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

Working Group on Effects
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Items 4 and 7 of the provisional agenda

FUTURE PRIORITIES AND OBJECTIVES OF THE EFFECT-ORIENTED ACTIVITIES

Note prepared by the Bureau of the Working Group on Effects
in collaboration with the secretariat

I. INTRODUCTION

1. At its seventeenth session, the Working Group on Effects approved the note on the further development of the effect-oriented activities (EB.AIR/WG.1/1998/3) as amended. It also invited all Task Forces to consider the practical implementation of the proposed changes in the objectives and priorities of individual programmes at their next meetings, while preparing plans for future activities.

2. The Working Group reiterated the continuing need for regularly updating the objectives and methods of work of individual programmes, in view of the priorities of the Executive Body, and noted that the results of the external review of the effect-oriented activities, once considered and approved by the Working Group on Effects and the Executive Body (in 1999), might have an important impact on the future orientation, objectives, structure and scope of the programmes= activities.

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3 The Working Group agreed that, while the main objectives of the effect-oriented activities, even with new pollutants included, remained in principle the same, their relative importance for the work under the Convention would change and would vary considerably between the programmes.

4 The Working Group also noted that providing results of assessments of, and/or any new knowledge on, the state of the environment and the observed trends to the Executive Body and other subsidiary bodies with a view to identifying the benefits and the shortcomings in the implementation of current agreements, should receive a high priority within the effect-oriented activities.

5 The Working Group agreed to reconsider the further development of the effect-oriented activities at its eighteenth session in 1999, taking into account any changes in activities of individual programmes proposed by the Task Forces, the conclusions and recommendations of the external review, and the Executive Body's deliberations on its medium- and long-term activities (EB.AIR/WG.1/1998/2, paras. 13 (a)-(c) and 41 (d)).

II. FUTURE ORGANIZATION OF WORK OF THE EXECUTIVE BODY

6 At its fifteenth session, the Executive Body decided on future priorities for the period after the completion of the protocol on nitrogen oxides and related substances, and requested its Bureau to prepare a proposal on a new structure. At its sixteenth session, the Executive Body agreed that once the present negotiation phase was completed, probably in late 1999, the Executive Body's priorities would shift to the:

- (a) Review and extension of existing protocols; and
- (b) Implementation of and compliance with existing agreements.

7 It also stressed that these two-policy related tasks required sound scientific support in three areas, the core activities:

- (a) Atmospheric monitoring and modelling;
- (b) Effects; and
- (c) Integrated assessment, including modelling and economic benefit evaluation.

8 The Executive Body agreed that the Working Group on Effects would continue to coordinate the work of the International Cooperative Programmes (ICPs) and their centres, the Task Forces on Health and Mapping, and the Coordination Center for Effects (CCE). It would provide the scientific basis for the review of the effects, including the possible recovery of the environment and human health following emission reductions in line with protocols. It would also alert the Executive Body to any perceived additional, or changed, threats caused by air pollution that might require policy response (EB.AIR/1998/5, paras. 1-3 and 7; ECE/EB.AIR/59, para. 58 (a)).

III. SUMMARIZED CONCLUSIONS AND RECOMMENDATIONS OF THE EXTERNAL REVIEW OF THE EFFECT-ORIENTED ACTIVITIES

9 The report of the external review of the effect-oriented activities was discussed by the Extended Bureau of the Working Group on Effects (consisting of the Bureau, the chairpersons of the Task Forces and representatives of the Programme Centres) and the external reviewer at a meeting in Toronto (Canada) in February 1999. The summary below outlines the main conclusions of the report and the discussions.

A. Overview of all activities

10 The reviewer noted the success of all programmes in promoting international cooperation among scientists and demonstrating strong leadership as reflected by the amount of data gathered and the growing scientific participation. While the scientific quality of the programmes was generally very good, there was a lack of effective written communication from the programmes especially to policy makers and the general public. It was agreed that there was a need for:

- (a) More commonality in reporting (including logos, common formats, covers, report frontispiece) to create an identity;
- (b) Effective executive summaries which identify the main results and inform rather than describe (there were some good examples in the ICP reports and some bad ones);
- (c) Clear identification of the most important findings, for instance in executive summaries near the front rather than in conclusions near the back; these should be collated for presentation to the Executive Body;
- (d) A complete list of objectives for all of the effects-oriented activities;
- (e) Exploring possible links to other international organizations and/or conventions dealing with environmental issues (such as global climate change); concrete proposals for a closer cooperation should be presented to the Executive Body for consideration.

B. ICP Forests

11 The reviewer had encountered some problems in reviewing this Programme. He noted there had been difficulties in interpreting the level I results and further work was needed in this area. He welcomed the increased focus on level II and thought this might provide the opportunity for upscaling level I and identifying links to level II results. He recognized that effective collaboration with the European Commission (EC) had provided important resources for the continuation of this Programme. The European Commission had planned a new phase of its programme for 2001 and ICP Forests planned to re-evaluate its future work at the same time. The Extended Bureau agreed that:

- (a) The plans to re-evaluate the Programme and make provision for long- term planning beyond 2000 should proceed with the active involvement of scientists and the Extended Bureau of the Working Group on Effects;
- (b) These plans should consider shortfalls in the current level I activities and in the reporting of these results;
- (c) Level II monitoring had potential for the future both in its own right and, maybe, when linked to level I results;
- (d) There was a need for improved clarity in reporting, and a need for better communications, especially to policy makers.

C. ICP Waters

12 The reviewer found few problems with this Programme, and noted that executive summaries in some reports were good examples. The new ICP Waters brochure was also an excellent example of effective communication. There was nevertheless a need:

- (a) For improvements to some executive summaries to make them more informative; the reviewer felt that cumulative results in executive summaries would also be effective;

- (b) For a wider participation in the biological programme to address current shortfalls;
- (c) To accentuate that the critical loads activities are carried out in close cooperation with the Mapping Programme and that they use the same methods and types of data;
- (d) To stress the important message that there is a shortfall in reporting critical loads for freshwater, which appear to be the most sensitive ecosystems in many countries.

D. ICP Materials

13 While the reviewer noted the excellent work done by this Programme, he felt that its conclusions were not always adequately presented. Not all reports had executive summaries; results were often hidden in conclusions. Reports produced for the wider public would be useful and help to convey important results from the Programme; non-involved scientists could help produce readable reports. It was agreed that:

- (a) Executive summaries highlighting the conclusions were needed at the beginning of each report;
- (b) Work on the economic impacts of pollutants was still needed; it was noted that there was a workshop planned in 2000 to consider mapping stock at risk;
- (c) A brochure of the eight-year report would aid communication of important results;
- (d) The multi-pollutant study was justified but the aims needed to be strengthened.

E. ICP Crops (Vegetation)

14 The reviewer noted the excellent progress made by the Programme since the very critical review of its work in 1994. Documents were now well focused for the policy maker, although executive summaries could be even stronger. The objectives of the Programme were clear, but did not indicate how they related to the effect-oriented activities in general. It was agreed that:

- (a) Economic aspects of crops were important and should be addressed in future work;
- (b) The planned natural vegetation pilot studies could be an important part of the Programme in the future;
- (c) Further work on critical levels was needed;
- (d) The effective use of artificial neural networks (ANN) for developing predictive models from available data should be explained clearly, with examples, to other scientists;
- (e) There were possible opportunities for linking the activities with the world climate programme provided it was consistent with the objectives of the Convention.

F. ICP Integrated Monitoring

15 This Programme had established a strong international reputation but a more positive attitude to presenting results was needed. Again reports would benefit from executive summaries. For instance, the important results of the European Union LIFE project on Development of Assessment and Monitoring Techniques at Integrated Monitoring Sites in Europe were "buried" in a conclusions chapter. The reviewer expressed his concern over the use of critical loads for heavy metals. It was concluded that:

- (a) Executive summaries and the presentation of results should be improved;
- (b) Dynamic modelling was important for interpreting impacts and this work should be continued;
- (c) Continued efforts for common methodologies and inter-site comparisons were important;

(d) While the reviewer was uncomfortable about the use of critical loads for heavy metals, the term critical threshold had been adopted by the Mapping Programme.

G. Mapping Programme

16 The reviewer had looked at this programme critically because he felt that critical load maps had been an important "policy driver" in the development of the Protocols. He was concerned about the problems of communicating the use of critical loads and felt that the technical language was often difficult for the non-specialist to understand. There was no doubt that the application of critical loads in the Mapping Programme had been successful, but increasing their complexity had risks. If the concept of the simple idea was lost, then the acceptance of the approach by policy makers may be lost too. On the other hand, increasing complexity had been unavoidable for the purposes of the integrated assessment modelling. It appeared to the reviewer that there was a "proliferation of critical loads" and the time had come to take stock and simplify the issues for the outside world. He acknowledged that additional documents, such as the Mapping Manual and the Report of the Heavy Metals and POPs Workshop, were available which provided further technical information. There were also cross programme links with other ICPs that had not been appreciated by the reviewer. It was recognized that the need to refine methods and assessments and hence the increasing complexity of procedures may lead to some confusion and that adequate steps were required to avoid such a possibility. This risk, however, should not hamper the development of new concepts and better approaches. It was concluded that:

- (a) A major effort should be made to improve communications regarding the definitions and use of critical loads;
- (b) The Mapping Programme had a heavy workload, there were many large workshops and there had been time pressures for collating data and maps for the Protocols. However, it was now a high priority to produce a stand-alone document to review and summarize critical loads and their application. This should describe the evolution of critical loads and their definitions.

IV. PROPOSALS FOR FUTURE WORK UNDER THE WORKING GROUP ON EFFECTS

A. New priorities and objectives of the Working Group on Effects

17 The priorities of the Working Group on Effects will continue to reflect the needs of the Executive Body. While these will change after completion of the preparation of the multi-pollutant, multi-effect protocol, the Working Group will maintain its efforts to collect and assess information on:

- (a) The present status and long-term trends in the degree and geographic extent of the impact of air pollution and other related stress factors in the ECE region;
- (b) Dose-response relationships for major air pollutants;
- (c) Critical loads, levels and limits for major air pollutants.

18 The fulfilment of the above-mentioned tasks would require maintaining and strengthening efforts in developing methods and collecting data for:

- (a) Monitoring the state of the environment;
- (b) Assessing the effects of air pollution;
- (c) Deriving dose/response relationships;
- (d) Trend analysis;

- (e) Determining critical loads, levels and limits;
- (f) Mapping critical levels and loads and areas where they are exceeded;
- (g) Developing and applying risk assessment methods;
- (h) Assessing stock at risk;
- (i) Dynamic modelling of ecosystems= response to air pollution;
- (j) Economic evaluation of damage; and
- (k) Assessing uncertainties in the different elements.

19 The future focus of these activities will be to provide the means for:

- (a) Assessing results, especially in relation to the effectiveness of the implementation of existing Protocols to the Convention;
- (b) Identifying the most endangered areas, ecosystems and receptors and the extent of the effects of air pollution on human health, terrestrial and aquatic ecosystems, and materials as a basis for further development of air pollution abatement strategies;
- (c) Scientific substantiation for improving the existing and developing possible future protocols;
- (d) Related scientific activities outside the Convention and/or joint efforts with other bodies/organizations.

20 For all programmes and activities under the Working Group on Effects high priority will be given to the development of effective means of communication, including use of web pages and related digital documents, and the preparation of summary documents.

B. Organizational structure and methods of work

21 The Bureau will prepare, for the Working Group on Effects, proposals and draft decisions on the planning, coordination, assessment and reporting of activities, as defined in the work-plan for the implementation of the Convention. The Bureau will discuss and agree the means for accomplishing this and take the necessary action in collaboration with the secretariat. In addition, the Bureau will meet with the chairpersons of the subsidiary bodies and the representatives of the Programme Centres (the Extended Bureau of the Working Group on Effects) to discuss and develop joint activities under the Working Group.

22 It is proposed that the Programme on Mapping, with a task force led by Germany, should be known as the International Cooperative Programme on Mapping Critical Loads and Levels and their Exceedances, like the other subsidiary bodies of the Working Group on Effects. ICP Mapping would be supported as before by the activities of the Coordination Center for Effects.

23 The detailed planning, research, monitoring, assessment and reporting activities under the Working Group will continue to be carried out by the six International Cooperative Programmes: (i) ICP Forests; (ii) ICP Waters; (iii) ICP Materials; (iv) ICP Crops (Vegetation); (v) ICP Integrated Monitoring; and (vi) ICP Mapping. This should be done with due attention to avoiding any unnecessary duplications and ensuring the most effective use of available resources.

24 In addition, the Joint Task Force on Health Aspects of Air Pollution, a subsidiary body of the Executive Body led by the World Health Organization (WHO), will continue to provide all necessary inputs on the effects of long-range transboundary air pollution on human health.

25 As part of its short- and medium-term plans for further developing the effects-oriented activities and, in particular, for effectively using the available resources, the Working Group on Effects should consider possible options for bringing together and linking closely related activities and tasks, for instance in the following areas:

- (a) Terrestrial environment;
- (b) Aquatic environment;
- (c) Built environment;
- (d) Environmental modelling and mapping;
- (e) Case studies of selected problems.

26 One of the options might be to organize, when needed, joint meetings of various task forces (e.g. ICP Crops (Vegetation) and ICP Forests, ICP Forests and ICP Integrated Monitoring, ICP Integrated Monitoring and ICP Waters, or ICP Mapping and ICP Integrated Monitoring).

27 Other options include creating ad hoc joint expert groups to address specific problems, to undertake short-term tasks, or to perform particular case studies. These ad hoc groups, however, should not be part of the formal structure under the Working Group on Effects, but would require clearly defined tasks and timetable for their work.

28 In a long-term perspective, depending on the future development of the activities under the Convention and its Executive Body, the closer cooperation and integration might lead to the regrouping of the effects-oriented activities under fewer subsidiary bodies. However, any possible modification of the Working Group's organizational structure would require cost-benefit and efficiency studies to be undertaken in close collaboration with the Executive Body.

C. Actions for individual programmes/task forces

29 The existing programmes and their task forces and programme centres should take note of the comments of the external review and the subsequent discussions and recommendations by the Bureau. In addition, while noting the changed priorities of the Working Group, the general conclusions of the external review and the need for an efficient and coordinated use of resources, the following should receive special attention in the programmes' short- and medium-term plans.

30 ICP Forests:

- (a) Finalize the internal review of the programme, updating its medium- and long-term objectives and priorities, and its structure;
- (b) Review the monitoring parameters and methods, further develop and explore methods for the integrated assessment of the status and evaluation of trends in forest ecosystem conditions under the impact of air pollution, including ozone. With stress on intensive monitoring on permanent plots, possibilities for upscaling results to the large scale should be explored and developed;

(c) As the highest priority, cause-effect (air pollution-forest condition) relationships should be derived on the basis of already available and/or newly compiled data;

(d) Establish on-line access to information/data on forest condition available at the Programme Centre.

31 ICP Waters:

(a) Maintain the monitoring programme and further assess trends in water chemistry and biota related to the implementation of pollution abatement strategies;

(b) Use dynamic modelling to predict changes in water chemistry with regard to decreases in acidic emissions and the potential for recovery;

(c) Draw attention to the high sensitivity (low critical loads) of freshwater systems to acidification;

(d) Continue efforts to expand the biological monitoring programme, taking note of the recommendations from the 1998 workshop on biological monitoring;

(e) Improve and expand the database with regard to: (i) more complete regional coverage; and (ii) inclusion of data on heavy metals.

32 ICP Materials:

(a) Implement the new exposure programme over a wider geographical area to derive dose-response functions and to determine trends in material damage for complex multi-pollutant situations (including SO₂, O₃, NO₂, HNO₃ and particulates);

(b) Continue the assessment of stock at risk;

(c) Map areas with elevated risk of corrosion damage when acceptable levels of corrosion are exceeded;

(d) Evaluate/calculate costs of damage to technical structures and objects of cultural heritage for different pollution scenarios.

33 ICP Crops (Vegetation):

(a) Maintain and further develop the programme of experiments on the effects of ambient ozone episodes on crops and natural vegetation;

(b) Continue using the data from ICP Crops (Vegetation) experiments to develop dose-response models which incorporate the modifying influence of level II factors on the responses of crops and natural vegetation to ozone;

(c) Analyse trends in ICP Crops (Vegetation) data;

(d) Produce "stock-at-risk" maps and contribute to an economic assessment of losses due to ozone;

(e) Continue the analysis of clover samples for heavy metal content and contribute to the validation of maps of heavy metal deposition in the ECE region.

34 ICP Integrated Monitoring:

(a) Further develop integrated monitoring at selected sites of the modified monitoring network with stress on: (i) setting priorities for monitored parameters with a view to building up the consistent database needed for dynamic modelling and trend analysis; and (ii) more complete coverage of typical ecosystems in the region;

(b) Continue modelling ecosystems= response to effects of long-range transboundary air pollution;

(c) Study heavy metals fluxes and pools in selected ecosystems;

(d) Study bioindication and modelling of air pollution effects on vegetation;

(e) Consider possibilities for effective cooperation with other international programmes and activities (e.g. in studies of climate changes).

35 ICP Mapping:

(a) Review and update methods and data for calculating critical loads for the purposes of the Convention, including the assessment of uncertainties. Provide specific databases for the Implementation Committee and a possible future centre for integrated assessment modelling;

(b) Initiate the collection of level II critical levels data for ozone;

(c) Take steps to broaden participation in the Programme and increase cooperation with other ICPs and other bodies under the Executive Body;

(d) Prepare a review document summarizing the development of the programme methodology and its application for mapping critical loads and levels within the framework of the Convention;

(e) Further develop the methodology for the risk assessment of selected pollutants;

(f) Develop methods for dynamic modelling at the regional level, in collaboration with other ICPs.

36 The Joint Task Force on the Health Aspects of Air Pollution may wish to consider as its short- and medium-term priority the continued assessment of available information on population exposure to, and health effects of:

(a) Particulates from long-range transport;

(b) Heavy metals (starting with Cd, Hg and Pb);

(c) Selected persistent organic pollutants.

V. CONCLUSIONS AND RECOMMENDATIONS

37 The external review acknowledged the successful implementation of the effects-oriented activities and recognized the high scientific quality of its achievements. The report also presented several proposals concerning objectives and methods of implementation of some Programmes and/or parts of their activities. As a general observation, however, it was concluded that there was an acute need for a substantial improvement in effectively communicating important findings of the effects-oriented activities to policy makers and the general public.

38 The Executive Body at its recent sessions re-confirmed the continuing important role of the Working Group on Effects and the effects-oriented activities in implementing the Convention, in particular by providing the scientific basis for the assessment of effects of air pollution on the environment and human health, and for reviewing trends as related to the implementation of the Protocols.

39 All Programmes and their Task Forces are requested to develop their activities with due attention to: (i) the defined future objectives of the Executive Body; (ii) the proposed new priorities and objectives of the Working Group on Effects; and (iii) the conclusions and recommendations of the external review of the effect-oriented activities.

40 To improve further the quality of data produced and to ensure a rational use of available resources, every effort should be made to make common use of well equipped monitoring sites and towards establishing even closer cooperation with the monitoring stations included in the EMEP network.

41 The Bureau of the Working Group on Effects is invited to consider, in consultation with the Executive Body and its Bureau, possibilities for closer cooperation with some other environmentally oriented conventions (e.g. Convention on Climate Change), the further integration of activities and a more effective exchange of information.

42 The Bureau of the Working Group on Effects is invited to further review and develop the present note in the light of new decisions of the Executive Body, and to present updated information to the Working Group on Effects at its nineteenth session.