EFCA Newsletter

European Federation of Clean Air and Environmental Protection Associations

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In this Issue

One atmosphere – many issues

The year 2011 may, in retrospect, be considered as a productive year for the air pollution community. The Executive Body of the Convention on Long-range Transboundary Air Pollution hopes to agree soon on a revised Gothenburg Protocol. The European Commission started a major project for further improvement of Europe's air quality with new legislation in the Year of Air in 2013. The Commission is also aiming at more effective integration with other policy areas, including Climate Action, Energy, Transport and Agriculture.

EFCA may also want to remember the year 2011 as a productive one. With three conferences within one year it served the scientific community with many opportunities to exchange and discuss new developments in different areas, while enabling policymakers to consider the policy relevance of these.

EFCA's third symposium on Ultrafine Particles delivered a message about the need to further explore possible regulation of Black Carbon Particles. A matter of improved health protection which would also connect clean air objectives with climate policy in view of the role of Black Carbon in global warming. EFCA summarised this message when responding to a consultation on the revision of the Air Quality Directive by the Commission this year.

The recent, more active policy interest in non-CO_2 greenhouse gases was also served by the 6th EFCA-sponsored symposium on NCGGs earlier this month.

Bridging these two activities was a conference in September under the title: "One atmosphere –making the connections". It addressed the 'co-benefits' approach, explored the connections between the atmosphere and biodiversity and looked at international cooperation.

The present Newsletter, as always, summarises developments in European atmosphere-related policies. It further reports on the three conferences, gives references to their sources and provides details on EFCA's further initiatives in relation to them; among these is an internet discussion on the Forum at EFCA's website.

It also introduces a new topic: the *Olivine–option*. In a concise article, attention is being asked for a presently still unknown approach among Climate Action policies: fighting global warming and acidification together by learning from how the earth once got rid of its surplus of CO_2 and still does.

Developments in EU policy

Sulphur content of shipping fuels

On 15 July 2011 the Commission adopted a proposal for an amendment of Directive 1999/32/EC (relating to a reduction of the sulphur content of certain liquid fuels). The proposal is in line with new standards of the International Maritime Organisation. Under the proposals, the maximum permissible sulphur content of maritime fuels used in sensitive areas such as the Baltic Sea, the North Sea and the English Channel will fall from the previous level of 1.5 % to 0.1 %, as of 1 January 2015. Other areas, e.g. the Mediterranian, are to achieve an even bigger cut, from 4.5 % down to 0.5 % by 1 January 2020. When fully implemented the proposals should reduce SO_2-emissions by 90% and the emissions of PM by 80%. The proposal is to follow the co-decision procedure by the European Parliament and the Council.
More information: proposal

"Nanomaterials" defined

According to a Recommendation adopted by the Commission on 18 October "Nanomaterials are materials whose main constituents have a dimension between 1 and 100 billionth of a metre" (*1-100 nm*). There was a need for such a definition, in order to guide industry when registering their products under the REACH Directive which protects the public against risks from chemical substances. The Commission was advised by the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) and the Joint Research Centre (JCR).
The definition does not consider any specific properties or risks. Where products meet the size criterion risk should be estimated in a subsequent assessment. Nanomaterials are currently being used in hundreds of applications and consumer products, often in low quantities. In its guidance for registration of products under REACH the Commission has further defined a threshold whereby if less than 50% of the number distribution of particles are in the defined range an assessment procedure may not be necessary. There is a provision, however, that concerns for the environment, health, safety or competitiveness may require that a threshold below 50% is set. The Commission Recommendation is to be reviewed in 2014.
More information: EC – Nanomaterials; MEMO/11/704 (Q&A)

Comment
A closing definition of nanomaterials is difficult. It has to reflect that the properties of nanomaterials may be different from the bulk material with the same chemical composition. These properties, however, may not be just dependent on size, but also on shape or specific surface area by volume. None of these criteria is supported by current data on nanomaterial risk. In a Comment in Nature[1)] Andrew Maynard recently advised against defining them at all for this reason.
By confining the definition to the size criterion the Commission serves the registration process under REACH while avoiding premature controversial approaches. Risk assessments will stimulate more research and gradually develop the knowledge for adequate protection of human health and the environment. However, the initial threshold of 50% probably limits further actions to application of nanomaterials in powders. This rather recognizes the importance of nanomaterials as an important driver of European competitiveness but it may not contribute substantially to our insights into the risks posed by these materials.

1. *Maynard, A.D., Nature **475**, 31 (2011)*

Roadmap to resource efficiency

On 20 September the Commission set out a 'roadmap' aimed at transforming Europe's economy into a sustainable one by 2050. The roadmap identifies the economic sectors that consume the most resources, and suggests tools and indicators to help guide action in Europe and internationally. It is an agenda for competitiveness

and growth based on using fewer resources when we produce and consume goods and creating business and job opportunities from activities such as recycling, better product design, materials substitution and eco-engineering. The roadmap aims to address resource inefficiency in the sectors that are responsible for the greatest share of environmental impacts – namely food, buildings and mobility, whose combined effects account for 70-80 % of all environmental impacts.
More information: Resource efficiency; Roadmap

Non-CO_2 greenhouse gases

In a speech to the European Parliament on 16 September Connie Hedegaard, Commissioner for Climate Action, informed the EP on the potential for reductions of man-made non-CO_2 climate relevant emissions. Referring to the Roadmap to a low-carbon economy in 2050 (*see EFCA Newsletter no. 11*) she mentioned a target between 42 and 49% reduction of agricultural non-CO_2 emissions (methane and nitrous oxide) and a target of 70-78% reduction for other non-CO_2 emissions.
In this respect she announced a legislative initiative of the Commission in 2012 on the fluorinated gases (see next entry). In addition, the EU is calling for global action and supports a proposal to the parties of the Montreal Protocol to reduce the production and consumption of HFCs.
With respect to the short-lived climate forcers black carbon and tropospheric ozone she referred to the review of the Thematic Strategy on Air Pollution which will address air quality matters and their interlinkages with climate change policy. The Commission is also addressing this topic within the Convention on Long-range Transboundary Air Pollution and the revision of its Gothenburg Protocol. In addition, it backs an initiative of UNEP for global action against black carbon emissions for adoption at Rio+20 in June 2012.

Reducing F-gases emissions

The Commission intends to further reduce the industrial emissions of fluorinated gases (F-gases). F-gases are known as greenhouse gases with an extremely high Global Warming Potential. The present regulation, has had a considerable impact, but without further measures the F-gas emissions will remain at today's levels in the long term. A **report** pointed out that replacing F-gases by alternatives has become more feasible and has the potential to eliminate two thirds of present emissions by 2030.
On 26 September the Commission launched a public **consultation** addressing all interested stakeholders which will run until 19 December. A legislative proposal is foreseen in 2012.
More information: report ; consultation.

ETS: allowances for aviation

In 2008 the decision was taken to include the aviation sector in the Emissions Trading System of the EU. The decision will become effective from 2012 which is also the first trading year. As a result more than 900 aircraft operators with significant operations from and to Europe have applied for free allowances. On 26 September the Commission published the benchmark values which will be used to allocate greenhouse gases emission allowances free of charge.
Operators have monitored their activity during 2010 in terms of distance travelled and amount of passengers and freight transported and are now able to calculate how many allowances they will receive free up to the year 2020. In the first year 85% of the allowances will be free of charge. Based on the current carbon prices the costs per ticket for a transatlantic flight will increase by less than 2 Euro.
More information: Aviation in ETS

Kyoto target

On 7 October the Commission published its annual report on the EU's progress towards meeting its Kyoto Protocol target for reducing greenhouse gas emissions. In 2010 the EU succeeded in cutting the emissions by 15.5% since 1990 while the economy grew by 41% over that

period. It is now very likely that the EU-15 will overachieve its target of 8% emission reduction.

Biofuels: sustainability schemes approved

As part of the Climate and Energy Package adopted in 2008 Member States are committed to a target of 10% renewable energy in their transport sector in 2020. It was expected that the major part of this would consist of biofuels. This target raised serious concern, because the agreement did not include guidelines to check whether the production of the biofuel had been sustainable and what the avoided CO_2-emission amounted to. Checking these criteria of the Renewable Energy Directive was made the responsibility of Member States.
In July 2010 the Commission published guidance on the criteria certification, land use change and avoided emissions. With respect to certification governments and industry were encouraged to set up "voluntary schemes" to check the criteria; schemes should include independent expert auditing. In response some 50 stakeholders sent their schemes to the Commission for assessment of the certification procedures.
On 19 July the Commission published a first list with seven of such voluntary schemes which have now been approved for a period of five years. The Commission is in contact with applicants of the remaining schemes, in order to improve their standards for certification.
More information: Press release; MEMO/11/522

Public awareness

Surveys by "Eurobarometer" are a regular check on the legitimacy of European policies. Based on fieldwork in the first half of 2011 the attitudes in the EU27 towards policies with respect to Climate Action and to Resource Efficiency, Environment and Growth were polled; two separate reports account for the results.

Attitudes towards Climate Action
A survey has shown that more than two Europeans in three see climate change as a very serious problem and almost 80% consider that taking action to combat it can boost the economy and jobs. The poll also found that in June 2011 the European public is more concerned about climate change than it was in 2009 – and that climate change remains a greater worry than the economic situation. The survey also shows a widespread expectation in the 27 member states that the European Union will become a climate-friendly, low-carbon society by the middle of this century.

Attitudes towards the environment
With respect to Resource Efficiency, Environment and Growth 83% of people believe that better use of resources can lead to economic growth; 77% of people believe that protection of the environment can do the same (up from 66% in 2009).
With respect to personal actions 72% of Europeans (compared to 75% in 2007) are willing to pay more for products which are specifically environmentally friendly. However, 69% of them believe that they are not doing enough to use natural resources efficiently.
In 2011 60% of the respondents think that they are "well-informed" about environmental issues (up from 55% in 2007).
More information: Eurobarometer report (reports 365 and 372)

CAP reform

On 12 October the Commission published an explanation of the main elements of the reform of the Common Agricultural Policy (CAP) after 2013. The original objectives of the CAP which aimed at food security and a reasonable income for farmers across the EU (the so-called "first pillar" of agricultural policy) have in more recent years been extended towards more specific additional objectives with a focus on rural development.
In the new CAP an additional move will be made towards greening of the agricultural production. To that end Member States will have to set aside

30% of their "national envelope" for 'green' measures. As such three criteria are introduced:

- Maintaining permanent pasture;
- A scheme for crop diversification;
- Maintaining an "ecological focus area" of at least 7% of farmland; these could consist of field margins, hedges, trees, forested areas, etc.

Their implementation will be further diversified, taking into account characteristics of farmland, social aspects of farms and farmers and other variables.
Public interventions in market mechanisms will be reduced though a safeguard policy with respect to general market disturbances (e.g. the E. Coli crisis) will be extended.
With respect to rural development the Commission has proposed six priorities for which targets have to be set in order to link funding with performance. Among the priorities one finds:

- Restoring, preserving and enhancing ecosystems
- Promoting resource efficiency and transition to low carbon economy

More information: CAP legal proposals.

EU research funding in 2012

In July the Commission decided on the budget for the Seventh Framework Programme for Research (FP7) in 2012. From a total budget of €7 billion €265 million has been reserved for environment and climate related challenges. Additional funding of research in these areas will come from other areas, such as transport and mobility related topics, the "Smart Cities initiative", agricultural projects and a fund of €1.6 billion which will be made available by the European Research Council to the best senior and young researchers in Europe.
More information: MEMO/11/521

Sequestering CO_2: olivine, the forgotten option

The earth has evidently passed the point at which the climate system was capable to absorb increasing levels of greenhouse gases and so prevent climate change. World leaders have accepted this as a fact; they agree on the necessity to limit warming to a maximum 2°C rise, whilst also admitting that such a rise seems unavoidable.
Present energy policies which include the promotion of energy conservation and renewable energy will at best reduce further changes in the composition of the atmosphere, but will never be able to reverse this development. Carbon Capture and Storage, still in development, may prevent CO_2-emissions from big sources, such as new power stations; but capture of atmospheric CO_2 is not looking like a feasible option.
Vegetation may store some extra carbon as a result of higher CO_2 levels; it can not prevent a further rise. Also, this carbon for the major part returns to the atmosphere in the so-called short carbon cycle. The long cycle of fossilisation is too slow to be of any significance.

The oceans also absorb more CO_2 in proportion to the atmospheric concentration; however, natural mechanisms to speed up the sedimentation of carbonates fall short to keep pace with the rising concentrations.
Control of the atmospheric CO_2 levels so seems to be an unsolvable problem; still it was solved already in the past.

Palaeo-geochemistry
Billions of years ago carbon dioxide was the dominant component of the earth atmosphere . After the genesis of life photosynthetic organisms gradually started to remove it, producing oxygen and the earth reservoirs of fossil fuels. A much bigger part of the atmospheric CO_2, however, was removed by the weathering of rock and can be traced in the earth crust with its huge deposits of calcium and magnesium carbonates. The process responsible is the weathering of rocks:

rock (silicates) + H_2O + CO_2
→ carbonates + silica

The ions released during weathering are transported to the marine environment where they combine to form the carbonates which sink to the sea bottom and so contribute to sediments of limestone and dolomites.

In the Dolomites our Earth stored massive amounts of CO_2 captured from the atmosphere and converted into carbonates

Enhancing weathering

The CO_2-depletion of the atmosphere to the levels of the present era which is likely to have had a capricious course took billions of years and is slow in comparison to the human time scale. Would it be possible to accelerate this process? Olaf Schuiling, retired professor of geochemistry at the University of Utrecht, Netherlands is convinced that this is possible. He has recommended olivine because it is the mineral which weathers fastest and is abundantly available on every continent.

Olivine, which is a magnesium-iron silicate, is won by open pit mining, and is mainly used in the steel industry to reduce the viscosity of slag. The solid rock is not very reactive; grinding to grain size considerably improves this. Weathering is considerably accelerated in acid environments, however.

Co-benefits

Acidification through atmospheric deposition is still a serious problem in many parts of the world, including Europe. Agricultural soils may lose their productivity which is generally compensated by liming. Lime is obtained from limestone ($CaCO_3$) by thermal treatment which produces CaO with emission of CO_2. Treating soils with olivine grains in areas with acid rain may also keep soils productive. The difference is that olivine treatment simultaneously sequesters CO_2 while liming is connected with increased CO_2 emission.

It has been estimated (*Schuiling et al, 2006*) that in moderate climates with wet deposition with average pH of 4, an application of one to two tons of olivine grains per ha (roughly the equivalent of present liming practices) takes 30 year for complete decomposition. At pH 5 this would take 300 years, which would then be sufficient to neutralise the acidification. To match the CO_2 removal under pH 4 conditions a tenfold higher olivine application would be needed, however. Recent field experiments in the Netherlands (pH values of rain between 4 and 5) demonstrated a marked increase in soil pH after one year upon application of an olivine-type stone-meal (*Rietra et al, 2011*). Further research will be needed, however, to optimise the method for different soil, weather and climate conditions. Nature areas which deteriorated due to acid deposition could also benefit from olivine treatment and so contribute to removal of CO_2 from the atmosphere.

Definition of the Olivine option
Removing CO_2 from the atmosphere by enhanced weathering of suitable rocks.

Ocean acidification

There is no obvious reason to confine the olivine option to agricultural soils. In principle, recreational grounds, road surfaces and roadsides, industrial areas and the built environment may all contribute to CO_2 sequestration.

The most interesting perspective, however, might be the application of olivine in the marine environment. Due to rising CO_2 concentrations pH values of ocean water have been noticed to decrease by about 0.1 pH unit in the open ocean and somewhat more in the North Sea. This already affects the reproductive success of the most sensitive organisms and threatens coral reefs.

The only answer to this specific problem is removal of CO_2 from the atmosphere: lower CO_2-levels will automatically lead to higher pH-value again, because of the equilibrium between CO_2 in water/CO_2 in air will shift back. And here the sea is ready to help mankind. By spreading olivine on beaches around the surf-line it is rendered to the biggest ball mill on earth ready to produce fine and easily dissolvable particles which combine

with the CO_2 in the seawater. The process may also work in shallow seas and narrows where tide or surf generate sufficient turbulence. This drives more atmospheric CO_2 to dissolve and repair the equilibrium. Obviously, the location of the olivine application does not matter: atmospheric transport of CO_2 is fast (*Schuiling and De Boer, 2011*).

Policy implications

The enormous challenge to keep climate change within tolerable limits requires that every approach which could serve this objective is to be considered. Unfortunately, the olivine option up to present does not seem to have been noticed by policymakers, although it is gaining rapidly support among scientists. Though still in an early stage of development the prospects and potential are such that an assessment of their policy implications must have a high priority. Relevant characteristics include:

1. The olivine option is the only known approach with the potential to remove CO_2 from the atmosphere at a relevant scale in relation to CO_2-emissions
2. It makes use of abundant resources only
3. Initial projects based on the olivine option show the feasibility of market approaches (www.greensand.nl; www.ecolutie.nl). Application in agriculture would only marginally increase costs. The olivine option has the potential to develop into a market-conform technology
4. Applications which address ocean acidification may have to be financed by carbon credit schemes.

An assessment will obviously identify gaps in knowledge. Research programmes which could answer rising questions, therefore, will be a requisite for progress.

References

1. Schuiling, R.D. and P. Krijgsman, Enhanced weathering: an effective and cheap tool to sequester CO_2. Climatic Change 74, 349-354 (2006)
2. Schuiling, R.D. and P.L. de Boer, Fast weathering of olivine in shallow seas for cost-effective CO_2 capture. Submitted for publication (2011)
3. Rietra, René, Bram Hoogesteeger and Huig Bergsma, Olivijn. De groene klimaatridder? CO_2-emissies verlagen via steenmeelbemesting (Olivine, the green climate saver? Reduction of CO_2-emissions through stonemeal dressing. Milieu 2011 (5), 28-30 (in Dutch)

EFCA Events in 2011

EFCA sponsored three symposia in 2011.

- 3rd symposium on Ultrafine Particles: Sources, Effects, Risks and Mitigation Strategies (UFP-3; Brussels, 26-27 May 2011)
- One atmosphere: Making the Connections Air Pollution, Climate Change, Ecosystem Services and biodiversity (Paris, 29-30 September 2011)
- 6th symposium on Non-CO_2 Greenhouse Gases: Science, Policy and Integration (NCCG-6; Amsterdam, 2-4 November 2011)

An update on UFP-3 and reports on the two others are to be found at the next pages.

UFP-3

A CD-ROM with the presentations and the Conference report has recently been published and distributed among the participants in Brussels. The CD-ROM is available from the Karlsruhe Institute of Technology and may be ordered at no cost by sending a request to Mrs Biserka Mathes at: b.mathes@kit.edu). The Conference report is also separately available at EFCA's website (Conference report UFP-3).

The main message of UFP-3: to consider, in addition to PM, the legislation of Black Carbon Particles was also presented to the Commission as part of EFCA's contribution in their Consultation on the revision of the Air Quality Directive (*see page 11*). A further initiative which comes forth from UFP-3 is that EFCA facilitates a Forum discussion on this topic at its website (*see page 12*).

One atmosphere: making the connections

At the end of September EFCA's French member APPA hosted a conference which dealt with three crucial environmental problems. The conference aimed to provide answers to the challenges of the "Vancouver Declaration" from IUAPPA's 15th World Congress (2010):

- *Air Pollution and Climate Change*
- *Ecosystem services and Biodiversity and their interaction with Air and Climate*
- *International cooperation on Air Pollution*

The conference was a joint activity with IUAPPA, EFCA and the Global Atmospheric Pollution Forum and was co-sponsored by the French Agency Adème. The most relevant messages of the conference on these three topics are summarised below.

Air Pollution and Climate Change

The UNEP/WMO assessment of black carbon and tropospheric ozone has clearly demonstrated the co-benefits for climate, health and food security of addressing short-lived climate forcers (SLCF).
Examples were presented that a small number of emission reduction measures for methane and black carbon in use in different regions around the world, using existing technologies, in the domains of transport, residential, industry and agriculture, could lead to significant health, crop, ecosystems and climate benefits in the near term.

Much wider and more rapid implementation is nevertheless required to achieve the full benefits of SLCFs reduction, and despite these near term benefits, reducing warming in the longer term will require action now to also reduce CO_2 emissions.
Though there is room for the question of their integration in global climate agreements, the local and regional character of these issues rather suggests the need to tackle them through regional agreements, such as the CLRTAP, which has taken the lead by integrating Black Carbon into the revision of its Gothenburg Protocol. Other such regional agreements are being developed or encouraged, notably by the Global Atmospheric Pollution Forum.
At smaller geographic scales of local government, progress can be and is also made in integrating air pollution and climate change policies, though at a slow pace due to institutional and organizational barriers. Local governments have a wide selection of possible means to achieve co-benefits.

Ecosystem Services and Biodiversity in their interactions with air and climate

The new strategic plan of the UN Convention on Biodiversity points to the need to reduce pollution to levels that are not detrimental to ecosystem functioning and biodiversity. There is a need, however, for a comprehensive set of indicators, including for air pollution and climate forcing, for monitoring the progress in meeting targets.
After acid rain had its impact on forests, acidification and also eutrophication have been successfully addressed by the CLRTAP through the concept of critical loads and levels which includes ozone and indirect effects of atmospheric deposition. Consequences for ecosystems of the latter are now rather well known, notably after the European Nitrogen Assessment. Dry N deposition requires better characterization though. The most serious threats are from ammonia, for which there has been little progress in reducing emissions. The Habitats directive is not adequately protecting Natura 2000 sites from atmospheric nitrogen pollution; this is because measures designed to protect large areas may not be sufficient for local protection.
Although the pressures on biodiversity are clearly leading to loss, it proves difficult to tease out the impacts from air pollution from the other pressures which cause habitat disturbance, such as land use and climate change.

There are still considerable practical difficulties in the application of economic ecosystem-

biodiversity values to public decision making; a potentially more profitable course may be to focus on economics of polluting sources. Often values ascribed to biodiversity loss seem trivial compared to values attached to detriment of human health, and biodiversity concerns rank low in public priorities.
It seems urgent though to develop instruments that make socially desirable investments attractive for market actors.

International Co-operation on Air Pollution

The present globalisation of economies has created a need for a hemispheric, if not global approach of atmospheric pollution. However, there is presently no policy framework for regional /hemispheric pollutants, no air pollution-climate change link in international policies, no well-integrated multi-pollutant approach across the regions, no global voice for air pollution to enable interaction with other global environmental actions, and a lack of awareness at a technical level between different parties in the field of air pollution.
For an effective global/hemispheric approach there is a need for three essential components:

- a data/information and coordination mechanism
- an assessment process
- a negotiating platform.

SLCFs could be a key towards more effective global and integrated action offering incentives for taking measures with co-benefits in mind.

"Grouping" of existing regional air quality agreements is needed to tackle the global issues such as SLCFs which may require tailor-made approaches: legally binding agreements may not be the best way forward everywhere. Also, health and crops may be stronger driving forces in developing countries than climate change (economic losses are easier to calculate and progress is also easier to record).
While grouping together can be useful, ongoing sub-regional and regional approaches should be continued. Even global approaches, such as the Task Force on Hemispheric Transport of Air Pollution (TF HTAP), need to take account of regional contexts.

Scientific groupings of information networks are the first step in the overall global/hemispheric process and is the basis for future policy development to promote interregional communication (TF HTAP could provide a good basis for such endeavors). We need to look at existing regional and global players (such as UNEP, WMO, TF HTAP, EMEP, Asian and African networks, and initiatives in Latin America) to see how this might be achieved under commonly agreed principles and a strategic framework vision.

Scientific assessment and development of subsequent policy options would be a natural follow-on to the development of the data/information network. The GAP Forum could provide useful guidance on necessary links and ways forward in this process.
Presenting short-term and long-term benefits effectively would help convince policymakers to take action. Awareness–raising among the general public and involvement of stakeholders from industry and public interest groups could be important drivers.
Objectives could be reached through various channels including partnerships. These may differ between regions and there are different priority pollutants in Asia and Europe/North America that need to be recognized. Different national, sub-regional and regional circumstances and capabilities must also be understood.
Policymakers in all regions need to be made aware of the potential of co-benefits.

Conclusions

With some 25 invited speakers, this conference has been recognized as a forward thinking meeting and the first to gather the interests in nitrogen, air pollution, climate change, ecosystem services and biodiversity all under the same roof.
It has thus paved the path towards better connections in policymaking between the multiple factors that influence the fragile equilibrium of our one atmosphere.

Presentations are available at APPA's website. For a view click here.

Jean-Marie Rambaud
One atmosphere Congress chairman

Sixth International Symposium on Non-CO_2 Greenhouse Gases (NCGG6)

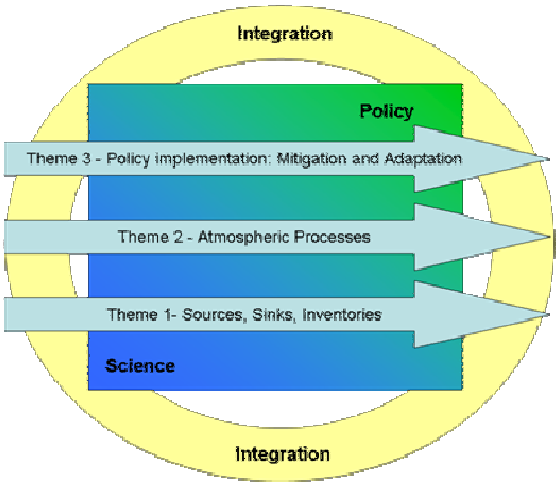
Sixth International Symposium on Non-CO_2 Greenhouse Gases (NCGG-6) Science, Policy and Integration

Amsterdam, the Netherlands November 2-4, 2011

Successful NCGG6 symposium in Amsterdam concludes: Reduction of non-CO_2 greenhouse gases works faster and is more cost effective than reduction of CO_2

NCGG6, the *6th non-CO_2 Greenhouse Gases Symposium: Science, Policy and Integration* was held in Amsterdam from November 2 to 4, 2011. Over 200 scientists, policy makers and representatives of industry from many countries in the world gathered to discuss the ins and outs of non-CO2 greenhouse gases at the interface between scientific understanding and the applications in policy and decision making. Over 140 podium presentations and about 40 posters described new developments in the three main themes of the conference (see graphic):

1. Sources, sinks and inventories
2. Atmospheric processes
3. Policy implementation: mitigation and adaptation



Non-CO_2 greenhouse gases contribute significantly to radiative forcing. These include not only the gases regulated under the UNFCCC and the Kyoto Protocol, CH_4 and N_2O and the so-called F-gases (HFCs, PFCs and SF_6), but also those regulated under the Montreal Protocol on the protection of the ozone layer (CFCs) and various types of particulates.

- Sources, sinks and inventories
  Several presentations within this theme investigated sources of CH_4 and N_2O in agriculture. Emissions from animal husbandry received special attention in several dedicated sessions, organised in cooperation with the *Global Research Alliance (GRA) on Agricultural Greenhouse Gases* (www.globalresearchalliance.org), an allience of 32 countries aiming at coordinating research that can contribute to grow more food without growing greenhouse gas emissions.

- Atmospheric processes
  Within theme 2 a number of new ground-based and satellite measurements of concentrations of specific F-gases were presented and interpreted. Using reversed modelling, authors were able to estimate the emissions that would have caused the observed concentrations. For a number of gases, the emissions, derived from the measurements fairly agree with those reported by the countries to the UNFCCC. For some they don't and sources still seem to be missed in the inventories.
  A number of participants joined a "plume hunt" where they in real time were tracking down and measuring a few CH_4 plumes near Amsterdam, using advanced measuring equipment, installed in a van with a radio link to a bus.

- Policy implementation: mitigation and adaptation
  Theme 3 discussed policy options to reduce non-CO_2 greenhouse gas emissions, concentrating on real examples in various countries. Factors that determine success or failure of these policies were discussed in depth, including the costs of such measures.

The three plenary sessions and three special interactive debate sessions aimed at integrating the understanding within each theme, with a view to indeed have an intensive and lively interaction between the different actors in the science and policy application interface. The plenary sessions provided global background and overviews of the climate issue and the role of non-CO_2 greenhouse gases in the solution of the climate problem.

Chairperson Carolien Kroeze (front/middle) during one of the discussions

One of the debates, a "Young Scientists Session" was organised by Dutch PhD students, discussing the science and approaches needed to really have solved the climate problem 50 years from now. A second debate discussed the complicated role of agriculture in the climate issue. The final debate closed the conference by discussing freely and openly on a number of provocative statements to scrutinize moiré or less fixed ideas on the sometimes troublesome boundary between scientific curiosity and the practical and pragmatic approaches needed in policy making.

One of the main conclusions of NCGG6 was that reduction of non-CO_2 greenhouse gases is an important first step in mitigating climate change. Since most of these gases are short lived climate forcers, reductions will relatively quickly be reflected in the heat balance of the atmosphere. In many cases these abatement options are also quite cost effective, sometimes even having negative total costs. Reducing the emissions of these non-CO_2 greenhouse gases would also allow for the longer time period, needed before CO_2 reductions will show effects on the earth's atmosphere.

Selected papers presented at NCGG6 will be available from:

1. A special issue of **Current Opinion in Environmental Sustainability** (COSUST) on Carbon and Nitrogen cycles, Volume 3, Issue 5 (2011)
2. A special issue of the **Journal of Integrative Environmental Sciences** (IES), expected in spring 2012
3. **Greenhouse Gas Measurement and Management** (GHGMM),

Carolien Kroeze and Tinus Pulles
NCGG6 Organising Committee

New EFCA Initiatives

EFCA responds at EU consultation

This summer the Commission organised a Public Hearing with the aim to collect information and opinions for the revision of the Air Quality Directive which is foreseen to take effect in 2013. Responding on behalf of 15 Member associations with different positions in their country within a narrow time schedule is not possible. However, EFCA's earlier Policy Initiatives provided a basis for input in the consultation.
The consultation, with many closed questions, was answered in part only. The essence of EFCA's input could be submitted in the open question: "Your most important issues". Please find below what EFCA pleaded for in its response sent on 26 September 2011.

EFCA's most important issues (Chapter 10 of the Consultation)

Integrated policy development
EFCA's ranking of integrated policy development as 'important' or 'very important ' is in line with its Policy Initiative No.2 (2010; *Linking air pollution and climate change – a challenge for European legislation*) where its consequences have been explored for the most relevant existing legislation for the policy domains of air quality and climate change. It is also true within the air quality domain itself and imperfections here are observable in the *conceptual approach*.

Conceptual approach
In chapter 3 (*of the consultation*) EFCA rated the overall conceptual approach of the air quality directives as "moderately effective". EFCA has two reasons for this position:

1. Quality oriented legislation is beneficial; however, it may become 'teethless' if a source and/or emission ceilings legislation which is coherent with the air quality requirements and targets at the relevant time path is not in place. The Plans and Programmes approach for measures at national and local level will have made up for the resulting gaps in part; however, they hardly addressed the background levels of pollutants. This reduces the legitimacy of infringement procedures on Member States by the Commission and does not support the credibility of the EU as policymaker and legislator.
2. The concept of limit values as the single measure for air quality requirements is too rude as it ignores the actual exposure of the public. In its First Policy Initiative in 2005 (*Memorandum and Annex*) EFCA has pleaded for a 'population weighted exposure' approach as an additional measure (and the preferred option at the long term possibly). In the $PM_{2.5}$ approach this idea has been taken aboard to some extent. It is recommended that this approach is extended, in particular to those pollutants for which compliance is problematic.

Air quality standards and new scientific facts
In Chapter 9 we have indicated that there is ground to reconsider the air quality standard for PM_{10}. If it had been asked we would have said the same for $PM_{2.5}$.
At the 3d EFCA-symposium on Ultrafine particles (UFP-3) in May 2011 the scientific community presented new insights which suggested that the present approach to protect the population against the health risks of particulate matter may require a rethink; in addition, a suggestion for modification of the present PM-metrics was tabled: Black Carbon Particles (BCP) have to be addressed separately, in addition to PM10. An informal account of the proceedings of UFP-3 which provides the main arguments for this recommendation is available as a concise Conference report (EFCA Newsletter no. 12, p. 8-11; *Conference Report UFP-3*); full proceedings will become available at short term (*note: these were published 16 November 2011 and available from KIT, Biserka Mathes, b.mathes@kit.edu).*
Integration of the approach towards nanomaterials seems logical, though potentially complicating because of its diverse character. This topic has not been discussed in depth during UFP-3.

EFCA facilitates Forum discussion

The important message from UFP-3 was that a more effective protection of the population against health risks from atmospheric particulate matter than provided by present EU legislation has been identified and proposed as possible additional regulation: Black Carbon Particles (BCP; considered as equivalent to Elemental Carbon (EC)). It is then likely that policymakers, before taking action, have questions and may want additional information. By making its Forum available for an Internet discussion EFCA intends to facilitate that such questions will be known and more views on the proposal will be heard.

Topics for discussion
We intend to have two discussions: in a first round (December 2011) questions around the scientific database will be considered. In a second round (January 2012) the focus is at implementation aspects.

I. Scientific database

1. Does the epidemiological database provide convincing evidence which supports a specific approach for UFP?
2. The UFP fraction is composed of black carbon, organic carbon (OC) and an inorganic fraction (sulphate/nitrate). Is the causal relation with BCP sufficiently strong to support a proposal for regulation? Do we have information which suggests that similar regulation for OC and inorganics is required to reduce health risks?
3. The specific risk of UFP is primarily their size which allows them to penetrate into the blood circulation. The exact

mechanism of the *in vivo* effects of UFP is still incomplete. Do we need more insight in these mechanisms for a reliable estimate of the effect of BCP regulation?

4. Could, in spite of an incomplete scientific database, regulation of BCP be considered as a no-regret option?

II. Implementation of BCP regulation (to be detailed later)

5. Emission database of BCP
6. Monitoring database of BCP
7. Clean technology for BCP

Technical details

Participants in the discussion need a login which is coupled to their e-mail address. Participants in the recent EFCA/KIT UFP-symposia will receive a personal invitation by e-mail with their login. Others who are interested are advised to follow the registration procedure as explained when accessing the Forum page at www.efca.net. EFCA intends to start the discussion on 5 December and close it by 16 December, with an option of an additional week. Any news will be communicated at www.efca.net.

EFCA invites interested readers of its Newsletter to register at the Forum at www.efca.net and contribute in the discussion

News on EFCA and its members

EFCA's president resigns

A week ago Jean-Marie Rambaud decided that, because of health reasons, he had to resign as EFCA's president with immediate effect. His decision and in particular the reason for it has struck EFCA's delegates and is felt as a big loss for EFCA.

The Assembly agreed to appoint EFCA's past-president, Giuseppe Fumarola, as acting president until the election of a new president. Giuseppe Fumarola confirmed his availability for the office for the time needed.

The Assembly also decided, in view of his substantial contributions to EFCA as president and vice-president, to elect Jean-Marie Rambaud as Honorary Member of the Assembly.

TUNCAP announces AQM2012

From 4-7 September 2012 our Turkish member TUNCAP will have its 4th International Symposium on Air Quality Management at Urban, Regional and Global scales. It will be held in Istanbul and is co-organised with the Istanbul Technical University (ITU). EFCA and IUAPPA will sponsor symposium. A Call for papers has been published this month; click here for a view. The deadline for submission of abstracts is 15 February. A dedicated website for the symposium is presently being developed.

Calendar

CfP = Deadline Call for Papers

Planet Under Pressure 2012 - New Knowledge Towards Solutions
26-29 March 2012, London, UK
(www.planetunderpressure2012.net)

32nd NATO/SPS International Technical Meeting on Air Pollution Modelling and its Application
7-11 May 2012, Utrecht, Netherlands (www.int-tech-mtng.org)

2nd Urban Environmental Pollution conference - Creating Healthy, Liveable Cities.
17-20 June 2012, Amsterdam, Netherlands.
(www.uepconference.com) CfP: 16-01-12

IIASA 40th Anniversary Conference
27-29 June 2012, Vienna/Laxenburg, Austria
(www.iiasa.ac.at/conference2012)

Air Quality Management at Urban, Regional and Global scales (AQM2012)
4-7 September 2012, Istanbul, Turkey. International EFCA symposium and IUAPPA Regional Conference, hosted by TUNCAP and ITU. (CfP 15-02-12)

16th IUAPPA World Clean Air Congress
29 September – 4 October 2013, Cape Town, South Africa, hosted by NACA

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EFCA

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