POLICY BRIEF
CLIMATE ACTION NETWORK EUROPE

Methane mitigation for EU energy security: an analysis of supplier risks and abatement potential

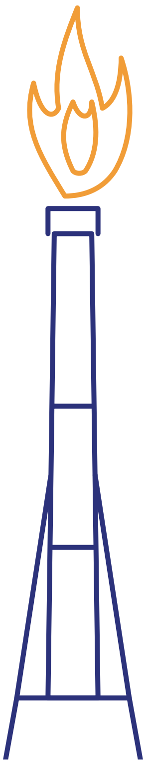
CAN EUROPE POLICY BRIEF
SEPTEMBER 2026

90%

of EU fossil gas consumption is supplied through imports

55%

of potential methane reductions across all fossil gas suppliers can be achieved at negative net cost



1/3

of current global warming comes from methane emissions in the atmosphere today

20 bcm

of gas from fossil gas operations alone could be recovered using existing methane-abatement technologies across the EU's main gas suppliers

Contents

Key messages

1 Methane mitigation can support the EU's energy security by recovering wasted gas

Improved methane management using existing abatement technologies across the EU's main gas suppliers could recover around 20 bcm of gas from fossil gas operations alone, equivalent to roughly twice the EU's LNG imports from Qatar in 2025. Extending these measures to oil operations could increase recoverable volumes to around 43 bcm, equivalent to more than half of the US LNG imported by the EU in 2025.

2 Methane abatement is a cost-effective energy security measure

Many methane reduction measures can be implemented at no net cost, as recovered methane has market value and can be reinjected into supply chains. Globally, around 55% of potential methane reductions across fossil gas suppliers can be achieved at negative net cost indicating that their deployment can result in overall savings, while the corresponding share among the EU's top eight suppliers is approximately 29%. Accelerating methane action can therefore deliver both emissions reductions and economic benefits.

3 The greatest methane reduction opportunities are concentrated among high-emitting suppliers

Methane abatement potential is highest in countries with greater methane intensity and significant upstream losses. The United States represents the largest absolute opportunity, with estimated reductions of around 7.6 Mt CH_4 from gas operations alone, corresponding to approximately 73% of methane emissions from US gas operators. By contrast, lower-emission producers such as Norway and the United Kingdom have more limited additional reduction potential due to already stronger methane management practices.

4 Growing reliance on US LNG creates a new risk for the EU

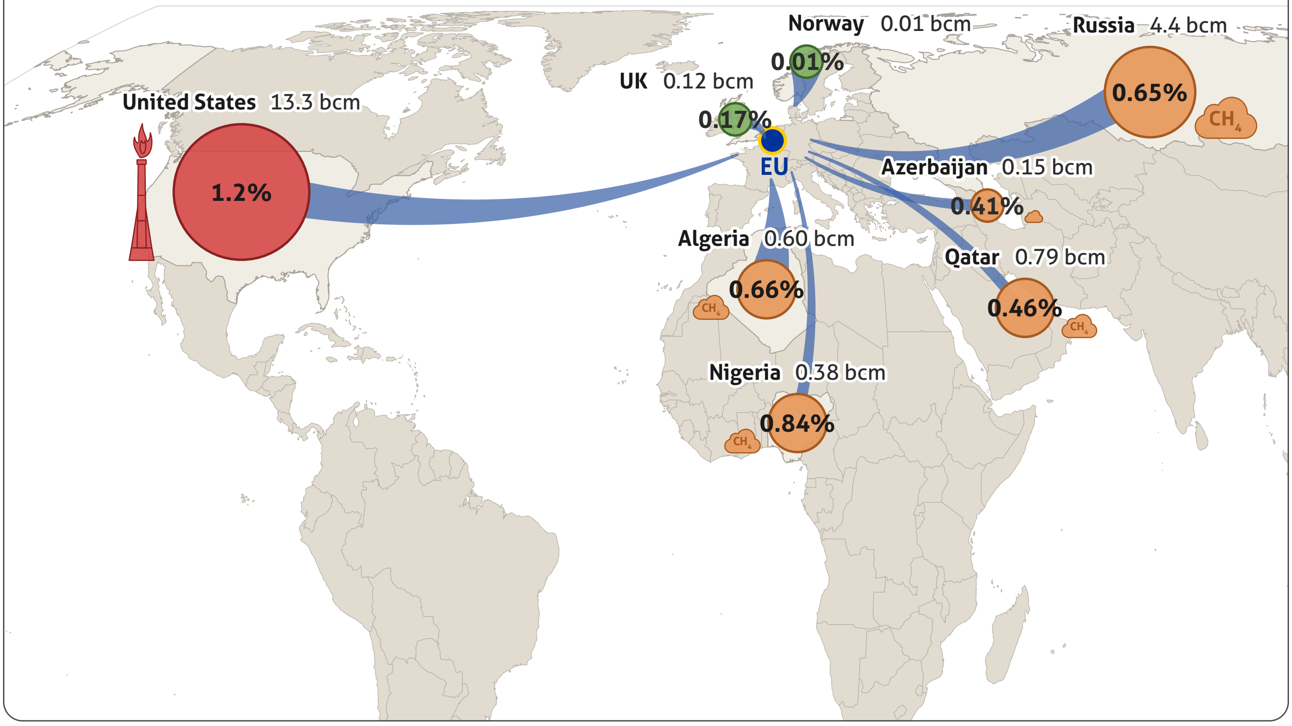
The United States has become the EU's dominant LNG supplier, accounting for approximately 58% of EU LNG imports in 2025. At the same time, it is the world's largest source of methane emissions from gas operations, responsible for around one-third (10.3 Mt CH_4) of global emissions from the gas sector. US LNG is also estimated to have a methane intensity of approximately 1.2%, substantially exceeding the Oil and Gas Climate Initiative (OGCI) benchmark target of 0.2%. While increased imports of U.S. LNG have played a key role in reducing the EU's dependence on Russian gas, growing reliance on a supplier with relatively high methane intensity risks substituting one dependency with another, potentially increasing the emissions embedded in the EU's imported energy supply.

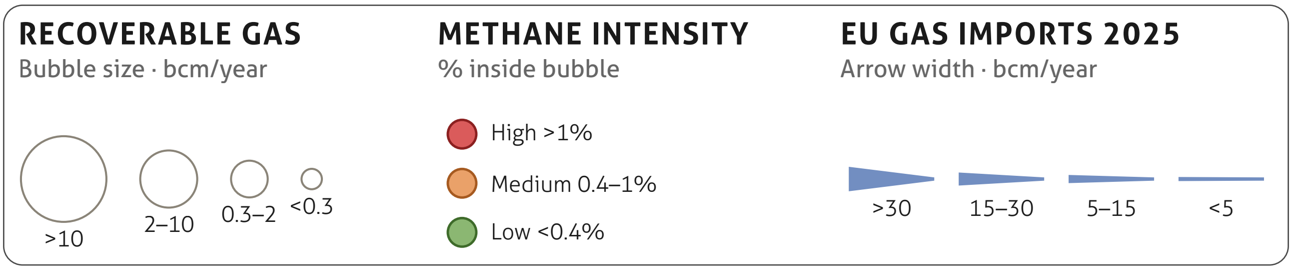
5 Integrate the EU Methane Regulation (EUMR) into a comprehensive fossil gas exit strategy

The EUMR is part of a broader strategy to strengthen Europe's energy security by reducing structural dependence on imported fossil fuels. As this analysis shows, EU methane exposure is shaped by both import dependence and upstream methane intensity, with the United States currently representing the highest combined exposure due to its dominant role in EU LNG imports and comparatively high methane intensity. This demonstrates that supplier diversification alone shifts rather than eliminates strategic vulnerabilities. Integrating the EUMR into a broader fossil gas exit strategy—including a gradual phase-out of LNG imports, particularly from the United States by 2032—would reduce methane emissions, enhance energy security, increase resilience to global gas market volatility, and support the EU's long-term climate objectives.

Recovering gas through methane mitigation can strengthen EU energy security

Large volumes of wasted gas can be recovered from the EU's main gas suppliers by cutting methane emissions





Executive Summary

Europe is once again paying the price of its fossil fuel dependence, including its reliance on imported fossil fuels. The US-Israel war on Iran and the conflict across the region, with its devastating human toll, have once again exposed the EU's continued vulnerability to geopolitical shocks and increased the EU's energy bill by an estimated €62 billion.

Europe cannot achieve lasting energy security, affordability, and economic resilience while remaining exposed to volatile fossil fuel markets. Despite spending around €330 billion on fossil fuels in 2025, renewables increasingly demonstrate their role in shielding consumers from gas price spikes. Spain provides a clear example: during the first four months of 2026, Spain and Portugal consistently ranked among the three EU countries with the lowest day-ahead electricity prices. Accelerating a socially just transition based on renewables,renewables-based electrification, energy efficiency, flexibility, and modern infrastructure is therefore both an economic necessity and a climate imperative.

The EU Methane Regulation (EUMR) is the world's first framework covering methane emissions from both domestic production and imported fossil fuels. As around 90% of EU fossil gas is imported, it supports both climate action and energy security by improving transparency and accountability across global gas supply chains. The European Commission, the UK, and Canada, through the 23 June joint statement have highlighted methane abatement as a critical opportunity to reduce emissions, improve energy resilience and slow global warming. This is also fully aligned with the broader international consensus, including the United Nations' call to rapidly reduce methane emissions as one of the fastest, most cost-effective opportunities to slow global warming.

This report shows that **methane mitigation can directly contribute to energy security.** Improved methane management across the EU's eight largest gas suppliers[1] could recover around **20 bcm of gas annually** from gas operations alone, increasing to approximately **43 bcm** when oil operations are included. Moreover, methane abatement is often economically attractive: **55% of global methane reduction potential** can be achieved at **negative net cost**, while the corresponding share across the EU's top eight suppliers is **29%**, demonstrating that reducing methane emissions can also improve resource efficiency and lower costs.

The analysis also identifies important differences between the EU's gas suppliers. The **United States**, now accounting for around **58% of EU LNG imports**, is also responsible for approximately **one-third (10.3 Mt CH_4)** of global methane emissions from gas operations and has an estimated methane intensity of **1.2%**, well above the **0.2%** benchmark established by the Oil and Gas Climate Initiative (OGCI). While increased U.S. LNG imports have reduced dependence on Russian gas, growing reliance on a high methane-intensity supplier risks replacing one strategic dependency with another. The report therefore finds that **methane intensity should become an integral component of EU energy security assessments.**

1 Norway, the United States, Russia, Algeria, the United Kingdom, Azerbaijan, Qatar, and Nigeria

The report concludes that the EUMR should be recognised as **both a climate and an energy security instrument**. Maintaining its integrity requires ensuring robust implementation, and embedding methane mitigation within the EU's broader fossil fuel exit strategy. Combined with energy efficiency measures, increased renewables based electrification, the wider deployment of clean heating technologies, these efforts can reduce fossil gas demand and strengthen Europe's resilience, enhance global gas supply chain efficiency, and support the Union's long-term climate and energy objectives.

Policy Recommendations

1. **Prioritise implementation and enforcement of the EU Methane Regulation (EUMR)**
2. **Use the EUMR as a tool for international methane governance and supplier engagement**
3. **Recognise methane abatement as an energy security measure**
4. **Integrate the EUMR into a comprehensive fossil gas exit strategy**

01 Why Methane matters

Methane is one of the most significant contributors to climate change, accounting for approximately one-third of current global warming and roughly half of the observed increase in global average temperature since the pre-industrial era. As a short-lived climate pollutant with a relatively short atmospheric lifetime, methane offers a unique opportunity for rapid climate mitigation.

1/3 of current global warming comes from methane emissions in the atmosphere today

According to the International Energy Agency (IEA) Global Methane Tracker 2026:

- methane emissions from fossil fuels remain above **120 Mt CH_4 annually**;
- fossil gas accounts for approximately **30%**;
- around **70%** of fossil fuel methane emissions can be reduced with technologies already available today;
- approximately **30%** can be eliminated at no net cost because recovered gas can be marketed.

Although methane emissions temporarily declined in 2020 due to the widespread shutdown of oil and gas operations during the COVID-19 pandemic, emissions have increased each year since (Figure 1). This trend persists despite the Global Methane Pledge (GMP), under which 160 countries committed to reducing global methane emissions by at least 30% by 2030.

However, progress toward this goal remains limited. Most GMP signatories have yet to introduce the policies and regulatory frameworks necessary to achieve meaningful emissions reductions. Current policies are projected to reduce methane emissions from the oil and gas sector by only around 20% by 2030 and 26% by 2035, falling well short of the GMP's economy-wide target of 30%. Achieving sustained methane reductions therefore requires translating high-level commitments into concrete action through robust regulations, adequate resources, effective implementation, and enforcement mechanisms.

World methane emissions from oil and gas are still rising

Global methane emissions from oil and gas operations, historical values and IEA Stated Policies Scenario projection to 2035 (kt CH_4).

Vertical divider marks 2025 (present day). Callout: projected reduction to 2035 under stated policies

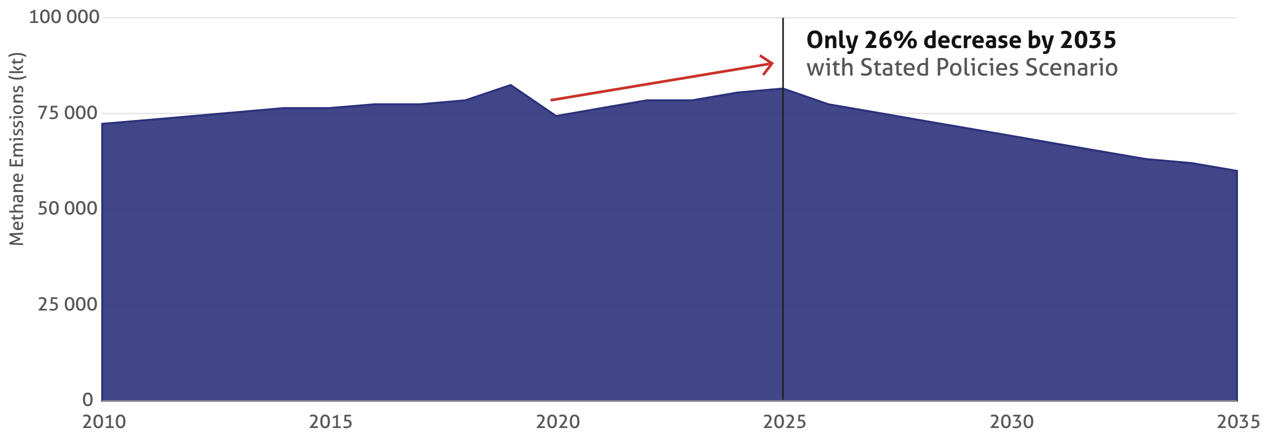


Figure 1: Global methane emissions from oil and gas operations since 2010.
Source: IEA, Methane Abatement Tracker

Despite the growing number of international initiatives and voluntary commitments aimed at improving methane monitoring and reporting, significant governance gaps remain. A persistent transparency and measurement gap exists, as reported methane emissions are consistently lower than independent estimates. The IEA has repeatedly concluded that official national inventories substantially underestimate methane emissions from the global fossil fuel sector. In addition, measurement, reporting, and verification (MRV) frameworks remain incomplete or absent in many fossil fuel-producing and exporting countries, limiting the comparability, credibility, and accountability of emissions data.

The EU Methane Regulation (EUMR) has been designed to address these shortcomings through a phased implementation framework. The Regulation introduces mandatory requirements for measurement, reporting, and verification (MRV), followed by methane intensity reporting and, ultimately, compliance with maximum methane intensity values for imported fossil fuels. By establishing harmonised and transparent reporting requirements for both domestic production and imported energy, the EUMR creates a robust framework for strengthening data quality, and supporting the decarbonisation of energy supply chains.

02 Why the EU Methane Regulation matters

The EUMR must be understood in the context of the European Union's high dependence on imported fossil fuels. It functions not only as a domestic climate instrument, but also as a supply chain governance framework designed to address emissions occurring outside EU territory that are embedded in the fossil fuels consumed within the Union.

This external dimension is particularly important for the EU, which relies heavily on imported fossil fuels, and especially fossil gas. Approximately **90% of EU fossil gas consumption is supplied through imports**, meaning that the majority of methane emissions associated with EU gas consumption occur outside the EU. As a result, achieving EU climate objectives cannot rely solely on domestic mitigation measures but requires effective engagement with international suppliers and greater transparency across global energy supply chains.

90% of EU fossil gas consumption is supplied through imports

The importance of this approach is reinforced by the significant variation in methane emissions among the EU's gas suppliers. The **United States** is the world's largest source of methane emissions from gas operations (Figure 2), emitting approximately **10.3 Mt CH_4** annually—around one third **(32.5%)** of global methane emissions from the gas sector. **Russia** follows with approximately **3.5 Mt CH_4**, while among the EU's major suppliers, **Qatar** emits around **0.6 Mt CH_4**. These differences demonstrate that the climate impact of imported gas depends not only on the volume imported but also on the methane performance of the producing country.

The United States alone accounts for one-third of global methane emissions from gas operations

Estimated methane emissions from gas operations by country, 2025. Tile size proportional to emissions (kt CH_4).

Top 8 EU gas suppliers coloured by methane intensity · Non-EU countries in grey · Rest of world grouped

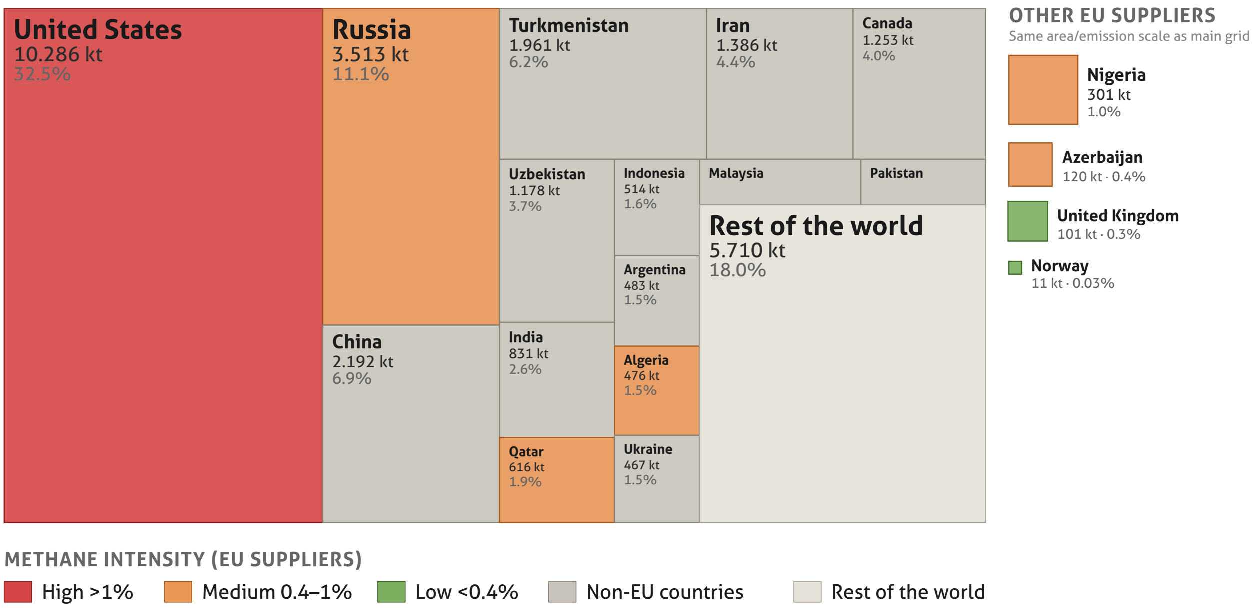


Figure 2: Methane emissions in 2025 across gas suppliers
Source: IEA

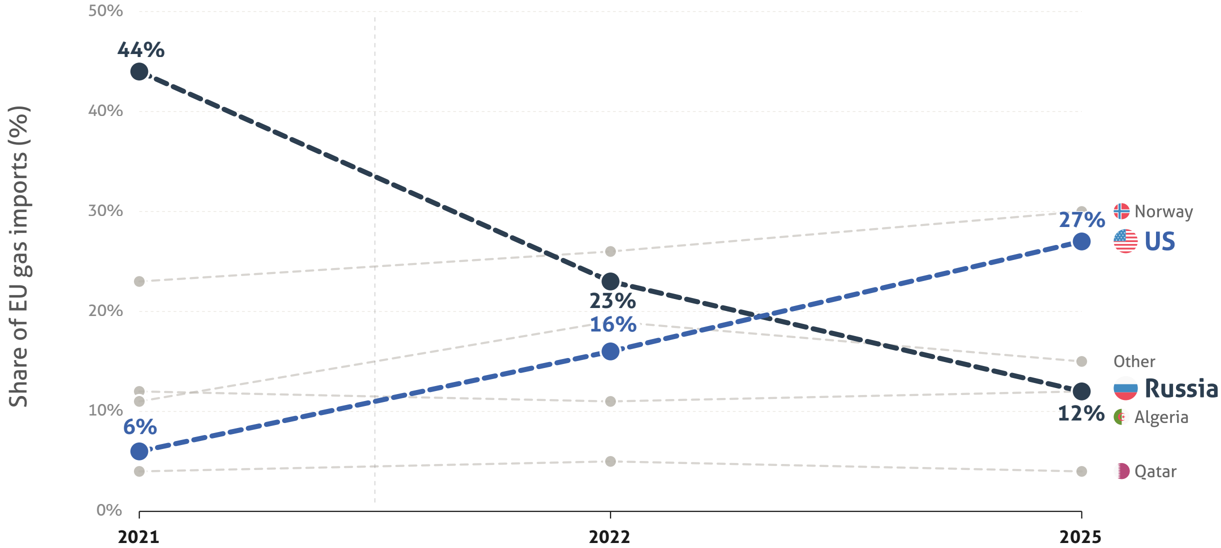
The structure of EU gas imports has changed since the 2022 energy crisis following Russia's invasion of Ukraine. Prior to the crisis, Russia was the EU's dominant external supplier, accounting for around 44% of gas imports, as shown in Figure 3. In response to the crisis, the EU adopted the REPowerEU, which aimed to rapidly reduce dependence on Russian fossil fuels and accelerate the deployment of renewables, energy efficiency in order to have a cleaner energy system.

As a result, Russia's share of EU gas imports has declined sharply, reaching approximately 12% in 2025 (Figure 3). This reduction has been largely offset by structural transformations in the EU energy system. Renewable energy sources now generate around half of the EU's electricity, which together with energy efficiency measures, increased electrification, and the wider deployment of clean heating technologies have contributed to a significant reduction in fossil gas demand. Between August 2022 and January 2026, the EU reduced its fossil gas consumption by approximately 19%. At the same time, the EU has diversified its gas supply routes, primarily through a substantial increase in LNG imports from global markets. The United States has emerged as a big supplier, with the U.S. LNG accounting for around 27% of total EU gas imports (Figure 2), making it the EU's second-largest gas supplier after Norway.

The EU replaced Russian gas dependence with growing reliance on US LNG

Share of EU gas imports by supplier country, 2021–2025 (% of total imports).

After Russia's invasion of Ukraine and REPowerEU, US LNG replaced most of the shortfall.



Highlighted: countries with the largest shifts between 2021 and 2025. Grey lines show all other suppliers for context.
Data points refer to specific years shown; dashed lines connect data points but do not imply linear trends between years.

Figure 3: Share of gas imports in the EU across different suppliers for the years 2021, 2022 and 2025. Source: IEEFA

In LNG terms, this transformation is even more pronounced: the EU now sources more than half of its LNG imports from the United States (58% in 2025). This shift introduces new risks as it has increased exposure to global LNG market dynamics, including price volatility and geopolitical disruptions, as demonstrated by recent tensions in the Middle East.

The changing composition of EU gas imports also has important implications for methane emissions. Methane intensity[2] - a measure of emissions per unit of gas - varies significantly between exporting countries. US LNG, in particular, has an estimated gas methane intensity of around 1.2% (Figure 4), which is significantly above the Oil and Gas Climate Initiative (OGCI) benchmark target of 0.2%. The OGCI's *Aiming for Zero Methane Emissions Initiative*, launched in 2022, reflects an industry commitment among member companies to achieve near-zero methane emissions from operated assets by 2030, primarily through improved detection, measurement, and abatement technologies. Nevertheless, substantial variation in methane performance persists across producing regions, underscoring the importance of addressing upstream emissions as a structural component of EU energy and climate policy.

2 More details in the methodology used to calculate methane intensity can be found in the ANNEX

Increased US LNG dependence could lock the EU to a high methane intensity source

Share of EU gas imports (bars, left axis) versus methane intensity of each supplier (dots, right axis), 2025.

Dashed red line = OGCI industry target of 0.2% methane intensity.

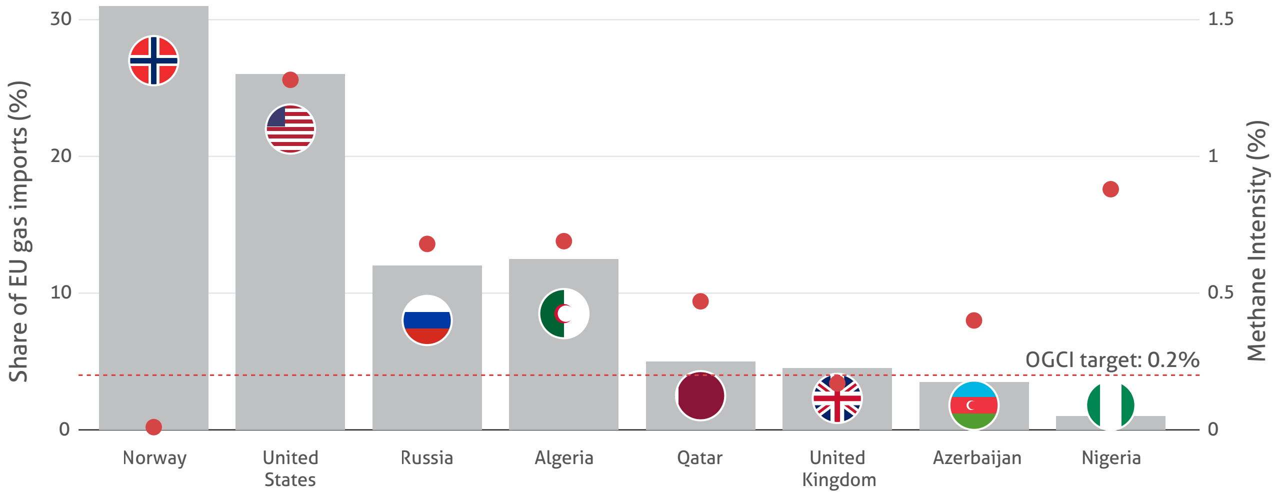


Figure 4: Methane intensity for EU's top eight gas suppliers in 2025
Source: IEA, IEEFA, Bruegel, Energy Institute, CAN E calculations

Overall, the EU's main gas suppliers—including Norway, the United States, Russia, Algeria, the United Kingdom, Azerbaijan, Qatar, and Nigeria—account for over 95% of the EU's imported fossil gas. These suppliers differ substantially in both production pathways and regulatory regimes, resulting in significant variation in associated methane emissions. This diversity highlights the importance of assessing EU exposure not only in terms of supply, but also by considering the upstream methane intensity of each supplier.

Against this background, the EU's top eight gas suppliers can be grouped according to their methane **risk exposure profile**[3], taking into account both the level of EU import dependence and the methane intensity of gas, as presented in Figure 5. **The United States represents the highest exposure category, combining a significant share of EU gas imports with comparatively high methane intensity**. This combination creates a particularly important methane **risk profile**, as increased reliance on U.S. gas imports is accompanied by greater exposure to upstream emissions.

Russia and Algeria fall into the high exposure category, as they combine medium levels of EU import dependence with elevated methane intensity profiles. Qatar, Azerbaijan, and Nigeria represent moderate exposure, reflecting lower import shares but medium-to-high methane intensity levels. By contrast, Norway and the United Kingdom are associated with low exposure, as they combine important roles in EU gas supply with comparatively lower methane intensity levels.

3 For more info see in the ANNEX

This differentiated profile illustrates that the EU's exposure to methane-intensive imports is not uniform, but varies significantly across suppliers. Overall exposure is therefore a function of both market concentration and emissions intensity, rather than import dependence alone. Suppliers such as the US that combine high market shares with high methane intensity pose a dual challenge: they reinforce external energy dependence while also embedding higher upstream emissions. This highlights how **energy security considerations and methane mitigation objectives are increasingly intertwined within the EU's external energy policy framework**. In this context, the EU Methane Regulation plays a critical role by enhancing transparency across supply chains and creating incentives for improved methane performance among both domestic producers and international suppliers.

Supplier	EU Exposure to gas supplier
United States	**Very high exposure** High gas import dependence combined with high methane intensity
Russia, Algeria	**High exposure** Medium gas import dependence combined with relatively high methane intensity
Qatar, Azerbaijan, Nigeria	**Moderate exposure** Lower gas import shares but medium-to-high methane intensity
Norway, United Kingdom	**Low exposure** Low methane intensity despite significant import shares

Figure 5: EU exposure to methane risk from major gas suppliers: import dependence and methane intensity assessment

03 Methane abatement can support energy security

Concerns that the EU Methane Regulation could undermine European security of supply are not supported by available evidence. The European Commission has highlighted that **the Regulation is unlikely to constrain gas availability**, and independent analyses reinforce this conclusion. Continued contracting activity, expanding global compliance capacity, and structural reductions in European gas demand indicate that market participants are adapting to the new regulatory framework rather than withdrawing from the EU market.

Moreover, methane abatement should not be viewed solely as a climate mitigation measure. By reducing methane losses from fossil fuel operations, improving operational efficiency, and recovering gas that would otherwise be wasted, methane abatement can contribute to energy security while also providing economically attractive opportunities for industry.

Continued contracting and market adaptability

There is no evidence that the EUMR is preventing the conclusion of long-term gas agreements. Since the Regulation entered into force, long-term agreements continue to be negotiated and renewed, suggesting that market participants are adjusting to the new requirements rather than reducing their engagement with the European market.

Recent data further reinforces this conclusion. Long-term contracts signed on or after 4 August 2024 and explicitly linked to EU end-users amount to approximately 13 bcm per year of deliveries by 2027 and 25 bcm by 2030, representing only around 4% and 8% of EU gas consumption in 2025, respectively. Importantly, most of these volumes are already committed rather than provisional, indicating that contractual activity remains structurally robust. This suggests that concerns regarding a potential contracting freeze are overstated.

Expanding global compliance capacity

In parallel with continued contracting activity, the capacity of global suppliers to comply with methane-related requirements is expanding. Updated Rystad Energy analysis suggests that by 2027, global gas supply capable of meeting OGMP 2.0 Level 5 reporting standards could reach volumes approximately three times larger than total EU gas imports in 2025. Complementary evidence from the Oil and Gas Methane Partnership 2.0 (OGMP 2.0) indicates that assets responsible for around 1,000 bcm of fossil gas production in 2025 were expected to achieve Level 5 reporting by 2030, a volume broadly comparable to the scale of global net fossil gas trade.

Taken together, these developments point to a rapid scaling-up of measurement-based methane transparency across the upstream sector. This suggests that **the pool of supply capable of complying with stringent methane reporting requirements is likely to expand significantly over the coming decade**, reducing the risk that such standards will constrain market access under the EU Methane Regulation.

Methane abatement as a source of additional supply

Importantly, the EUMR can also contribute to enhancing global gas availability by incentivising cost-effective methane abatement. The International Energy Agency (IEA) estimates that nearly 100 billion cubic metres (bcm) of fossil gas could be made available annually through a global effort to cut methane from oil and gas operations, with a further 100 bcm unlocked through the elimination of non-emergency flaring worldwide.

Applying this perspective to the EU's eight largest gas suppliers[4] highlights the scale of the opportunity. Improvements in methane management across **gas operations** alone **could recover** approximately **20 bcm of gas annually[5]—equivalent to roughly twice the EU's LNG imports from Qatar in 2025**. Extending methane abatement measures **to oil operations** would increase the estimated recoverable volume to around **43 bcm, equivalent to more than half of the U.S. LNG imported by the EU in 2025.**

However, this abatement potential is not evenly distributed across suppliers. Instead, it is concentrated among a relatively small number of producing countries with high methane emissions and greater technical opportunities for emissions reductions. Understanding this distribution is important for identifying where methane mitigation efforts can deliver the greatest climate and energy security benefits.

4 Norway, the United States, Russia, Algeria, the United Kingdom, Azerbaijan, Qatar, and Nigeria
5 Explanation of this result can be found in ANNEX

Concentration of abatement potential across suppliers

The potential for methane abatement is highly concentrated among a limited number of high-emitting producers, reflecting the strong relationship between methane intensity, operational losses, and recoverable gas volumes. **The United States represents the largest abatement opportunity among EU gas suppliers**, with estimated methane emissions of approximately **10,286 kt CH_4** and potential reductions of around **7,557 kt CH_4**, equivalent to approximately **73%** of total emissions (Figure 6).

Around 70% of methane emissions from the EU's biggest gas suppliers could be reduced with existing technologies

Methane abatement potential by country, 2025, based on IEA data for existing technologies. Each grid represents that country's total emissions (100 squares = country total).

Coloured squares = share of emissions that could be abated with current technologies
Grey squares = residual emissions

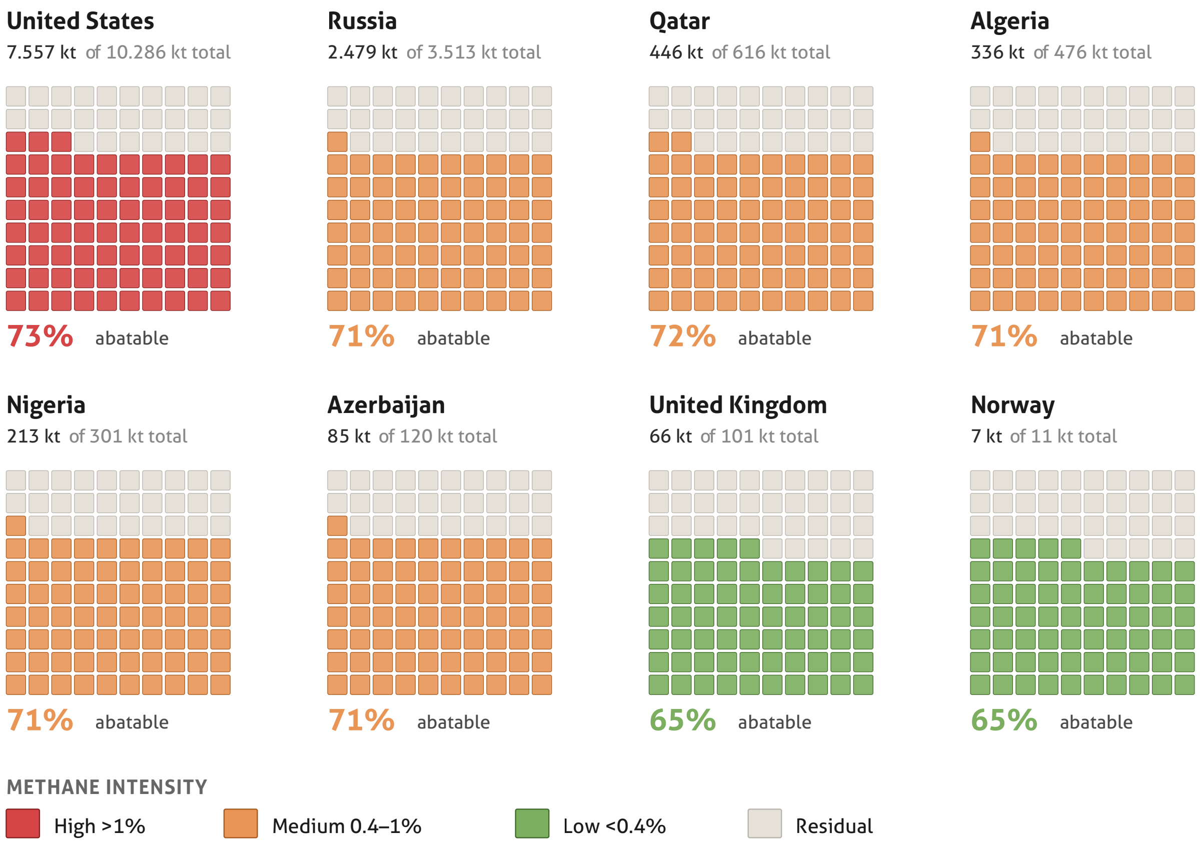


Figure 6: Methane abatement potential by gas supplier
Source: World Oil and Natural Gas Methane Abatement Data

73% of US methane emissions from gas operations could be abated with existing technologies

Russia also presents considerable abatement opportunities, with estimated methane emissions of approximately **3,513 kt CH_4** and the potential to reduce around **2,479 kt CH_4.** Although Qatar accounts for lower absolute emissions, it exhibits a similarly high reduction potential relative to its emissions base, with approximately 72% of emissions considered technically avoidable. Comparable proportional reduction opportunities are observed in Algeria, Nigeria, Azerbaijan, and other suppliers, where estimated methane reductions generally range between 65% and 71% of total emissions.

Overall, a clear pattern emerges across the dataset: **suppliers with higher methane emissions and greater methane intensity also tend to offer the largest opportunities for cost-effective emissions reductions and gas recovery**. Conversely, lower-emission producers such as Norway and the United Kingdom exhibit comparatively limited abatement potential, reflecting more efficient production systems and lower levels of avoidable methane losses. This concentration of abatement opportunities among a relatively small number of suppliers suggests that **targeted methane mitigation efforts could deliver disproportionately large climate and energy security benefits.**

Economic value of methane abatement

The supply benefits of methane mitigation are further reinforced by its favourable economics. A substantial share of the abatement measures identified across the EU's major fossil gas suppliers can be implemented at no net cost, meaning that the value of the recovered gas equals or exceeds the cost of deploying the mitigation technology. This reflects the fact that methane emissions frequently represent commercially valuable fossil gas that would otherwise be lost through leaks, venting, and inefficient operational practices.

Analysis of technology-specific abatement options (Figure 7) shows that **55% of potential methane reductions across global fossil gas suppliers can be achieved at negative net cost**. Among the EU's eight largest gas suppliers, the corresponding share is approximately **29%**. When **near-zero-cost[6] measures** are also included, the share of economically attractive methane reductions increases to **67% globally and 49% across the EU's top eight suppliers**. When higher-cost mitigation measures are excluded, the proportion of economically attractive reductions increases even more, highlighting the substantial scope for cost-effective methane abatement. Many of the most effective measures—including leak detection and repair (LDAR), equipment replacement, and the elimination of routine venting and non-emergency flaring—not only reduce methane emissions but also generate positive economic returns through the recovery of marketable gas.

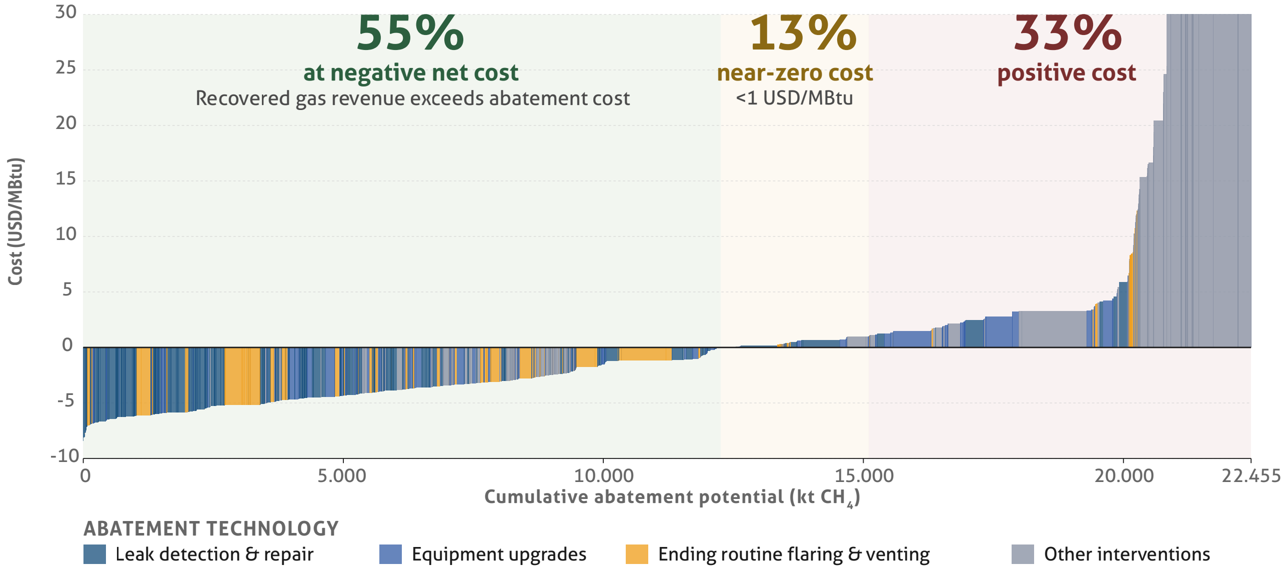
6 For near zero the assumption is that the technology costs less than 1 USD/MBtu

55% of global methane reduction potential can be achieved at negative net cost

More than half of global methane abatement can be achieved at negative net cost

Marginal abatement cost curve for methane emissions from fossil gas operations, 2025. Each bar represents an abatement measure (width = potential savings in kt CH_4, height = cost in USD/MBtu).

Y-axis clipped at 30 USD/MBtu — maximum value in the dataset is 147 USD/MBtu.



For the EU's top eight gas suppliers specifically, the negative-cost share is 29% and near-zero cost 49%.

Figure 7: Costs for different methane abatement technologies for fossil gas suppliers

04 Policy recommendations

1. Prioritise implementation and enforcement of the EU Methane Regulation

The effectiveness of the EU Methane Regulation will depend on its implementation, enforcement, and ability to translate regulatory requirements into measurable emissions reductions. The EU should prioritise the timely implementation of mandatory measurement, reporting, and verification (MRV) requirements, ensuring that methane data from both domestic producers and imported fossil fuel suppliers is accurate, comparable, and independently verifiable.

At the same time <u>Member States should prioritise the timely adoption of effective, proportionate and dissuasive penalty regimes, in accordance with Article 33</u>, while ensuring that competent authorities have sufficient technical and administrative capacity to enforce the Regulation consistently.

2. Use the EUMR as a tool for international methane governance and supplier engagement

Because approximately 90% of EU fossil gas consumption is imported, methane reductions cannot be achieved through domestic measures alone. The EU should use the EUMR as a framework for constructive engagement with major gas suppliers, supporting the adoption of comparable methane measurement and reduction practices across global supply chains.

<u>Engagement should focus particularly on suppliers with the highest methane exposure profiles, where improved methane management can deliver the greatest climate and energy security benefits.</u> **The United States, Russia, and Algeria represent priority areas due to their combination of market relevance and methane intensity, while cooperation with lower-intensity suppliers can help establish best practices and maintain strong performance standards.**

3. Recognise methane abatement as an energy security measure

Methane mitigation should be recognised not only as a climate policy instrument but also as an energy security measure alongside diversification, demand reduction, renewable energy deployment, and electrification. Recovering methane that is currently lost through leaks, venting, and inefficient flaring can increase available gas volumes without requiring additional production.

Given that methane abatement across major EU suppliers could recover approximately 20 bcm of gas from gas operations alone, *methane reduction should be incorporated into broader EU strategies on supply resilience and resource efficiency. This approach strengthens the argument that methane regulation is not a constraint on energy security, but a mechanism to improve the efficiency of existing energy systems.*

4. Integrate the EUMR into a comprehensive fossil gas exit strategy

The EUMR is part of the broader strategy to strengthen EU' s energy security and should be considered as a key instrument for reducing the bloc's structural dependence on imported fossil fuels. Long term energy security cannot be achieved through diversification of fossil fuel suppliers but requires a structural reduction in fossil gas demand through energy efficiency, renewable energy deployment, renewables-based electrification, flexibility, and demand-side flexibility.

The analysis presented in this paper shows that EU methane exposure is determined by the interaction between import dependence and upstream methane intensity. The United States currently represents the highest combined exposure profile, reflecting both its dominant role in EU LNG imports and its comparatively high methane intensity. This illustrates that replacing one dominant supplier with another does not reduce long-term strategic risk. **Diversification without reducing fossil gas dependence can shift, rather than eliminate, strategic vulnerabilities.**

Embedding the EUMR within a broader fossil gas exit strategy - including the gradual phase-out of LNG imports, particularly US LNG by 2032 - would simultaneously reduce methane emissions, strengthen energy security, improve resilience to global gas market volatility, and support the Union's long-term climate objectives.

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Abbreviations

Abbreviation	Definition
EU	European Union
US	United States
IEA	International Energy Agency
GMP	Global Methane Pledge
OGCI	Oil and Gas Climate Initiative
CH_4	Methane
LNG	Liquefied Natural Gas
bcm	Billion cubic metres
Mtoe	Million tonnes of oil equivalent
Mt	Million tonnes
kt	Kilo tonnes
EJ	Exajoule
MJ	Megajoule

ANNEX

A. Methane intensity calculation

1. Definition and methodological approach

Methane intensity has been calculated following the methodology developed by the International Energy Agency (IEA). Methane intensity represents the amount of methane emissions associated with energy production and is expressed in different ways. In the context of this analysis it is calculated as a percentage.

The general formula is:

$$\textit{Methane Intensity [\%]} = \frac{\textit{Total methane emissions from oil and gas supply [MJ]}}{\textit{Total oil and gas production (energy) [MJ]}} \times 100$$

2. Scope of calculation in this report

In this report, the same calculation framework has been adapted to assess the methane intensity of the fossil gas sector only. Accordingly, methane intensity is calculated as the ratio of methane emissions associated with fossil gas supply to marketed fossil gas production, expressed on an energy basis. This sector-specific approach enables direct assessment of methane emissions performance for natural gas independently of oil production. The methodology follows the IEA's energy-based conversion approach (including the conversion of methane mass to energy using 55 MJ/kg CH_4), while restricting both the numerator and denominator to the fossil gas sector

$$\textit{Methane Intensity [\%]} = \frac{\textit{Total methane emissions from oil and gas supply [MJ]}}{\textit{Total oil and gas production (energy) [MJ]}} \times 100$$

3. Data Sources

The calculation relies on the following datasets:

- Methane emissions: Methane emissions data are obtained from IEA Methane Tracker Database
- Fossil gas production: Gas production data are obtained from the IEA Documentation and the Energy Institute Statistical Review of World Energy.

The two fossil gas production datasets have been used complementarily, with the following hierarchy:

1. IEA production data are used as the primary source where available.
2. Energy Institute data are used:
   - to estimate the share of gas production within total oil and gas production for 2025; and
   - to fill gaps where IEA production data are unavailable for specific countries (for example, the United Kingdom and Azerbaijan).

4. Conversions

Methane emissions are reported in mass units and must be converted into energy units to align with the energy-based methane intensity methodology. The IEA conversion factor has been used assuming an energy density for methane of : *1 kg CH4 = 55 MJ*

Fossil gas production data are converted from million tonnes of oil equivalent (Mtoe) into exajoules (EJ) to ensure consistency with the energy-based methane intensity calculation. The conversion factor according to IEA Unit Converter is : *1 Mtoe = 0.041868 EJ*

B. Risk profile calculation

The risk profile has been developed as a qualitative indicator specific to this report to assess the potential methane-related supply risk associated with the EU's main fossil gas suppliers.

The assessment combines two dimensions:

- **EU import dependence**, measured as the supplier's share of total EU gas imports; and
- **Fossil Gas methane intensity**, calculated according to the methodology described in Section A of this annex.

The objective is to identify suppliers to which the EU may be more exposed due to a combination of high import reliance and higher methane intensity.

Import Dependence Classification		**Methane Intensity Classification**	
Import share	Category	Fossil gas methane intensity	Category
≥20%	High dependence	≥ 0.7%	High intensity
Between 5% and 20%	Medium dependence	Between 0.2% and 0.7%	Medium intensity
<5%	Low dependence	≤0.2%	Low intensity

The combined risk profile provides an indicative assessment of methane-related supply exposure. It is intended as a comparative screening tool and does not represent a direct measurement of methane emissions embedded in EU gas imports.

C. Calculation of saved gas from methane abatement technologies

The potential gas savings from methane abatement technologies have been estimated based on the International Energy Agency estimate that:

"Nearly 100 billion cubic metres (bcm) of natural gas could be made available annually through a global effort to cut methane from oil and gas operations."

Based on this approach, this report estimates the volume of gas that could become available from the EU's top gas suppliers (Norway, the United States, Russia, Algeria, the United Kingdom, Azerbaijan, Qatar, and Nigeria) if all methane abatement opportunities identified by the IEA were implemented.

The calculation uses methane emissions reductions from the IEA Methane Tracker and converts avoided methane emissions into equivalent fossil gas volumes.

Conversion Methodology

To estimate the volume of natural gas recovered, the following assumptions from the IEA methodology are applied:

- Methane content of well-head natural gas: 83%
- Methane density: 0.68 kg/m^3
- Methane energy density: 36 MJ/m^3
- Volume from mass: V=m/p
- For 1 tonne CH_4: V = 1000/0.68 = 1470.6 m^3
- Since: 1 bcm = 10^9 m^3
- Therefore: 1 Mt CH4 = 1.4706 bcm CH4
- Methane content adjustment: gas volume = methane volume /0.83
- Therefore: 1 Mt CH4 = 1.4706/0.83 = 1.77 bcm gas,
    - 1 kt CH4 = 0.00177 bcm gas

Data and Scope

The methane abatement potential is derived from the IEA Methane Abatement Tracker, assuming the implementation of all identified methane reduction technologies.

The calculation was applied to the EU's top eight fossil gas suppliers: Norway, the United States, Russia, Algeria, the United Kingdom, Azerbaijan, Qatar, and Nigeria. Under the assumption that all abatement measures are implemented, the estimated gas volume potentially recovered is approximately 20 bcm per year.

As a sensitivity exercise, the calculation was also performed excluding: Improved flaring, and Monitoring and plugging of abandoned wells, as these measures may not directly correspond to avoided marketed gas losses. Under this alternative assumption, the estimated recoverable gas volume decreases to approximately 18 bcm per year.

However, since the IEA methodology does not explicitly distinguish whether these two measures should be excluded when estimating recoverable marketed gas volumes, the main assessment retains the full estimate of 20 bcm per year. The same logic was applied for oil operations.

Economic value of methane abatement

The economic value of methane abatement refers to the potential financial benefit associated with emission reductions from negative-cost abatement measures. Methane that is recovered through abatement actions can often be captured and sold or used, generating additional value. Therefore, certain abatement measures can result in overall savings when the value of the recovered methane exceeds the cost of implementing the technology.

The economic value of abatement has been calculated as the share of potential methane savings associated with negative-cost measures relative to the total potential methane savings considered in the assessment.

In line with the IEA approach, the category "additional measures" has been excluded from this calculation, as these measures generally represent higher-cost abatement options and are associated with higher implementation costs. The calculation therefore focuses on measures with the potential to deliver economically attractive methane reductions.

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