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OPTIONS FOR REVISING THE GOTHENBURG PROTOCOL

WORKSHOP ON COSTS AND BENEFITS OF THE GOTHENBURG PROTOCOL

Report by the rapporteur of the Network of Experts on Benefits and Economic Instruments

1. This report presents the results of the fifth workshop of the Network of Experts on Benefits and Economic Instruments in accordance with item 1.4 of the 2008 workplan for the implementation of the Convention (ECE/EB.AIR/91/Add.2) adopted by the Executive Body at its twenty-fifth session. This workshop on costs and benefits of the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol), organized jointly with the European Association of Environmental and Resource Economists (EAERE) annual conference, was held on 27 June 2008 in Gothenburg, Sweden.
2. The workshop consisted of two parts, both on the Protocol: (a) a joint EAERE/Network of Experts policy workshop; and (b) a Network of Experts workshop. The main purposes were: (a) to bring together the most recent research findings from practical applications of cost-benefit

analysis and other economic analyses of the Protocol; and (b) to identify research needs in order to improve the performance of future cost-benefit analyses.

3. Experts from Austria, Denmark, France, Germany, Netherlands, Norway, Sweden, United Kingdom and the European Commission attended the workshop. An expert from a non-governmental organization also attended. Part 1 of the workshop was attended by a number of European academics and government officials participating in the EAERE conference.

4. Part 1 of the workshop was chaired by Mr. Rob Maas (Netherlands), and part 2 by Mr. Ståle Navrud (Norway), rapporteur of the Network of Experts.

I. SUMMARY OF MAIN DISCUSSION POINTS

5. Mr. Peringe Grennfelt (Sweden) opened part 1 of the workshop by giving a historical overview and an ex-post evaluation of the Protocol. He concluded that the Protocol could be considered a success because of: (a) its awareness of the problems; (b) its sound scientific and transparent basis; and (c) the wide participation in the process.

6. Mr. Julio Lumbreras (Spain) made a presentation titled “The Gothenburg Protocol – projections, expectations and realities: lessons from a national review”. He drew attention to the original projections and expectations associated with the Protocol emission ceilings for six countries and compared these with the current realities and contemporary short-term forecasts up to 2010. He highlighted the most important issues and lessons learned for future international agreements, stressing in particular:

(a) Trends in activity levels’ growth were in many cases underestimated, namely population growth, economic growth and especially mobility growth and the associated use of fossil fuels. This presented many countries with considerable challenges with regard to compliance with emission ceilings originally based upon far more conservative projections. The lesson learned was that if activity projections were based on conservative projections, “reserve” measures should be formulated;

(b) Optimistic assumptions regarding the effectiveness and timing of policy measures could engender significant problems related to compliance. For example, it had been shown that the Euro emissions standards had had a considerable and varied impact on Parties to the Protocol. The lesson learned was that there was a need to evaluate policy progress nationally, on a year-to-year basis, and to compare it with the time-path leading to meeting the emission ceilings in the target year. In addition, where measures were revised and major challenges arose,

care should be taken to ensure that the cost-effectiveness and ambitions of the process remained on target;

(c) Indicators comparison between countries showed great differences in national values when negotiating the Protocol. For instance, nitrogen oxides emissions per capita for 2010 under the Protocol varied from 27.4 to 16.1 kg per capita. Regarding sulphur dioxide, emissions per energy consumption were in the range of 152.9 to 13 kg/TJ. These differences highlighted a country-specific problem between equity and environmental improvements. Here the lesson learned was to include indicators comparisons between countries when negotiating future emission ceilings, as was currently done in the post-Kyoto process under the United Nations Framework Convention on Climate Change.

7. Mr. Lumbreras further stressed that the nature of the environmental challenges we face required pre-emptive action. To determine an appropriate and effective course, assumptions for the future needed to be made. These entailed a degree of uncertainty. While models served an important role in this process, they were entirely dependent upon the quality of the data. This required ongoing structured efforts to improve the quality of the modelling data, and a commitment to take account of updates and improvements in the effort to make progress vis-à-vis environmental objectives.

8. Mr. Mike Holland (United Kingdom) demonstrated how the impact pathway approach developed in the European Union (EU) projects series ExternE (External Costs of Energy; www.externe.info) had been successfully applied, together with abatement costs data, to perform a cost-benefit analysis of reductions in volatile organic compounds emissions. He highlighted some of the most important advances in this cost-benefit analysis, such as the acceptance of chronic effects of particulate matter (PM) on mortality and inclusion of PM_{2.5} impacts, acceptance of the impact pathway approach methodology (through the review and publication of the Clean Air for Europe (CAFE) cost-benefit analysis), economic valuation of mortality and morbidity (where mortality impacts dominated the benefits) and better treatment of uncertainty. Among the impacts still not included were ecosystems and cultural heritage impacts.

9. Mr. Maas presented a report on the costs and effects of the Protocol based on the report by the Task Force on Integrated Assessment Modelling reviewing the Protocol. He drew attention to the costs, effectiveness and sufficiency of the Protocol in the light of new scientific insights, recent trends and the latest projections on economic activities. He recommended increasing the cost-effectiveness of the Protocol by putting a stronger focus on East European countries and the shipping sector, and by exploring synergies with climate and agricultural policies.

10. In part 2 of the workshop, Mr. Holland gave a presentation on uncertainties and future research needs in the cost-benefit analysis of international protocols. He outlined the major results and experiences from the cost-benefits analyses of the Gothenburg Protocol, the EU National Emission Ceilings Directive¹ and CAFE. He also presented a list of recommendations for future research needs for cost-benefit analysis of the Protocol (and similar international protocols) for discussion by the workshop.

11. Mr. Maas raised the issue of the compatibility of national emission ceilings for air pollutants with the flexible (economic) instruments proposed by the European Commission on carbon dioxide emissions trading, elaborated on the topics raised in part 2 of the workshop.

12. Mr. Bernd Schärer (Germany) and Mr. Christer Ågren (Sweden) discussed the topic, “Do international protocols really trigger additional policy measures, or do countries offer no more than they already planned to do?” They thought that the protocols had triggered additional policy measures, but agreed that this was a question that one should continue to ask and analyse.

13. Mr. Navrud emphasized the important role that the Network of Experts could play in performing economic analyses of the costs and benefits of future revisions of international protocols in order to ensure the economic efficiency of future protocols and the cost-effectiveness of existing ones. He pointed out that this demanded a more active role from national members of the Network in terms of contributing human resources and helping to secure funds for such analyses.

II. CONCLUSIONS AND RECOMMENDATIONS

14. The workshop identified needs for future work in the following research areas related to cost-benefit analysis of the Gothenburg Protocol, and to benefit assessment in particular:

- (a) Improving impact assessments which were the basis for the benefit assessments;
- (b) Increasing the number of primary valuation studies of affected ecosystem services, and procedures for transferring (in space and time) and scaling up the existing (and new) valuation studies;
- (c) Increasing the number of primary valuation studies of health impacts from air pollutants; especially for chronic respiratory illnesses, cancer and premature death of adults and

¹ 2001/81/EC.

children (i.e. more primary stated preference (SP) valuation studies of value of a statistical life (VSL), value of a life year (VOLY) and years of life lost (YOLL); meta-analysis of previous SP studies of VSL, VOLY and YOLL; and value transfer guidelines);

(d) Improved treatment of uncertainties in cost-benefit analysis, especially in impacts assessment and economic valuation (e.g. more sensitivity analyses and better simulation models) as well as improved ways of communicating these uncertainties in cost-benefit analysis.

15. It was agreed that all four items were potential topics for future Network of Experts workshops, which could benefit from being organized in cooperation with ongoing European Commission research projects, including: (a) VERHI – Children (Valuing environmentally related health impacts with special reference to children) and HEIMTSA (Health and environment integrated methodology and toolbox for scenario assessment) regarding health impacts (see para. 14 (c) above); (b) AquaMoney (economic valuation of environmental and resource costs and benefits in the EU European Water Framework Directive); and (c) ongoing work in the European Environment Agency on valuing biodiversity and ecosystems services in relation to ecosystems services (see para. 14 (b)).

16. Participants in the workshop also pointed out the lack of funding for cost-benefit analysis of revisions of the Protocol. The Nordic Council of Ministers, which had provided financial support for the workshop, was suggested as a potential source of funding, but other countries also needed to contribute. The Network of Experts could contribute to the coordination of the use of the funds raised to maximize the outputs in terms of cost-benefit analysis and benefit assessments.

17. Participants in the workshop also expressed interest in contributing to updating the Guidance document on Economic Instruments to Reduce Nitrogen Oxides, Sulphur, VOCs and Ammonia (EB.AIR/1999/2, chapter VI). Existing inputs to this process included the outcome of the third Network of Experts workshop, “Policy instruments for air pollution abatement (organized jointly with the EU Directorate-General for Environment in November 2004) and a recent report by the National Environmental Research Institute (University of Aarhus, Denmark) to the Nordic Council of Ministers entitled “Nordic perspectives on the Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone”. A new joint Network of Experts/European Community workshop on policy instruments was suggested as a starting point for this work.
