

Working Group 4

Sector control policies: energy, transport, agriculture, consumer behaviour

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1. Introduction

Working Group 4 set out to discuss a) direct and indirect impacts of air pollution control policies on climate change; b) impacts of measures more specifically directed at air pollution on climate change; c) impacts of climate change policies and measures on air pollution; and to identify d) important synergetic measures and e) possibly needed further action (policies, communication, research...).

Not all of these issues were finally covered in the working group at least not systematically. Presentations highlighted synergetic and antagonistic effects on air pollution and climate change of measures applicable to the sectors energy, agriculture and road transport, and of measures falling under the categories of consumer behaviour and demand management. Further presentations dealt with PM filters for all types of diesel engines, and with the EU power sector's view on integrated implementation of air pollution and climate change policies.

It was not possible to detail measures and instruments across all sectors in the brief span of this working group and accompanying report (though more details are to be found in the presentations available at www.naturvardsverket.se/airclimconf). However, during working group discussions, various participants mentioned examples of measures and policy instruments with potential synergetic effects on air pollution and climate change.

- Examples of measures: PM traps for diesel engines to reduce black carbon (also retrofit); SCR on ships (also retrofit); eating less meat; methane capture; cleaner low sulphur distillate ship fuel; off-shore electricity in ports. The importance of structural measures was also highlighted. One example stated was that in countries where cities are still increasing, the design of cities could influence transport and the transport means needed.
- Examples of policy instruments: mandatory transport plans for cities; legislation inhibiting open burning of agricultural residues and biomass; legislation introducing black carbon emission limit values at EU level; inclusion of black carbon in the revision of the Gothenburg Protocol; legislation on standards for low emission zones in the EU; performance/emission standards for new and existing domestic boilers and stoves at national or EU level or in CLRTAP protocol technical annexes; retrofit or replacement schemes for existing domestic boilers and stoves; stricter NO_x emission standards for ships; stricter regulation for wood combustion in particular from small and medium-sized plant; incentives for diesel particulate traps for road vehicles; regulation for PM trap retrofits to diesel engines at national or EU level or in technical annexes to CLRTAP protocols.

Discussions also showed that often the application of best practice measures is closely related to policy instruments in place, for example: Germany has financial support schemes for the refurbishing of buildings; in Belgium and Germany only the most energy efficient appliances can be sold; in the Netherlands tax reductions are granted for people buying a bike for work; California subsidises the retrofit of diesel engines; Switzerland has a regulation for diesel filters (retrofit) for non-road machinery and for filters on ships.

Most participants agreed that air pollution and climate change issues should not be opposed to each other. They should be considered as equally important and the emphasis should be on measures that deliver co-benefits for climate and air pollution. A closer link between science and the policy debate was thought necessary.

There was a discussion about short and long term implications. For example, air pollution control might increase fossil plant CO₂ emission in the short term, but it would decrease the relative costs of energy efficiency and renewables and so might reduce air pollution and CO₂ emission in the longer term and improve energy security. The issue was raised that regulatory stability and predictability improves the economic efficiency of investments.

No consensus was reached on the question whether indoor air pollution and people’s exposure to it should be brought into discussions under CLRTAP. This would also cover the impact of energy efficiency measures in buildings (e.g. reducing ventilation) on health. Counter-arguments were, amongst others, that this would bring more different types of pollutants into play, e.g. from smoking, furniture and the issue was distant from long range transboundary air pollution.

A further question raised was whether a better or common terminology for air pollutants and green-house gases might help promote combined strategies for air quality and climate change. Should green-house gases be subsumed under the term “pollutants”?

Some sectors and activities were not covered, or at least not in a comprehensive way. Missing in the title of the working group are important sectors and emission sources such as industry, buildings and off-road sources. The presentations did not address in detail aviation, shipping, non-electricity energy supply and buildings. Given the mostly general character of conclusions and recommendations from Working Group 4, it is unlikely that they would have been altered by an inclusion of these activities.

2. Conclusions

- The rate and speed at which measures reducing emissions can be introduced is important. “Fast measures” increase the chances of meeting near term targets and of avoiding tipping points. Furthermore, they allow for higher cumulative impacts for both short- and long-lived substances (total emissions reduced over the number of years considered and their impacts).
- Measures affecting the activities that are at the source of emissions are likely to lead to synergetic effects for air pollution and climate change. Therefore, all categories of measures are important and should be considered: not only technology but also behavioural, demand management, energy efficiency and energy mix/structural change measures.
- Next to air pollution and climate change co-benefits also other objectives should be considered, e.g. energy security and social equity.
- Behavioural and demand management measures lead mostly to win-win situations for air pollution and climate change, energy efficiency and fuel mix & quality measures lead often to win-win situations. Such measures also serve further objectives, such as energy security.
- For reasons of economic efficiency, market based policy instruments are frequently preferred. Explicit control instruments such as regulation and planning should also be considered. They can be cost-effective and their effects are often more predictable than those of market based instruments. There may also be a conflict between the economic incentives necessary to change activities sufficiently so as to meet air pollution and climate change objectives and the politically acceptable level of prices/taxes.
- In the choice of measures, conflicts between short term requirements and long term optimality are possible. For example, changes to the energy structure may be more beneficial in the long term than the use of end-of-pipe technologies on fossil fuel based power plants. But if their investment takes too much time to meet short term environmental targets, the use of certain technologies may be necessary even if this is sub-optimal in the long term.

3. Recommendations

- Methodology and science:
 - There is a need for consistent, comparable and comprehensive analyses of measures. Life-cycle analyses need to cover all relevant impacts of measures and activities, no matter where in the world these occur if they are regional or global in impact (e.g. LCA of bio-fuels). [*→Analysts*]
 - The total impact of measures in terms of net global warming needs to be assessed, i.e. positive and negative effects over different pollutants need to be added (e.g. of PM traps for diesel, SCR for ships, ...). [*→Analysts*]
 - The speed at which measures can be implemented should be considered, in terms of both the measures’ ability to meet near term targets and avoid tipping points and their cumulative impact for both short- and long-lived substances and impacts. [*→Modelling community, policy makers*]
- Research and analysis:
 - Best practice replication is important. Best practice examples should be collated to make them known to other countries and institutions. Especially for behavioural and structural change and demand management measures there are certainly close links between the application of measures and the instruments used to implement them. [*→All stakeholders - countries, NGOs...]. The possible effects of best practice if they were replicated across Europe should be modelled. [*→NIAM?*]*]
- Policy:
 - More action is needed on aviation and shipping. This includes measures for existing ships, such as SCR, as well as new. For aviation behavioural change may be most important. [*→National decision makers, regional decision makers, IMO/ICAO*]
 - In road transport there is a need for refined air pollution and green-house gas emission standards. The levels of air pollutants and green-house gases are currently independent from each other and EURO standards do not differentiate air pollution standards by car size. Air pollution and green-house gas standards should be graded by car size. [*→EU*]

4. Presentations

- Introduction on Working Group 4: Sector control policies - energy, transport, agriculture, consumer behaviour (Simone Schucht, INERIS/France)
- Results of research in NL on bio-fuels for transport, biomass for stationary sources, CCS for the power sector and industry, and small scale CHP (Pieter Hammingh, PBL/NL)
- Integrated implementation of air pollution and climate change policies: perspective of the power sector (Hélène Lavray, EURELECTRIC)
- The effects of specific measures in the transport area on the emissions of traditional APs and GHGs (Rafael Borge, UPM/Spain)
- Policies and scenario elements on integrated measures to reduce gaseous emissions from agriculture (José Martinez, CEMAGREF/France)
- Consumer behaviour and energy demand management (Mark Barrett, UCL/UK)
- “Soot Free for Climate” - German NGO Campaign on Climate Impact of Black Carbon Emissions (Dorothee Saar, DUH/Germany)

5. Participants

- Andrei Pilipchuk, Ministry of the Environmental Protection
- Birgit Nielsen, The County Administrative Board of Västra Götaland
- Carole Ory, EURELEC TRIC/EDF/France
- Catherine Witherspoon, Climate Works/USA
- Christer Agren, AirClim/Sweden
- Dorothee Saar, Deutsche Umwelthilfe e.V./Germany
- Gaston Theis, Federal Office of the Environment/Switzerland
- Harald Perby, Ministry of Environment/Sweden
- Harry Vallack, Stockholm Environment Institute
- Hélène Lavray, EURELECTRIC
- Jenny Arnell, IVL/Sweden
- José Martinez, CEMAGREF/France
- Luke Redmond, AP EnvEcon/Ireland
- Manfred Ritter, UBA/Austria
- Maria Lindblad, IVL/Sweden
- **Mark Barrett, UCL/UK**
- Nadine Allemand, CITEPA/France
- Pieter Hammingh, PBL/NL
- Rafael Borge, UPM/Spain
- Sarah Honour, DEFRA/UK
- Seppo Sarkkinen, Ministry of the Environment
- **Simone Schucht, INERIS/France**
- Sustyo Priyojati, Chalmers University of Technology/Sweden