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

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**AIR POLLUTION AND CLIMATE CHANGE: DEVELOPING A FRAMEWORK FOR
INTEGRATED CO-BENEFITS STRATEGIES**

Report by the secretariat

INTRODUCTION

1. This document, prepared by the secretariat, reports the results of a major conference and workshop titled “Air Pollution and Climate Change: Developing a Framework for Integrated Co-benefits Strategies”, held from 17 to 19 September 2008 in Stockholm. It was prepared in consultation with Sweden, which hosted the event, and the Chairs of the event. The report is prepared in accordance with the 2008 workplan for the implementation of the Convention, (ECE/EB.AIR/91/Add.2 and ECE/EB.AIR/91/Add.2/Amend.1, section 1.1 (k)) as amended by the Bureau of the Executive Body according to its mandate (ECE/EB.AIR/91/Add.1, annex I). The event was held under the auspices of the Convention and the United Nations Environment Programme (UNEP), in consultation with the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The event was funded by the Swedish International Development Cooperation Agency (Sida) and organized by the Stockholm Environment Institute

(SEI) and the International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA) as secretariat for the Global Atmospheric Pollution Forum.

2. One hundred and ten experts attended the workshop. The following Parties to the Convention were represented: Austria, Belgium, Canada, Croatia, the Czech Republic, France, Germany, Italy, the Netherlands, Norway, Romania, Sweden, the United Kingdom of Great Britain and Northern Ireland and the United States of America; the European Community was also represented. Also present were representatives of the Steering Body of EMEP¹, the Task Force on Hemispheric Transport of Air Pollution, the Expert Group on Techno-economic Issues and representatives of the Working Group on Effects' International Cooperative Programme (ICP) on Integrated Monitoring, ICP Materials and ICP Vegetation, as well as the Centre for Integrated Assessment Modelling of EMEP.

3. The meeting was attended by representatives of UNEP, the UNFCCC secretariat, the Arctic Monitoring and Assessment Programme, the Clean Air Initiative for Asian Cities (CAI-Asia), CAI-Latin America, the Air Pollution Information Network for Africa (APINA), the Acid Deposition Monitoring Network in East Asia (EANET), the Inter-American Network for Atmospheric and Biospheric Studies (IANABIS) in Latin America, and the Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia. The European Commission and its Joint Research Centre were also represented.. In addition, the meeting was attended by representatives of SEI, IUAPPA, the European Federation of Clean Air and Environmental Protection Associations, the International Council on Clean Transportation, the Union of the Electricity Industry, the European Environmental Bureau, the Oil Companies' European Association for Environment, Health and Safety in Refining and Distribution. A member of the Convention secretariat also attended.

4. The Global Atmospheric Pollution Forum, which had been responsible for planning the event, was represented through the representatives of its component bodies: the Convention, APINA, CAI-Asia, CAI-Latin America, EANET, IANABIS, IUAPPA, the Malé Declaration and SEI.

5. From outside the ECE region, the following countries were represented: Australia, Brazil, Chile, China, Ghana, India, the Islamic Republic of Iran, Japan, Kenya, Mongolia, Panama, the Philippines, Thailand, Tunisia, Zambia and Zimbabwe.

¹ The Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe.

6. Mr. R. Mills (IUAPPA) and Mr. J. Kuylenstierna (SEI), the convenors of the Global Atmospheric Pollution Forum, chaired the meeting.

I. AIMS OF THE CONFERENCE/WORKSHOP

7. The conference/workshop brought together international policymakers and scientists to consider ways to develop and implement programmes that simultaneously decrease emissions of air pollutants and greenhouse gases (GHGs). The main focus was on co-benefits strategies and, as well as considering Convention-related activities in Europe and North America, included consideration of programmes in Asia, Africa and South America.

8. The goal of the event was to provide recommendations to the Executive Body as well as to other relevant international negotiating forums. The intention was also that the results would be disseminated to a number of regional conferences planned in 2008.

9. The event aimed, in particular, to examine:

- (a) The science linkages between air pollution and climate change;
- (b) The effectiveness of integrated assessment techniques to link air pollution and climate policy;
- (c) The challenges in developing and applying integrated approaches at various policy and geographic levels; and
- (d) How to develop strategies, frameworks and processes for better integrating air pollution and climate change programmes.

II. ORGANIZATION OF THE CONFERENCE/WORKSHOP

10. The conference was opened by Ms. E. Falemo, State Secretary for Environment, Sweden, and H.E. Mr. J. De Zorzi, Ambassador of France to Sweden, on behalf of European Union Presidency. Ms. Mia Horn af Rantzien, Deputy Director, Sida, welcomed delegates and emphasized the importance of air pollution and climate change to Sweden's development agenda. Mr. M. Iyngararasan (UNEP Regional Resource Centre for Asia and the Pacific), Mr. H. Wuester (UNFCCC secretariat) and Mr. M. Williams, Chair of the Executive Body, explained the context and expectations for the conference/workshop.

11. Conference participants had received previously preparatory working papers on the following topics: (a) introductory summary of co-benefit issues and conference objectives; (b) scientific understanding behind the development of integrated co-benefits strategies; (c) integrated assessment of co-benefits between air pollution control and GHG mitigation; (d)

challenges of developing and applying integrated strategies at various scales; (e) linking climate and air pollution policy processes at the international scale; and (f) taking an integrated approach to air pollution and climate change – opportunities and challenges from an African perspective (a personal contribution by Mr. Y. Sokona, Sahara and Sahel Observatory, Tunisia).

12. Following the opening and introductory presentations, the event comprised three plenary sessions, each with extended discussions to help develop conclusions. Each session focused on one of the first three aims of the conference, namely:

- (a) Science linkages between air pollution and climate change (chaired by Mr. P. Artaxo (Brazil));
- (b) The effectiveness of integrated assessment techniques to link air pollution and climate policy (chaired by Mr. P. Grennfelt (Sweden));
- (c) Challenges in developing and applying integrated approaches at various policy and geographic levels (chaired by Mr. A. Lloyd (United States)).

13. The plenary sessions were followed by regional break-out sessions with delegates participating in one of the following groups:

- (a) Europe, North America and the Arctic (chaired by Mr. A. Zuber (European Commission));
- (b) Asia (chaired by Mr. Changhong Chen (China) and Mr. Hu Tao (China));
- (c) Africa (chaired by Mr. Y. Sokona (Tunisia));
- (d) Central and South America (chaired by Mr. S. Sanchez (CAI-Latin America)).

14. The Chairs of the plenary and break-out sessions provided summary reports and conclusions for their sessions; these were discussed and conclusions were amended taking account of the plenary discussions.

15. In a final plenary discussion, chaired by Mr. B. Kjellén (SEI) and Mr. R. Mills (IUAPPA), key conclusions were agreed by the participants. These are set out in chapter III below.

16. The conclusions of the plenary and break-out sessions, as well as the key conclusions will be published in a workshop report to be prepared by the organizers. This will be made available online (at www.gapforum.org), together with the background papers and presentations for the conference/workshop.

III. CONCLUSIONS AGREED BY THE CONFERENCE/WORKSHOP

17. The principal conclusions and recommendations made by the conference/workshop are summarized in the paragraphs below.
18. Current science emphasizes the urgent need to address air pollution and climate change in an integrated way. We should no longer treat these two issues separately as we strive to achieve sustainable development and a low-carbon society.
19. Global climate change is primarily the result of 150 years of carbon dioxide (CO₂) and other GHG emissions. Recent studies indicate that 13 to 90 per cent – with a central value of 40 per cent – of the warming by GHGs in the atmosphere is presently being masked by certain aerosols (and aerosol-cloud interactions) that increase the reflection of sunlight; these aerosols result from air pollution emissions (see para. 27).
20. In both developing and industrialized countries, abatement of air pollution and mitigation of climate change have generally been treated separately. There are, however, substantial benefits to considering the control options together. Such an approach would mostly lead to increased health and/or climate benefits and decreased costs.
21. The current priority for many developing countries is poverty eradication and sustained economic development. In that context they seek to improve air quality and the health of their citizens, as part of their development policies. An integrated co-benefits approach could achieve win-win solutions and, indeed, some countries in different regions are already explicitly integrating air pollution controls and GHG mitigation.
22. A range of integrated assessments and analyses around the world highlight that GHG mitigation net costs are lower due to cost savings on air pollution control, and benefits of GHG mitigation are greater due to reduced air pollution impacts. For example, recent assessments for Europe and parts of Asia found that a 20 per cent decrease in CO₂ emissions could lead to about a 15 per cent fall in air pollution-induced deaths, with considerable associated cost savings.
23. Ground-level ozone and black carbon aerosols are both air pollutants and act as warming agents (see para. 24). Methane is a precursor of ozone formation and a GHG. Urgent action to decrease their concentrations in the atmosphere would provide opportunities, not only for significant air pollution benefits (e.g. health and crop-yield benefits), but also for rapid climate benefits, by helping to slow global warming and avoid crossing critical temperature and environmental thresholds. The substances are relatively short-lived in the atmosphere (compared to CO₂), lasting from days to weeks (ozone and black carbon) to a decade (methane), and so

decreasing their concentrations by cutting emissions could produce relatively quick climate benefits. However, achieving this would require careful consideration, extensive commitment and regional and global cooperation.

24. Methane, ozone and black carbon aerosols together are a major warming component compared with CO₂. According to the Intergovernmental Panel on Climate Change, the mean anthropogenic radiative forcing resulting from all GHGs is estimated to be +3.05 W m⁻² of which methane accounts for +0.48 W m⁻² and tropospheric ozone for +0.35 W m⁻². In addition, it is estimated that black carbon accounts for +0.34 W m⁻² in the atmosphere and an additional +0.1 W m⁻² on snow. Regionally, however, black carbon heating effects can rival that due to CO₂ increases, for example in the Arctic and the Himalayan-Tibetan glacier regions.

25. Opportunities for decreasing emissions of methane and other ozone precursors in industry, agriculture, mining and transport are widely recognized and relatively inexpensive. Decreasing black carbon emissions from the majority of diesel engines is effective and practical, and there are other promising opportunities in both industrial processes and the uncontrolled burning of biomass.

26. Decreasing concentrations of methane, ground-level ozone and black carbon should occur alongside CO₂ emission cuts and the required climate change adaptation measures. Ozone reductions are best achieved by cutting emissions of all precursors, which include nitrogen oxides and volatile organic compounds as well as methane. Studies show that decreasing nitrogen oxide concentrations alone might exacerbate the build up of global methane levels.

27. Air pollution abatement policies that decrease sulphate and some other aerosols to help protect human health and the environment will produce inadvertent acceleration of warming because of the “cooling” effect of these aerosols on climate. This warming could be alleviated to some degree by reducing the short-lived warming agents (methane, ozone and black carbon) as described above (para. 23), and emphasizes the urgent need to decrease concentrations of these substances.

28. Among air quality policies, structural change, for example through replacement of fossil fuels by renewable energy sources, could provide greater climate and air pollution co-benefits than the traditional end-of-pipe technologies.

29. The national level may be the most important for the development of co-benefit strategies, since the content and focus of such strategies are likely to differ from region to region and country to country. Countries which do not have well-established systems of air quality regulation have the opportunity to develop groundbreaking integrated systems more simply and

effectively than countries where well-established air pollution control systems are already in place.

30. Existing regional air pollution networks, climate networks, inter-governmental agencies and agreements could play an important role in linking the climate and air pollution communities at different scales and in sharing expertise.

31. Potential co-benefits might have implications for the future development of international air pollution and climate change negotiating and policy processes. It is important that these conclusions be made available to the UNFCCC and relevant air pollution conventions and networks. This could be achieved through their secretariats.

32. It is also important that these significant climate and air pollution co-benefits are made known to negotiators and relevant policymakers at the national level as soon as possible, since they may affect future decisions on abatement and mitigation. The conclusions should be considered and promoted at the national and local scales. In the UNECE region, the Convention could play a lead role. In other regions, the established international networks and agreements could take the lead.

33. To promote broader understanding of the issues it would be helpful if an early, comprehensive review of the issues and available evidence could be undertaken. For example, a body such as the Intergovernmental Panel on Climate Change or other scientific bodies or networks could be invited to develop authoritative reports which draw upon relevant information from the climate change and air pollution communities.

34. To develop co-benefits strategies, enhanced collaboration and communication between key climate change and air pollution stakeholders is considered essential at the international, national and local scales; these may include government departments and industry.

35. A substantial programme would be needed to enhance and build capacity to implement a co-benefits approach; this should start with raising awareness and understanding among key stakeholders. As part of this programme, there would be a need to provide the necessary tools and assistance for work at the regional and national scales to undertake the necessary modelling, assessments, planning, etc.

36. Addressing all of these issues would require the urgent mobilization of significant resources. However, such investment is believed to be highly cost-effective.
