2.A.5.a - Quarrying & Mining - Other Than Coal

Category Code	Method					AD					EF				
2.A.5.a	T1					IS					CS				
Key Category	**SO_2**	**NO_x**	**NH_3**	**NMVOC**	**CO**	**BC**	**Pb**	**Hg**	**Cd**	**Diox**	**PAH**	**HCB**	**TSP**	**PM_{10}**	**$PM_{2.5}$**
2.A.5.a	-	-	-	-	-	-	-	-	-	-	-	-	L/-	L/T	L/-

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

For particulate emissions, Mining is the main emissions source in the Mineral industries.

In Germany we use two approaches - one for Sands and rocks, one for salts.

Short description - Sands and Rocks

The mining process emits relevant amounts of particles. Quarrying and mining of minerals other than coal is subsumed, in particular mining of limestone, hard rock and building Sands, with rising recycled materials.

Methodology

With the use of the 2019 GB method [1)], a Tier 2 method is available that can reflect different national conditions. In particular, this concerns input variables on humidity and wind speed, which are differentiated into twelve regions.

Activity Data

As provided for in the GB model, we use AD in the split hard rock, sand and recycled material. These AD are taken from association information because the national statistics are not complete [2)]. Data gaps are interpolated for time series concsistency. The application of the method therefore resulted in higher AD.

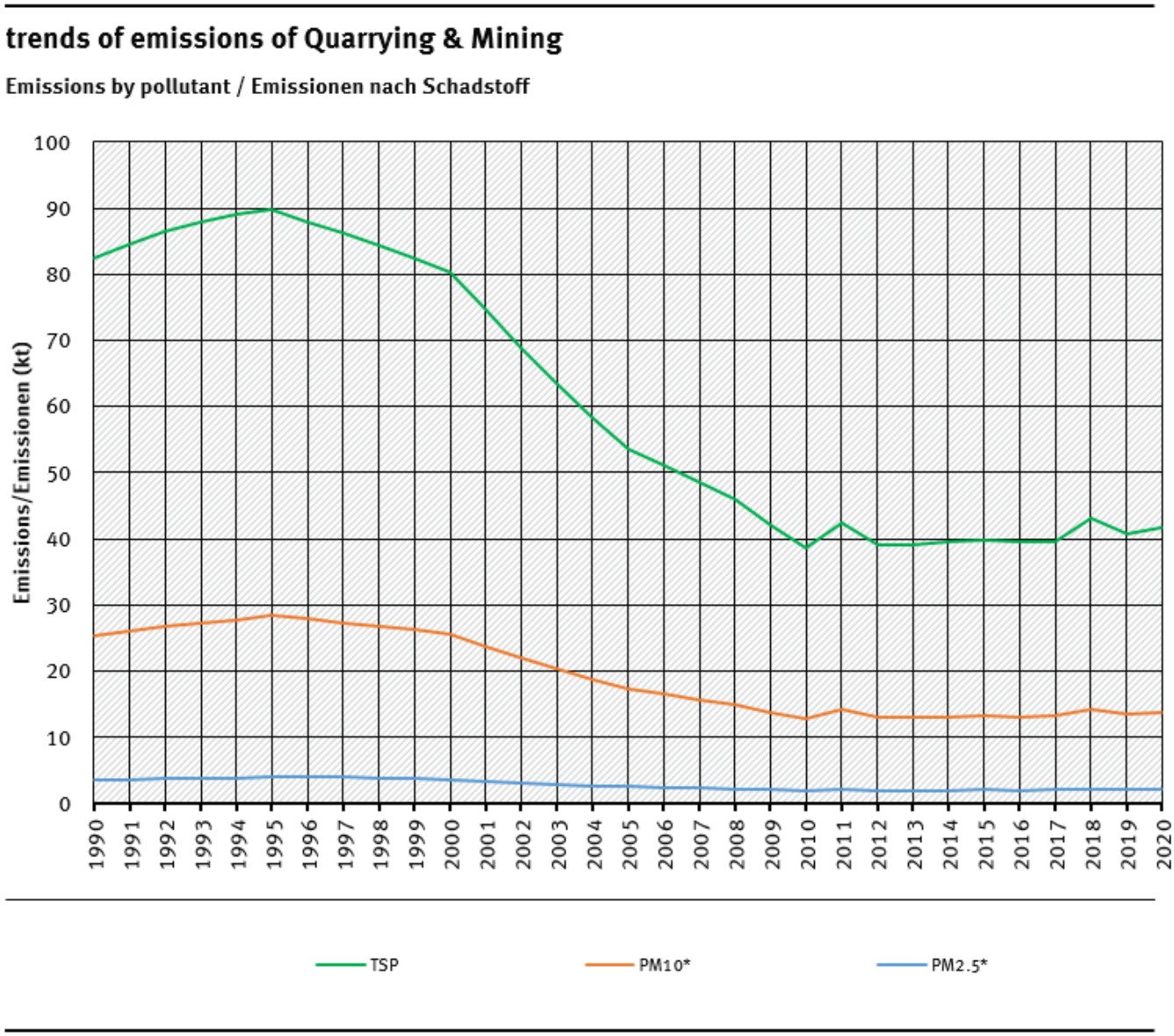
Emission factors

The calculation of emissions takes into account national circumstances and reduction measures.The calculations are available in total more than ten Excel files (individual years since 1990, annually from 2010). Since the GB tool in principle calculates emissions for exactly one year [3)], files must be available for exactly those years in which input data are available. Intermediate years are interpolated in case of data gaps.

With the help of the GB tools, IEFs are estimated on an annual basis, which are used for the inventory method AR x EF. The emission factors are virtual, but the calculation of this is modified by national circumstances on the parameters. So we would name the EF as country-specific.

Trend discussion

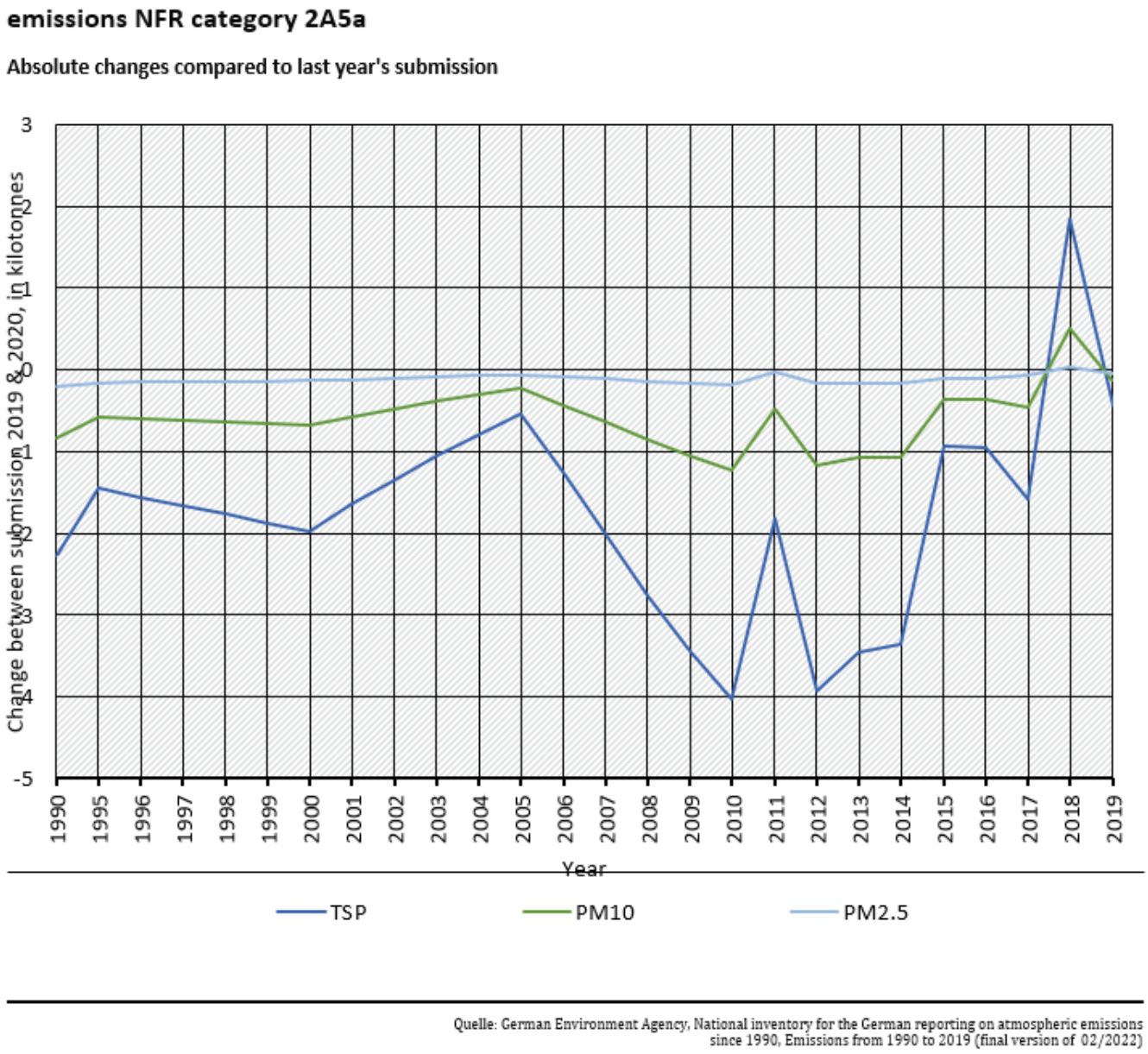
Trends in emissions follow the shrinking mining activities.



Emission trends in NFR 2.A.5.a

Recalculations

Recalculations were necessary due to revised emissions model parameters for the whole time.



Quelle: German Environment Agency, National inventory for the German reporting on atmospheric emissions since 1990, Emissions from 1990 to 2019 (final version of 02/2022)

Recalculations in NFR 2.A.5.a

Planned improvements

At the moment, it is planned to take into account more Country specific conditions and more temporal changes of these.

Short description - Salt Production

Salt production is a sub-category of the mining activities in respect of the country specific approach used. Currently, a Tier 1 method is used: information on production of salts are multiplied with emission factors for TSP and PM.

Method

Activity data

The data from national statistics includes production of potash and rock salt. Potash salt is dominating, nevertheless gaps of

statistics are filled and emissions are modelled as potash salt only.

Emission factors

The emission factors are based on analogy to bulk product handling by an expert judgements from UBA:

Table 2: Overview of applied emission factors, in kg/t salt

Pollutant	EF value	EF trend
TSP	0.031	constant
PM_{10}	0.016	constant
$PM_{2.5}$	0.003	constant

Planned improvements

At the moment, no category-specific improvements are planned.

[1)] EMEP/EEA, 2019: EEA Report No 13/2019 EMEP EEA air pollutant emission inventory guidebook 2019, Copenhagen, 2019; URL: https://www.eea.europa.eu/publications/emep-eea-guidebook-2019/part-b-sectoral-guidance-chapters/2-industrial-processes/2-a-mineral-products/2-a-5-a-quarrying/view

[2)] European Industry Association data are published annually at https://uepg.eu/pages/figures. Within the framework of technical consultations, historical data were confirmed by the National Association for Mineral Resources (https://www.bv-miro.org/).

[3)] EMEP/EEA, 2019: EEA Report No 13/2019 EMEP EEA air pollutant emission inventory guidebook 2019, Copenhagen, 2019; URL: https://www.eea.europa.eu/publications/emep-eea-guidebook-2019/part-b-sectoral-guidance-chapters/2-industrial-processes/2-a-mineral-products/2-a-5-a-quarrying-1/view