

Working group 1

Combined strategies to control climate change and air pollution

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About 35 participants.

Introductory presentations were made by John Rea, Markus Amann, Mark Barrett, Armond Cohen, Cornie Huizenga and Julio Lumbreras. Summaries of the presentations are attached in Annex X.

This report reflects in summary the issues touched upon in the presentations and the discussions in the working group.

The need for joint assessment of air quality and climate change

The air quality (AQ) and climate change (CC) policy areas have been developed independently from one another. The geographical scales differ as well as the lifetime of pollutants and the way in which they behave in the atmosphere. However, the sources of pollutants are to a large extent the same (e.g. power generation, transport). In the absence of other measures, growth in demand for such goods and services would lead to a “lose-lose” scenario for climate and air quality policies.

We can define a number of measures leading to a reduction of climate gases and an increase in other air pollutants and vice versa, so called “win-lose” (e.g. biofuels replacing gas) or “lose-win” (e.g. particle traps on diesel vehicles), but we can also distinguish a number of “win-win” measures reducing at the same time air pollutants and greenhouse gases (fuel switching, energy efficiency measures). For some measures, which category they fall into will depend on local factors, for instance while CHP will normally reduce air pollution it can increase it depending on where it is located and what fuel it replaces.

AQ and CC are seldom considered jointly. If we analyze and design air quality and climate change strategies independently we risk: a failure to spot trade-offs early enough; an incomplete assessment of benefits (co-benefits ignored); a double-counting of costs; an incomplete assessment of the mitigation potential; and the possibility of overlooking the best overall option in favour of one focusing on only one of the issues. Assessments and design of strategies therefore need to be brought together.

But should strategies and policies be joined at all levels? Probably not. At local and national level the issues should definitely be looked at jointly when deciding how best to implement policy. There might also be a role here at European Community level. The Working Group felt that it would be politically unwise to further complicate the international climate change negotiations at global level by including consideration of air pollutants. Most of the group also felt that climate change pollutants should not be introduced to regional (CLRTAP) level negotiations (although that did not preclude trying to better understand the scientific links between the two issues).

For assessment and design of strategies and for communication purposes it is important to find a common metric. How can we compare apples and pears ? How can we compare a life

shortened by a few months with a percentage of a certain GHG emission reduced leading to a reduction in climate forcing over a period measured in decades? This is to some extent a problem we already have today trying to compare health effects with environmental effects of air pollution.

Tools

The primary tool we have available today to explore the linkages between climate change and air pollution strategies is GAINS, which allows us to quantify the linkage between AQ and GHG emissions, control costs, atmosphere chemistry and impacts.

GAINS could be used for joint assessment of AQ and CC and constitute a basis for drawing up common strategies. On the other hand there will be increased analytical and institutional complexity as more and more parameters are fed into the models. The transparency in the tools is crucial to their acceptance in policy making and increased complexity runs the risk of reducing stakeholders' understanding and trust.

To be able to have a common assessment and a common development of policies it is important to start from the same basic data. In liberalised markets it is difficult to get hold of data, e.g. on costs, which subsequently leads to a large uncertainty in the cost estimates. Public availability of data needs to be improved. The ExternE study is recognised as a good example. A user friendly and publicly available ExternE database is currently being created. To have common and consistent emission inventories and projections for national AQ and GHG emissions to be reported to international bodies (EU, CLRTAP, UNFCCC) would also be an important step and something being thought about at the EU level. Reporting also needs to be consistent between countries. Should for example fuels sold or fuels used be used to calculate emissions? The former is easy to measure, but the latter is more relevant to AQ modelling and impacts.

Drivers and challenges

Large CO₂ reductions are achievable within the EU. The date and rate of introduction of measures is critical to their impact. Technological solutions still exist to get important reductions in energy demand like a shift from fossil fuel heating to solar or electric heat pumps, or a shift from fossil fuel electricity generation to a mix of renewables. For aviation and shipping the win-win options for further cost-efficient reductions seem less obvious (it was suggested that shipping is already cost optimized for fuel efficiency – and therefore CO₂, although much is still technically feasible for reducing AQ pollutants). One of the problems is the difficulty in replacing liquid fossil fuels for these sectors.

It is recognized that behavioural changes are becoming more and more important to meet the long term challenges, especially when it comes to choice of car and air travel.

To link to climate change is important, but we need to recognise links to other areas as well like competitiveness, energy security and public health aspects. The latter is a powerful driver since there are large economic gains to be made from a healthier population.

The challenges are different in different parts of the world. In developing countries we have a heavily increasing energy demand. The drivers are also different. Poverty is the main driver. "If my life is reduced by a few months [because of air pollution] it doesn't mean anything

since I do not have a life today.” “I cannot drive less because I am not driving today”. The issue in Asia is very much about never getting people into the cars, while in the industrialised countries it is about getting them out of the cars. In both cases the answer lies at least in part in providing attractive alternatives for (or to) personal mobility. The support from industrialised countries will play an important role. To deal with the rapid urbanisation is another important priority area.

Measures and instruments

We can divide measures in two broad blocks;

- 1) technology changes or
- 2) behavioural changes

Views differ on the potential and the feasibility of the two or what the mix should look like. This leads to a discussion on what policy instruments we should use to achieve these changes 1) market based 2) fiscal (e.g. road tax) or 3) command and control/regulatory instruments like speed limits or exclusion of cars from city centres. Views diverge also concerning the extent to which community measures (EU or US) should and could be used. Community measures are proven to be effective but can also block national action. Federal states and EU Member states find it difficult to go beyond such measures, often for competitiveness reasons. Taxation on EU level would not be possible.

To implement forcing instruments in order to change peoples behaviour demands strong leaders that dare to take the risk (of not being re-elected). Taxation is never popular and needs to be balanced against a tax relief in another area, green tax shifting. How can we gain public acceptance for this kind of measures?

Today countries have less impact on the national energy markets than they used to have before the liberalisation of markets on the large scale. The energy mix is to a large extent the result of market choices that depend on economic decisions by private companies. Nuclear power and percentage of renewables are on the contrary often in the hands of governments. The kind of instruments that best suits the encouragement of “green choices” needs to be analysed in each specific case on a country level.

The climate change community often choose economic instruments as the main policy delivery route, while in air quality regulation is more common. Views differ on the usefulness of an international trading scheme for air pollutants. Would such a scheme help in reducing the cost of emission reductions? To what extent would it reduce the environmental and health benefits of the EU National Emission Ceilings directive? It clearly depends heavily on how the geographical bubble is defined within which trading is allowed.

It is not obvious that an instrument like the IPPC directive functions as an integrated measure, it could possibly be a constraint. Some EU member states go beyond the directive like for example Denmark with their tax on sulphur or Sweden with their NO_x charge.

Discussion and interaction

Despite the similarities and inter-dependencies of CC and AQ science and policy there is a lack of discussion and interaction between the respective communities. Organising climate

change and air pollution in the same part of the national ministry/department may increase the possibility for interactions, but that is still no guarantee of effective communication.

In Europe at least, climate change is the environmental problem receiving by far the most attention (we have heard how this may not be true in other parts of the world, e.g. California, Asia). Air quality is not the only area trying to link its activities to climate change. This popularity allied to the political imperative to address climate change may explain the lack of time and interest for the CC community to engage with the AQ community. However, the AQ community has a longer history, to some extent more established tools and ways of working, and a more established costs-benefits evidence base to justify emission reductions. Nevertheless, it is likely that the AQ community has to provide the impetus to more effectively link the areas. Organising strategic workshops under CLRTAP could be one way to achieve this (but only if CC policymakers and scientists can be persuaded to turn up).

The need for more transatlantic discussion was also expressed. CLRTAP could be the right forum for countries less enthusiastic about CC negotiations to engage in discussions about the need for, and benefits of, emission reductions.

Questions for the research community

Radiative forcing of air pollutants (e.g. PM (as both black carbon and sulphate aerosol), O₃) needs to be better understood.

Climate change is not only about CO₂. Air pollutants such as sulphate aerosol, black carbon, methane and ozone also affect the climate. Those substances have a shorter lifetime in the atmosphere than CO₂ meaning that we can get a relatively quick response on the temperature when reducing these substances. There are options to reduce these pollutants by end-of-pipe solutions that are more cost-effective than further pressure on CO₂ alone. CO₂ should continue to be the focus, but work on reducing these substances could give us some “room to breathe” while solving the CO₂ problem.

Carbon capture and storage (CCS) on large scale is a possible future development, not least when considering the large energy needs and the large coal availability in many developing regions. It is important to fully understand the air pollution implications of these techniques (CCS either with or without IGCC).

Summary and recommendations,

- We need more focus on identifying the synergies and trade-offs between AQ and CC policies and measures. We need this to be considered much earlier in the policy process.
- There is a danger in not linking the assessment and policy processes i.e of not promoting synergies and not identifying trade offs. For example the air pollution implications of carbon capture and storage and IGCC need to be looked into. Recommendation to Countries and international bodies: more studies required.
- At what level should the policies/strategies be joined (negotiations and/or implementation)?
Local level - yes
Country level – yes

EU level – yes. At EU level there is certainly a need for more coherence between AQ and CC policy at an early stage of the process.

Regional level (CLRTAP) – most, but not all group members, thought not.

Global level – no

- There is a commonly held perception that we tend to systematically underestimate the benefits and overestimate the costs of environmental policy measures. We need more ex-post ex-ante analyses to investigate this.
- We need to be careful to balance the complexity we get when we put more information into the models/tools vs the benefits we get (a holistic approach). We must avoid “paralysis by analysis”.
- AQ and CC need to use a common source of data wherever possible (e.g. emission data). Bringing data sources together is the starting point for bringing science together which is needed to bring policy together.
- Public data availability may be an issue. Further investigation necessary.
- It is not just about climate change and air pollution – energy security, competitiveness, public health etc. need to be combined with the environmental drivers. The interactions are not obvious. These interactions may help or hinder environmental goals, but cannot be ignored.
Recommendation to CLRTAP and the CSD : raise the awareness of these issues, more dialogue needed.
- Global level, do not forget that these linkages (ap cc), co-benefits are important for developing countries where policies are in another development stage.
Keep the international dimension i e do not forget that whatever industrialised countries invent the developing countries will get in time. There is also a risk of exporting problems.
- Measures can be encouraged in different ways. As well as energy and transport, we need to work on issues such as urban planning and the possibilities presented by advance in IT.
Recommendation to DG TREN: In the Green paper on urban development, it would be good to focus on win-win CC AQ measures. A lot of demand management policies already exist, but more will undoubtedly be needed, particularly to address CC. Marginal cost pricing is likely to be a key.
- How to make new green taxes more acceptable to the public? (Note that taxation is a national prerogative – there is likely to be stiff resistance to any international efforts to impose taxes). If you tax with one hand you have to give something back with the other.
- Countries are not in control of their energy markets to the extent they used to be due to liberalisation of markets etc. Taxation, regulation, target setting (e.g. a certain % of renewables) are available – but they need to take account of the linkages between CC and AQ. It is up to the individual countries to understand how this functions in their own specific case.

- IPPC is an integrated measure but it may also be a constraint on some of the market based instruments (by ensuring individual installations are already operating close to their cleanest possible potential).
- We have a strong technical science base but the social science base is poor. We need more insight in why things work in some places and how they can be made to work more widely.
- Recommendation to CLRTAP (+ FP7?):
Work needs to be done on encouraging and reviewing social science (e.g. on encouraging behavioural change). Do we need a new group or Task Force above and beyond the rather more limited remit of NEBEI?
- We need to learn from good practice.
Recommendation to EU and CLRTAP: There is much to be learned from analysing the information already submitted i.e. in National Plans and Programmes.
- A lot of work has been done on non technical measures in the past, that could be recycled.
- The air quality community needs to lead on the linking since the climate change community is not likely to do so.
- We should be clear when we feel policy is getting ahead of the science. The precautionary principle still applies, but we should make sure policy makers know when they are using it!
- We need to formulate questions for scientists: e.g. can common metrics be developed? Do we need strategic workshops bringing together scientists from climate change and air pollution?.How to find the balance between comprehensive assessment (for example life cycle analysis) and a timely one for the policy process for instance as presently used in the CLRTAP ?