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**ECONOMIC COMMISSION FOR EUROPE**

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

Working Group on Effects

**REPORT ON THE TWENTY-FIRST SESSION  
OF THE WORKING GROUP ON EFFECTS**

Introduction

1. The twenty-first session of the Working Group on Effects took place in Geneva from 28 to 30 August 2002.
2. It was attended by representatives of the following Parties to the Convention: Austria; Canada; Czech Republic; Denmark; Finland; France; Germany; Hungary; Italy; Netherlands; Norway; Poland; Slovenia; Spain; Sweden; Switzerland; Ukraine; and the United Kingdom.
3. Representatives of the World Meteorological Organization (WMO) and the World Health Organization's European Centre for Environment and Health (WHO/ECEH), Bonn Office, were also present. The Centre for Integrated Assessment Modelling (CIAM), and the EMEP Meteorological Synthesizing Centre-East (MSC-E) were also represented.

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.

4. Representatives of the following non-governmental organizations were present: the Oil Companies' European Organisation for Environment, Health and Safety (CONCAWE), and the Union of the Electricity Industry (EURELECTRIC).

5. Mr. H.-D. Gregor (Germany) chaired the meeting.

I. ADOPTION OF THE AGENDA

6. The agenda (EB.AIR/WG.1/2002/1) was adopted.

II. ADOPTION OF THE REPORT OF THE TWENTIETH SESSION

7. The Working Group adopted the report of its twentieth session (EB.AIR/WG.1/2001/2).

III. MATTERS ARISING FROM THE NINETEENTH SESSION OF THE EXECUTIVE BODY FOR THE CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION, THE THIRTY-THIRD SESSION OF THE WORKING GROUP ON STRATEGIES AND REVIEW AND THE TWENTY-FIFTH SESSION OF THE STEERING BODY OF THE COOPERATIVE PROGRAMME FOR MONITORING AND EVALUATION OF THE LONG-RANGE TRANSMISSION OF AIR POLLUTANTS IN EUROPE (EMEP)

8. Mr. K. Bull, the Chief of the Air and Water Team of the Environment and Human Settlements Division, provided information on the present status of the Convention and noted the recent progress in the ratification of its protocols. He reviewed decisions and ongoing activities of the Executive Body and its subsidiary bodies, in particular the Working Group on Strategies and Review and the Steering Body of EMEP of relevance to the Working Group on Effects. Special mention was made of: (i) the progress achieved in the effect-oriented activities, including preparation for the substantive report, elaboration of the level II critical levels for ozone, and the work done on the health aspects of heavy metals, POPs and particulate matter; (ii) the development of close cooperation between the Working Group on Effects and the EMEP Steering Body in particular in harmonizing their medium-term work-plans as agreed at the meeting of the Bureaux of the Steering Body and the Working Group, in February 2002, that is available through the Convention's web site; and (iii) the progress in developing a mechanism for the stable, long-term financing of core activities that the Executive Body planned to complete in preparation for the Ministerial Conference "Environment for Europe" scheduled for May 2003 in Kiev.

9. The Working Group on Effects took note of the decisions made by the Executive Body and its Bureau, and of the results of the deliberations of other bodies under the Convention and agreed to bear them in mind when discussing its future activities.

IV. RECENT RESULTS AND SHORT-TERM GOALS OF THE EFFECT-ORIENTED ACTIVITIES

10. The Chairman introduced the annual 2002 Joint report of the International Cooperative Programmes (ICPs) and the Task Force on the Health Aspects of Air Pollution

(EB.AIR/WG.1/2002/3) and invited representatives of individual task forces/programmes to review their ongoing activities and the most important results and to summarize plans for their further development.

A. International Cooperative Programme (ICP) on assessment and monitoring of air pollution effects on forests

11. Mr. T. Haußmann (Germany), Chairman of the Task Force on ICP Forests, presented the progress report of the programme, including the results of the eighteenth Task Force meeting (EB.AIR/WG.1/2002/3, annex I). He noted the continuously growing participation of Parties in the activities of the programme including those in North America and the eastern part of the ECE region, as well as cooperation with the Acid Deposition Monitoring Network in East Asia (EANET). Information was also provided on recent developments in the programme's activities in the fields of data quality assurance, biodiversity, critical load calculations and dynamic modelling.

12. Mr. T. Haußmann also informed the Working Group of the European Commission's proposal for a European Parliament and Council regulation concerning monitoring of forests and environment interactions in the Community (dated 15 July 2002), which would significantly influence not only ICP Forests, but also other effect-related activities under the Convention. He noted, in particular, that while the European Commission intended to increase its voluntary contribution to ICP Forests, it also planned to change the infrastructure of the common monitoring programme as well as its reporting strategy.

13. Mr. M. Lorenz (Germany), Head of the Programme Coordinating Centre, introduced the summary report on the 2001 results of monitoring forest condition in Europe (EB.AIR/WG.1/2002/7) and provided additional detailed information on the latest results of the programme, referring, in particular, to the work on crown condition, deposition and critical loads, and on ground vegetation assessment.

14. Mr. M. Posch (Netherlands), representing the Coordination Center for Effects (CCE), provided additional information on the results of calculating critical loads of nitrogen and acidity carried out on 230 level II intensive monitoring plots and presented results for exceedances of critical loads of nitrogen and acidity.

15. In the following discussion the Working Group expressed its satisfaction with the impressive results of ICP Forests in addressing a growing number of important topics. It appreciated, in particular, the important results of close cooperation with other bodies under the Convention. However, the Working Group on Effects also strongly expressed concern that the implementation of the proposed European Parliament and Council regulation concerning monitoring of forests and environment interactions in the Community with its suggested changes would have detrimental consequences for ongoing long-term monitoring activities, further development of databases, activities of well-established and internationally recognized coordinating centres, and, in particular, for the active participation of all Parties to the Convention in the generation of data and their qualified assessment.

16. The Working Group on Effects:

- (a) Took note of the report on the progress of ICP Forests (EB.AIR/WG.1/2002/3, annex I);
- (b) Took note of the summary report on monitoring forest condition in Europe (EB.AIR/WG.1/2002/7);
- (c) Took note of the programme's plans to develop further its activities, in particular on level II monitoring, dynamic modelling, forest biodiversity, climate change and carbon sequestration;
- (d) Appreciated the active cooperation of ICP Forests with other programmes, bodies and international organizations within and outside the ECE region, including, for instance ENFORS, a Europe-wide network for long-term Forest Ecosystem and Landscape Research, the International Union of Forestry Research Organizations (IUFRO), and EANET;
- (e) Took note of the information on the draft regulation concerning monitoring of forests and environment interactions in the Community (Forest Focus), expressed concern about possible adverse impact of its implementation on the ongoing long-term monitoring activities carried out under the Convention and invited the Chairman, in collaboration with the secretariat, to communicate the concerns of the Working Group to the European Commission.

B. ICP on assessment and monitoring of acidification of rivers and lakes

17. Ms. B. Kvaeven (Norway), Chairwoman of the Task Force on ICP Waters, introduced the report on the recent achievements of the programme, including the results of the seventeenth Task Force meeting (EB.AIR/WG.1/2002/3, annex II), and the technical report on tracing biological recovery in surface waters by using multivariate statistics (EB.AIR/WG.1/2002/8). She stressed the importance of biological monitoring and noted that its results would provide substantial input to the future review of protocols to the Convention. She also underlined the need for intensified monitoring of heavy metals in surface waters and for wider application of dynamic modelling. She drew attention to the new brochure on nitrogen in surface waters. She also noted the forthcoming workshop on biological response modelling (models for biological recovery from acidification in a changing climate) (Grimstad, Norway, 11-13 September 2002).

18. M. Johannessen Ulstein (Norway), Head of the Programme Centre, presented the recently published reports, in particular the proceedings from the workshop on heavy metals (Pb, Cd and Hg) in surface waters: monitoring and biological impact (March 2002, Lillehammer, Norway) and the reports on the results of the 2002 chemical and biological intercalibration exercises. She also reviewed plans for further development of the programme in 2002/2003 and noted that for this period the work should concentrate on the preparation of: (i) the ICP Waters 15-year report; (ii) the report on possibilities and limitations in dynamic modelling of surface waters; and (iii) the ICP Waters contribution to the substantive report.

19. Ms. B.-L. Skjelkvåle (Norway), Project Manager, provided more detailed information on the content, methods and the most important findings and conclusions of the report on tracing biological recovery in surface waters using multivariate statistics.

20. The Working Group welcomed the important results of the work, in particular those related to biological recovery of aquatic ecosystems. It stressed the importance of developing biological response models to assess the delay in biological response following chemical changes in the environment resulting from reduced air pollution emissions. Results from ICP Waters have shown that delays in biological response were within the time frames discussed within the Convention. This was considered an important message to policy makers. In this respect the delegation of Canada offered its relevant extensive database to other interested Parties for further investigation.

21. The Working Group:

- (a) Took note of the report on the progress of ICP Waters (EB.AIR/WG.1/2002/3, annex II);
- (b) Took note of the technical report on tracing biological recovery in surface waters by using multivariate statistics (EB.AIR/WG.1/2002/8);
- (c) Took note of the results of the workshop on heavy metals (Pb, Cd and Hg) in surface waters: monitoring and biological impact, and welcomed the publication of its proceedings;
- (d) Took note of the information on results of the 2002 chemical and biological intercalibration exercise;
- (e) Noted the further progress in developing the programme's monitoring network and database with emphasis on biological data, and welcomed its effective cooperation with other programmes and bodies.

C. ICP on effects of air pollution on materials, including historic and cultural monuments

22. Mr. V. Kucera (Sweden), Chairman of the Task Force on ICP Materials, introduced the progress report of the programme, including the results of the eighteenth Task Force meeting (EB.AIR/WG.1/2002/3, annex III). Special mention was made of the present status in implementing the multi-pollutant exposure programme. While summarizing the preliminary results achieved after four years of exposure (EB.AIR/WG.1/2002/9), he noted the importance of the multi-pollutant conditions and the complexity of factors influencing corrosion rate in such situations. He also provided information on the progress in mapping areas of increased corrosion rates and in gathering information on stock at risk.

23. He reviewed plans for the further development of the programme and, in particular, presented a proposal for a new programme sub-centre for stock at risk and cultural heritage to be set up in Italy with the technical support of L'Ente per le Nuove Tecnologie, l'Energia e l'Ambiente (ENEA). He also mentioned the programme's participation in the MULTI-ASSESS project of the European Commission, which would start in November 2002 and be carried out for one year. It was noted that Poland and Latvia would actively participate in the MULTI-ASSESS project. This was expected to enhance substantially the importance of the ICP Material's results.

24. Mr. S. Fitz (Germany) provided information on the workshop on the release of heavy metals from materials due to corrosion, to be held in May 2003 in Munich (Germany).

25. In the ensuing discussion a number of delegations welcomed the important results of the programme, the substantial development of its activities, as well as the successful sharing of the

achieved results and new knowledge with organizations/institutes outside the UNECE region.

26. The Working Group:

- (a) Took note of the report on the progress of ICP Materials (EB.AIR/WG.1/2002/3, annex III);
- (b) Took note of the report on preliminary results after four years of exposure in the multi-pollutant programme and on the further development of the programme (EB.AIR/WG.1/2002/9);
- (c) Noted with appreciation the proposal to set up a new programme sub-centre for stock at risk and cultural heritage, welcomed the willingness of the Government of Italy to organize it and to provide it with technical support from ENEA, and agreed to recommend establishing the sub-centre to the Executive Body at its twentieth session;
- (d) Noted the progress in mapping activities, assessment of stock at risk and cost-benefit analysis;
- (e) Noted recent developments in the programme's participation in the MULTI-ASSESS project of the European Commission;
- (f) Took note of preparations for the workshop on the release of heavy metals due to corrosion of materials (12-14 May 2003, in Munich, Germany);
- (g) Took note of the RAPIDC project covering a number of South African and Asian partners, and considered it to be an example of successful export of knowledge, gathered within the framework of the Convention, to other regions.

D. ICP on effects of air pollution on natural vegetation and crops

27. Ms. G. Mills (United Kingdom), Chairwoman of the Task Force on ICP Vegetation, introduced the progress report of the programme, including the results of the fifteenth Task Force meeting (EB.AIR/WG.1/2002/3, annex IV). She noted the markedly higher participation in the programme's activities and attendance at its recent Task Force meeting. While reviewing the programme deliverables for 2001/2002, she made special reference to the 2002 annual status report of ICP Vegetation. She also outlined the programme's plans for 2003.

28. In more detail she presented the technical report on economic assessment of crop losses in Europe due to ozone (EB.AIR/WG.1/2002/10). It was shown that the impact of ozone on crops substantially reduced production and the related losses across Europe were estimated at several billion euro annually. It was stressed that these findings further underlined the need for continuing development of methods for deriving critical levels for ozone.

29. In relation to this need Ms. G. Mills presented summarized results of the ad hoc expert panel meeting on the methodology for modelling ozone flux and deposition (June 2002, Herrogate, United Kingdom) and suggested that a flux approach, once further developed, would substantially improve the quality/reliability of ozone critical levels. It was suggested that the forthcoming workshop on level II critical levels for ozone (November, Gothenburg, Sweden) should assess possible approaches (e.g. modified level I, level II - fluxes), evaluate advantages and risks/shortcomings of their respective application and propose practical solutions, that are also applicable to integrated assessment modelling.

30. In the following discussion several delegations expressed their satisfaction with the work of the programme and welcomed its recent results. With respect to developing further the critical levels for ozone, several delegations noted that more work and information would be needed before qualified decisions could be taken.

31. Mr. M. Amann, representing the Centre for Integrated Assessment Modelling, stressed that, while a flux approach would be a great improvement for the understanding of ozone effects on plants, a number of important questions still remained to be answered. Necessary data needed to be gathered and models developed.

32. The Working Group:

- (a) Took note of the report on the progress of ICP Vegetation (EB.AIR/WG.1/2002/3, annex IV) and the programme's 2002 annual status report;
- (b) Took note of the technical report on the evaluation of the economic impact of ozone pollution on agricultural crop production in Europe (EB.AIR/WG.1/2002/10);
- (c) Welcomed with appreciation the progress in developing the programme's activities;
- (d) Noted information on the results of the recent ad hoc expert panel meeting on modelling and mapping of ozone flux and deposition to vegetation (16-19 June 2002, Harrogate, United Kingdom), and stressed the need for further elaboration of a practical and credible approach for deriving critical levels of ozone.

E. ICP on integrated monitoring of air pollution effects on ecosystems

33. Mr. L. Lundin (Sweden), Chairman of the Task Force on ICP Integrated Monitoring, presented the progress report of the programme and reviewed its recent achievements, including the results of the tenth Task Force meeting (EB.AIR/WG.1/2002/3, annex V) as well as the programme's eleventh annual report 2002. Special mention was made of the further development of the harmonized network and the programme database, progress in dynamic modelling activities, and close cooperation with ICP Forests in assessing cause-effect relationships. He reviewed activities related to bio-indicator modelling, the calculation of pools and fluxes of heavy metals and the calculation of fluxes and trends of sulphur and nitrogen compounds and base cations. He also noted the extensive cooperation of ICP Integrated Monitoring with other bodies/organizations and its participation in projects inside and outside the Convention. He reiterated the concern regarding the European Commission's proposal for a draft regulation concerning monitoring of forests and environment interactions in the Community (Forest Focus), which would also affect the integrated monitoring programme, as it dealt mainly with natural forest ecosystems.

34. Mr. M. Forsius (Finland), Head of the Integrated Monitoring Programme Centre, provided detailed information on the scientific activities of the programme, in particular related to: (i) fluxes of sulphur, nitrogen and acidity; (ii) site-specific dynamic modelling; and (iii) climate change.

35. The Working Group on Effects:

- (a) Took note of the report on the progress of the ICP Integrated Monitoring (EB.AIR/WG.1/2002/3, annex V);

- (b) Took note of the programme's eleventh annual report 2002;
- (c) Took note of the progress in calculating pools and fluxes of heavy metals at selected sites, calculating fluxes of sulphur, nitrogen and acidity; and in the site-specific dynamic modelling, carried out in collaboration with other ICPs;
- (d) Noted information on programme's participation in international projects addressing global environmental issues such as the Carbon and nitrogen interactions in forest ecosystems (CINTER), and the Climate-induced variation of dissolved organic carbon in Nordic surface waters (NMDTOC).

F. ICP on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends

36. Mr. T. Spranger (Germany), Chairman of the Task Force on ICP Modelling and Mapping, introduced the report on the recent activities of the programme (EB.AIR/WG.1/2002/3, annex VI) and, in particular, reviewed the results of the eighteenth meeting of the Task Force. He summarized the progress achieved in dynamic modelling and deriving critical loads for heavy metals and their modelling and mapping, and the preparations for the forthcoming revision of the mapping manual. Special mention was made of possible strategic consequences of different approaches to the assessment of the effects of heavy metal deposition.

37. Mr. Spranger also reviewed plans for future activities, including, inter alia, the updating of critical loads data, further work on dynamic modelling and its linking to integrated assessment modelling, and the development of methodologies for deriving critical levels or fluxes of ozone, which would be carried out in close cooperation with other ICPs and bodies under the Convention.

38. Mr. M. Posch (Netherlands), representing the Coordination Center for Effects, provided additional information on progress in dynamic modelling, in particular with reference to the work presented in the status report on dynamic modelling of soils and surface waters for the assessment of time delays of impacts on ecosystems caused by changes in deposition trends (EB.AIR/WG.1/2002/11). He also addressed problems related to the use of dynamic modelling in integrated assessment.

39. Mr. Posch reviewed the recent activities of CCE, provided information on the outcome of the twelfth CCE workshop on critical loads and levels (April 2002, Sorrento, Italy), and outlined plans for future activities. Special mention was made of the preparation of the manual for dynamic modelling, the development of a very simple dynamic model, and of the steps taken to ensure its wider application. He also noted the active role of the Polish NFC, which, with the support of Sweden and CCE, had tested the possibility of extended existing databases for dynamic modelling.

40. In the following discussion the Working Group expressed its high appreciation for the quantity of work and the quality and importance of the results achieved by the programme and CCE. In particular, a number of delegations welcomed the progress achieved in the application of dynamic modelling, including the preparation and use of the simple dynamic model, and the steps taken in linking dynamic modelling to integrated assessment. It was noted that dynamic modelling included both chemical and biological aspects. It was recognized, however, that the broader application of dynamic modelling and making full use of its potential would require further



developments in methodology, as well as improvements in the available databases. Special mention was made of future needs concerning recovery times and target-setting. The Working Group stressed that the close cooperation with other bodies under the Convention, in particular EMEP and CIAM, as well as the active participation of, and support by, all countries, was essential for the successful application of dynamic modelling on the European scale.

41. The Working Group on Effects:

(a) Took note of the report on the progress of ICP on Modelling and Mapping and the Coordination Centre for Effects including the results of the twelfth CCE workshop (EB.AIR/WG.1/2002/3, annex VI);

(b) Took note of the status report on dynamic modelling of soils and surface waters for the assessment of time delays of impacts on ecosystems caused by changes in deposition trends (EB.AIR/WG.1/2002/11);

(c) Noted with appreciation further substantial progress achieved, in particular, in (i) addressing critical loads data quality and comparability; (ii) deriving critical limits for heavy metals; and (iii) the application of dynamic modelling;

(d) Confirmed that, if present deposition was below critical loads, increasing deposition and filling the gap up to the critical load was not in line with the accepted critical load approach and would be against the spirit of the Convention, aiming, inter alia, to control and, if possible, decrease air pollution and its effects and avoid any deterioration of the environment;

(e) Welcomed the preparation of the manual for dynamic modelling of soil response to atmospheric deposition, and the availability of the very simple dynamic model on the CCE web site, and recommended its application in modelling activities on a national level;

(g) Invited CCE to issue, in the autumn of 2002, a call for updated critical loads and parameters for dynamic modelling;

(f) Stressed the essential importance of active participation of all Parties to the Convention in the modelling and mapping activities and the need for continued support.

G. Task Force on the Health Aspects of Air Pollution

42. Mr. M. Krzyzanowski, representative of the European Centre for Environment and Health of the World Health Organization (WHO/ECEH), Bonn Office, and Chairman of the Task Force on the Health Aspects of Air Pollution, introduced the progress report on the activities of the Task Force, including the results of its fourth and fifth meetings (EB.AIR/WG.1/2002/3, annex VII). He stressed, in particular, that the report on the health risks of persistent organic pollutants (POPs) was now finalized. He also noted that the Task Force at its fifth meeting had considered its structure and organization of work and proposed to establish within the Task Force a core group of experts who would ensure the necessary continuation of its activities. An additional network of governmental experts/advisers would be invited to contribute to the future assessments of the health effects of selected air pollutants. He stressed the need for continuing active support of all countries to these important activities.

43. He also outlined plans for future activities of the Task Force. These included, inter alia, continuing assessment of the health risk of particulate matter, nitrogen oxides and ozone. The activities would be carried out by WHO/ECEH in collaboration with the Clean Air for Europe

(CAFE) programme with important financial support from the European Commission. It was stressed that the results would also be used to answer the needs of the Convention. The next meeting of the Task Force in 2003 would address mainly problems related to the health risks of particulate matter and ozone.

44. In the ensuing discussion delegations expressed their satisfaction with the impressive results achieved by the Task Force. A number of delegations also welcomed the plan to establish a core group of experts and expressed their readiness to take an active part in its work.

45. The Working Group on Effects:

- (a) Took note of the report on the activities of the Task Force (EB.AIR/WG.1/2002/3, annex VII);
- (b) Invited the Task Force to continue assessing the health risk of particulate matter, nitrogen oxides and ozone and to present a progress report at its twenty-second session;
- (c) Noted the Task Force's plans to further develop its activities, welcomed the plan to create a core group of experts supported by a network of governmental experts/advisers, and reiterated its invitation to all interested countries to nominate their experts and actively participate in the work of the Task Force.

#### H. Common aspects of the International Cooperative Programmes

46. In introducing the discussion on more general aspects of the effect-oriented activities, the Chairman drew attention to 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 continuing need for communicating the results of the effect-oriented activities to policy and decision makers, to the professional community also outside the Convention and to the general public, in order to maintain the necessary financial and political support.

47. The Working Group on Effects:

- (a) Welcomed the orientation of the International Cooperative Programmes' and the Task Force on the Health Aspects of Air Pollution's short- and medium-term activities towards the priority tasks supporting the effective implementation of the Convention, in particular towards preparing for the forthcoming review of protocols;
- (b) Reiterated the importance of the work carried out by the national focal centres (NFCs) and of the support provided by the lead countries and coordinating centres;
- (c) Stressed the importance of the active participation of all Parties to the Convention in the effect-oriented activities for providing the sound knowledge and high-quality representative database required for the effective implementation and future review of the Convention and its protocols;
- (d) Suggested that the Executive Body should reiterate its invitation to Parties to nominate NFCs for those effect-oriented activities/programmes in which they did not yet actively participate;

(e) Noted 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.

## V. FURTHER DEVELOPMENT OF THE EFFECT-ORIENTED ACTIVITIES AND THEIR CONTRIBUTION TO THE FUTURE REVIEW OF PROTOCOLS

### A. Updated medium-term work-plan

48. In introducing a note on the updated medium-term work-plan for the further development of the effect-oriented activities (EB.AIR/WG.1/2002/4), the Chairman noted that it had been prepared following the Executive Body's invitation to harmonize as much as possible the medium-term work-plans of the Working Group on Effects and the EMEP Steering Body, taking into account the timetable of the European Commission's CAFE programme.

49. In the following discussion representatives of several programmes appreciated the close and efficient cooperation with EMEP and its centres. They also noted, however, that some expected information and data needed for the further development of the effect-oriented activities were not yet available. The Meeting was informed that the Task Force on the Health Aspects of Air Pollution planned to present in 2003 updated reviews on the health effects of both particulate matter and ozone.

50. The Working Group on Effects:

(a) Took note of the results of the joint meeting of its Extended Bureau and the Bureau of the EMEP Steering Body;

(b) Approved the updated medium-term work plan for the further development of the effect-oriented activities (EB.AIR/WG.1/2002/4) (as amended) and decided to submit it to the Executive Body;

(c) Agreed 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, and stressed the importance of organizing further joint meetings of the Bureaux in the future;

(d) Agreed to seek external support to enable EMEP to provide the effect-oriented activities with the data and information most urgently needed for its further work (e.g. ecosystem-specific deposition data, data on historic deposition for nitrogen).

### B. Draft annotated outline of the 2004 substantive report

51. The Chairman presented the draft annotated outline of the report on the review and assessment of present air pollution effects and their recorded trends (EB.AIR/WG.1/2002/5), prepared by the Bureau in collaboration with the secretariat and with the assistance of a consultant. He stressed that the objective of the report was not only to present the most important results of individual programmes/task forces, but, in particular, to provide the Executive Body with summarized and assessed data and information needed for the forthcoming review of protocols to the Convention.

52. It was also noted that the Extended Bureau of the Working Group had suggested to amend the title and subtitles for chapter V:

- V. Estimation of economic consequences of air pollution effects
  - A. Preliminary results of the effect-oriented activities;
  - B. Review of ongoing activities within and outside the Convention.

53. In the ensuing discussion it was stressed that the preparation of the report should be carried out in close cooperation with EMEP and other relevant bodies under the Convention.

54. The Working Group on Effects:

(a) Approved the annotated outline of the report on review and assessment of present air pollution effects and their recorded trends (EB.AIR/WG.1/2002/5) (as amended) and decided to submit it to the Executive Body for information;

(b) Invited the Bureau to maintain the close collaboration with EMEP and its Centres in finalizing the structure of the report and in its further elaboration, and to seek the support of the Working Group on Strategies and Review, in particular through the Network of Experts on Benefits and Economic Instruments (NEBEI), to address problems related to the economic consequences of air pollution effects;

(c) Requested its Bureau to organize editorial meetings in November 2002 and February 2003 to harmonize the preparation of contributions to the substantive report, with external assistance, if needed;

(d) Noted that Mr. G. Fenech (Canada) would serve as a Bureau contact person till the next meeting of its Extended Bureau in February 2003;

(e) Invited its Bureau to seek additional support for the preparation, and the subsequent publication, of the substantive report, either in cash or in kind;

(f) Invited all Task Forces to start, without any undue delay, preparing their particular contributions to the substantive report and to submit the drafts by 20 October 2002;

(g) Noted that the preparation of the most important summarizing parts (in particular the overall conclusions and recommendations) would require a major collaborative effort of all Programme Centres, and that, most probably, some form of additional external assistance (e.g. through the Trust Fund, and/or as contributions in kind) would be needed.

## VI. UPDATING OF SCIENTIFIC AND TECHNICAL KNOWLEDGE

### A. Progress in dynamic modelling

55. Mr. A. Jenkins (United Kingdom), Chairman of the Joint Expert Group on Dynamic Modelling, introduced the summary report on its second meeting (EB.AIR/WG.1/2002/12). He noted the objectives of dynamic modelling, and reviewed the recent results and progress achieved in developing methods to be used for the European assessment. He also summarized the Group's recommendations regarding relevant future activities of ICPs and other bodies under the Convention. Noting the most important gaps in knowledge, he outlined the needs for future research and development.

56. In the following discussion a number of delegations welcomed the progress achieved, stressed the importance of dynamic modelling for the work under the Convention, supported the further development of these activities, including the further development of biological recovery models. It was stressed, however, that the existing databases could be more efficiently used, in particular by active participation of all ICPs and more NFCs in modelling activities. It was also stressed that dynamic modelling of freshwaters was most likely to demonstrate rapid recovery. It was noted that more knowledge was needed on nitrogen processes and on critical loads for nitrogen and that the results of dynamic modelling and their potential use should be linked to existing critical loads/receptors and to integrated assessment models. The results should be communicated to the general public.

57. The Working Group:

(a) Approved the summary report on the second meeting of the Group (EB.AIR/WG.1/2002/12);

(b) Welcomed the important work already done by the Joint Expert Group on Dynamic Modelling, noted the plans for its further work and urged all ICPs, NFCs and national experts to take them into consideration in their future activities;

(c) Invited all ICPs and NFCs to actively participate, to the extent possible, in the further development of the dynamic modelling;

(d) Stressed the need for linking dynamic models with critical loads and integrated assessment models, and for efficient communication to the general public and policy makers of both the results and the potential uses of dynamic modelling.

B. Mapping of heavy metals critical loads

58. Mr. J.-P. Hetteling (Netherlands), Head of the Coordination Center for Effects, introduced the note on the results of the preliminary modelling and mapping of critical loads of cadmium and lead in Europe: results of a call for voluntary national data contributions (EB.AIR/WG.1/2002/13) and summarized the first results of the mapping of critical loads of heavy metals. While eleven countries submitted data, six other countries reported the need for additional work. He outlined plans for further activities and stressed, in particular, that definitions for critical loads and stand-still loads had to be further clarified.

59. Mr. S. Dutchak (Russian Federation), Director of the EMEP Meteorological Synthesizing Centre-East, provided information on the relevant activities of the Centre and expressed its readiness to participate in further joint activities concerning critical loads for heavy metals.

60. In the following discussion the Working Group appreciated the preliminary results of the mapping of critical loads of heavy metals, noting especially the need for the continuing development of critical limits and transfer functions, further work on mercury and on the effects on human health. Several delegations announced their intention to participate in these activities in the future.

61. The Working Group:

(a) Took note of the note on the preliminary modelling and mapping of critical loads of cadmium and lead in Europe: results of a call for voluntary national data contributions (EB.AIR/WG.1/2002/13);

(b) Welcomed the preparation, in collaboration with the EMEP Meteorological Synthesizing Centre-East, of the technical report on the preliminary modelling and mapping of critical loads of cadmium and lead in Europe, and its publication by CCE;

(c) Appreciated the offer of the EMEP Meteorological Synthesizing Centre-East to participate in further joint activities concerning critical loads for heavy metals;

(d) Stressed the need for the further development and application of clearly defined and harmonized methods for deriving and mapping critical loads of heavy metals on the European scale.

C. Health risk of persistent organic pollutants

62. Mr. M. Krzyzanowski (WHO/ECEH) introduced the technical report on the health risks of persistent organic pollutants (POPs) from long-range transboundary air pollution and its executive summary (EB.AIR/WG.1/2002/14). He reviewed the groups of pollutants identified for the review, outlined the structure of the report and provided information concerning the authors who had contributed to individual parts of the report. He also sought the advice of the Working Group on how the full technical report could be best published and distributed.

63. Mr. R. Ballaman, Chairman of the Working Group on Strategies and Review, and Mr. D. Stone (Canada), Chairman of the Expert Group on POPs Assessment, stressed the importance of the report for the forthcoming review of the Protocol on POPs and noted that expertise available in the Task Force on the Health Aspects of Air Pollution should be fully used in the future work under the Convention.

64. The Working Group appreciated the excellent work done by the Task Force in preparing this comprehensive assessment of the health risks of the selected POPs and stressed the need to ensure publication of the full technical report as soon as possible.

65. The Working Group on Effects:

(a) Took note of the executive summary of the report on the health risks of POPs from long-range transboundary air pollution (EB.AIR/WG.1/2002/14), agreed to make it available at the thirty-fourth session of the Working Group on Strategies and Review and decide to present it to the Executive Body at its twentieth session for information;

(b) Welcomed the publication of the full technical report on the health risks of POPs from long-range transboundary air pollution by WHO/ECEH and stressed the need for its wide distribution.

D. Cause-effect relationships of forest ecosystems

66. Mr. M. Lorenz introduced the joint report of ICP Forests and ICP Integrated Monitoring on cause-effect relationships of forest ecosystems, as well as its summary (EB.AIR/WG.1/2002/15). He noted the aims of the report, reviewed the distribution of sampling plots from both programmes and the structure of the data considered.

67. Mr. L. Lundin summarized the most important findings of the report concerning, for instance, crown condition, species diversity, carbon sequestration, heavy metals, dynamic modelling and acidification and eutrophication trends. He stressed that the continuing cooperation of both programmes represented an important contribution to the harmonized assessment of the present status and ongoing processes in forest ecosystems as affected by air pollution.

68. The Working Group welcomed the report, noted the complementary nature of relevant activities carried out by both programmes and invited them to continue their effective collaboration in this area.

69. The Working Group:

- (a) Took note of the summary of the joint report of ICP Forests and ICP Integrated Monitoring on cause-effect relationships of forest ecosystems (EB.AIR/WG.1/2002/15);
- (b) Appreciated the publication of the full report by the Federal Research Centre for Forestry and Forest Products in Hamburg (Germany) and the Finnish Environment Institute in Helsinki;
- (c) Invited ICP Forests and ICP Integrated Monitoring to continue their joint activities on this topic.

E. Forthcoming workshops and technical meetings

70. Organizers and/or representatives of the host countries provided information on the objectives of, and ongoing preparations for, the forthcoming workshops and technical meetings:

- (a) Workshop on biological response modelling (models for biological recovery from acidification in a changing climate (9-11 September 2002, Grimstad, Norway);
- (b) Fifth trilateral meeting of the Czech Republic, Germany and Poland to harmonize critical loads and their exceedances (21-22 October 2002, Beroun, Czech Republic);
- (c) Fourth subregional training workshop on modelling and mapping in East and Central European countries (28-30 October 2002, Sudak, Ukraine);
- (d) Workshop on ICP Forests's level II data evaluation (30-31 October 2002, Heerenveen, Netherlands);
- (e) Third meeting of the Joint Expert Group on Dynamic Modelling (6-8 November 2002, Sitges, near Barcelona, Spain);
- (f) Workshop on empirical critical loads for nitrogen deposition on (semi-) natural ecosystems (11-13 November 2002, Bern);
- (g) Workshop on level II critical levels for ozone (19-22 November 2002, Gothenburg, Sweden);

(h) Ad hoc meeting of experts on the further development of effect-based critical limits and transfer functions for heavy metals (2-4 December 2002, Berlin, tentatively);

(i) Workshop on the release of heavy metals from materials due to corrosion (12-14 May 2003, Munich, Germany).

71. The Working Group noted that the workshop on level II critical levels for ozone was expected to provide revised level I critical levels and level II values and functions including effective dose-yield/biomass response relationships and more complex flux-effect relationships.

Also, the workshop was expected to address questions raised by the Centre for Integrated Assessment Modelling relating to the use of these possible approaches in integrated assessment modelling.

72. The Working Group on Effects:

(a) Took note of the planned workshops and technical meeting and appreciated the effort already devoted to their preparation, and invited Parties to participate actively in them;

(b) Stressed again that all workshops and technical meetings held within the framework of the Convention should be prepared by the organizers in close collaboration with the relevant subsidiary body and the secretariat;

(c) Requested the secretariat to make the existing guidelines for organizing workshops, expert groups and task force meetings available on the web page of the Executive Body.

## VII. FINANCING OF EFFECT-ORIENTED ACTIVITIES

73. The secretariat introduced a note on financing of the effect-oriented activities, prepared by the Bureau of the Working Group in collaboration with the secretariat (EB.AIR/WG.1/2002/6), and presented its updated version of table 3 of that document showing the recent development in the Trust Fund (see table 1 below). It drew attention to the relevant decisions of the Executive Body requesting the Working Group on Effects to submit to it at its twentieth session an agreed budget for 2003 and preliminary budgets for 2004 and 2005 showing essential coordination costs of different elements of the effect-oriented activities (tables 2 and 3, below).

74. The Chairman of the Working Group reiterated the importance of the substantial financial support continuously provided by all lead countries of the programmes and by countries hosting the programme centres, and/or organizing task force meetings and workshops.

75. Mr. R. Ballaman drew attention to the completion of the negotiations on funding instruments at the thirty-fourth session of the Working Group on Strategies and Review in September 2002 and the twentieth session of the Executive Body in December 2002. He recommended that delegations should make an effort to brief their national representatives at these meetings to ensure that they were fully aware of the need for a secure long-term funding mechanism.



76. The Working Group:

- (a) Approved the note on the financing of the effect-oriented activities (EB.AIR/WG.1/2002/6) as amended and decided to submit it to the Executive Body;
- (b) Approved the 2003 essential coordination costs of different elements for the effect-oriented activities (table 2 below) and the preliminary annual budgets for 2004 and 2005 (table 3 below) for submission to the Executive Body;
- (c) Noted with appreciation the essential support provided to the Working Group on Effects and its effect-oriented activities by lead countries, countries hosting coordinating centres and organizing meetings, and countries funding activities of their NFCs and the active participation of their national experts in the work under the Convention, but stressed the need to establish a stable mechanism for the long-term funding of core activities;
- (d) Reiterated its invitation to all Parties which had not yet done so to consider providing voluntary contributions to the Trust Fund for financing the effect-oriented activities without undue delay.

77. The secretariat informed the Working Group that voluntary contributions in United States dollars should be sent to:

Bank Name:	JPMorgan Chase Bank
Address:	International Agencies Branch 1166, Avenue of the America, 17th floor New York, N.Y. 10036-2708, USA
ABA:	021000021 (Specific for US use)
SWIFT code:	CHASUS33
Account Name:	UN Geneva General Fund
Account Number:	485-001802

Each contribution must be clearly referenced:

Credit LUA Trust Fund ECE/EOA, Allotment account: LUC-25-270

78. These contributions should be clearly earmarked by year for which the contribution is made and the specific programme/coordinating centre (if applicable).

79. Alternatively, contributions may also be made by cheque made payable to "UN Economic Commission for Europe", clearly earmarked as indicated above, and addressed to:

Executive Office (Office 333)  
Office of the Executive Secretary  
Economic Commission for Europe  
Palais des Nations  
1211 Geneva 10

80. Whatever the method of payment, a communication should be sent to UNECE, specifying the amount contributed, the date and purpose of the payment.

## VIII. ELECTION OF OFFICERS

81. Mr. H.-D. Gregor (Germany) was re-elected Chairman. Mr. B. Achermann (Switzerland), Mr. G. Fenech (Canada) and Mr. T. Johannessen (Norway) were re-elected Vice-Chairmen and Mr. R. Farret (France) and Mr. W. Mill (Poland) were elected Vice-Chairmen.

82. The Working Group appreciated the important contribution of its Bureau to the recent impressive results and expressed its gratitude, in particular, to Mr. V. Bashkin and Mr. R. Guardans for their work as Vice-Chairmen. It also expressed its full support to the newly elected Bureau.

83. The Working Group noted that to meet all its future demanding tasks the Bureau might need to invite other experts to participate in its work.

## IX. OTHER BUSINESS

84. The secretariat presented a provisional list of meetings for 2002/2003 (annex) and invited all Parties and programmes to communicate to it any amendments or new information.

85. The Working Group noted the direct relevance of the forthcoming second workshop on the economic valuation of benefits to ecosystems due to air pollution abatement of the Network of Experts on Benefits and Economic Instruments (NEBEI) (2-3 October 2002, The Hague, Netherlands) for the effect-oriented activities and invited the programmes and national experts to participate actively.

86. The delegation of Sweden announced its willingness to host a workshop, in 2003 or 2004, to discuss the future priorities and long-term work-plan for the Working Group and its programmes. The Working Group considered that this would be a useful and timely exercise and requested Sweden to coordinate the preparations for the workshop with the Bureau.

87. The secretariat again drew the attention of the Working Group to the web pages of the Executive Body (<http://www.unece.org/env/eb>) and the Working Group on Effects (<http://www.unece.org/env/wge>).

88. The Chairman informed the Working Group that its twenty-second session was tentatively scheduled to be held from 3 to 5 September 2003, starting on Wednesday, 3 September 2003 at 10 a.m.

**Table 1. 2002 voluntary cash contributions towards financing the core activities under the Convention (in US\$) (as recorded on 30 August 2002)**

	ICP F	ICP W	ICP M	ICP V	ICP IM	ICP M&M	HEALTH	EOA-GEN	CIAM	T.CONTR.
Armenia										
Austria	2,358									2,358
Belarus										
Belgium										
Bosnia and Herzegovina										
Bulgaria										
Canada								12,146		12,146
Croatia										
Cyprus								870	130	1,000
Czech Republic								4,217	625	4,842
Denmark								27,272	4,040	31,312
Estonia										
Finland	1,605									1,605
France										
Georgia										
Germany	27,705									27,705
Greece										
Hungary	675							4,142	613	5,430
Iceland										
Ireland								6,000	890	6,890
Italy										
Kazakhstan										
Kyrgyzstan										
Latvia										
Liechtenstein	30									30
Lithuania										
Luxembourg	150									150
Malta										
Monaco										
Netherlands						36,910			36,915	73,825
Norway	1,695	33,501								35,196
Poland										
Portugal	450									450
Republic of Moldova										
Romania										
Russian Federation										
Slovakia	790									790
Slovenia	150							2,386	353	2,889
Spain										
Sweden										
Switzerland								52,001	770	52,771
The FYR of Macedonia										
Turkey										
Ukraine										
United Kingdom										
United States										
Yugoslavia										
European Community	4,995									4,995
<b>TOTAL 2002 CONTR.</b>	<b>40,603</b>	<b>33,501</b>				<b>36,910</b>		<b>109,034</b>	<b>44,336</b>	<b>264,384</b>

**Table 2.**

**2003 ESSENTIAL COORDINATION COSTS FOR THE EFFECT-ORIENTED ACTIVITIES**

(in thousands of United States dollars)

Activities	ICP Forests; PCC	ICP Waters; PC	ICP Materials; PMRC	ICP Vegetation PCC	ICP Integrated Monitoring; PC	ICP Modelling & Mapping CCE	TF Health Aspects	Subtotal Activities
Monitoring and assessment	130	60	80	30	70			370
Dose- response		55	50	70	40			215
Critical loads and levels	35	25	50	40	20	120		290
Dynamic modelling	35	35	30	20	75	135		330
Database management	85	65	80	70	70	30		400
<b>Total ICPs, and TF</b>	<b>285</b>	<b>240</b>	<b>290</b>	<b>230</b>	<b>275</b>	<b>285</b>	<b>105</b>	<b>1710</b>

**Table 3.**

**ESTIMATED ANNUAL 2004 and 2005 ESSENTIAL COORDINATION COSTS FOR THE EFFECT-ORIENTED ACTIVITIES**

(in thousands of United States dollars)

Activities	ICP Forests; PCC	ICP Waters; PC	ICP Materials; PMRC	ICP Vegetation PCC	ICP Integrated Monitoring; PC	ICP Modelling & Mapping CCE	TF Health Aspects	Subtotal Activities
Monitoring and assessment	130	60	80	35	75			380
Dose-response		55	55	70	40			220
Critical loads and levels	40	30	50	40	20	125		305
Dynamic modelling	40	40	30	30	80	140		360
Database management	90	70	85	70	75	30		420
<b>Total ICPs, and TF</b>	<b>300</b>	<b>255</b>	<b>300</b>	<b>245</b>	<b>290</b>	<b>295</b>	<b>110</b>	<b>1795</b>

Annex**PROVISIONAL LIST OF MEETINGS FOR 2002/2003**

2-4 September 2002 Geneva	EMEP Steering Body (twenty-sixth session)
18-20 September 2002 Geneva	Working Group on Strategies and Review (thirty-fourth session)
10-13 December 2002 Geneva	Executive Body for the Convention (twentieth session)
31 March-4 April 2003 Geneva	Working Group on Strategies and Review (thirty-fifth session)
3-5 September 2003 Geneva	Working Group on Effects (twenty-second session)
8-10 September 2003 Geneva	EMEP Steering Body (twenty-seventh session)
15-19 September 2003 Geneva	Working Group on Strategies and Review (thirty-sixth session)
9-12 December 2003 Geneva	Executive Body for the Convention (twenty-first session)
* * * * *	
11-13 September 2002 Geneva (tentatively)	Implementation Committee (tenth meeting)
* * * * *	
9-11 September 2002 Grimstad (Norway)	(Expert) workshop on biological response modelling (Models for biological recovery from acidification in a changing climate)
2-3 October 2002 The Hague (Netherlands)	Second workshop on the economic valuation of benefits to ecosystems due to air pollution abatement of the Network of Experts on Benefits and Economic Instruments (NEBEI)
7-9 October 2002 Moscow	Programme Task Force, ICP on Assessment and Monitoring of Acidification of Rivers and Lakes (eighteenth meeting)
21-22 October 2002 Beroun (Czech Republic)	Fifth trilateral meeting of the Czech Republic, Germany and Poland to harmonize critical loads and their exceedances
28-30 October 2002 Sudak (Ukraine)	Fourth subregional training workshop on modelling and mapping in East and Central European countries

30-31 October 2002 Heerenveen (Netherlands)	Workshop on ICP Forests level II data evaluation
6-8 November 2002 Sitges, near Barcelona (Spain)	Joint Expert Group on Dynamic Modelling (third meeting)
11-13 November 2002 Bern	Workshop on empirical critical loads for nitrogen deposition on (semi-) natural ecosystems
19-22 November 2002 Gothenburg (Sweden)	Workshop on level II critical levels for ozone
2-4 December 2002 Berlin (tentatively)	Ad hoc meeting of experts on further development of effect-based critical limits and transfer function for heavy metals
27-30 January 2003 Velenja (Slovenia)	Programme Task Force, ICP on Effects of Air Pollution on Natural Vegetation and Crops (sixteenth meeting)
8-9 May 2003 Munich (Germany)	Programme Task Force, ICP on Effects of Air Pollution on Materials, Including Historic and Cultural Monuments (nineteenth meeting)
8-10 May 2003 Helsinki	Programme Task Force, ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems (eleventh meeting)
12-14 May 2003 Munich (Germany)	Workshop on release of heavy metals from materials due to corrosion
19-23 May 2003 Tartu (Estonia)	Programme Task Force, ICP on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (nineteenth meeting); and thirteenth CCE workshop
24-28 May 2003 Zagreb	Programme Task Force, ICP on Assessment and Monitoring of Air Pollution Effects on Forests (nineteenth meeting)
Spring 2003 (tentatively)	Joint Task Force on the Health Aspects of Air Pollution (sixth meeting)