is becoming NaTran. This name change goes hand in hand with a new aim: to become Europe's leading operator for transporting renewable gases, hydrogen and CO_2 in view of achieving carbon neutrality by 2050."*

OGE

Vier Gas Transport GmbH (OGE's parent holding company), group annual report 2024: *"The amount of natural gas that will be transported in future will decrease. In order to ensure the long-term viability of OGE's business model and allow it to continue to grow, it is necessary to think ahead and extend the business fields."*

Gasunie

2025 half-year report, foreword by executive board: *"Our current and future transmission and transport networks, like our natural gas grid, are key [...] We will be able to use these networks later to transport green gas [...] Hydrogen, for example, remains a key pillar in all future scenarios [...] We are working with a multitude of parties to develop the CCS value chain."*
Interview with CEO, April 2025: *"I want to elevate Gasunie's position in the energy transition [...] Without molecules, our [Dutch] industry cannot become more sustainable. Now, that is still natural gas, in the future hydrogen, green gas and CO_2 will become more important. Our network enables this with transport and storage."*[51]

[51] Management Scope. Willemien Terpstra (Gasunie): 'Setting up new energy systems is the only way'. 8 April 2025.

Inconsistent Emissions Reporting

There is some variance in the availability, granularity and methodology of gas TSOs' emissions reporting. The release of an oil and gas sector-specific European Sustainability Reporting Standard should have solved this by providing clear guidance for midstream gas companies.[52] However, that standard has been indefinitely postponed for the EU Omnibus "simplification" agenda.

Of the six companies in this report, all except NaTran publish detailed information for all their Scope 1, 2 and 3 emissions, including a breakdown of their 2024 Scope 3 emissions by the GHG Protocol categories. OGE publishes via its parent holding company, Vier Gas Transport. IEEFA contacted NaTran for the same information. The company provided Scope 1, 2 and 3 emission totals but no breakdown for Scope 3 emissions. It explained that this is because it has been using a French Agency for Ecological Transition (ADEME) methodology and is currently in the process of switching its Scope 3 reporting to the GHG Protocol categories.

As this report focuses on Scope 3 emissions, it does not include a full analysis of the TSOs' pledges and targets regarding future reduction of their Scope 1 and 2 emissions. Most of the companies have some form of commitment to reduce Scope 1 emissions and are demonstrating progress (for example by reducing methane leaks and electrifying compressor stations along their pipeline network). Most also plan to use green electricity contracts to reduce their market-based Scope 2 emissions to zero, if they have not already done so. For reference, IEEFA scrutinised Snam's transition and strategic plans as well as related financing and targets in a report published in January 2025.[53]

The TSOs' available Scope 3 data suggest inconsistency in reporting approach, potentially reducing comparability and usefulness to external stakeholders. Some of these variations may be due to differences between the TSOs and their physical networks. However, some may point to methodological differences in allocating emissions across categories, based on differing interpretations of the GHG Protocol.

[52] The European Financial Reporting Advisory Group drafts European Sustainability Reporting Standards, which eligible companies must use in their mandatory emissions reporting obligations under the Corporate Sustainability Reporting Directive.
[53] IEEFA. Collector of labelled debt: Snam's net-zero transition plan has much to prove. 27 January 2025.

Table 5: TSOs' reported Scope 3 emissions in 2024

Scope 3 category, % of total reported Scope 3 emissions	Snam	Enagás	Fluxys	OGE	Gasunie
1. Purchased goods and services	5%	7%	58%	19%	34%
2. Capital goods	30%	1%	11%	74%	44%
3. Fuel- and energy-related activities (not included in Scope 1 or 2)	15%	4%	28%	6%	18%
4. Upstream transportation and distribution	0.04%	36%	1%	0.3%	0.3%
5. Waste generated in operations	0.1%	0.002%	0.03%	0.04%	1%
6. Business travel	0.1%	0.1%	0.3%	0.4%	0.5%
7. Employee commuting	0.1%	0.1%	1%	0.4%	1%
8. Upstream leased assets	0.04%	-	-	-	-
9. Downstream transportation and distribution	-	36%	-	-	-
10. Processing of sold products	-	-	-	-	-
11. Use of sold products	20%	-	-	-	-
12. End-of-life treatment of sold products	-	-	-	-	0.2%
13. Downstream leased assets	0.01%	-	-	-	-
14. Franchises	-	-	-	-	-
15. Investments	30%	16%	-	-	1%
	100%	100%	100%	100%	100%
Total reported Scope 3 emissions ($MtCO_2e$)	1.921	0.753	0.067	0.456	0.285

Sources: Company information.
Note: $MtCO_2e$ = million tonnes of CO_2 equivalent.

Snam and Enagás show significant emissions from their investments, likely reflecting their larger size and corporate structure, with multiple subsidiaries and equity investments, including interests in biomethane and hydrogen production companies. Snam reports the largest Scope 3 emissions overall, more than twice as much as Enagás, which has the second largest.

Enagás is the only TSO that allocates significant emissions to Scope 3 categories 4 and 9, upstream and downstream transportation and distribution, respectively. This is likely due to Enagás's

involvement with upstream and downstream logistics around its LNG terminals, for example using trucks to unload and distribute LNG from its terminals. Enagás asserts that its category 9 reporting removes the need for category 11 emissions. "Enagás does not own or sell natural gas," the company said in comments sent to IEEFA. "Therefore, we consider distribution companies to be end customers of our services, and their emissions to be the final ones linked to the natural gas we transport."

Fluxys, OGE and Gasunie all identify over 90% of their Scope 3 emissions in categories 1 to 3.

In comments sent to IEEFA, Fluxys reiterated that its "Scope 3 emissions are reported in full compliance with the greenhouse gas protocol, as mandated by the CSRD/ESRS. The emissions from the use of the gas transported via our infrastructure is not included in our scope 3 as Fluxys does not own the gas that flows through its infrastructure, therefore it does not fall under the category 11 'use of sold products'. Our entire ESG reporting is verified by an external auditor for our annual report 2024." OGE did not provide any further comment to its published disclosures.

Of note, both Snam and Gasunie have issued sustainability-linked bonds. This may explain their similarity of approach, including why they exclude transported emissions from Scope 3 reporting but do disclose some estimates for recent years as supplementary information. Extracts of their reasoning are included below:

- Snam provides a full-page explanation in its 2024 annual report and points to the GHG Protocol for justification: "Emissions related to the use of transported gas are outside the direct control of Snam. It is important to underline that the company does not own the transported gas, nor is it involved in its sale. These circumstances support the exclusion of this type of emission from Snam's emission inventory, as it cannot be included in the GHG Protocol's Scope 3 Category 11 GHG 'Use of Sold Product'."[54] IEEFA notes that under two alternative interpretations of GHG Protocol previously referenced, the same emissions can and should be included.

- Gasunie gives similar reasoning but acknowledges it is making a choice to exclude against recommended guidance: "Given that Gasunie does not own or sell the gas we transport, the emissions from gas usage are not included in our Scope 3 inventory or target. On this point we deviate from SBTi's general guidance."[55]

Snam is the only TSO that reports any category 11 emissions, but these are not transported emissions. Snam clarified to IEEFA that they are instead due to "products sold by other companies within the Snam Group, such as Renovit. Although [Renovit] is a business that offers solutions aimed at energy efficiency, the solutions sold by the company may involve consumption that generates emissions during their life cycle. For example, Renovit sells high-efficiency heating systems." Snam

[54] Snam. Annual Report 2024.
[55] Gasunie. Annual Report 2024.

also has a subsidiary called Bioenerys, which produces biomethane that Snam self-consumes by agreement with Italy's regulator. Snam explained to IEEFA that, given the low net emissions footprint of biomethane, those emissions "represent a small portion, close to zero, of our Scope 3.11". [56]

Estimating Transported Emissions

Methodology

IEEFA estimated transported emissions for the six gas TSOs using a "throughput method", as recommended in technical guidance published by CDP. Our calculation was as follows:
Gas throughput data: Annual gas throughput for each TSO was collected using publicly available reports and direct data requests, where possible. This data is typically provided in units of energy (terawatt-hours [TWh]) or volume (billion cubic metres [bcm]). An exact conversion between these units would require knowledge of the gross calorific value of the gas, which varies slightly within a range. To compare the data, all values were converted using a general gross calorific value of 11 kilowatt-hours per cubic metre (1bcm ≈ 11TWh).

1 Emission factor: An emission factor of 56.1 tonnes of CO_2 per terajoule was then applied, as referenced in the European emissions monitoring regulation for the combustion of natural gas.[57] This is equivalent to ~202 grams of CO_2 per kilowatt-hour or ~0.202 million tonnes (Mt) of CO_2/TWh.

2 Emissions from end-use combustion of the gas: The gas throughput was reduced by a percentage assumed to be used for non-energy purposes, such as feedstock for hydrogen production, methanol and other chemical processes. To be conservative, we have set this at 8%, after reviewing International Energy Agency data, which shows a range of 5-8% between 2019 and 2023.[58] This should provide an underestimate, as some portion of non-energy uses still lead to emissions (for example, hydrogen production from steam methane reformation releases CO_2 unless it is captured and kept permanently out of the atmosphere).

[56] Snam. Annual Report 2024. Page 305: "ARERA Resolution 140/2023/r/gas of 4 April 2023 stipulates that Snam shall use the biomethane produced by its subsidiary Bioenerys for self-consumption, without selling it to third parties, until 30 June 2027." 10 April 2025.
[57] EUR-Lex. Commission Implementing Regulation (EU) 2018/2066.
[58] International Energy Agency. How is natural gas used in Europe?

The transported emissions were then calculated as follows:

{Transported emissions}		{Gas throughput}		{Emissions factor}		{1 - Non-energy factor}
	=		x		x	
($MtCO_2e$)		(TWh)		($MtCO_2e$/TWh)		

= ~0.186 x {Gas throughput}

Results

The resulting emissions data are summarised below, including total publicly reported emissions (Scopes 1-3), estimated transported emissions and gas throughput data for each of the six TSOs between 2020 and 2024. These same data appear below in Figure 4.

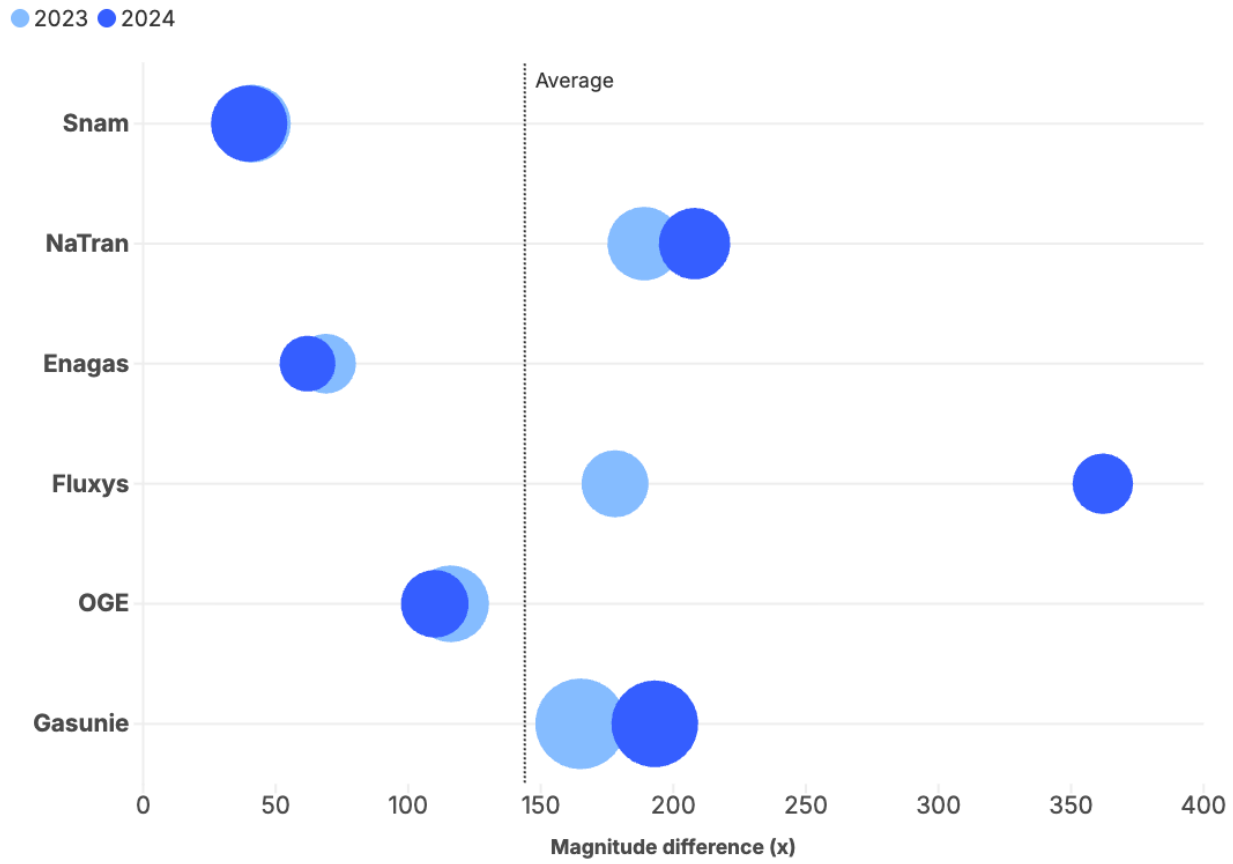
Table 6: Summary emissions data (2020-2024)

	Year	Snam	NaTran	Enagás	Fluxys	OGE	Gasunie
Reported emissions, Scopes 1-3 combined (million tonnes of CO_2)	2020	2.3	0.6	0.5	0.5*	1.1*	1.0*
	2021	2.5	0.6	1.1	0.4*	0.9*	0.9*
	2022	3.1	0.7	1.5	0.7*	1.6*	1.0*
	2023	3.2	0.6	1.1	0.5	1.1*	1.1
	2024	3.1	0.5	1.0	0.2	0.9	0.9
Transported emissions, IEEFA estimate (million tonnes of CO_2)	2020	143	119	67	74	161*	202
	2021	155	117	70	73	130	206
	2022	154	131	80	114	138	206
	2023	131	116	74	95	127	181
	2024	126	109	64	76	97*	165
Materiality: Transported emissions as a multiple of reported emissions	2020	61x	184x	138x	164x*	148x*	208x*
	2021	63x	208x	62x	188x*	145x*	236x*
	2022	50x	197x	53x	174x*	86x*	208x*
	2023	41x	189x	69x	178x	116x*	165x
	2024	40x	208x	62x	362x	110x*	193x

Sources: Company reports and IEEFA estimates.
*Note: *Figures include estimates and assumptions to compensate for data gaps.*

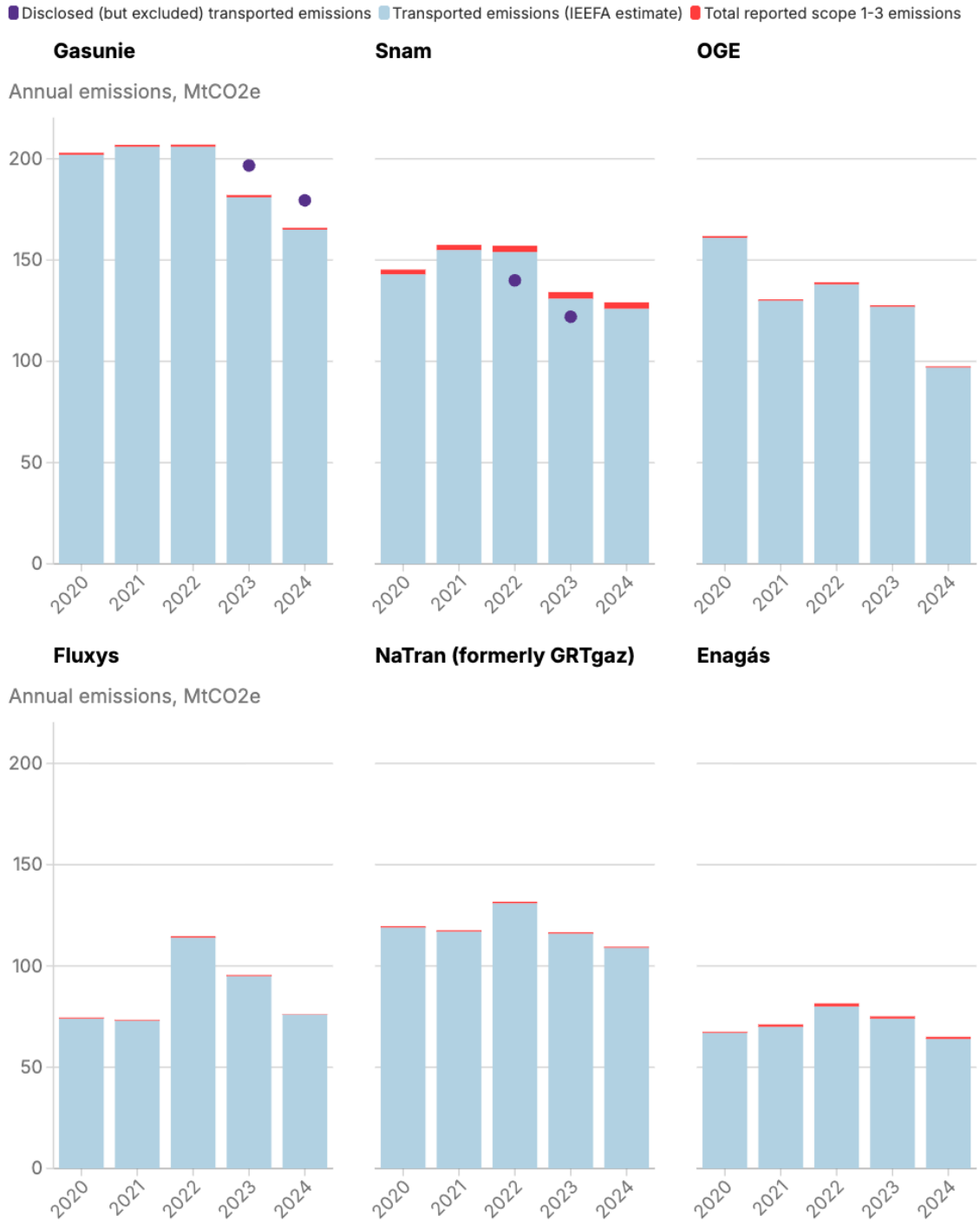
The results clearly demonstrate the materiality of gas TSOs' transported emissions. These range from 40 to 362 times as large as the total reported emissions, with a median value of 156 and a mean (average) of 144 times as large. Described another way, their **total reported emissions are only 0-3% the size of transported emissions**, which currently remain unreported and mostly out of sight for investors and other stakeholders.

Figure 3: Gas TSOs' transported emissions can be hundreds of times larger than their reported Scope 1+2+3 emissions



Sources: TSO annual and sustainability reports, energy regulator reports, responses to IEEFA data requests, IEEFA estimates.

Figure 4: European gas TSOs' transported emissions relative to their reported Scope 1+2+3 emissions



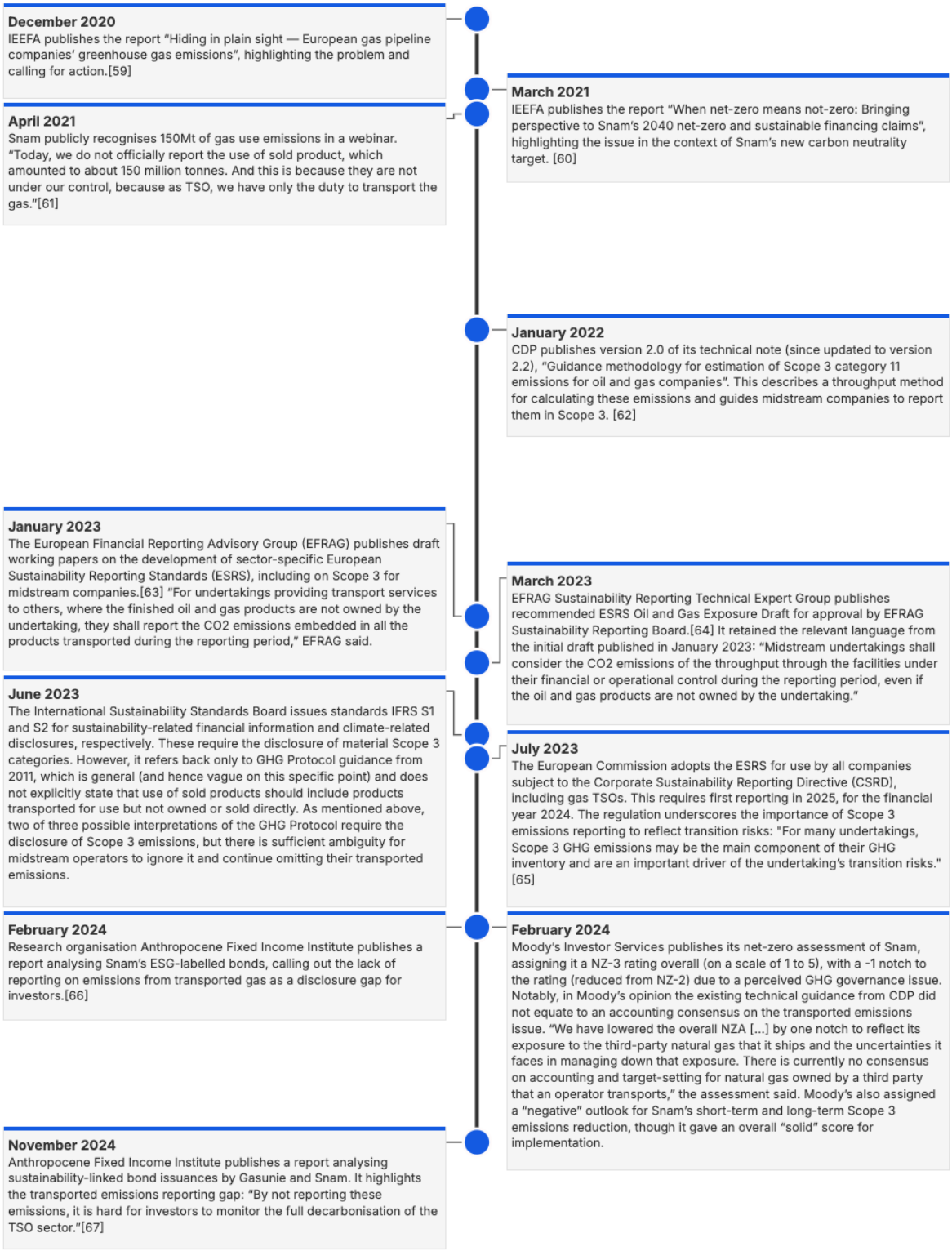
Sources: TSO annual and sustainability reports, energy regulator reports, responses to IEEFA data requests, IEEFA estimates.

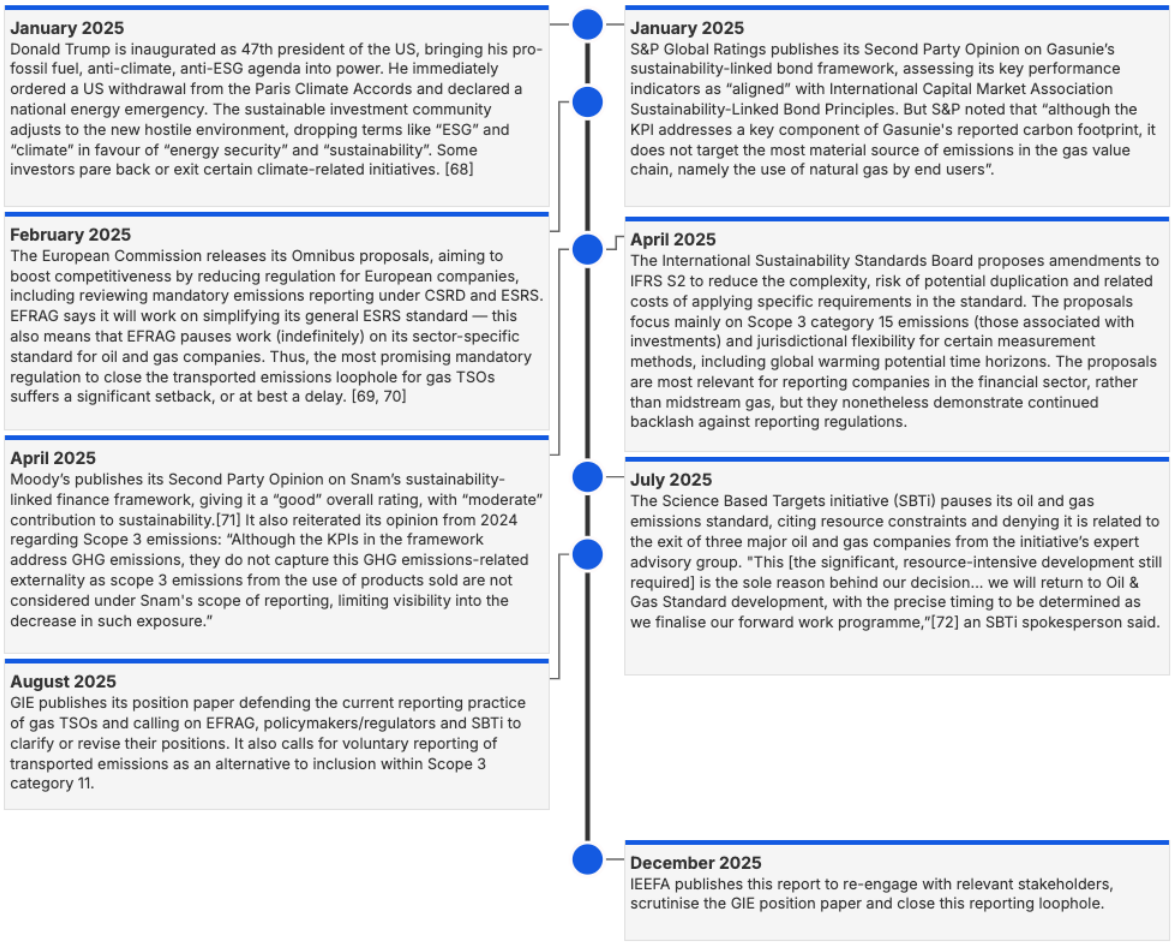
Taking Stock: Slow Progress Towards Closing the Transported Emissions Loophole

Since IEEFA's first report on this topic in 2020, progress towards closing this loophole could be described as "two steps forward and one step back" — partly reflecting the macro environment over this period. The advancement of progressive sustainability regulations in 2023-24 has come up against a wave of political backlash in 2024-25, fuelled by elections and a change in political sentiment amid multiple geopolitical and economic crises. But while near-term progress has been checked and likely slowed, the direction of travel remains unchanged; the EU is still committed to its Green Deal. At the same time, rising financial, health and social costs from changing weather patterns continue to reinforce the urgent systemic need to decarbonise and transition away from fossil fuel dependence.

Figure 5 highlights some of the specific actions, both progressive and regressive, made by think tanks, standards-setters and gas TSOs themselves over the last five years. In short, while there has been some progress on closing TSOs' transported emissions loophole, the core issue remains unresolved.

Figure 5: Timeline of progress towards closing the TSO transported emissions loophole





[59] IEEFA. Hiding in plain sight — European gas pipeline companies' greenhouse gas emissions. 1 December 2020.
[60] IEEFA. When net-zero means not-zero: Bringing perspective to Snam's 2040 net-zero and sustainable financing claims. 16 March 2021.
[61] Snam. ESG Seminar - Conference call. 20 April 2021.
[62] CDP. Guidance methodology for estimation of Scope 3 category 11 emissions for oil and gas companies. 28 June 2024.
[63] EFRAG. EFRAG SRB Meeting 24 January 2023. 24 January 2023.
[64] EFRAG. EFRAG SRB meeting 10 March 2023. 10 March 2023.
[65] EUR-Lex. Commission delegated regulation (EU) 2023/2772. 31 July 2023.
[66] Anthropocene Fixed Income Institute. The Forensic Carbon Accountant: Snam SpA SLB. 26 February 2024.
[67] Anthropocene Fixed Income Institute. European gas TSOs: one pipeline to transport them all. 26 November 2024.
[68] Financial Times. Can sustainable investing survive Trump 2.0? 17 January 2025.
[69] EFRAG. Sector-specific ESRS.
[70] EFRAG. Oil & Gas (OG) standard setting.
[71] Moody's. SNAM S.p.A.: Second Party Opinion – Sustainability-Linked Finance Framework Assigned SQS3 Sustainability Quality Score. 15 April 2025.
[72] Business & Human Rights Resource Centre. SBTi pauses oil and gas emissions standard as Shell and other major companies walk away. 22 July 2025.

Moving Forwards: A Path to Greater Transparency

In IEEFA's view, closing the transported emissions loophole would enable gas TSOs to clearly demonstrate their progress over the coming years and decades, as they work towards realising their shared vision of a multi-molecule low-carbon gas network supporting European energy security. This opportunity is important, as such a transparent marker of progress could add significant credibility to TSOs' transition plans, financing frameworks and business strategy when communicated to financial markets, regulators and the public.

> **Closing the transported emissions loophole would enable gas TSOs to clearly demonstrate their progress over the coming years and decades, as they work towards realising their shared vision of a multi-molecule low-carbon gas network supporting European energy security.**

This additional information would also help regulators to track decarbonisation progress and could provide additional data for validating national-level transition and decarbonisation plans. With this in mind, IEEFA makes the following recommendations for different stakeholder groups.

Recommendations

For TSOs

1. Report transported emissions: Begin estimating and reporting transported emissions (Scope 3 category 11) in annual reports, starting with the next reporting cycle and ideally also for prior years for comparison.

2. Adopt the throughput method: Use the method outlined by CDP in its technical note on this topic to calculate transported emissions, clearly stating the gas volumes and the emission factors used.

3. Share reporting know-how and best practices to improve data comparability. Companies which are more advanced in their reporting, such as Snam and Gasunie, could share their knowledge and experience with other gas TSOs to improve the consistency of data across the sector.

For Standards-Setters, Policymakers and Regulators

1. Standards-setters (especially GHG Protocol): Provide explicit, sector-specific guidance, noting that transported emissions are a material reporting category for gas infrastructure companies under the CSRD/ESRS. Recommend that entities include these emissions in Scope 3 category 11 for their annual reporting.

2. Policymakers: Grant national energy regulators a statutory mandate focused on the energy transition, for example similar to the UK's introduction of a net zero duty for Ofgem in 2023.[73] This would empower regulators to consider national climate goals more explicitly in their decisions.

3. Regulators: Enforce reporting. Ensure TSO compliance with Scope 3 reporting obligations, including applying sector-specific guidance (such as existing guidance from CDP).

For Investors and Financial Institutions

1. Request disclosure: Actively engage with gas TSOs to increase transparency and disclosure of transported emissions.

2. Integrate into analyses and decision-making: Use transported emissions data to help assess the transition risk of TSOs, to hold them accountable to their decarbonisation pledges and to scrutinise their long-term business strategy and transition plans. Incorporate this data into investment decision-making and stewardship activities.

[73] UK Department for Energy Security and Net Zero. Energy Security Bill Factsheet: Ofgem net zero duty. 6 June 2023.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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Arjun Flora holds the role of Energy Finance Analyst, Europe, at IEEFA, having previously served as Director of the IEEFA Europe team. Since joining IEEFA in 2020, he has authored numerous reports and provided expert briefings to various stakeholder groups, as well as being quoted on European energy issues by leading business and news outlets. Arjun has covered multiple topic areas relating to the energy transition in Europe, with a current focus on gas infrastructure and sustainable finance.

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