

OPTIONS FOR REVISING THE 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 eighteenth meeting of the Expert Group on Techno-Economic Issues, held on the 15th and the 16th of November 2010, in Lyon, in accordance with item 1.7 of the 2010 work plan for the implementation of the Convention (ECE/EB.AIR/99/Add.2) adopted by the Executive Body at its twenty-seventh session. The outcomes of the kick off meeting on definition of costs associated with the options 1, 2, and 3, suggested by the Expert Group in the draft revised technical annexes to the Gothenburg Protocol (ECE/EB.AIR/WG.5/2009/17–22), which took place on the 15th, back to back to the plenary session of EGTEI, are also reported.

A. Attendance

2. Experts from the following Parties to the Convention attended the meeting of the Expert Group: Austria, Belarus, Belgium, Canada, Finland, France, Italy, the Netherlands, Poland, the Russian Federation, Sweden, ~~Switzerland~~ and the United Kingdom. The participation of experts from Belarus and the Russian Federation was financially supported by Sweden and France. Industry experts from the ‘European association for environment, health and safety in refining’ (CONCAWE), EURELECTRIC, the European Confederation of Iron and Steel Industries (EUROFER), the European Association of Internal Combustion Engine Manufacturers (EUROMOT), the Standing Committee of the European Glass industries (CPIV), the European Solvents Industry Group (ESIG), the confederation of chemical industries (CEFIC), and experts from the French-German Institute for Environmental Research (IFARE), the Inter-professional Technical Centre for Studies on

Atmospheric Pollution (CITEPA), the French Agency of Environment and Energy Management (ADEME) and the International Institute for Applied Systems Analysis (IIASA) also attended the meeting.

B. Organization of work

3. Mr. J.-G. Bartaire (France) and Mr. T. Pignatelli (Italy) co-chaired the meeting, which was hosted by France. Simultaneous interpretation English-Russian was provided during the main session of 16 November to facilitate the active participation of the Russian-speaking experts.

I. KICK OFF MEETING ON COST DEFINITION

4. A representative from the Technical Secretariat of the Expert Group (CITEPA, France) presented the EGTEI methodology for the definition of the costs associated with the 3 options suggested by EGTEI, in the revised Annexes to the Gothenburg Protocol. The methodology is based on transparency and traceability. Within relevant sectors, the applicability and costs of all possible emission reduction measures must be determined on installation, respectively on process level. Such an assessment strongly depends on specific characteristics of single installations, since in most of the sectors, significant differences exist between installations with regard to size, capacity and processes in use. Due to the large number of individual emission sources, within each sector, consideration and assessment of the technical parameters for each single installation is not feasible.

A possible solution consists in the assignment of individual installations to pre-defined categories, each category being represented by a “*reference installation*”. This established approach aims at a comprehensive and simultaneous assessment of technological and economic properties of the considered processes and the related emission abatement options. The definition of a reference installation is performed according to:

- in all the installations, categorized in a certain *reference installation*, the same emission reduction options can be applied;
- All the installations categorized in one reference installation show similar abatement efficiencies and costs for a given emission reduction options.

Two types of measures can be distinguished:

- primary measures: all measures which allow the reduction or avoidance of possible emissions at the moment of their formation (e.g. Low NO_x burner)

- secondary measures (also called end-of-pipe or add-on techniques): all measures which allow the reduction of emissions in the exhaust/waste gas of considered processes (e.g. fabric filter)

Beyond that, combinations of primary and secondary measures may be considered.

Costs of reduction techniques are determined according to the characteristics of the reference installations. Investments, fixed and variable operating costs, as well as total costs per ton of pollutant abated can be derived.

5 Members of the Technical Secretariat of the Expert Group presented respectively the cost data collected for activities covered by annexes IV, V, VII and VI. For what concerns the annex IV, V and VII, information is available from the work carried out by EGTEI on LCP. For other activities, costs data from the latest version of BREF documents for cement and glass industry are also considered. For other activities, the BREF documents are often the main source of information. It was highlighted that, documents prepared for the meeting, on annexes IV, V and VII, have to be considered very preliminary.

On annex VI, work carried out by EGTEI can be considered sufficient for determining costs of the different options. It must be kept in mind that EGTEI data were used in the BREF “surface treatment using organic solvents”. It is possible to associate combinations of measures to options and by this way costs.

6 EGTEI must provide the informal documents on costs associated with the different options on time for the next WGS&R meeting, scheduled from the 11th to 15th of April 2011. The documents should be ready at least 3 weeks before the meeting or 21 March 2011, at the latest. Due to the very tight time frame, the Expert Group will focus on the main activities (most important emitters) and key pollutants (NO_x and PM).

7 The definition of costs must be properly transparent. The methodology used by EGTEI is consistent with the methodology used in the GAINS Model, if taxes are removed and the technical lifetime of equipments is considered to calculate annualized costs.

8 Investments as well as total annual costs are considered useful information. Costs expressed per ton of pollutant abated should be also delivered. The incremental costs from one option to another one are also considered useful.

9 Indication will be provided on trade off and co-benefits of reduction technique, as foot notes.

10 Activities to be covered with the highest priority are as follows: LCP: a meeting with EURELECTRIC is already scheduled on the 25 November 2010. Refineries: work to carry out with CONCAWE. Iron and steel: cooperation with EUROFER. Cement: the use of the last BREF is planned, CEMbureau will be contacted, Glass: the use of the last BREF is planned; CPIV (Standing Committee of the European Glass industries) is already informed. For what concerns the Small Combustion Installations (with capacity lower than 50 MW), Switzerland will be contacted. For stationary engines, Finland will be contacted on the participation of Euromot. Bilateral consultations will be organized. The participation of national experts is expected for the examination and validation of the results.

II. PROGRESS IN THE WORK OF THE EXPERT GROUP

11 The Co-Chairs introduced the main issues of the meeting: (a) the results of the work on the draft revised technical Annexes to the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) carried out by the ad hoc group of technical experts at the session in parallel to the forty-seventh session of the Working Group on Strategies and Review, held in Geneva, at the beginning of September 2010; (b) the cooperation of the Expert Group with a number of European industry associations with the aim of improving the quality of the data in the related sectors in the GAINS Model; (c) the work on the definition of costs associated with the options suggested by the Expert Group in the draft revised Annexes to the Gothenburg Protocol and (d) the draft work plan of the Expert Group in 2011.

12 The Italian Co-Chair highlighted the main outcomes of the work carried out by the technical experts, at the session held in parallel to the 47th WGS&R meeting, which was aimed at clarifying technical aspects related to the emission limit values (ELVs) proposed by the Expert Group for the revised Annexes in a number of sectors: Small Combustion Installation, Stationary Engines, use of solvents in a number of industrial activities, solvents in products, TiO₂ production, nitric acid production, paper pulp production, wood processing. The experts attending the parallel session were also invited to provide preliminary views on their preferences about the three options, on ELVs, suggested by the Expert Group, in the draft revised Annexes, although the political choice among the options, as clearly stated, was a matter of the negotiation process within the WGS&R. The technical working group suggested a number of amendments to be included, mainly, in Annex VI and Annex XI.

11 The representative from CITEPA, technical secretariat of the Expert Group, presented the progress made on the redaction of amendments on annex VI and XI. Those amendments have to be finalized as official document for translation not later than mid January. Some editorial changes have been made. It was suggested by the experts, at the parallel sessions, to

distinguish between plants consuming less than 200 t solvent per year and those consuming more than 200 t per year, to be better in line with the EU Industrial Emission Directive. For what concerns the wood processing sector the amendment is being prepared on the basis of the recommendations collected at the parallel sessions, with contributions from Belgium, which carried out some studies. For what concerns TiO₂ the work is also in progress.

12 The representative from Belarus presented an overview of the difficulties in his country concerning the application of the suggested ELVs for solvents. The existing regulation is based upon the limitation of 12 solvents as well as TSP emissions. It was suggested to continue to explore the differences and search for possible solutions.

13 The French Co-Chair reported to the Expert Group a short summary on the outcomes of the kick off meeting on costs, held on the 15th of November.

14 The representative from EURELECTRIC presented the provisional assessment of the representation of the Power Plants category in the GAINS model. Following initial discussion between EGTEI and CIAM in June 2010, an assessment was been made on the plants characteristics, emission factors, fuels and cost parameterisations. Three national case studies are under way (France, Germany, U.K.) carried out by EURELECTRIC. Detailed comparison has been made between GAINS representation and national information, in each case. The main outcomes from the case study are as follows: from a stakeholders perspective, the categories distinguished in the GAINS model for power plants should relate more closely to the different applicable emission factors (relating to load factor, IED options, national regulation); however, the availability of robust statistics and projections at such a detailed level for all countries needs to be explored. A stakeholder perspective would also call for improved control strategies in GAINS model (i.e., the temporal penetration of emission control measures). However, as the control strategies currently implemented in GAINS have been developed in close collaboration with the officially designated national experts, changes need to be agreed upon with national experts. Stakeholders were invited to provide updated information on the quality of fuel and plant parameters via their national contact points. The organization of a follow-up meeting between EGTEI and the IIASA experts was recommended to discuss in details the outcome of the national case studies. The representative from CIAM explained that discrepancies observed at 2010 are not surprising since the GAINS data for 2010 have not been calibrated as statistics will only become available in 2011/12. It was observed that statistics provided by Eurostat and PRIMES (which derives data from Eurostat) are often different from the national statistics, and that in the interest of international comparability GAINS should preferably rely on internationally harmonized statistics.

15. The representative from EUROFER presented briefly the work carried out to characterize the sector data to be used as input to the Integrated Assessment Modeling in GAINS. A

review of production data available in GAINS has been carried out. New figures will be proposed. Emissions factors are also, in some cases, affected by errors. EUROFER should provide other figures. Abatement options and related costs will be revised and other figures proposed. The data should be discussed in an EGTEI working group.

16. The Italian Co-Chair presented the methodology developed for Italy to link the Emission Limit Values, as proposed by the Expert Group, in the revised technical Annexes, with the GAINS scenarios. From data available in GAINS, for the Power Plant sector, an Excel Macro has been developed with the main function of upgrading the existing Control Strategy in GAINS, where needed, so that the resulting emissions are consistent, in terms of concentrations, with the ELVs suggested by the Expert Group. Assumptions and caveats have been discussed. An improved approach is being developed and tested on Italy's scenarios, after closer discussion with the IIASA experts. The methodology looks suitable to be applied to any country, with the aim of comparing emissions from the Power Plant sector, in different countries, assuming consistency with the three options, respectively. The final results will be presented, as informal report, to the 48th session of the WGS&R, in April 2011.

17 The representative from the Scientific Research Institute of Atmospheric Air Protection (SRI Atmosphere, Russian Federation) presented the ongoing project with Germany to facilitate the signature of the Gothenburg Protocol by the Russian Federation, Belarus and Kazakhstan. The kick off meeting took place in Belarus. Collaboration with EGTEI can be developed on a study on tentative costs and technical aspects of implementation of technical standards, based on best available technologies (BAT). The French Co-Chair explained the expectations from WGS&R. The Russian Federation would be the coordinator of the project, being the main issue of the collaboration focused on costs but also on possible difficulties, e.g. on solvents and search for solutions. A kick off meeting will be organized in early 2011.

18 The representative from Canada presented the new developments of the regulations in his country. Canada is defining new standards for PM and O₃ and more stringent standards are also being established for industrial sources. Local regulations are also implemented through the air shed management zones, as one unique system does not make sense, in Canada. Canada has special interest in close understanding Transboundary Air Pollution issues and, in this perspective, fora, like as WGS&R and EGTEI, are considered of high interest. Canada intends to ratify the Gothenburg Protocol.

19 The representative from IFARE, member of the technical secretariat of the Expert Group, presented the work to be carried out on emerging techniques, in combustion installations with capacity ranging between 50 MWth and 500 MWth. The work aims at defining emerging techniques which can be both: improvements of existing abatement techniques, e.g. ESP (Electro-Static Precipitator); improvement of existing technologies, e.g.

efficiency of a gas-fired power plants; techniques/technologies applied in other domains (emerging applications); new (emerging in the narrow sense) abatement techniques; new (emerging in the narrow sense) technologies, e.g. IGCC (Integrated Gasification Combined Cycle). The sub group on these issues is established and chaired by ADEME (France) and the technical secretariat provided by IFARE. Ten to twenty participants (administration, industry) with presentations from research / technology providers are expected. The sub-group will start the work in early 2011 to finish by the end of 2011.

III. REVISED WORK PLAN

20. The Expert Group proposed the following items for the 2011 workplan:

- (a) Finalize the redaction of amendments to technical Annex VII for wood processing and Annex V for NO_x emissions from TiO₂ and Annex VI on VOC emissions and Annex XI on the solvent content of products.
- (b) Carry out a work aimed at estimating the costs of reduction techniques associated with the three options proposed by the Expert Group in the draft revised Annexes;
- (c) Continue to cooperate with the Centre for Integrated Assessment Modeling (CIAM) on improving the representation of large combustion plants (LCP) and steel industry sectors in the GAINS Model.
- (d) Progress on the update of the methodology on LCP, proposed by the Expert Group;
- (e) Continue to cooperate with the European Integrated Pollution Prevention and Control Bureau, including the updating of cost data in BAT reference documents for some industry sectors, such as steel and LCP;
- (f) Define a work programme for cooperation with the Coordinating Group for Eastern Europe, the Caucasus and Central Asia and hold a meeting, tentatively in mid-February, on this issue;
- (g) In cooperation with ADEME, continue the work on emerging technologies for combustion plants with capacity lower than 500 MW;
- (i) Continue the cooperation with the Institute of Prospective Technological Studies in Seville;
- (j) Report on progress to the sessions of the Working Group on Strategies and Review.

IV. MEETINGS OF EGTEI

21 The Expert Group will hold its nineteenth meeting, tentatively in May 2011, in Italy (date and venue to be specified).