Final Review Report 2020

Review of National Air Pollutant Emission Inventory Data 2020 under Directive 2016/2284 (National Emission reduction Commitments Directive) Service Contract No. 070201/2019/8159797/SER/ENV.C.3

Germany

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Reference: Service Contract No. 070201/2019/8159797/SER/ENV.C.3

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Abbreviations

AD	Activity data
C	Confidential
Cd	Cadmium
CLRTAP	Convention on Long-range Transboundary Air Pollution: the first international treaty to deal with air pollution on a broad regional basis signed by the UNECE in 1979.
E-PRTR	European Pollutant Release and Transfer Register
EC	European Commission
EEA	European Environment Agency
EF	Emission factor
EIONET	European Environment Information and Observation Network
EMEP	The co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (unofficially 'European Monitoring and Evaluation Programme' = EMEP)
EMRT-NECD	EEA Emission Review Tool (EMRT) for the National Emission reduction Commitments Directive (NECD)
EU	European Union
GHG	Greenhouse gas
HCB	Hexachlorobenzene
Hg	Mercury
HMs	Heavy metals
IEF	Implied emission factor
LPS	Large point sources
kt	Kilotonnes
NA	Not applicable
NECD	National Emission reduction Commitments Directive
NFR	Nomenclature for reporting
NH_3	Ammonia
NMVOC	Non-methane volatile organic compounds
NO_X	Nitrogen oxides
NR	Not relevant
PAHs	Polycyclic aromatic hydrocarbons
Pb	Lead
PCB	Polychlorinated biphenyls
PM_{10}	Fine particulate matter: particles with an aerodynamic diameter equal to or less than 10 micrometres (µm)
$PM_{2.5}$	Fine particulate matter: particles with an aerodynamic diameter equal to or less than 2.5 micrometres (µm)
POPs	Persistent Organic Pollutants

PTC	Potential technical correction
RE	Revised estimate
SO_2	Sulphur dioxide
SO_X	Sulphur oxides
TC	Technical correction
TERT	Technical expert review team
TSP	Total suspended particulates

I. Introduction

1. The review of the air pollution emission data submitted by Member States and the UK[1] under the European Union's National Emissions reduction Commitments Directive (Directive (EU) 2016/2284[2]) is defined in Article 10(3):

"The Commission, assisted by the European Environment Agency and in consultation with the Member States concerned, shall review the national emission inventory data in the first year of reporting and regularly thereafter. That review shall involve the following:

(a) checks to verify the transparency, accuracy, consistency, comparability and completeness of information submitted;

(b) checks to identify cases where inventory data is prepared in a manner which is inconsistent with the requirements set out under international law, in particular under the LRTAP Convention;

(c) where appropriate, calculation of the resulting technical corrections necessary, in consultation with the Member State concerned.

Where the Member State concerned and the Commission are unable to reach an agreement on the necessity or on the content of the technical corrections pursuant to point (c), the Commission shall adopt a decision laying down the technical corrections to be applied by the Member State concerned."

2. The technical review of the National Emissions reduction Commitments Directive (NECD) inventories in 2020 (hereafter referred to as the 'NECD Review 2020') was undertaken in accordance with the NECD Review air emission inventory review guidelines established at the beginning of the project.

[1] s this review relates to a legal obligation that was due by 15 February 2020, the UK is included in the review as per the transition period arrangements following its withdrawal from the EU.

[2] DIRECTIVE (EU) 2016/2284 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC

II. Objectives of the review

3. The general objective of the technical review of Member States' and the UK NECD inventories as reported in February 2020 (and updated before 1 May 2020) was an improvement of transparency, consistency, comparability, completeness and accuracy of submitted data and as such the review will contribute to establishing accurate, reliable and verified emission inventories for all Member States and the UK.

4. The specific objectives of the NECD Review 2020 were:

- A detailed review to verify that Member States and the UK have integrated all of the recommendations, unquantified potential technical corrections, technical corrections and revised estimates from the NECD Review 2019[3].
- A review of the recalculations between the 2019 and 2020 national inventory submissions for the pollutants NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$ for the years 2000-2017 and for the pollutants PAHs (total and individual PAHs), dioxins/furans, PCBs, HCB, Cd, Hg, Pb for the years 1990, 2005, 2016 and 2017.
- A review of the time series consistency between the years 2017 and 2018 for the pollutants: NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$, PAHs (total and individual PAHs), dioxins/furans, PCBs, HCB, Cd, Hg, Pb.
- A review of national gridded data of emissions and large point sources (LPS) for the year 2015 submitted until 15 May 2020.
- In accordance with the requirements of the NECD (Article 5 and Annex IV) and in line with the "Technical guidance for Parties making adjustment applications and for the expert review of adjustment applications (ECE/EB.Air/130)"[4], an expert review of:
    i. New adjustment applications submitted in 2020, not submitted and reviewed yet in 2019 under the NECD, including the review of the supporting documentation as requested in part 4 of Annex IV of the NECD and an assessment of whether the adjustment application is consistent with the circumstances described therein
    ii. The adjustment applications submitted in 2020, that were already submitted, reviewed, and accepted in 2019 under the NECD, with a focus on reviewing the consistency in the reporting of these adjustment applications.

[3] NECD Review 2019 reports are Available at http://ec.europa.eu/environment/air/reduction/implementation.html
[4] Available at http://www.ceip.at/fileadmin/inhalte/emep/Adjustments/ECE_EB_AIR_130_AV_for_the_web.pdf

III. Review approach, team and scope

5. The scope of the NECD Review 2020 is summarised in Table 1.

Table 1: Scope of the NECD Review 2020 (under Directive (EU) 2016/2284)

Element	Scope	Further information
Geographical coverage	EU geographical coverage of the Member States as of 1 January 2020	Includes the geographical territory of the Member States, their exclusive economic zones and pollution control zones. Excludes the Canary Islands, the French overseas departments, Madeira, and the Azores
Years	**Main pollutants:** 2005, 2010, 2015-18 **HMs and POPs:** 1990, 2005, 2016-18 **Gridded data:** 2015 **LPS data:** 2015	**Main pollutants, HMs and POPs:** In addition, time series consistency was reviewed between the years 2017 and 2018.
Pollutants	**Main pollutants:** NO_X, NMVOC, SO_2, NH_3, $PM_{2.5,}$ **HMs and POPs:** PAHs (total and individual PAHs), dioxins/furans, PCBs, HCB, Cd, Hg, Pb **Gridded data:** NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$, PM_{10}, CO, Pb, Cd, Hg, dioxins/furans, total PAHs, HCB, PCBs **LPS data:** NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$, PM_{10}, CO, Pb, Cd, Hg, dioxins/furans, total PAHs, HCB, PCBs	According to NECD (Directive (EU) 2016/2284) Annex I
Categories	**Main pollutants, HMs and POPs:** All NFR and GNFR categories, including selected memo items **Gridded data, LPS data:** All GNFR categories, excluding O_AviCruise, P_IntShipping, z_Memo	**Main pollutants, HMs and POPs:** All NFR categories as listed in Annex 1 of reporting Guidelines[5] including the following memo items: 1A3ai(ii) International aviation cruise (civil) 1A3aii(ii) Domestic aviation cruise (civil) 1A3di(i) International maritime navigation 1A3 Transport (fuel used) – where a Member State or the UK uses fuel used for compliance purposes. **Gridded data:** Reported data based on fuel used will be considered in selected cases.
National totals	National total and National total for compliance	Rows 141 and 154 in Annex 1 of reporting Guidelines

[5] The Annexes to the Reporting Guidelines are available at https://www.ceip.at/reporting-instructions/annexes-to-the-2014-reporting-guidelines.

6. The review was split into two phases:

a) **Initial checks** were carried out by the project team under service Contract No. 070201/2019/8159797/SER/ENV.C.3. Significant findings from the initial checks that were not resolved within the initial checks phase were followed up by the technical expert review team during the desk review and centralised review.

b) **A desk review and centralised review** were performed by the technical expert review team under Contract No. 070201/2019/8159797/SER/ENV.C.3. The technical expert review team consisted of the following experts:

- **Lead Reviewers:** Justin Goodwin, Anne Misra, Ole-Kenneth Nielsen
- **Energy:** Stijn Dellaert, Marlene Schmidt Plejdrup, Robert Stewart
- **Transport:** Jean-Marc André, Matina Kastori, Yvonne Pang
- **IPPU:** Coralie Jeannot, Ils Moorkens, Maria Purzner
- **Agriculture:** Anais Durand, Mette Mikkelsen and Beatriz Sánchez
- **Waste:** Romain Bort, Céline Gueguen and Dirk Wever
- **Gridding:** Katie King, Jeroen Kuenen, Ioannis Tsagatakis

This year the desk review had two phases: an initial four weeks for sector experts to review inventories with one week for Member States and the UK to reply to questions; then a further two weeks for sector experts and lead reviewers to send follow-up questions with one week for Member States and the UK to reply. After this the one-week centralised review took place remotely.

7. The desk review and centralised review were coordinated by the project team (led by Sabine Schindlbacher and Chris Dore).

8. The EEA Review Secretariat led by Federico Antognazza supported the NECD Review 2020.

9. The review was performed on the basis of NECD emission data officially reported by Germany by 15 February 2020 for emission inventory and by 1 May 2017 for gridded emission inventory data and LPS data. The Informative Inventory Reports (IIR) reported by 15 March 2020 under the NECD were taken as a base for the review. For the review of emission inventories resubmissions and other additional information officially submitted by Member States and the UK were taken into account until 1 May 2020. For the review of gridded emission inventory data and LPS data resubmissions were taken into account until 15 May 2020.

10. To avoid any potential conflicts of interest, the lead reviewers and sector experts did not review emission inventories of Member States or the UK where these individuals have themselves contributed to the compilation of that inventory, or presently are or have been any part of the decision-making process related to the compilation of that inventory. Reviewers who are nationals of the Member State or the UK whose inventory is concerned, did not act as main sector expert for this Member State or the UK.

11. All sector experts signed confidentiality agreements in which they agreed to keep information received by Member States and the UK confidential.

12. Definitions for findings included in the Final Review Report can be found in Table 2. Findings listed in the tables of recommendations are ordered by type (Technical Corrections, Revised Estimates, Unquantified Potential Technical Corrections, and Recommendations) and are second sorted by NFR code.

Table 2: Definitions for finding classifications of the NECD review.

Concluded Findings	
Recommendation	Findings where an identified issue has not been resolved during the course of the review and which is not for a mandatory year or category or above the threshold of significance.
RE	Revised Estimate: Findings for which a Member State or the UK has provided new estimates in response to an issue raised by the technical expert review team (TERT) during the course of the review.
UPTC	Unquantified Potential Technical Correction: Findings for which quantifying a technical correction is not currently possible by the technical expert review team. This is for cases where the expected impact is likely to exceed the determined thresholds of significance, but it is not possible to quantify the technical correction as part of the review. The situations where this may arise include but are not limited to situations: a) Where Tier 1 methods are used to make emission estimates for a key category b) Issues raised under the review of large point sources c) Issues raised under the review of gridded data
TC *(only issued in the Final Review Report)*	Technical corrections: Issued by the technical expert review team for issues identified which relate to an over or under estimate of more than a 2% on the national total in one of the reported years under review and where Member States or the UK did not provide a revised estimate which was accepted by the technical expert review team (TERT).

IV. Overall assessment of the quality of the submissions

13. The technical expert review team considers the inventory submission to be of good quality in terms of completeness and accuracy. The IIR describes the methods transparently with only a few cases where transparency improvements are recommended (energy, IPPU, agriculture). See below.

14. The LPS data submission was good in terms of completeness. Background information was documented transparently. However, improvements to the documentation of the use of E-PRTR data could be made.

15. The gridded data submission was adequate in terms of completeness with a lack of estimated emissions gridded for Cd, Pb, Hg, PCDD/F, PAHs, HCB, PCBs for 2015. Background information was documented transparently.

16. To improve the quality of these submissions, the technical expert review team suggests that Germany:

- moves to higher tier methods for key categories and to improve transparency for a few cases in energy, IPPU, agriculture.
- improves the documentation of the use of E-PRTR data could be made estimate emissions gridded for Cd, Pb, Hg, PCDD/F, PAHs, HCB, PCBs.

17. The TERT recommends that Germany reports emissions in line with the 2019 EMEP/EEA Guidebook in their next submission.

18. The technical expert review team considers that it received responses from Germany that were sufficient in order to undertake the NECD Review 2020.

V. Findings and conclusions from the technical expert review team for the follow-up review of national emission inventories for NO_X, NMVOC, SO_2, NH_3, and $PM_{2.5}$

19. The technical expert review team assessed the implementation of all findings from the NECD Review 2019. This assessment was based on the emission inventory submitted under the NECD in 2020 by Germany pursuant to Directive (EU) 2016/2284 and their review report from the NECD Review 2019.

20. Resubmissions and other additional information provided by Germany during the review were taken into account until 1 May 2020.

21. Table 3 gives an overview of the number of recommendations, revised estimates, technical corrections and unquantified potential technical corrections for NO_X, NMVOC, SO_2, NH_3 and $PM_{2.5}$ that are included in Table 4. It also indicates in which NECD Review these findings were raised for the first time. Further, it shows how many findings have been implemented by Germany in their inventory submission 2020. The table also shows the range of recommendations, revised estimates, technical corrections and unquantified potential technical corrections that were included in the NECD Review reports for other Member States and the UK.

22. Table 4 provides all the recommendations, revised estimates, technical corrections and unquantified potential technical corrections from the technical expert review team related to NO_X, NMVOC, SO_2, NH_3 and $PM_{2.5}$ including those additionally made during the NECD Review 2020 and those not implemented from the NECD Review 2019.

Table 3: Overview of the number of findings from the NECD Review 2020 and previous NECD reviews related to NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$

		Findings included in the 2020 Review Report by year of origin (see Table 4 below)				Implemented findings
		TC*	RE*	UPTC*	Recom.*	
Finding first raised in:	NECD Review 2017	0	0	0	1	4
	NECD Review 2018	0	0	0	0	0
	NECD Review 2019	0	0	0	1	2
	NECD Review 2020	0	0	0	1	n/a
Total from NECD Review 2020		0	0	0	3	
(Range for All Member States and the UK)		**(0-3)**	**(0-4)**	**(0-4)**	**(0-28)**	

* TC = Technical Correction, RE = Revised Estimate, UPTC = Unquantified Potential Technical Correction Recom. = Recommendation

Table 4: All recommendations, revised estimates, technical corrections and unquantified potential technical corrections including those additionally made during the NECD Review 2020 and those not implemented from previous reviews, for NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2017 (4)	DE-2B6-2017-0001	No	2B6 Titanium Dioxide Production, NO_X, CO, TSP, 1990-2018	No	No	No
Assessment of the implementation of the initial recommendation For category 2B6 Titanium Dioxide Production, for NO_X emissions and the whole time series, the TERT noted that emissions are reported 'NE' regarding 2020 NFR Tables, while there is a default emission factor in the 2016 EMEP/EEA Guidebook. This issue was raised during the 2017, 2018 and 2019 NECD reviews. The TERT noted that the issue is below the threshold of significance for a technical correction. The 2020 review TERT noted that the IIR states that the issue has been included in the list of improvements and that the recommendation will be addressed as soon as possible. In a question raised during the 2020 review, Germany answered that an expert meeting is planned in 2020. **The TERT reiterates the recommendation that Germany moves forward on estimating NO_X emissions for category 2B6 for the 2021 submission.**						
Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2020 (1)	DE-3I-2020-0001	No	3I Agriculture Other, NO_X, NH_3, 1990-2018	N/A	No	No
Recommendation The TERT notes with reference to 3I Agricultural Other, which in Germany's case includes NH_3 and NO emission from storage of digestate from energy crops, that there is a lack of transparency regarding the calculation. In response to a question raised during the 2020 review, Germany explained with reference to the background report Haenel et al. (2020), that Chapter 10 Table 10.2 on page 332 that the share of gastight storage tank for year 2018 is 35.5%. Availability of this information makes it possible to evaluate the estimate from storage of digestate from energy crops, and the TERT confirm that the estimate matches the number given in NFR. **Due to a transparency issue, the TERT recommends Germany to include information on distribution of gastight storage and storage in open tank in the IIR for the next submission. This information is relevant for evaluating the estimate for the NH_3 and NO_2 emission from 3I.**						
Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2019 (2)	DE-5D2-2019-0001	No	5D2 Industrial Wastewater Handling, NMVOC, 1990-2018	No	No	No
Assessment of the implementation of the initial recommendation For NMVOC emissions from 5D2 Industrial Wastewater Handling and all years, the TERT noted that there is an under-estimate of emission below the threshold of significance. 'NA' is reported in the NFR tables despite an EF being proposed in the EMEP/EEA Guidelines. This was raised during the 2019 NECD review. In response to a question raised during the 2020 review Germany confirmed the outcomes of the current checks will be implemented in the 2021 submission if relevant. The TERT noted that the issue is below the threshold of significance for a technical correction. **The TERT recommends that Germany includes an estimate of NMVOC emissions from industrial wastewater treatment plants in the 2021 submission.**						

VI. Findings and conclusions from the technical expert review team for the follow-up review of national emission inventories of POPs and heavy metals

23. The technical expert review team assessed the implementation of findings from the NECD Review 2019. This assessment was based on the emission inventory submitted under the NECD in 2020 by Germany pursuant to Directive (EU) 2016/2284 and their review report from the NECD Review 2019.

24. Resubmissions and other additional information provided by Germany during the review were taken into account until 1 May 2020.

25. Table 5 gives an overview of the number of recommendations, revised estimates, technical corrections and unquantified potential technical corrections for heavy metals and POPs that are included in Table 6. It also indicates in which NECD Review these findings were raised for the first time. Further, it shows how many findings have been implemented by Germany with their inventory submission 2020. The table also shows the range of recommendations, revised estimates, technical corrections and unquantified potential technical corrections that were included in the NECD Review reports for other Member States and the UK.

26. Table 6 provides all the recommendations, revised estimates, technical corrections and unquantified potential technical corrections from the technical expert review team related to POPs and HMs including those additionally made during the NECD Review 2020 and those not implemented from the NECD Review 2019.

Table 5: Overview of the number of findings from the NECD Review 2020 and previous NECD reviews related to POPs and HMs

		Findings included in the 2020 Review Report by year of origin (see Table 6 below)				Implemented findings
		TC*	RE*	UPTC*	Recom.*	
Finding first raised in:	NECD Review 2017	0	0	0	0	0
	NECD Review 2018	0	1	0	4	0
	NECD Review 2019	0	0	0	1	7
	NECD Review 2020	0	0	0	1	n/a
Total from NECD Review 2020		0	1	0	6	
(Range for All Member States and the UK)		**(0-2)**	**(0-5)**	**(0-2)**	**(1-20)**	

* TC = Technical Correction, RE = Revised Estimate, UPTC = Unquantified Potential Technical Correction, Recom. = Recommendation

Table 6: All recommendations, revised estimates, technical corrections and unquantified potential technical corrections including those additionally made during the NECD Review 2020 and those not implemented from previous reviews, for heavy metals and POPs

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2018 (3)	DE-2C1-2018-0001	No	2C1 Iron and Steel Production, HCB, 1990, 2005, 2016	No	RE	No
Assessment of the implementation of the initial recommendation For category 2C1 Iron and Steel Production, for HCB emissions, for the entire time series, the TERT noted that the notation key 'NA' was used while a Tier 1 method is available in the 2016 EMEP/EEA Guidebook. This was raised during 2018 and 2019 NECD reviews. In response to a question raised during the 2020 review, Germany explained that a project was on hold, and provided revised estimates during the review for all years. The TERT agreed with the revised estimate provided by Germany. **The TERT recommends that Germany include the revised estimate in its 2021 NFR and IIR submission.**						
Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2018 (3)	DE-1A4cii-2018-0001	No	1A4cii Agriculture/Forestry/Fishing: Off-Road Vehicles and Other Machinery, Cd, 2007-2018	No	No	No
Assessment of the implementation of the initial recommendation For category 1A4cii Off-Road Vehicles and Other Machinery, for Cd for years 2007-2018 the TERT noted an erratic trend in the corresponding emissions and IEF. This was raised during the 2018 and 2019 NECD reviews. The TERT noted that the issue is below the threshold of significance for a technical correction. The 2020 review noted that the IIR states that all issues regarding the inconsistency of activity data from the National Energy Balance (NEB) can only be resolved as soon as the ongoing internal revision process launched by the provider of the NEB has been finished. **The TERT reiterates the recommendation that Germany should make an effort to correct these erratic trends in emissions and IEF.**						
Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2018 (3)	DE-1A4ciii-2018-0001	Yes	1A4ciii Agriculture/Forestry/Fishing: National Fishing, SO_2, NO_X, NH_3, NMVOC, $PM_{2.5}$, PAHs, PCBs, Cd, Hg, Pb, PCDD/F, 2016	No	No	No
Assessment of the implementation of the initial recommendation For category 1A4ciii National Fishing, for years after 2015 the TERT noted that there is a lack of transparency regarding the increase of emissions. This does not relate to an over- or under-estimate of emissions. This was raised during the 2018 and 2019 NECD reviews. In response to a question raised during the review, Germany provided a thorough explanation of how the fuel quantities delivered to the navigation sector as distributed onto the specific nautical activities and also stated that plans to recalculate the entire fuel consumption time series for the next annual submission. **The TERT recommends that Germany continues to investigate this issue and to provide a recalculated time series with the next submission of 2021.**						

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2020 (1)	DE-2C7a-2020-0001	Yes	2C7a Copper Production, Cd, Pb, 1990, 2005, 2016, 2017, 2018	N/A	No	No

Recommendation

For category 2C7a Copper Production, for Cd and Pb emissions for the years 1990, 2005, 2016, 2017, 2018, the TERT noted that there is a lack of transparency regarding the method used and the copper production type with reference to the Germany 2020 IIR. This does not relate to an over- or under-estimate of emissions. In response to a question raised during the review, Germany explained that primary and secondary copper production activities exist. For Cd and Pb emissions in primary copper production emission factors of the 2016 EMEP/EEA Guidebook are used whereas for secondary copper production country specific emission factors are used. The country specific emission factor for Cd is 0.486 g/t and for Pb it is 21.977 g/t. Germany stated that they will adapt the description in the IIR with the next submission 2021.

The TERT recommends that Germany improves the description of the sector, the methodology applied, and the Tier used in its 2021 IIR.

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2018 (3)	DE-2D3a-2018-0001	No	2D3a Domestic Solvent Use Including Fungicides, Hg, 1990-2018	No	No	No

Assessment of the implementation of the initial recommendation

For category 2D3a Domestic Solvent Use Including Fungicides, for Hg emissions, for the entire time series, the TERT notes with reference to the German 2020 NFR Tables that notation key 'NA' was reported while the 2016 EMEP/EEA Guidebook provides a methodology. This was raised during the 2018 and 2019 NECD reviews. In response to a question raised during the review Germany stated that it is still in the process of developing a method to calculate the emissions from 1990 and solving the problem of getting data regularly. The TERT noted that the issue is below the threshold of significance for a technical correction.

The TERT recommends that Germany moves forward on estimating Hg emissions for 2D3a for the next submission.

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2019 (2)	DE-2D3a-2019-0001	No	2D3a Domestic Solvent Use Including Fungicides, Hg, 2017, 2018	No	No	No

Assessment of the implementation of the initial recommendation

For category 2D3a Domestic Solvent Use Including Fungicides for Hg emissions, for the entire time series, including 2017 and 2018, the TERT notes with reference to the German 2020 NFR Tables that the notation key 'NA' was reported while the 2016 EMEP/EEA Guidebook provides a methodology. This was raised during the 2019 NECD review, and there is a similar issue in observation DE-2D3a-2018-0001. During the 2019 review, Germany and the TERT agreed that the 2016 EMEP/EEA Guidebook EF was too high and that the 2019 EMEP/EEA Guidebook does not provide an EF for Hg for 2D3a. Germany also answered that it is in the process of collecting all needed national data for the Hg-emission source of fluorescent tubes. The TERT would like to add that the 2019 EMEP/EEA Guidebook states on p. 8: 'In addition to the emission of NMVOC, emissions of Hg could arise from the use of fluorescent tubes. These emissions may, however, be accounted for elsewhere in the inventory e.g. under waste where emissions arising from breakage of these tubes might be an issue. Due to the uncertainty around these releases, this source is currently not considered in the EMEP/EEA Guidebook. However, it is recommended that countries review the available information to what extent this source could be estimated. Additional information on this source can be found in Climate and Pollution Agency, (2012).'

The TERT recommends Germany to include the country-specific data collection process stated during the 2019 review in the improvement plan in the IIR for the future submission.

Review year of initial recommendation (number of years it has been recommended)	Observation	Key Category	NFR, Pollutant(s), Year(s)	RE, TC, or UPTC in 2019	RE, TC, or UPTC in 2020	Tier 1 used for Key Category
2018 (3)	DE-2D3g-2018-0001	No	2D3g Chemical Products, PAHs, 1990-2018	No	No	No

Assessment of the implementation of the initial recommendation

For category 2D3g Chemical Products, for PAHs (Benzo(a)pyrene), for the whole time series, the notation key 'NA' is reported while a Tier 2 methodology is available in the 2016 EMEP/EEA Guidebook (for asphalt blowing). The TERT noted that the issue is below the threshold of significance for a potential technical correction. The 2020 review noted that the IIR states that the issue has been included in the list of improvements and that the recommendation will be addressed in the 2021 submission.

The TERT reiterates the recommendation that Germany estimate PAHs from asphalt blowing in the next submissions or include the right notation key 'NE'.

VII. Findings and conclusions from the technical expert review team for the LPS data

27. The technical expert review team performed an in-depth review of the LPS data submitted by 1 May 2017. Resubmissions up until 15 May 2020 were taken into account for the review. Additional information provided by Germany during the review was taken into account until 15 May 2020.

28. The technical expert review team carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the most recent submission of LPS data for the year 2015. The technical expert review team used submitted LPS data for the years 2016-2018 as a cross-check only.

29. Table 7 gives an overview of the number of recommendations, revised estimates and unquantified potential technical corrections for the gridded data that are included in Table 8. The table also shows the range of recommendations, revised estimates and unquantified potential technical corrections that were included in the NECD review reports for other Member States and the UK.

30. Table 8 provides all the recommendations from the technical expert review team related to the LPS data including revised estimates and unquantified potential technical corrections. Technical Corrections were not applied during the review of the LPS data. The implementation of the recommendations will be followed-up in the NECD review 2021.

Table 7: Overview of the number of findings from the NECD Review 2020 related to LPS data

	Findings included in the 2020 Review Report by year of origin (see Table 8 below)		
	RE*	UPTC*	Recom.*
Total from NECD Review 2020	0	0	6
(Range for All Member States and the UK)	(0-13)	(0-7)	(1-26)

* RE = Revised Estimate, UPTC = Unquantified Potential Technical Correction, Recom. = Recommendation

Table 8: All recommendations, revised estimates and unquantified potential technical corrections made during the NECD Review 2020 for LPS data

Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-GEN-2020-0002	General, 2015	No
Recommendation The TERT notes that for the year 2015, emissions are reported for 36 facilities in the E-PRTR database (v18) which could not be found in the LPS submission using the National IDs provided. The TERT notes that the sum of these missing facilities is below the threshold of significance. During the review Germany indicated that deviations could result from data updates or post-reporting as well as installations that are reported in the E-PRTR but had not reported emissions of pollutants relevant for reporting under CLRTAP. Germany indicated that both the methodology and the timeliness of the data will be improved in the next LPS reporting. **The TERT recommends that Germany includes these improvements as well as some transparent explanation of the possible reasons for differences in its IIR.**			
Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-GEN-2020-0004	General, 2015	No
Recommendation The TERT notes that in 2015, the same pair of longitude and latitude coordinates was assigned to more than one differently named LPS in 10 case(s). The TERT notes that LPS reporting guidance specifies that differently named LPS cannot have the same latitude and longitude. During the review Germany highlighted that the LPS dataset is a direct re-publication of the E-PRTR and that its 'E-PRTR/ PRTR'-geodata were used. The TERT notes that Germany's IIR includes a brief description of the methods, data assumptions and methods used to incorporate the E-PRTR data into the LPS. **The TERT recommends that Germany provides a more transparent description of the use of its E-PRTR in the NECD inventory including an explanation of the assumptions on geo-referencing of the LPS sites.**			
Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-GEN-2020-0003	General, 2015	No
Recommendation The TERT notes that in 2015, 53 combination(s) of LPS name, GNFR code and stack height class were reported two or more times. The correct reporting format requires that each combination of LPS, GNFR and height class must appear only once. In its response to the review question, Germany indicated that it only delivers a copy of PRTR-data for the LPS. **The TERT recommends that Germany ensures that it provides unique references to the LPS name in order to differentiate LPS in its future submissions.**			
Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-GEN-2020-0001	General, PAHs, PCBs, $PM_{2.5}$, 2015	No

Recommendation

The TERT notes that for the year 2015, no LPS emissions are reported for the following pollutant(s): PAHs, PCBs, $PM_{2.5}$. During the review Germany indicated that it relies on the national E-PRTR database for LPS reporting. Since the pollutants above are not covered by the E-PRTR, they do therefore not appear in the submitted template. During the review Germany confirms the completeness of gridded data in including all emissions sources in the national totals. The TERT therefore does not consider this an issue of under- or over-estimation. **The TERT recommends that Germany considers improving its distribution of emissions for these pollutants by estimating and or attributing point source estimates to facilities that are likely to be producing emissions. For example, Germany could investigate whether any of the LPS reporting PM_{10} can reasonably be used to estimate $PM_{2.5}$, for example using the particle size distribution from the EMEP/EEA Guidebook.**

Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-E-2020-0001	E Solvents, NMVOC, 2015	No

Recommendation

For the year 2015, total emissions reported for the LPSs with the corresponding E-PRTR National ID of 03-05-05050581570 (Heyne & Penke Verpackungen GmbH) were different to those reported for that facility for the same year in the E-PRTR database (v18). In response to a question raised during the review Germany stated that reason for deviation can be a data update, which seems a correction of a scale error (now it's one-tenth), and that the data actuality will be improved in the next LPS reporting.

The TERT recommends that Germany correct the LPS emissions for this plant in the next LPS reporting.

Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	RE or UPTC in 2020
2020 (1)	DE-LPS-K-2020-0001	K Agriculture Livestock, 2015	No

Recommendation

For GNFR code K_AgriLivestock in the LPS submission year 2015, the TERT noted that there is a lack of transparency. Germany reports NH_3 emissions for NFR code(s) 3B3 Manure Management - Swine, 3B4gi Manure Management - Laying hens, 3B4gii Manure Management - Broilers, 3B4giii Manure Management - Turkeys in the national inventory but not for GNFR code K_AgriLivestock in the LPS submission. This does not relate to an over- or under-estimate of emissions. In response to a question raised during the NECD review 2019, Germany explained that emission from large pigs and poultry farms where allocated in GNFR L_AgriOther. Germany agree that these emissions should be mapped into GNFR category K_AgriLivestock. Germany confirm to provide a reallocation to GNFR L_AgriOther in future submission.

The TERT recommends that Germany reallocate the NH_3 emission from GNFR code L_AgriOther to GNFR code K_AgriLivestock, for the next submission 2021.

VIII. Findings and conclusions from the technical expert review team for gridded data

31. The technical expert review team performed an in-depth review of the gridded data submitted by 1 May 2017. Resubmissions up until 15 May 2020 were taken into account for the review. Additional information provided by Germany during the review was taken into account until 15 May 2020.

32. The technical expert review team carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the most recent submission of gridded data for the year 2015. The technical expert review team used submitted gridded data for the years 2016-2017 as a cross-check only.

33. Table 9 gives an overview of the number of recommendations and unquantified potential technical corrections for the gridded data that are included in Table 10. The table also shows the range of recommendations and unquantified potential technical corrections that were included in the NECD review reports for other Member States and the UK.

34. Table 10 provides all the recommendations from the technical expert review team related to the gridded data including unquantified potential technical corrections. Revised Estimates and Technical Corrections were not applicable to the review of the gridded data. The implementation of the recommendations will be followed-up in the NECD review 2021.

Table 9: Overview of the number of findings from the NECD review 2020 related to gridded data

	Findings included in the 2020 Review Report by year of origin (see Table 10 below)	
	UPTC*	Recom.*
Total from NECD Review 2020	1	0
(Range for All Member States and the UK)	(0-8)	(0-6)

* PTC = Unquantified Potential Technical Correction, Recom. = Recommendation

Table 10: All recommendations and unquantified potential technical corrections made during the NECD Review 2020 for gridded data

Review year of initial recommendation (number of years it has been recommended)	Observation	GNFR sector, Pollutant(s), Year(s)	UPTC in 2020
2020 (1)	DE-GRID-GEN-2020-0001	General, Cd, Pb, Hg, PCDD/F, PAHs, HCB, PCBs, 2015	UPTC
Recommendation The TERT notes with reference to the lack of estimated emissions gridded for Cd, Pb, Hg, PCDD/F, PAHs, HCB, PCBs for 2015 an issue in the Gridding submission which relates to an under-estimate of emissions. This under-estimate has an impact on total emissions that is above the threshold of significance. It is currently not possible for the TERT to provide a numerical emission estimate and therefore the issue will be flagged as an Unquantified Potential Technical Correction and will be assessed as a high priority item in future reviews. **The TERT recommends that Germany should calculate Cd, Pb, Hg, PCDD/F, PAHs, HCB, PCBs emissions from all relevant GNFR categories for inclusion in next years' inventory submission.**			

IX. Effect of revised estimates, technical corrections and adjustments recommended to be approved on the national total and national total for compliance

35. The tables below show the direct changes in response to the NECD Review 2020. These changes include all revised estimates, technical corrections and adjustment assessments. The tables also show the impact that these changes have on the National total (row 141, Annex I) and National Total for Compliance (row 154, Annex I). The National Emission Ceilings as defined by Directive 2001/81/EC[6] are provided in the tables for reference.

Table 11: National totals as reported and national totals including adjustments for NO_X, NMVOC, SO_2, NH_3, $PM_{2.5}$ and National Emission Ceilings[7][8]

Description	Reference	Pollutant estimates (kt)					
		2005	2010	2015	2016	2017	2018
NO_X							
National total (row 141)	Annex I, 12/03/2020	1 641.468	1 473.856	1 366.250	1 335.944	1 288.066	1 202.279
National Total for Compliance (row 154)[9]	Annex I, 12/03/2020	1 522.189	1 060.146	964.244	963.393	947.596	909.057
Adjustment provided by Germany and recommended to be accepted by the technical expert review team							
1A3b Road Transport	DE-1A3b-2018-0002	-	-297.841	-269.025	-244.309	-214.873	-174.585
3B Manure Management, 3D Crop Production and Agricultural Soils, 3I Agriculture Other	DE-3B-2018-0002	-	-115.869	-132.981	-128.242	-125.597	-118.637
National total (row 141) including revised estimates and technical corrections accepted by Germany (calculated using data above)		1 641.468	1 473.856	1 366.250	1 335.944	1 288.066	1 202.279
National Total for Compliance (row 154) estimate including revised estimates, technical corrections accepted by Germany and adjustments recommended (by technical expert review team) to be accepted by EC (calculated using data above)		1 522.189	1 060.146	964.244	963.393	947.596	909.057
2010 National Emission Ceiling		n/a	1 051.000	1 051.000	1 051.000	1 051.000	1 051.000

[6] Available at https://eur-lex.europa.eu/eli/dir/2001/81/2018-07-01

[7] As defined in Annex I The 'National Total for Compliance (NECD)' includes the 'National Total (based on fuel sold)' (row 141) corrected for i) approved adjustments and flexibilities to national totals (row 153) and, if applicable, ii) national totals based on transport fuel used (rows 143-149) as well as iii) the subtraction of sectors 3B + 3D for NOx and NMVOC (only from 2020 onwards and for the year 2005 as a basis for emission reduction commitment calculations), according to the NEC Directive, Article 4/3(d).

[8] The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations, all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

[9] The National Total for Compliance for NOx, NMVOC and NH3 were corrected by the TERT in line with recommendation DE-0A-2020-0001

Description	Reference	Pollutant estimates (kt)					
		2005	2010	2015	2016	2017	2018
NMVOC							
National total (row 141)	Annex I, 12/03/2020	1 512.071	1 383.960	1 166.268	1 160.278	1 165.415	1 140.321
National Total for Compliance (row 154)[7]	Annex I, 12/03/2020	1 182.669	1 057.185	830.907	827.748	835.469	816.007
Adjustment provided by Germany and recommended to be accepted by the technical expert review team							
3B Manure Management, 3D Crop Production and Agricultural Soils	DE-3B-2018-0003	-	-326.775	-335.362	-332.530	-329.945	-324.314
National total (row 141) including revised estimates and technical corrections accepted by Germany (calculated using data above)		1 512.071	1 383.960	1 166.268	1 160.278	1 165.415	1 140.321
National Total for Compliance (row 154) estimate including revised estimates, technical corrections accepted by Germany and adjustments recommended (by technical expert review team) to be accepted by EC (calculated using data above)		1 182.669	1 057.185	830.907	827.748	835.469	816.007
2010 National Emission Ceiling		n/a	995.000	995.000	995.000	995.000	995.000
SO_2							
National total (row 141)	Annex I, 12/03/2020	477.274	405.207	335.928	311.365	301.720	288.972
National Total for Compliance (row 154)	Annex I, 12/03/2020	477.274	405.207	335.928	311.365	301.720	288.972
2010 National Emission Ceiling		n/a	520.000	520.000	520.000	520.000	520.000
NH_3							
National total (row 141)	Annex I, 12/03/2020	641.444	640.784	684.156	675.531	665.679	636.425
National Total for Compliance (row 154)[7]	Annex I, 12/03/2020	641.444	600.473	624.394	616.119	607.035	577.478
Adjustment provided by Germany and recommended to be accepted by the technical expert review team							
3D Crop Production and Agricultural Soils, 3I Agriculture Other	DE-3D-2018-0001	-	-40.311	-59.762	-59.412	-58.644	-58.948
National total (row 141) including revised estimates and technical corrections accepted by Germany (calculated using data above)		641.444	640.784	684.156	675.531	665.679	636.425
National Total for Compliance (row 154) estimate including revised estimates, technical corrections accepted by Germany and adjustments recommended (by technical expert review team) to be accepted by EC (calculated using data above)		641.444	600.473	624.394	616.119	607.035	577.478
2010 National Emission Ceiling		n/a	550.000	550.000	550.000	550.000	550.000
$PM_{2.5}$							

Description	Reference	Pollutant estimates (kt)					
		2005	2010	2015	2016	2017	2018
National total (row 141)	Annex I, 12/03/2020	141.141	123.135	105.529	99.545	98.338	96.705
National Total for Compliance (row 154)	Annex I, 12/03/2020	141.141	123.135	105.529	99.545	98.338	96.705

Table 12: National totals as reported and national totals including revised estimates (RE) for PAHs (total PAHs and benzo(a)pyrene), dioxins/furans, PCBs, HCB, Cd, Hg and Pb[1011]

Description	Reference	Unit	Pollutant estimates				
			1990	2005	2016	2017	2018
PCDD/PCDF (dioxins/furans)							
National total (row 141)	Annex I, 14/03/2020	(g I-TEQ)	814.977	154.944	124.755	124.397	120.727
National Total for Compliance (row 154)	Annex I, 14/03/2020	(g I-TEQ)	814.977	154.944	124.755	124.397	120.727
PAHs (total)							
National total (row 141)	Annex I, 14/03/2020	(t)	375.034	135.377	173.553	179.961	174.883
National Total for Compliance (row 154)	Annex I, 14/03/2020	(t)	375.034	135.377	173.553	179.961	174.883
benzo(a) pyrene							
National total (row 141)	Annex I, 14/03/2020	(t)	139.272	22.723	28.116	29.056	28.212
National Total for Compliance (row 154)	Annex I, 14/03/2020	(t)	139.272	22.723	28.116	29.056	28.212
HCB							
National total (row 141)	Annex I, 14/03/2020	(kg)	2 897.488	14.396	15.079	17.687	11.892
National Total for Compliance (row 154)	Annex I, 14/03/2020	(kg)	2 897.488	14.396	15.079	17.687	11.892
Difference between original estimate and revised estimate provided by Germany and accepted by the TERT							
2C1 Iron and Steel Production	DE-2C1-2018-0001	(kg)	1.053	0.926	0.885	0.912	0.892
National total (row 141) including revised estimates and technical corrections accepted by Germany (calculated using data above)		(kg)	2 898.541	15.321	15.964	18.598	12.784
National Total for Compliance (row 154) estimate including revised estimates, technical corrections accepted by Germany and adjustments recommended (by technical expert review team) to be accepted by EC (calculated using data above)		(kg)	2 898.541	15.321	15.964	18.598	12.784
PCBs							
National total (row 141)	Annex I, 14/03/2020	(kg)	1 735.483	196.490	229.576	228.031	212.852
National Total for Compliance (row 154)	Annex I, 14/03/2020	(kg)	1 735.483	196.490	229.576	228.031	212.852

[10] As defined in Annex I The 'National Total for Compliance (NECD)' includes the 'National Total (based on fuel sold)' (row 141) corrected for i) approved adjustments and flexibilities to national totals (row 153) and, if applicable, ii) national totals based on transport fuel used (rows 143-149) as well as iii) the subtraction of sectors 3B + 3D for NOx and NMVOC (only from 2020 onwards and for the year 2005 as a basis for emission reduction commitment calculations), according to the NEC Directive, Article 4/3(d).

[11] The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations, all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

Description	Reference	Unit	Pollutant estimates				
			1990	2005	2016	2017	2018
Pb							
National total (row 141)	Annex I, 14/03/2020	(t)	1 919.413	269.255	203.475	210.871	207.364
National Total for Compliance (row 154)	Annex I, 14/03/2020	(t)	1 919.413	269.255	203.475	210.871	207.364
Cd							
National total (row 141)	Annex I, 14/03/2020	(t)	30.416	12.921	12.838	13.066	12.692
National Total for Compliance (row 154)	Annex I, 14/03/2020	(t)	30.416	12.921	12.838	13.066	12.692
Hg							
National total (row 141)	Annex I, 14/03/2020	(t)	35.449	13.951	8.632	8.549	8.248
National Total for Compliance (row 154)	Annex I, 14/03/2020	(t)	35.449	13.951	8.632	8.549	8.248

X. Statement from Germany on the conclusions presented by the technical expert review team

36. Germany did not raise any issues with the calculated estimates in Table 11.

37. Germany did not raise any issues with the calculated estimates in Table 12.

XI. Technical expert review team response to the statement from Germany

38. Germany did not raise any issues with the calculated estimates presented in Table 11 and 12 and therefore no response from the TERT is required.

ANNEX I - Technical corrections deemed necessary by the technical expert review team and revised estimates provided by Germany

39. Germany did not have any Technical Corrections in the NECD Review 2020.

40. The technical expert review team calculated technical corrections for cases

- where it did not agree with the way that a revised estimate or technical correction from the NECD Review 2019 was implemented and where no revised estimate was accepted by the technical expert review team during the review
- and where the suggested recommendation of the technical expert review team would change the National Total by more than 2%.

41. The methods for calculating the technical corrections are set up in the "Guidance on technical corrections" and are based on the basic adjustment methods referred in the revised UNECE Reporting Guidelines and UNFCCC Adjustment guidance[12] and use the EMEP/EEA inventory guidebook as a reference for methods and emission factors.

[12] Technical guidance on methodologies for adjustments under Article 5, paragraph 2, of the Kyoto Protocol

Table A1: Summary tables of Revised Estimates and Technical Corrections

EMRT ID:	DE-2C1-2018-0001
EMRT URL:	https://emrt-necd.eionet.europa.eu/2020/DE-2C1-2018-0001
Member State:	Germany
Sector:	2C1 Iron and steel production
Pollutants:	HCB
Completed by (SE):	Coralie Jeannot
Reviewed by (LR):	Justin Goodwin
Reviewed by (Counterpart):	Maria Purzner
Reviewed by (Quality Controller):	Chris Dore

The underlying problem:	NA reported when Guidebook methodology is available
Summarise the methodology used:	RE: integrated iron and steel production x T1 EF from 2016 EMEP/EEA GB

2

Details of the corrected estimate

	Original Estimate								Notes
Year	Pb (t)	Cd (t)	Hg (t)	PCDD/F (g I-TEQ)	BaP (t)	PAHs (t)	HCB (kg)	PCBs (kg)	
1990							NA		
2005							NA		
2016							NA		
2017							NA		
2018							NA		

	Revised Estimate received from MS								Notes
Year	Pb (t)	Cd (t)	Hg (t)	PCDD/F (g I-TEQ)	BaP (t)	PAHs (t)	HCB (kg)	PCBs (kg)	
1990							1.053		
2005							0.926		
2016							0.885		
2017							0.912		
2018							0.892		

	Difference between Original Estimate and Revised Estimate								Notes
Year	Pb (t)	Cd (t)	Hg (t)	PCDD/F (g I-TEQ)	BaP (t)	PAHs (t)	HCB (kg)	PCBs (kg)	
1990							1.053		
2005							0.926		
2016							0.885		
2017							0.912		
2018							0.892		

ANNEX II - Review of the 2020 adjustment application of Germany, technical expert review team report for the EC

Table A2: Summary Information on submitted adjustment application, Germany 2020

Source Sector	Years	Pollutant	Application type	Outcome of Adjustment Review
3D Crop Production and Agricultural Soils 3I Agriculture Other	2010-2018	NH_3	Previously accepted (first submitted in 2017)	**Accept**
3B Manure Management 3D Crop Production and Agricultural Soils	2010-2018	NMVOC	Previously accepted (first submitted in 2017)	**Accept**
1A3b Road Transport	2010-2018	NO_X	Previously accepted (first submitted in 2017)	**Accept**
3B Manure Management 3D Crop Production and Agricultural Soils 3I Agriculture Other	2010-2018	NO_X	Previously accepted (first submitted in 2017)	**Accept**

1. Introduction

Article 5(8) of the NECD (Directive (EU) 2016/2284) explains that "The Commission, when exercising its powers under paragraphs 6 and 7 (reviewing the use of flexibilities), shall take into account the relevant guidance documents developed under the LRTAP Convention." Article 8(4) and Part 4 of Annex IV to the NECD further specify that Member States that opt for the adjustment flexibility must include supporting information in the Informative Inventory Report, including a demonstration that the use of the adjustment procedure fulfils the relevant conditions set out in Article 5(1) and Part 4 of Annex IV. The minimum supporting information required is highlighted in Part 4.1 of Annex IV. In the chapeau of Annex IV it is further specified that adjusted emission inventories should be prepared using the EMEP reporting guidelines, while also adding that reliance upon these EMEP reporting guidelines is without prejudice to the additional arrangements specified in Part 4 of Annex IV. Consequently, the review of adjustment applications under the NECD will in principle follow the process for reviewing adjustment applications made under the without prejudice to the additional arrangements specified in Part 4 of Annex IV of the NECD. It allows inter alia the submission of additional information during the review, necessary for a proper and full assessment of the adjustment application.

2. Adjustment process

Member States and the UK may apply to adjust their inventory data or emission reduction commitments **if they are in non-compliance with their emission ceilings** established in NEC Directive 2001/81/EC (in accordance with Article 21(2) of new NECD). If a Member State or the UK applies for more than one adjustment and not all these adjustments are required to bring that Member State or the UK into compliance, that Member States and the UK should be informed that

in accordance with the intent of the adjustment procedure, **recommendations for approval will be limited to adjustments necessary to bring compliance and be invited to withdraw one or more of their adjustments.** In making an adjustment application, Member States or the UK must demonstrate that extraordinary circumstances have given rise to revisions to their emissions estimates. These extraordinary circumstances fall into three broad categories:

a) Emission source categories are identified that were not accounted for at the time when the emission reduction commitments were set; or

b) For a particular source, the emission factors used to estimate emissions for the year in which emissions reduction commitments are to be attained are significantly different to those used when the emission reduction commitments were set; or

c) The methodologies used for determining emissions from specific source categories have undergone significant changes between the time when emission reduction commitments were set and the year they are to be attained.

"Technical corrections" and "revised estimates" arise when the review team identifies substantial quality issues with the emissions inventory. The emissions inventory data is revised during the review to address the issue. Consequently, technical corrections and revised estimates change the national emission totals, which may impact on the validity of an adjustment submission. Therefore, the finalised outcome of the work on technical corrections and revised estimates is established before the review of an associated adjustment application can be completed.

The review of an adjustment application can recommend acceptance or rejection. In the case of a rejection, the recommendation may be accompanied by information explaining that the principle of the adjustment is considered appropriate but that the quantification has not been determined correctly, or it has not been possible to adequately assess the quantification in the time available for the review. Consequently, it may be appropriate for Member States or the UK to consider resubmitting selected rejected applications at a future date.

Any Member State or the UK submitting an application for an adjustment to its inventory is required to notify the European Commission by 15 February at the latest.

3. Technical expert review team

In 2020 the reviewers undertook a detailed technical review of newly submitted adjustment applications. Information provided regarding adjustments that were accepted in previous years was also reviewed. Reviews are undertaken in cooperation with the EEA and recommendations from the review on the acceptance or rejection of an adjustment are communicated to the European Commission. The reviews of submitted adjustments were performed by the following technical expert review team:

- Adjustment Lead Reviewers – Chris Dore, Ole-Kenneth Nielsen
- Energy: Stationary and fugitives – Stijn Dellaert, Marlene Schmidt Plejdrup
- Energy: Transport and off-road – Jean-Marc André, Matina Kastori, Yvonne Pang
- Industrial processes and product use – Coralie Jeannot
- Agriculture – Anais Durand, Mette Mikkelsen and Beatriz Sánchez

4. Review of adjustments approved prior to 2020

Germany had 4 adjustments granted prior to 2020, details of which can be found in Table A2. Germany included information on these adjustments in its submission under the National Emissions Ceilings Directive (Directive (EU) 2016/2284) of 12 February 2020, reporting sectoral level data in Annex VII to the reporting guidelines and in line 153 of Annex I. Germany provided a "Declaration on consistent reporting of Approved Adjustments", by the deadline of 15 February 2020, stating that criteria and methodologies used for the calculation of relevant emissions for the 2020 submission are the same as in the most recent year in which the adjustments were approved (2019).

The review of previously accepted adjustment applications focuses on checking that any recalculations performed have been done so using a methodology that follows best practice, and that transparent supporting information has been provided. A check is made that the adjustment is still "necessary" to ensure compliance, but no check is made on the basis of the application - as this was checked in detail during the review when the adjustment application was first made.

5. Conclusions and Recommendations of technical expert review team concerning adjustment applications

The reviewers have undertaken a full and thorough assessment of the applications of adjustments approved prior to 2020 for NH_3 emissions from 3D Crop Production and Agricultural Soils, 3I Agriculture Other, and NMVOC emissions from 3B Manure Management, 3D Crop Production and Agricultural Soils, and NO_X emissions from 1A3b Road Transport, 3B Manure Management, 3D Crop Production and Agricultural Soils, 3I Agriculture Other.

The review of the submitted applications followed the requirements as set in the NECD. The findings of the reviewers are described in detail in sections above of this report.

Table A3*:* below provides a summary of the adjustment applications received from Germany, and the subsequent recommendations made by the reviewers to the European Commission.

Table A3: Recommendations following the 2019 review of adjustment applications[13]

Source Sector	Years	Pollutant	Application Type	Basis of Adjustment	Impact on National Total	Recommendation
3D Crop Production and Agricultural Soils 3I Agriculture Other	2010-2018	NH_3	Previously accepted (first submitted in 2017)	New source/Significantly different EFs	-9.3% in 2018	**Accept**

[13] The Impact on National Total column is calculated using the national total based on fuel sold, excluding adjustments. The data are presented for context only, and not for compliance purposes.

Conclusion text

2019 final comments: The TERT reviewed the information submitted by Germany on the previously accepted adjustment for 3D Crop production and agricultural soils and 3I Agriculture other for NH_3 for years 2010-2017. The TERT found it necessary to ask Germany for clarifications, and Germany did answer these questions satisfactorily, indicating where reasons for recalculations are described in the IIR and that the statement on sewage sludge was incorrectly taken from IIR 2018. The TERT did not find it necessary to ask Germany to recalculate the quantification of the adjustment. Following the review of the information made available prior to and during the review, the TERT concludes that the adjustment does continue to meet the requirements stated in the NECD for an adjustment, and therefore recommends that the European Commission does continue to accept the most recent submission as a valid adjustment for these sources and pollutant.2020 comment to close the observation: The TERT clarified during the 2018 review, that Germany does not appear to have provided in its IIR or associated methodological documentation regarding recalculation of NO_X and NH_3 associated with its approved adjustment application for categories 3D and 3I. However, during the 2019 review, same observation change to an issue about a lack of transparency regarding the recalculations, where also a question to application of sewage sludge where included. Submission 2020 also include a recalculation, but this is mentioned and explained in IIR submission 2020. There are still some lack of transparency due 3I regarding NO_2 and NH_3 from storage of digestate from energy crops, as well as for application of sewage sludge, which will be mentioned in new 2020 observations to avoid misunderstanding of observation content. As such, a recommendation does not need to be added to the review report.

Source Sector	Years	Pollutant	Application Type	Basis of Adjustment	Impact on National Total	Recommendation
3B Manure Management 3D Crop Production and Agricultural Soils	2010-2018	NMVOC	Previously accepted (first submitted in 2017)	New source/Significantly different EFs	-28.4% in 2018	**Accept**

Conclusion text

The TERT reviewed the information submitted by Germany on the previously accepted adjustment for NMVOC under category 3B, 3D for years 1990-2018. The TERT did not find] it necessary to ask Germany for clarifications. The TERT did not find it necessary to ask Germany to recalculate the quantification of the adjustment. Following the review of the information made available prior to and during the review, the TERT concludes that the adjustment continues does meet the requirements stated in the NECD for an adjustment, and therefore recommends that the European Commission does continue to accept the most recent submission as a valid adjustment for NMVOC under category 3B, 3D for years 1990-2018.

Source Sector	Years	Pollutant	Application Type	Basis of Adjustment	Impact on National Total	Recommendation
1A3b Road Transport	2010-2018	NO_X	Previously accepted (first submitted in 2017)	New source/Significantly different EFs	-14.5% in 2018	**Accept**

Conclusion text

The TERT reviewed the information submitted by Germany on the previously accepted adjustment for category 1A3b, NO_X, for 2010-2018. The TERT found it necessary to ask Germany for clarifications, Germany did answer these questions satisfactorily. More specifically, the recalculation of the adjustment is due to two reasons: 1) switch to HBEFA 4.1 and 2) a new version of the PHEM (Passenger car and Heavy-duty Emission Model), which features improvements in the simulation of SCR catalysts, was applied.The TERT did not find necessary to ask Germany to recalculate the quantification of the adjustment. Following the review of the information made available prior to and during the review, the TERT concludes that the adjustment, does continues to meet the requirements stated in the NECD for an adjustment, and therefore recommends that the European Commission does continue to accept the most recent submission as a valid adjustment for this source and pollutant.

Source Sector	Years	Pollutant	Application Type	Basis of Adjustment	Impact on National Total	Recommendation
3B Manure Management 3D Crop Production and Agricultural Soils 3I Agriculture Other	2010-2018	NO_X	Previously accepted (first submitted in 2017)	New source/Significantly different EFs	-9.9% in 2018	**Accept**

Conclusion text

The TERT reviewed the information submitted by Germany on the previously accepted adjustment for NO_2 under category 3B, 3D and 3I for years 2010-2017. The TERT did not find] it necessary to ask Germany for clarifications. The TERT did not find it necessary to ask Germany to recalculate the quantification of the adjustment. Following the review of the information made available prior to and during the review, the TERT concludes that the adjustment continues does meet the requirements stated in the NECD for an adjustment, and therefore recommends that the European Commission does continue to accept the most recent submission as a valid adjustment for NO_2 under category 3B, 3D and 3I for years 2010-2017.

References and Supporting Documents

Annex I emission reporting template. Available at http://www.ceip.at/ms/ceip_home1/ceip_home/reporting_instructions/

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NEC Directive 2016, DIRECTIVE (EU) 2016/2284 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2016.344.01.0001.01.ENG