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**ECONOMIC COMMISSION FOR EUROPE**

**EXECUTIVE BODY FOR THE CONVENTION ON LONG-RANGE  
TRANSBOUNDARY AIR POLLUTION**

Twenty-sixth session  
Geneva, 15–18 December 2008  
Item 15 of the provisional agenda<sup>1</sup>

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

Thirty-second session  
Geneva, 8–10 September 2008  
Item 9 of the provisional agenda<sup>2</sup>

**DRAFT WORKPLAN FOR 2009**

Note by the secretariat

1. This draft workplan for EMEP follows the priorities of the Executive Body as reflected in recent workplans.
2. The EMEP programme provides scientific support to the Convention on atmospheric measurements and modelling; emission inventories and emission projections; integrated assessment modelling as well as on hemispheric transport of air pollution.

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<sup>1</sup> ECE/EB.AIR/95.

<sup>2</sup> ECE/EB.AIR/GE.1/2008/1.

3. The work under EMEP is carried out in close cooperation by Parties, the four Task Forces under EMEP (the Task Force on Emission Inventories and Projections (TFEIP), the Task Force on Integrated Assessment Modelling (TFIAM), the Task Force on Measurements and Modelling (TFMM); and the Task Force on Hemispheric Transport of Air Pollution (TFHTAP)); the five EMEP Centres (the Chemical Coordinating Centre (CCC), the Centre for Integrated Assessment Modelling (CIAM), the Meteorological Synthesizing Centre-East (MSC-East), the Meteorological Synthesizing Centre-West (MSC-West) and the EMEP Centre on Emission Inventories and Projections (CEIP)) and, where relevant, other bodies under the Convention. They will report on the activities carried out to the thirty-second session of the EMEP Steering Body. The EMEP Steering Body Bureau will also report on its activities to the thirty-second session.

4. Wherever relevant and possible, the Task Forces and EMEP Centres cooperate with other organizations, programmes and projects, including: the Arctic Monitoring and Assessment Programme (AMAP); the East Asian Acid Deposition Monitoring Network (EANET); the European Commission's Directorate General for the Environment and its Joint Research Centre (JRC); the European Environment Agency (EEA), (including its European Topic Centre for Air and Climate Change (ETC/ACC)); the Intergovernmental Panel on Climate Change (IPCC); the International Geosphere-Biosphere Programme (IGBP) and its International Global Atmospheric Chemistry (IGAC) activity; the marine commissions; the United Nations Environment Programme (UNEP); the United Nations Framework Convention on Climate Change (UNFCCC); the World Meteorological Organization (WMO), including its Global Atmosphere Watch (GAW) programme; and the European Centre for Medium-range Weather Forecasts (ECMWF).

5. The numbering and formatting in this workplan are consistent with that of past Executive Body workplans.

## **2.1 EMISSIONS**

Description/objectives: To further develop emission inventories; improve the quality, transparency, consistency, completeness and comparability of reported emission and projection data; support the review of compliance; and assist Parties with their emission reporting. TFEIP, led by Norway and co-chaired by Sweden and EEA, provides a technical forum for sharing information, harmonizing emission factors, establishing methodologies for the evaluation of emission data and projections, and identifying and resolving reporting problems, with a view to harmonizing as far as possible reporting requirements with UNFCCC and the European Union's National Emission Ceilings (NEC) directive.

Main activities by Parties:

- (a) Submit emission data for 2007 and projections and updates regarding data for earlier years by 15 February 2009, gridded data by 1 March 2009 and Informative Inventory Reports by the 15 March in accordance with revised “Guidelines for Reporting Emission Data under the Convention on Long-range Trans-boundary Air Pollution”<sup>3</sup>;
- (b) Support the review of emission data through communication with the review teams and by supporting the Stage III review with nominated reviewers, responsible for the compilation of specific country review reports;
- (c) Maintain and establish where appropriate national activities to improve the compilation of information on emissions and projections;
- (d) Support maintaining and updating the Emission Inventory Guidebook;

Main activities by the EMEP Centres:

- (a) Compile revised emission data, update the inventory database and make it available at <http://www.emep-emissions.at/emission-data-webdab/> by 15 June 2009. Update the database with the late submissions by 1 December 2009 (CEIP);
- (b) Review reported national emission data in line with the stage 1 and stage 2<sup>4</sup> review procedures and produce a European overview and country specific “Stage 1 status reports” by 10 March 2009 and “Stage 2 Synthesis and assessment reports” by 31 May 2009 for data submitted during the 2009 reporting round (CEIP, EEA);
- (c) Implement stage 3 review procedures<sup>5</sup>, provide technical support to the reviewers, coordinate the review process, and maintain the list of eligible reviewers and set-up review teams. Selection of the countries to be reviewed will be in consultation with the Implementation Committee. (CEIP, TFEIP);

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<sup>3</sup> 2009 will be the first year for Parties to report according to the revised Reporting Guidelines.

<sup>4</sup> The stage 2 review will be performed jointly with European Environment Agency (EEA).

<sup>5</sup> Subject to approval by the Steering Body ECE/EB.AIR/2008/4.

(d) Elaborate a data set of validated and complete emission data submitted during the 2009 reporting round by 15 April 2009 for use in the EMEP 2007 assessments. Increase the transparency in use of non-Party estimates for modelling (CEIP, MSC-W, MSC-E);

(e) Review sulphur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), ammonia (NH<sub>3</sub>) and particulate matter (PM) emissions (MSC-W) and heavy metals and persistent organic pollutant (POP) emissions for modelling purposes (MSC-E);

(f) Support the secretariat and Implementation Committee by providing an overview of emission data reported by Parties to protocols by 30 March 2009 (CEIP);

(g) Establish cooperation with Eastern Europe, Caucasus and Central Asia (EECCA) on methodologies for emissions (CEIP);

(h) New developments on emission data reviews: In 2009 the review task will include further improvement of tests as proposed by TFEIP, and will seek to achieve a common approach to prioritizing and monitoring inventory improvements with UNFCCC and the European Union National Emission Ceilings (NEC) Directive (CEIP);

(i) New developments to support emission reporting by Parties: Where appropriate enhance the use of alternative ways to facilitate Parties' submissions of annual emission data to the secretariat, including through the EEA Reportnet Central Data Repository. Maintain tools for Parties to test reported inventories (CEIP);

(j) New developments in the emission database: Adapt the CEIP emission database and webpage to facilitate implementation of the new Emission Inventory Reporting Guidelines to be applied for the 2009 reporting round. Consider further technical improvements of the data system with the aim of providing consistent information in a transparent manner and in real time (CEIP, TFEIP);

(k) New developments for gridded data: Consider actions to improve the transparency and robustness of gridded data (CEIP).

#### Main activities by TFEIP

(a) Evaluate and support the stage 2 and stage 3 review processes, and consider a plan for future maintenance and improvement of guidelines for reviewers and templates for review reports;

(b) Consider and propose further actions to close the gap between official emission data for heavy metals and POPs and modelling results in close collaboration with the modelling community (TFEIP, TFMM, MSC-E);

(c) Consider actions to improve emission reporting from EECCA countries, to cover the extended EMEP area with officially reported data, with the aim of reducing expert estimates to the extent possible;

(d) Develop a plan for future maintenance and improvement of the EMEP/EEA Air Pollutant Inventory Guidebook in cooperation with EEA;

(e) TFEIP to hold its twenty-second meeting in spring 2009 and its twenty-third meeting in autumn of 2009 and report to the thirty-third session of the Steering Body.

## **2.2 ATMOSPHERIC MEASUREMENTS AND MODELLING**

Description/objectives: To support the implementation of protocols to the Convention; provide the measurement and modelling tools necessary for further abatement policies; compile and evaluate information on transboundary air pollution; and implement the EMEP monitoring strategy adopted in 2004. The Task Force on Measurements and Modelling, led by France and co-chaired by WMO, reviews and assesses the scientific and operational activities of EMEP related to monitoring and modelling, evaluates their contribution to the effective implementation and further development of the protocols, and reviews national activities related to measurement, modelling and data validation.

### Main activities by Parties:

(a) Submit monitoring data for 2008 to CCC by 31 July 2009, in accordance with the adopted monitoring strategy (EB.AIR/GE.1/2004/5) and decisions from the Steering Body;

(b) Make efforts to implement the EMEP monitoring strategy fully, explore options to reduce the timeline of observation data submission, investigate possible caveats in the recommended standard methods and report on progress to the TFMM in May 2009;

(c) Contribute, to the extent possible, to the EMEP field campaigns that will be held in 2008-2009 and aim at improving our understanding of PM pollution, promote urban and fine

scale assessments of air quality, in particular O<sub>3</sub> and PM, by linking urban exposure information with measurement data, emission inventories and atmospheric dispersion models;

- (d) Support the revision of the new EMEP strategy in 2009.

Main activities by the EMEP Centres:

- (a) Provide validated data on concentrations, depositions and transboundary fluxes of SO<sub>x</sub> and NO<sub>x</sub> and reduced nitrogen, O<sub>3</sub>, VOCs and particulate matter PM<sub>2.5</sub> and PM<sub>coarse</sub> for 2007 over the extended (eastward) EMEP domain ; update source-allocation calculations including EECCA countries and present their status in 2007 (MSC-W, CCC);

- (b) Recalculate source-receptor relationships for 2000 to 2006 with the open source version of the EMEP model, in order to reach consistency in trends results (MSC-W);

- (c) Provide validated data on concentrations, depositions and transboundary fluxes of heavy metals (mercury (Hg), lead (Pb) and cadmium (Cd)) and POPs for 2007 over the extended (eastward) EMEP domain, and update source-allocation calculation, including EECCA countries (MSC-E, CCC);

- (d) Prepare individual country status reports; update web access to electronic source-allocation information with validated data for the main pollutants and PM and for heavy metals and POPs (MSC-W, MSC-E);

- (e) Review, store and make available the 2008 monitoring data; assess uncertainties in, and the representativeness of, monitoring data required by the EMEP monitoring strategy (CCC, MSC-E and MSC-W);

- (f) Provide access to validated databases with EMEP measurement data in 2008 by 31 December 2009 (CCC), after joint revision with MSC-E and MSC-W and bilateral discussions with Parties experts;

- (g) Arrange laboratory intercomparisons for the main pollutants, heavy metals, elemental carbon/organic carbon (EC/OC) and POPs, and carry out field intercomparisons at selected sites (CCC, Parties);

- (h) Update and improve the EMEP Manual for Sampling and Analysis and update the section on quality assessment/quality control on the Internet (CCC);

- (i) Review the implementation of the 2004-2009 monitoring strategy and provide training/guidance to Parties' experts to establish monitoring activities in compliance with it (CCC, TFMM);
- (j) Continue support and training in EECCA countries (CCC, MSC-East and MSC-W).

Main activities and time schedule for acidification and eutrophication:

- (a) New developments in nitrate chemistry: Investigate coarse nitrate formation in dust and sea salt particles (MSC-W);
- (b) New developments in nitrate chemistry: Identify the influence of HNO<sub>2</sub> chemistry in OH radical formation and its effect on the formation of atmospheric nitrate (MSC-W);
- (c) New developments with increased spatial resolution: Investigate the role of spatial resolution in our understanding of reduced nitrogen air concentrations and trends (MSC-W).

Main activities and time schedule for photo-oxidants:

- (a) New developments with increased spatial resolution: Start evaluation of the changes needed in regional scale chemical models to improve their performance in local/urban scale applications. (MSC-W);
- (b) Source receptor calculations (MSC-W);
- (c) New developments with VOCs: Evaluate and extend the VOCs monitoring programme, audit national VOCs monitoring laboratories, and support training and assistance (CCC).

Main activities and time schedule for heavy metals:

- (a) New developments in mercury deposition: Consider nationally available measurements on dry deposition of Hg to forests to evaluate measurement uncertainties and improve model parameterization (CCC, MSC-E, Parties);

(b) New developments in ecosystem dependent deposition: Evaluate ecosystem-dependent depositions of heavy metals and contribute to the development of the effect-based approach (MSC-E, CCE);

(c) New developments in heavy metal dispersion modelling: Continue to develop the heavy metal model parameterization including improvement of the wind re-suspension scheme and implementation of aerosol size-segregated description and removal processes (MSC-E);

(d) New developments in Hg chemistry: Update the Hg chemical scheme in the regional and global models based on new findings of the research community (MSC-E);

(e) New developments in meteorological data preparation: Investigate the possibility to update meteorological drivers by application of WRF (Weather Research and Forecasting Model).

#### Main activities and time schedule for POPs:

(a) New developments in POP gas/particle partitioning: Further refine the description of POP gas/particle partitioning (MSC-E);

(b) New developments in POP deposition processes: Improve the model description of depositions of POPs in the particulate phase on the basis of information on spatial and temporal aerosol distribution and chemical composition (MSC-E);

(c) New developments with inverse modelling: Continue to develop the inverse modelling approach for the analysis of differences between measurements and modelling results (MSC-E);

(d) New developments in the study of climate effects on POPs: Further investigate possible approaches to the evaluation of the influence of climate change on the fate and behaviour of POPs (MSC-E);

(e) New developments with POP monitoring: Continue to evaluate the POPs passive measurements campaign on the hemispheric level and compare with modelling results; evaluate the EMEP monitoring strategy in relation to the outcome of the campaign as well as with the UNEP global monitoring strategy, and report conclusions to TFMM (MSC-East, CCC).

#### Main activities and time schedule for PM:



- (a) New developments in PM chemistry: Evaluate alternative methods for the calculation of water in PM and its influence on PM mass calculations (MSC-W);
- (b) New developments in PM chemistry: Investigate to what extent information on the diurnal and seasonal variation of aerosol components from the EMEP campaigns can contribute to a better understanding of the origin of PM in air (MSC-W, CCC);
- (c) New developments in PM chemistry: Investigate to what extent new information on secondary organic aerosol is available and make use of the results as appropriate (MSC-W);
- (d) New developments in PM deposition: Investigate different approaches for evaluating the dry deposition of particles and its influence on total PM mass calculations (MSC-W);
- (e) New developments using integrated measurements: Evaluate the newly implemented wind-blown dust parameterization with satellite aerosol optical depth (AOD) information and campaign data (MSC-W);
- (f) New developments with monitoring carbonaceous aerosol: Continue efforts to develop a reference method for improved sampling and chemical analysis of carbonaceous material in aerosols (CCC);
- (g) New developments with EMEP campaigns: Coordinate and carry out the intensive advanced measurements between 25 February and 26 March 2009 (CCC, Parties);
- (h) New developments in study of climate effects on PM: Investigate possible approaches to the evaluation of the influence of climate change on the fate and behaviour of PM (MSC-W).

Main activities by TFMM:

- (a) Report to the EMEP Steering body (2009) on the implementation of a new procedure for measurement data reporting that should improve the time of data availability;
- (b) Report data and start evaluating the results from the intensive measurements made in September 2008 (Parties, CCC, MSC-W,);
- (c) Propose a strategy, based on national emission inventories and measurement and modelling data, for better accounting for urban scale contributions to air pollution patterns;

(d) Organize a joint meeting with TFHTAP, tentatively in May 2009 in Paris, France, focusing on regional to global modelling and climate interaction;

(e) Hold the tenth meeting of the Task Force in March 2009 and report to the thirty-third session of the Steering Body.

### **2.3 INTEGRATED ASSESSMENT MODELLING**

Description/objectives: To analyse scenarios on cost-effective reduction of acidification, eutrophication, tropospheric ozone and PM pollution. Modelling will cover: (i) abatement options for reducing sulphur, nitrogen oxides, ammonia, VOCs and primary PM, including structural measures in energy, transport and agriculture, and their costs; (ii) projections of emissions; (iii) assessments of the atmospheric transport of substances; and (iv) analysis and quantification of environmental and health effects and benefits of emission reductions. The Task Force on Integrated Assessment Modelling, led by the Netherlands, will guide the work of CIAM at the International Institute for Applied Systems Analysis (IIASA) and encourage and support national modelling activities by its National Focal Points.

#### Main activities by Parties

(a) All Parties submit updated projections energy and activity projections compatible with climate change policies by 31 May 2009;

(b) Share experiences in integrated assessment modelling via the new Network for National Integrated Assessment Modelling.

#### Main activities by the EMEP Centres:

(a) Establish the basic requirements and analyse 2020 scenarios to support the revision of the Gothenburg Protocol, for discussion at the forty-fifth session of the Working Group on Strategies and Review in September 2009 and to be presented at the twenty-seventh session of the Executive Body in December 2009.

#### Main activities by TFIAM

- (a) Contribute to the revision of the Gothenburg Protocol, including the review of national energy projections and aspirational environmental targets and related abatement, links to structural changes and climate change and analysis of uncertainties and robustness (TFIAM, CIAM, Parties, Network for National Integrated Assessment Modelling);
- (b) Collaborate with the Task Force on Reactive Nitrogen, in particular on the avoidance of pollution swapping (TFIAM, CIAM, Parties);
- (c) Collaborate with the TFHTAP, in particular on boundary conditions and future hemispheric emissions (TFIAM, CIAM, Parties);
- (d) Collaborate with the Working Group on Effects, in particular on additional analyses of ecosystem effects by the Coordination Centre for Effects using emission scenarios from the GAINS model, on using dynamic models and on the development of policy-relevant indicators, including those for biodiversity (TFIAM, CIAM, Working Group on Effects);
- (e) Proceed with the second phase of the GAINS model review in collaboration with the European Commission (TFIAM, CIAM);
- (f) Hold a workshop meeting of bilateral projects and a tutorial session on the GAINS model, tentatively in February 2009;
- (g) Hold its thirty-fifth meeting, tentatively in February 2009
- (h) Hold its thirty-sixth meeting, tentatively in June 2009;
- (i) Hold a workshop on the second phase of the review of the GAINS model, tentatively at the end of 2009;
- (j) Hold its thirty-seventh meeting, tentatively in December 2009);
- (k) Submit appropriate reports to the EMEP Steering Body and to the Working Group on Strategies and Review.

#### **2.4 HEMISPHERIC TRANSPORT OF AIR POLLUTION**

Description/objectives: To develop a fuller scientific understanding of the hemispheric transport of air pollution and estimate the hemispheric transport of specific air pollutants, the Task Force on the Hemispheric Transport of Air Pollution, led by the United States and the European

Community, coordinates activities, including collaboration with other international bodies, programmes and networks, both within and outside the UNECE region, with related interests.

Main activities by Parties:

- (a) Contribute with expertise on monitoring, emission estimates and modelling relevant to the policy relevant science questions identified by TFHTAP;
- (b) Actively support the participation of modelling groups in the model inter-comparison for the EMEP geographical region;
- (c) Conduct projects that contribute to the objectives of the TFHTAP such as the development of the global emission database (EDGAR HTAP), the global ground-based monitoring database and the NASA flight measurements database for evaluation of models.

Main activities by the EMEP Centres:

- (a) Participate in the TFHTAP model inter-comparison for O<sub>3</sub>, PM compounds POPs and heavy metals with the two EMEP global models (MSC-W, MSC-East);
- (b) Contribute to the TFHTAP 2010 assessment report on intercontinental transport of air pollution (MSC-E, MSC-W, CIAM, CCC);
- (c) New development - integrated EMEP global system: Evaluate the effect of using different geophysical and emission data in the existing global models used at the two meteorological synthesizing centres (MSC-E, MSC-W);
- (d) New development - integrated EMEP global system: Evaluate means for the flexible introduction of different meteorological drivers to be used in the common EMEP global model (MSC-E, MSC-W);
- (e) New development - integrated EMEP global system: Identify the changes in existing model routines that are necessary to facilitate common modules for global modelling in EMEP (MSC-W, MSC-E);
- (f) New developments for global emission data: Evaluate the new EDGAR THTAP global emission data in comparison with other available expert estimates (CEIP, MSC-W, MSC-E).

Main activities by TFHTAP:

- (a) Evaluate the developments in the modelling inter-comparison for intercontinental transport and trace the progress with the compilation of global emissions and monitoring databases;
- (b) Hold a workshop on emission inventories and projections, Hg and POPs, tentatively in January or February 2009 in St Petersburg, Russia;
- (c) Organize a joint meeting with TFMM tentatively in May 2009 in Paris, focusing on regional to global modelling and climate-air quality interactions, including adoption of the TFHTAP workplan for 2010;
- (d) Hold a workshop in autumn 2009;
- (e) Prepare for the 2010 assessment report on intercontinental transport of air pollution.

**2.5. COOPERATION WITH COUNTRIES IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA AND SOUTH-EASTERN EUROPE**

Description/objectives: To enhance cooperation with EECCA and South-East European (SEE) countries, to involve them in the activities of EMEP and to provide them assistance, as needed, to implement the EMEP programme, in particular with a view to obtaining emission data from these countries as well as to establishing monitoring and modelling activities.

Main activities by Parties:

- (a) Explore opportunities for providing bilateral assistance to EECCA and SEE countries in the field of emission inventories, monitoring and modelling;
- (b) To the extent possible, contribute to financial support of the representatives from EECCA and SEE to the meetings and workshops organized under the Convention;
- (c) (EECCA and SEE Parties) Seek to take part in the activities of EMEP, including through active participation in meetings of the EMEP Steering Body and its task forces; use every opportunity to voice needs and to seek donor assistance, inter alia, through formulating project proposals for capacity building.

Main activities by the EMEP Centres and task forces

(a) In collaboration with the EMEP Bureau and the secretariat, carry out a gap analysis in EECCA and SEE, through a questionnaire survey assessing the specific needs for assistance and the resources already available;

(b) On the basis of the outcome of the questionnaire survey, prepare, in cooperation with EECCA and SEE countries, an action plan for EMEP, with a time frame and cost estimates for the future steps to be taken;

(c) Explore opportunities for organizing subregional workshops to explain methodologies and to build capacity in emission inventories, monitoring and modelling.

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