

Methane Emissions Snam international activities



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Snam company profile



Snam is one of the world's leading energy infrastructure operators. Hydrogen, biomethane, CNG/LNG, energy efficiency are the pillars of Snam's strategy for the energy transition

- National pipeline network
- Compression stations
- Storage sites
- Regasification terminals
- > Entry points



- Network ~ 32,700 km
- Compressor stations 13
- Gas injected into network ~ 75.4 bcm
- 8 supervisory and controlling districts
- 48 O&M centers
- Storage sites 9
- Gas moved ~ 19 bcm
- Natural gas storage capacity ~ 12.5 bcm
- 1 LNG terminal
- Max. regasification capacity 3.5 bcm

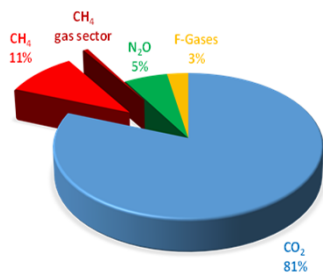


EU methane emissions

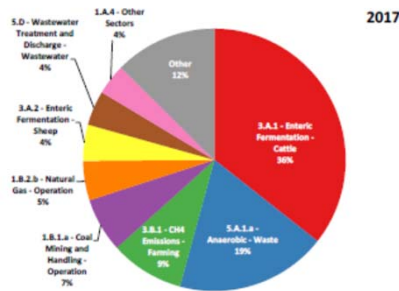


- Methane emissions: safety, climate change (policy developments, public opinion..), commercial value
- Methane emissions account for 11 % of total EU GHG emissions in 2017. The two largest sources are enteric fermentation and anaerobic waste (54 %); gas operations 5% (0.6% total EU GHG emissions)
- From 1990 to 2016 methane emissions gas sector: -37% (1.b.2 oil&gas) – 51% (1b2b natural gas) -> gas consum. +25%

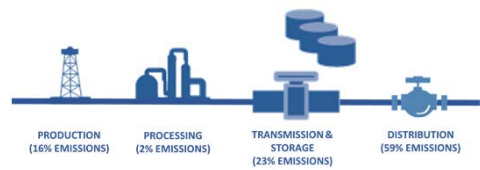
Total EU GHG emissions



CH4 emissions per source



CH4 emissions from natural gas operations



Source: Elaborated by Madrid Forum report authors based on European Environment Agency GHG report

Snam approach



Since 1993, Snam carried out an international project in order to obtain a methodology scientifically recognised and able to provide a reliable estimate of annual methane emissions from its gas infrastructure.

The activity was performed in co-operation with the US-Gas Research Institute and Radian, both with a solid experience in this field derived by several studies already achieved in the U.S. This approach also fits the Marcogaz methodology Tier 3 approach, developed by European gas companies.

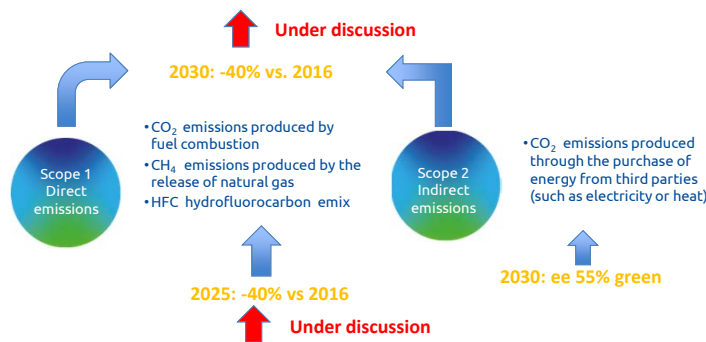
All the gas infrastructure and all emitting typologies are considered, according to international approach

	Pipeline	CS	R&R	Other
Fugitive	X	X	X	X
Pneumatic	X	X	X	X
Vent	X	X	X	X
Unburnt	X	X	X	X

Snam's GHG emissions and Targets



- Green House Gases that Snam releases into the atmosphere are carbon dioxide (CO₂) and methane. The Company increased the targets for reducing methane emissions by 2025, from -25% to -40% vs. 2016, -40% by 2030 for Scope 1 and 2 and 55% use of green electricity by 2030. **Under discussion vs. 2015 according to UNEP OGMP**
- Snam joins **Carbon Disclosure Project**, a not-for-profit charity that runs the global disclosure system to manage environmental impacts and **CLIMATE RELATED FINANCIAL DISCLOSURES** by the Financial Stability Board with the goal to improve the disclosure of companies on financial aspects related to climate change.
- https://www.snam.it/export/sites/snam-rp/repository/file/Sostenibilita/strategie_impegni/Snam_climate_change_2019.pdf



Climate Change & Methane Emissions - Snam activities



- ☐ Snam Presentations – Geneva
- ☐ Methane Strategy consultant
- ☐ OGMP 2.0 Gold Standard

- ☐ Madrid Forum report
- ☐ Snam Presentations (Brux-Wien..)
- ☐ Position paper Methane Strategy
- ☐ Guidelines for setting targets

- ☐ FAQ on methane emissions
- ☐ Guidance for reporting template
- ☐ Glossary document
- ☐ LDAR guidelines
- ☐ NIR Recom. improve accuracy



- ☐ Event European Parliament
- ☐ Opinion piece EURACTIV



- ☐ CEN standardisation
- ☐ TC 234 new TR on CH4 emix



- ☐ Imperial College masterclass
- ☐ Best Practices IDMQ & BAT Snam case studies



- ☐ Specialised Master Programme



- ☐ Snam Presentations IGRC
- ☐ New Research Proposal



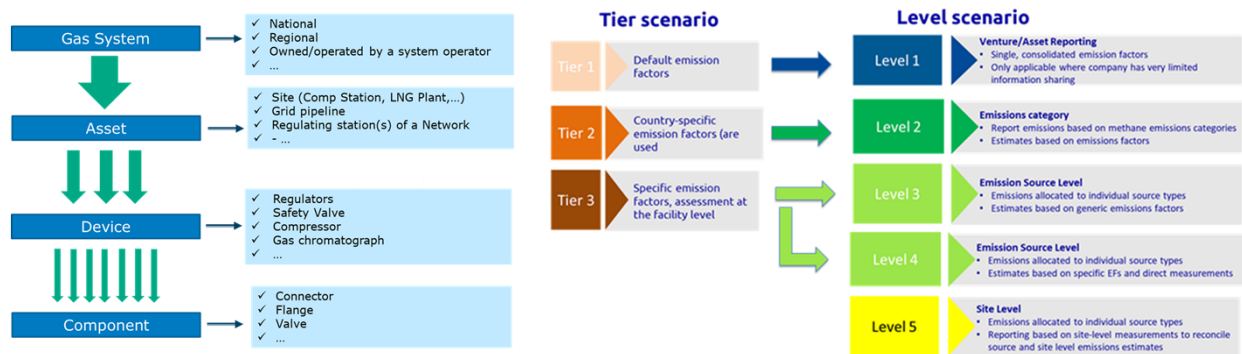
- ☐ GEME Task Force
- ☐ Snam Presentations - Korea



OGMP 2.0



- UNEP OGMP brings together governments, international organizations, NGO's and industry
- Launched in 2015 (upstream) now considering mid-downstream (2020); about 50 companies involved, including Snam
- Three task forces have been established to assist member companies (Reporting, Technical Guidance, Uncertainty and Reconciliation). Action plan:
 - Operated/non-operated ventures (% share)
 - Methane emissions reduction targets and path to reach them (-45% at 2025 vs. 2015 -60-75% at 2030 vs. 2015)
 - Action plan to get to level 4/5 in 3 years for material and operated (non operated -> 5 years)
 - Mid 2021 -> 2020 data according to reporting template



Technological innovation - MGP Snam case studies



- The Methane Guiding Principle, a voluntary international partnership comprising of industry Signatories and Supporting Organizations, have developed a collection of Reducing Methane Emissions Best Practice Guides.
- The main goal is to share best available techniques to reduce methane emission in the gas supply chain.
- Snam provided technical information and support in the development of the new guides: "Identification, Detection, Measurement and Quantification" and "Transmission, Storage, LNG Terminals and Distribution".



Technological innovation - MGP Snam case studies



- Gas companies are promoting and implementing mitigation measures to reduce GHG and methane emissions. Emission sources should be identified and quantified on a regular basis, to incorporate new data on emissions rates from equipment and operations
- The analysis of the technical and economic feasibility of the Best Practices should be done on a case-by-case basis together with a cost-benefit analysis, considering that "one size does not fit all" principle. This will allow gas companies to select the most effective methane emission reduction.
- Snam presented six different Best Practices.
- <https://methanequidprinciples.org/best-practice-guides/>

Case study 4: Hot tapping for pipeline connections (transmission)



Description of measures: Hot tapping allows new connections to be made to pipelines in order to modify the existing transmission network. Alternatively, the required shutoffs done in a section of the network and subsequent gas in the atmosphere. This procedure is referred to as a "shut-in".

Case study: Snam operates a large network of transmission pipelines and uses hot tapping to avoid the need for cutting gas when making new connections to facilities.

Results: Snam avoids hot tapping techniques in order to avoid possible, avoidable, and a high number of operations are completed in 2019, an average of 100 operations per year, 1,000,000 m³ of gas (10% reduction of annual emissions) in 2019, an average of 100,000 m³ of gas.

Costs: The average cost per hot tapping operation is around 10,000 euros.

Learnings: Although this technique is widely applied and considered an essential practice in the oil and gas industry, such has not been the case in the natural gas industry. Specific working procedures need to be used to ensure a safe operation.

Source: Data provided by Snam.

Case study 6: Minimizing emissions from dehydrators by using vapor compression and low-temperature separation to remove water storage



Description of measures: This measure is used to reduce gas losses from dehydrators. The first is a vapor compression system that allows the gas to be compressed and then separated from the water. The second is a low-temperature separation system that allows the gas to be separated from the water. The third is a low-temperature separation system that allows the gas to be separated from the water.

Case study: This measure is used to reduce gas losses from dehydrators. The first is a vapor compression system that allows the gas to be compressed and then separated from the water. The second is a low-temperature separation system that allows the gas to be separated from the water. The third is a low-temperature separation system that allows the gas to be separated from the water.

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Case study 2: Recovering blowdown gas at compressor stations using permanent compressors (transmission and storage)



Description of measures: This measure is used to recover blowdown gas at compressor stations. The first is a permanent compressor system that allows the gas to be compressed and then separated from the water. The second is a low-temperature separation system that allows the gas to be separated from the water. The third is a low-temperature separation system that allows the gas to be separated from the water.

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Case study 1: Pumping down pipelines with portable compressors before maintenance (transmission)



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NIR – New Research



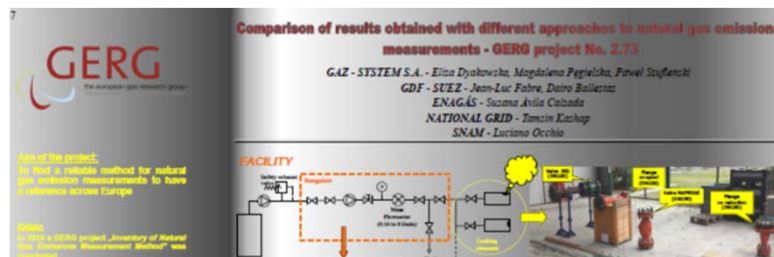
National Inventory Reports – Recommendation to improve accuracy

- Coordination between industries and national authorities to improve the quality of data and the amount of methane emissions

Under discussions - Research on Methane emissions

Understand the different systems, limitations, « trends » Top Down Methodologies

- State of the art
- assessment technologies and quantification methodologies,
- assessment reconciliation of bottom-up vs. top-down



Dissemination

Dissemination activities worldwide

Meeting the consultant



Training process raising awareness and sharing knowledge

Working together with UNEP, EC, EDF ...