Convention on Long-range Transboundary Air Pollution

emep

Co-operative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe

TECHNICAL REPORT CEIP
05/2025

Establishment of a system for using UNFCCC methane emissions by the Air Convention

Sabine Schindlbacher

CEIP

Establishment of a system for using UNFCCC methane emissions by the Air Convention

Technical report CEIP 05/2025

Project management

Sabine Schindlbacher

Author

Sabine Schindlbacher (CEIP)

CONTENTS

CONTENTS 3

1 INTRODUCTION 4

2 TEST STUDY 5

3 MAPPING TABLE 6

4 UNITS AND ABBREVIATIONS 15

5 REFERENCES 16

1 INTRODUCTION

Methane (CH_4) is a potent greenhouse gas and an important precursor of tropospheric ozone (UNECE, 2016). While historically the focus of the Air Convention (UNECE, 1979) has been on classical air pollutants such as SO_x, NO_x, NH_3 and NMVOC, increasing scientific evidence has highlighted the importance of CH_4 emissions in driving hemispheric background ozone concentrations and associated impacts on human health and vegetation. Limiting CH_4 emissions is of major importance for controlling ozone concentrations over the coming decades (UNECE, 2016). Even with full implementation of the Gothenburg Protocol, background levels of ozone in the ECE region, are expected to continue to increase due to CH_4, NO_x and NMVOC emissions outside the ECE region (UNECE, 2022 a). The main anthropogenic sources of CH_4 emissions are agriculture, fossil fuel production and waste management (UNECE, 2022 b). Further reductions of ozone precursor emissions within the ECE region are technically feasible and can decrease ozone concentrations and impacts within the region (UNECE, 2022 b).

A number of international forums are undertaking work to address CH_4 emissions.There are, for example, voluntary commitments under the Global Methane Pledge, information-sharing and capacity-building under the Global Methane Initiative and the Climate and Clean Air Coalition (UNECE, 2022 b).

In contrast to most pollutants covered by the Air Convention, CH_4 has long been reported under the United Nations Framework Convention on Climate Change (UNFCCC) as part of national greenhouse gas inventories since many years. These inventories are compiled using internationally agreed methodologies and provide comprehensive time series of CH_4 emissions for many of the Parties to Air Convention. However, since the UNFCCC is focused on limiting global warming, CH_4 is generally treated as interchangeable with other greenhouse gases, via conversion to carbon dioxide equivalent (UNECE, 2022 b).

The integration or reuse of methane emission data reported under the UNFCCC could offer opportunities to reduce reporting burdens for Parties. Therefore, at its tenth joint session the Steering Body and the Working Group recommended to set-up a test study conducted by CEIP to investigate the practicalities of using the UNFCCC CH_4 emissions data for the purposes of the Air Convention. CEIP presented the results of this test study at the eleventh joint session of the Steering Body and the Working Group (UNECE, 2025 a).

This report contains the informal document for the eleventh joint session of the Steering Body and the Working Group (UNECE, 2025 b) and the mapping table between CRT (UNFCCC reporting format) and NFR (CLRTAP reporting format).

2 TEST STUDY

ESTABLISHMENT OF A SYSTEM FOR USING UNFCCC METHANE EMISSIONS BY THE AIR CONVENTION - REPORT BY THE CENTRE ON EMISSION INVENTORIES AND PROJECTIONSREVIEW UNDER THE LRTAP CONVENTION

United Nations ECE/EB.AIR/GE.1−WG1/2025/INF.20

Distr.: General
9 September 2025

English only

Economic Commission for Europe

Executive Body for the Convention on Long-range Transboundary Air Pollution

Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe

Working Group on Effects

Eleventh joint session, Geneva, 15–18 September 2025
Item 4 (a) (i) of the provisional agenda
Progress in activities of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe in 2025 and its workplan for 2026–2027: improvement and reporting of emission data and adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone: adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone

Establishment of a system for using UNFCCC methane emissions by the Air Convention

Report by the Centre on Emission Inventories and Projections

Summary

At its tenth joint session the Steering Body and the Working Group recommended to set-up a test study conducted by CEIP to investigate the practicalities of using the UNFCCC methane (CH_4) emissions data for the purposes of the Air Convention.

From a technical perspective, a system for the use of UNFCCC CH_4 emission data under the Air Convention could be established by CEIP with reasonable effort. However, there are several issues that require further consideration before a decision is taken to mandate CEIP to compile the data in place of direct reporting by the Parties. Issues like the geographical scope of countries, timelines of reporting, and the legal aspects related to the reuse of UNFCCC data may be more effectively addressed if Parties were to report CH_4 emissions separately under the Air Convention.

Should CEIP be tasked to integrate the UNFCCC methane emission data into the CEIP database, a number of technical details would need to be clarified. A decision needs to be taken how the differences in the in geographical scope (this includes matters like oversea departments and the definition of domestic shipping and domestic aviation) are addressed. Further, a decision needs to be made how LULUCF emissions should be considered. The legal aspects related to the reuse of UNFCCC CH_4 emission data should further be discussed by the Steering Body. In addition, the format of the output needs to be specified in detail.

I. Introduction

1. At its tenth joint session (Geneva, 9–13 September 2024), aware of the increased interest of technical bodies and task forces of the Air Convention in methane (CH_4) due to its role in ozone formation, the Steering Body and the Working Group recommended to set-up a test study conducted by CEIP to investigate the practicalities of using the UNFCCC methane emissions data for the purposes of the Air Convention.

2. Following the joint thematic session on methane, held during the ninth joint session of the Working Group on Effects and the EMEP Steering Body (Geneva, 11–15 September, 2023), a short paper was prepared by the Task Force on Emission Inventories and Projections (TFEIP), the Centre on Emission Inventories and Projections (CEIP), and the TFEIP Ad Hoc Group on Methane Emission Reporting. The paper was submitted for consideration at the tenth joint session of the Working Group on Effects and the EMEP Steering Body in 2024 (Geneva, 9–13 September 2024). It provided an initial technical assessment of the practical requirements and processes for the reporting of methane emissions under the Convention on Long-range Transboundary Air Pollution and notes that an assessment of legal implications would also be required.

3. CEIP started the work on the test study to investigate the practicalities of using the UNFCCC methane emissions data for the purposes of the Air Convention in 2025 and presents the preliminary results for discussion in this informal document for the eleventh joint session of the Steering Body and the Working Group.

II. Availability of methane emission data under the UNFCCC

4. *Geographical Coverage:* CH_4 as a GHG is reported under the UNFCCC. The UNFCCC is a Convention with global coverage and thus covers the whole EMEP area and US and Canada. However, for some countries there are differences in the geographical scope between UNFCCC and the Air Convention e.g. overseas territories and crown dependencies that are outside the geographical extent of the Air Convention or exclusion of territories that were agreed upon ratification of Air Convention Protocols. In some cases, CEIP would need to take assumptions to adapt the CH_4 data reported by a Party under the UNFCCC for use under the Air Convention. However, this is limited to a small number of countries. An additional complication arises from the emissions from aviation take-off and landing. In the Air Convention, emissions from aviation take-off and landing are included in national totals (for domestic and international movements) while cruise emissions are reported as memo items. In the UNFCCC, domestic take-off and landing and domestic cruise emissions are included but international components are reported as memo items. As the mentioned sources are either reported as part of the national total or as memo item CEIP can adapt the national total comparatively easily. However, the definition of domestic shipping and domestic aviation can be significantly affected by differences in the geographical definition of countries (see above). For this CEIP again would need to take assumptions or the concerned Parties would need to provide additional information.

5. *Details of reporting:* CH_4 emissions are reported by Parties under the UNFCCC in the Common Reporting Tables (CRT). This reporting format is broadly comparable to the Nomenclature for Reporting (NFR) tables applied under the Air Convention. For most Parties, time series of emission estimates are available and include corresponding activity data. While the majority of CRT source categories are consistent with those in the NFR, certain differences between the two formats remain. To address these, CEIP has developed a mapping table, and it is proposed that this mapping table between CRT and NFR be formally agreed by the Steering Body.

6. *Land Use, Land Use Change, and Forestry (LULUCF):* LULUCF is not considered under the Air Convention but has a major impact on CH_4 concentrations. Emissions from LULUCF could be allocated to the NFR sources 6A Other (included in national total) or 6B Other (excluded from national total) or not be considered at all. Also, the NFR structure could be adapted. This is a point that needs further discussion at technical level e.g. the TFEIP Ad Hoc Group on Methane Emission Reporting. As this might have wider implications for

reporting after discussion at technical level the topic of inclusion of LULUCF data needs to be thoroughly discussed with the Parties to the Air Convention.

7. *Timelines of reporting:* The reporting timelines under the Air Convention and UNFCCC are not fully harmonized. In this context, it is important to distinguish between "Annex I" [1] and "non-Annex I"[2] under the UNFCCC. "Annex I" Parties are required to report their methane (CH_4) emissions annually, with submissions due by 15 April. Emission and activity data are reported up until "x-2", where "x" is the year in which reporting occurs. For example, for reporting in 2025, emission and activity data for the years 1990–2023 were reported. This is consistent with the reporting scheme set out in the Air Convention. However, under the Air Convention, air emission inventories are submitted by 15 February, with the option of resubmitting until 15 March. This means that the CEIP timelines for quality checking and gap-filling of CH_4 emissions would be very tight, particularly since several countries typically submit their data late or provide resubmissions in the weeks following the initial submission. "Non-Annex I" countries report CRT tables as part of their BTR (Biennial Transparency Reports). The report is a biennial report, so for those countries CH_4 data is then only available every second year. The first BTR was due on 31 December 2024. The latest reported year in this report was 2022. Emission estimates from "Non-Annex I" are thus typically several years behind those reported by "Annex I" countries and reporting tends to be less complete.

8. *Completeness of reporting:* For all "Annex I" Parties, time series of CH_4 emissions beginning in 1990 are available. For "Non-Annex I" Parties, the availability of consistent time series remains limited and CH_4 emission data is not available for all countries for the year 2022 either. For an overview of availability of CH_4 emission data and reported documents see Table 1.

Table 1
Availability of CH4 emission data for "non-Annex I" countries for the year 2022.

Country	*Documents submitted*	*CH_4 emissions for 2022*	*Main emission categories (Summary 1.A table)*
Albania	NID	–	–
Armenia	–	–	–
Azerbaijan	BTR, CRT	x	x
Bosnia and Herzegovina	–	–	–
Georgia	BTR, NID, CRT	x	x
Kazakhstan	BTR, NID, CRT	x	x
Kyrgyzstan	–	–	–
Montenegro	NID, BTR, CTF tables NDC	x	–
North Macedonia	–	–	–
Republic of Moldova	BTR, NID, CRT	x	x
Serbia	BTR, NID, CRT	x	x

[1] Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, Ukraine, United Kingdom, United States of America

[2] Albania, Armenia, Azerbaijan, Bosnia & Herzegovina, Georgia, Kazakhstan, Kyrgyzstan, Montenegro, North Macedonia, Republic of Moldova, Serbia.

Note: BTR – Biennial Transparency Report; CRT – Common Reporting Tables; CTF – Common Tabular Format; NDC – Nationally Determined Contribution, NID – National Inventory Document

III. Technical aspects of using UNFCCC CH_4 emissions under the Air Convention

9. *Output of the work*: CH_4 emissions reported under the UNCCC after necessary adaptations had been made (e.g. geographical scope, allocation of memo items, see above) would be imported into the CEIP database. Here, the dataset could only be available as dataset in the "Emissions as used in EMEP models"[3], where missing data and data of inadequate quality have been gap-filled and emissions are presented at GNFR level. Alternatively, it could also be available in the "Reported emission data"[4] dataset, where emissions are presented as reported by Parties at the more granular NFR level.

10. *Automatic import*: At the beginning of the year 2025 CEIP perused the possibility of basing the import of CH_4 emissions reported under the UNFCCC on a direct query from a database hosted by the UNFCCC secretariat, or at least to extracting the respective JSON files directly. CEIP was informed that plans for a database existed, but that the project was behind schedule.

11. *Manual downloading:* As an alternative, CEIP explored the possibility of manually downloading and importing the CRT files into the CEIP webdab database. The CRT files are publicly available on the UNFCCC website[5], and downloading and importing them to the database is a standard procedure with no expected obstacles.

12. *Gap-filling:* As CH_4 data is not available for all countries, and quality issues may exist for some countries, CEIP would need to gap-fill the emissions for several countries. A method for this needs to be developed. However, as CH_4 emissions are available as part of the IIASA GAINS model gap-filling at GNFR[6] or NFR level should not be a major challenge.

13. *Review of the data:* Should a review of the data under the Air Convention be requested by the Parties, the specific modalities would need to be clarified so that CEIP can be mandated with this task.

IV. Legal aspects for the use of UNFCCC CH4 emission under the Air Convention

14. In view of the discussion of the ad hoc group of experts on open data (see ECE/EB.AIR/GE.1−WG.1/2025/INF.14) the legal aspects related to the reuse of UNFCCC CH_4 emission data should further be discussed by the Steering Body. While the data are publicly accessible on the UNFCCC website, CEIP was not able to find a licence explicitly permitting the reuse of the data. Furthermore, issues concerning the geographical coverage should be clarified in consultation with the Parties concerned.

V. Budget aspects

15. While the majority of the steps involved in importing the files into the CEIP database are relatively time-efficient, the overall process (including manual manipulation for allocation of memo items, correction of geographical coverage, allocation of LULUCF data, quality checks of the submissions and additional gap-filling) will require significant budget allocation from other CEIP tasks, unless it is funded separately.

[3] https://www.ceip.at/webdab-emission-database/emissions-as-used-in-emep-models
[4] https://www.ceip.at/webdab-emission-database/reported-emissiondata
[5] https://unfccc.int/ghg-inventories-annex-i-parties/2025
[6] GNFR: NFR Aggregation for Gridding and LPS. For reporting of gridded data and LPS data emissions reported at GNFR level are aggregated to 13 GNFR sectors.

VI. Conclusions and open decision

16. From a technical perspective, a system for the use of UNFCCC CH_4 emission data under the Air Convention could be established by CEIP with reasonable effort. However, there are several issues that require further consideration before a decision is taken to mandate CEIP to compile the data in place of direct reporting by the Parties. Issues like the geographical scope of countries, timelines of reporting, and the legal aspects related to the reuse of UNFCCC data may be more effectively addressed if Parties were to report CH_4 emissions separately under the Air Convention.

17. Should it be decided that CEIP is to integrate the UNFCCC methane emission data into the CEIP database, a number of technical details would need to be clarified. These include the issues outlined above, which are summarized as follows:

(a) a mapping table between NFR and CRT tables needs to be approved by the Steering Body

(b) a decision needs to be taken how the differences in the in geographical scope (this includes matters like oversea departments and the definition of domestic shipping and domestic aviation) are addressed. Here CEIP would suggest that the Parties concerned provide suggestions how issues related to the geographical scope should be handled for their country. If CEIP is tasked with this, it would need support from the Secretariat and the Parties concerned.

(c) a decision needs to be made how LULUCF emissions should be considered. This might have wider implications for reporting and needs to be thoroughly discussed with the Parties. Allocating emissions from LULUCF to NFR sources 6A Other (included in national total) or 6B Other (excluded from national total) would result in inconsistencies between the NFR and CRT reporting formats which have been avoided so far. Including CRF sector 4 LULUCF raises the question as to whether it becomes relevant to report other pollutants for this sector, for example NOx.

(d) the legal aspects related to the reuse of UNFCCC CH4 emission data should further be discussed by the Steering Body.

18. On a more technical side, also the format of the output needs to be specified including the following questions:

(a) are CH_4 emission estimates at the GNFR level sufficient or should they be provided at the NFR level.

(b) is it necessary to provide gridded emission data

(c) should the data be available in the dataset “Emissions as used in EMEP models”, where missing data and data of inadequate quality have been gap-filled and emissions are presented at GNFR level or also in the “Reported emission data” dataset, where emissions are presented as reported by Parties at the more granular NFR level.

3 MAPPING TABLE

Mapping Table between CRT (UNFCCC reporting format) and NFR (CLRTAP reporting format)

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
1A1a	Public electricity and heat production	1.A.1.a. Public electricity and heat production	FAC6F9B7-A754-4A2F-971D-1799BEF0FDDB
1A1b	Petroleum refining	1.A.1.b. Petroleum refining	B605E4F0-F37A-4E18-8154-F955542D91A7
1A1c	Manufacture of solid fuels and other energy industries	1.A.1.c. Manufacture of solid fuels and other energy industries	5D5316DB-3A94-4E1A-9D73-36AC3AC831A4
1A2a	Stationary combustion in manufacturing industries and construction: Iron and steel	1.A.2.a. Iron and steel	8CA92046-6225-4EFF-AB08-7D7F9325C71F
1A2b	Stationary combustion in manufacturing industries and construction: Non-ferrous metals	1.A.2.b. Non-ferrous metals	86E85BF5-2FE3-4FC6-9D05-CD893C9FECC6
1A2c	Stationary combustion in manufacturing industries and construction: Chemicals	1.A.2.c. Chemicals	81A0449D-57FC-4FB7-8AC5-9C7FFF06492D
1A2d	Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	1.A.2.d. Pulp, paper and print	3466593E-14C5-4F8A-87FA-A3D6E97D6D74
1A2e	Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	1.A.2.e. Food processing, beverages and tobacco	4FE24E6C-83E2-4843-A6C0-834CEDEC33E5
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	1.A.2.f. Non-metallic minerals	CB38A105-71C5-4CEC-8079-F3CD8D6D8E8C
1A2gvii	Mobile Combustion in manufacturing industries and construction	IE	IE

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
1A2gviii	Stationary combustion in manufacturing industries and construction: Other	1.A.2.g. Other	2016826C-739E-4626-832C-2641FCB29C12
1A3ai(i)	International aviation LTO (civil)		IE
1A3aii(i)	Domestic aviation LTO (civil)	1.A.3.a. Domestic aviation	05385795-EAA6-4793-A195-5C0E8407AE86
1A3bi	Road transport: Passenger cars	1.A.3.b.i. Cars	0FF731F8-0862-459A-9991-186D82D3BCED
1A3bii	Road transport: Light duty vehicles	1.A.3.b.ii. Light duty trucks	F2687539-FB54-47F8-91D1-85B789D83C44
1A3biii	Road transport: Heavy duty vehicles and buses	1.A.3.b.iii. Heavy duty trucks and buses	ECB72AB8-998D-440F-B139-BF1CD7EF4BF3
1A3biv	Road transport: Mopeds & motorcycles	1.A.3.b.iv. Motorcycles	0369470A-A218-4A24-91B0-DE0C99033AEB
1A3bv	Road transport: Gasoline evaporation	1.A.3.b.v. Other (please specify)	70AFE61F-9377-47B2-948A-E0F871837CA0
1A3bvi	Road transport: Automobile tyre and brake wear		IE
1A3bvii	Road transport: Automobile road abrasion		IE
1A3c	Railways	1.A.3.c. Railways	BB5AE984-101C-4B74-9297-C6E5777BC927
1A3di(ii)	International inland waterways		IE
1A3dii	National navigation (shipping)	1.A.3.d. Domestic navigation	E3BF59B3-43EA-4E69-B964-F2FE9D4E36D7
1A3ei	Pipeline transport	1.A.3.e.i. Pipeline transport	61885298-24D3-4997-A769-76C1301B0EA2
1A3eii	Other	1.A.3.e.ii. Other (please specify)	6822D5F7-E1AF-4EFA-89AC-19DFBD678396

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
1A4ai	Commercial/institutional: Stationary	1.A.4.a.i. Stationary combustion	636C6705-BBDF-4613-8B27-1BEF17D0EB84
1A4aii	Commercial/institutional: Mobile	1.A.4.a.ii. Off-road vehicles and other machinery	CF6CC208-1F78-43CC-AB6E-83F4D1E14435
1A4bi	Residential: Stationary	1.A.4.b.i. Stationary combustion	BAE32692-B8DF-423B-BAA8-A0DC4D86C219
1A4bii	Residential: Household and gardening (mobile)	1.A.4.b.ii. Off-road vehicles and other machinery	09E10351-929A-46F8-8642-9160814623F9
1A4ci	Agriculture/Forestry/Fishing: Stationary	1.A.4.c.i. Stationary	34B4C318-281E-42C3-9D1B-7FA4F8583FDB
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	1.A.4.c.ii. Off-road vehicles and other machinery	7B57E6A0-0B8C-4197-912C-0F4050E2D15B
1A4ciii	Agriculture/Forestry/Fishing: National fishing	1.A.4.c.iii. Fishing	F1C2554D-17DE-4434-9020-351F8F76450E
1A5a	Other stationary (including military)	1.A.5.a. Stationary	9932D5C2-4A55-4EB8-822A-63644455D1B2
1A5b	Other, Mobile (including military, land based and recreational boats)	1.A.5.b. Mobile	53D0533C-AFFA-41CD-AFDB-5EE2BD8ECDEF
1B1a	Fugitive emission from solid fuels: Coal mining and handling	1.B.1.a. Coal mining and handling	78A1F84C-8F8B-48E0-B2CA-8680039E58ED
1B1b	Fugitive emission from solid fuels: Solid fuel transformation	1.B.1.b. Fuel transformation	E800517A-07D5-49F6-B1E3-6D1B56356ED8
1B1c	Other fugitive emissions from solid fuels	1.B.1.c. Other	706BEE07-5FEC-4816-B19A-DD8302F77224
1B2ai	Fugitive emissions oil: Exploration, production, transport	1.B.2.a.i. Exploration	18F30998-DCBF-49AD-840C-2115B472631C
1B2aiv	Fugitive emissions oil: Refining / storage	1.B.2.a.iv. Refining/storage	D1951679-B031-404D-A4B5-E7E49C1DBC3E

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
1B2av	Distribution of oil products	1.B.2.a.v. Distribution of oil products	ED1414C0-C3C0-4991-8842-771EFB441B83
1B2b	Fugitive emissions from natural gas (exploration, production, processing, transmission, storage, distribution and other)	1.B.2.b. Natural gas	FAEF0142-3A21-4A96-8A4C-E915EF741D74
1B2c	Venting and flaring (oil, gas, combined oil and gas)	1.B.2.c. Venting and flaring	F27F0104-F35E-4326-BD3C-CA97F3C38071
1B2d	Other fugitive emissions from energy production	1.B.2.d. Other	5EF16164-431D-4C7A-B8B9-A870D35E801E
2A1	Cement production		NO
2A2	Lime production		NO
2A3	Glass production		NO
2A5a	Quarrying and mining of minerals other than coal		IE
2A5b	Construction and demolition		IE
2A5c	Storage, handling and transport of mineral products		IE
2A6	Other mineral products	2.A.4. Other process uses of carbonates	7AE5060F-87AF-43CA-BE24-ED8E50D17DF9
2B1	Ammonia production	2.B.1. Ammonia production	237ECB7F-E333-4EBE-8F5C-9846ED852B08
2B2	Nitric acid production		NO
2B3	Adipic acid production		NO
2B5	Carbide production	2.B.5. Carbide production	C2B13F7F-E6C5-4A3D-A469-544213F4B764
2B6	Titanium dioxide production		NO
2B7	Soda ash production		NO

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
2B10a	Chemical industry: Other	2.B.10. Other	FB88FCCF-C304-4EF0-A612-E53F1A79E374
2B10b	Storage, handling and transport of chemical products	2.B.8. Petrochemical and carbon black production	CBCD6504-291A-4437-A6FE-BB09DA30D406
2C1	Iron and steel production	2.C.1. Iron and steel production	A839891C-9D5F-46E5-A7C0-8F8484E0CB5D
2C2	Ferroalloys production	2.C.2. Ferroalloys production	5FA222C3-2ECC-4363-891A-C196ECBE22B4
2C3	Aluminium production	2.C.3. Aluminium production	NO
2C4	Magnesium production	2.C.4. Magnesium production	NO
2C5	Lead production	2.C.5. Lead production	NO
2C6	Zinc production	2.C.6. Zinc production	NO
2C7a	Copper production		IE
2C7b	Nickel production		IE
2C7c	Other metal production	2.C.7. Other	DD610763-C0B0-4DFD-AE7B-32EADB4DB1D5
2C7d	Storage, handling and transport of metal products		IE
2D3a	Domestic solvent use including fungicides		IE
2D3b	Road paving with asphalt		IE
2D3c	Asphalt roofing		IE
2D3d	Coating applications		IE
2D3e	Degreasing		IE
2D3f	Dry cleaning		IE
2D3g	Chemical products		IE
2D3h	Printing		IE
2D3i	Other solvent use	2.D. Non-energy products from fuels and solvent use (4)	00ABA437-D136-49A3-AD03-99A6CD525550

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
2G	Other product use	2.G. Other product manufacture and use	90D29821-8FCA-400A-BA1A-4F6F4186982F
2H1	Pulp and paper industry	2.H.1. Pulp and paper	3F773A04-F079-4064-8546-1E93E95AEAB2
2H2	Food and beverages industry	2.H.2. Food and beverages industry	9F5B1C1A-6DB2-4B9C-A927-2D8C2BECFF5D
2H3	Other industrial processes	2.H.3. Other (please specify)	AD7F5697-7255-4075-8770-DDED42596295
2I	Wood processing		IE
2J	Production of POPs		IE
2K	Consumption of POPs and heavy metals (e.g. electrical and scientific equipment)		IE
2L	Other production, consumption, storage, transportation or handling of bulk products		IE
3B1a	Manure management - Dairy cattle	3.B.1. Cattle(3)	214F3A37-3FD5-4EB3-99D4-FBCBDA7C9407
3B1b	Manure management - Non-dairy cattle		IE
3B2	Manure management - Sheep	3.B.2. Sheep	314EC5F7-6C0B-4311-9909-C58720F64BFF
3B3	Manure management - Swine	3.B.3. Swine	0C2E3015-C6BD-41F0-A3E0-54E9B026E353
3B4a	Manure management - Buffalo	3.B.4.a. Buffalo	8ED2C36E-9055-4495-959D-2B2A9BE11003
3B4d	Manure management - Goats	3.B.4.d. Goats	4AD632EE-4161-459B-94DE-813296EE9802
3B4e	Manure management - Horses	3.B.4.e. Horses	10ECD482-EEE6-4F66-ABC4-15C2AB4D6DE3

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
3B4f	Manure management - Mules and asses	3.B.4.f. Mules and Asses	79B6FA5E-82A3-496F-BC0E-B451A03C419F
3B4gi	Manure mangement - Laying hens		IE
3B4gii	Manure mangement - Broilers		IE
3B4giii	Manure mangement - Turkeys		IE
3B4giv	Manure management - Other poultry	3.B.4.g. Poultry	19664B9A-9F23-4041-9C46-7698E2260549
3B4h	Manure management - Other animals	3.B.4.h. Other	0BCCF700-D848-4544-8F84-D342237E095A
3Da1	Inorganic N-fertilizers (includes also urea application)	3.D. Agricultural soils(4,5)	3F2390B2-F2A0-4D98-8200-DF1E3BAD623C
3Da2a	Animal manure applied to soils		IE
3Da2b	Sewage sludge applied to soils		IE
3Da2c	Other organic fertilisers applied to soils (including compost)	3.E. Prescribed burning of savannahs	0AF40DDC-732A-47A0-9D31-1C5A13702393
3Da3	Urine and dung deposited by grazing animals		IE
3Da4	Crop residues applied to soils		IE
3Db	Indirect emissions from managed soils		IE
3Dc	Farm-level agricultural operations including storage, handling and transport of agricultural products		IE
3Dd	Off-farm storage, handling and transport of bulk agricultural products		IE
3De	Cultivated crops		IE
3Df	Use of pesticides		IE
3F	Field burning of agricultural residues	3.F. Field burning of agricultural residues	0CC832EA-D9FE-4087-B3CA-75A4FEB58846

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
3I	Agriculture other	3.J. Other (please specify)	906F249E-2D50-49EC-933C-2BCAD72E01D5
5A	Biological treatment of waste - Solid waste disposal on land	5.A. Solid waste disposal	DBACFAA0-5DE6-41CE-8FB1-49845E1897E0
5B1	Biological treatment of waste - Composting	5.B.1. Composting	D344E699-BEF5-4B7D-88A5-FFC3C2DF7C0C
5B2	Biological treatment of waste - Anaerobic digestion at biogas facilities	5.B.2. Anaerobic digestion at biogas facilities	90AC54DB-708C-4323-94E6-5FE20F6F36F2
5C1a	Municipal waste incineration	5.C.1.a.i. Municipal solid waste	496C0385-6081-4E64-B649-9807EADE45E6
5C1bi	Industrial waste incineration	5.C.1.a.ii.1. Industrial solid wastes	5ADB5354-9DCE-4E8C-908E-D88DFB7D3D4A
5C1bii	Hazardous waste incineration	5.C.1.a.ii.2. Hazardous waste	609D4F94-F6AC-4AE1-BC27-70D1D258C9A7
5C1biii	Clinical waste incineration	5.C.1.a.ii.3. Clinical waste	C3CBE973-495D-4EA7-A004-35339FE7381D
5C1biv	Sewage sludge incineration	5.C.1.a.ii.4. Sewage sludge	9269DF0C-7270-486E-9DC9-97529DEE000B
5C1bv	Cremation		IE
5C1bvi	Other waste incineration	5.C.1.a.ii.5. Other (please specify)	80752B4D-CBCF-4D19-AEAB-148379E2583D
5C2	Open burning of waste	5.C.2. Open burning of waste	4A702C88-EFC0-4101-86C0-93E8E5D0843A
5D1	Domestic wastewater handling	5.D.1. Domestic wastewater	63976506-7A21-4DBA-953B-0BE2C1DDA2DD
5D2	Industrial wastewater handling	5.D.2. Industrial wastewater	368377BC-AD2E-41C4-B6A0-BB50CE75B127

NRF sector number	NFR sector name	CRT sector name	CRT sector UID
5D3	Other wastewater handling	5.D.3. Other	DE515DFB-81E9-45B6-8AC0-4E0486828B2E
5E	Other waste	5.E. Other (please specify)	6C31CD15-D42F-4CD8-8ECF-47DF1753A0E8
6A	Other (included in national total for entire territory)	6. Other (please specify) (7)	5EDBB0E1-492D-4BB0-ADBE-B5A3331C921A
NATIONAL TOTAL	National total for the entire territory (based on fuel sold)	Total national emissions and removals (with LULUCF)	B3C6CE61-81BF-440C-A5EC-3451AB9205B8
ADJUSTMENTS (Net total)	Sum of adjustments (negative value) from Annex VII		NO
NATIONAL TOTAL FOR COMPLIANCE	National total for compliance assessment (please specify all details in the IIR)		NO
1A3ai(ii)	International aviation cruise (civil)	1.D.1.a. Aviation	6EB10B39-D827-4B7D-BE48-0B1490832640
1A3aii(ii)	Domestic aviation cruise (civil)		IE
1A3di(i)	International maritime navigation	1.D.1.b. Navigation	9CE80DA9-C267-439C-9CD2-7C35D4BD54BD
1A5c	Multilateral operations	1.D.2. Multilateral operations	6BD78DAF-AF60-4655-85D1-F47586D42272
1A3	Transport (fuel used)		NO
6B	Other not included in national total of the entire territory		NO
11A	Volcanoes		NO
11B	Forest fires		NO
11C	Other natural emissions		NO

4 UNITS AND ABBREVIATIONS

Abbreviations used in this report and in related work/discussions

CEIP..... EMEP Centre on Emission Inventories and Projections

CLRTAP ..... Air Convention, Convention on Long Range Transboundary Air Pollution

EEA ..... European Environment Agency

EMEP ..... Co-operative Programme for Monitoring and Evaluation of the Long-range Transmissions of Air Pollutants in Europe

EU ..... European Union

GNFR..... nomenclature for reporting of gridded data amd LPS

IIR..... informative inventory report

LRTAP Convention ..... UNECE Convention on Long-range Transboundary Air Pollution

LULUCF ..... Land Use, Land Use Change, and Forestry

Main pollutants ..... NO_x, NMVOCs, SO_x, NH_3 and CO

NFR ..... UNECE nomenclature for reporting of air pollutants

NH_3 ..... ammonia

NMVOCs ..... non-methane volatile organic compounds

NO_2 ..... nitrogen dioxide

NO_x ..... nitrogen oxides

PM ..... particulate matter

PM_{10}..... particulate matter, with a 50 per cent efficiency cut-off at 10 µm aerodynamic diameter or less

$PM_{2.5}$ ..... particulate matter, with a 50 per cent efficiency cut-off at 2.5 µm aerodynamic diameter or less

PM_{coarse} ..... particulate matter, the difference between PM_{10} and $PM_{2.5}$

SO_x ..... sulphur oxides

SO_2 ..... sulphur dioxide

TFEIP ..... UNECE Task Force on Emission Inventories and Projections

UNECE..... United Nations Economic Commission for Europe

UNFCCC ..... United Nations Framework Convention on Climate Change

5 REFERENCES

UNECE, 1979. Convention on Long-range Transboundary Air Pollution. https://unece.org/sites/default/files/2021-05/1979%20CLRTAP.e.pdf

UNECE, 2016: Rob Maas and Peringe Grennfelt, eds. Towards Cleaner Air: Scientific Assessment Report 2016. https://unece.org/sites/default/files/2021-06/CLRTAP_Scientific_Assessment_Report_en.pdf

UNECE, 2022 a: Report on the review of the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone, as amended in 2012. ECE/EB.AIR/2022/3. https://unece.org/sites/default/files/2022-10/ECE_EB.AIR_2022_3-2214963E.pdf

UNECE, 2022 b: Technical information for the review of the Gothenburg Protocol. ECE/EB.AIR/2022/5. https://unece.org/sites/default/files/2022-10/ECE_EB.AIR_2022_5-2215383E.pdf

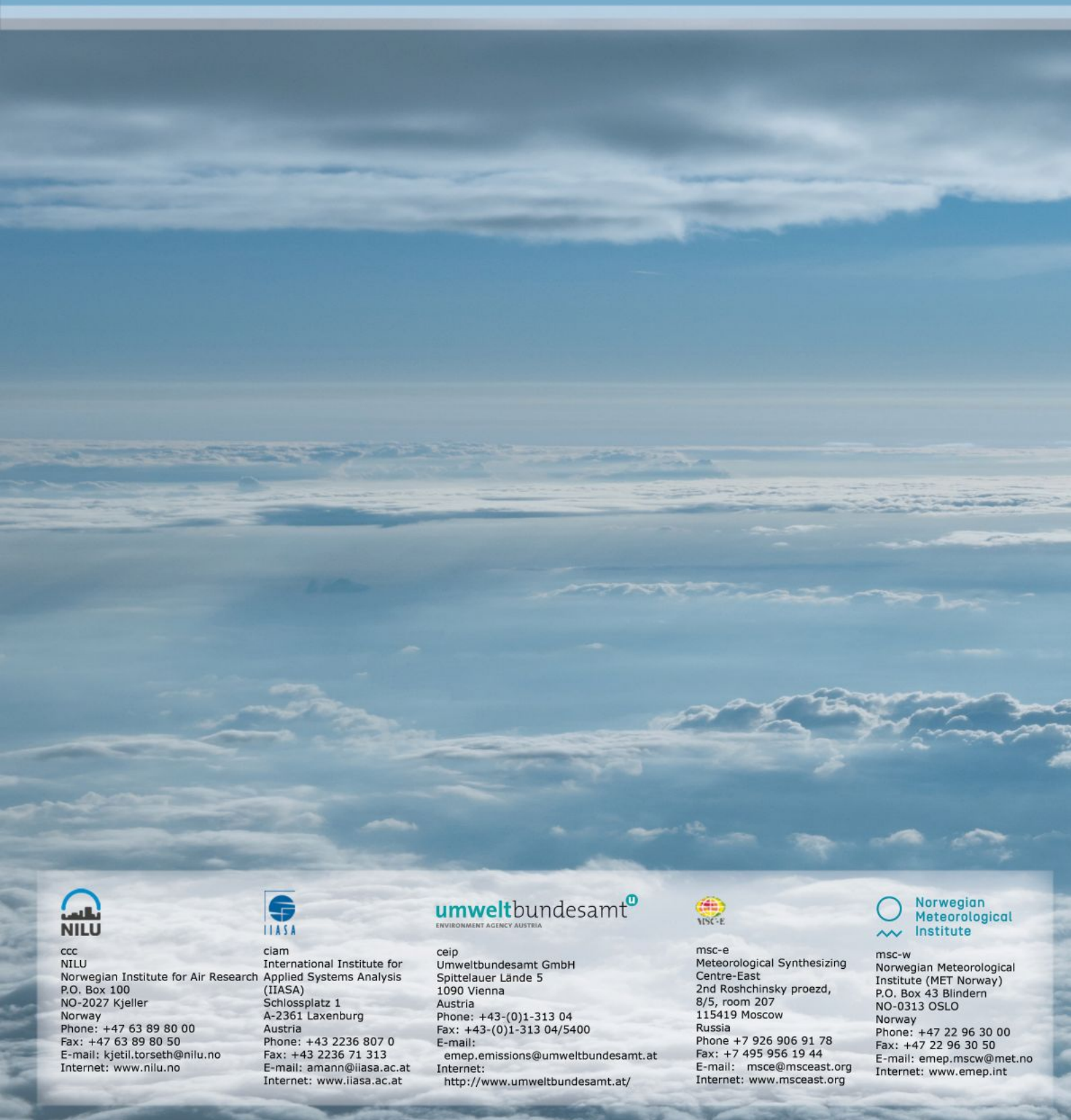
UNECE, 2025 a: Report of the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe and the Working Group on Effects on their eleventh joint session. ECE/EB.AIR/GE.1/2025/2−ECE/EB.AIR/WG.1/2025/2. https://unece.org/sites/default/files/2025-12/ECE_EB.AIR_GE.1_2025_2%20E_0.pdf

UNECE, 2025 b: Establishment of a system for using UNFCCC methane emissions by the Air Convention. ECE/EB.AIR/GE.1−WG1/2025/INF.20. https://unece.org/sites/default/files/2025-09/Item%204%20a%20i%20ECE_EB.AIR_GE.1%E2%88%92WG1.2025_INF.20.pdf

UNFCCC, 1992: United Nations Framework Convention on Climate Change. https://unfccc.int/resource/docs/convkp/conveng.pdf

emep

CEIP
Umweltbundesamt
Spittelauer Laende 5, 1090 Vienna, Austria



NILU

ccc
NILU
Norwegian Institute for Air Research
P.O. Box 100
NO-2027 Kjeller
Norway
Phone: +47 63 89 80 00
Fax: +47 63 89 80 50
E-mail: kjetil.torseth@nilu.no
Internet: www.nilu.no

IIASA

ciam
International Institute for
Applied Systems Analysis
(IIASA)
Schlossplatz 1
A-2361 Laxenburg
Austria
Phone: +43 2236 807 0
Fax: +43 2236 71 313
E-mail: amann@iiasa.ac.at
Internet: www.iiasa.ac.at

umweltbundesamt
ENVIRONMENT AGENCY AUSTRIA

ceip
Umweltbundesamt GmbH
Spittelauer Lände 5
1090 Vienna
Austria
Phone: +43-(0)1-313 04
Fax: +43-(0)1-313 04/5400
E-mail:
emep.emissions@umweltbundesamt.at
Internet:
http://www.umweltbundesamt.at/

MSC-E

msc-e
Meteorological Synthesizing
Centre-East
2nd Roshchinsky proezd,
8/5, room 207
115419 Moscow
Russia
Phone +7 926 906 91 78
Fax: +7 495 956 19 44
E-mail: msce@msceast.org
Internet: www.msceast.org

Norwegian
Meteorological
Institute

msc-w
Norwegian Meteorological
Institute (MET Norway)
P.O. Box 43 Blindern
NO-0313 OSLO
Norway
Phone: +47 22 96 30 00
Fax: +47 22 96 30 50
E-mail: emep.mscw@met.no
Internet: www.emep.int