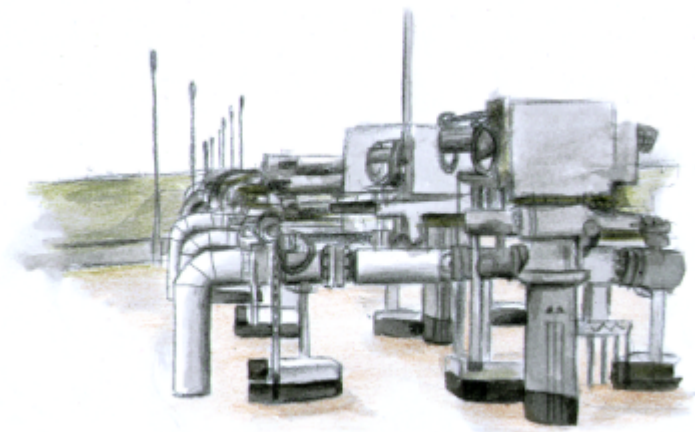# 1.A.3.e i - Other Transport: Pipeline Transport

Short description

Under category 1.A.3.e i - Pipeline Compressors emissions from compressors in pipeline transport of natural gas are reported.

NFR-Code	Name of Category	Method	AR	EF	Key Category [1]
1.A.3.e i	Pipeline Compressors	T2	NS	CS	no key source

T = key source by Trend **L** = key source by Level

Methods	
D	Default
RA	Reference Approach
T1	Tier 1 / Simple Methodology *
T2	Tier 2*
T3	Tier 3 / Detailed Methodology *
C	CORINAIR
CS	Country Specific
M	Model

* as described in the EMEP/CORINAIR Emission Inventory Guidebook - 2007, in the group specific chapters.

AD - Data Source for Activity Data	
NS	National Statistics
RS	Regional Statistics
IS	International Statistics
PS	Plant Specific data
AS	Associations, business organisations
Q	specific questionnaires, surveys

EF - Emission Factors	
D	Default (EMEP Guidebook)
C	Confidential
CS	Country Specific
PS	Plant Specific data

Activity data

In past years, statistical fuel consumption data from the National Energy Balances for Germany was used (AGEB, 2019)[1]. But a comparison with data from German ETS (available as of 2005) exposed several inconsistencies within these statistics.

Therefore, as the fuel consumption of a compressor station depends strongly on the amount of transferred natural gas, a conversion factor was derived reflecting the relation between the fuel consumption of all compressor stations and the primary energy consumption of natural gas within Germany. Using this conversion factor, the insufficient statistical data could be replaced by much more solid estimates for the years 1990 to 2004 whereas for 2005+ the abovementioned ETS data is used.

Emission factors

The emission factors for pipeline comporessors have been taken from the research project "Determination and evaluation of emission factors for combustion systems in Germany for the years 1995, 2000 and 2010" (DFIU, 2002)[2]. A detailed description of the procedure is presented in Chapter: 1.A.1.a - Public Electricity And Heat Production. In 2018 and 2019emission factors were revised by using emission data from large combustion plants (UBA, 2019)[3].

Compressor stations, in Germany mostely gasturbines are responsible for maintaining a constant pressure in the pipeline. Basically they work discontinuously which causes relatively high specific emissions. In order to reflect this point the German law allows exemptions for installations with a low level of utilization. Table 2: EF used for 2018 emission estimates, in kg/TJ

SOx	NOx	TSP	CO
0.14	62.18	0.4	35

Trend discussion for Key Sources

The following diagram gives an overview of the fuel consumption in NFR 1.A.3.e
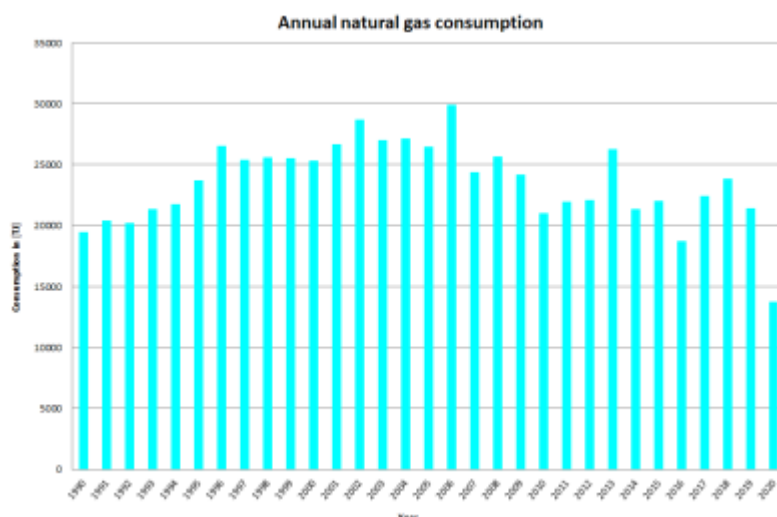
Since 1990 fuel consumption has shown an increasing overall trend. Annual fluctuations are due to the varying primary energy consumption. The maximum fuel consumption occured in 2006, the year with the so far highest German total primary energy consumption of natural gas. Thereafter, natural gas consumption decreases considerably.

Recalculations

For specific information on recalculated emission estimates for Base Year and 2018, please see the pollutant specific recalculation tables following chapter 8.1 - Recalculations.

Planned improvements

Currently no further improvements are planned.

[1] Arbeitsgemeinschaft Energiebilanzen (Hrsg.): Energiebilanz für die Bundesrepublik Deutschland; URL: http://www.ag-energiebilanzen.de/7-1-Energy-Balance-2000-to-2015.html

[2] Rentz, O.; Karl, U.; Peter, H.: Ermittlung und Evaluierung von Emissionsfaktoren für Feuerungsanlagen in Deutschland für die Jahre 1995, 2000 und 2010; Forschungsbericht 299 43 142 im Auftrag des Umweltbundesamtes; Dezember 2002.

[3] Kristina Juhrich, Rolf Beckers: "Updating the Emission Factors for Large Combustion Plants": https://www.umweltbundesamt.de/publikationen/updating-emission-factors-large-combustion-plants