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TRANSBOUNDARY AIR POLLUTION

Working Group on Strategies and Review

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Geneva, 14–17 April 2008
Item 7 of the provisional agenda

PREPARATORY WORK FOR THE NEGOTIATION OF A REVISED GOTHENBURG
PROTOCOL

TECHNO-ECONOMIC ISSUES

Report by the Co-Chairs of the Expert Group on Techno-economic Issues

1. This report presents the results of the twelfth meeting of the Expert Group on Techno-economic Issues, held on 2 October 2007 in Angers, France, in accordance with item 1.6. of the 2007 workplan (ECE/EB.AIR/2006/11) adopted by the Executive Body at its twenty-fourth session (ECE/EB.AIR/89). In addition, the main outcomes of the sub group on emerging technologies for large combustion plants (LCPs), held on 1 October, are included in section II A below.

2. The Expert Group reviewed progress achieved with respect to the implementation of the workplan, focusing on the progress on emerging technologies for LCPs; the revision of the

Expert Group's methodology and the background document on LCPs; the review of the annexes on stationary engines; and the studies on small combustion plants (SCPs). In addition, the Expert Group discussed the work ahead, including notably the revision of the guidance documents on sulphur dioxide (SO_x), nitrogen oxides (NO_x) and volatile organic compounds (VOCs) associated with the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol); further work on emerging technologies; as well as capacity-building activities in East-Europe, Caucasus and Central Asia (EECCA). Presentations from both meetings are available online at:

http://www.citepa.org/forums/egtei/egtei_meetings.htm#Steeringgroup12.

3. Experts from the following Parties to the Convention attended the meeting of the Expert Group: Belgium, Finland, France, Italy, the Netherlands, Sweden and the United Kingdom of Great Britain and Northern Ireland. Also present were industry experts from the Standing Committee of the European Glass Industries (CPIV), Electricité de France (EDF), the European Association of Internal Combustion Engine Manufacturers (EUROMOT), the Polish electricity producer BOT, and the German association of electricity and heat generation (VGB). The French-German Institute for Environmental Research (IFARE), the Interprofessional Technical Centre for Studies on Atmospheric Pollution (CITEPA) and the French Agency of Environment and Energy Management (ADEME) were also represented. A member of the secretariat also attended.

4. Mr. J.-G. Bartaire (France) and Mr. T. Pignatelli (Italy) co-chaired the meeting, which was hosted by France.

I. INTRODUCTORY REMARKS AND ITEMS FOR INFORMATION

5. A representative of the secretariat presented the outcomes of the fortieth session of the Working Group on Strategies and Review (17–20 September 2007), drawing attention to the invitation to the Expert Group to initiate work for a possible revision of the Gothenburg Protocol and its annexes.

6. Mr. Pignatelli reviewed the conclusions from the eleventh meeting of the Expert Group (2 April 2007, Rome) and highlighted elements from the Expert Group's workplan of. He drew attention to the revision of the guidance documents on NO_x, SO₂ and VOCs that the Expert Group would initiate in 2008. In addition, he referred to the input of the Expert Group in the revision of the *EMEP¹-Corinair Emission Inventory Guidebook*, as well as to its cooperation

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

with the European Integrated Pollution Prevention and Control (IPPC) Bureau for the revision of best available techniques reference documents (BREFs) for the steel, glass and possibly cement industries. Finally, he highlighted the ongoing efforts to organize a workshop in Almaty, Kazakhstan, in 2008, with a specific focus on information exchange on abatement technologies in the fields of energy production, refineries and cement production. Delays in the official correspondence with the host administration, the Kazakh Ministry of the Environment, had somewhat postponed the preparatory work, but the final date for the workshop would be communicated to the Expert Group as soon as possible.

7. Mr. Bartaire informed the Expert Group about the latest developments in the revision of the European Community (EC) National Emission Ceilings (NEC) Directive. He noted the objective to link the national emission ceilings of the European Union (EU) Member States with the EU climate change policy targets for carbon dioxide (CO₂) burden-sharing.

8. Mr. M. Woodfield (United Kingdom) presented a proposal for a multistakeholder project to support the ongoing efforts of the EC to introduce improved reporting mechanisms in the current revision of the “Monitoring Mechanism”², which are compatible with reporting requirements of other air and climate change instruments. These mechanisms, if replicated elsewhere would harmonize reporting procedures and guidance time frames, addressing known weaknesses, improving data quality and minimizing burdens on the EU Member States.

9. Ms. C. Ory (Electricité de France) provided an update on the revision of the EC IPPC Directive, which provides common rules for permitting and controlling industrial installations with a view to minimizing pollution from industrial sources. One of the aims of the revision of the IPPC Directive was to better ensure that permit conditions, including emission limit values (ELVs), were based on best available techniques (BAT). The BREFs that provide information for the decision makers, inter alia, about the technically and economically available means for industry to improve its environmental performance, were being updated as part of the revision of the Directive.

² Decision 280/2004 and its implementing provisions 2005/166.

II. PROGRESS OF THE EXPERT GROUP

A. Emerging technologies for large combustion plants

10. Mr. G. Guyonvarch (France) reported on the outcomes of the second meeting of the Expert Group's subgroup of experts on emerging technologies for LCPs, held on 1 October 2007. The subgroup aimed at providing technical and economical information for modelling purposes on emerging or improved technologies and abatement techniques of NO_x, SO₂, particulate matter (PM) and greenhouse gases for LCPs exceeding 500 MWth up to 2030.

11. At its meeting, the subgroup defined: (a) which technologies and abatement techniques it should look at on a priority basis; (b) which were of secondary importance, i.e. to be considered only if resources permitted; and finally (c) , which should be left out from the scope of its work. It also drew up a workplan specifying deliverables and corresponding tasks, and called for further volunteers for contributing to this work.

12. The subgroup had scheduled to hold its third meeting for 25 January 2008 in Brussels, with a view to reporting the preliminary outcomes of its work to the Working Group on Strategies and Review at its forty-first session. The fourth meeting would be hosted by CITEPA and ADEME and would take place on 17 March 2008 in Paris, followed by a fifth meeting hosted by Sweden in Stockholm on 28 April 2008. Further details on the work of the subgroup of experts are available on the website (<http://www.citepa.org/forums/egtei>).

B. Background document on large combustion plants

13. Mr. M. Hiete (IFARE) reported on the progress achieved in revising the Expert Group's methodology and the background document for LCP >500 MWth. Following the Czech and Swedish experiences in testing the methodology, a technical meeting had been held on 13 September 2007 with experts from Belgium, Czech Republic, France and Sweden with a view to providing further clarifications and improving the methodology and its applicability at the national level.

14. As a follow-up to the meeting, the user-friendliness of the background document and the associated Excel spreadsheets would be improved and a short guide would be prepared to assist the national experts in collecting the technical information. Furthermore, based on the conclusions of the meeting, the Expert Group's methodology would be amended, inter alia, to take into account the positive and negative impacts of given abatement techniques on other pollutants, e.g. on CO₂ emissions from the use of limestone or electricity use; and to leave out

the concept of “fuel characteristics that vary over time”. The next technical meeting was scheduled to be held in late November 2007.

C. Emission limit values for nitrogen oxides from stationary engines

15. During the review process of the Gothenburg Protocol and of its technical annexes, some Parties had drawn attention to the need to revise table IV of annex V, which lists limit values for NO_x emissions for new stationary engines, due to the difficulties these Parties had experienced for complying with these values when ratifying the Protocol.

16. Mr. P. Daskalopoulos (EUROMOT), supported by the delegation of Finland, recommended revising the annex V with new ELVs for NO_x that were based on a cost-effective and “environment-driven” approach. He suggested also granting emission bonuses for power plants with high energy efficiency in mechanical drive applications and/or engines fired with biofuels. Furthermore, he stressed the need for the ELVs to reflect local conditions and infrastructures, which vary considerably throughout the UNECE region.

17. Mr. P. Meulepas (Belgium) presented NO_x emissions in the Flemish region and voiced concerns about the potential impact of the proposed “softening” of the current NO_x ELVs in annex V on these emissions. According to Mr. Meulepas, the climate policies were likely to prompt a significant increase of smaller engines fired with biofuels as well as those in combined heat and power (CHP) mode. Consequently, maintaining the current ELV regulations in the Gothenburg Protocol would be useful in limiting the NO_x trade-offs from the expected increase.

18. The Expert Group took note of both presentations. It welcomed the kick-off meeting that EUROMOT would organize on behalf of the Expert Group and Finland (as the lead country for this activity) with a view to preparing technical options for consideration by the Working Group on Strategies and Review at its forty-first session. The meeting would be held at the premises of EUROMOT in Frankfurt, Germany, on 27 February 2008. The Expert Group called on national experts to take part in it.

D. Information on the revision of BREF for the glass industry

19. Mr. G. Tackels (CPIV) informed the Expert Group that the glass industry had commissioned a study, with input from the Dutch research organization TNO, for collecting the data required for updating the BREF on glass. The outcomes of this work would be presented at the next meeting of the Expert Group and made available to the members of the Group. The new data was scheduled to be presented to the IPPC Bureau by 18 July 2008. The Expert Group

welcomed the information provided, stressing that the revision of the BREF for glass was an example of good collaboration between the IPPC, industry and national administrations.

E. Work on small combustion plants

20. Mr. Pignatelli reported on progress in two studies on small combustion plants: one carried out by the Italian Petrol Union and the other one by the Italian research institute, CESI, in collaboration with the Italian National Agency for New Technologies, Energy and the Environment (ENEA). The results of these studies would be made available to the Expert Group by the end of the year and communicated to the EMEP Centre for Integrated Assessment Modelling (CIAM) for use in the modelling work. The Expert Group was invited to comment the report as well as to introduce country-specific parameters.

21. At its next meeting, the Expert Group would be informed of the outcomes of the German study on the average emission factors for small combustion units in households and the tertiary sector. In addition, the outcomes of two recent studies on wood burners and stoves and on comparison of new and old gas burners, carried out in Italy, would be made available on the website of the Expert Group and communicated to CIAM for possible use in its modelling work. The authors of the studies would be invited to attend the next meeting to present the results and/or updates of their work.

E. Emerging technologies from an integrated assessment modelling perspective

22. Mr. R. Maas, Chair of the Task Force on Integrated Assessment Modelling, reported on a number of activities under the Convention, in particular in connection with work on emerging technologies to be carried out, including with inputs from the Expert Group.

23. Mr. Maas reminded the Expert Group of the conclusions of the “Saltjöbaden III” Workshop (12–14 March 2007, Gothenburg, Sweden) that climate change should be taken into account in the revision of the Gothenburg Protocol and of the NEC Directive and that it was important to look beyond 2020. These conclusions implied an increasing focus on emerging technologies as well as on projections under the Convention, including through the new expert panel on projections set up under the Task Force of Emission Inventories and Projections.

24. Mr. Maas presented main findings of a joint Task Force on Integrated Assessment Modelling/CIAM Gothenburg Protocol review report published in autumn 2007, drawing attention to the need for further measures to reach critical loads and levels. He also enumerated measures for increasing the cost-effectiveness of the Gothenburg Protocol that included: (a) increasing the number of ratifications; further reducing emissions from international shipping;

(b) regulating primary PM_{2.5}; including non-technical measures such as congestion fees; and (c) making use of synergies with climate policy and nitrogen policies. In line with its workplan for 2008, the Task Force would explore: (a) optimized scenarios for revising the Protocol; (b) synergies with climate change and nitrogen; as well as (c) “aspirational” scenarios for 2050. Furthermore, the Task Force would start implementing the second phase of the review of GAINS model (RAINS multi-pollutant/multi-effect framework extended to greenhouse gases).

25. Mr. Maas portrayed benefits and potential risks in linking air pollution abatement with climate policy. In general terms, climate policy was expected to substantially decrease the costs of air pollution policy. Furthermore, increased energy efficiency and shift towards low carbon energy would have positive synergetic effects. However, he drew attention to the following climate policies that had to be weighed carefully when opting for a given technology or a policy measure:

(a) Carbon Capture and Storage (CCS) implied additional energy needs for coal-fired power plants and could therefore lead to higher NO_x emissions, whereas an integrated approach such as coal gasification (IGCC) could reduce CO₂, NO₂ and NO_x simultaneously and possibly even at a lower cost;

(b) Biomass burning at a small scale would increase PM emissions; in addition, as its production required land, water and nutrients, it would compete with food production and entail biodiversity effects; “Biodiesel” could lead to higher NO_x emissions than normal diesel; and finally, ELVs for biofuel refineries were still lacking;

(c) Transport technology implied a trade-off between energy efficiency (CO₂ emissions) and NO_x; Emerging technologies would play an important role (hybrid electric cars, hydrogen cars);

(d) The tendency to move to small scale Combined Heat and Power (CHP) units in urban areas could increase the exposure of the urban population to pollutants;

(e) Transboundary emission trading could reduce the costs of climate policy at the national level but increase the costs of air pollution.

26. In line with the request by the Working Group on Strategies and Review, the Expert Group discussed priority areas of work and specified work elements in the field of emerging technologies for consideration of the Working Group at its forty-first session. The Expert Group agreed that it should focus on collecting further information on the effects of CCS and biofuels as well as on current practices of plants producing biofuels. It should attempt to avoid overlaps

with work carried out elsewhere. In spite of the lack of expertise on traffic, among its current members, it also agreed to look into emerging technologies for vehicles, if the resources permitted.

IV. CONCLUSIONS

The Expert Group:

- (a) Took note of the information provided on the:
 - (i) Review and possible revision of the Gothenburg Protocol;
 - (ii) Revision of the EC NEC Directive;
 - (iii) Revision of the EC IPPC Directive;
 - (iv) Project for streamlining of the climate change and air pollution reporting requirements (carried out jointly by AEA Energy & Environment, TNO, Pricewaterhouse Coopers and the University of Leuven);
- (b) Welcomed the outcomes of the second meeting of the Expert Group's subgroup on emerging technologies for large combustion plants held on 1 October 2007; invited contributions from the experts on the priority technologies and techniques for discussion at the next meeting of the subgroup scheduled for 25 January 2008; and agreed that the preliminary outcomes of the work should be made available by June 2008 and the final results presented to the Working Group on Strategies and Review at its forty-second session in September 2008.
- (c) Took note of the outcomes presented by IFARE on the technical meeting held on 13 September 2007 for the improvement of the methodology and background document on LCPs, involving making the background document and the Excel spreadsheets user-friendly and preparing a guidance document for national experts; agreed that the work should be completed in time for reporting to the Working Group on Strategies and Review at its forty-first session in April 2008; and agreed on holding the next technical meeting in late November 2007;
- (d) Took note of the recommendations of EUROMOT and Finland for revising the ELVs with a view to reviewing the annexes of Gothenburg Protocol on stationary engines; and agreed to hold a joint meeting with EUROMOT in February 2008 with a view to preparing technical options for consideration by the Working Group on Strategies and Review at its forty-first session.
- (e) Took note of the information provided on the outcomes of the two Italian studies on small combustion plants; agreed to explore with CIAM the possibilities for using the results

in modelling; and invited experts to comment the report and test the methodology at the national level.

(f) In line with the recommendations from the “Saltsjöbaden III” Workshop and as requested by the Working Group on Strategies and Review at its fortieth session, agreed on priorities for further work on emerging technologies; and agreed to collect information on a priority basis on effects of (a) carbon capture and sequestration; (b) biofuels, including on current practices of biofuels production plants; (c) traffic, including on biofuels, hybrid vehicles and hydrogen.

(g) With a view to the possible revision of the Gothenburg Protocol and as requested by the Working Group on Strategies and Review at its fortieth session, decided to initiate the revision of the guidance documents on SO₂, NO_x and VOCs associated with the Protocol; agreed that the work on guidance document on NO_x be led by IFARE and those on SO₂ and VOCs by CITEPA together with other volunteering experts; and decided to hold a kick-off meeting in early 2008 and invited all the experts to participate;

(h) Took note of the further comments provided by Belgium on the informal document on the Gothenburg Protocol annexes IV, V and VIII;

(i) Took note on the preparations for the workshop in Almaty, Kazakhstan, possibly in May/ June 2008;

(j) Agreed to hold its thirteenth meeting in Stockholm on 28 and 29 April 2008 and its fourteenth meeting in Italy in October 2008.

(k) Considered organizing a special event for the fifth anniversary of the Expert Group.
