

# **Minutes of the expert meeting on evolution of emission abatement technologies over time. A role for EGTEI?**

## **Held in Paris on 11<sup>th</sup> of April 2006**

**Chaired by Jean-Guy Bartaire and Tiziano Pignatelli.**

### **1- Results of the expert meeting**

1 - Experts who attended are : Markus Amann (IIASA), Sergio Herman (ECN, NL), Tiziano Pignatelli (EGTEI co-chairman), Jean-Guy Bartaire (EGTEI co-chairman), Bernd Calaminus (IFARE), Pierre Kerdoncuff (IFARE), Odile Sanquer (ADEME), Eric Vésine (ADEME), Nadine Allemmand (CITEPA), Carole Ory (EDF), Christine Lecuyer (EDF/Eurlectric), Ole Restad (CEM Bureau), Anna Engleryd (Swedish Environment Protection Agency), Eric Joss (EDF),

2 - The meeting was chaired by Jean-Guy Bartaire and Tiziano Pignatelli

3 – Jean-Guy Bartaire presented the scope and objectives of the meeting. The review process of the Gothenburg Protocol and of the NEC Directive is ongoing. CIAM is aware that performance of techniques will change over time as new techniques will be introduced but no sufficient information is available to elaborate other scenarios which could go further than the MTR scenario. Energy efficiency increases; performances of DeNO<sub>x</sub>, DeSO<sub>x</sub> techniques increase... The MTR scenario is thus probably not the ultimate scenario to obtain emission reductions. In fact the RAINS model currently takes into account performances of today's techniques and not performance of emerging techniques which could get a certain part of the market in the coming decades. The EGTEI meeting is aimed at answering to questions such as: what could be done by EGTEI to provide useful data to IAM, what are priority sectors, can we focus on some sectors, who could do something. Several presentations have been made prior to the discussions.

4 - Bernd Calaminus from IFARE has summarized the study carried out in 2004 by IFARE, Austrian UBA, ITA and CITEPA "Assessment of the air emissions impact of emerging technologies" carried out in the scope of an IPTS/DG environment project.

The project aimed at:

- the identification of promising new technologies and preparation of techno-economic data for these technologies (as far as possible),
- information exchange for and from revision of BREF documents,
- the identification of the main drivers and barriers for diffusion of these technologies.

The study has been conducted in order to inform and get feedbacks from industry and experts. Most of air pollutants under the focus of regulations have been considered.

An emerging technique has been defined as:

- a technology which could gain relevant market share in a period 2005 – 2030,
- a technology relevant for air emissions and has less specific emissions,
- a technology which has a lower energy demand, is less raw material consumptive,
- a technology which is less cost intensive.

Emerging technologies and applications have been considered. To be considered as emerging these technologies are at least at pilot plant scale.

Many sectors have been studied and a number of techno-economic data have been collected in line as far as possible with what is implemented by EGTEI.

Following studies should foresee more time for more intensive and individual discussions on emerging technologies with sector representatives, particularly for the estimation of realistic data on costs.

From the EU 2004 study, it also appears that it should be necessary to execute further in-depth studies on selected technologies, to provide information compatible with IAM needs, and to develop scenarios for emerging techniques.

5 - Markus Amann from IIASA gave some useful information on needs of IAM. An emerging technology has to have larger removal efficiency than conventional technologies, lower costs and larger application potentials. In any assessment study on emerging technologies at least 3 topics have to be studied: technical features, economic features and application potentials over time. Priorities of

IAM can be defined in terms of pollutants PM and NO<sub>x</sub> and in terms of sectors: as example small combustion plants using solid fuels and PM diffuse sources. Priorities should be given to add-on technologies compared to integrated measures. Even if IGCC is not considered as promising as expected according to Isabelle Lecuyer from Eurelectric, recent information on costs, potential application rates and technical information would be useful for IAM.

6 - Ole Restad from CEM Bureau presented what technical improvements have been made in the cement production through the years. Technologies improvement has been achieved by process equipment suppliers and every shift in technology has to be adapted to each individual plant. Sometimes, modifications are not possible for all plants.

The cement industry fears some consequences from the use of emerging technologies in the RAINS model. As example the use by regulators of such data as a proof of the industry resistance towards reform, the use of inadequate technical solutions to solve a problem and a risk to incite the shift of locations outside Europe.

7 – Jean-Guy Bartaire presented the ongoing study by Eurelectric on emerging techniques in electricity production. The electricity production has to face many constraints such as Kyoto, sustainable development, competitiveness, security of supply... A study has been launched with a budget of 400 k€ to explore both the demand and the supply of electricity in a wide and long term objective. Systematic economic impact assessment will be carried out. For the demand, the potential of energy savings through more efficient appliances and through substitution of other energy vectors will be quantitatively assessed. For the supply, the potential thermal efficiency gain and emission gain from different generation technologies will be quantitatively assessed as their economic performance. Modelling and development of scenarios are also scheduled with participation of the University of Athens using the PRIMES model. A steering committee is implemented. The EC and UNECE as NGOs will be invited. Main outcomes of the study are expected for the end of this year.

8 - From discussion and presentations it appears that on one hand, a study is available but no additional demand for the further development of the subject has been addressed by the EC so far. On the other hand, IAM needs more information on emerging technologies, their efficiencies, their potential penetration rates and costs with focus on PM and NO<sub>x</sub> and small combustion plants using solid fuels, PM diffuse sources and IGCC.

For the NEC review the information cannot be provided, however EGTEI could work on a longer term perspective.

For a large acceptance, a close cooperation with both industry and administration should be implemented. It should be useful to know also what has been done in some European Agencies. Japan and USA are also working on these issues. Some useful information could be available.

From the list elaborated by IFARE, it could be possible to derive a list of techniques or of sectors to be studied in more depth but staying in line with IIASA priorities and modelling capacities.

## **2 - Conclusions**

As soon as possible, a description paper on what could be done, why and how and with what stakeholders will be provided. This document will try to prioritise the issues by listing activities or techniques which could be studied. Combustion in small appliances could be considered as example.

Jean-Guy Bartaire and Tiziano Pignatelli will visit the EC and the UNECE for better knowing and considering their opinion as for example UNECE has put priority on the work of the Convention.

The main aim of a potential future is to deliver useful information to RAINS.

If a work can be done, it will be conducted in close cooperation with industry and administration.

The next step will be to find how to finance the project.