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

Twenty-second session  
(Geneva, 29 November - 3 December 2004)  
Item 4 of the provisional agenda

**PROGRESS IN CORE ACTIVITIES**

Note by the secretariat

**Introduction**

1. This note has been prepared to assist the Executive Body in its review and assessment of progress made in the following areas of cooperation within the scope of the Convention:

(a) Cooperative programme for monitoring and evaluation of the long-range transmission of air pollutants in Europe (EMEP), encompassing the two core activities:

(i) atmospheric monitoring and modelling; and (ii) integrated assessment;

(b) Effects of major air pollutants on human health and the environment, the third core activity identified by the Executive Body.

2. Progress in cooperation should be evaluated in relation to the 2004 work-plan for the implementation of the Convention, as adopted by the Executive Body at its twenty-first session (ECE/EB.AIR/79/Add.2, annex XII).

Documents prepared under the auspices or at the request of the Executive Body for the Convention on Long-range Transboundary Air Pollution for GENERAL circulation should be considered provisional unless APPROVED by the Executive Body.

3. At its twenty-first session, the Executive Body for the Convention took note of the updated medium-term work-plan for the further development of the effect-oriented activities (EB.AIR/WG.1/2003/4), as amended in the report on the twenty-second session of the Working Group on Effects (EB.AIR/WG.1/2003/2, paras. 44-46), and invited the Working Group on Effects and the Steering Body of EMEP to continue their close cooperation in implementing the priority tasks of the Convention (ECE/EB.AIR/79, para. 64 (e)).

4. Pursuant to decisions of the Executive Body, the Bureau of the Steering Body of EMEP and the Extended Bureau of the Working Group on Effects held their third annual joint meeting in March 2004 to reconsider and update their medium-term work-plans for 2004-2006.

5. A number of Parties have contributed significantly to the core activities by leading task forces, hosting coordinating centres, organizing workshops and seminars, and by designating experts to assist the secretariat in the preparation of draft documents for submission to relevant bodies or meetings. The number of Parties taking an active part in these activities further increased.

## **I. COOPERATIVE PROGRAMME FOR MONITORING AND EVALUATION OF THE LONG-RANGE TRANSMISSION OF AIR POLLUTANTS IN EUROPE (EMEP)**

6. The Steering Body held its twenty-eighth session in Geneva from 6 to 8 September 2004 (EB.AIR/GE.1/2004/2).

7. The Steering Body reviewed the progress in the work of its centres and Task Forces. It expressed its satisfaction with the progress achieved in all areas of work, in particular:

(a) The review of the unified EMEP model showed that the model was state of the art in terms of acidification, eutrophication and photo-oxidants and could be used for policy applications. Improvements over the old Lagrangian model included higher spatial resolution, more reliable treatment of transboundary transport and ecosystem-specific deposition. Further work was needed to improve confidence in the modelling of fine particles mass, even though the model calculated regional anthropogenic particulate matter (PM) fractions sufficiently accurately to assess the outcome of different control measures. The source-receptor calculations showed an increase of ecosystem area at risk of exceeding critical loads for acidification and eutrophication due to model and data improvements. A first draft base cation deposition map for Europe was compiled in cooperation between EMEP and the Working Group on Effects to provide background information for comparison with national data used in the calculation of critical loads and dynamic acidification modelling. The EMEP Meteorological Synthesizing Centre-West (MSC-W) would as a high priority further investigate the influence of interannual meteorological variability on source-receptor matrices. It would explore interactions with climate change and

assess from a modelling perspective the robustness of the effects indicators for ozone. The Steering Body agreed on the importance of hemispheric- and local-scale modelling and requested MSC-W to continue work on both;

(b) The Steering Body welcomed the EMEP contribution to the preparatory work for the review of the Protocol on Heavy Metals. The Meteorological Synthesizing Centre-East (MSC-E) supported the Expert Group on Heavy Metals with analysis of emission and measurement data as well as modelling results on the atmospheric transport of lead, cadmium and mercury. Emissions of heavy metals were clearly underestimated in some countries. The Steering Body called upon Parties to report emissions of heavy metals and invited the Task Force on Emission Inventories and Projections to provide guidance to Parties for improving their data quality. The MSC-E model on heavy metals would be reviewed at a workshop in November 2005. Germany would organize and support an intercomparison study for mercury measurements in 2005;

(c) Concerning the work on PM, the Steering Body recognized that emission data, especially for primary PM, were poor and requested Parties and the Task Force on Emission Inventories and Projections to work on improving data quality. It recognized the need for monitoring the chemical composition of PM and urged Parties to initiate monitoring programmes to address this. A workshop held in New Orleans, United States, in April 2004, reviewed the current state of PM measurement and modelling in Europe and North America and recommended priorities for future work (EB.AIR/GE.1/2004/16). The Steering Body recognized the need for further close cooperation between North American and European experts on PM;

(d) The Steering Body welcomed the work contributing to the review of the Protocol on Persistent Organic Pollutants (POPs). At the request of the Task Force on POPs, MSC-E provided analysis of emission data, data on measurements and modelling results on atmospheric transport and deposition of POPs for 1990-2001. MSC-E and the Chemical Coordinating Centre (CCC) would cooperate closely with the United Nations Environment Programme (UNEP) secretariat to the Stockholm Convention on improving emission inventories and the monitoring of POPs. MSC-E would continue working on the hemispheric modelling of POPs, also in cooperation with UNEP. The Steering Body called upon Parties to report emissions on POPs and invited the Task Force on Emission Inventories and Projections to provide guidance to Parties for improving emission data quality.

8. The Steering Body adopted the revised EMEP monitoring strategy for the period 2004-2009, as prepared by CCC and amended during the session, and urged Parties to take the necessary steps to ensure its effective implementation. Increasing the number of monitoring stations in Eastern Europe was a significant challenge requiring both technical and financial

assistance. CCC would organize a workshop on the implementation of the strategy in November 2004.

9. The Steering Body discussed the draft EMEP assessment report and its summary. It endorsed its contents including the summary and recommended the publication of the report.

10. The Steering Body noted that the review of the RAINS integrated assessment model indicated it was a scientifically reliable tool for policy advice. With regard to further exploring the linkages and synergies between air pollution and climate change policies, six greenhouse gases had been included in RAINS and an extension of the model allowed analysis of flexible mechanisms such as joint implementation, emission trading, etc. Preliminary model runs indicated that there was a huge potential for cost savings when addressing climate measures simultaneously with measures to reduce traditional air pollutants. There was a need to further address the impacts of climate change policies and effects and the interannual variation of source-receptor relationships, as well as include marine emissions into the model. Results of the CITY-DELTA project concerning urban PM and ozone pollution would be integrated into the model. A workshop on integrated assessment methodologies related to RAINS would be held in January 2005 hosted by the International Institute for Applied Systems Analysis (IIASA).

11. The Steering Body discussed development of the Clean Air for Europe (CAFE) programme baseline scenarios. The final scenario would be presented on 27 September 2004. Concerns were raised that the intense consultations between the Centre for Integrated Assessment Modelling (CIAM) and national experts had concentrated on European Union (EU) Member States. For future work on the review of the Gothenburg Protocol, it would be essential to establish and fund similar procedures for other Parties to the Convention. The Task Force on Integrated Assessment Modelling might need to hold two meetings in 2005 to develop the baseline scenarios and prepare for the review of the Gothenburg Protocol.

12. With regard to the status of emission data reporting (EB.AIR/GE.1/2004/10), the Steering Body noted that timeliness and completeness of submissions had improved over the previous year, though there were still gaps in the time series for many Parties, especially for the 1980s. There remained incomplete reporting of POPs, heavy metals and PM, in particular as gridded sectoral data.

13. The Steering Body discussed the differences between the revised and the previous emission reporting guidelines (EB.AIR/GE.1/2004/8), as requested by the Executive Body at its twenty-first session. Differences between the guidelines might imply differences between the reporting of national emission totals for the Gothenburg Protocol with those reported under the European Union National Emissions Ceilings (NEC) directive. As an immediate measure, the Steering Body requested the secretariat to adjust the reporting templates with added memo items,

and urged Parties to use these so that the differences between the old and the new guidelines were traceable. It was suggested that the long-term solution was to revise the 2002 Guidelines.

14. A note on emission inventory review and data quality assurance, prepared by the Chairman of the Steering Body in collaboration with the Bureau and the secretariat (EB.AIR/GE.1/2004/15), was submitted to the Working Group on Strategies and Review as requested by the Executive Body at its twenty-first session. The Steering Body stressed the need to develop further an inventory improvement programme to increase the quality of reported emission data. It urged all Parties, the EMEP centres and the Task Force to make further efforts to improve emission inventories. The Steering Body recommended that the Task Force should hold two meetings per year, with the spring meeting focused on inventory review, to enable reporting of results to the Steering Body in September.

15. The Steering Body noted progress in modelling hemispheric air pollution, invited MSC-W to continue this work and invited the Task Force on Measurements and Modelling and the other EMEP centres to collaborate. The United States planned to organize a hemispheric modelling workshop in 2006.

16. The Steering Body also discussed the signing of a formal working arrangement between the European Centre for Medium-range Weather Forecasts (ECMWF) and the Convention through an exchange of letters. The meteorological data held by ECMWF would greatly benefit the work of EMEP. It reviewed the proposed draft letters, made amendments and recommended them to the Executive Body (EB.AIR/GE.1/2004/2, annex).

17. The Steering Body amended and agreed upon its work-plan for 2005 (EB.AIR/GE.1/2004/13), prepared on the basis of the adopted priorities up to 2004 (EB.AIR/GE.1/2001/9), with input from the Task Forces and centres, and taking into account the results of the joint meeting between the Bureaux of the Steering Body and the Working Group on Effects.

18. The Steering Body approved the proposed budget of CIAM for 2005 as set out in the report of the Task Force on Integrated Assessment Modelling (EB.AIR/GE.1/2003/4, para. 59), and decided to keep the proposed budgets for 2006 and 2007 at the same level. It also considered the financial and budgetary matters of EMEP (EB.AIR/GE.1/2004/14). Financial and budgetary matters are reported in EB.AIR/2004/5.

19. The Executive Body may wish, inter alia, to:

(a) Take note of the report of the twenty-eighth session of the EMEP Steering Body (EB.AIR/GE.1/2004/2);

- (b) Welcome the positive outcome of the review of the EMEP Eulerian model and note the need for further work on PM;
- (c) Note the progress made on heavy metals modelling, monitoring and emission reporting, and welcome the EMEP contribution to the preparatory work for the review of the Protocol on Heavy Metals;
- (d) Note the progress made on POPs monitoring and modelling, welcome the EMEP contribution to the review of the Protocol on POPs and take note of MSC-E plans to review its models for POPs and heavy metals;
- (e) Approve the EMEP monitoring strategy for the period 2004-2009 and call upon Parties to ensure that resources are available for its implementation at the national level;
- (f) Welcome the publication of the EMEP assessment report;
- (g) Note with appreciation the progress in the development of the RAINS model and the positive outcome of its review, note the development of baseline scenarios and urge all Parties to provide the necessary data for integrated assessment modelling;
- (h) Welcome plans by CIAM to organize a workshop on integrated assessment methodologies in relation to the RAINS model at IIASA in January 2005;
- (i) Welcome the note on emission inventory review and data quality assurance (EB.AIR/GE.1/2004/15) and the note on the differences between the revised and the previous emissions reporting guidelines (EB.AIR/GE.1/2004/8);
- (j) Recognize the importance of further developing the inventory improvement programme and take note of the future need to revise the 2002 Emissions Reporting Guidelines;
- (k) Urge all Parties to report emissions data on POPs, heavy metals and particulate matter and to make efforts to improve the quality of reported emissions data;
- (l) Welcome the continued and useful cooperation of EMEP with other international organizations;
- (m) Approve the exchange of draft letters establishing a formal working arrangement between the Convention and ECMWF and proceed with their signature;
- (n) Approve the proposed budget of CIAM for 2005 as set out in the report of the Task Force on Integrated Assessment Modelling (EB.AIR/GE.1/2003/4, para. 59), agree to keep the 2006 and 2007 budgets at the same level and call upon Parties to make every effort to provide the necessary funding for work on integrated assessment modelling to be conducted as foreseen in the work-plan.

## **II. EFFECTS OF MAJOR AIR POLLUTANTS ON HUMAN HEALTH AND THE ENVIRONMENT**

20. The Working Group on Effects held its twenty-third session in Geneva from 1 to 3 September 2004 (EB.AIR/WG.1/2004/2).

21. The Working Group reviewed the results of the effect-oriented activities, as presented in the 2004 Joint Report of the International Cooperative Programmes (ICPs) and the Task Force on the Health Aspects of Air Pollution (EB.AIR/WG.1/2004/3/Add.1). It welcomed the growing participation of countries in the effect-oriented activities, noted the positive results of closer and more effective cooperation between ICPs, as well as with EMEP and other bodies under the Convention, and stressed the continuing need for communicating the results of the effect-oriented activities to policy and decision makers, to the professional community including that outside the Convention and to the general public, in order to maintain the necessary awareness and support.

22. The Working Group welcomed the important results achieved by the ICP on the Assessment and Monitoring of Air Pollution Effects on Forests, in particular the assessment of nitrogen deposition and ozone exposure at intensively monitored sites (level II) and relationships identified between deposition, crown condition, tree growth and ground vegetation, and took note of the summary report on the results of monitoring forest condition in Europe (EB.AIR/WG.1/2004/5).

23. The Working Group expressed its satisfaction with the progress achieved in implementing the ICP on the Assessment and Monitoring of Acidification of Rivers and Lakes, noted in particular that continued improvement to the chemical status of acid-sensitive lakes and streams had led to signs of biological recovery (EB.AIR/WG.1/2004/6). It noted the outline of an assessment of POPs in aquatic ecosystems, a draft of which would be made available to bodies working under the Convention.

24. The Working Group congratulated the ICP on Effects of Air Pollution Materials, including Historic and Cultural Monuments and took note of the new method of particle measurements. It noted the results showing that improvements in corrosion trends, largely due to decreasing SO<sub>2</sub> concentrations, had halted in some regions of Europe, possibly due to the contributions from HNO<sub>3</sub> and particles (EB.AIR/WG.1/2004/7). It welcomed the activities of the new programme sub-centre for stock at risk and cultural heritage in Italy, with the technical support of the Italian National Agency for New Technologies, Energy and the Environment (ENEA), and noted that future responsibility for the programme would be shared between Sweden and Italy, which would co-chair the programme starting in January 2005. It also welcomed work on the mapping and assessment of stock at risk of cultural heritage objects.

25. The Working Group reviewed the work of the ICP on Effects of Air Pollution on Natural Vegetation and Crops, and took note of the technical report on the improved concentration-based critical levels and on definitions of flux-based critical levels for selected vegetation receptors (EB.AIR/WG.1/2004/8). It also noted results from the analysis of factors influencing the concentrations of heavy metals in mosses.

26. The Working Group considered the recent results of the ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems and took note of the technical report on heavy metal and nitrogen studies (EB.AIR/WG.1/2004/9) and of the conclusions that the carbon-nitrogen (C/N) ratio in the organic horizon of soil was a useful indicator for risk of nitrogen leaching and that heavy metals accumulating in soils and catchments often exceeded critical limits, leading to increased risks to biota.

27. The Working Group reviewed the work of the ICP on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends and the Coordination Center for Effects (CCE) and took note of the new data from national focal centres on critical loads for acidification and eutrophication and on dynamic models (EB.AIR/WG.1/2004/10). It noted the conclusions that 8% and 35% of European ecosystems would be at risk from acidification and eutrophication, respectively, in 2010 as indicated by calculations using the new critical loads database of acidity and deposition and results from the EMEP unified model. It welcomed the advances made by CCE on applying critical loads data to derive impact factors for the use in, for example, life-cycle and multi-criteria analyses. The Working Group recommended the results from new national data on critical loads for use in work under the Convention, recommended use of the programme's revised Mapping Manual, approved calls for data for the critical loads of heavy metals and for the critical loads of acidification and eutrophication and target loads and requested that the new results from the EMEP unified model should be reflected in the deposition history for use in dynamic modelling. It agreed that 2030, 2050 and 2100 may be used as target years for dynamic modelling, noting that 2030 and 2050 were suggested by the Working Group on Strategies and Review (EB.AIR/WG.5/76, para. 36) and that the focus could be on only one implementation year (currently 2015), by which all reduction measures to reach the final deposition, the target load, were assumed to be implemented.

28. The Working Group expressed its satisfaction with the recent important results of the Task Force on the Health Aspects of Air Pollution, took note of the report (EB.AIR/WG.1/2004/11) and the conclusions that agreed methods for quantifying impacts indicated that more than 10,000 premature deaths per year in Europe could be attributed to ozone exposure. There were significant impacts of fine particulate matter on human health leading to a shorter life expectancy of up to one or two years in the more polluted part of Europe and long-range transport of air pollutants were an important source of the risk.

29. The Working Group took note of the conclusions of the report of the fourth meeting of the Joint Expert Group on Dynamic Modelling (EB.AIR/WG.1/2004/13), confirming that studies on acidification were on schedule and identifying a need for further work on the links between empirical and dynamic models. The Working Group stressed that models should be calibrated to observations to ensure the validity of results and noted the need to further develop methods for dynamic modelling of nutrient nitrogen. It noted with appreciation the proposals from the Joint



Expert Group to continue its work welcoming the broad participation in its activities and focus on issues relevant to ICP work.

30. The Working Group took note of the report on an expert meeting on land-cover data and ecosystem classification harmonization (EB.AIR/WG.1/2004/10/Add.1) proposing that a harmonized land-cover map should be used in the Convention's work, which should use EUNIS (European Nature Information System) to classify ecosystems and base their geographical location on CORINE (Coordination and Information on the Environment) data and land-cover information from the Stockholm Environment Institute. The Working Group recommended the map for use in work under the Convention, stressed the need for further harmonization and encouraged efforts to complement the map with other information such as nature conservation areas and population data.

31. The Working Group took note of the report of the workshop on critical loads of heavy metals (EB.AIR/WG.1/2004/10/Add.1), noting the proposal to use available effects-based approaches for lead, cadmium and mercury as scientific input to the review of the Protocol on Heavy Metals and concluding that effects-based approaches for heavy metals were sound. The Working Group recommended the results for use in work under the Convention.

32. The Working Group welcomed the report of the workshop on emissions, transport, deposition and effects of base cations in relation to acidification (EB.AIR/WG.1/2004/15) held in cooperation with EMEP. A first draft base cation deposition map for Europe was providing background information for comparison with national data used in the calculation of critical loads and dynamic acidification modelling. The Working Group stressed the need for further collaboration and recommended the common base cation deposition data for use in work under the Convention.

33. The Working Group welcomed the 2004 Joint Report of the ICPs and the Task Force on Health on progress in the effect-oriented activities (EB.AIR/WG.1/2004/3), which was aimed to contribute to the twenty-fifth anniversary of the Convention by describing the history of its effects-oriented activities and recommended that it should be made available for the twenty-second session of the Executive Body.

34. The Working Group considered and approved the 2004 Substantive Report on the review and assessment of air pollution effects and their recorded trends, as amended, and requested its submission to the Executive Body (in English only). It also approved the executive summary of the report (EB.AIR/WG.1/2004/14), as amended, and decided to submit it as a revised version to the Executive Body. The Working Group agreed that its Bureau, in collaboration with the secretariat, would be responsible for the final edits and take the necessary steps to ensure the

report was printed in readiness for the twenty-second session of the Executive Body and the Convention's twenty-fifth anniversary.

35. The Working Group took note of the results of the joint meeting of its Extended Bureau and the Bureau of the EMEP Steering Body. It approved the updated medium-term work-plan for the further development of the effect-oriented activities (EB.AIR/WG.1/2004/4), as amended. It stressed the importance of continuing collaboration with the EMEP Steering Body, in particular with its Bureau and programme centres, to ensure that the Convention's priorities were addressed effectively. The Working Group decided to charge its Bureau with preparing a long-term strategy for consideration at its next session.

36. The Working Group considered the note on the financing of the effect-oriented activities (EB.AIR/WG.1/2004/12) and, in particular, the tables showing the 2005 essential coordination costs of different effect-oriented activities and the preliminary annual budgets for 2006 and 2007. The Working Group approved the note, as amended, including an agreed budget for effects-oriented programmes for 2005 of US\$ 2,152,700 and provisional annual budgets for 2006 and 2007 of US\$ 2,152,700, and decided to submit it to the Executive Body. The Working Group reiterated its appreciation for the essential support rendered by countries leading the programmes and/or hosting the programme centres, as well as for all other forms of additional voluntary contributions in cash or in kind provided for the effect-oriented activities.

37. The Executive Body may wish, *inter alia*, to:

(a) Take note of the report of the twenty-third session of the Working Group on Effects (EB.AIR/WG.1/2004/2);

(b) Note the further progress in developing the effect-oriented activities and the important results achieved by the International Cooperative Programmes and the Task Force on the Health Aspects of Air Pollution in implementing the Convention (EB.AIR/WG.1/2004/3/Add.1);

(c) Welcome the progress achieved in cooperation between the bodies under the Convention, in particular the harmonization of data on land cover and base cations (EB.AIR/WG.1/2004/10/Add.1 and EB.AIR/WG.1/2004/15);

(d) Reiterate the importance of the active participation of all Parties to the Convention, the effective cooperation among the programmes, task forces and coordinating centres and their close collaboration with EMEP, and welcome the further development of close links with relevant institutions and organizations outside the Convention;

(e) Note that future responsibility for the ICP Materials programme would be shared between Sweden and Italy, which would co-chair the programme starting in January 2005;

(f) Reiterate its invitation to Parties to nominate national focal centres for those effect-oriented activities/programmes in which they do not yet actively participate;

- (g) Appreciate the continued progress achieved in the application of dynamic modelling (EB.AIR/WG.1/2004/13) and the related work-plan elements for future work;
- (h) Welcome the progress achieved in developing methods for flux-based ozone critical levels (EB.AIR/WG.1/2004/8) and effects-based approaches for heavy metals (EB.AIR/WG.1/2004/10/Add.1);
- (i) Note the revised Mapping Manual for critical thresholds and their exceedances, confirm that the updated European critical loads data and maps (EB.AIR/WG.1/2004/10/Add.1) may be used for work under the Convention and welcome the new calls for data for the critical loads of heavy metals, acidification and eutrophication and target loads;
- (j) Note the importance of continuing the communication of the results and findings of the effect-oriented activities to the scientific community, policy makers and the general public, both nationally and internationally;
- (k) Take note of the 2004 substantive report on the review and assessment of present air pollution effects and their recorded trends and its revised executive summary (EB.AIR/WG.1/2004/14/Rev.1);
- (l) Take note of the updated medium-term work-plan for the further development of the effect-oriented activities (EB.AIR/WG.1/2004/4) and invite the Working Group on Effects and the Steering Body of EMEP to prepare effectively for continuing close cooperation in implementing the priority tasks of the Convention;
- (m) Note document EB.AIR/WG.1/2004/12, as amended, on the financing of the effect-oriented activities and invite the Working Group to prepare a note on the effectiveness of voluntary contributions made according to Executive Body decision 2002/1 to core activities not funded by the EMEP Protocol, to aid the Executive Body's consideration in 2005, as required by the decision, to review the need for adopting a protocol to achieve long-term stable funding for the core activities.