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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

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Item 13 of the provisional agenda
Progress in emissions inventories and other emissions-related issues

Emission inventories and projections

Report by the Co-Chairs of the Task Force on Emission Inventories and Projections

Summary

The Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) is mandated to provide sound scientific support to the Convention on Long-range Transboundary Air Pollution, inter alia, in the area of emission inventories and projections (see ECE/EB.AIR/68, annex III, appendix III). To help EMEP to fulfil that mandate, the Task Force on Emission Inventories and Projections reports annually to the EMEP Steering Body on progress in the area, providing policy-relevant messages and recommendations (see ECE/EB.AIR/135, annex I, sect. B).

The present report contains a summary of the discussions at and outcomes of the Task Force's thirtieth meeting (Krakow, Poland, 11-12 May 2017), where participants considered progress in Task Force activities carried out in the accordance with the 2016-2017 workplan for the implementation of the Convention (ECE/EB.AIR/133/Add.1, items 1.1.1.21, 1.1.2.1, 1.1.2.3, 1.1.2.6, 1.1.2.7 and 3.4), and also in the informal document submitted to the Executive Body for the Convention at its thirty-fourth session, "Basic and multi-year activities in the 2016-2017 period" (items 1.4.5, 1.4.6, 1.4.7 and 1.5.1). Planning

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of future activities was also discussed.

Annexed to the meeting report is a summary of the conclusions of the workshop, "Discussion with Countries from the Eastern Part of the EMEP domain, Uncertainties in Emissions Inventories, Quality Assurance and Quality Control in Emissions Inventories", which was held in three separate sessions in Zagreb on 10 May 2017.

Contents

I. Introduction

1. The Task Force on Emission Inventories and Projections under the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) assists EMEP in providing sound scientific support to the Convention on Long-range Transboundary Air Pollution (Air Convention) in the area of emission inventories and projections. The work of the Task Force is organized and led by the Co-Chairs, Mr. Chris Dore (United Kingdom of Great Britain and Northern Ireland), Mr. Martin Adams (European Environment Agency (EEA)) and Ms. Kristina Saarinen (Finland). In addition, expert panel leaders coordinate work relating to emissions in four specific technical areas, namely: (a) combustion and industry; (b) transport and mobile machinery; (c) agriculture and nature; and (d) emission projections. The focus of this work is to support the Convention's Parties in reporting air pollutant emissions and projections data, including capturing relevant information for maintenance and improvement of the *EMEP/EEA air pollutant emission inventory guidebook* (EMEP/EEA Guidebook 2016).[1]

2. The annual meeting constitutes the Task Force's main annual output.

II. 2017 annual meeting of the Task Force

A. Organization and planning

3. The thirtieth meeting of the EMEP Task Force on Emission Inventories and Projections was held in Krakow, Poland on 11 and 12 May 2017.[2] The meeting of the Task Force, a subsidiary body of the United Nations Economic Commission for Europe (ECE) Air Convention, was preceded by a scientific workshop on 10 May, concerning emissions reporting from countries in the Eastern part of the EMEP domain, uncertainties in emissions inventories and quality assurance and quality control in emissions inventories (see annex).

4. The meeting was hosted by the University of Science and Technology, Krakow City Council and the Norwegian Institute for Air Research.

5. The Co-Chairs jointly chaired the meeting and expert panel leaders chaired the technical sessions in the four defined technical work areas (see para. 1).

B. Attendance

6. Over 115 participants attended the annual Task Force meeting, representing over 40 countries and international organizations, including the EMEP Centre for Integrated Assessment Modelling, the EMEP Centre on Emission Inventories and Projections and the Task Force on Reactive Nitrogen. EEA was represented by several members of its staff and by staff from its European Topic Centre for Air Pollution and Climate Change Mitigation. Several representatives from industry also attended.

[1] The most recent edition is the *EMEP/EEA air pollutant emission inventory guidebook 2016*: *Technical guidance to prepare national emission inventories*, EEA Report No. 21/2016 (Luxembourg, Publications Office of the European Union, 2016), available from http://www.eea.europa.eu/publications/emep-eea-guidebook-2016.

[2] Presentations and documents from the Task Force meeting and from the workshop are available online from http://www.tfeip-secretariat.org/meetings/.

C. Reflections on 25 years of the Task Force

7. Mr. Jozef Pacyna (Norway and Poland) and the Co-Chairs welcomed the participants, and reflected on the Task Force reaching its twenty-fifth anniversary.

D. Review of related work under the Convention

8. A member of the Convention secretariat provided an update on activities within the different Convention bodies, including with regard to the 2016 scientific assessment,[3] capacity-building activities and outreach activities. The Task Force Co-Chairs presented the Task Force's contributions to recent sessions of the EMEP Steering Body and the Executive Body for the Convention.

9. A representative of the Centre on Emission Inventories and Projections provided an overview of results from the latest reporting cycle. More informative inventory reports were being provided, and data quality was considered to be improving, but further progress was still needed.

10. A representative of the European Environment Agency provided a summary of the 2016 update to the EMEP/EEA Guidebook and activities since the update, including the availability of a new online viewer for Guidebook emission factors.

E. Review of emissions inventories

11. A representative of the European Commission presented information on the new European Union National Emission Ceilings Directive,[4] and in particular presented an options paper highlighting opportunities to potentially streamline emission inventory review activities under the Directive and the Air Convention, reducing workloads.

12. The Task Force considered the numerous options for aligning, streamlining or merging review activities under the Directive and the Convention and reached several conclusions:

(a) **Independent, but aligned**: The Task Force agreed that there was a need to ensure aligned guidance for the two review processes. However, retaining a second independent review process for European Union member States under the Convention was considered to be important, to help ensure that findings from one review process were not merely repeated by a second review team;

(b) **Added burden**: While the addition of a second independent review process would lead to an added burden on European Union member States, which would be subject to two review processes for the main pollutants every five years, the current frequency of review under the Convention (only once every five years) was not considered to be overly demanding for Parties;

[3] See Rob Maas and Peringe Grennfelt, eds., *Towards Cleaner Air: Scientific Assessment Report 2016* (Oslo, 2016) and United States Environmental Protection Agency and Environment and Climate Change Canada, *Towards Cleaner Air: Scientific Assessment Report 2016 – North America* (2016, online report).

[4] 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.

(c) **Implementation Committee**: It was recognized that, while the intention of the new "technical corrections" process defined in the proposal for updating the "Methods and Procedures" document[5] was to support Parties and EMEP in a capacity-building perspective, such information should, where relevant, also support the work of the Convention Implementation Committee;

(d) **EMEP Steering Body**: The Task Force recommended further discussion of the European Union paper during the next session of the EMEP Steering Body.

F. Emissions from selected sources

13. A number of technical presentations were given during the parallel expert panel sessions:

(a) **Emission projections**: A representative of the United Kingdom presented the upcoming reporting requirements of emissions projections under European Union legislation referring to air quality control programmes;

(b) **Small-scale or domestic combustion**: New data were presented by a representative of Sweden from a project involving the Nordic countries, and also by a representative of Estonia;

(c) **Transport**: The revised EMEP/EEA Guidebook chapters on road transport and aviation were discussed. Developments in methodologies for estimating emissions from shipping were also presented and discussed;

(d) **Agriculture**: A Task Co-Chair noted that methodologies for estimating emissions from mineral fertilizers and anaerobic digestion had been finalized and included in the 2016 version of the EMEP/EEA Guidebook. The methodology proposed for estimating emissions from growing crops was rejected. Dialogue with several stakeholder groups is needed, particularly because there is limited scientific information available.

14. The Task Force agreed to recommend to the EMEP Steering Body that the updated EMEP/EEA Guidebook chapters on small-scale combustion and road transport be adopted with immediate effect. Other information, provided from industry or from research projects, would be held for incorporation into the Guidebook during its next major revision.

15. Other technical presentations were given on a range of topics such as "dieselgate", estimating particulate matter emissions in the United Kingdom and emission factors of persistent organic pollutants from waste combustion and cremation.

G. Filterable and condensable particulate matter

16. The Task Force Co-Chairs presented the current status of the filterable/condensable particulate matter issue, and the paper by Task Force on Measurements and Modelling. The Co-Chairs then led discussion. The Task Force agreed that:

(a) There is a clear need to improve the consistency of reporting across countries, and to improve the transparency of the particulate matter metrics being used in emissions inventories;

5 A proposal for revising the "Methods and Procedures" document (ECE/EB.AIR/GE.1/2007/16) was submitted as an informal document to the second joint session, and is available from the web page for the meeting (http://www.unece.org/index.php?id=40002#/).

(b) The preferred way forward with regard to reporting "condensable" particulate matter is for all Parties to include the condensable component when reporting emissions from selected source sectors (e.g., residential combustion and road transport). Other sectors (e.g., industrial sources) would use emission factors consistent with the filterable particulate matter fraction, consistent with established measurement technologies for those sectors;

(c) Information in the EMEP/EEA Guidebook would need to provide emission factors consistent with the principles above — i.e., clear guidance on whether "condensable" particulate matter was included for each sector or not.

17. The Task Force Co-Chairs agreed to present the findings at the third joint session of the EMEP Steering Body and the Working Group on Effects in September 2017 with the aim of agreeing a way forward.

H. Guidance on technical revisions during the emissions inventory review

18. A guidance document on the process of technical revisions (see para. 12 (c) above), circulated as a meeting document, was presented and discussed.

19. The Task Force agreed to forward the paper to the EMEP Steering Body for discussion and adoption as part of the process for the technical review of emissions inventories under the Convention.

I. European Environment Information and Observation Network

20. After an overview of European Environment Agency activities, representatives from the Agency and its European Topic Centre for Air Pollution and Climate Change Mitigation presented recent project work and activities relevant to the European Environment Information and Observation Network in general, including the status of recent reporting of member States under the European Union National Emission Ceilings Directive and examples of new European Environment Agency online tools and data services.

J. Future work

21. The Task Force discussed and agreed the remaining work scheduled for 2017, and the workplan for 2018-2019. A number of actions were agreed, with priority items being:

(a) **Standing items**:

(i) Holding an annual Task Force meeting and workshop to support development of the EMEP/EEA Guidebook and share best practices;

(ii) Acting as a focal point for technical discussions on emission estimates relating to the Convention and managing associated communication channels (including dissemination and maintaining website services);

(iii) Promoting and supporting work that provided updated information for use in the EMEP/EEA Guidebook by sourcing data from the literature and liaising with other projects, task forces and centres within the Convention, as resources allowed;

(b) **Other core workplan items**:

(i) In the long term, the Task Force would aim to secure an annual budget or funding to support the development of the EMEP/EEA Guidebook;

(ii) Two items would be proposed for EMEP funding: a review of ammonia emission factors for livestock and manure management and development of guidance on reporting emissions of filterable or condensable particulate matter (in collaboration with the Task Force on Measurements and Modelling);

(c) The Task Force would continue to compile and distribute a prioritized list of improvement activities for the EMEP/EEA Guidebook, noting that they do not have secured funding.

22. The Task Force would also continue to recommend that the format of the parts of the Convention workplan and budget devoted to EMEP activities be made more interactive and user-friendly to provide more transparency and improved access to information.

K. Other business

22. A summary of the conclusions and outcomes of the workshop was presented, covering the discussion with countries from the Eastern part of the EMEP domain, uncertainties in emissions inventories and quality assurance and quality control in emissions inventories (see annex).

23. The Task Force thanked Parties for supporting its work, and in particular the European Union (through the European Environment Agency), Finland and the United Kingdom. The Task Force also expressed its sincere appreciation to their hosts, the University of Science and Technology, Krakow City Council and the Norwegian Institute for Air Research.

Annex

Conclusions of the Task Force on Emission Inventories and Projection 2017 Workshop

1. The Task Force on Emission Inventories and Projections held a workshop on 10 May 2017, comprising three separate sessions:

(a) A discussion with countries from the eastern part of the EMEP domain;

(b) Uncertainties in emissions inventories;

(c) Quality assurance and quality control in emissions inventories.

2. The workshop was co-hosted by the University of Science and Technology, Krakow City Council and the Norwegian Institute for Air Research.

Conclusions of the workshop session on discussion with countries from the eastern part of the EMEP domain

3. Representatives from countries in Eastern Europe, the Caucasus and Central Asia were invited to attend a discussion session on the barriers to reporting good quality emissions inventories under the Convention.

4. In addition to flagging the need for help with generating emissions projections, and therefore being able to use the emissions inventory as an effective policy support tool, national representatives highlighted the following challenges:

(a) **Activity data**: It was noted that Parties tended to avoid making approximate emission estimates rather than using best practice where there were challenges with sourcing data. They were encouraged to focus on completeness at the outset;

(b) **Lack of coordination between ministries**: Representatives noted challenges in coordinating work between ministries, with a clear distinction between the work on air quality emissions estimates and climate change — the latter having a much stronger legal remit to obtain data, which drove coordination across government ministries and departments;

(c) **Lack of staff and funding**: Countries could have either a small, or no officially defined team. It was therefore challenging to undertake all of the work required. In that regard, the Convention inventory reviews could provide a useful mechanism for flagging under-resourcing and making recommendations to the relevant Government;

(d) **Institutional barriers**: National representatives indicated their current status with regard to the signing or ratification of the Convention and its associated Protocols. Progress was being made in many countries.

5. All countries agreed that support with regard to generating gridded data would be helpful. It was also considered that gaining a better understanding of the Greenhouse Gas — Air Pollution Interactions and Synergies (GAINS) model would be valuable.

6. A representative of the Centre for Integrated Assessment Modelling indicated the Centre's willingness to hold a workshop to support countries in producing gridded data.

7. It was further recognized that countries would welcome support on quality assurance and quality control issues, although it was appreciated that there was extensive guidance in the EMEP/EEA Guidebook.

8. Countries flagged their highest priorities as being:

(a) Technical support on compiling gridded data;

(b) Support in developing the quality of available activity data;

(c) Improving institutional arrangements within the country;

(d) Increased funding or resources for the inventory team.

9. The Task Force Co-Chairs indicated that they would have further discussions with the ECE secretariat to explore whether supporting actions could be arranged.

10. The Task Force Co-Chairs thanked the representatives for attending, and thanked the secretariat for providing financial support to country representatives.

Conclusions of the workshop session on uncertainties in emissions inventories

11. A Task Force Co-Chair explained the current shortcomings of the statistical approaches used regarding uncertainties in emissions inventories, and suggested a new complementary approach to predict the extent to which estimates might be revised in the future. There was general interest, although the process required development and testing.

12. A representative of Germany showcased a database tool for generating uncertainties. A representative of Italy presented a comprehensive system that separately considered different aspects of uncertainties in emissions estimates, noting that little progress had been made in that area for a decade.

13. Following discussions, it was concluded that:

(a) There needs to be improvement in the way that the emissions inventory community present uncertainty and changes in uncertainty;

(b) There are tools and approaches that can be used to better reflect the different aspects of uncertainty in emissions inventories. However, they are not currently being supported, and are therefore not being developed into readily usable methodologies.

Conclusions of the workshop session on quality assurance and quality control in emissions inventories

14. A Task Force Co-Chair opened noted that most of the available quality assurance and quality control guidance material drew heavily on systems set up under the greenhouse gas emissions inventory requirements. Also, the Convention emissions inventory reviews had never reviewed the quality assurance and quality control systems in countries. A representative of the Centre on Emission Inventories and Projections then outlined the size of recalculations, noting that Parties typically revised at least one national total by more than 10 per cent each year.

15. Representatives of the United Kingdom gave two presentations, showing improvements to quality assurance and quality control systems in the United Kingdom emissions inventory that had been driven by changes in the needs of the Government, and innovative automated systems for quality assurance and quality control that had been developed for greenhouse gas emissions inventories.

16. Following discussions, it was concluded that:

(a) There are benefits when countries invest more time and effort in improving quality assurance and quality control systems;

(b) There are tools currently being developed that allow quality assurance and quality control to be undertaken in a highly efficient and automated way.

17. The Co-Chairs thanked the hosts, and then closed the workshop.