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

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**Progress in activities of the Cooperative Programme for Monitoring and Evaluation of the Long-range
Transmission of Air Pollutants in Europe in 2024 and future work: Improvement and reporting of emission data
and adjustments under the Protocol to Abate Acidification, Eutrophication and Ground-level Ozone**

The practicalities and processes required for including CH₄ in emissions reporting under the Air Convention

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Summary

A joint thematic session on CH₄ was included in the 9th joint session of WGE and the EMEP Steering Body (2023), and following this, an item was added to the TFEIP's workplan to "Investigate the practicalities and processes required for including CH₄ in emissions reporting" (workplan item 1.1.2.1). This short paper, for consideration at the 10th joint session of WGE and the EMEP Steering Body (2024), is the deliverable from this workplan item. This paper provides an initial technical evaluation of the practicalities and processes that would be required for reporting CH₄ under the Air Convention, but further assessment of the legal implications would also be required if the issue progresses further.

I. Introduction

1. Within the Air Convention, there is increased interest in CH₄ due to its role in ozone formation.
2. A joint thematic session on CH₄ was included in the 9th joint session of WGE and the EMEP Steering Body (2023), and following this, an item was added to the TFEIP’s workplan to “Investigate the practicalities and processes required for including CH₄ in emissions reporting” (workplan item 1.1.2.1). This short paper, for consideration at the 10th joint session of WGE and the EMEP Steering Body (2024), is the deliverable from this workplan item.
3. This paper provides an initial technical evaluation of the practicalities and processes that would be required for reporting CH₄ under the Air Convention, but further assessment of the legal implications would also be required if the issue progresses further.

II. What is readily available from the UNFCCC?

A. Country coverage

4. The UNFCCC is a Convention with global coverage, which includes the reporting of GHG emissions. However, the detail and frequency of reporting for a given country depends on whether it is an “Annex I” or “non-Annex I” country under the UNFCCC.
5. A full listing of Parties to the Air Convention and their allocation to Annex I and non-Annex I is included below in Table 1. The non-Annex I and Annex I Parties to the UNFCCC represent, broadly, an East-West split of the geographical extent of the Air Convention.

Table 1: UNFCCC Annex I and non- Annex I countries¹

<i>Annex I^a</i>			<i>Non-Annex I</i>
Austria	Greece	Poland	Albania
Belarus	Hungary	Portugal	Armenia
Belgium	Iceland	Romania	Azerbaijan
Bulgaria	Ireland	Russian Federation	Bosnia & Herzegovina
Canada	Italy	Slovakia	North Macedonia
Croatia	Latvia	Slovenia	Georgia
Cyprus	Liechtenstein	Spain	Kazakhstan
Czechia	Lithuania	Sweden	Kyrgyzstan
Denmark	Luxembourg	Switzerland	Montenegro
Estonia	Malta	Türkiye	Republic of Moldova
Finland	Monaco	Ukraine	Serbia
France	the Netherlands	United Kingdom	
Germany	Norway	United States of America	

^a *The European Union are signatories to both the Air Convention and the UNFCCC in their own right, but individual countries are listed here for clarity.*

¹ Signatories to the Air Convention taken from <https://www.ceip.at>, and Annex I and non-Annex I Parties to the UNFCCC taken from <https://unfccc.int/> (May 2024).

B. Emissions inventory reporting frequency and format

Annex I countries

6. The submissions made by Annex I countries to the UNFCCC are very similar in scope and format to submissions under the Air Convention. Submissions are made annually and include/are:

- (a) A timeseries of annual CH₄ emissions.
- (b) Detailed activity data in addition to emission estimates.
- (c) Reported in detail in the “CRF” source structure, which is very similar to “NFR”.

7. The largest sources of CH₄ emission (agriculture and fugitive sources) have a source resolution in the CRF format that maps very easily to the NFR structure used in the Air Convention. However, there are some differences between the two reporting formats which require consideration:

(a) The CRF includes emissions and uptake from land use, land use change, and forestry. These could be allocated to the NFR sources 6A Other (included in national total) or 6B Other (excluded from national total), but this would result in inconsistencies between the NFR and CRF reporting formats which have specifically been avoided to date. For example, waste has been assigned to CRF code 5 to align with NFR reporting, despite the fact that there is no CRF code 4. Alternatively, the NFR structure could be edited to include CRF sector 4 LULUCF. However, this has potential implications on the complexity of reporting, and raises the question as to whether it becomes relevant to report other pollutants for this sector, for example NO_x. Either option represents a major change to emissions reporting under the Air Convention, and would require extensive discussion with the Parties before anything is agreed.

(b) Geographies can differ i.e. the geographical definition of a country in the UNFCCC can be different to that in the Air Convention. Being a “global” convention, the UNFCCC sometimes includes overseas territories and crown dependencies that are outside the geographical extent of the Air Convention. However, differences in the national totals are generally small.

(c) In the Air Convention, emissions from aviation take-off & landing are included in national totals (for both domestic and international movements). Cruise emissions are reported as memo items. In the UNFCCC, domestic take-off & landing and domestic cruise emissions are included, with international components being reported as memo items. Domestic shipping and aviation emissions can be significantly affected by differences in the geographical definition of a countries (see above). So even accounting for the different inclusion/exclusion of sources from the national total, caution is needed because similarly named “national” and “international” sources may not represent the same scope.

8. So, in conclusion, Annex I countries (which make up the western part of the Air Convention’s geographic coverage) report comprehensive and detailed CH₄ emissions data to the UNFCCC, which can be accessed and added to Air Convention emissions datasets relatively easily.

Non-Annex I countries

9. The submissions made by non-Annex I countries are currently very different to submissions under the Air Convention:

- (a) A greenhouse gas emissions inventory, which includes CH₄, is submitted every 4 years “to the extent its capacities permit”, in a National Communication report.
- (b) The inventory is updated every 2 years, and presented in a Biennial Update Report.

(c) Emission estimates typically are several years behind those reported by Annex I countries in the same year, and there is often no, or very limited, timeseries. Source detail varies from country to country, but is usually considerably less detailed than the CRF format used by Annex I countries.

10. Evidently the CH₄ emissions information available from non-Annex I countries is considerably less detailed and frequent than emissions inventory reporting under the Air Convention. However, the reported data may still be sufficient for the purposes of the modelling community in the Air Convention.

(a) By the end of 2024 non-Annex I countries will have increased reporting obligations under the Paris Agreement, and, providing Parties meet these obligations, there will be similar datasets available for both Annex I and non-Annex I countries: The inventory time series will be updated and presented in the Biennial Transparency Report that is common to all the Parties of the Paris agreement (both developed and developing countries)The BTR submission is expected to improve the availability of complete and transparent GHG emission timeseries although some flexibilities are allowed for the least developed countries.

Conclusions

11. Whilst taking emissions straight from UNFCCC reporting means that there will be limited control in the Air Convention over the quality of data reported, it minimises the amount of additional effort required by Parties in reporting the data and also means that a situation where Parties are producing multiple estimates for the same pollutant is avoided.

12. Resources would be needed to compile the data from the non-Annex I countries, and incorporate it into Air Convention datasets. CEIP is best placed to investigate how much person time would be required for this. Currently the data would need to be extracted from each individual national communications which would be a time consuming process. This may change due to changes to Paris Agreement reporting and it would therefore be beneficial to wait until updated Paris Agreement reporting is in place before this is resolved.

C. Emissions projections and mitigations strategies

13. As with the reporting of historical emissions, there is a wide variation across the UNFCCC Parties of the detail to which they report CH₄ projections and control strategies.

14. Many Parties report plans that target CO₂, or greenhouse gases overall, but do not clearly show the impacts on CH₄. Emission projections will be reported on a pollutant specific basis in a common tabular format in the BTRs . However, non-Annex I countries also have a flexibility which means that projections reporting is not mandatory and many do not have projections data.

15. It would be possible, but time consuming, to compile data on national plans for use in scenario work for Parties that report projections data. But it is thought unlikely that this information would be available from non-Annex I countries.

D. The needs of the Air Convention's modellers

16. The modellers in the Air Convention will be using the CH₄ emissions data as input in modelling ozone formation. So they do not have the same requirements for precision as those using the data for compliance purposes. What is important for the modellers is that:

(a) The emission estimates are complete and accurate enough to give a reasonable estimate of the national total in a given year.

(b) There is good enough source resolution to allow emission maps to be created (the spatial resolution can be lower than that for the "main" air quality pollutants), and understand the seasonal variations in emissions.

17. However, there is still some uncertainty around the detail of the data that is required by the Air Convention's modellers. Providing a national total for CH₄ with a separate LULUCF total would be considerably less complicated than providing a detailed dataset, and may still meet their needs. It is also important to understand whether modellers are already using CH₄ data in models, and if so, where this data is taken from.

18. Choices about the format of the data is dependent on the required use of the data. If CH₄ emissions data are only needed for modelling purposes, it may be appropriate to provide CH₄ data separately to the annual air pollutant emissions inventory submissions. If CH₄ data were required for e.g. compliance purposes, then it would be better for the data to be submitted in the same format as other pollutants, i.e. the NFR format, which requires much more detail.

III. Conclusions and Recommendations

A. Conclusions

19. **CH₄ emissions data is available from the UNFCCC**, and all Parties to the Air Convention report CH₄ emissions (in some form) to the UNFCCC.

20. For the countries in the **Western part of the Air Convention's** geographical coverage, detailed and comprehensive data is readily available and is considered to be easily incorporated into Air Convention datasets.

21. For countries in the **Eastern part of the Air Convention's** geographical coverage, data is less frequently available, and is generally less detailed. But is thought to still be sufficient to meet the needs of the modellers in the Air Convention and is likely to improve as a result of additional climate change reporting requirements that are expected in 2024.

22. **It would be sensible to use these data in the Air Convention**, and not add requirement to report CH₄ emissions to the Air Convention. The requirement could be to provide a reference to a suitable datasets for use in the Air Convention. However, it should be noted that in the case that CH₄ data is required under CLRTAP to assess compliance against legally binding commitments, detailed reporting under CLRTAP would be required and this approach would not be sufficient. It will be important to understand if there are expected to be uses of the data beyond modelling purposes, e.g. for compliance checking.

23. Any solution would need to be further evaluated from a legal perspective in case this solution will be used for compliance checking.

B. Recommendations

24. Check that the comments outlined above are in line with the needs of the Air Conventions modellers. As a priority, further engagement with modellers is required to understand their requirements. This will have a strong influence on the most appropriate detail level of emissions datasets and the frequency of reporting.

25. If inclusion of CH₄ emissions reporting is likely, then it would be sensible to undertake a test study:

(a) CEIP would need to be funded to compile a CH₄ dataset from the UNFCCC and incorporate it into Air Convention datasets. CEIP and other groups of the Air Convention could then evaluate the resulting benefits and associated costs.