Methane emissions:
Safeguarding affordability, environment, & security of supply

Gas Infrastructure Europe

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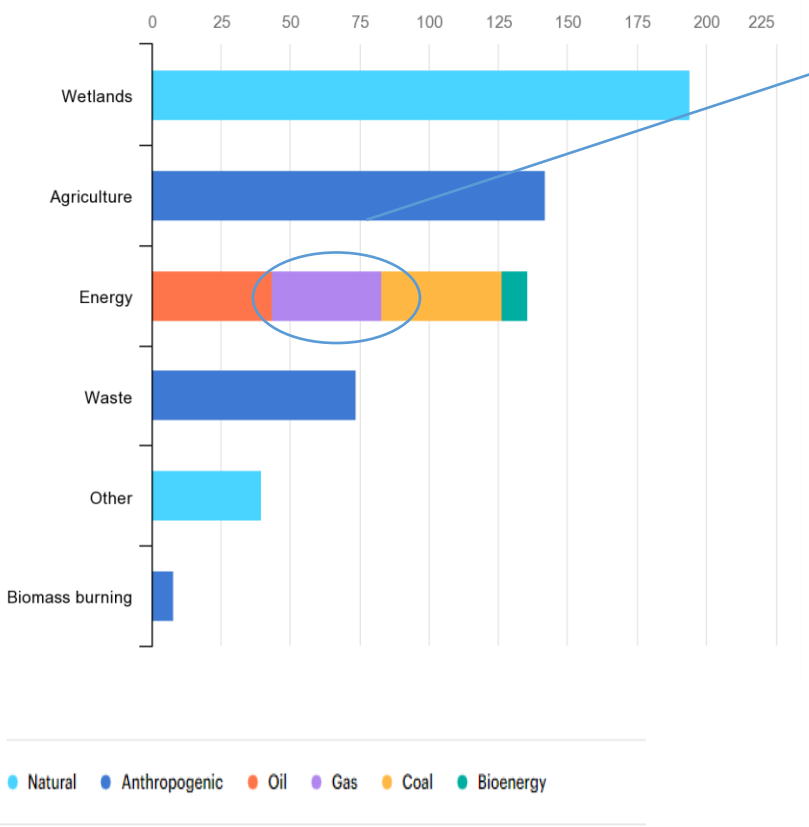
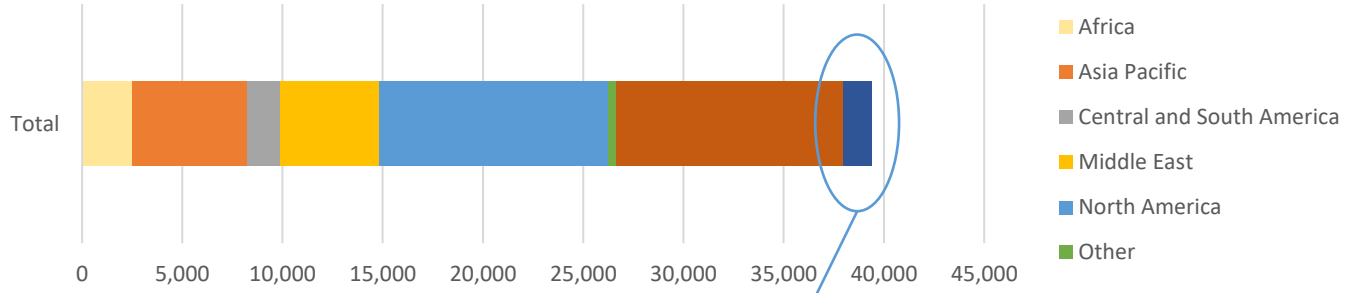
Methane emissions: the European gas sector in the global context

Sources of methane emissions, 2021, Mt

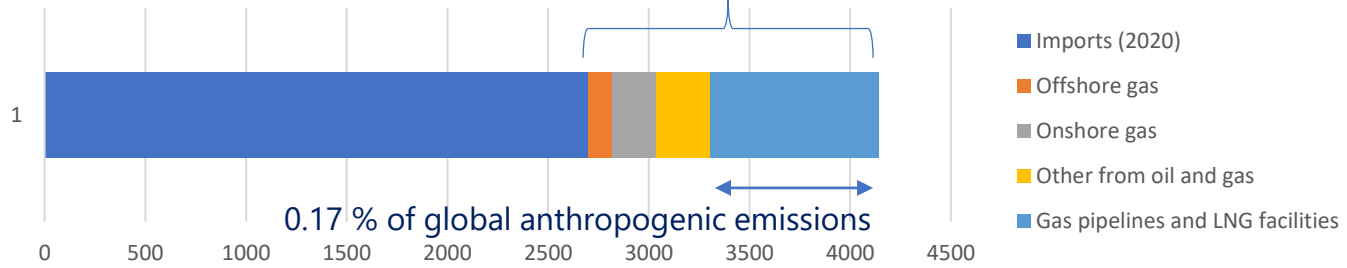


Sources: IEA methane tracker 2022 database and own elaboration based on IEA data.

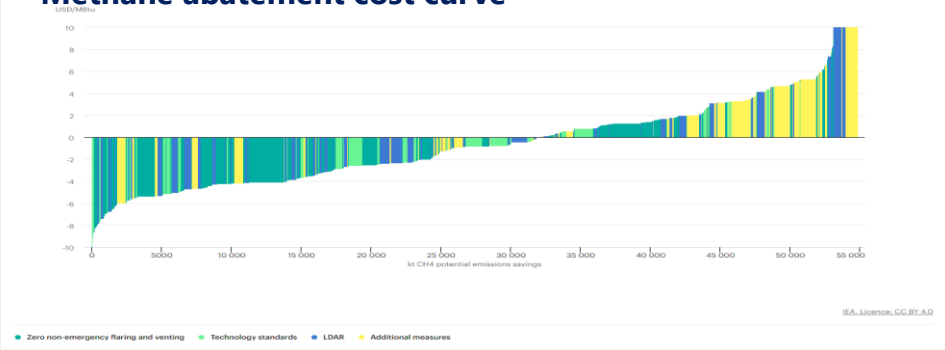
Methane emissions in the gas sector, 2021, kt



Methane emissions in the gas sector, Europe, 2021, kt

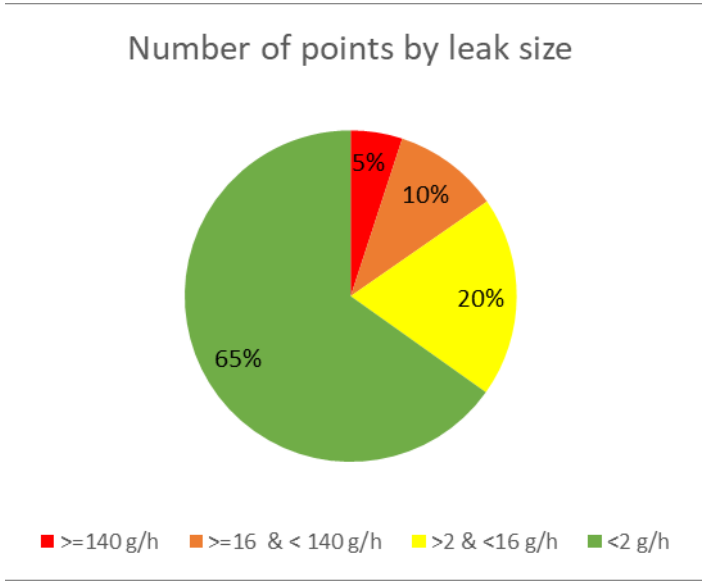


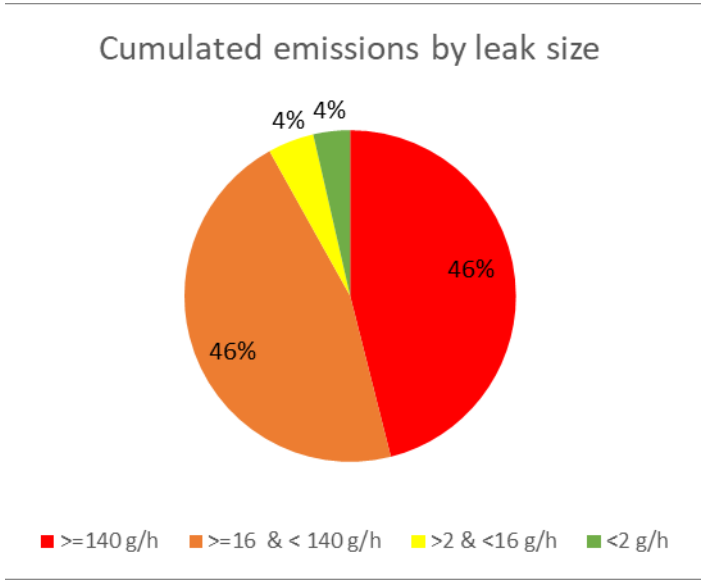
Methane abatement cost curve



For regulated operators, it's not the net but the full cost what is relevant.

The keys to abating methane emissions promptly & efficiently





Source: Enagás LDAR campaigns

Materiality and proportionality

- To curb emissions promptly, **material sources** -representing 95% of emissions- should be **prioritised**. As an example, less than 20% of the leaks account for more than 90% of the methane in LDAR campaigns.
- As the regulation states, operators will take **all appropriate measures available to prevent and minimise** methane emissions (e.g. attempting to fix all the leaks found).
- In addition, some situations (e.g. a leak difficult and expensive to fix) may lead to abatement costs much above the societal cost of methane. To **prevent unjustifiable costs to society**, we must ensure **proportionality** via a limit to abatement costs per tCH4, which could be fixed by an authoritative party, an authoritative party, e.g. ACER, could fix.

Efficiency and flexibility

- Consequently, an **efficient –while prescriptive- approach** should prioritise measures based on their effectiveness.
- Building on robust MRV, **value chain segment-specific** targets can be set to ensure a minimum degree of performance. Once achieved, **flexibility** should be granted to operators.

Proportionality: example of a difficult-to-repair leak

Example of how a difficult to repair leak at a valve station looks like. Source: GIE

The operator shall repair all leaks, including small ones. However, some small leaks can be very difficult and expensive to repair:

- Leak size: 17 g/h based on the General Approach above-ground repair threshold, which corresponds with a realistic leak size encountered at, e.g. a valve station.
- Annual leak: 150 kg ~ 4,200 kgCO2eq
- Similar to the emissions from 2 European households' annual gas consumption
- In 50 years, the total emission would be 7,5 tCH4
- Repair costs: 500,000 € (management, engineering and supervision, permitting, materials, construction, management of surroundings and the (societal) costs of emissions caused by the repair or replacement)
- Abatement costs: **67,000 €/tCH4** (2,400 €/tCO2eq)
- Societal cost[1]: **3,500 €/tCH4 - 21,000 €/tCH4** (125-750 €/tCO2eq)

[1] 3500 from EC's Impact Assessment. These societal costs might be disputed, however, even when considered three times higher (similar to using GWP20) or even six times higher (considering also other damaging effects), **the costs of repair are sometimes not proportional to the societal costs of emission.**

EU regulation: key provisions for midstream operators

Article 12 *Monitoring & reporting*	• Alignment with **OGMP** TGDs and adoption of site-level as technology matures.
Article 13 *General mitigation obligation*	• **Appropriate, proportionate measures** (social impact of the emission greater than that of the mitigation measure) • Intensity targets more useful if linked to **flexibility**
Article 14 *LDAR*	• **Segment-specific**, **performance-based** frequencies • Repair thresholds targeting **material sources**
Article 15 *Venting & flaring*	• **Standardisation** of equipment and operations • Implementation schedules to **prioritise** efficient measures

Source: Enagás LDAR campaigns

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