



**Economic and Social
Council**

Distr.
GENERAL

EB.AIR/WG.5/2005/6
6 July 2005

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-seventh session, Geneva, 26 - 30 September 2005)
Item 4 of the provisional agenda

**TECHNO-ECONOMIC DATA AND INTEGRATED ASSESSMENT MODELLING:
PREPARATION FOR REVIEW OF THE 1999 GOTHENBURG PROTOCOL**

Report of the Expert Group on Techno-economic Issues, prepared by the Chairman
in consultation with the secretariat

Introduction

1. This report reflects progress made by the Expert Group on Techno-economic Issues at its seventh and eighth meetings, held in Laxenburg (Austria) on 19 January 2005 and in Rome on 6 June 2005, respectively. Conclusions and recommendations from both meetings are listed in section III. Information on meetings and documents are available at:
www.citepa.org/forums/egtei_index.htm.

2. Experts from the following countries attended one or both of the meetings: Austria, Belgium, Croatia, Czech Republic, Finland, France, Italy, the Netherlands, Norway, Spain, and the United Kingdom. Industry was represented by experts from: Technical Association of Hydraulic Binder Industry (ATILH), British Petroleum (BP) International Limited, European Cement Association (CEMBUREAU), European Chemical Industry Council (CEFIC), the Oil Companies' European Organizations for Environment, Health and Safety (CONCAWE), European Federation

Documents prepared under the auspices or at the request of the Executive Body for the Convention on Long-range Transboundary Air Pollution for GENERAL circulation should be considered provisional unless APPROVED by the Executive Body.

of Glass Industry (CPIV), Electricity of France (EDF), Union of the Electricity Industry (EURELECTRIC), European Association of the Iron and Steel Industries (EUROFER), Federation of Engine Manufacturers in Europe (EUROMOT) and European Association of Printers (Intergraph). Representatives of the Centre for Integrated Assessment Modelling (CIAM) were present, as was a member of the French-German Institute for Environmental Research (IFARE) and the Interprofessional Technical Centre for Studies on Atmospheric Pollution (CITEPA) and the French Agency of environment and Energy Management (ADEME). The European Commission was represented by a member of the Directorate General for Environment and a member of its Joint Research Centre (JRC). A member of the secretariat was present at both meetings.

I. RESULTS OF THE SEVENTH MEETING OF THE EXPERT GROUP

3. The Expert Group held its seventh meeting back to back with the Task Force on Integrated Assessment Modelling workshop on the RAINS methodology, which took place on 20 and 21 January 2005. The meeting and workshop were organized by the Centre for Integrated Assessment Modelling (CIAM) and held at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg (Austria). The report of the workshop is available at: http://www.unece.org/env/emep/emep29_docs.htm.

4. Mr. J-G Bartaire (France) chaired the meeting.

A. Mandate and objectives

5. The Chairman of the Expert Group, Mr. J.G. Bartaire, presented the objectives of the meeting: to assess progress in developing a data set of techno-economic information; to determine the remaining tasks for 2005 and 2006 and to agree on how best to achieve the aims of the Expert Group. The secretariat presented highlights of the twenty-second session of the Executive Body, including the support for the work of the Expert Group and its mandate, as reflected in the 2005 workplan of the Convention (ECE/EB.AIR/83/Add.2, item 1.7).

6. Mr. R. Ballaman, Chairman of the Working Group on Strategies and Review, recalled that the Expert Group was a forum for exchange of information on techno-economic issues between national experts and industry. It should aim to develop a data set describing emission control options, their costs and ranges of uncertainties and to evaluate data submitted by countries.

7. The Expert Group noted that the review of the Gothenburg Protocol, due to start in December 2006, might involve proposals for updating the technical annexes to reflect new abatement options and for reviewing guidance documents to take account of new information on

Best Available Technologies (BAT). Ammonia and particulate matter should be considered in greater detail. It agreed that cost data on ammonia abatement should not be integrated into ECODAT, the techno-economic database developed by the Expert Group, but should be dealt with by the Expert Group on Ammonia Abatement whilst maintaining close collaboration between the two groups.

8. Mr. D. Johnstone (European Commission) reported on the European Commission's Clean Air for Europe (CAFE) programme and the development of its thematic strategy on air quality and climate change. This included proposals for the revision of air quality directives, which would require data on the feasibility of optimal control options.

B. Progress made by the Expert Group

9. Ms. N. Allemand (CITEPA) reported on progress made since the sixth meeting and proposed tasks for 2006: transparent methods for estimating costs of emission reduction techniques as input for integrated assessment modelling; and consolidated background documents describing priority sectors in ECODAT. The background documents had been developed in cooperation with industry to achieve consensus on measures and costs. The work of the Expert Group had been presented to the American Waste Management Association (AWMA) in June 2004 (Indianapolis), to the World Clean Air Congress in July 2004 (London), to the Convention's Task Force on Emission Inventories and Projections in October 2004 (Pallanza, Italy) and to the workshop on the review and assessment of European air pollution policies in October 2004 (Gothenburg)).

10. Mr. B. Calaminus (IFARE) described the finalization of background documents on several sectors and the integration of these into ECODAT, including large combustion plants (> 500 MWth), smaller combustion plants (300MWth -500 MWth) and refineries. Final validation of data for refineries with industry was pending. A background document covering nitrous oxides, sulphur dioxide, particulate matter from refineries and sulphuric acid production was proposed in July 2004. Another covering nitric acid production was finalized and awaiting feedback from industry. Further work was needed on the iron and steel industries.

11. Mr. J. Vincent (CITEPA) outlined progress on ECODAT. Validation of data and corrections of the programme had been finalized for all sectors concerning volatile organic compounds (VOCs). The combustion sector had been completed, covering nitrous oxides, VOCs and sulphur dioxide from installations larger than 500MWth. A revised version of ECODAT may be accessed and downloaded from the CITEPA website of the Expert Group (see above). He demonstrated the database, explaining the use of default data when figures were not available from countries, and the use of data for application rates and projected emissions up to 2020.

12. Mr. J. Cofala and Z. Klimont (CIAM) described the use of data produced by the Expert Group in the RAINS model. CIAM recommended better internal and peer review of background documents, less detailed documents and endorsement of data by countries. Further work was needed to develop default data for the sectors covered and to collect missing country-specific information. The deadline for new data submitted by Parties' experts was the end of February 2005.

C. Experience in collecting techno-economic data

13. Some experts expressed concern that there was a lack of transparency in the process of constructing ECODAT, the use of resources in collecting data and the time constraints for providing data. Data provided was not always used by CIAM in RAINS. Experts asked to be kept informed on which data would be used in RAINS, noting that CIAM's expectations were often too high in terms of data requested. Time constraints were often due to the constraints of the CAFE programme. The Expert Group noted that while the European Commission had its timetable, the Expert Group should agree its own level of aggregation, level of detail, time frame and benchmarks for its work.

14. The expert from the Netherlands reported on Dutch emissions and conversion factors and suggested that the Expert Group use lower nominal efficiency values in ECODAT. Dutch industry sectors were structured differently from those in ECODAT. The level of detail required was often higher than that available, for example, in the Dutch metal sector. The expert from Austria described the methodology used in Austria for collecting data for ECODAT on VOCs. The expert from Italy described problems in providing data, citing communication gaps between national experts and CIAM.

15. The Expert Group agreed it provided an important forum where industry and national experts could discuss information on costs of abatement technologies and measures. It proposed developing a synopsis document on all sectors included in ECODAT, containing figures validated by industry, for endorsement by experts at its next meeting and for the approval of the Working Group on Strategies and Review. It underlined the importance of further work on emerging technologies, especially those used in small combustion plants, that were considered a significant source of particulate matter.

II. RESULTS OF THE EIGHTH MEETING OF THE EXPERT GROUP

A. Introduction and update of work

16. Ms. L. Pierantonelli of the Italian Ministry for the Environment welcomed participants

on behalf of the Government of Italy and announced that Italy would propose co-chairing the Expert Group.

17. The Chair noted the work undertaken since its seventh meeting, including several meetings with national authorities in Austria, Germany, Italy, Poland, Spain and the United Kingdom. He presented a newsletter aimed at increasing understanding of the Expert Group and its work. Steps had been taken to promote collaboration with the Integrated Pollution Prevention and Control (IPPC) Bureau in Seville, in particular on emerging technologies.

18. Mr. Michael Sponar (European Commission) noted that data from ECODAT would be part of its baseline scenario under the CAFE programme. The first meeting to consider the revision of the European Union's National Emission Ceilings (NEC) directive was planned in summer 2005. The Directorate General on Environment asked the Expert Group to provide a list of sectors that had been incorporated into RAINS and a list of those planned for inclusion. Mr. Sponar was informed that this information would be covered in the synopsis to be submitted to the Working Group on Strategies and Review. The European Commission considered emissions from agriculture, small combustion plants and shipping its highest priorities. Mr. Sponar suggested that work on emerging technologies under CAFE and by IFARE should be further developed by the Expert Group.

19. Mr. B. Calaminus (IFARE) gave an update of recent work, including data collection from municipal solid waste incinerators, oil refineries, sulphuric acid production and iron and steel sectors. Ms. N. Allemand (CITEPA) presented synopsis sheets developed to increase understanding of the work of the Expert Group.

20. Ms. Carol Ory (EDF) presented a newsletter developed for the Expert Group with the aim of publicizing its work by increasing its visibility, improving the quality of data collected by providing more detailed information on the sectors involved and encouraging a wider participation.

21. The Expert Group noted that improvements had been made to the website of the Expert Group, including background documents, as well as links to BAT reference (BREF) documents and to the CAFE programme. Feedback on the newsletter and the website was invited.

B. Status of integration of data into RAINS

22. J. Cofala (CIAM) presented the current state of integration of techno-economic data into RAINS. Country-specific data were available for only a limited number of countries. This was expected to improve with increased contacts and commitments from national authorities. The

present data would be used for the revision of the NEC directive. It was therefore important to CIAM that the implementation of ECODAT and the use of the data in RAINS be endorsed by the Working Group. Data from most sectors concerning volatile organic compounds had been integrated into RAINS. For off-road mobile sources, emission and cost characteristics of control stages according to the current European legislation were also included. Data on large combustion sources were integrated into RAINS, although technologies for combustion in refineries and glass production were not yet integrated, since country-specific parameters were not known. In the printing, adhesive and residential combustion sectors, an update and revision of emission and cost characteristics were integrated into RAINS.

23. CIAM recommended that the Expert Group concentrated on completing work on sectors already integrated into RAINS before working on new sectors, and that it collected missing country-specific information and transmitted it to CIAM. CIAM noted that data incorporated into RAINS had been useful for integrated assessment modelling. Experts requested that they be informed when a new sector was integrated into RAINS.

C. Synopsis sheets

24. Mr. J. Vincent (CITEPA) and Mr. P. Kerdoncuff (IFARE) presented synopsis sheets of data integrated into RAINS, as agreed by the Expert Group at its seventh meeting. The sheets included a simplified display of techno-economic data with a brief description of the relevant industry, costs of abatement measures and types of data (parameters) requested from national experts for ECODAT. There were three parts: data from sectors already included in RAINS; data from sectors to be integrated into RAINS; and sectors for which data might be introduced into RAINS in the future. A summary table of the sheets is attached (annex). The synopsis sheets would be submitted to the Working Group on Strategies and Review in English only.

D. Emerging technologies

25. Mr. Ignacio Calleja of the Institute for Prospective Technological Studies (IPTS) of JRC described work on emerging technologies for air pollution abatement. IPTS provided technical and scientific support to the policy-making processes of the European Commission and promoted BREF documents under the IPPC directive. Emerging technologies and possible scenarios were also being considered by IPTS groups on energy and climate change and on transport and mobility. Future work on emerging technologies required reliable information. It should evolve in parallel with IPPC BREF documents and be focused on Best Available Techniques. It will also take into consideration long-term performance targets for different industrial processes.

26. Mr. Bernd Calaminus (IFARE) informed participants about a workshop held in

Brussels from 27 to 28 June 2004 to identify promising new technologies and the techno-economic data for these as well as to identify obstacles to the development of such technologies. The project included analysis of the main emitting sectors in the 25 European Union Member States, at present and in the future. The conclusions from the workshop included a selection of promising emerging technologies and ideas on how to facilitate their widespread application.

III. CONCLUSIONS AND RECOMMENDATIONS

27. The Expert Group:

(a) Recognized that much work had been accomplished in bringing together industry and national experts in the development of techno-economic data and background information on sectors of highest priority;

(b) Noted that country-specific data collected through the Expert Group had been provided to CIAM for use in RAINS and this was crucial in the elaboration of the baseline scenario. CIAM would indicate its priority sectors and time frames for collection of data from these sectors;

(c) Noted that some participants had expressed dissatisfaction with the lack of communication and transparency in the work of the Expert Group. Efforts had been made to improve these through a newsletter, clarification of procedures in updating the website and the development of synopsis sheets for each sector covered in ECODAT. Training sessions for experts were proposed to present detailed results of the work, to explain the methodologies for collecting and modelling the data and to evaluate parameters in selected sectors;

(d) Noted that there was insufficient participation of Parties' experts in the work of the Expert Group. The Chairman of the Working Group on Strategies and Review, in cooperation with the secretariat, proposed to contact heads of delegation of the Working Group, encouraging wider participation in the Expert Group. The Chairman proposed to visit selected national administrations to explain the importance of the work of the Expert Group and encourage greater involvement.

(e) Noted that work on costs of ammonia abatement would be addressed by the Expert Group on Ammonia Abatement rather than the Expert Group on Techno-economic Issues, although cooperation between the two groups would continue;

(f) Recognized the importance of promoting and developing work on emerging technologies. It appreciated the results of the work on emerging technologies by the European

Commission and noted it was compatible with the work of the Expert Group, for both ECODAT and integrated assessment modelling. The Chairman would continue to cooperate with the European Commission and the IPPC Bureau in Seville to explore synergies with the Expert Group in this area;

(g) Noted that a summary of the background documents discussed at the seventh meeting in Laxenburg had been presented to the eighth meeting in Rome and would be submitted to the Working Group on Strategies and Review at its thirty-seven session, in English only. It was intended to increase understanding of the work of the Expert Group, stimulate interest and encourage participation from other Parties;

(h) Agreed to make efforts to improve communication among national experts, industry representatives, CITEPA/IFARE, integrated assessment modellers and CIAM. A newsletter was developed for this purpose and circulated to experts in advance of the eighth meeting;

(i) Agreed to adapt the data from ECODAT to the level of aggregation used in RAINS; this would be done by the Expert Group, rather than by CIAM;

(j) Recalled that proposals concerning the structure or use of data produced by the Expert Group for inclusion in RAINS would be referred to the Working Group on Strategies and Review; where there might be need for modification of the model itself, CIAM would also be informed;

(k) Welcomed the offer of Italy to co-chair the Expert Group.

AnnexList of air emission source sectors treated by the techno-economic database (ECODAT) of the Expert Group on Techno-economic Issues included or proposed for inclusion in the RAINS model for integrated assessment

The following tables present activities by source sector (using SNAP nomenclature), considered by the Expert Group on Techno-economic Issues, and the code used to represent them in the RAINS model for integrated assessment. The three tables cover the source sectors proposed by the Expert Group currently included in RAINS (table 1); the source sectors finalized by the Expert Group not yet included, or only partially included, in RAINS (table 2); and the source sectors proposed by the Expert Group for possible inclusion in RAINS in the future that need further updating or development (table 3).

Table 1. Source sectors proposed by the Expert Group and currently in RAINS

ECODAT	Representation RAINS sector
Steam cracking (SNAP 040501+040502) Production of ethylene and propylene through steam crackers	STCRACK_PR
PVC production by suspension process (part of SNAP 040508)	PVC_PR
Down stream units in continuous organic processes except those above (all SNAP 0405 less SNAP 040501 and 02 + part of SNAP 040508 - NMVOC emissions)	OTH_ORG_PR
Fuel distribution	D_GASST
Manufacture of cars Manufacture of trucks Manufacture of truck cabins Manufacture of buses Part of general industry for other vehicles (part of SNAP 060108 and SNAP 060101)	AUTO_P AUTO_P_NEW
Vehicle refinishing (SNAP 060102) Commercial vehicle/car repair	VEHR_P VEHR_P_NEW
Decorative paints (SNAP 060103 and 060104)	DECO_P
Coil coating (SNAP 060105)	COIL
Coating of wood (SNAP 060107) Furniture/joinery wood	WOOD_P
Wire coating (part of SNAP 060108)	WIRE
General industry, continuous	IND_P_CNT

(part of SNAP 060108 drum) Metal furniture Rigid metal packaging (if not considered in PRT_PACK)	
General industry, other (part of SNAP 060108) Trade coaters, general engineering, industrial equipment, original equipment, heavy engineering, part of powder, ACE, aerospace, marine, high performance	IND_P_OT
General industry, plastic coating (part of 060108) Plastic coating Automotive OEM components	IND_P_PL
Surface degreasing (SNAP 060201)	DEGR DEGR_NEW
Dry cleaning (SNAP 060202)	DRY DRY_NEW
Polystyrene processing (SNAP 060304)	PLSTYR
Tyre production	TYRE
Speciality organic chemistry (SNAP 060306 + non pharmaceutical products in SNAP 060314 or other SNAP)	PHARMA
Manufacture of paints, inks, glues (SNAP 060307, 060308 and 060309)	PIS
Leather coating	LEATHER
Heatset offset (part of SNAP 060403) Paste inks	PRT_OFFS PRT_OFFS_NEW
Flexo and roto in packaging (part of 060403, SNAP 060405 and SNAP 060108) For activity: - Flexo and other gravure inks - Metal decorating inks	PRT_PACK PRT_PACK_NEW
Publication (part of SNAP 060403) Gravure publication inks	PRT_PUB PRT_PUB_NEW
Edible fat, non edible oil extraction (SNAP 060404)	FATOIL
Industrial use of adhesives (information for the two RAINS sectors is available) (SNAP 060311 + part of SNAP 060405)	GLUE_INH (will become wood and other) GLUE_INT (will become labels & tapes)

Manufacture of shoes (part of SNAP 060405) Shoes (adhesives)	SHOE
Preservation of wood (part of SNAP 060406)	WOOD
Wood combustion in domestic appliances	DOMEST
Road traffic Support for updating the RAINS model concerning road transport final report RD03/162101.5 + updated statement on cost of European diesel emission regulation Costs data introduced in RAINS	TRA_RD_LD4 Light duty vehicles: gasoline and medium distillate TRA_RD_HD Heavy duty vehicles: medium distillate
2 wheels	TRA_RD_M4_GSL TRA_RD_LD2_GS
Off-road sources (introduction of data in RAINS representing 96 % of costs and 80 % of emissions of these sources)	Off-road sources

Table 2. Source sectors finalized by the Expert Group that are not yet included, or only partially included, in RAINS

ECODAT
Cement production (some data for emission reduction techniques considered)
Glass production
Petroleum industry for SO ₂ , PM and NO _x emissions
Large combustion plants > 500 MW (only some cost information taken into account)

Table 3. Source sectors proposed by the Expert Group for possible inclusion in RAINS in the future that need further updating or development

ECODAT
Large combustion plants from 50 to 500 MW
Refineries for their NMVOC emissions
Lime production
Municipal waste incineration
Ferrous metals
Sulphuric acid
Nitric acid
Off-road sources (largest emitters represented by diesel engines covered in RAINS but need for updating of documents to take into account most recent regulations)