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

Twenty-fourth session
Geneva, 11-14 December 2006
Item 11 of the provisional agenda

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

Thirtieth session
Geneva, 4-6 September 2006
Item 6 of the provisional agenda

REVISED DRAFT WORKPLAN FOR 2007¹

Note prepared by the secretariat in consultation with the Bureau

1. This draft workplan for EMEP follows the priorities of the Executive Body as reflected in recent workplans.
2. The work under EMEP is carried out in close cooperation by Parties, the four Task Forces under EMEP, the four EMEP Centres (the Chemical Coordinating Centre (CCC), the

¹ This document was revised by the Steering Body at its thirtieth session for submission to the twenty-fourth session of the Executive Body.

Centre for Integrated Assessment Modelling (CIAM), the Meteorological Synthesizing Centre – East (MSC-E) and the Meteorological Synthesizing Centre – West (MSC-W)) and, where relevant, other bodies under the Convention.

3. 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 Clean Air for Europe (CAFE) programme 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).

4. 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. The Task Force on Emission Inventories and Projections, 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 and time schedule:

(a) Submit emission data for 2005 and projections and updates regarding data for earlier years by 15 February 2007 and 1 March 2007 for gridded data, in accordance with the

Emission Reporting Guidelines² (Parties);

(b) Compile reported emission data, update the inventory database and make it available at <http://webdab.emep.int> by 15 June 2007; provide tools for testing emission inventory quality, particularly to aid visualization of reported gridded data (MSC-W);

(c) Review reported data and produce a synthesis and assessment report for data through 2005; elaborate country-specific review reports; in 2007, the review will focus on the spatial distribution of emissions (MSC-W, CIAM, MSC-E, CCC, EEA and team of invited experts);

(d) Continue the assessment of large-point-source data compiled under the European Pollutant Emission Register (EPER) to further improve disaggregation of emission data and harmonize emission reporting (MSC-W, EEA);

(e) Complete the revision of the Emission Reporting Guidelines by 2007, in close collaboration with the revision of the European Union's National Emission Ceilings (NEC) directive and the IPCC Guidelines under UNFCCC (Task Force, MSC-W, CIAM);

(f) Consider and propose further actions to improve the quality of emission data for heavy metals and persistent organic pollutants (POPs), taking into account different sets of emissions data (official and expert estimates – TNO, ESPREME, etc.) (Task Force, CCC, MSC-W, MSC-E, Parties);

(g) Support the update and restructuring of the *EMEP/CORINAIR Atmospheric Emission Inventory Guidebook* (Task Force, MSC-W, MSC-E);

(h) Further consider proposals for stage 3 in-depth reviews, defining the scope, responsibilities, methods and procedures for work, and transmit these to the Steering Body at its thirty-first session (Task Force, MSC-W);

(i) Follow up on the Capacity-Building Workshop on Air Emission Inventories held on 17-18 October 2005 by, for example, developing synergies with the CAPACT project and training activities of EEA and TACIS on air emission reporting; transmit results of workshops to

² The EMEP Emission Reporting Programme for 2006/2007 is presented in table 1 below

the Working Group on Strategies and Review as input into its action plan for countries of Eastern Europe, Caucasus and Central Asia (EECCA)³ (Task Force)

(j) The Task Force will hold its seventeenth meeting jointly with EIONET on 31 October – 2 November 2006 in Thessaloniki (Greece); a workshop on emission projections will be held on 30–31 October 2006, (Task Force on Emission Inventories and Projections and Task Force on Integrated Assessment Modelling, United Kingdom).

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 the United Kingdom 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 and time schedule for monitoring:

(a) Submit monitoring data for 2006 to CCC by 1 October 2007, in accordance with the adopted monitoring strategy (EB.AIR/GE.1/2004/5) (Parties);

(b) Review, store and make available the 2006 monitoring data (CCC, MSC-W, MSC-E); assess uncertainties relating to, and the representativeness of, monitoring data on heavy metals and POPs (CCC, MSC-E);

(c) Make efforts to fully implement the EMEP monitoring strategy and report on progress to the Task Force in May 2007 (Parties, CCC);

(d) Complete the intensive measurements campaigns (June 2006 and January 2007) on particulate matter (PM) and chemical speciation of different-size fractions; evaluate the results and compare these with model results; include the results in the PM assessment report (CCC, MSC-W, Parties);

³ Action Plan to Involve EECCA Countries in the Work of the Convention (EB.AIR/WG.5/80, annex).

- (e) Improve the *EMEP Manual for Sampling and Analysis* (CCC) and update the section on quality assessment/quality control; expand the quality assessment information available on the Internet; implement the “level” approach of the monitoring strategy; provide training/guidance to Parties to establish level 2 and 3 monitoring sites (CCC, Task Force);
- (f) Provide a reference method for improved sampling and chemical analysis of carbonaceous material in aerosols (CCC);
- (g) Evaluate flux measurements of nitrogen and sulphur species to improve dry deposition estimates; compare the low-cost denuder with filterpack measurements and regular denuders to evaluate the quality of the different methods for separating gaseous and particulate nitrogen species (CCC);
- (h) Arrange laboratory intercomparisons for main components and heavy metals; carry out field intercomparisons at selected sites (CCC; Task Force); develop laboratory intercomparisons on elemental carbon/organic carbon (EC/OC) (CCC);
- (i) Review heavy metals monitoring data (mosses, forests, etc.) generated in the framework of the Working Group on Effects and make recommendations for their use in model validation (CCC, MSC-E);
- (j) Consider nationally available measurements on dry deposition of mercury to forests to evaluate measurement uncertainties and improve model parameterization (CCC, MSC-E, Parties);
- (k) Support the organization of a pilot study using passive and active air samplers to monitor POPs across the EMEP domain in order to provide spatially and temporally resolved air concentration data (CCC, MSC-E, Parties);
- (l) Evaluate the POP passive measurements campaign and compare with modelling; evaluate the EMEP monitoring strategy in relation to the outcome of this campaign as well as UNEP’s global monitoring strategy; report conclusions to the Task Force (MSC-E, CCC);
- (m) Evaluate and extend the volatile organic compound (VOC) monitoring programme; audit national VOC monitoring laboratories; support training and assistance (CCC);
- (n) Continue support and training for EECCA countries (CCC);

(o) Develop tools and guidelines to use integrated datasets (from satellites, LIDAR, etc.) in EMEP as part of the regular reporting and model evaluation (CCC, Task Force);

(p) Hold the eighth meeting of Task Force tentatively in May 2007 and include a session on national implementation of the monitoring strategy and the PM assessment report.

Main activities and time schedule for atmospheric modelling in general:

(a) Support and review national activities related to the implementation of the Unified EMEP model at the fine and ecosystem scales (Parties, Task Force, MSC-W);

(b) Promote urban fine-scale assessment tools, in particular on ozone and PM, by linking urban exposure assessments with national/regional/local emission inventories and atmospheric models (Parties, Task Force);

(c) Further develop the MSC-E models and report on progress, taking into account the recommendations of the model review (MSC-E);

(d) Explore possibilities for enhanced collaboration with the satellite, LIDAR and other remote sensing communities (CCC; Task Force, Parties);

(e) Complement EMEP data with quality-checked data from other international programmes and make a comprehensive comparison of observations with model results (CCC, MSC-E, MSC-W, Parties).

Main activities and time schedule for atmospheric modelling for acidifying and eutrophying compounds:

(a) Provide validated data on concentrations, depositions and transboundary fluxes of sulphur and oxidized and reduced nitrogen for 2005; update source allocation calculation (MSC-W, CCC);

(b) Provide preliminary data on concentrations and depositions of sulphur and oxidized and reduced nitrogen, using the most recent emission and meteorological data;

(c) Evaluate and report trends relating to sulphur and nitrogen compounds across Europe to support the review of the Gothenburg Protocol (MSC-W, CCC, Task Force);

(d) Evaluate the impact of implementing a new calculation of ammonia emissions in the EMEP model (MSC-W; Task Force);

(e) Investigate the use of the Unified Eulerian model with different meteorological drivers to increase the spatial resolution of the model and facilitate ecosystem deposition analysis (MSC-W, United Kingdom, Croatia).

Main activities and time schedule for atmospheric modelling for photo-oxidants:

(a) Provide validated data on concentrations, depositions and transboundary fluxes of ozone, nitrogen oxides and VOCs for 2005 and update source allocation calculations (MSC-W, CCC);

(b) Provide preliminary data on concentrations and depositions of ozone, nitrogen oxides and VOCs using the most recent emission and meteorological data;

(c) Calculate the short-term and long-term exposures of vegetation to photochemical oxidants for vegetation growing periods; apply the revised dry deposition sub-routine and develop methods to evaluate exceedances of critical levels (MSC-W, CIAM, Working Group on Effects);

(d) Investigate methods to calculate ozone levels relevant to human exposure in urban areas (MSC-W, Parties, Task Force);

(e) Evaluate VOC speciation of emissions in the Unified EMEP model and the validity of the model results by comparison with monitoring data (CCC, MSC-W);

(f) Quantify uncertainties in modelled results related to vertical profiles of air pollution; provide a first evaluation for the Mediterranean area (MSC-W, France).

Main activities and time schedule for atmospheric modelling for heavy metals:

(a) Prepare information on lead, cadmium, and mercury for 2005: air concentrations and ecosystem-dependent depositions over Europe; comparison of modelling results (concentration in air and precipitation, deposition fluxes) with monitoring data; country-to-country deposition matrices; estimates of depositions on regional seas (Mediterranean, Baltic, Black and North Seas) (MSC-E, CCC);

(b) Improve model description of heavy metal deposition processes; develop a model for the second-priority metals (As,Cr, Cu, Ni, Zn, Se) and make pilot calculations of the atmospheric transport and depositions of these metals in Europe (MSC-E);

(c) Prepare input data for the model application; employ the ECMWF reanalysis for data pre-processing; prepare mapped anthropogenic emission data for regional modelling based both on official and expert estimates (MSC-E);

(d) Evaluate ecosystem-dependent depositions of heavy metals and contribute to the development of the effect-based approach (MSC-E, CCC).

Main activities and time schedule for atmospheric modelling for POPs:

(a) Prepare information on polycyclic aromatic hydrocarbons (PAHs) and toxic congeners of dioxins/furans (PCDD/Fs) for 2005: air concentrations and depositions over Europe; comparison of modelling results (concentration in air and precipitation, deposition fluxes) with monitoring data; country-to-country matrices; estimates of depositions on marginal seas (Mediterranean, Baltic, Black and North Seas); evaluation of media response to a possible emission reduction scenario for PCDD/Fs (MSC-E, CCC);

(b) Further develop the MSCE-POP model in accordance with the recommendations of the model review: refine datasets of physical-chemical properties used in modelling; develop the model parameterization for POP resuspension and volatilization from soils and improve the model description of degradation in the atmosphere and deposition processes and seasonal variations of main processes (MSC-E);

(c) Prepare input data for the model application; use the ECMWF reanalysis for the data preprocessing; prepare mapped emission data for regional modelling based on both official and expert estimates (MSC-E);

(d) Complete stage III of the MSCE-POP model intercomparison study (comparison of different model approaches to ranking a number of reference chemicals with respect to long-range transport potential and overall persistence) and the analysis of agreement and discrepancies between model simulations of previous stages; cooperate with national experts on POP modelling issues (MSC-E, Parties)

(e) Assess the atmospheric behaviour of possible new POPs;

(f) Investigate the possibility of applying inverse modelling for selected POPs on the basis of measurement data, including passive sampling; (MSC-E).

Main activities and time schedule for atmospheric modelling for fine particulates:

(a) Prepare information for 2005 on transboundary transport and air concentrations fields of PM_{2.5} and PM₁₀ in the EMEP area (50 km × 50 km); calculate 2005 source allocation matrices and evaluate health indicators (MSC-W, CIAM);

(b) Provide preliminary information about the concentrations of PM using the most recent emission and meteorological data;

(c) Analyse the chemical composition of PM in Europe, in particular for carbonaceous contributions, differentiation between primary and secondary organic aerosols and assessment of the effect of biogenic versus anthropogenic emissions on the formation of organic aerosols (Task Force, MSC-W, CCC);

(d) Continue work on source apportionment and chemical mass closure of PM using the output from the intensive measurement periods as well as available results from other advanced measurement campaigns (CCC, MSC-W, Parties);

(e) Prepare a PM assessment report building upon the detailed national particle monitoring and assessment work as well as the results from the intensive measurement periods (Parties, Task Force, CCC).

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 and time schedule:

- (a) Update national energy and emission scenarios (CIAM, Parties);
- (b) Report on the model for agricultural emissions (CIAM);
- (c) Update baseline energy and emission scenarios for 2010, 2015 and 2020 covering all Parties to the Convention within the geographical scope of EMEP, for the review of the 1999 Gothenburg Protocol (CIAM, Parties);
- (d) Improve treatment of negative cost measures in the GAINS model and report on provisional results from GAINS model optimization (CIAM);
- (e) Further develop methods for including dynamic ecosystem modelling and modelling of the nitrogen cycle in integrated assessment modelling (CCE, CIAM);
- (f) Further explore options for target setting on environmental endpoints in integrated assessment models and analyse the robustness of alternative emission reduction scenarios (Task Force, CIAM);
- (g) Analyse the effects of hemispheric pollution scenarios (Parties, MSC-W, CIAM, Task Force on Hemispheric Transport of Air Pollution);
- (h) Further evaluate sectoral trends and maximum feasible emission reductions, taking into account non-technical measures, new emerging technologies and abatement of ships emissions (CIAM, MSC-W);
- (i) Hold the thirty-third meeting of the Task Force in May 2007 in Prague.

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 and time schedule:

- (a) Draft and finalize an interim assessment report as input to the review of the 1999 Gothenburg Protocol (Task Force);
- (b) Work further on the policy-relevant science questions identified by the first meeting of the Task Force;
- (c) Continue the model intercomparison and evaluation exercise and the development of intercomparison tools and information infrastructure begun at Workshop on Intercontinental Transport Modelling Intercomparison held on 30-31 January 2006 (Task Force; CCC, MSC-E, MSC-W);
- (d) Continue outreach efforts directed at experts in countries outside the UNECE region;
- (e) Hold the third Task Force meeting in late May or early June 2007, tentatively in London;
- (f) Hold a workshop on integrated observations for assessing intercontinental transport in Geneva in January/February 2007;
- (g) Hold a workshop to further prepare the 2009 Task Force assessment report in October/November 2007.

Table 1. The EMEP Emission Reporting Programme for 2006/2007

Emission data should be submitted to the secretariat by **15 February 2007**. Gridded data should reach the secretariat no later than **1 March 2007**. This table is a summary of the information contained in the Emission Reporting Guidelines.

Description of contents	Components	Reporting years ¹
YEARLY: MINIMUM (and ADDITIONAL)		
A. National totals:		
1. Main pollutants	SO _x , NO _x , NH ₃ , NMVOC, CO	1980–2005
2. Particulate matter	PM _{2.5} , PM ₁₀ , TSP	2000–2005
3. Heavy metals	Pb, Cd, Hg / (<i>As, Cr, Cu, Ni, Se, Zn</i>)	1990–2005
4. POPs	(See note 2)	1990–2005
B. Sector emissions:		
1. Main pollutants	SO _x , NO _x , NH ₃ , NMVOC, CO	1980–2005
2. Particulate matter	PM _{2.5} , PM ₁₀ , TSP	2000–2005
3. Heavy metals	Pb, Cd, Hg / (<i>As, Cr, Cu, Ni, Se, Zn</i>)	1990–2005
4. POPs	(See note 2)	1990–2005
5-YEARLY: MINIMUM REPORTING		
C. Gridded data in the EMEP 50 × 50 km² grid		
1. National totals	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	1990, 1995, 2000 and 2005 (PM for 2000 and 2005)
2. Sector emissions	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	1990, 1995, 2000 and 2005 (PM for 2000 and 2005)
D. Emissions from large-point sources	Main pollutants, HM, PCDD/F, PAHs, HCB, PM	2000
E. Historical and projected activity data and projected national total emissions		
1. National total emissions	See table IV 2A in the Emission Reporting Guidelines	2010, 2015 and 2020
2. Energy consumption	See tables IV 2B and 2C in the Emission Reporting Guidelines	1990, 1995, 2000, 2010, 2015 and 2020
3. Energy consumption for transport sector	See table IV 2D in the Emission Reporting Guidelines	1990, 1995, 2000, 2010, 2015 and 2020
4. Agricultural activity	See table IV 2E in the Emission Reporting Guidelines	1990, 1995, 2000, 2010, 2015 and 2020
5-YEARLY: ADDITIONAL REPORTING FOR REVIEW AND ASSESSMENT PURPOSES		
VOC speciation / Height distribution / Temporal distribution	Parties are encouraged to review the information used for modelling at the Meteorological Synthesizing Centres, available at http://webdab.emep.int/ and http://www.emep.int/index_data.html	
Land-use data / Mercury breakdown		
% of toxic congeners of PCDD/F emissions		
Pre-1990 emissions of PAHs, HCB, PCDD/F and PCB		
Information on natural emissions		

^{1/} As a minimum, data for the base year of the relevant protocol and from the year of entry into force of that protocol to the latest year should be reported.

^{2/} Aldrin, chlordane, chlordecone, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), Mirex, toxaphene, hexachlorocyclohexane (HCH), hexabromobiphenyl, polychlorinated biphenyls (PCBs), dioxins/furans (PCDD/F), polycyclic aromatic hydrocarbons (PAHs), and as additional information: short-chain chlorinated paraffins (SCCP) and pentachlorophenol (PCP). (See Emission Reporting Guidelines.)