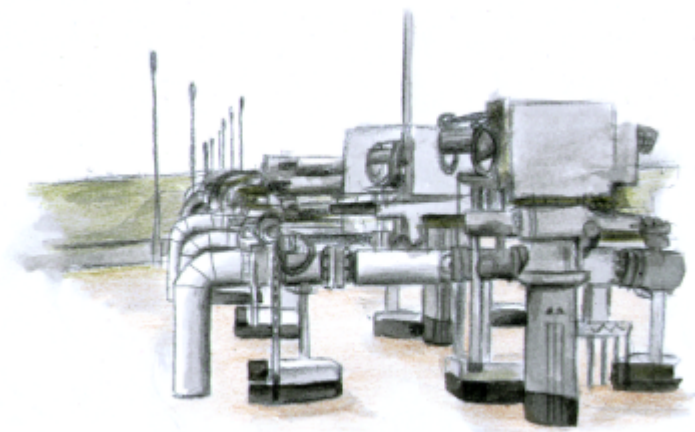


# 1.A.3.e i - Other Transport: Pipeline Transport

## Short description



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

Category Code	Method					AD					EF				
1.A.3.e.i	T2					NS					CS				
Key Category	SO <sub>2</sub>	NO <sub>x</sub>	NH <sub>3</sub>	NMVOC	CO	BC	Pb	Hg	Cd	Diox	PAH	HCB	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
1.A.3.e.i	-/-	-/-	-	-/-	-/-	-	-	-/-	-	-	-	-	-/-	-/-	-/-

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

### Methods

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

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

### AD - Data Source for Activity Data

<b>NS</b>	National Statistics
<b>RS</b>	Regional Statistics

<b>AD - Data Source for Activity Data</b>	
<b>IS</b>	International Statistics
<b>PS</b>	Plant Specific data
<b>AS</b>	Associations, business organisations
<b>Q</b>	specific questionnaires, surveys
<b>EF - Emission Factors</b>	
<b>D</b>	Default (EMEP Guidebook)
<b>C</b>	Confidential
<b>CS</b>	Country Specific
<b>PS</b>	Plant Specific data

## Methodology

### Activity data

In past years, statistical fuel consumption data from the National Energy Balances for Germany was used (AGEB, 2019)<sup>1)</sup>. 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 compressors 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)<sup>2)</sup>. A detailed description of the procedure is presented in Chapter: 1.A.1.a - Public Electricity And Heat Production. In 2018 and 2019 emission factors were revised by using emission data from large combustion plants (UBA, 2019)<sup>3)</sup>.

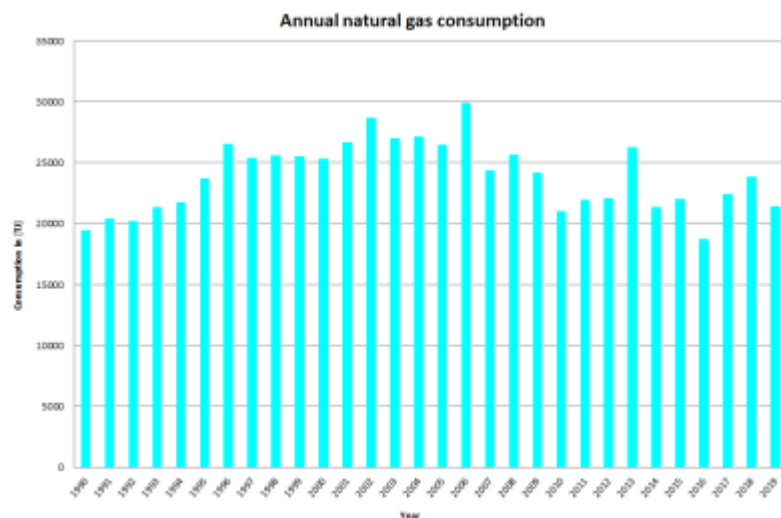
Compressor stations, in Germany mostly gas turbines are responsible for maintaining a constant pressure in the pipeline. Basically they work discontinuously which causes relatively high specific emissions. In order to reflect this point the German law allows exemptions for installations with a low level of utilization.

Table 2: EF used for 2018 emission estimates, in kg/TJ

<b>SOx</b>	<b>NOx</b>	<b>TSP</b>	<b>CO</b>
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 occurred 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.

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

<sup>2)</sup> 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.

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