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## 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 (EMEP)

#### Thirty-fourth session

Geneva, 13-15 September 2010

Item 6 (c) of the provisional agenda

**Progress in activities in 2010 and future work: emissions**

### Emission inventories and projections

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

## I. Introduction

1. This report reflects progress made and conclusions agreed at the twenty-third meeting of the Task Force on Emission Inventories and Projections, in accordance with item 2.1 of the 2010 workplan for the implementation of the Convention (ECE/EB.AIR/99/Add.2) approved by the Executive Body at its twenty-seventh session.

2. The twenty-third meeting was held on 10 and 11 May 2010 in Larnaca, Cyprus, and was held jointly with the European Environment Information and Observation Network (EIONET), maintained by the European Environment Agency (EEA). The meeting was followed by a scientific workshop, held jointly with the Task Force on Measurements and Modelling, which covered emissions and measurements in a number of technical areas: particulate matter from wood burning; metals; time resolution; emission maps; and uncertainties. Conclusions from the joint workshop are presented in the annex to this report. Presentations and documents from the Task Force meeting and from the workshop are available at: <http://www.tfeip-secretariat.org>.

### A. Attendance

3. Over 100 experts from the following Parties to the Convention on Long-range Transboundary Air Pollution attended the meeting: Austria, Belarus, Belgium, Bosnia and

Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Latvia, Luxembourg, the former Yugoslav Republic of Macedonia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, the Russian Federation, Serbia, the Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland and Ukraine.

4. The European Commission was represented at the meeting by the Joint Research Centre's Institute for Environment and Sustainability (DG-JRC). Representatives from the EEA and its European Topic Centre on Air and Climate Change (ETC/ACC) were also present, together with representatives of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) Centre on Emission Inventories and Projections (CEIP), the Centre for Integrated Assessment Modelling (CIAM) and the United Nations Framework Convention on Climate Change (UNFCCC).

## **B. Organization of work**

5. Mr. C. Dore (United Kingdom), Mr. M. Adams (EEA) and Ms. K. Saarinen (Finland) co-chaired the meeting of the Task Force.

6. The Deputy Director of the Cyprus Ministry of Labour and Social Insurance opened the meeting. The Chair of the EMEP Steering Body provided an overview of the latest activities under the Convention.

7. The co-Chair from the United Kingdom informed participants about the outcomes of the twenty-seventh session of the Executive Body held in December 2009, and the forty-sixth session of the Working Group on Strategies and Review held in April 2010, highlighting in particular, revisions and amendments to Protocols to the Convention, the request from the Executive Body for the Task Force, in cooperation with EEA, to provide a maintenance and improvement plan for the EMEP Steering Body meeting in 2010, and its endorsement of the updated EMEP/EEA Emissions Inventory Guidebook.

8. In addition, the Task Force held expert panel sessions on combustion and industry; agriculture and nature; transport; and projections.

## **II. 2010 emissions reporting and review**

9. The Task Force considered the results of the 2009 reporting round, presented by a representative of CEIP. She highlighted that while the timeliness of reporting and completeness of reported inventories was gradually improving, there were significant gaps in reporting of large point sources (LPS) data and limited data reported for the extended EMEP area. Furthermore, good quality gridded emission data were sparse. It was noted that that was an important area to develop in the future, and a workshop was proposed for that purpose.

10. The representative of CEIP also explained that there was a shortage of inventory reviewers for the Stage 3 emission inventory reviews scheduled for June 2010. One Party scheduled for review in June 2010 (the Russian Federation) had not yet submitted either an emission inventory or an Informative Inventory Report. The Co-Chairs again encouraged Parties to provide nominations and proposed contacting known emissions experts who were not currently on the list of expert reviewers, with the aim of increasing reviewer numbers.

11. A representative of ETC/ACC presented an analysis of the incidences of countries reporting “Not Estimated” for sources in their emission inventories. It was highlighted that reporting of “Not Estimated” for significant emission sources was not best practice.

12. The Task Force:

(a) Noted the continued improvement in reporting, although recognizing that reporting was still far from complete for certain Parties;

(b) Agreed that high-quality gridded emissions data be included as a subject for future work and capacity building activities with Parties in 2011; and

(c) Stressed that using the “Not Estimated” notation key where there was expected to be a significant source of emissions was not good practice;

(d) Thanked the stage-3 review teams from the European Community, Austria, Denmark, France, Germany, the Netherlands, Sweden and the United Kingdom for participating in the 2009 reviews.

### **III. Informative Inventory Reports**

13. A representative from Sweden provided an overview of Sweden’s Informative Inventory Report (IIR), and presented examples of good practice in a number of different areas.

14. A representative from Germany presented the web-based German IIR. The website (<http://iir-de.wikidot.com/>) allowed ready access from a number of different users, and was an efficient way of making the information publicly available. Version control and write privileges required some thought, but it was generally concluded that wiki was a very useful platform for compiling an IIR.

15. A representative from ETC/ACC presented the results of a review of the available IIRs. He gave examples of practices in the IIRs which made conducting the Stage 3 emission inventory reviews easier or more difficult. He indicated that, in terms of completeness, the French IIR was an example of best practice; in terms of presentation, the IIR from the Netherlands was of a particularly high standard; and in terms of innovation, the German wiki-based IIR was also of a high standard. He also noted that countries with smaller teams could produce good quality IIR’s and in particular cited the IIR’s from Croatia and Cyprus as being of a high standard.

### **IV. Recent research projects and emission inventory developments**

16. The Task Force considered a number of research projects with the potential to contribute to the improvement of the emission inventories. It noted in particular the following as being valuable for further inventory improvements:

(a) Recent developments of the emissions database for global atmospheric research (EDGAR) and the global emissions inventory, presented by a representative of JRC. The database now provided 35 years of emission trends and was recognized as a valuable resource for national inventory compliers, for example, for its potential use for inventory verification;

(b) The uncertainty analysis on the COPERT4 Road Transport Emissions Model. Nitrogen oxide (NOx) and fine particulate matter (PM2.5) were less uncertain than other air quality pollutants because diesel vehicles had been shown to be less variable than emissions

from petrol vehicles. In an analysis of national emission estimates, the parameters which had proved to have a large influence on the overall emission estimates varied depending on the detail to which data such as fleet, age, speed etc. were established;

(c) The new emissions inventory system, which had been used for the national emissions inventory in Luxembourg. The system included a centralized database which allowed efficient working and effective quality control/quality assurance (QA/QC) to be implemented;

(d) Recent developments undertaken as part of the Cyprus emissions inventory. The largest contributors to air quality pollutants were electricity generation, road transport and cement production. Analysis showed that without any additional measures, emissions in Cyprus were projected to increase through 2013;

(e) The in-kind contribution from Belarus on Tier 3 estimates for specific industrial emissions;

(f) The project for mapping diffuse sources in the European Pollutant Release and Transfer Registers (E-PRTR) carried out by Stuttgart University (see section VI below).

## **V. EMEP/EEA Air Pollutant Emission Inventory Guidebook**

17. A representative from the Netherlands made a comparison between their national inventory and an inventory compiled using information from the recently revised EMEP/EEA Air Pollutant Emission Inventory Guidebook, which indicated that some sources included in the Netherlands inventory were not included in the Guidebook. Following discussion, it became apparent that that was also the case for other national inventories. Parties were encouraged to submit information from their national inventories to allow for improved completeness of the Guidebook.

18. The Finnish co-Chair provided a demonstration of the emission factor library being developed by the Finnish Environment Institute (SYKE). The Task Force considered that to be a very valuable resource and encouraged national inventory compilers to submit nationally specific information to develop the content of the database.

19. The Task Force thanked Danish and industry experts (from The Oil Companies' European association for health, safety and environment in refining and distribution (CONCAWE)) for contributing a large amount of information on industrial emission factors to the Guidebook.

20. The Task Force discussed and agreed to revisions of several chapters in the Guidebook. It recommended to the EMEP Steering Body that it endorse the following revised chapters of the EMEP/EEA Air Pollutant Emission Inventory Guidebook:

- (a) 1.A.1: Energy industries;
- (b) 1.A.3.b: Road transport;
- (c) 1.A.3.d: Navigation;
- (d) 1.A.4: Other mobile;
- (e) 1.B.2.a.i and 1.B.2.b: Exploration, production and natural gas;
- (f) 1.B.2.a.iv: Refining, storage; and
- (g) B.2.a.v: Distribution of oil products.

21. The co-Chair from the United Kingdom provided an update on the recent progress and developments associated with the Guidebook. He proposed a process for undertaking Guidebook updates, whereby substantial Guidebook updates would be undertaken every three years (in contrast to the rather ad hoc process of updates at present), while new information would be made available through the Task Force's website and expert panels between updates.

22. The Task Force agreed with the proposed process for updating the Guidebook (as described in paragraph 19 above) and decided to forward it to the EMEP Steering Body for consideration and approval.

23. The Task Force also discussed several tasks which were considered to be of value to updating the Guidebook, but which could not be undertaken without funding. It agreed to forward those for consideration by the EMEP Steering Body as part of the draft EMEP/EEA Air Pollutant Emission Inventory Guidebook Maintenance and Improvement Plan (ECE/EB.AIR/GE.1/2010/7).

24. Given the limitations on its own workload, the Task Force also encouraged participants to seek ways in which their countries could provide either financial or in-kind support to the process.

## **VI. European Environment Information and Observation Network (EIONET)**

25. EIONET representatives and Task Force participants were given an update on recent EIONET-related activities and projects.

26. The co-Chair from EEA informed participants about recent and upcoming EEA and EIONET activities in the field of air pollutant emissions, including changes made to the structure of the Network, with the establishment of the new air pollution and climate change mitigation grouping; the annual work programme of EEA and recently published and planned reports (including progress on the EEA "European Environment — State and Outlook 2010" report); key data activities, such as the launch of the European Pollutant Release and Transfer Register (EPRTR) in November 2009; and a summary of foreseen requests for EIONET support during the remainder of 2010.

27. A representative from Stuttgart University gave a presentation explaining the work being undertaken to map diffuse sources of emissions as part of the EPRTR under a European Commission-funded project. That would require handling large amounts of data and the construction of an extensive geographic information system (GIS)-based system. Results from the project due for completion in 2011 would be made available for countries.

28. A representative from ETC-ACC summarized the results of an analysis performed to compare reported point source emission data under EPRTR with national emission inventory submissions reported by Parties to the Convention. She noted several instances of apparent inconsistencies between the two official datasets and stressed the need for consistency in official emissions data being reported by countries.

29. A representative from ETC/ACC provided feedback to national European Union (EU) representatives concerning the successful trial of an improved gap-filling routine for the compilation of the 2010 EU emission inventory submission to the Convention. That had resulted in a more complete emission dataset for the EU than in previous years, and for the first time emission trends of priority heavy metals and persistent organic pollutants (POPs) were able to be reported.

## **VII. Emission inventory developments in Eastern Europe, the Caucasus and Central Asia**

30. Presentations were given on progress in supporting the countries in Eastern Europe, the Caucasus and Central Asia to report more comprehensive data. The Task Force discussed the informal feedback collected from those countries on the obstacles to reporting. It was decided to make that feedback available on the Task Force website.

31. An update was provided on the project funded by Norway to translate the EMEP/EEA Air Pollutant Emission Inventory Guidebook into Russian, which was expected to conclude in spring 2011. ). The Task Force thanked Norway for providing the funds for translating the Guidebook, It was agreed that a reporting template in Russian would be made available on the Task Force website. It was decided to investigate ways to launch the Russian translation of the Guidebook in 2011.

32. A representative from the Russian Federation presented a proposal for a support network to support emission inventory experts in the countries of Eastern Europe, the Caucasus and Central Asia. The Task Force agreed with the creation of such a support network, which could act as a forum for technical experts, oversee translation of documents into Russian and help coordinate capacity-building activities.

33. The Task Force agreed to further investigate ways in which it could help with the improvement of inventories in the countries of Eastern Europe, the Caucasus and Central Asia.

## **VIII. Other issues**

34. The Task Force agreed to actively seek ways of contributing to the new Ad Hoc Expert Group on Black Carbon and to provide support to the revision process for the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol). It was noted that Party members attending the Working Group on Strategies and Review could contribute with points discussed at the Task Force.

35. The Task Force agreed that the attendance of the secretariat at past meetings of the Task Force had been very valuable and expressed its wish for it to attend future meetings if possible.

36. The Task Force expressed its appreciation to the Ministry of Labour and Social Insurance and Cyprus for hosting the meeting and to Norway, the United Kingdom and the EEA for providing financial support to Russian, Kazakhstan and EIONET country representatives respectively.

## **IX. Future work**

37. The Task Force agreed on the following main activities planned for 2011 to be submitted to the EMEP Steering Body in September 2010 for approval:

(a) Activities undertaken to maintain and improve the Guidebook, including in the areas of combustion and industry, transport, agriculture and nature, and projections, and liaison with the research community;

(b) Research topics to be included in the maintenance and improvement plan;  
and

(c) A future Task Force workshop/session on mapping and gridding emission estimates in preparation for Parties' mandatory reporting of gridded data in 2012.

38. The Task Force agreed to hold its next meeting in Stockholm in spring 2011 (provisionally scheduled for early May).

## Annex

### **Conclusions of the Joint Technical Workshop of the Task Force on Emission Inventories and Projections and the Task Force on Measurements and Modelling**

The workshop participants:

- (a) Agreed to suggest to the Ad Hoc Expert Group on Black Carbon that they create a “road map” for black carbon emission inventories and include a consideration of “brown carbon”;
  - (b) Concluded that there were a wide range of uncertainties assigned to wood activity statistics. However, investment in surveys resulted in the better quantification of estimates;
  - (c) Noted that better coordination of international energy agency surveys would be helpful and that, in that regard, consistent use of definitions would be a good aspect to improve;
  - (d) Noted that improvement of the meta-data provided with emission factors (e.g., whether cold start was included in emission factors for road transport) was an important improvement to measurement data;
  - (e) Agreed that there were clear and current opportunities to use existing measurements to improve current emissions estimates;
  - (f) Agreed that assessing emission uncertainties benefited from new assessment techniques (not just the Monte Carlo error analysis technique);
  - (g) Concluded that uncertainties in measurements needed to be location specific when using point source data, and that the specific measurement strategy was important;
  - (h) Noted that, despite automation, validation still required human expertise;
  - (i) Agreed that there was a need to improve the communications between the measurement, emissions and modelling communities;
  - (j) Concluded that there were still fundamental discrepancies between metal emission inventory estimates and those derived from modelling studies. There were also clear candidates for improving national emission estimates, and some emission sources which required further exploration, e.g., re-suspension;
  - (k) Noted that results of international projects needed to be better communicated to experts at the national level;
  - (l) Concluded that compiling short-term estimates required much more data and work hours and recommended that the Task Force and EMEP consider dedicating time to further investigate the importance of that area;
  - (m) Agreed that there was a clear need for reliable emission maps for modelling studies, which required a consistent approach between research projects and official reporting.
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