



**Economic and Social
Council**

Distr.
GENERAL

ECE/EB.AIR/GE.1/2007/4
ECE/EB.AIR/WG.5/2007/8
13 June 2007

Original: ENGLISH

ECONOMIC COMMISSION FOR EUROPE

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

Steering Body to the Cooperative Programme for Monitoring and Evaluation
of the Long-range Transmission of Air Pollutants in Europe (EMEP)

Thirty-first session

Geneva, 3–5 September 2007

Item 4 (f) of the provisional agenda*

Working Group on Strategies and Review

Fortieth session

Geneva, 17–20 September 2007

Item 3 of the provisional agenda**

INTEGRATED ASSESSMENT MODELLING

Report of the Task Force by the Chair of the Task Force on Integrated Assessment Modelling

1. This report describes the preparation of the draft document of the Task Force for the review of the Gothenburg protocol, the assessment of the progress in integrated modelling and scenario development, and the experiences of national integrated modelling groups. It includes the results of the thirty-third meeting of the Task Force on Integrated Assessment Modelling, held in Prague from 2 to 4 May 2007, presented here in accordance with the 2007 workplan

* ECE/EB.AIR/GE.1/2007/1

** ECE/EB.AIR/WG.5/87

(item 2.3). The presentations made during the meeting and the reports presented can be accessed on the Internet at: www.unece.org/env/tfiam.

2. Forty-eight experts from the following Parties to the Convention attended the meeting of the Task Force: Bulgaria, Czech Republic, Cyprus, Denmark, Finland, France, Georgia, Germany, Ireland, Italy, Moldova, the Netherlands, Norway, Portugal, Serbia, Slovakia, Spain, Sweden, Switzerland, the former Yugoslav Republic of Macedonia, Ukraine and the United Kingdom of Great Britain and Northern Ireland. The European Commission was also represented. Also present were representatives from the Coordination Centre for Effects (CCE), the Centre for Integrated Assessment Modelling (CIAM, located at the International Institute for Applied Systems Analysis) of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), EMEP Meteorological Synthesizing Centre-West (MSC-W), the Expert Group on Techno-economic issues, the European Environment Agency (EEA), the Oil Companies' European Organization for Environment, Health and Safety (CONCAWE), the Union of the Electricity Industry (EURELECTRIC), and the European Environmental Bureau (EEB). A member of the UNECE secretariat also attended.

3. Mr. R. Maas (Netherlands) chaired the meeting, which was hosted by the Czech Hydrometeorological Institute (CHMI). The meeting was opened by Mr. J. Santroch (Ministry of the Environment, Czech Republic) and Mr. P. Jilek (Vice-Chair of the Bureau of the Working Group on Strategies and Review).

I. OBJECTIVES AND INTRODUCTORY REMARKS

4. The Chair noted that the meeting's purpose was to: (i) prepare the draft document of the Task Force for the review of the 1999 Gothenburg Protocol; (ii) assess of the progress in integrated modelling and scenario development; and (iii) learn from the experiences of national integrated modelling groups.

5. Mr. M. Johansson (UNECE secretariat) outlined the conclusions of the twenty-fourth session of the Executive Body, drawing attention to the forthcoming finalization of the review of the Gothenburg Protocol. The Task Force noted that the exploration of non-binding "aspirational" goals for emission reductions for the year 2050 had been discussed in the thirty-ninth session of the Working Group on Strategies and Review, which would require new types of information from all bodies under the Convention.

6. Ms. A. Engleryd (Sweden) presented conclusions of the workshop on air pollution and its relation to climate change and sustainable development ("Saltsjobaden III"), held in Gothenburg, Sweden, from 12 to 14 March 2007. She emphasized the importance of linking work on air pollution and climate change issues, the importance of taking climate change into account in the revision of the Gothenburg Protocol, the need for integrated nitrogen approaches and policy

options, the need for an improved scientific basis associated with health effects and a closer involvement of the countries in Eastern Europe, Caucasus and Central Asia (EECCA).

7. Mr. G. Klaassen (European Commission) presented the progress in the Thematic Strategy for Air Pollution (TSAP) of the European Union (EU) and in the revision of the national emission ceilings (NEC) directive. He reminded the Task Force that the strategy comprised, inter alia, the NEC directive, air quality legislation revision of the integrated pollution prevention and control (IPPC) directive and new Euro standards for vehicle emissions. The Task Force noted that the costs of the NEC directive revision would depend on the EU policies on climate change and the protocols of the Convention; however, health benefits were likely to exceed costs.

II. REVIEW OF THE GOTHENBURG PROTOCOL

8. The Chair led a discussion on the draft report of the Task Force of the Gothenburg Protocol review. The Task Force adopted the draft report as amended, and agreed to finalize the report by 2 June 2007. The remarks made in May should be sent to the Chair and copied to the secretariat.

9. Ms. H. ApSimon (United Kingdom) illustrated some of the advantages and disadvantages of the SOMO35 (sum of means over 35 parts per billion (ppb) of ozone as a daily maximum 8-hour mean) metric as an indicator for health effects. The effect of reducing European emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) would be obscured for SOMO35 due to the low threshold, increasing shipping emissions, and competing influences of global emissions outside Europe. Photochemical smog episodes would continue to be of concern in many European countries. The retention of a metric that would be more indicative of the high ozone concentrations during ozone episodes, such as AOT60 (accumulated ozone concentration over the threshold of 60 ppb), would be useful to indicate the greater effect of European emission reductions on reducing peak ozone levels.

III. DEVELOPMENTS IN INTEGRATED ASSESSMENT MODELLING

10. The Chair presented the report of the first phase of the review of the GAINS model of CIAM. The optimization method had been changed from a single-pollutant cost curve approach to a multi-pollutant measures-based approach. The Task Force noted that the team which had carried out the first review on the model had considered that the GAINS model produced cost curves consistent with the RAINS model, and that the optimization results were also comparable. Control costs based on cost curves for individual pollutants derived from the GAINS model could not be added into total costs, as this would lead to double counting of costs. The second review phase, which would address mainly the greenhouse gas mitigation within the GAINS model, might start later this year.

11. Mr. Johansson presented the conclusions of the workshop on urban air pollution held in Laxenburg, Austria, on 16 and 17 November 2006. He noted in particular the availability of new methods to estimate urban background levels of particulate matter (PM) within the Europe-wide integrated assessment models. In the ensuing discussion, some delegates highlighted the importance of work on PM source apportionment and the need for more continuous measurements on PM speciation.

12. Ms. C. Ory (France) presented the progress made regarding the 2007 workplan of the Expert Group on Techno-economic Issues, in particular to the work initiated on emerging technologies, the dissemination of the Expert Group's results and activities for EECCA, and their contribution to the Gothenburg Protocol review. The Task Force noted that the Expert Group would initiate work on the possible revision of the annexes of the Gothenburg Protocol, including the revision of the guidance documents on sulphur dioxide (SO₂), NO_x and volatile organic compounds (VOC). The Task Force advised the Expert Group to closely follow the updating process of the reference documents of best available technologies (BREF) in the IPPC directive.

13. Mr. M. Amann (CIAM) presented recent methodological changes in the GAINS model. He emphasized the new approach to estimate urban increment, which is based on the population weighted concentration of fine PM (PM_{2.5}), with a new definitions of the city centre domain and five meteorological years. The results were found to be closer to measurements, yet validation was not possible due to lacking quality-controlled monitoring data. The approach would give a better estimate of population exposure to PM; however, it would not suitable to be used for compliance to air quality limit values. He also presented the five-year workplan for the European consortium project for modelling of air pollution and climate strategies (EC4MACS), which intends to support the review of the TSAP and the EU climate change programme, and which will concentrate on methodology improvements in its first years. The Task Force noted the additional importance of this work in terms of its support of the Convention activities.

14. Mr. Amann presented the development of emission control scenarios for countries in Europe. He noted that for EU Member States, the Euro VI vehicle control measures appeared to provide a cost-effective means for achieving environmental objectives, and additional emission control costs were strongly influenced by assumptions on climate policy. He presented an exploratory case that indicated that EU-wide emission limit values for large combustion plants, linked to the emission factors indicated in the reference documents of best available technologies in the IPPC directive, could generally lead to further cost-effective emission reductions. The Task Force noted that for non-EU countries, very sparse validated national information was available and assumptions on the implementation of existing regulations had a strong impact on results. The Task Force reminded the meeting that the thirty-ninth session of the Working Group on Strategies and Review had noted that, due to lack of new requested official information, the GAINS modelling had been performed with existing energy and emission data, and for Belarus, the Russian Federation and Ukraine the case B for current legislation with largely uncontrolled

emissions had been assumed. The Task Force also noted that there was a potential for cost-effective measures in international shipping.

15. Mr. M. Barrett (United Kingdom) presented the inclusion of low carbon dioxide (CO₂) scenarios in the GAINS model. He drew attention to the energy strategies that achieve environmental and energy goals at low overall cost in the EU and concluded that large CO₂ reductions were possible. However, the timing and rate of introducing measures were critical for success.

16. Mr. S. Reis (United Kingdom) presented the background for the workshop on integrated assessment modelling of nitrogen, to be held in Laxenburg, Austria, from 28 to 30 November 2007. The workshop would aim to seek integrated assessment modelling approaches for coherent abatement strategies for nitrogen from agriculture and energy, and to address the cascade of nitrogen effects on health, biodiversity and the interaction with the carbon cycle.

17. The Task Force noted that it was also important to keep the integrated approach when addressing the nitrogen cycle.

IV. NATIONAL INTEGRATED ASSESSMENT MODELLING ACTIVITIES

18. Mr. H. Eerens (EEA) presented the study on identifying environmentally compatible ways of using biomass for energy in the EU to reduce emissions of greenhouse gases. Biomass could be obtained from waste, agriculture and forestry, and the environmental pressures were estimated, for example, using a life cycle approach.

19. Mr. M. Maly (Czech Republic) gave a presentation on the convergence of energy sector modelling approaches for different purposes. He emphasized that the political relevance of national scenario development had increased, and noted that different reporting obligations required projections for different sectoral breakdowns.

20. Ms. S. Nebusová (Slovakia) presented integrated scenarios for air pollution and climate change in Slovakia. She explained the use of the MESSAGE model to describe the energy system and abatement measures, highlighting the decreasing energy intensity in Slovakia as well as the increasing use of low-carbon fuels.

21. Mr. J. Lumberras (Spain) presented a sensitivity analysis of “city-delta” calculations for several Spanish cities. Computed urban concentrations by the GAINS model did not fully match PM_{2.5} measurements for Madrid and Barcelona. Its computation was found to be very sensitive to geometric and meteorological parameters and the city considered, but linear to emissions and insensitive to population size. There was a large variability between monitoring stations and thus it would be critical to select them with care. The Task Force noted the importance of having such

sensitivity analyses carried out in the countries, and encouraged others to perform similar studies.

22. Mr. E. Pisoni (Italy) presented a study on modelling health benefits due to coarse PM (PM₁₀) control policies in Northern Italy using a multi-objective optimization method. He concluded that health risks could be reduced significantly with reduction costs that were relatively low compared to external costs.

23. Mr. J. Aben (Netherlands) presented a study on environmental benefits for the Netherlands due to control measures for international sea shipping in the North Sea. He concluded that international sea shipping in the North Sea continued to contribute increasingly to air quality problems in the Netherlands. Control measures for shipping emissions could reduce these problems in a cost-effective way.

V. FURTHER WORK

24. The Task Force discussed its objectives as laid down in its annual workplan. The Task Force agreed to emphasize in its future work the review of methodological developments under the EC4MACS project as well as the review of initiatives to develop long-term scenarios up to 2050 to assess the relationships between climate change policy and air pollution, in particular ozone formation, and developments of integrated modelling of nitrogen.

25. The Task Force agreed to amend its 2007 workplan with the following additions:

(a) Workshop on integrated assessment modelling of nitrogen, to be held from 28 to 30 November 2007 at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria;

(b) Finalize the Task Force's document for the Gothenburg Protocol review, June 2007 (Task Force, CIAM, Parties).

26. The Task Force agreed on its draft 2008 workplan:

(a) Contribute to the possible revision of the 1999 Gothenburg Protocol (Task Force, CIAM, Parties);

(b) Integrated assessment of strategies to abate air pollution and greenhouse gases (Task Force, CIAM, Parties);

(c) Explore non-binding "aspirational" targets for the year 2050 for emission scenarios and effects (Task Force, CIAM, Parties);

(d) Carry out the second phase of the GAINS model review, in collaboration with the European Commission (Task Force, CIAM);

- (e) Thirty-fourth meeting of the Task Force, to be tentatively held in May 2008 in Madrid;
- (f) Workshop on integrated assessment modelling, to be tentatively held towards the end of 2008;
- (g) Thirty-fifth meeting of the Task Force, to be tentatively held towards the end of 2008 in connection with a workshop on integrated assessment modelling;
- (h) Appropriate reports to sessions of the Steering Body of EMEP and the Working Group on Strategies and Review.
