

**Workshop –
Short Lived Climate Forcers: Pathways to Action
19th – 20th March 2012**



Summary (adopted 20 April 2012)

The co-benefits for climate, human health, agriculture, ecosystems, visibility, tourism, economics and more broadly sustainable development from reducing air pollutants like methane, soot, tropospheric ozone and hydrofluorocarbons (HFCs) have been topics of research and political discussion over the last several decades. Recently, these have been dubbed “short-lived climate-warming pollutants” (SLCPs), due to their impact on climate and their relatively short lifetimes (between about a week for soot and about a decade for methane) compared to anthropogenic carbon dioxide (CO₂) with its much longer average lifetime of the order of a century.

The importance of reducing SLCPs is now emerging with a far greater clarity, as demonstrated in two recent reports coordinated by UNEP and corresponding papers in the journal *Science* (Shindell et al., 2012 and Velders et al., 2012). These studies have assessed several hundred possible measures to reduce these pollutants, and focused in on the 14 to 16 most significant measures. If this subset of measures were to be implemented worldwide, it would not only help to boost sustainable development and result in extensive benefits for human health and agriculture, but would also result in an approximately 0.5°C reduction in the global temperature rise by 2050 relative to a business as usual scenario, with larger regional benefits, such as in the Arctic. The UNEP reports and the Shindell paper focus on reduction of methane and black carbon (BC) emissions; inclusion of HFCs mitigation would further reduce the warming by another 20% (about 0.1°C), thus increasing the total reduction of warming between now and 2050 to about 0.6°C (Ramanathan and Xu, 2010), with a potential for even larger impacts due to controls on other ozone precursors like nitrogen oxides and volatile organic compounds.

The technology for implementation of the measures selected by the UNEP reports and Shindell paper is available, and about half of the measures have direct economic benefits already over short time scales. An example is cutting methane loss from the oil and gas industry, which would allow the recovered methane to be sold as a fuel (which would in turn result in emissions of CO₂ from burning the methane, but CO₂ is less efficient as a greenhouse gas than methane). The Velders paper notes that alternatives to HFCs are also already available for many sectors.

Thus, although the increase in atmospheric CO₂ is the single largest cause of climate change, the short lifetimes of SLCPs compared with CO₂ means that reducing their concentrations will lead to rapid benefits that will become apparent on a widespread basis within a few years, and that will accrue over decades rather than centuries, with the largest benefits accruing in the regions making the reductions. The SLCPs agenda can provide new incentives to tackle emissions both as an issue of social development as well as climate change. An analogy can perhaps be drawn to the CFCs (chlorofluorocarbons), which were phased out for the sake of protecting the ozone layer, but which has also made a substantial contribution to reducing global warming. If the “case” can be made effectively and backed by appropriate policy frameworks, then this policy field has great potential to contribute to reconciling diverging agendas, and hence may even make a larger contribution to more constructive regional and international cooperation on climate change and sustainability issues.

Nevertheless, despite this tremendous potential, efforts to reduce SLCPs have not received the attention they warrant, and have not been internationally coordinated. All of the 16 measures proposed by UNEP have already been implemented in some places, mostly in cities across developed nations, under the auspices of efforts to improve local air quality, where they have proven not only to be cost-efficient, but also to have various simultaneous positive effects, including: substantial improvements in health and agriculture; addressing the climate change challenge; and initiating technological development. But much still remains to be learned about how to scale up these efforts to a larger regional or even global scale.

There are many other questions left to be addressed, such as:

- What are the primary relevant issues to focus on in order to move forward with the promising possibilities of SLCPs reductions with the speed and scale needed, and what effective mechanisms could be put in place for moving forward?
- Do we have all the knowledge needed to address these issues effectively, or if not, how can we effectively go about filling gaps in our knowledge?
- Why hasn't the transfer of available knowledge into concerted global action worked well for SLCPs yet, and how can this be improved? Are there examples in other areas we could learn from?
- How do we fit SLCPs into the bigger picture of global change (such as industrialization, urbanization, and restructuring of the energy sector), and how do we develop an integrated, global perspective on the many regional issues?
- On what kind of timeline should we be working?
- Is it possible to use the issue of SLCPs to effectively bridge the climate and the development agendas, in order to more extensively realize co-benefits?
- Should SLCPs be an integral part of the global climate change policy discussions (e.g., UNFCCC), or should they primarily be on a separate agenda?
- How do we prevent the public and political perception of action on SLCPs from deflecting attention away from efforts to reduce CO₂ emissions?

To address these and other questions, a 2-day workshop was convened at the IASS in Potsdam. It brought together leading representatives of the natural and social sciences, policy makers, industry, NGOs and the UN to consider the pathways to action on SLCPs.

The workshop, in planning since October, 2011, turned out to be very timely as it was convened in the wake of the announcement in Washington, D.C. in February by six countries and UNEP of the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), which may provide new momentum for this agenda.

The IASS workshop included a day of presentations about the state of science and policy around SLCPs, with embedded discussions, followed by a short morning session of presentations of current international activities (including the CCAC), discussions in three break-out groups, and a final synthesis dialogue session.

The conclusions of the workshop discussions can be split into two: recommendations to those active in this realm, particularly the CCAC, and recommendations for follow-ups to this workshop, in particular for the potential role of the IASS in moving forward.

RECOMMENDATIONS TO THE SLCPs COMMUNITY AND THE CCAC

- The international research community is urged to support the CCAC through collaborative efforts, and nations are encouraged to become members of the CCAC.
- In turn, the CCAC should enlist a broad-based support for its objectives linked to a common sense of purpose and language: scientific atmospheric/climate community, scientific air quality/health community, economists, political scientists, law researchers, policy makers, ministers of health, water, forests and development as well as environment, NGOs, communication experts, and others.
- The urgency of the issue supports fast and decisive action, especially given the political window of opportunity opened by the establishment of the CCAC.
- The idea of selecting a few pilot countries to demonstrate the potential success of rapid, scaled-up implementation of SLCP measures is strongly supported, and in turn the CCAC should develop a realistic but rapid time frame for these efforts, and strongly support those willing to contribute to such activities.
- While many of the basic physical processes governing SLCP and their effects on the climate system are still active areas of ongoing research, which may help to improve the effectiveness of the various measures and the details of their implementation, this should not obscure the need to communicate the high degree of scientific certainty justifying rapid and decisive action. This is further supported by the fact that there are many other well-established reasons for action, in particular the impacts on health and agriculture.
- Key activities that should be supported include increasing the data coverage and monitoring for the sake of evaluating the success of measures, and improving the emission inventories, especially for BC. Furthermore, any open issues around the transfer of knowledge and technology into concerted action, up-scaling and cost coverage need to be addressed quickly to ensure fast and sustainable action.
- The CCAC is advised to focus especially on the most immediately evident impacts on health, agriculture, ecosystems, visibility (tourism), and the economy along with the benefits from transitions to more sustainable technologies (e.g., renewable energies), with the climate change mitigation aspect providing a further incentive for the efforts needed for implementation of the many measures. As a result, reducing SLCPs may be best pursued, for the time being, as a complimentary and possibly separate partnership outside the UNFCCC climate negotiations.
- Since many of the 16 selected measures are not the responsibility of the environment ministries, for example improving waste water treatment works, the coalition should forge links with ministries for the economy, health, water, housing, infrastructure and other relevant ministries, as well as development agencies in OECD countries.
- The CCAC should consider engaging with member states who are party to regional air quality agreements (e.g., ASEAN) in order to promote inclusion of SLCPs in those agreements.
- The CCAC should consider prioritizing the measures, and consider the specific actors and the numbers involved in various measures, e.g. the oil and gas industries, versus billions of individual households.

- The CCAC should consider the merits of linking to the already established Project Atmospheric Brown Clouds, which is supported by UNEP in order to help with the transfer of information into broader implementation efforts, monitor especially the regional benefits and assist with ongoing improvement of emissions datasets.
- The CCAC would benefit from connecting to the “International Year of Sustainable Energy for All” agenda of the UN Secretary-General and hence should consider concrete options how to move forward on this; especially the large impact of SLCPs from household cooking on human mortality, resulting in over two million premature deaths annually worldwide, should be considered within this and other frameworks.
- Despite the evident win-win situation from the implementation of SLCP measures, success will require broad backing, including public support. This will require raising awareness, communication efforts and active engagement in order to secure public buy-in for SLCPs. In doing so, options should be explored how to “marry” the rational arguments for acting on SLCPs with effective imaging and messaging, including the emotional context, in its communications. This will be a central and significant challenge for the CCAC and the broader SLCP research and policy development community.

RECOMMENDATIONS FOR GENERAL FOLLOW-UP ACTIONS TO THE WORKSHOP AND FOR THE POSSIBLE CONTRIBUTIONS OF THE IAASS

- A concise statement of the main messages, reasons for action and opportunities for quick wins with respect to SLCPs needs to be communicated among relevant communities to reach a consensus; a starting point could be “There is compelling scientific evidence that improving air quality by reducing SLCPs will have multiple benefits for society in terms of human health, agriculture, ecosystems, visibility, tourism, economics and sustainable development, as well as rapidly mitigating against global warming, and that it is possible to attain a substantial impact through the implementation of even a relatively limited set of measures (e.g., 16 as suggested by UNEP for black carbon and methane, as well as implementation of alternatives to HFCs); this provides the background for a political imperative for rapid, extensive and coordinated action.”
- A valuable output of the workshop would be a short policy-oriented publication, for instance in *Science* magazine’s Policy Forum section; an important aspect of this could be laying out a recommended framing of the issue, including the relationship of reductions of the warming pollutants in light of their ability to compensate for the climate-warming effects of ongoing international efforts to reduce sulfate and other sunlight-reflecting aerosol particles which currently cool the climate; it would also be valuable to make it clear that action on SLCPs is no excuse to not act quickly and decisively on CO₂, since any further delay in reducing CO₂ emissions would make it highly unlikely to stay below the targeted maximum 2°C global mean temperature increase during the next century, even if aggressive measures to reduce SLCPs are implemented immediately; this latter point was demonstrated clearly in a revised version of the key scenarios figure from the Shindell paper, which was debuted at the workshop.

- As adopted in these workshop summary notes, it was recommended that the term “short-lived climate-warming pollutants (SLCPs)” be used preferably to the formerly-used term “short-lived climate forcers (SLCFs)”, because it frames the issue less “technically”, and it emphasizes the air quality aspect; when the “C” is interpreted as “climate-warming”, then it also distinguishes from the masking by reflecting particles like sulfate aerosols.
- Rather than using the term “buying time” for climate change by mitigating through the reduction of SLCPs, which neglects the importance of the impacts of SLCPs on health, agriculture and other parameters, it would be more appropriate and effective to speak of “quickly alleviating negative effects on society and ecosystems”, or “reducing the need for short-term adaptation to climate change”, or similar.
- Considering the bigger picture, it can be seen that actions on SLCPs could tie in well with the UN Rio+20 process including its theme of a Green Economy in the context of sustainable development and poverty eradication and the proposed Sustainable Development Goals which may also include the targets contained in the International Year for Sustainable Energy for All; the measures identified recently have the potential to make significant contributions to energy transition strategies (low carbon economies) and sustainable development plans addressing upcoming challenges in both the developed and developing countries.
- The IASS can have several roles, including:
 - Convening relevant stakeholders;
 - Organizing expert workshops on urgent issues needing improvement and communication among the community, e.g. BC inventories, as well as bringing together researchers from various disciplines and focusing on different facets of the overall issue, such as air, water, agriculture and health;
 - Contributing to the basic science needed to better understand the connection between mitigation measures and impacts for SLCP aerosol particles and gases, with an initial focus on the role of ground-level ozone and the complexities behind its production, especially in light of ongoing urbanization worldwide;
 - Contributing to the detailed understanding of the relationship between major sources for aerosol and gas SLCPs, mitigation possibilities and implementation difficulties for the specific case of Nepal, as one of the potential pilot countries.