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**Executive Body for the Convention on Long-Range Transboundary
Air Pollution**

**Working Group on Strategies and Review
Meeting of the Heads of Delegation of the Working Group**

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PREPARATIONS FOR THE REVIEW OF THE GOTHENBURG PROTOCOL

Note by the secretariat in collaboration with the Chairman of the Working Group

Introduction

1. The Executive Body at its twenty-third session initiated a first review of the 1999 Gothenburg Protocol in accordance with article 10 of the Protocol following the Protocol's entry into force in 2005 (ECE/EB.AIR/87, para. 51(b)). It invited all bodies of the Convention to plan their work for the review. This document provides a draft annotated report outline that could form the basis for the review. The first section presents an interpretation of the legal requirements for the review. The second section presents the technical elements to be considered in the review, drawing upon the informal document considered by the Executive Body at its twenty-third session. The third section presents an outline and summary contents of the review report for consideration at the twenty-fifth session of the Working Group on Effects (30 August – 1 September 2006), the thirtieth session of the Steering Body to EMEP (4–6 September 2006) and the thirty-eighth session of the Working Group on Strategies and Review (18–22 September

2006). Finally, section IV describes the preparation of a draft timetable for completing work on the individual elements of the review in time for the twenty-fifth session of the Executive Body in December 2007.

I. Legal requirements for the review

2. Article 10 of the Gothenburg Protocol requires that Parties keep under review the obligations of the Protocol and broadly specifies the modalities of such reviews. Paragraphs 2 (a) and (b) of the article are of importance in determining the content and structure of the review report, while paragraph 2 (c) deals with procedural matters for the review.

3. Paragraph 2 (c) of article 10 stipulates that the procedures, methods and timing for reviews shall be specified by the Parties at a session of the Executive Body. It also requires that the first such review start no later than one year after the entry into force of the Protocol. In accordance with this requirement, the Executive Body initiated the review at its twenty-third session in December 2005, following the Protocol's entry into force on 17 May 2005. It also indicated the time frame for completion of the review – by its twenty-fifth session in December 2007 – and invited all Convention bodies to plan their work for the review.

4. Paragraph 2 (a) of article 10 specifies the subject of the review. According to its subparagraph (i), the Parties' obligations in relation to their calculated and internationally optimized allocations of emission reductions, referred to in article 7, paragraph 5, should be reviewed. Article 7, paragraph 5 requires Parties to arrange for the preparation of revised information on calculated and internationally optimized allocations of emission reductions for the States within the geographical scope of EMEP, using integrated assessment models, including atmospheric transport models or alternative assessment methods approved by the Executive Body. In other words, the Parties' emission ceilings (specified in annex II of the Protocol) should be reviewed in light of the revised information on calculated and internationally optimized emission reduction allocations.

5. Paragraph 2 (a)(ii) of article 10 requires the review of the adequacy of the obligations and the progress made towards achieving the objective of the Protocol. The relevant obligations to be reviewed here could include those under article 3, paragraph 1 on the achievement of emission ceilings; article 3, paragraphs 2 and 3 on the application of emission limit values to new and existing stationary sources; article 3, paragraph 4 on the evaluation of limit values (ELVs) for new and existing boilers and process heaters; article 3, paragraph 5 on the application of limit values for fuels and new mobile sources; article 3, paragraph 8 (a) on the application of measures to control ammonia emissions; and article 3, paragraph 7 on the application of measures to products. It should be noted that the results of the in-depth review of the Gothenburg Protocol by the Implementation Committee, scheduled for 2006 and 2007, should provide an assessment of the degree of implementation of most of these articles by the individual Parties to the Protocol.

6. Paragraph 2 (a)(ii) of article 10 also requires the review of progress made towards achieving the objective of the Protocol – that is, to control and reduce emissions of sulphur, nitrogen oxides, ammonia and volatile organic compounds caused by anthropogenic activity so

as to ensure that, in the long term and in a stepwise approach, and taking into account advances in scientific knowledge, atmospheric depositions or concentrations of these substances do not exceed the critical loads as described in annex I of the Protocol.

7. In view of the above, the review of the Protocol should include the following elements:

- (a) a review of the emission ceilings in annex II;
- (b) a review of the adequacy of the obligations listed in paragraph 5 above;
- (c) a review of the progress towards achieving the objective of the Protocol as set out in article 2.

8. The results of the review should indicate (i) whether, in view of the latest scientific knowledge, the emission ceilings in annex II and the obligations of the Protocol are adequate for achieving the objective of the Protocol; and (ii) what progress has been made towards achieving the objective.

9. Depending on the outcome, the review could lead to one of the following possible conclusions:

- (a) The most optimistic conclusion is that the emission ceilings and the obligations of the Protocol are adequate and on the way to being fully implemented, which would lead to achieving the objective of the Protocol. If this conclusion is reached, a possible further step could be a revision of the Protocol in view of increased ambition levels.
- (b) The second possibility is that, although on their way to being fully implemented, the obligations of the Protocol will not lead to achieving its objective and therefore need to be revised.
- (c) It is also possible that the latest scientific knowledge confirms the adequacy of the Protocol's obligations, but that, due to an insufficient degree of implementation, progress towards achieving its objective is slow. In this case, no revision of the Protocol will be necessary, but stronger implementation measures will be needed.

II. Technical elements for consideration in the review

10. Paragraph 2 (b) of article 10 requires that such reviews take into account the best available scientific information on the effects of acidification, eutrophication and photochemical pollution, including assessments of all relevant health effects, critical levels and loads, the development and refinement of integrated assessment models, technological developments, changing economic conditions, progress made on the databases on emissions and abatement techniques (especially those related to ammonia and volatile organic compounds), and the fulfilment of the obligations on emission levels.

11. At the twenty-third session of the Executive Body, an informal document prepared by the Chairman of the Working Group on Strategies and Review, in collaboration with the secretariat

and some members of the Bureau of the Executive Body, listed possible elements for the review of the Protocol, in accordance with the requirement under paragraph 2 (b), and identified the responsible Convention bodies.

12. The technical inputs required from different Convention bodies to carry out the review include:

(a) From the Working Group on Effects:

- (i) **Monitored effects on human health, ecosystems and materials.** A substantive report on the status of and trends in effects on human health, ecosystems and materials was completed in 2004 and will be updated by the International Cooperative Programmes (ICPs) and the Task Force on Health in 2006.
- (ii) **Critical loads (acidity and eutrophication).** The latest data on critical loads were approved by the Working Group in 2005. Further updates could be accomplished in 2006 and made available for integrated assessment modelling.
- (iii) **Dynamic modelling of ecosystems recovery.** Dynamic models provide information on time delays of ecosystem damage – or recovery – caused by changes in acidifying deposition. Data on parameters for dynamic modelling are currently available from 13 Parties. Additional information will be provided from workshops on nitrogen in 2005 and 2006.
- (iv) **Critical levels (ozone).** This includes information about ozone pollution damage to vegetation and crops, based on concentration-based and flux-based results, and incorporating the latest conclusions reported in 2006.
- (v) **Land use maps.** Harmonized land use maps allow the identification of impacts across the region. Available maps may need to be refined in 2006.
- (vi) **Human health effects.** Reported data on the effects of ozone and particulate matter (PM) on human health will be updated by the Task Force on Health in 2006.
- (vii) **Effects on materials, historical and cultural heritage and related economic impacts.** Information on these effects will be available in the forthcoming report on trends of corrosion and pollution for 1987-2003. A workshop in 2006 is expected to provide information for the assessment of related economic impacts.

(b) From the EMEP Steering Body:

- (i) **Emission data.** The latest update of the annually reported emission data is required.
- (ii) **Unified Eulerian EMEP model.** In 2003 it was concluded that the model could be used for integrated assessment modelling for acidification, eutrophication and ground-level ozone. Further work was recommended to improve confidence in the modelling of PM. Since then, the model has been continuously improved based on these recommendations.
- (iii) **Source-receptor matrices.** Source-receptor matrices present responses to

emission changes. Here the latest update of the calculated source-receptor matrices is required.

(iv) **RAINS model framework.** The RAINS integrated assessment model supported the negotiations of the Protocol. The key feature of the model is that it can link projected socio-economic development with potential air pollution effects on human health and the environment. It can also identify least-cost strategies with differentiated control requirements for different countries and their emission sources based on the impacts of different pollutants. The model is constantly evolving, but its basic development has been completed and reviewed. Further improvement in the EMEP model will be incorporated, as well as further work on population exposure from the CITY DELTA project.

(v) **Land use maps** (see (a) (v)).

(vi) **Development of baseline scenario (2010 / 2020)** (see also (c) (vii)). Baseline scenarios of the RAINS models have been developed and bilateral consultations on the input data have been held with the European Union (EU) 28, Switzerland and Norway. Further work is needed for other countries.

(vii) **Hemispheric transport of air pollution.** An assessment report on the relevance of hemispheric transport will provide scientific input into the review.

(c) From the Working Group on Strategies and Review (WGSR):

(i) **Abatement costs.** Data on abatement costs are available in the RAINS model for EU countries. These data need to be supplemented with data on other countries. Data from the ECODAT database developed by the Expert Group on Techno-economic Issues may be used as a supplement to the RAINS data.

(ii) **Annexes review with binding [emission] limit values.** Work has started for EU countries, but further work is needed to determine the need for revision, in particular on emission limit values for NO_x for new stationary engines.

(iii) **Review of annex II on national emission ceilings.** Work has started for EU countries in connection with the review/revision of the EU National Emissions Ceilings (NEC) Directive, but the review should be extended to other countries.

(iv) **Scheduled evaluation of emission limit values (article 3, para. 4), with a view to amending annexes IV, V and VIII.** According to article 3, paragraph 4 of the Protocol, ELVs for new and existing boilers and process heaters with a rated thermal input exceeding 50 MWth and new heavy-duty vehicles shall be evaluated by the Parties at a session of the Executive Body with a view to amending the annexes no later than two years after the date of entry into force of the present Protocol. The necessary data will be made available according to the work plan for the implementation of the Convention (item 1.6 (c)).

(v) **Guidance documents / emerging technologies.** The guidance documents on

ammonia and on economic instruments will be updated in 2006 (items 1.3 and 1.8 (b) of the work plan for the implementation of the Convention). Other guidance documents to be reviewed are on SO₂, NO_x and VOC control techniques for stationary and mobile instruments.

(vi) **Particulate matter.** A review of the need to include PM in a future instrument.

(vii) **Development of baseline scenario (2010 / 2020)** (see also (b) (vi)).

13. At its twenty-third session, the Executive Body decided that the Working Group on Strategies and Review, working with the appropriate bodies under the Convention, should develop and evaluate options for addressing the long-range transport of particulate matter and tropospheric ozone, including the air pollutants that contribute to their formation (ECE/EB.AIR/87, para. 51(b)). Such an evaluation could also take into account associated issues relevant to climate change.

III. Draft outline of the report on the review

14. The most appropriate format for presenting the report on the review would be an official document of about 8,000 words in the three languages for the twenty-fifth session of the Executive Body. The main report might be supported by additional reports from subsidiary bodies that could be Convention documents, separate publications or documents posted on the Convention's website. The main report might have the following structure:

I. INTRODUCTION

Background information about the review, its methodology and results.

II. CONCENTRATION AND DEPOSITION LEVELS

Description of the latest information on ambient concentrations and depositions of sulphur and nitrogen compounds and of photochemical pollution and the latest emission levels.

III. EFFECTS ON HUMAN HEALTH, NATURAL ECOSYSTEMS, MATERIALS AND CROPS

Description of the current status of the monitored effects of sulphur and nitrogen compounds and photochemical pollution on human health, natural ecosystems, materials and crops.

IV. NATIONAL EMISSION CEILINGS

Revised information on calculated and internationally optimized allocations of emission reductions for States within the geographical scope of EMEP, using integrated assessment models, including atmospheric transport models. This section should provide an answer to whether the emission ceilings in annex II of the Protocol are adequate or need to be revised.

V. EMISSION LIMIT VALUES

Assessment of the adequacy of the obligations of the Protocol.

VI. THE ROLE OF HEMISPHERIC TRANSPORT

VII. SYNERGIES WITH CLIMATE CHANGE

VIII. PARTICULATE MATTER

Assessment of the need to include PM in a future instrument.

IX. PROGRESS TOWARDS ACHIEVING THE OBJECTIVE OF THE PROTOCOL

Assessment of the progress towards achieving the objective of the Protocol. This section should provide an answer to the question of whether the Protocol obligations, if fully implemented, would lead to the desired results, in view of the latest scientific knowledge.

X. CONCLUSIONS

IV. Timetable for preparation of the review report

15. To ensure that the review work is carried out and the report completed in a timely manner, it is proposed that the Working Group elaborate a detailed work schedule according to the agreed structure of the report and in consultation with the respective responsible bodies. The secretariat will prepare a first draft for presentation to the Heads of Delegation session. The work schedule will include the title of the contribution, the section of the report, the name of the body/centre/programme contributing and the deadline to be met.