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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)
(Twenty-ninth session, Geneva, 5-7 September 2005)
Item 6 of the provisional agenda

DRAFT WORKPLAN FOR 2006

Note prepared by the secretariat in consultation with the Bureau

1. This draft workplan for EMEP follows the priorities of the Executive Body reflected in recent work-plans.
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 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

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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 is 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 in their reporting tasks. The Task Force on Emission Inventories and Projections, led by Norway and co-chaired by the European Environment Agency (EEA), provides a technical forum to share information, harmonize emission factors, establish methodologies for the evaluation of emission data and projections, identify and resolve problems related to reporting, and harmonize reporting requirements with UNFCCC and the European Pollutant Emissions Register (EPER).

Main activities and time schedule:

- (a) Submit emission data for 2004 and projections and updates to data for earlier years by 15 February 2006, or 1 March 2006 for gridded data, in accordance with the Emission Reporting Guidelines (Parties);
- (b) Compile the reported emission data, update the inventory database and make it available at <http://webdab.emep.int>, by 15 June 2006; provide tools for testing emission inventory quality, particularly to aid visualization of reported gridded data (MSC-W);
- (c) Review reported emission data and produce a synthesis and assessment report for data up to 2004. In 2006, the review will compare reported particulate matter (PM) emissions with baseline data used by CIAM (MSC-W, CIAM, MSC-E, CCC, EEA and team of invited experts);
- (d) Initiate assessment of large point source data compiled under EPER to further improve disaggregation of emission data and harmonize emission reporting (MSC-W, EEA);

- (e) Evaluate the effects of technology developments on emission factors and the consequences for time-series consistency and projected emissions, and propose relevant actions (CIAM, EEA, Task Force, Task Force on Integrated Assessment Modelling);
- (f) Initiate revision of the Emission Reporting Guidelines for completion by 2007 (Task Force, MSC-W, CIAM);
- (g) Propose additional quality assessment methods and procedures for detailed review of emissions data and uncertainties and assess resources needed (Task Force, EEA);
- (h) Develop methodologies to evaluate natural PM emissions (Task Force; MSC-W);
- (i) Take action to improve reporting from Eastern European, Caucasian and Central Asian (EECCA) and Balkan countries (Task Force);
- (j) Develop, maintain and promote the Atmospheric Emission Inventory Guidebook (EEA, Task Force, Parties);
- (k) Consider further actions to improve the quality of emission data for heavy metals and persistent organic pollutants (POPs), taking into consideration other work under the Convention (Task Force, CCC);
- (l) Carry out a centralized trial review of emission data as part of the inventory improvement programme (Task Force, Parties)
- (m) Fifteenth meeting of the Task Force in spring 2006, with emphasis on data quality, inventory review and the revision of the Emission Reporting Guidelines; sixteenth meeting jointly with EIONET in autumn 2006.

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 on measurements, modelling and data validation.

Main activities and time schedule for monitoring:

- (a) Submit monitoring data for 2005 to CCC by 1 October 2006, in accordance with the adopted monitoring strategy (EB.AIR/GE.1/2004/5) (Parties);
- (b) Review, store and make available the 2005 monitoring data (CCC, MSC-W, MSC-E);
- (c) Develop national plans for implementation of the EMEP monitoring strategy and respond to the relevant questionnaire, with particular emphasis on progress expected by the end of 2006, and report to the Task Force in May 2006 (Parties, CCC);
- (d) Identify crucial gaps in the implementation of the EMEP monitoring strategy and assess their consequences for achieving the overall objectives in relation to measurements, modelling and data validation activities (CCC, Task Force);
- (e) Improve EMEP Manual for Sampling and Chemical Analysis (CCC) and update quality assessment/quality control section; expand quality assessment information on Internet; implement the 'level' approach of the monitoring strategy; and provide training/guidance to Parties to establish level 2 and 3 monitoring sites (CCC, Task Force);
- (f) Develop a reference method and improve sampling and chemical analysis of carbonaceous material in aerosols. Organize two intensive measurement periods during 2006 with focus on particles and distribution of inorganic/organic species; compile information on national particle measurements (CCC, Parties);
- (g) Evaluate flux measurements of nitrogen and sulphur species to improve dry deposition estimates and arrange laboratory comparison for main components and heavy metals with field intercomparisons at selected sites (CCC; Task Force);
- (h) Evaluate the EMEP monitoring strategy in relation to UNEP's global monitoring strategy and report conclusions to the Task Force (MSC-E, CCC);
- (i) Evaluate and extend the volatile organic compound (VOC) monitoring programme; audit national VOC monitoring laboratories; and support training and assistance (CCC);

(j) The seventh meeting of Task Force will be held tentatively in May 2006, in Finland, and will include a session on national implementation of the monitoring strategy as well as investigation of satellite data use.

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) Review and evaluate the MSC-E model (Task Force);

(d) Develop further the MSC-E models and report on progress, taking into account the recommendations of the model review (MSC-E);

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

(f) Complement EMEP data with 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 2004; update source allocation calculation (MSC-W, CCC);

(b) Evaluate and report on the main mechanisms determining trends of sulphur and nitrogen compounds over Europe (MSC-W, CCC, Task Force);

(c) Revise the calculation of ammonia emissions in the EMEP model and investigate treatment of its deposition fluxes, in particular with respect to co-deposition with sulphur (MSC-W; Task Force);

(d) 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, UK).

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 2004 and update source allocation calculations (MSC-W, CCC);

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

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

(d) Analyse 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 2004: deposition and air concentrations fields in the EMEP area (50 km x 50 km); country-to-country deposition matrices; deposition to the regional seas; comparing model results for air concentrations and precipitation as well as deposition fluxes with measurements; and present calculations for Hg dispersion at the hemispheric scale for the evaluation of European pollution from global sources and boundary conditions for regional EMEP modelling (MSC-E);

(b) Further develop the MSC-E models and the input databases of geophysical and meteorological data for regional and hemispherical modelling (MSC-E);

(c) Prepare maps of depositions (exceedances) for different emission scenarios for the development of effects-based approaches (MSC-E, CCE);

(d) Prepare an overview report on best available emission data, including 1990 and recent years, on atmospheric transport, ambient concentrations and deposition of heavy metals for the sufficiency and effectiveness review of the Protocol on Heavy Metals. Carry out pilot model

calculations for atmospheric transport of arsenic, nickel, and chromium (MSC-E, CCC, MSC-W, TFEIP);

(e) Prepare a peer reviewed publication devoted to the third stage of the intercomparison study of Hg models (MSC-E, Bulgaria, Denmark, Germany, Sweden, and United States).

Main activities and time schedule for atmospheric modelling for POPs:

(a) Prepare information using 2004 data to evaluate concentration and deposition fields of PAHs and toxic congeners of PCDD/Fs and to assess source-receptor relationships. Compare model results for concentrations in air and precipitation and deposition fluxes with measurements; analyse contributions from northern hemisphere sources to the European region and the contribution of European sources to other regions for PCBs, HCB, and γ -HCH (MSC-E);

(b) Further develop the MSC-E model and its input databases of geophysical and meteorological data for regional and hemispherical modelling, paying special attention to POP transport in the marine environment at the hemispherical scale (MSC-E);

(c) Work on the third stage of the POP model intercomparison study; ranking a number of chemicals with respect to long-range transport potential and overall persistence (MSC-E, Parties);

(d) Work on evaluation of long-range transport potential and persistence of new substances (MSC-E);

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

(a) Prepare information for 2004 on transboundary transport and air concentrations fields of PM_{2.5} and PM₁₀ in the EMEP area (50 km x 50 km); calculate 2004 source allocation matrices and evaluate health indicators (MSC-W, CIAM);

(b) Analyse chemical composition of particulate matter 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 (MSC-W, CCC);

(c) Continue work on source apportionment and chemical mass closure of PM; further analyse the output from the elemental carbon/organic carbon (EC/OC) measurement campaigns (CCC, MSC-W, Parties);

(d) Initiate the preparation of a PM assessment report building upon the detailed national particle monitoring and assessment work (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) Develop and review baseline scenarios covering all Parties to the Convention within the geographical scope of EMEP, for the review of the Gothenburg Protocol (CIAM, Parties);

(b) Carry out an analysis of uncertainties and biases (CIAM, Parties);

(c) Explore options for target setting on environmental endpoints in integrated assessment models and analyse the robustness of alternative emission reduction scenarios (Task Force, CIAM);

(d) Develop methods for including dynamic ecosystem modelling and modelling of the nitrogen cycle in integrated assessment modelling (CCE, CIAM);

(e) Identify the systematic differences in costs and effects of abatement strategies based upon regional, national and urban/local-scale models (Task Force);

(f) Examine the effects of changes in hemispheric background pollution on integrated assessment modelling results in Europe (Parties MSC-W, CIAM);

- (g) Evaluate cost-effectiveness of measures to reduce regional air pollutants taking into account linkages with climate change policy (CIAM);
- (h) 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) Thirty-second meeting of the Task Force in May 2006. Thirty-third meeting later in the year, if appropriate.

2.4 HEMISPHERIC TRANSPORT OF AIR POLLUTION

Description/objectives: To develop a fuller scientific understanding of the hemispheric transport of air pollution and estimate such transport for specific air pollutants. The Task Force on the Hemispheric Transport of Air Pollution, led by the United States and the European Community, will coordinate activities, including collaboration with other international bodies and networks with related interests within and outside the UNECE region.

Main activities and time schedule:

- (a) Plan technical review on estimation of hemispheric transport of air pollutants for use in the reviews of protocols and report progress to the thirtieth session of the Steering Body of EMEP;
- (b) Hold a workshop on the development of a common methodology to compare and evaluate inter-continental source-receptor calculations (early 2006) (Task Force);
- (c) Link measurements at regional and hemispheric scales; investigate further the intercontinental transport of air pollution and assess its impact on European surface pollution levels, using the EMEP monitoring data (CCC, MSC-E, MSC-W);
- (d) Extend the modelling work to the whole northern hemisphere; present initial hemispheric model simulations with a focus on intercontinental source allocation, and contribute to intercontinental scale model inter-comparisons to be carried out by the Task Force (MSC-W);
- (e) Explore possible interaction between the work of EMEP and new initiatives such as the Global Monitoring for Environment and Security (GMES); develop a strategy to derive three-dimensional concentration fields for priority air pollutants on the basis of surface and satellite observations, remote sensing and other sensors (CCC, MSC-E, MSC-W);

- (f) Hold a workshop on emission scenarios (autumn 2006);
- (g) Plan a workshop on the use of integrated observations to evaluate models and inventories (late 2006/early 2007);
- (h) Hold a second meeting of the Task Force (spring 2006).

Table. The EMEP Emission Reporting Programme for 2005/2006

Emission data should be submitted to the secretariat by 15 February 2006. Gridded data should reach the secretariat no later than 1 March 2006. This table is a summary of the information contained in the Emission Reporting Guidelines (Air Pollution Studies Series, No. 15, 2004).

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	From 1980 to 2004
2. Particulate matter	PM _{2.5} , PM ₁₀ , TSP	From 2000 to 2004
3. Heavy metals	Pb, Cd, Hg / (<i>As, Cr, Cu, Ni, Se, Zn</i>)	From 1990 to 2004
4. POPs	(See note 2)	From 1990 to 2004
B. Sector emissions:		
1. Main pollutants	SO _x , NO _x , NH ₃ , NMVOC, CO	From 1980 to 2004
2. Particulate matter	PM _{2.5} , PM ₁₀ , TSP	From 2000 to 2004
3. Heavy metals	Pb, Cd, Hg / (<i>As, Cr, Cu, Ni, Se, Zn</i>)	From 1990 to 2004
4. POPs	(See note 2)	From 1990 to 2004
5-YEARLY: MINIMUM REPORTING		
C. Gridded data in the EMEP 50x50 km² grid		
1. National totals	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	For 1990, 1995 and 2000 (PM for 2000)
2. Sector emissions	Main pollutants, PM, Pb, Cd, Hg, PAHs, HCB, dioxins/furans	For 1990, 1995 and 2000 (PM for 2000)
D. Emissions from large point sources	Main pollutants, HM, PCDD/F, PAH, HCB, PM	For 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	For 2010, 2015 and 2020
2. Energy consumption	See tables IV 2B and 2C in the Emission Reporting Guidelines	For 1990, 1995, 2000, 2010, 2015 and 2020
3. Energy consumption for transport sector	See table IV 2D in the Emission Reporting Guidelines	For 1990, 1995, 2000, 2010, 2015 and 2020
4. Agricultural activity	See table IV 2E in the Emission Reporting Guidelines	For 1990, 1995, 2000, 2010, 2015, 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)