Chapter 8.2 - Improvements

Improvements since last Submission

- 1.A.3.d ii: introduction of LPG and gasoline as fuels in national inland navigation
- 1.A.3.d ii & 1.A.3.d i (i), 1.A.4.c iii, 1.A.5.b: separate reporting of diesel oil and light fuel oil in navigation
- 6.A.2 : ammonia emissions from cats and dogs taken into account for the first time

Improvements planned for future submissions

Possible improvement issues that have been identified so far and will be checked in the future are given below:

OVER-ALL INVENTORY (all source categories)

- To prioritise improvements on the basis of the results of the uncertainty analysis, it is planned to determine uncertainty analysis at source category level.

stationary fuel combustion:

- 1.A.1.a: evaluation of measurement data on POPs and heavy metal in large combustion plants
- 1.A.1.b: revision of SO_2 emission factors
- further improvements of PAH Emission factors for small combustion plants

mobile fuel combustion:

- 1.A.3.b vi + vii: update of emission factors for abrasive emissions from tyres and brakes (via research project), with special focus on Euro7 standard; possible implementation into TREMOD
- 1.A.3.c: validation and revision of approach for abrasive emissions from railways; possible implementation into TREMOD

industrial processes:

- lead production: update of PCB emission factor
- magnesium production: right allocation of emissions

Investigated Review Findings

NECD 2023

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Official Comment for IIR
(lack of) Transparency	2C4	2022	Lack of transparency regarding the use of notation keys does not match IIR description	DE-2-2022-0002	Partly	The research is ongoing now we have changed the notation keys to NE. Germany will report on the progress made implementing this improvement in IIR submissions.
	2D3	2023	Check Notation keys	DE-2D-2023-0001	No	
	2D3a	2023	Improve discription of domestic solvent use	DE-2D3a-2023-0001	No	
	2D3i	2023	consider the allocation of NMVOC emissions from lubricants concrete additives and plant protectives to source category 2G and provide information for not calculating the emission from use of shoes and clarification about reporting NMVOC from lubricants and cooling lubricants	DE-2D3i-2023-0001	No	
	3Da2c	2023	harmonise the description of conversion of the emission factor for NOX throughout all Chapters for 3D Agricultural soils in the IIR	DE-3Da2c-2023-0001	Yes	Tier Level corrected to T2
	3Dc	2023	correct Tierlevel for 3Dc in the IIR	DE-3Dc-2023-0001	No	
	5E	2023	Include the information (weighting factors applied for each type of buildings/car fires in order to derive the number of full□scale fires justification that the default emission factors refer to full-scale burning) and complete the description with detailed activity data split by type of fire (small medium major) and category of buildings including the sources of the data.	DE-5E-2023-0001	Yes	Germany has included an explanation of the determination in IIR and has added an informative graph.
	2A5a	2023	Include an explanation for how the share of the emissions from saltmining has been determined	DE-2A5a-2023-0001	Yes	Updated Publication is now correctly referenced as Vos et al. 2024
Accuracy	1A3di(i)	2023	Check PM2.5 implied emission factor	DE-1A3di(i)-2023-0002	No	
	2D3e	2023	Investigate the possibility of using surrogate data	DE-2D3e-2023-0001	No	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Official Comment for IIR
Completeness	5A	2023	estimate PM emissions from all mineral waste handled (including backfilling) or provide a justification in the IIR that the estimate includes all relevant emissions	DE-5A-2023-0001	Yes	Germany has improved transparency regarding the methodological description. About the conversion of different types of fires to full-scale fires and about the activity data split by type of fire now there is more information in IIR.
	3B4h	2023	Continue the effort in calculating emissions from the category Other animals and include more detailed information on the manner of the gathering activity data for this category	Germany 2023-3B-1	No	
Consistency	3B4gi	2023	Correct inconsistencies in the timeseries and to include explanations of any fluctuations with clear references to other documents and corresponding statements	Germany-2023-3B-4	No	
	3B4gii	2023	Correct inconsistencies in the timeseries and include explanations of any fluctuations with clear references to other documents and corresponding statements in it the IIR	Germany-2023-3B-5	Yes	Germany will add the link to chimney sweeps statistic in the next IIR submission.

NECD 2022

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	1A5b	2022	Lack of transparency regarding the NOx emissions outlier in 2005 compared to 2000-2010 emissions	DE-1A5b-2022-0001	Yes	
	1A5b	2022	Lack of transparency regarding the PM2.5 emissions outlier in 2005 compared to 2000-2010 emissions	DE-1A5b-2022-0002	Partly	
	2C4	2022	Lack of transparency regarding the use of notation keys does not match IIR description	DE-2-2022-0002;DE-2-2022-0002	Partly	The research is ongoing now we have changed the notation keys to NE. Germany will report on the progress made implementing this improvement in IIR submissions.
	2G	2022	Lack of transparency regarding the drop in the emissions in 2020 from the previous rather steady trend	DE-2G-2022-0001	Yes	We have improved the IIR documentation of the allocation of all emissions from the pulp and paper industry and included an explanation of the management of process related sulphur and ammonia emissions for pulping processes occurring in Germany.
	2J	2022	Lack of transparency regarding the use of notation keys because the notation keys 'NA' and 'NE' do not match the explanation in the IIR	DE-2J-2022-0001	Yes	
	2K	2022	Lack of transparency on the use of these notation keys and the explanation provided in the IIR	DE-2K-2022-0001	No	Will be implemented in Submission 2024
	3D	2022	Lack of transparency regarding activity data reported in the NFR tables for years 1990-2020	DE-3D-2022-0001	Yes	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Consistency	1A4ciii	2018		DE-1A4ciii-2018-0001	No	This issue is under discussion with the BSH Hamburg as the agency in charge of the underlying model. However, these activity data are based on ship movement data showing a correspondingly increasing trend. Nonetheless, the model is under ongoing revision and erroneous calculations and results will be corrected whenever they are determined.
Completeness	2D3c	2022	For particulate matter Germany did not provide estimates and was using the notation key ‘NA’ (not applicable) in its NFR	DE-2D3c-2022-0001	Yes	
	2H1	2022	Germany reports 'IE' for all pollutants under NFR 1A2d assuming that the fuel-related emissions are allocated under 2H1 however for BC and CO the notation key 'NE' is used	DE-2H1-2022-0002	Yes	
	3B	2022	Other animals not reported	DE-3B4h-2022-0001	Yes	
	3Da2a	2022	Use of notation key for NMVOC while emissions are expected	DE-3Da2a-2022-0001	Yes	
	5D1	2022	Lack of transparency regarding dry toilets (including latrines)	DE-5-2022-0001	No	
Accuracy	3Dc	2022	Farm-Level Agricultural Operations should be reported using Tier 2 or higher	DE-3Dc-2022-0001	Yes	

NECD 2021

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
General	LPS	2021	Update to the 2019 dataset	DE-LPS-GEN-2021-0002	No	
(lack of) Transparency	1A1a\1A2gviii\1A4\1B1	2021	Clearly reference EFs used for HCB and BC	DE-1A1a-2021-0001	Yes	
	1A2b	2021	Update notation key used for BC emission	DE-1A2b-2021-0001	Yes	
	1A2e	2021	Update notation key for BC and check allocation	DE-1A2e-2021-0001	Yes	
	1A4bii	2021	Update IIR description	DE-1A4bii-2021-0001	Yes	
	1A3ei	2021	Explicitly state why PM2.5 is equal to PM10	DE-1A3ei-2021-0001	Yes	Citation has been updated to the latest GB version - no changes in EF needed. Only for 5C2 some changes in EF is planned.
	5	2021	Update to the latest Guidebook where needed	DE-5-2021-0001	Yes	Revised emission factors developed according to suggestions in review.
Consistency	1A4ciii	2018	Large increase in AD from 2015 to 2016	DE-1A4ciii-2018-0001	No	Metal and PCDD/F emissions are not considered as fugitive. If IE would be used nevertheless one can assume there are such fugitives. Germany suggest to keep the notation key NA.
	1A4cii	2018	Inconsistent AD values NFR vs. IIR	DE-1A4cii-2018-0001	Yes	As the National Energy Balances 2003 to 2020 have been revised by the Working Group on Energy Balances (AGEB) in advance of the 2024 submission this erratic trend has been resolved.
	1A1b	2021	Resolve time series issue for BC	DE-1A1b-2021-0001	No	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Completeness	2D3g	2018	Report PAHs from 2D3g Chemical Products	DE-2D3g-2018-0001	Yes	notation keys replaced by activity data values
	LPS	2020	Add missing pollutants PAHs PCBs PM2.5	DE-LPS-GEN-2020-0001	Yes	
	1A2a	2021	Report BC emissions	DE-1A2a-2021-0002	No	
	1A2a	2021	Include BC emissions	DE-1A2a-2021-0001	Yes	
	1A5a	2021	Include BC emissions	DE-1A5a-2021-0001	Yes	The notation key for BC is changed from 'NA' to 'NE' and a justification for this notation key is included in the IIR.
	2A3	2021	Include BC emissions	DE-2A3-2021-0001	Yes	
	LPS	2021	Include PCDD/F emissions	DE-LPS-GEN-2021-0001	No	
	GRID	2021	Include NOx emissions from shipping	DE-GRID-G-2021-0001	Yes	
Comparability	1B1b	2021	Update PAH reporting	DE-1B1b-2021-0001	Yes	Details of the methodology used for BaP and for PAH-1-4 estimation are explained in IIR 2022.
	2A1	2021	Update PAH reporting	DE-2A1-2021-0001	Yes	
	2C1	2021	Update PAH reporting	DE-2C1-2021-0001	Partly	
	2C3	2021	Update PAH reporting	DE-2C3-2021-0001	No	
Accuracy	1A2f	2021	Move CO emission calculation to a higher tier	DE-1A2f-2021-0003	Yes	

NECD 2020

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
General	LPS	2020	Improve consistency with the latest ePRTR reporting.	DE-LPS-GEN-2020-0002	Yes	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	3I	2020	Improve the transparency of the calculations used for NO emissions from storage of digestate from energy crops.	DE-3I-2020-0001	Yes	
	2C7a	2020	Improve Transparency for Cd and Pb emissions from copper production	DE-2C7a-2020-0001	Yes	
	LPS	2020	Reallocate livestock emissions from GNFR L_AgriOther to K_AgriLivestock	DE-LPS-K-2020-0001	Yes	
Consistency	1A4cii	2018	IEF Cd trend since 2007 erratic	DE-1A4cii-2018-0001	Partly	As described in the relevant IIR chapter activity dta for maritime navigation including fishing is estimated bottom-up in a country-specific model and based on ship movement data. From that perspective jumps in fuel consumption cannot be explained by errors in statistics but are assumed to represent reality in respect to the amounts of fuels used by fishing vessels opreating from German harbours.
	1A4ciii	2018	Large increase in AD from 2015 to 2016	DE-1A4ciii-2018-0001	No	Metal and PCDD/F emissions are not considered as fugitive. If IE would be used nevertheless one can assume there are such fugitives. Germany suggest to keep the notation key NA.

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Completeness	2B6	2017	Include the NOx emissions in the next submission.	DE-2B6-2017-0001;DE-2B6-2018-0001	Yes	
	2D3g	2018	Report PAHs from 2D3g Chemical Products	DE-2D3g-2018-0001	Yes	notation keys replaced by activity data values
	2C1	2018	Potential under-estimate of emissions of HCB	DE-2C1-2018-0001	Yes	
	5D2	2019	NMVOC emissions missing although default EFs exist	DE-5D2-2019-0001	Yes	
	2D3a	2019	Emissions of Hg not estimated	DE-2D3a-2019-0001	Yes	Default-EF used emissions reported.
	LPS	2020	Add missing pollutants PAHs PCBs PM2.5	DE-LPS-GEN-2020-0001	Yes	
	GRID	2020	Add gridded emissions of Cd Pb Hg PCDD/F PAHs HCB PCBs to reporting	DE-GRID-GEN-2020-0001	Yes	Germany now includes a new estimate based on further analysis in sector 2A2 in sector 1A2f you can find only the notation key 'IE'.
Accuracy	2D3a	2018	Rationale for not estimating emissions in category 2D3a and notation key selection	DE-2D3a-2018-0001	Yes	References to research Projects of CS-EF added
	LPS	2020	Check emission data for facility “Heyne & Penke Verpackungen GmbH”	DE-LPS-E-2020-0001	Yes	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
QA/QC	LPS	2020	Improve coordinates given check for collisions	DE-LPS-GEN-2020-0004	No	Germany checked this issue and does not see any reason to change the data. It is unclear why LPS name GNFR and stack height should function as a key alternative in particular because the table already provides the ePRTR ID as an unique and valid key.
	LPS	2020	Make sure each point source reported has unique key build from attributes	DE-LPS-GEN-2020-0003	No	Since these pollutants are not in the ePRTR dataset Germany cannot report them.

NECD 2019

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	1A1	2017	Presents its NH3 EF for stationary combustion in the next submission of its IIR justify the use of these and compare these against the values in 2016 EMEP/EEA Guidebook.	DE-1A1-2017-0001;DE-1A1-2018-0001	Yes	
Consistency	1A4cii	2018	IEF Cd trend since 2007 erratic	DE-1A4cii-2018-0001	Partly	
	1A4ciii	2018	Large increase in AD from 2015 to 2016	DE-1A4ciii-2018-0001	No	
	1A4bii	2019	Significant fluctuations in fuel consumption over the time series	DE-1A4bii-2019-0001	Yes	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Completeness	2B3	2017	Include the NOx emissions in the next submission preferably using a country specific method to account for the specific technologies and abatement equipment applied.	DE-2B3-2017-0001;DE-2B3-2018-0001	Yes	
	2B6	2017	Include the NOx emissions in the next submission.	DE-2B6-2017-0001;DE-2B6-2018-0001	Yes	
	5A	2017	Include NMVOC and PM2.5 emissions from 5A in its next submission.	DE-5A-2017-0001;DE-5A-2018-0001	Yes	Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. Industrial wastewater emissions implemented since 2021 reporting.
	2D3g	2018	Report PAHs from 2D3g Chemical Products	DE-2D3g-2018-0001	Yes	notation keys replaced by activity data values
	2C1	2018	Potential under-estimate of emissions of HCB	DE-2C1-2018-0001	Yes	
	5D2	2019	NMVOC emissions missing although default EFs exist	DE-5D2-2019-0001	Yes	
	1A2a	2019	NE reported for Cadmium although a default EF is available	DE-1A2a-2019-0001	Yes	
	1A2b	2019	NE reported for some pollutants although default EFs are available	DE-1A2b-2019-0002	No	Germany carefully checked all possible aditional sources for HCB in this sector. This includes the BREF documents as well as other literature. There was no indication for any missing emission found. The emission factors in the Guidebook are only applicable to processes not occuring in Germany.
	1A2b	2019	NA is reported for HCB 1990	DE-1A2b-2019-0001	Yes	Emissions calculated based on default EF
	1A3b	2019	PCB emissions missing for all years although default emission factors are available	DE-1A3b-2019-0001	Yes	
	1A3c	2019	Update notation key from NE to NA	DE-1A3c-2019-0001	Yes	
	2D3a	2019	Emissions of Hg not estimated	DE-2D3a-2019-0001	Yes	Default-EF used emissions reported.
	5C2	2019	Emission are not estimated for PCDD/F Pb and Cd although default EFs are available	DE-5C2-2019-0001	Yes	
Comparability	1A4ai	2019	Implied EFs PAHs and PCDD/F are outliers compared to other member states	DE-1A4ai-2019-0001	No	
Accuracy	1A1a	2017	Include the revised estimate of activity data and emissions for biogas in its next submission.	DE-1A1a-2017-0003;DE-1A1a-2018-0001	Partly	Implemented for 1A4ai and 1A4ci
	2D3a	2018	Rationale for not estimating emissions in category 2D3a and notation key selection	DE-2D3a-2018-0001	Yes	References to research Projects of CS-EF added
	3B	2019	Tier 1 method used for key category	DE-3B-2019-0001	Yes	Industrial wastewater NMVOC emissions were implemented and are part of the 2021 reporting.

NECD 2018

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	1A1	2017	Presents its NH3 EF for stationary combustion in the next submission of its IIR justify the use of these and compare these against the values in 2016 EMEP/EEA Guidebook.	DE-1A1-2017-0001;DE-1A1-2018-0001	Yes	
	1A1b	2014	Include the country specific EFs for combustion in refineries in the relating chapter of its IIR to improve transparency.	§ 55 (CLRTAP 2014);DE-1A1b-2017-0001;DE-1A1b-2018-0001	Yes	
	2D3d	2017	Include explanation on recalculation to 1994 in the next submission.	DE-2D3d-2017-0001;DE-2D3d-2018-0001	Yes	
	1A3bi	2018	Incorrect notation keys for activity data	DE-1A3bi-2018-0002	Yes	'NE' replaced by 'NA' as suggested by the TERT
	1A3bv	2018	Incorrect notation keys for HCB and PCB emissions	DE-1A3bv-2018-0001	Yes	As the National Energy Balances 2003 to 2020 have been revised by the Working Group on Energy Balances (AGEB) in advance of the 2024 submission this erratic trend has been resolved.
Consistency	1A4cii	2018	IEF Cd trend since 2007 erratic	DE-1A4cii-2018-0001	Partly	As described in the relevant IIR chapter activity dta for maritime navigation including fishing is estimated bottom-up in a country-specific model and based on ship movement data. From that perspective jumps in fuel consumption cannot be explained by errors in statistics but are assumed to represent reality in respect to the amounts of fuels used by fishing vessels opreating from German harbours.
	1A4ciii	2018	Large increase in AD from 2015 to 2016	DE-1A4ciii-2018-0001	No	Metal and PCDD/F emissions are not considered as fugitive. If IE would be used nevertheless one can assume there are such fugitives. Germany suggest to keep the notation key NA.
	1A4cii	2018	Inconsistent AD values NFR vs. IIR	DE-1A4cii-2018-0001	Yes	As the National Energy Balances 2003 to 2020 have been revised by the Working Group on Energy Balances (AGEB) in advance of the 2024 submission this erratic trend has been resolved.

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Completeness	2B3	2017	Include the NOx emissions in the next submission preferably using a country specific method to account for the specific technologies and abatement equipment applied.	DE-2B3-2017-0001;DE-2B3-2018-0001	Yes	
	2B6	2017	Include the NOx emissions in the next submission.	DE-2B6-2017-0001;DE-2B6-2018-0001	Yes	
	2C3	2017	Include NOx from aluminium production in the next submission to improve completeness and comparability.	DE-2C3-2017-0001;DE-2C3-2018-0002	Yes	
	5A	2017	Include NMVOC and PM2.5 emissions from 5A in its next submission.	DE-5A-2017-0001;DE-5A-2018-0001	Yes	Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. Industrial wastewater emissions implemented since 2021 reporting.
	5D	2017	Include the estimation of NMVOC emissions from wastewater treatment plant in its next submission.	DE-5D-2017-0001;DE-5D-2018-0001	Yes	
	2D3g	2018	Report PAHs from 2D3g Chemical Products	DE-2D3g-2018-0001	Yes	notation keys replaced by activity data values
	1B2aiv	2018	Potential under-estimate of emissions of Hg Cd PCDD/F	DE-1B2aiv-2018-0001	Yes	Data acquisition for the resolution of this issue will be implemented in the framework of a research project updating several emission factors. The effort is scheduled to start in 2021 and will take about 3 years. Until then the default emission factor from the EMEP/EEA Guidebook is used.
	2C1	2018	Potential under-estimate of emissions of HCB	DE-2C1-2018-0001	Yes	
	2C3	2018	Potential under-estimate of emissions of HCB	DE-2C3-2018-0001	No	Germany is in the process of evaluating data to calculate emissions of Hg from the use of fluorescent tubes.
Comparability	5C	2018	Hg EF is 100 times smaller than the default value proposed in the 2016 EMEP/EEA Guidebook and the Cd and Pb EF are 1000 times smaller than the default values proposed in the 2016 EMEP/EEA Guidebook	DE-5-2018-0001	No	
Accuracy	1A1a	2017	Include the revised estimate of activity data and emissions for biogas in its next submission.	DE-1A1a-2017-0003;DE-1A1a-2018-0001	Partly	Implemented for 1A4ai and 1A4ci
	2D3a	2018	Rationale for not estimating emissions in category 2D3a and notation key selection	DE-2D3a-2018-0001	Yes	References to research Projects of CS-EF added

NECD 2017

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	1A1	2017	Presents its NH3 EF for stationary combustion in the next submission of its IIR justify the use of these and compare these against the values in 2016 EMEP/EEA Guidebook.	DE-1A1-2017-0001;DE-1A1-2018-0001	Yes	
	1A1a	2017	Improves the transparency of its IIR regarding PM2.5 shares used for each fuel (solid fuels (coal and lignite) and gaseous fuels but also biomass if relevant).	DE-1A1a-2017-0001	No	The emission factors continue to be under revision. New emission factors will be included in the IIR following the use of results of a finished project.
	1A1b	2014	Include the country specific EFs for combustion in refineries in the relating chapter of its IIR to improve transparency.	§ 55 (CLRTAP 2014);DE-1A1b-2017-0001;DE-1A1b-2018-0001	Yes	The reporting in the different source categories is explained in the IIR.
	1A2gviii	2017	Improve the transparency of the IIR to explain its assumptions on the PM2.5 fraction used for each fuel and particularly for liquid fuels biomass and other fuels.	DE-1A2gviii-2017-0001	Yes	
	2A1	2017	Include the explanation and rationale for using two sets of activity data to be included in the IIR for the next submission.	DE-2A1-2017-0001	Yes	
	2C	2017	Update the SO2 emission factors for 2C5 2C6 and 2C7a for the next submission to reflect the individual production activities and to include more transparent information on primary vs. secondary production of lead zinc and copper in the IIR.	DE-2C-2017-0001	Yes	Was reported with the submission 2019.
	2D3d	2017	Include explanation on recalculation to 1994 in the next submission.	DE-2D3d-2017-0001;DE-2D3d-2018-0001	Yes	
	3B	2017	Include the information for the proportional of NO-N and N2 and the reference in the IIR to improve transparency.	DE-3B-2017-0002	Yes	
	3B2	2017	Mention that NFR 3B2 includes lambs and also explain the lower EF NMVOC used for lambs. Furthermore the TERT recommend that Germany in IIR mentioned that pullets are included in NFR 3B4giv other poultry.	DE-3B2-2017-0004	Yes	
	3F	2017	Include more information in the IIR for the next submission referring to the specific law and clarifying from which year the ban came into force. Furthermore it is recommended to inform whether there are derogations for field burning under certain circumstances or for certain crop types.	DE-3F-2017-0001	Yes	Information on methods used for estimation of energy-related is reported in NFR 1. Germany considers NO to be correct and explains the situation in its IIR. Cremation estimation is explained now.
Consistency	1A2	2017	Use the right notation keys in the NFR tables for its next submissions. (1A2 Stationary Combustion in Manufacturing Industries and Construction PM2.5 2005-2015)	DE-1A2-2017-0001	Yes	
	5E	2010	Although the Guidebook has methods for car and house fires in Chapter 6 it may be more transparent to include these in Chapter 7 as Chapter 6D is more focused on compost and sludge. The ERT encourages Germany to consider including some of these emissions in the next submissions.	§ 116 (CLRTAP 2010);§139 (CLRTAP 2014);DE-5A-2017-0003	Partly	Car and house fires have been included for quite a while now (5E). Human NH3 emissions are considered in 6A. Pets will be considered in sub2024.
	2B10a	2017	Investigate whether flaring occurs in relation to carbide production e.g. by contacting the single producer of carbide.	DE-2B10a-2017-0002	Yes	
Completeness	2B3	2017	Include the NOx emissions in the next submission preferably using a country specific method to account for the specific technologies and abatement equipment applied.	DE-2B3-2017-0001;DE-2B3-2018-0001	Yes	
	2B6	2017	Include the NOx emissions in the next submission.	DE-2B6-2017-0001;DE-2B6-2018-0001	Yes	
	2C3	2017	Include NOx from aluminium production in the next submission to improve completeness and comparability.	DE-2C3-2017-0001;DE-2C3-2018-0002	Yes	
	3D1bii	2017	Include the emission from sewage sludge applied to agricultural soils in the next submission.	DE-3Da2b-2017-0001	Yes	
	5A	2017	Include NMVOC and PM2.5 emissions from 5A in its next submission.	DE-5A-2017-0001;DE-5A-2018-0001	Yes	Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. Industrial wastewater emissions implemented since 2021 reporting.
	5D	2017	Include the estimation of NMVOC emissions from wastewater treatment plant in its next submission.	DE-5D-2017-0001;DE-5D-2018-0001	Yes	
Comparability	3D1a	2017	Use the updated emission factors available in the 2016 EMEP/EEA Guidebook (Table 3.2) for the next submission.	DE-3Da1-2017-0001	Yes	Little information is available due to the split of Germany into two nations. Some overview data has been added to the IIR.

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
Accuracy	1A1a	2017	Include the revised estimate of activity data and emissions for biogas in its next submission.	DE-1A1a-2017-0003;DE-1A1a-2018-0001	Partly	Implemented for 1A4ai and 1A4ci

CLRTAP 2023

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	3F	2023	Include information and the correct reference to Roseman et al. (2023) in the IIR	Germany-2023-3F-1	No	Updated Publication is now correctly referenced as Vos et al. 2024
	KCA	2023	Includes information on available the linked background files on the quantitative KCA level and trend assessment in its IIR	Germany-2023-0-1	Yes	
	3B2\3B4d\3B4e	2023	Add in the improvement plan a year in which the CLRTAP recommendation was implemented to include a clear reference to the chapters of the NIR and other documents and to link the previous IIRs in the relevant chapters	Germany-2023-3B-2	No	
	3b1a\3B3\3B4gi	2023	include the provided justifications of fluctuations in emissions and changes in the calculations in its IIR and to add in the improvement plan the year in which the recommendation was implemented	Germany-2023-3B-3	No	
Consistency	3B4gi	2023	correct inconsistencies in the timeseries and to include explanations of any fluctuations with clear references to other documents and corresponding statements	Germany-2023-3B-4	No	
	3B4gii	2023	Correct inconsistencies in the timeseries and include explanations of any fluctuations with clear references to other documents and corresponding statements in it the IIR	Germany-2023-3B-5	Yes	
Completeness	3B4h	2023	Continue the effort in calculating emissions from the category Other animals and include more detailed information on the manner of the gathering activity data for this category	Germany 2023-3B-1	No	Emissions from other animals (deer ostrich rabbits fur-bearing animals) included.

CLRTAP 2022

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	1A4bi	2022	Document the description of the activity date in more detail including information from the chimney sweeps statistic in the next IIR submission.	§ 10 (CLRTAP 2022)	No	Germany will add the link to chimney sweeps statistic in the next IIR submission.
	1A4bi	2022	Provide a complete and clear documentation on the splitting of appliance types are in the next IIR submission.	§ 12 (CLRTAP 2022)	Partly	Germany will check possible further information and report the results in future IIR submission.
	1A4bi	2022	Include information on the measurement standards and equipment used to determine the emission factors.	§ 14 (CLRTAP 2022)	No	Germany will check possible further information and report the results in future IIR submission. Nevertheless information about the status is already included in IIR.
	1A4bi	2022	Include the information provided during the review on the approach to the so-called user impact	§ 17 (CLRTAP 2022)	No	Germany will look at the development of the Guidebook and then will consider changes.
	1A4bi	2022	Include further information on the age distribution of the vehicle fleet and more information about the traffic condition.	§ 25 (CLRTAP 2022)		
Completeness	1A4bi	2022	Further investigate for each biomass and coal PM emission factor whether or not condensables are included.	§ 18 (CLRTAP 2022)	No	Germany will look at the development of the Guidebook and then will consider changes.

CLRTAP 2014

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
(lack of) Transparency	3B	2014	Explain the variation in activity data for goats in the IIR.	§ 120 (CLRTAP 2014)	Yes	
	2D3	2014	The methodology described in the IIR for solvent and other product use is found to be not transparent. Provide detail on all 37 subcategories including activity data and emission factors.	§ 18 96 97 98 (CLRTAP 2014)	Yes	The transparency for the solvents used and products used sector in the IIR was much improved in the submission 2016.
		2010	Inaccuracies were found in the use of notation keys and it is recommended to justify the use of notation keys in the IIR for each particular sector.	§ 38 (CLRTAP 2010);§ 19 (CLRTAP 2014)	Yes	Information tables for NE & IE were added to the completeness chapter of the current IIR.
		2014	Provide more detailed to explain emission trends e.g. annual fluctuations and discontinuities of emissions.	§ 21 78 (CLRTAP 2014)	Yes	
		2014	Extend the use of a bibliography for some subsectors to all sectors in the IIR.	§ 77 (CLRTAP 2014)	No	The amount of recurring references is very small within most source categories. And the total number of references per page is usually quite low. So directly linking to the documents seems like a good way to make sources available to the readers.

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
	1A1b	2014	Include the country specific EFs for combustion in refineries in the relating chapter of its IIR to improve transparency.	§ 55 (CLRTAP 2014);DE-1A1b-2017-0001;DE-1A1b-2018-0001	Yes	The emission factors continue to be under revision. New emission factors will be included in the IIR following the use of results of a finished project.
	1A3b	2010	Explain in more detail the emission calculation for road transport not only by saying that HBEFA and TREMOD are used but giving more information including an overview of emission factors in the next versions of the IIR.	§ 65 (CLRTAP 2010);§ 72 (CLRTAP 2014)	Yes	
	1B2d	2014	Report in the IIR on what basis emissions from geothermal energy extraction are considered negligible.	§ 59 (CLRTAP 2014)	Yes	
	3B	2014	Provide additional information in the IIR especially related to: TAN contents distributions of housing and storage facilities (e.g. for the first and last reporting year) slurry storage systems and the spreading systems applied corresponding EFs.	§ 117 (CLRTAP 2014)	Yes	

Aspect	Sector	First identified in	Finding summary	Observation	Implemented?	Comment
	5A\5B\5C	2010	Since all incineration is reported under energy add information about the methodology used for different types of waste incineration under NFR 1. In NFR 6C use the notation key “IE” instead of “NO” and to explain the use of the notation key in the IIR.	§ 103 110 111 112 (CLRTAP 2010);§ 136 (CLRTAP 2014)	Yes	Information on methods used for estimation of energy-related is reported in NFR 1. Germany considers NO to be correct and explains the situation in its IIR. Cremation estimation is explained now.

CLRTAP 2014

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
General		Provide a PDF version of the IIR for offline use and to better facilitate the review process	§ 6 9 11 28	§ 17							No	The current Wiki platform isn't able to export a whole site to PDF. But we can provide an offline HTML version with full navigation.
General		Use the results of the KCA to prioritise improvements in the inventory		§ 14							Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
QA/QC		Fully implement the QA/QC system for the air pollutant emission inventory. If possible implement a unified QA/QC system for reporting to CLRTAP and UNFCCC.	§ 21 24 62 74 88 105	§ 37 44f							No	Ongoing discussion
QA/QC		Widen the use of the existing QA/QC system used for the set of activity data as well as the methods and emission factors for GHGs for the needs of CLRTAP/NECD inventories and providing further details on its implementation in the IIR (general and sectoral descriptions).	§ 33 40	§ 16 69 84 87 103 105							No	Ongoing discussion

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
QA/QC		Include information on verification and validation of the inventory in the IIR.		§ 38							No	Ongoing discussion
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Transparency		Inaccuracies were found in the use of notation keys and it is recommended to justify the use of notation keys in the IIR for each particular sector.	§ 38	§ 19							Yes	Information tables for NE & IE were added to the completeness chapter of the current IIR
Transparency		Provide more detailed to explain emission trends e.g. annual fluctuations and discontinuities of emissions.		§ 21 78							Yes	
Transparency		Extend the use of a bibliography for some subsectors to all sectors in the IIR.		§ 77							Partly	The amount of recurring references is very small within most source categories. And the total number of references per page is usually quite low. So directly linking to the documents seems like a good way to make sources available to the readers.
Transparency	1A1b	Include the country specific EFs for combustion in refineries in the relating chapter of its IIR to improve transparency.		§ 55	DE-1A1b-2017-0001	DE-1A1b-2018-0001					No	Emission factors are under revision. New emission factors will be included in the IIR following completion of the running refinery project.
Transparency	1A3b	Explain in more detail the emission calculation for road transport not only by saying that HBEFA and TREMOD are used but giving more information including an overview of emission factors in the next versions of the IIR.	§ 65	§ 72							Yes	
Transparency	1B2d	Report in the IIR on what basis emissions from geothermal energy extraction are considered negligible.		§ 59							Yes	

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Transparency	2D3	The methodology described in the IIR for solvent and other product use is found to be not transparent. Provide detail on all 37 subcategories including activity data and emission factors.		§ 18 96 97 98							Yes	The transparency for the solvents used and products used sector in the IIR was much improved in the submission 2016.
Transparency	3B	Explain the variation in activity data for goats in the IIR.		§ 120							Yes	
Transparency	3B	Provide additional information in the IIR especially related to: TAN contents distributions of housing and storage facilities (e.g. for the first and last reporting year) slurry storage systems and the spreading systems applied corresponding EFs.		§ 117							Yes	
Transparency	5A\5B\5C	Since all incineration is reported under energy add information about the methodology used for different types of waste incineration under NFR 1. In NFR 6C use the notation key “IE” instead of “NO” and to explain the use of the notation key in the IIR.	§ 103 110 111 112	§ 136							Yes	Information on methods used for estimation of energy-related is reported in NFR 1. Germany considers NO to be correct and explains the situation in its IIR. Cremation estimation is explained now.
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Consistency	1A1\1A2	In the IIR in the “Short description” for 1A1 and 1A2 Germany presents a tier 2 or 3 approach. However during the review Germany indicated that only the tier 2 approach was used. This needs correction in the IIR (was agreed by Germany to do this)	§ 47	§ 54							Yes	
Consistency	2	Ensure time series consistency of TSP emissions between 1990 and later years and clearly explain in the IIR where and why consistent reporting is not possible.		§ 80							Yes	

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Consistency	2A1\2A2	A time series inconsistency is found which relates to a different reporting structure before 2000. It is recommended to explore the feasibility of harmonizing the methodology.		§ 93							Yes	
Consistency	2D3	Provide emissions for 1990-2005 at a disaggregated level similar to later years if possible. If not explain why for the earlier period emissions have been estimated at a more aggregated level. Also clearly document in the case of IE where emissions have been allocated.		§ 100 101							Yes	The manufacturing industry was the most important branch of the GDR economy. The transformation of the markets and the disappearance of large state-owned enterprises in the course of the German unity led to a dramatic change in the eastern part of Germany
Consistency	3B	The ERT encourages Germany to further improve the consistency of the time series of NH3 for manure management. In chapter 4 of the EMEP/EEA Guidebook 2013 specific methods are provided.		§ 110							Yes	
Consistency	3B	Sheep animal numbers show a step change due to a different reporting time. This should be corrected for and described in the IIR as appropriate.		§ 119							Yes	
Consistency	3B	Check and explain the variation in activity data for horses in the IIR.		§ 121							Yes	
Consistency	3B	Explain how the change in farm practices or the implementation of mitigation measures has affected the time series in the IIR in order to facilitate the assessment of emission trends.		§ 111							Yes	
Consistency	3B	Explain in the IIR why the NH3 EF for dairy cattle decreased from 2011 to 2012.		§ 122							Yes	
Consistency	3B	Explain in the IIR why the NH3 EF for swine decreased from 1993 to 1994.		§ 123							Yes	

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Consistency	3B	Explain in the IIR why the NH3 EF significant changes for different poultry subsectors in the 2000s.		§ 124							Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Completeness		Emissions prior to 1990 are not reported.	§ 27	§ 24							Yes	
Completeness		LPS data were not reported.		§ 10							Yes	
Completeness		A key category analysis (KCA) was missing for the base years (1990 or 2000 for PM) of the pollutants.		§ 13							Yes	
Completeness	1A3ai(i)\1A3aii(i)	Heavy metal emissions are currently not estimated. The ERT recommends that the Party estimates these emissions using the methodology in the EMEP/EEA Guidebook.		§ 62							Yes	
Completeness	1A3biv\1A4bii	PM10 and PM2.5 emissions are reported as “NE”. The ERT recommends that Germany completes the inventory by estimating these emissions.		§ 63							Yes	
Completeness	1A3bv	Evaporative emissions from running losses (i.e. vapour generated in the fuel tank during vehicle operation) were missing because not considered in the TREMOD model. The ERT recommends to include these in the inventory.		§ 73							No	This issue has not yet been looked into as other model revisions especially regarding a follow-up of 'diesel gate' appear much more relevant tying up all resources.
Completeness	1A3dii	Pb and Hg emissions are currently not estimated. The ERT recommends that the Party considers the emission factors available in the Guidebook.		§ 64							Yes	
Completeness	1A4ai\1A4ci\1A5a	HM and POP currently not reported since no consistent dataset is available (partly country specific partly Guidebook). The recommendation is to describe the issue in the IIR and until it is solved use the Guidebook emission factors despite their recognized uncertainty rather than reporting NE.		§ 57							Partly	Implemented for 1A4ai and 1A4ci

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Completeness	5A\5C\5D	The inventory regarding Waste is currently not complete with missing estimates for several source categories.	§ 102	§ 134 135							Yes	Industrial wastewater emissions implemented since 2021 reporting. Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. 5.C completed
Completeness	5A\5D	Improves the completeness of the inventory by estimating emissions from solid waste disposal and wastewater handling.		§ 127							Yes	Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. Industrial wastewater emissions implemented since 2021 reporting.
Completeness	5E	Although the Guidebook has methods for car and house fires in Chapter 6 it may be more transparent to include these in Chapter 7 as Chapter 6D is more focused on compost and sludge. The ERT encourages Germany to consider including some of these emissions in the next submissions.	§ 116	§139	DE-5A-2017-0003						Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Accuracy		Implement a (qualitative and quantitative) uncertainty analysis and use the results to prioritize improvements to the inventory	§ 20 24	§ 32 44e 85							Yes	
Accuracy		Include a chapter in the IIR with for each source category the foreseen improvements for the inventory		§ 34							Partly	Included for most categories

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Accuracy	1A3bvi	This source is a key category for Pb and the ERT has noted that the emission factor for brake wear used by Germany was higher than the maximum range quoted by the 2013 Guidebook. Germany is recommended to review the EF explain where it is coming from in the IIR and potentially revise to bring in line with the Guidebook.		§ 74							Yes	
Accuracy	1A3dii\1A5b	Review the methodology for national navigation by distinguishing between coastal and inland shipping based on an ongoing research project as well as explicitly include emissions from military activities.		§ 75 76							Yes	
Accuracy	2A1	Cement production is a key source for Hg HCB and for NOx PM10 and PAH but Tier 1 is used. The ERT encourages Germany to use plant-specific data collected as part of the LCPD IPPC and E-PRTR to develop a tier 2 or 3 methodology in the near future and to document these in its IIR.	§ 79	§ 88							Yes	plant-specific data approach is not planned

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Accuracy	2D3	Increase the use of information from individual installations that make a high contribution to the key categories such as car assembly sites and big printing installations.		§ 104							Yes	Emissions caused by the use of solvents and solvent-based products are reported in the relevant source groups. In our methodology we also include the application of solvent-based products in large installations such as those used in automotive series production or large printing systems. The emission data of defined individual plants are thus included in the calculation but cannot be shown and published individually for reasons of confidentiality and data protection.
Accuracy	3B	Describe the efforts taken to verify / validate the emission model in the IIR.		§ 118							Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Comparability	1A2a\1A4ai\1A4ci\1A5a	Notation key NE is used for (many) heavy metals despite the availability of EFs in the EMEP/EEA Guidebook. If all HM emissions from iron & steel are reported in 2C1 the notation key should be IE.		§ 56							Partly	Implemented for 1A4ai and 1A4ci
Comparability	1A4bii\1A4cii	Implied NOx emission factors are at the high end of the range when compared with a selected group of countries (AT BE DK ES FI FR GB IE IT NL NO). The ERT recommends that the Party reviews the emission factors for these two sources and includes an explanation for this issue in the IIR.		§ 66							No	This minor issue has not yet been checked. The inventory compiler will look into this as soon as resources allow.

CLRTAP 2010

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
General		Provide a PDF version of the IIR for offline use and to better facilitate the review process	§ 6 9 11 28	§ 17							No	The current Wiki platform isn't able to export a whole site to PDF. But we can provide an offline HTML version with full navigation.
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
QA/QC		Fully implement the QA/QC system for the air pollutant emission inventory. If possible implement a unified QA/QC system for reporting to CLRTAP and UNFCCC.	§ 21 24 62 74 88 105	§ 37 44f							No	Ongoing discussion
QA/QC		Widen the use of the existing QA/QC system used for the set of activity data as well as the methods and emission factors for GHGs for the needs of CLRTAP/NECD inventories and providing further details on its implementation in the IIR (general and sectoral descriptions).	§ 33 40	§ 16 69 84 87 103 105							No	Ongoing discussion
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Transparency		Inaccuracies were found in the use of notation keys and it is recommended to justify the use of notation keys in the IIR for each particular sector.	§ 38	§ 19							Yes	Information tables for NE & IE were added to the completeness chapter of the current IIR
Transparency		Provide more detailed information on the rationale for recalculations at a sectoral level to compliment the information already provided in the recalculation tables per pollutant.	§ 30 43 90 107								Yes	
Transparency	1A2a\1A2b\2C	For iron & steel there is a mix of reporting under 1A2a (PM & CO) 2C1 (NOx SOx VOC NH3) and “NE” (HMs and POPs). For non ferrous metals similar issues are observed. The recommendation is to explain the rationale for reporting in different source categories as well the rationale for NEs. NE reporting should be avoided as much as possible e.g. by applying Guidebook Tier 1 EFs.	§ 48 49								Yes	The reporting in the different source categories is explained in the IIR.

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Transparency	1A2gviii	The ERT recommends that Germany include details of the units of AD used in its estimations as this was not always the case.	§ 51								Yes	
Transparency	1A3b	Explain in more detail the emission calculation for road transport not only by saying that HBEFA and TREMOD are used but giving more information including an overview of emission factors in the next versions of the IIR.	§ 65	§ 72							Yes	
Transparency	1A4	Provide more detail on the emission factors used including their applicability for the different years and sub-categories of the time series. Find EFs to estimate emissions for heavy metals (for example: using tier 1 in the EMEP Guidebook inventories in other countries).	§ 52								Yes	
Transparency	3B	The ERT recommends including in the IIR information on the complete time series of the activity data description of emission drivers recalculations and improvements for the agriculture sector.	§ 86 94								Yes	
Transparency	5A\5B\5C	Since all incineration is reported under energy add information about the methodology used for different types of waste incineration under NFR 1. In NFR 6C use the notation key “IE” instead of “NO” and to explain the use of the notation key in the IIR.	§ 103 110 111 112	§ 136							Yes	Information on methods used for estimation of energy-related is reported in NFR 1. Germany considers NO to be correct and explains the situation in its IIR. Cremation estimation is explained now.
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Consistency	1A1\1A2	In the IIR in the “Short description” for 1A1 and 1A2 Germany presents a tier 2 or 3 approach. However during the review Germany indicated that only the tier 2 approach was used. This needs correction in the IIR (was agreed by Germany to do this)	§ 47	§ 54							Yes	
Consistency	1A5	The IIR says Tier 1 method is used for 1A5 but it is actually Tier 2/3. This should be corrected in the IIR.	§ 53								Yes	

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Consistency	3B	The activity data (animal numbers) is coming from various sources and some corrections are being done. It is recommended that Germany includes a table in the IIR showing the livestock numbers from different sources and the type of elaboration/correction that has been done.	§ 94								Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Completeness		Emissions prior to 1990 are not reported.	§ 27	§ 24							Yes	
Completeness	1A2a\1A2b\1A4\1B1a	Some emissions are not estimated for some pollutants: heavy metals and POPs for 1A2a particulates heavy metals and POPs for 1A2b heavy metals for 1A4 and NMVOC for 1B1a. The ERT recommends Germany to use the Guidebook default EFs if no other method is available.	§ 36								Yes	
Completeness	1A3a	NH3 reported as NE. Recommendation to investigate the emissions or report as NO if emissions do not occur.	§ 68								Yes	The notation key 'NE' is used only for ammonia from aviation gasoline (as recommended in the 2016 EMEP Guidebook). For jet kerosene emissions are estimated.
Completeness	1B1a	In 2010 “NE” is indicated for particulates and “NA” for NMVOC but the Guidebook has EFs. It is recommended that Germany identifies the type of coal mining using the EFs from the EMEP Guidebook or other references to estimate emissions for this sector. In 2014 NMVOC was reported as NE and the ERT recommends Germany to describe why NE is reported (emissions assumed negligible).	§ 54								Yes	
Completeness	2C1	Include emissions for dioxins and heavy metals based on new research project.	§ 80 81								Yes	
Completeness	3D	The ERT encourages Germany to estimate PM10 and PM2.5 emissions for 3D in future submissions following the EMEP/EEA Guidebook recommendations.	§ 98								Yes	

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Completeness	5A\5C\5D	The inventory regarding Waste is currently not complete with missing estimates for several source categories.	§ 102	§ 134 135							Yes	Industrial wastewater emissions implemented since 2021 reporting. Solid waste emissions implemented since 2020 reporting. Domestic wastewater emissions implemented since 2018 reporting. 5.C completed
Completeness	5E	Although the Guidebook has methods for car and house fires in Chapter 6 it may be more transparent to include these in Chapter 7 as Chapter 6D is more focused on compost and sludge. The ERT encourages Germany to consider including some of these emissions in the next submissions.	§ 116	§139	DE-5A-2017-0003						Yes	
Completeness	6	Consider currently missing sources: NH3 emissions from Cats and Dogs from Zoo animals and human ammonia emissions etc.	§ 116								Partly	Car and house fires have been included for quite a while now (5E). Human NH3 emissions are considered in 6A. Pets will be considered in sub2024.
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**	**NECD 2022**	**Implemented?**	**Official Comment for IIR**
Accuracy		Implement a (qualitative and quantitative) uncertainty analysis and use the results to prioritize improvements to the inventory	§ 20 24	§ 32 44e 85							Yes	
Accuracy	1A1b\1A1c\2	Improvement from Tier 2 to Tier 3 using plant-specific data for some industrial processes including cement production as well as for large combustion plants (e.g. 1A1b 1A1c)	§ 19 41 45 46								Partly	Included for large combustion plants no plant-specific data for cement production
Accuracy	2A1	Cement production is a key source for Hg HCB and for NOx PM10 and PAH but Tier 1 is used. The ERT encourages Germany to use plant-specific data collected as part of the LCPD IPPC and E-PRTR to develop a tier 2 or 3 methodology in the near future and to document these in its IIR.	§ 79	§ 88							Yes	plant-specific data approach is not planned

Aspect	Sector	Finding summary	CLRTAP 2010	CLRTAP 2014	NECD 2017	NECD 2018	NECD 2019	NECD 2020	NECD 2021	NECD 2022	Implemented?	Official Comment for IIR
Accuracy	2L	Include results of ongoing research project to improve from Tier 1 to higher Tier methodology.	§ 82 83								Yes	
Accuracy	3B	There were errors in the calculation of N excretion rates it is recommended that Germany corrects this.	§ 97								Yes	
Aspect	**Sector**	**Finding summary**	**CLRTAP 2010**	**CLRTAP 2014**	**NECD 2017**	**NECD 2018**	**NECD 2019**	**NECD 2020**	**NECD 2021**		**Implemented?**	**Official Comment for IIR**
Comparability	1A2\2	Germany reports emissions from sugar production in source category 2D2. It is recommended to report these emissions under 1A2e and include a more detailed description of the sub-categories the methodology used the source of activity data the source of EFs and consistency across the time series (1990-2008).	§ 50								Yes	Reporting of NMVOC and PM emissions from sugar production in 2H2 (used to be 2D2) is correct according to the Inventory Guidebook 2016.
Comparability	1A3di(ii)\1A4ciii	Emissions reported as IE. The ERT encourages Germany to make separate emission estimates for these sectors in future IIR reports and in the meantime a separate summary table of all categories (fully or partially reported as IE) and where they have been moved would be beneficial.	§ 69								Yes	
Comparability	1A4aii	Emissions for main pollutants were reported as IE. The ERT encourages the Party to investigate further statistical resources for missing estimates in this sector and include a progress report within the next IIR.	§ 67								Yes	