REPORT OF THE WORKING GROUP ON EFFECTS
ON ITS TWENTY-SEVENTH SESSION
HELD IN GENEVA FROM 24 TO 26 SEPTEMBER 2008

CONTENTS

<table>
<thead>
<tr>
<th>Paragraphs</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1–4</td>
</tr>
<tr>
<td>I. Adoption of the agenda</td>
<td>5</td>
</tr>
<tr>
<td>II. Adoption of the report of the twenty-sixth session</td>
<td>6</td>
</tr>
<tr>
<td>III. Matters arising from the recent meetings of the Executive Body and its subsidiary bodies</td>
<td>7–8</td>
</tr>
</tbody>
</table>

CONTENTS (continued)

1 Sections I–X of this document correspond to agenda items 1–10 of the provisional agenda (ECE/EB.AIR/WG.1/2008/1).
Paragraphs | Page
--- | ---
IV. Recent results and updating of scientific and technical knowledge | 9–52 4
A. Recent effects-oriented activities | 9–10 4
B. Common aspects of International Cooperative Programmes, the Task Force on the Health Aspects of Air Pollution and the Joint Expert Group on Dynamic Modelling | 11–12 6
C. Activities in selected countries | 13–14 6
D. Updating of scientific and technical knowledge | 15–50 7
E. Information on forthcoming workshops and technical meetings | 51–52 14
V. Review of air pollution effects | 53–54 15
VI. Further development of the effects-oriented activities | 55–75 15
A. Integrated assessment modelling | 55–56 15
B. Reactive nitrogen | 57–58 16
C. Presentation of nitrogen effects | 59–60 16
D. Guidelines on reporting effects | 61–62 16
E. Outreach activities | 63–64 16
F. Strategies of the Convention bodies | 65–67 17
G. Revision of the Gothenburg Protocol | 68–69 17
H. Draft 2009 workplan | 70–75 17
VII. Financing of effects-oriented activities | 76–78 19
VIII. Election of officers | 79 20
IX. Other business | 80–81 20
X. Adoption of the decisions of the Working Group | 82 20

Annex

Provisional calendar of effects-related meetings for the biennium 2008–2009 | 21
INTRODUCTION

1. The twenty-seventh session of the Working Group on Effects was held from 24 to 26 September 2008 in Geneva.

2. It was attended by representatives of the following Parties to the Convention: Albania, Austria, Azerbaijan, Belarus, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Poland, the Republic of Moldova, the Russian Federation, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom of Great Britain and Northern Ireland.

3. A representative of the World Health Organization’s European Centre for Environment and Health (WHO/ECEH), Bonn Office, was present. The Chair of the Task Force on Integrated Assessment Modelling also participated.

4. Mr. T. Johannessen (Norway) chaired the meeting.

I. ADOPTION OF THE AGENDA

5. The agenda (ECE/EB.AIR/WG.1/2008/1) was adopted.

II. ADOPTION OF THE REPORT OF THE TWENTY-SIXTH SESSION


III. MATTERS ARISING FROM RECENT MEETINGS OF THE EXECUTIVE BODY AND ITS SUBSIDIARY BODIES

7. The secretariat provided information on the present status of the Convention’s protocols, and drew special attention to the revision of the Gothenburg Protocol\(^2\) and the requests made to the Working Group. It highlighted the outreach activities, particularly with the Malé Declaration\(^3\). It also noted the useful linkages of effects-oriented work to climate change and biodiversity, with particular emphasis on the results of the recent workshop on “Co-benefits of air pollution and climate change strategies”, but reminded the Working Group of the importance of keeping the focus of the work on air pollution-driven effects.

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\(^2\) 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.

\(^3\) Malé Declaration on the Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia.
8. The Working Group on Effects took note of the decisions made by the Executive Body and its Bureau as well as the deliberations of other bodies under the Convention, and agreed to bear them in mind when discussing its future activities.

IV. RECENT RESULTS AND UPDATING OF SCIENTIFIC AND TECHNICAL KNOWLEDGE

A. Recent effects-oriented activities

9. The Chair introduced the 2008 joint report by the International Cooperative Programmes (ICPs), the Task Force on the Health Aspects of Air Pollution (Task Force on Health) and the Joint Expert Group on Dynamic Modelling on progress in the effects-oriented activities (ECE/EB.AIR/WG.1/2008/3). He noted that the annexes described the recent activities of the programmes and listed their recent relevant publications. The representative from the lead country of each programme reviewed the recent achievements and publications, namely:

(a) Mr. M. Lorenz (Germany), on behalf of Mr. M. Köhl, Chair of the Task Force of the ICP on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests);
(b) Ms. B. Kvaeven (Norway), Chair of the Task Force of the ICP on Assessment and Monitoring of Acidification of Rivers and Lakes (ICP Waters);
(c) Mr. J. Tidblad (Sweden), Co-Chair of the Task Force of the ICP on Effects of Air Pollution on Materials, including Historic and Cultural Monuments (ICP Materials), and Head of the Main Research Centre of the programme;
(d) Mr. H. Harmens (United Kingdom), Chair of the Task Force of the ICP on Effects of Air Pollution on Natural Vegetation and Crops (ICP Vegetation);
(e) Mr. L. Lundin (Sweden), Chair of the Task Force of the ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems (ICP Integrated Monitoring);
(f) Mr. T. Spranger (Germany), Chair of the Task Force of the ICP on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping);
(g) Mr. M. Krzyzanowski, representative of WHO/ECEH and Chair of the Task Force on Health;
(h) Mr. A. Jenkins (United Kingdom), Co-Chair of the Joint Expert Group on Dynamic Modelling.

10. The Working Group:

(a) Took note of the recent activities of ICPs, Task Forces and the Joint Expert Group (ECE/EB.AIR/WG.1/2007/3, annexes I–VII);
(b) Welcomed the cooperation of ICP Forests with the European Union (EU), and took note of the 2008 executive report, “The condition of forests in Europe”, and the 2008 technical report, “Forest condition in Europe”;
(c) Noted the work of ICP Waters on biological responses, in particular the comprehensive 20-year report, “Monitoring effects of long-range transboundary air pollution on surface waters in Europe and North America since 1985”;

(d) Welcomed the work of ICP Materials on the new exposure of samples in the biennium 2008–2009 and its report, “Case studies on assessment of stock at risk and mapping areas of increased corrosion risk in Madrid, Spain”;


(f) Noted the work of ICP Integrated Monitoring on assessing links between air pollution and climate change; and took note of its 2008 annual report;

(g) Welcomed the work of ICP Modelling and Mapping on updating and evaluating critical and target load data as well as developments in nitrogen assessment and applications to biodiversity policy; stressed the importance of active participation of all Parties to the Convention in the modelling and mapping activities; took note of the results of the sixteenth Coordination Centre for Effects (CCE) workshop and the draft 2008 status report; and recommended that the 2008 critical load data be used in work under the Convention;

(h) Noted the work of the Task Force on Health and welcomed the WHO report “Health risks of heavy metals from long-range transboundary air pollution”; took note of the progress on the health effects of particulate matter (PM) from biomass combustion; and took note of the progress in involving Eastern Europe, Caucasus and Central Asia (EECCA) countries in the health-oriented work;

(i) Expressed appreciation to the WHO/ECEH Bonn Office for its work and continuing leading role in the activities of the Task Force on Health and welcomed increased participation by EECCA Parties in this work; and reiterated its invitation to Parties to nominate their experts and actively participate in the work of the Task Force on Health;

(j) Expressed appreciation for the progress made by the Joint Expert Group on Dynamic Modelling; and took note of the conclusions and recommendations from the eighth meeting of the Joint Expert Group (ECE/EB.AIR/WG.1/2008/13);

(k) Noted the active participation of ICPs and national experts in the activities of the Joint Expert Group; expressed appreciation of the work carried out; and took note of the proposals from the Group to continue its activities in keeping with the Convention’s workplan.
B. Common aspects of International Cooperative Programmes,
the Task Force on Health and the Joint Expert Group on Dynamic Modelling

11. The Chair drew attention to the growing participation of countries in the effects-oriented activities and noted the positive results of closer and more effective cooperation between ICPs, as well as with the Steering Body to the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), the Task Force on Integrated Assessment Modelling, the Task Force on Reactive Nitrogen and other bodies under the Convention.

12. The Working Group:

   (a) Welcomed the efforts of ICPs, the Task Force on Health and the Joint Expert Group on Dynamic Modelling in addressing priority tasks that had supported effective implementation of the Convention, particularly the input to reviews of the three most recent protocols;
   (b) Stressed once more the importance of the work carried out by national focal centres and the support provided by the lead countries, coordinating centres and their host countries and organizations;
   (c) Noted the level of participation in the session and welcomed the enhanced trend of Parties participating in the activities of the programmes;
   (d) Stressed the importance of the active participation of all Parties to the Convention in the effects-oriented activities for providing the knowledge and high-quality data for effective implementation and review of the Convention and its protocols;
   (e) Invited the Executive Body to reiterate its invitation to Parties to nominate national focal centres for those effects-oriented activities and programmes in which they were not actively participating;
   (f) Noted the importance of continuing communication of the results and findings of the effects-oriented activities to the scientific community, policymakers and the general public at both national and international levels.

C. Activities in selected countries

13. The Chair noted the Convention’s emphasis on encouraging participation of EECCA Parties, with the aim of assisting them to implement the Convention and its more recent protocols.

14. Representatives of Albania, Azerbaijan, Belarus, the Republic of Moldova, the Russian Federation and Ukraine informed the session about their activities related to air pollution and its effects. The Working Group noted that many of these countries participated in one or more of the effects-oriented programmes, and encouraged them to continue and increase their participation.
D. Updating of scientific and technical knowledge

15. The Chair drew attention to the pollutant-specific topics for the presentations on recent results from the activities of the ICPs. The 2008 joint report had been compiled to support the programme presentations under seven topics. The presentations drew largely from the 2008 joint report and the technical reports of the ICPs.

1. Acidification

16. Mr. Lorenz, Head of the Programme Coordinating Centre of ICP Forests, summarized sulphur throughfall deposition trends at selected level II sites. In the ensuing discussion, he clarified that deposition had been linked to negative effects on ground vegetation and work was under way to connect critical loads and the exceedances to observed effects. He agreed to display ranges of European average deposition in forthcoming reports and to explore the possibilities to stratify Europe into regions. He noted the possibilities for including the site-specific critical loads of ICP Forests in the national and CCE databases.

17. Ms. B.-L. Skjelkvåle (Norway), ICP Waters, presented the 20-year report summing up its achievements and future, noting that biological recovery was slow and not widespread. She further noted the growing importance of biological responses in monitoring, but emphasized that the underlying chemical drivers had induced the changes. Many sites in several regions of Europe would remain acidified after 2010, and climate change would affect acidification and recovery.

18. Mr. M. Forsius (Finland), Head of the Programme Centre of ICP Integrated Monitoring, introduced the report on links between air pollution and climate change effects using site-specific data, noting that an increased use of forest harvest residues for biofuel production was predicted to negatively influence the base cation budgets thus causing re-acidification.

19. Mr. J.-P. Hettelingh (Netherlands), Head of CCE, presented the results from the 2007/2008 call for data from national focal centres on critical loads for acidification, modelled and empirical critical loads for eutrophication, and dynamic modelling data. He drew special attention to the European background database, which was used for the first time for all countries that had not responded to the data call, and to dynamic modelling data designed for use in integrated assessment. With the new data, CCE had computed updated exceedance maps using ecosystem-specific deposition. It was noted that the revision of European air pollution reduction policies would benefit from the latest scientific methods and data developed under the effects-oriented programmes.

20. Mr. F. Moldan, Co-Chair of the Joint Expert Group on Dynamic Modelling, reported that the objectives of the Joint Expert Group had been largely achieved with respect to acidification, but other challenges, such as nutrient nitrogen, remained. He noted the important collaboration
with monitoring programmes, in particular with ICP Waters and ICP Integrated Monitoring on
testing dynamic models and improving their process descriptions using observed data. He invited
the monitoring programmes to present their data, in particular in relation to effects on ground
vegetation. The Working Group noted that air pollution was the focus of the effects assessments,
although some confounding factors such as climate change and land-use changes could have a
considerable impact as well.

21. The Working Group noted with appreciation the range and quality of the work being
done on acidification, and:

   (a) Took note of the ICP Forests work on updated trends of sulphur deposition and
       the report on 2008 results on monitoring forest condition in Europe
       (ECE/EB.AIR/WG.1/2008/6);
   (b) Noted the ICP Waters 20-year report on monitoring effects of long-range
       transboundary air pollution on surface waters in Europe and North America since 1985
       (ECE/EB.AIR/WG.1/2008/7), and in particular that acidified waters not only killed fish but
       reduced species richness as well;
   (c) Took note of the ICP Integrated Monitoring report on links between climate
       change and air pollution effects using site-specific data (ECE/EB.AIR/WG.1/2008/10);
   (d) Approved the results of ICP Modelling and Mapping based on the 2007/2008 call
       for data on European critical loads of acidification, including dynamic modelling parameters for
       use in integrated assessment modelling (ECE/EB.AIR/WG.1/2008/11) for use in work under the
       Convention, in particular for the revision of the Gothenburg Protocol;
   (e) Took note of the achievements on using dynamic modelling in assessing
       acidification and the challenges of remaining air pollution problems as presented by the Joint
       Expert Group on Dynamic Modelling (ECE/EB.AIR/WG.1/2008/13).

2. Nutrient nitrogen

22. Mr. Lorenz described the deposition of nitrogen compounds in Europe, and the
relationship found between critical load exceedance for eutrophication and defoliation at
selected level II sites. He noted that time delays could occur between exceedance and observed
effects. Some delegates invited ICP Forests to extend the results with statistical measures for
improved evaluation, especially concerning deposition estimates, and to use biological effects
indicators, such as changes in ground vegetation, to strengthen the conclusions.

23. Mr. Harmens described the results of the 2005/2006 survey on nitrogen concentrations in
European mosses by ICP Vegetation, noting that the link with deposition was strongest when
both were measured locally, rather than having average EMEP grid cell deposition. He further
described work on compiling a meta-database on nitrogen impacts on vegetation, drawing
attention to an initial finding that some surveys indicated reduction in species richness or
increase in nitrogen-demanding species with increase in nitrogen deposition.
24. Mr. Forsius described progress in planning the use of integrated monitoring data in European research and assessment related to biodiversity.

25. Mr. M. Posch (Netherlands), CCE, described the new 2007/2008 critical loads data on eutrophication. The data confirmed that the exceedance of critical loads for nitrogen was much more widespread than for acidification. He clarified that the methodologies had remained the same as the 2006 voluntary call for data and that the background data were made available to countries not submitting new data. Mr. R. Maas, Chair of the Task Force in Integrated Assessment Modelling, invited the countries to contribute to the development of aspirational targets in 2050, emphasizing that the maximum technically feasible reductions emission scenario would not be the main option to consider.

26. Mr. Jenkins described, based on discussions in the Joint Expert Group on Dynamic Modelling, the progress on model systems on ecosystem changes due to eutrophying air pollution. He emphasized that nitrogen emission reductions beyond those agreed under the Gothenburg Protocol were very likely required to prevent further changes in vegetation composition. Some delegates encouraged countries to provide data for further testing and that empirically based plant occurrence models could also be considered and compared with process-based models, within the limits of available data.

27. The Working Group congratulated the programmes on their important work on nutrient nitrogen, and:

   (a) Took note of the results of ICP Forests on nitrogen deposition and critical loads at selected sites (ECE/EB.AIR/WG.1/2008/6);
   (b) Noted the ICP Vegetation results of the 2005/2006 survey on nitrogen concentrations in European mosses, and the progress made with respect to nitrogen-related assessment of ecosystem effects;
   (c) Took note of the ICP Integrated Monitoring cooperation with projects outside the Convention and plans to use its data in work on biodiversity;
   (d) Approved the results of ICP Modelling and Mapping based on the 2008 call for data on European critical loads of eutrophication and dynamic modelling parameters, the draft 2008 progress report and the modelling of nitrogen effects in terrestrial ecosystems, including biodiversity (ECE/EB.AIR/WG.1/2008/11), and recommended that the data be used in work under the Convention, in particular in the revision of the Gothenburg Protocol; and agreed to use latest scientific knowledge and data, in particular ecosystem-specific deposition, in calculating exceedance of critical loads in integrated assessment modelling;
   (e) Took note of the work of the Joint Expert Group on Dynamic Modelling on nitrogen dynamics (ECE/EB.AIR/WG.1/2008/13).
3. **Ozone**

28. Mr. Lorenz described the comparison of observed ozone \((O_3)\) concentrations, as well as calculated AOT40 (accumulated concentration above a threshold of 40 parts per billion (ppb)) and modelled \(O_3\) flux values with observed injuries at selected level II sites in Europe. The work had employed passive samplers that averaged \(O_3\) exposure over six months. The Working Group noted the possible benefits in using a model with generic parameterization that was less data demanding than the full flux model employed in the study.

29. Ms. G. Mills, Head of the Programme Centre of ICP Vegetation, concluded, based on gathering evidence of widespread \(O_3\) damage to vegetation in Europe in the period 1990–2006, that \(O_3\) flux was a better indicator of damage than AOT40. The use of AOT40 maps had failed to identify one third of the European area where \(O_3\) damage was detected. In contrast, the flux method using generic parameterization for crops identified virtually all areas where \(O_3\) damage occurred; a clear flux threshold of the cumulative \(O_3\) flux \((AF_{st3_{gen}})\) of 12 mmol m\(^{-2}\) existed above which damage occurred. She encouraged national studies at higher spatial resolution than the employed 50 km \(\times\) 50 km grid to take into account influence of altitude on \(O_3\), in particular in Alpine areas. She further clarified that the threshold value of 3 nmol m\(^{-2}\) s\(^{-1}\) for calculating the cumulative flux \((AF_{st3_{gen}})\) for a generic crop species was chosen taking into account values that reflected effects measurements and that provided the lowest uncertainty in the EMEP \(O_3\) deposition model. In the future, the results would also be presented as yield losses for the receptor concerned.

30. Mr. Krzyzanowski outlined information on the health risks of \(O_3\), emphasizing the strengthened evidence that daily \(O_3\) exposure increased mortality and respiratory morbidity and that \(O_3\) effects were independent of other pollutants. In the 25 EU Member States, \(O_3\) was estimated to cause annually 21,000 premature deaths, 14,000 respiratory hospital admissions and 8 to 108 million person-days of minor restricted activity, respiratory medication use by children, and cough and lower respiratory symptoms. Current air pollution policies would lead to only a small decrease of the effects.

31. Following discussions, the Working Group noted the proposal from Slovenia that the biomonitoring of tropospheric \(O_3\) and heavy metals, conducted in urban areas according to methods developed by ICP Vegetation, could be used as an approximation for human biomonitoring.

32. The Working Group on Effects welcomed the progress made and the new results obtained regarding \(O_3\) effects, and:

(a) Took note of the ICP Forests results of comparing measured and modelled \(O_3\) with observed injury (ECE/EB.AIR/WG.1/2008/6);

(b) Noted the ICP Vegetation results on gathering evidence of widespread \(O_3\) damage to vegetation in Europe (1990–2006) (ECE/EB.AIR/WG.1/2008/9);
(c) Took note of the revision of the ozone-related chapter 3 in the Modelling and Mapping Manual, prepared cooperatively by ICP Modelling and Mapping, ICP Vegetation and ICP Forests;

(d) Took particular note of the recent results of the Task Force on Health and ICP Vegetation on the effects of O₃ on human health and vegetation, respectively, and noted that current levels of O₃ were shown to affect both health and vegetation across Europe;

(e) Recommended that flux-based methods be used in integrated assessment modelling for vegetation effects of O₃ rather than concentration-based approach (AOTX);

(f) Requested that O₃ effects on vegetation be incorporated in integrated assessment modelling, in particular in work for the revision of the Gothenburg Protocol;

(g) Expressed concern that the implementation of existing legislation would not provide a significant reduction in effects on health and vegetation;

(h) Took note that policies aiming only at health effects would not protect vegetation from O₃ effects in the northern one third of the European area;

(i) Emphasized that policies aimed at reducing O₃ effects on vegetation and health would need to be more stringent.

4. Particulate matter

33. Mr. Krzyzanowski described the recent results of periodic assessments on health effects of PM. He reported increased evidence on cardiovascular and respiratory effects and confirmation of long-term traffic-related effects of PM. Fine PM (PM₁₀) mass had been largely used as the link to health effects. Impacts of ultrafine particles (PM₀.₁) and of specific PM composition were a matter for further research.

34. The Working Group on Effects noted with appreciation the continuing assessment of health effects of PM by the Task Force on Health, and took note of the new evidence on health effects of PM (ECE/EB.AIR/WG.1/2008/12).

5. Heavy metals

35. Mr. Harmens introduced the spatial and temporal trends in heavy metal accumulation in mosses in Europe in the period 1990–2005. He noted that spatial trends were metal-specific, with the highest concentrations in Belgium and Eastern Europe, and that temporal trends were country-specific. Whereas most metal concentrations had declined in time, there were hardly any changes for chromium and mercury.

36. Mr. Lundin described the updated calculations on heavy metals at ICP Integrated Monitoring sites. He drew attention to new maps of exceedance of critical loads for lead and mercury in Sweden.
37. Mr. Spranger reported on the workshop on “Critical loads of heavy metals” (ECE/EB.AIR/WG.1/2008/14). It had recommended further method development and refinement, in particular setting toxic thresholds (critical limits), critical loads, relevant processes, uncertainties and dynamic modelling.

38. Mr. Hettelingh reported on the workshop on “Promotion of the ratification of the 1998 Protocol on Heavy Metals across the entire UNECE region”, where CCE had presented tentative maps of critical loads of heavy metals in EECCA countries. He noted the work under way to estimate exceedance in collaboration with the Meteorological Synthesizing Centre-East (MSC-East) of EMEP. The database on critical loads was considered an appropriate basis for possible further work.

39. Mr. Krzyzanowski introduced the results on recent assessment on health risks of heavy metals. He emphasized that for cadmium, lead and mercury, the atmospheric loading should be reduced as much as possible.

40. The Working Group on Effects expressed its appreciation of the work on heavy metals and:

   (a) Took note of the ICP Vegetation survey results on spatial and temporal trends of heavy metal accumulation in mosses;
   (b) Noted the recent work of ICP Integrated Monitoring on heavy metals at its monitoring sites;
   (c) Took note of the report of the workshop on “Critical loads for heavy metals” (ECE/EB.AIR/WG.1/2008/14);
   (d) Took note of the progress in mapping critical loads for heavy metals and their exceedance as well as the outcome of the workshop on “Promotion of the ratification of the 1998 Protocol on Heavy Metals across the entire UNECE region”;
   (e) Encouraged EECCA countries to review the CCE background database of critical loads for heavy metals;
   (f) Took note of the WHO report, “Health risks of heavy metals from long-range transboundary air pollution”.

6. **Persistent organic pollutants**

41. The Working Group on Effects noted the overall importance of further effects-oriented work on persistent organic pollutants (POPs) and welcomed the results presented by ICP Waters in their 20-year report (ECE/EB.AIR/WG.1/2008/7).

7. **Cross-cutting items**
42. Mr. Hettelingh reported on excess nitrogen deposition and its links to biodiversity and human health, related to the exploration for policy relevant effects indicators. CCE had defined biological diversity as species richness using empirical critical loads and data from experiments. It had mapped the relative loss of species richness in EUNIS (European Nature Information System) classes. Mr. Hettelingh clarified that this was one way to approach biodiversity and policy relevant indicators on biological changes caused by air pollution and that the consistency of the results would be addressed with the ensemble impact assessment at CCE. The Working Group welcomed the work done at CCE as the first approach for a regionalized indicator for the biodiversity change, as proposed in the context of integrated assessment and comparison of emission control scenarios. It encouraged the further development of biodiversity and other effects and invited all programmes to propose similar indicators to its twenty-eighth session.

43. Mr. Lorenz reported that two international cross-comparison courses for defoliation assessment were carried out under ICP Forests in 2007.

44. Ms. Skjelkvåle presented the results from chemical and biological intercomparison activities led by ICP Waters, drawing attention to the participation of laboratories outside ECE region.

45. Mr. S. Doytchinov (Italy), Co-Chair of ICP Materials, described work on mapping stock of cultural heritage materials at risk as a case study in Madrid with current and future air quality.

46. Mr. Tidblad introduced European maps of increased risk of zinc run-off for 1980, 1990, 2000 and 2005, noting that the new model being used indicated higher run-off than earlier. He also presented progress made with respect to corrosion and air pollutant trends for the period 1987–2006. He further reported on the combined effects of climate change and air pollution on materials, including cultural heritage, noting the potential contribution of climate to corrosion. He explained the progress in mapping stock at risk using national case studies, which was expected to lead to a more regional effort in future.

47. Mr. Posch outlined the use of dynamic modelling results in integrated assessment with target loads. He noted that the tool allowing ex-post analyses of any deposition scenario was being finalized at CCE and requested guidance from policymakers on desired ways to display the time-dependent information.

48. The Working Group on Effects expressed its appreciation of the work on cross-cutting issues, and:

   (a) Took note of ICP Forests international cross-comparison courses for defoliation assessment;
   (b) Noted ICP Waters intercalibration and intercomparison activities, and expressed its appreciation to the important work that benefited several programmes;
Took note of the ICP Materials mapping activities, in particular on the combined effects of climate change and air pollution on materials including cultural heritage (ECE/EB.AIR/WG.1/2008/8);

Noted ICP Modelling and Mapping work on introducing dynamic aspects into the target-setting of integrated assessment modelling, and encouraged policymakers to set necessary time-dependent goals.

The results of workplan items common to all programmes were presented by the programmes based on the information laid out in the 2008 joint report, including:

- Review of the robustness of monitored and modelled air pollution impacts;
- Observed parameters, methodologies, spatial and temporal extent of effects-oriented monitoring;
- Effects-oriented activities in EECCA countries.

The Working Group acknowledged the importance of the collaborative work on the workplan items common to all programmes, and took note of the results as presented and laid down in 2008 joint report, which had helped to synthesize the work and findings of the programmes.

E. Information on forthcoming workshops and technical meetings

Organizers and/or representatives of the host countries provided information on proposed forthcoming workshops and technical meetings. The Working Group welcomed the preparations for the:

- Nineteenth workshop of CCE, to be held from 11 to 15 May 2009 in Stockholm;
- Tenth meeting of the Joint Expert Group on Dynamic Modelling, tentatively scheduled to be held in October 2009;
- Subregional workshop on “Examination of cross-border consistency of critical loads mapping and dynamic modelling results”, to be held on 20 and 21 January 2009 in Katowice, Poland;
- Workshop on the quantification of ozone impacts on crops and (semi-)natural vegetation, by ICP Vegetation, tentatively scheduled to be held in autumn 2009;
- Three meetings of the Task Force on Integrated Assessment Modelling tentatively scheduled to be held in 2009, with the following main topics: (i) aspirational scenarios for 2050; (ii) baseline scenarios including climate policy; and (iii) target-setting options, sensitivity analysis and impact assessment;
- Workshop on bilateral meetings of countries in EECCA and South-Eastern Europe (SEE), and a tutorial session on the GAINS model, tentatively scheduled to be held in February 2009 at the Centre for Integrated Assessment Modelling (CIAM) in Laxenburg, Austria;
(g) The second meeting of the Task Force Reactive Nitrogen, tentatively scheduled to be held in May 2009.

52. The Working Group agreed to ensure that these workshops were included in the workplan and the provisional list of meetings for the biennium 2008–2009, and requested their organizers to collaborate in the preparations closely with the respective bodies and the secretariat and to invite Parties to actively participate in them.

V. REVIEW OF AIR POLLUTION EFFECTS

53. The Chair presented the executive summary of the consolidated report on air pollution effects prepared by the Bureau of the Working Group (ECE/EB.AIR/WG.1/2008/15). Some delegates proposed to include links with climate change and emphasized the need to present policy relevant indicators in the section on challenges.

54. The Working Group:

   (a) Approved the consolidated report on air pollution effects (ECE/EB.AIR/WG.1/2008/15) as amended, entrusting the Bureau to finalize the text with the secretariat. It also decided to submit it as a revised document to the Executive Body for information;

   (b) Entrusted the Bureau and the secretariat to finalize the full report.

VI. FURTHER DEVELOPMENT OF THE EFFECTS-ORIENTED ACTIVITIES

A. Integrated assessment modelling

55. Mr. Maas presented recent activities and results from the meeting of the Task Force on Integrated Assessment Modelling (ECE/EB.AIR/GE.1/2008/4) and the workshop on integrated modelling of nitrogen (ECE/EB.AIR/GE.1/2008/5). He explained the inclusion of effects indicators in integrated assessment modelling. He noted that there were several technical and non-technical steps needed to include indicators as optimization targets, but that ex-post analyses could be performed more easily. Such analyses could include, inter alia, materials, targets on biological diversity changes, and O₃ flux-based method for vegetation. The secretariat reported on the decision of the Extended Bureau on establishing contacts between effects-oriented activities and the focal points of the network on national integrated assessment modelling.

56. The Working Group on Effects took note of the information presented, welcomed the invitation to play an active role in integrated assessment modelling, and encouraged its bodies to collaborate with the Task Force and CIAM.
B. Reactive nitrogen

57. Ms. S. Honour (United Kingdom), on behalf Mr. M. Sutton and Mr. O. Oenema, of the Co-Chairs of the Task Force on Reactive Nitrogen, presented the results from the first meeting of that Task Force (ECE/EB.AIR/WG.5/2008/10). She noted in particular the wish of the Task Force to closely collaborate with other bodies under the Convention.

58. The Working Group on Effects took note of the first meeting of the Task Force on Reactive Nitrogen and encouraged its bodies to closely collaborate with it, in particular on the proposed 2009 workplan item common to all programmes on the status report on airborne nitrogen impacts on the environment.

C. Presentation of nitrogen effects

59. Ms. A. C. Le Gall (France) presented visual evidence on observed nitrogen effects, which she had compiled in collaboration with scientists within and outside the Convention.

60. The Working Group on Effects took note of the presentation, invited its Bureau to maintain the photograph database on nitrogen effects on ecosystems and encouraged all programmes to update and make use of it.

D. Guidelines on reporting effects

61. The secretariat presented the background on preparing draft guidelines for reporting on the monitoring and modelling of air pollution effects (ECE/EB.AIR/WG.1/2008/16). Some delegates noted the usefulness of having selected key parameters related to effects guiding future reporting.

62. The Working Group on Effects approved the draft guidelines for reporting on the monitoring and modelling of air pollution effects (ECE/EB.AIR/WG.1/2008/16) as amended. It decided to submit it as a revised document to the Executive Body for adoption.

E. Outreach activities

63. At its twenty-fifth session, the Executive Body invited all bodies to review all their current activities linked to outreach and to explore opportunities for including items on outreach in their future workplans. The Chair presented the compiled information on outreach activities from the effects-oriented bodies and the Task Forces on Integrated Assessment Modelling and Reactive Nitrogen. The contents of this document were presented to the intergovernmental meeting of the Malé Declaration for background information, for the Malé Declaration to consider a similar list for the Convention.
64. The Working Group on Effects took note of the compiled information on outreach activities, in particular to the Malé Declaration, and asked the secretariat to make it available as an informal document to the Executive Body.

F. Strategies of the Convention bodies

65. The Chair outlined the preparations of the Bureau of the Executive Body on preparing a strategy for the Convention. He reported on the plans of the EMEP Steering Body to revise its strategy, in collaboration with the Working Group on Effects. He also noted that the Working Group’s long-term strategy was in force for the period 2005–2015.


67. The Working Group on Effects took note of the strategy of ICP Forests and decided to forward it to the Executive Body for adoption.

G. Revision of the Gothenburg Protocol

68. The Chair reported on the revision of the Gothenburg Protocol. A tentative timetable, as amended by the Working Group on Strategies and Review, was available as informal document. He noted that the Working Group on Strategies and Review had, at its forty-first and forty-second sessions, invited the Task Force on Integrated Assessment Modelling, in cooperation with the Working Group on Effects, to discuss and present the merits of the different options for target-setting for 2020 and aspirational non-binding targets for 2050, using the most recent critical loads and levels data, keeping in mind that the ambition level for revision of the Gothenburg Protocol should, as previously agreed by the Working Group on Strategies and Review, be defined according to the objective set out in article 2 of the Protocol.

69. The Working Group on Effects agreed to amend its workplan to provide necessary information for the revision of the Gothenburg Protocol, and decided to forward this information for the consideration of the Executive Body.

H. Draft 2009 workplan

70. The Chair noted that the workplan document was approved last year by the Executive Body as amended. The Executive Body had agreed that its annual workplan would be published as a United Nations document following its annual session.

71. The Executive Body had agreed to the following standing mandates relating also to the Working Group on Effects: session reports, workplans, finance documents and progress in core activities. The Working Group recognized the need for mandates for documents and urged all
Parties and the secretariat to take the necessary actions to ensure that mandates were clearly spelled out for all official documents required. It agreed to propose the following standing mandates for adoption of the twenty-sixth session of the Executive Body:

(a) Technical documents from recent research results of its bodies as identified in the workplan;
(b) Reports from workshops relevant for effects-oriented activities as identified in the workplan or as requested by the Executive Body or its main subsidiary bodies;
(c) Reports of specific topics as identified in the workplan;
(d) Documents related to the mandate or operation of the Working Group to be prepared by the Bureau;
(e) Documents to support the Executive Body’s review or revision of the Convention or its protocols.

72. In introducing the draft 2009 workplan for the further development of the effects-oriented activities (ECE/EB.AIR/WG.1/2008/4), the Chair noted the preparation had followed the Executive Body’s invitation to harmonize as much as possible the workplans of the Working Group on Effects and the EMEP Steering Body.

73. The Working Group noted that the Executive Body had invited it to consider further quantification of policy relevant effects indicators such as biodiversity change, and to link these indicators to integrated modelling work. The Working Group agreed to amend its workplan on policy relevant effects indicators.

74. The Working Group:

(a) Approved the draft 2009 workplan for the further development of the effects-oriented activities (ECE/EB.AIR/WG.1/2008/4) as amended, and agreed to submit it as a revised document to the Executive Body;
(b) Agreed that the 2009 workplan items might be used as a basis for the partial financing of the programmes by the trust fund for core activities not covered by the EMEP Protocol\(^4\) (hereinafter, the trust fund);
(c) Took note of the communication between the Extended Bureau of the Working Group on Effects and the Bureau of the EMEP Steering Body during 2008;
(d) Agreed on the importance of continued collaboration with the EMEP Steering Body, in particular with its Bureau and programme centres, to ensure that the Convention’s priorities were addressed effectively, agreed to bear it in mind when considering plans for its future activities, and invited all programmes to do the same.

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75. The Chair outlined the current information compiled by the programmes as a response to the request of the Executive Body to consider further quantification of policy relevant effects indicators. The Working Group invited the programmes to consider the effects-related indicators for each pollutant, and to forward the information to the Chair, who would, in collaboration with the Bureau, prepare an oral presentation to the Executive Body at its twenty-sixth session.

VII. FINANCING OF EFFECTS-ORIENTED ACTIVITIES

76. In line with decision 2002/1 of the Executive Body, the secretariat introduced a note on the financing of effects-oriented activities prepared by the Bureau of the Working Group in collaboration with the secretariat (ECE/EB.AIR/WG.1/2008/5). The secretariat presented updated information for the table showing the recent cash contributions to the trust fund.

77. The Chair informed the session that alternatives for distributing non-earmarked funds among the eight centres supported by the trust fund had been considered by a small ad hoc group. The Executive Body had agreed that the aim of the ad hoc group had been fulfilled, and considered that no further work was required.

78. The Working Group:

(a) Approved the note on the financing of the effects-oriented activities (ECE/EB.AIR/WG.1/2008/5) as amended, and decided to submit the information to the Executive Body;

(b) Approved the table showing the 2009 international coordination costs of US$ 2,152,700 for different elements effects-oriented activities and the provisional cost estimate of $2,152,700 for 2010 and 2011 costs, for submission to the Executive Body;

(c) Noted with satisfaction the work of ICPs and the Task Force on Health funded by the trust fund;

(d) Approved the use of the draft 2009 workplan items as the basis for partial funding from the trust fund in 2009;

(e) Noted with appreciation the essential support provided to the Working Group on Effects and its effects-oriented activities by lead countries, countries and organizations hosting coordinating centres and organizing meetings, by countries funding activities of their national focal centres, and by the active participation of their national experts in the work under the Convention;

(f) Noted with appreciation the amount of voluntary cash contributions available in 2008, but reiterated its invitation to all Parties which have not yet done so to provide, without undue delay to the trust fund for financing of the effects-oriented activities, the contributions decided by the Executive Body in its revised decision 2002/1;

(g) Noted that contributions can be made as instructed in the letters concerning financial support sent out by the secretariat in early 2009.

VIII. ELECTION OF OFFICERS
79. Mr. T. Johannessen (Norway) was re-elected as Chair. Mr. J. Bak (Denmark), Mr. T. Clair (Canada), Ms. Le Gall (France), Mr. C. Nagl (Austria) and Ms. I. Skorepova (Czech Republic) were elected as Vice-Chairs. The Working Group noted with appreciation the considerable contributions of its Chair and the Bureau to the recent important results, and expressed its gratitude.

IX. OTHER BUSINESS

80. The secretariat presented a provisional list of meetings for the biennium 2008–2009 which will be updated on the Convention’s website, and invited all Parties and programmes to communicate to it any amendments or new information.

81. The Chair informed the Working Group that its twenty-eighth session was tentatively scheduled to be held from 23 to 25 September 2009, starting on Wednesday, 23 September 2009, at 10 a.m. in Geneva, pending decision of the twenty-sixth session of the Executive Body.

X. ADOPTION OF THE DECISIONS OF THE WORKING GROUP

82. The Working Group on Effects adopted the decisions taken during the session.
Annex

PROVISIONAL CALENDAR OF EFFECTS-RELATED MEETINGS FOR THE
BIENNium 2008–2009

Main bodies under the Convention

<table>
<thead>
<tr>
<th>Date and place</th>
<th>Body and session/meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–19 December 2008 Geneva</td>
<td>Executive Body for the Convention (Twenty-sixth session)</td>
</tr>
<tr>
<td>20–24 April 2009 Geneva</td>
<td>Working Group on Strategies and Review (forty-fourth session)</td>
</tr>
<tr>
<td>31 August–4 September 2009</td>
<td>Working Group on Strategies and Review (forty-fifth session)</td>
</tr>
<tr>
<td>7–9 September 2009 Geneva</td>
<td>EMEP Steering Body (thirty-third session)</td>
</tr>
<tr>
<td>14–18 December 2009 Geneva</td>
<td>Executive Body for the Convention (twenty-seventh session)</td>
</tr>
</tbody>
</table>

Task Forces and Expert Groups

<table>
<thead>
<tr>
<th>Date and place</th>
<th>Body and session/meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>6–8 October 2008 Budapest</td>
<td>Programme Task Force, International Cooperative Programme (ICP) on Assessment and Monitoring of Acidification of Rivers and Lakes (twenty-fourth meeting)</td>
</tr>
<tr>
<td>20–22 October 2008 Sitges, Spain</td>
<td>Joint Expert Group on Dynamic Modelling (ninth meeting)</td>
</tr>
<tr>
<td>2–5 February 2009 Braunschweig, Germany</td>
<td>Programme Task Force, ICP on Effects of Air Pollution on Natural Vegetation and Crops (twenty-second meeting)</td>
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<tr>
<td>February 2009 Laxenburg, Austria (tentative)</td>
<td>Workshop on bilateral projects on integrated modelling data and a tutorial session on the GAINS model for the countries in Eastern Europe, the Caucasus, Central Asia and South-Eastern Europe (Task Force on Integrated Assessment Modelling in collaboration with the Centre for Integrated Assessment Modelling)</td>
</tr>
</tbody>
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* Change of dates based on the proposal by the forty-second session of the Working Group on Strategies and Review to have its meeting from 31 August to 4 September, and pending decision of the twenty-sixth session of the Executive Body.
<table>
<thead>
<tr>
<th>Date/Location</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2009 Laxenburg, Austria</td>
<td>Task Force on Integrated Assessment Modelling (thirty-fifth meeting)</td>
</tr>
<tr>
<td>1–3 April 2009 Madrid (tentative)</td>
<td>Programme Task Force, ICP on Effects of Air Pollution on Materials, Including Historic and Cultural Monuments (twenty-fifth meeting)</td>
</tr>
<tr>
<td>April 2009 Tallinn (tentative)</td>
<td>Task Force on Reactive Nitrogen (second meeting)</td>
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<tr>
<td>6–8 May 2009 Tallinn (tentative)</td>
<td>Programme Task Force, ICP on Integrated Monitoring of Air Pollution Effects on Ecosystems (seventeenth meeting)</td>
</tr>
<tr>
<td>11–15 May 2009 Stockholm (tentative)</td>
<td>Coordination Centre for Effects (CCE) workshop (nineteenth meeting); Programme Task Force, ICP on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (twenty-fifth meeting)</td>
</tr>
<tr>
<td>19–20 May 2009 Bonn, Germany (tentative)</td>
<td>Joint Task Force on the Health Aspects of Air Pollution (twelfth meeting)</td>
</tr>
<tr>
<td>23–27 May 2009 St. Petersburg, Russian Federation</td>
<td>Programme Task Force, ICP on Assessment and Monitoring of Air Pollution Effects on Forests (twenty-fifth meeting)</td>
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<tr>
<td>June 2009 Tallinn (tentative)</td>
<td>Task Force on Integrated Assessment Modelling (thirty-sixth meeting)</td>
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<tr>
<td>October 2009 Tallinn (tentative)</td>
<td>Programme Task Force, ICP on Assessment and Monitoring of Acidification of Rivers and Lakes (twenty-fifth meeting)</td>
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<tr>
<td>Autumn 2009 Tallinn (tentative)</td>
<td>Joint Expert Group on Dynamic Modelling (tenth meeting)</td>
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<tr>
<td>November 2009 Tallinn (tentative)</td>
<td>Workshop on integrated assessment modelling (in collaboration with the Task Force on Integrated Assessment Modelling and the Centre for Integrated Assessment Modelling)</td>
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<tr>
<td>November 2009 Tallinn (tentative)</td>
<td>Task Force on Integrated Assessment Modelling (thirty-seventh meeting)</td>
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