



# “Methane emissions for gas transmission and distribution in Europe”

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4<sup>th</sup> Session Group of Experts on Gas

**marcogaz**  
TECHNICAL ASSOCIATION  
OF THE EUROPEAN NATURAL GAS INDUSTRY

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**“Bottom > Up” methodology:** based on an aggregation of collected data from the field (>< “Top > Down”)

$$\text{Total CH}_4 \text{ emissions} = \Sigma(\text{Emission factor} * \text{Activity factor})$$

**Emission factors** describe typical methane emissions of a component or part of the gas system (e.g. valve, pipeline section).

The **Activity factors** are the population of emitting components such as pipelines (length), installed compressors, the number of venting activities, accidental perforation, etc.

- **Scope**
  - Transmission network: TSO
  - Distribution grid: DSO
- **Included emissions**
  - Fugitive emissions
  - Pneumatic emissions
  - Vented emissions (Maintenance + Incident + Operations)
  - Unburned CH<sub>4</sub> in combustion processes
- **Activity Factors**
  - Identification of **all** the sources of emissions

- The data collection was done among members of MARCOGAZ and GIE
- Use of existing MARCOGAZ data forms
- Data collected represents
  - $\pm$  70% of the European transmission grids
  - $\pm$  60% of the European distribution grids
- Participating companies are made anonymous in the report

# Data collection - forms

**Example**

## METHANE EMISSION Calculation for Distribution

Organisation				Natural Gas Composition										
Company:				Average Methane Content of Natural Gas:		% (Vol.)								
Emissions for the Year:				Density of Methane:		0,7175 kg/m³								
Responsible Person:				Conversion Factor from m³ Nat.gas to g CH		0 g CH₄ / m³ Gas								
Calculation														
No.	System Category	Pressure	Activity Factors		Emission Factors				Total Emissions		Source for own factor			Remark (please specify, if possible)
			Data	Unit	Marcogaz Range*		Company		Nat.Gas	Methane	Measurement	Literature	Estimation	
					Minimum	Maximum		Unit	m³/a	g/a				
<b>1.</b>	<b>Distribution Lines</b>													
1.1	Grey cast iron with lead joint	Low		km	M			M	m³/km					
		Medium		km	M			L	m³/km					
		(1)		km					m³/km					
1.2	Ductile cast iron	Low		km	L			L	m³/km					
		Medium		km	M			L	m³/km					
		(1)		km					m³/km					
1.3	Steel	Low		km	L			L	m³/km					
		Medium		km	L			L	m³/km					
		(1)		km					m³/km					
1.4	Steel with cathodic protection	Low		km	L			L	m³/km					
		Medium		km	L			L	m³/km					
		(1)		km					m³/km					
1.5	Steel without cathodic protection	Low		km	L			M	m³/km					
		Medium		km	M			M	m³/km					
		(1)		km					m³/km					
1.6	Plastic Polyethylene PE	Low		km	L			M	m³/km					
		Medium		km	M			L	m³/km					
		(1)		km					m³/km					
1.7	Plastic PVC	Low		km					m³/km					
		Medium		km					m³/km					
		(1)		km					m³/km					

- **Emission Factors**

- are **key**
- identification of the most representative Emission Factors for each type of activity
- based on Members operational and technical experience
- based on the characteristic's of the grids

- **Challenge**

- narrow the **range** of the Emission Factors: data collection is running

Based on a statistical approach: **"Average"** scenario

CH4 emissions from <b>Transmission</b>	0,06%*
CH4 emissions from <b>Distribution</b>	0,17%*
<i>*Compared to the total mass [tons] of natural gas sales in Europe</i>	
Total amount of GHG emissions from Natural Gas transmission and distribution	0,5 - 0,9%**
<i>**of the total of anthropogenic GHG emission (CO<sub>2</sub> equivalents) in Europe (EU28).</i>	

- **Technical report 2017**
  - Update of existing report for transmission & distribution
    - data 2015
  - Extension of scope: CH<sub>4</sub> emissions from
    - Underground Gas Storage activities
    - LNG activities
    - Appliances
    - Domestic installations
- **Best practices for reduction of the CH<sub>4</sub> emissions**
  - Update of the draft MARCOGAZ document
- **MEEM project [GERG]**
  - Research for harmonization of data collection and calculation of CH<sub>4</sub> emissions in the EU distribution networks



The MARCOGAZ **study/results** are available on the **public** part of the website ([www.marcogaz.org](http://www.marcogaz.org))

- **Position Paper** « *Methane emissions in the European natural gas transmission and distribution sectors* » (WG-ME-13-08)  
<http://www.marcogaz.be/index.php/environment-health-a-safety>
- **Technical Report** « *Survey methane emissions for gas transmission and distribution in Europe* » (WG-ME-14-26) supports the conclusions and statements mentioned in the Position Paper.  
<http://www.marcogaz.be/index.php/environment-health-a-safety>



# Thank you !

**marcogaz**

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