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

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Item 8 of the provisional agenda

Action plan for the implementation of the long-term strategy for the Convention

**REVISED LONG-TERM STRATEGY OF THE EFFECTS-ORIENTED
ACTIVITIES**

Note by the Bureau of the Working Group on Effects

I. INTRODUCTION

1. At its twenty-sixth session in December 2008, the Executive Body considered a note on a long-term strategy for the Convention (ECE/EB.AIR/2008/6) prepared by its Bureau and decided to finalize the document for submission to its twenty-seventh session in 2009. The Executive Body appreciated that the Working Group on Effects and the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) were updating their strategies. The draft strategy was produced in accordance with the Convention's 2009 workplan (ECE/EB.AIR/96/Add.2, item 3.1 (d) (iii)), approved by the Executive Body at its twenty-sixth session in December 2008. The Working Group approved

this draft and decided to submit it to the twenty-seventh session of the Executive Body in December 2009 for adoption. At its thirtieth session the Working Group decided to make further amendments to the draft strategy and decided to submit it to the twenty-ninth seventh session of the Executive Body in December 2011 for adoption. The amended strategy now covers the time frame 2010 - 2020 and beyond

2. The unique way in which science supports policy development is considered as a core strength of the Convention. Together with EMEP, the Working Group on Effects forms the two pillars of scientific work that deliver the required scientific information in an efficient way.

3. The analysis of environmental and health effects of air pollutants remains a core issue under the Convention, in particular with respect to effects of reactive nitrogen, particulate matter, ozone, and risks from heavy metals and persistent organic pollutants (POPs). The adverse effects addressed by the Convention have become linked to endpoints considered by other international agreements such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity. The considerations of air pollution effects would need to be extended to hemispheric and global scales. An integration of air pollution effects with climate change, land use and other driving forces is deemed essential.

4. The Working Group aims to support effective implementation of the Convention in line with its mandate, in particular in assessing the results, effectiveness and sufficiency of existing protocols as well as their revision and extension. The effects-oriented activities establish and continuously develop a reliable, up-to-date scientific basis that is used to design and assess environmental policies, including cost-benefit analysis.

5. In recent years, new environmental problems have emerged and certain existing ones have gained in importance. The driving forces and socio-economic conditions have changed. In particular, improvements are needed regarding: (a) the interaction of air pollution control with climate change, land use change and the protection of biodiversity; (b) more active participation of, and cooperation with, countries in Eastern Europe, Caucasus and Central Asia (EECCA) and South-Eastern Europe (SEE); and (c) development of common policies on a hemispheric or global scale. These requirements would need to be reflected in the aims and scope of the future effects-oriented activities.

II. OBJECTIVES

6. The Working Group focuses on the effects of nutrient nitrogen and acidifying air pollutants, tropospheric ozone, volatile organic compounds, particulate matter including black carbon, heavy metals and POPs on the environment and health. It also alerts the Executive Body to any perceived additional – or changed – threats caused by air pollution that might require policy response.

7. The Working Group collects, assesses and further develops environment and health related knowledge and information on:

(a) The present status, long-term trends and dynamics, as well as the degree and geographical extent, of the impacts of air pollution, in particular but not exclusively its long-range transboundary impacts;

(b) Exposure-response relationships for agreed air pollutants;

(c) Critical loads, levels and limits for agreed air pollutants, and their links to observations;

(d) The linkages between the effects of air pollution, biodiversity and the effects of changes in climate and land use.

8. The effects-oriented activities: (i) prioritize problems to be solved and the timing of main tasks; (ii) collect, process and assess data; investigate and enhance where needed the robustness of effects assessments, and (iii) present results in a clear and policy-relevant manner. The up-to-date scientific knowledge and information will:

(a) Support the development of air pollution abatement strategies and decision-making at the national and international levels;

(b) Assess the results and effectiveness of the implementation of the existing protocols to the Convention, and compile and evaluate available scientific knowledge for its application in integrated assessment models and air pollution policy;

(c) Attract more Parties, as well as countries from outside the United Nations Economic Commission for Europe (UNECE) region, to participate in the effects-oriented work and activities under the Convention, as active involvement is essential for the relevance and quality of the Working Group's deliverables;

(d) Continue to inform stakeholders and the general public about the effects of air pollution on the environment and health.

III. LONG-TERM PRIORITIES

9. In fulfilling its mandate and in meeting the needs of the Executive Body, the Working Group identifies the following priority areas as of particular importance in the scientific work and in the development of methods and tools for the years 2010–2020:

(a) Provision of quantitative policy-relevant information on monitored and modelled air pollution effects;

(b) Derivation of exposure-response functions for chemical and biological effects of air pollutants, inter alia for effects of nutrient nitrogen, ozone and acidifying pollutants and ecosystems' functioning and biodiversity, in combination with other stresses such as land management and climate change;

(c) Gathering information on policy-relevant user friendly indicators to evaluate pollution effects on the environment and health;

(d) Monitoring and assessment of effects on the environment and health as well as their trends;

(e) Investigate the relevance of short lived climate forcers from the viewpoint of human and ecosystem health as well as detrimental effects on materials.

(f) Further development of modelling and mapping procedures, in particular for effects of nitrogen and ozone on the environment, ozone and particulate matter on health, multi pollutant effects on environment and materials, and of dynamic processes of damage and recovery due to eutrophication, acidification and heavy metal accumulation, including biological effects;

(g) Further studies of the uncertainties, robustness and validation of models, as well as data assumptions and uncertainties;

(h) Gathering information on possible risks from POPs and heavy metals not regulated in global agreements ;

(i) Evaluation of environmental benefits of air pollution control policies, as well as contribution to economic assessment of damages.

10. Considering the available data on effects within the Convention, the Working Group gives priority to the following pollutants: nitrogen, particulate matter including black carbon, ozone, sulphur, heavy metals and POPs.

11. In line with the long-term strategy for the Convention decided by the Executive Body (ECE/EB.AIR/106/Add.1, Decision 2010/18) and considering new scientific knowledge, available data and new emerging issues, areas for inclusion in the long-term strategy of the effects-oriented activities are, inter alia:

(a) Further strengthen the cooperation with the EMEP Programme

(b) Supporting and promoting capacity-building and enhanced participation of EECCA and SEE countries in the effects-oriented activities;

(c) Continuing to strengthen scientific and technical links to other regions, to share knowledge, experiences, data and information through scientific outreach;

(d) Exploring further synergies and mutual benefits of closer linkage of effects-oriented activities to climate change mitigation and adaptation;

(e) Further developing quantification and methods of policy-relevant and user friendly indicators of air pollution effects and their links to the integrated modelling work;

(f) Preparing proposals for strengthening existing control measures and for including

additional pollutants on the basis of observed and documented adverse effects;

(g) Further developing forms and methods for efficient, comprehensive and timely communication of scientific results within the Convention and to policymakers, the scientific community and the general public.

IV. METHODS

12. The effects-oriented activities under the Working Group comprise large-scale transnational monitoring and research networks that provide the scientific expertise to assess effects on ecosystems and materials. These networks (a) observe and document the present situation with respect to chemical and biological parameters, (b) generate and collect data, and (c) collate the best available information and scientific knowledge on a regional basis on the effects of major air pollutants and their recorded trends. This information is used for the creation and validation of models to reflect environmental processes and to assess the risks of air pollution. The work includes comprehensive case studies, the modelling and mapping of effects as well as the assessment of damage and recovery in a broad context, including the terrestrial, aquatic and built environments.

13. The work on the effects on human health of air pollutants is based on the comprehensive knowledge gathered and synthesized from inputs from research organizations and EMEP as well as from the World Health Organization (WHO) and its collaborating networks, such as those on exposure assessment and health effects studies.

14. The Guidelines for reporting on the monitoring and modelling of air pollution effects (ECE/EB.AIR/2008/11; see also the related Executive Body decision 2008/1) are the basis for the work. Cooperation between International Cooperative Programmes (ICPs) concerning monitoring, modelling and mapping is carried out in areas and at sites of common interest. The Bureau will collaborate with the ICPs in reviewing and refining monitoring strategies in order to establish criteria that define the greatest risks or in order to provide additional monitoring where it is required. Shared information systems for effects-oriented activities will enhance assessment capabilities and improve common access to information.

15. To review the obligations of the effects-related work under the Convention, the Working Group and its Bureau will oversee the contributions of the individual programmes and task forces to the implementation of its long-term strategy. Reassessment of tasks will depend on the outcome of the envisaged review of protocols and on any new priorities of the Executive Body.

V. ORGANIZATION

16. The Working Group and its Bureau are responsible for the planning, coordination and reporting of effects-oriented activities under the Convention. Specific activities are coordinated

and implemented by the task forces of the ICPs, the Joint Task Force on the Health Aspects of Long-range Transboundary Air Pollution of the WHO European Centre for Environment and Health (ECEH) and the Convention's Executive Body (hereinafter, the Task Force on Health), and the Joint Expert Group on Dynamic Modelling.

17. The international cooperative effects-related activities under the Convention (and their designated programme centres), are:

- (a) ICP on Assessment and Monitoring of Air Pollution Effects on Forests, led by Germany (Johann Heinrich von Thünen-Institute (vTI), Federal Research Institute for Rural Areas, Forestry and
- (b) ICP on Assessment and Monitoring of Air Pollution Effects on Rivers and Lakes, led by Norway (Norwegian Institute for Water Research, Oslo);
- (c) ICP on Effects of Air Pollution on Materials, including Historic and Cultural Monuments, led by Sweden and Italy (Swerea KIMAB (earlier: Swedish Corrosion Institute), Stockholm);
- (d) ICP on Effects of Air Pollution on Natural Vegetation and Crops, led by the United Kingdom (Centre for Ecology and Hydrology, Bangor, United Kingdom);
- (e) ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems, led by Sweden (Finnish Environment Institute, Helsinki);
- (f) ICP on Modelling and Mapping of Critical Loads and Levels and Air Pollution Effects, Risks and Trends, led by France (National Institute for Public Health and the Environment, Bilthoven, the Netherlands);
- (g) The Task Force on Health, led by the WHO/ECEH (Bonn Office, Germany).

18. The Extended Bureau of the Working Group is responsible for implementing the workplan. The Extended Bureau comprises the Bureau of the Working Group, the Chairs of the individual task forces and the Joint Expert Group on Dynamic Modelling, and the representatives of the programme centres of the ICPs and invited experts.

19. The designated programme centres associated with each programme are largely funded by the lead or host countries. Programme centres are also funded through the Convention's trust fund under revised decision 2002/1 of the Executive Body.

20. While striving to develop further the effects-oriented activities and in particular to ensure effective use of available resources, the Working Group also considers options for more closely linking related activities and tasks.

21. Depending on the specific needs identified by the Working Group, such options include:

(a) Joint and preferably pollutant-specific workshops and other meetings of the programme task forces;

(b) Using ad hoc joint expert groups to address specific problems, to undertake short-term tasks or to carry out particular case studies. These ad hoc groups, however, are not necessarily part of the formal structure of the Convention, but may report on clearly defined tasks through one or more of the programmes, with clear timetables for completion of their work.

22. The Working Group works in close collaboration with other subsidiary bodies under the Convention. Exchange of data and information and collaboration with other bodies is encouraged, developed and maintained. In particular, these include the Steering Body to EMEP, the Working Group on Strategies and Review, the Task Force on Heavy Metals and the Task Force on Reactive Nitrogen. The Working Group on Effects actively participates in the collaborative work on devising new policies and in assessments of the efficiency of current and future protocols.

23. The Working Group also provides information for related scientific activities outside the Convention and for joint efforts with other bodies and organizations. This includes, inter alia, cooperation with the European Environment Agency, UNFCCC, the Convention on Biological Diversity, the Millennium Ecosystem Assessment, the Arctic Monitoring and Assessment Programme (AMAP) and the Acid Deposition Monitoring Network in East Asia (EANET).

24. Considering that an increasing number of Parties to the Convention are Member States of the European Community, the synergies between the Convention and European Community work are taken into account. The Working Group also looks for methods to increase the involvement of EECCA and SEE countries, as these subregions are a special focus for the Convention.

25. While continuing to further improve its geographical coverage of the entire UNECE region, the Working Group devotes attention to intensifying its cooperation with other regions (e.g. Asia), to the specific problems of the Mediterranean basin and to initiating collaboration with new Parties to the Convention.

VI. SUMMARY AND VISION

26. The principal aims of the Working Group are:

- (a) To produce quantitative policy-relevant information on air pollution effects as a basis for air pollution abatement measures;
- (b) To ensure sufficient monitoring and modelling of the effects of air pollutants on the environment and human health;
- (c) To improve understanding of air pollution processes and trends of effects and recovery;
- (d) To provide scientific background for assessing the effectiveness and sufficiency of existing protocols, and for preparing new ones if required.

27. The Working Group's organization provides a unique science-based framework to influence environmental and health issues caused by multiple pollutants in the UNECE region. This framework is well adapted to assessing the effectiveness and sufficiency of air pollution abatement policies.

28. The Working Group supports further aspirations to reduce the detrimental effects of air pollution. It requires long-term and stable financing to safeguard, maintain and develop its monitoring and scientific activities. It seeks to strengthen the participation of more Parties, so as to improve the foundation for abatement policies in the future.
