

## **Report from topical workshop “Air pollution and climate, including the role of short-lived climate pollutants (SLCP) – WG1”**

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### **Questions prepared for the working group in advance**

In advance of the meeting, a set of questions was prepared for the working group and posted on the web site:

- 1) Scientific understanding of short lived climate forcing pollutants (SLCFs), and their climate effects. A particular question is regional vs global, i.e. does Europe, North America or LRTAP region overall health and climate benefit preferentially from reductions of SLCFs mitigation in those areas?
- 2) What are the current levels of emissions and the projected trends for the particular SLCFs? Regionally and Globally?
- 3) What are the current concentrations of SLCFs?
- 4) What are the options for control measures to mitigate SLCFs?
- 5) How can the climate benefits be accommodated in air quality policy? Can SLCFs be accommodated in climate policy? What metrics and techniques can be used to estimate the benefits?
- 6) What kind of research studies have been done or are under way looking at issues and relationships of strategies to address climate and air quality?
- 7) What strategies make the most sense when trying to address local/urban air quality health and environmental issues and pollutants like short lived climate forcers? Diesel engines? Woodstoves? Agriculture burning?
- 8) What research is needed to better assist air quality planners to incorporate climate concerns or short lived climate forcers into their planning and regulatory structures? Better emission inventories? Modeling? Control strategies?
- 9) For some climate pollutants like methane or CO<sub>2</sub>, local strategies will not benefit local air quality as quickly. However, some reduction strategies like getting more efficient motor vehicles, increasing transport systems and thereby reducing the amount cars are driven, moving to electric vehicles could all help reduce climate and air quality pollutants. Is there a complete list of those kinds of strategies? Are countries promoting these strategies in their air quality planning to achieve the appropriate air quality standards? What about other energy efficiency approaches?
- 10) Where do you think opportunities to maximize air quality and climate benefits are being missed today? What is needed to stop that from happening? More dissemination of information on strategies? More research? Information sharing forums/websites?
- 11) Are there obstacles or disincentives in the air quality planning of countries from considering climate issues as you develop strategies?
- 12) Do industry and the general public understand the linkages between air quality and climate or is greater education needed to get broader support for action?
- 13) What are the benefits including reduced costs for transportation (e.g., more efficient vehicles) and lower costs for heating (more energy efficient buildings)? Is information on costs and benefits readily available so consumers can make informed choices?
- 14) Would we change future efforts to continue to bring down PM knowing that BC-rich sources of PM might get us more climate benefits? Would we want to do that action if

- there are some health tradeoffs (e.g., at regional levels) to consider? Are there other such climate/air quality trade-offs?
- 15) What should be the 5 key next steps on climate and air quality linkage issues coming out of the meeting that would have the greatest benefits?
  - 16) What should be the 5 key recommendations on future actions and who are they directed to?

## **Agenda**

Also distributed in advance was the agenda for the meeting. Several participants were approached to give introductory talks to stimulate the discussion, as indicated in the agenda:

1. Introduction (30 minutes) [10:00am to 10:30am]
  - i. Introductions of Working Group Members
  - ii. Overview of Questions and Goal of Group
  - iii. Review and Discussion of Agenda
2. Presentations (10 minutes each)[10:30am to 11:15 am]
  - i. Scientific understanding of SLCPs and their climate effects. A particular question is regional vs global, i.e. does Europe benefit preferentially from European SLCP mitigation? (William Collins)
  - ii. Overview of International Fora working on SLCP (Harnett)
  - iii. Background on Black Carbon Emissions and Concentrations (Harnett)
  - iv. Black Carbon Control Technique Guidance Document (LRTAP EGTEI)
3. Discussion of Questions (11:15am to 12:00pm)
4. Lunch (12:00pm to 1:00pm)
5. Discussion of Questions (1:00pm to 1:30pm)
6. Presentation on optimization of trade-offs and co-benefits in Air Quality and climate change mitigation (Marcus Amann, IIASA) (10 minutes presentation and discussion, 1:30pm to 2:30pm)
7. Discussion on Questions (2:30pm to 4:00pm)
8. Discussions on Recommendations (4:00pm to 5:30pm)

## **Outcome and recommendations from the working group**

The working group attracted 25 participants. On the basis of the questions provided, talks given and the discussion the group, the following recommendations were agreed upon and endorsed for presentation in the plenary session on 26 June 2013:

1. Scientific evidence from TFHTAP shows that specific controls on methane and CO give important dual benefits for ozone air quality and near-term climate. The ozone benefits are particularly on the hemispheric background. The climate benefits come through changes in ozone and methane. These climate benefits will offset much of the warming from SO<sub>2</sub> controls.

Reducing the background level of ozone requires controlling methane and CO emissions on a (near) global basis.

CO and methane are hemispheric/global pollutants. CLRTAP and the CCAC are appropriate venues to address this. The National Emissions Ceilings (NEC) within the EU could be used as a first step towards addressing CO and methane for ozone, air

quality and health purposes, followed by similar actions also on a broader international scale.

2. There are synergies between the control of air pollution and global warming agents/greenhouse gas emissions; and further between these and other objectives such as those related to energy security and water or soil pollution. It is useful to identify where these synergies are positive across the board; win-win combinations. These positive synergies generally enhance the political feasibility of policy implementation (as there is no downside) and reduce the total cost of meeting air pollution, greenhouse gas and other objectives. Examples:

<b>Measure</b>	<b>AP</b>	<b>GHG</b>	<b>Energy security</b>
Control methane leakage	+	+	+
Energy efficiency	+	+	+
Renewables (wind, solar)	+	+	+
Switch from coal to gas	+	+	

WGSR, TFIAM, TFRN and other forums should address this issue.

3. Among the various pollutants which LRTAP has worked on, emission factors and inventories for black carbon, organic carbons and other particulate matter are the most uncertain. TFEIP is developing emission factors for the development of emission inventories for black carbon to begin to address these issues. However, there is also a need for:

Such inventory guidance for black carbon to be translated into Russian so we will get full emission inventories across the LRTAP Region

Further technical work by parties to improve the emission factors for the different categories and pollutants including through emission testing, inverse modeling and ambient speciated monitoring and share such work with TFEIP.

Emission measurement methods used for developing emission factors of these pollutants need to be harmonized.

TFEIP should address this issue.

4. Black carbon should be considered mainly as a regional pollutant for both air quality and near-term climate purposes, especially in the Arctic and alpine regions. Reductions in black carbon sources, including from domestic heating (both biomass and coal) and from open field and forest burning, have strong potential for the CLRTAP countries to add health and Arctic climate benefits in addition to those taken by the Arctic Council. This is because emitted co-species with black carbon from these biomass sources that otherwise might cool the atmosphere, are still warming over the reflective surface of ice and snow.

The strength of SLCP mitigation lies in slowing the rate of change in the radiative forcing, especially in snow or ice covered regions. Because of the rapid disappearance of snow and ice, it is important that the Gothenburg Protocol signatories act as quickly as possible to address black carbon as part of their PM2.5 commitments under the revised Protocol. The UNEP/WMO Assessment also noted the importance of taking action on black carbon and methane in the 2010-2030 time frame for maximum climate benefits.

In addition to its impact on background ozone levels for air quality purposes, for near-term climate benefits methane reductions also benefit the Arctic by two or even three times more than the global mean climate benefit.

TFIAM, AMAP and others are addressing these issues.

### Useful references

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