

Workshop Background Note

Air Quality and Climate Impacts: *Toward a methodology for stress-testing metrics*

Air quality management and climate change mitigation have historically been thought of relatively distinct policy domains. One is local, the other global; one has focused on reducing direct human health and agricultural impacts, the other on widespread environmental change leading to myriad effects including, but by no means limited to, health and agriculture; one is situated in international relations and treaties, the other in regional or domestic regulatory agencies.

The growing scientific evidence of the impact of a group of known air pollutants – specifically, tropospheric ozone and some of its precursors; and aerosols including organic carbon (OC), black carbon (BC), and brown carbon (BrC) – on climate change has forced these two policy domains into closer contact. The term “Short-Lived Climate Pollutants” (SLCPs) has emerged as a shorthand descriptor of these various climate-warming air pollutants, implicitly conveying the message that rapid mitigation of these pollutants could have an equally rapid impact on the trajectory of climate change. The emissions that the term describes are all relatively short-lived in the atmosphere, including aerosols, methane, tropospheric ozone and HFCs (not an air pollutant, but a powerful category of warming agents, many of which are short-lived). Reducing their emissions affects concentrations within weeks to roughly a decade and a half.

The close integration of these policy domains has proven to be challenging. For one, mitigation and management have generally (though not always) been addressed at national levels by separate agencies and, in the case of international collaboration, separate treaty and collaboration regimes. Second, there are complementarities but also trade-offs involved in emission reduction: policy efforts affect individual and group actions; these actions in turn affect a variety of emissions in different ways. Integrated assessments have been undertaken to assess the relationship between mitigation activities and a spectrum of emissions, but there is the further challenge of understanding how these emissions interact to affect climate, including the long term knock on effects on air quality of climate change. Third, there are also trade-offs as well as co-benefits between the various potential impacts of emissions reduction: environmental change, health, agriculture, economic, etc. Strategies designed with different sets of goals in mind may differ. Finally, emissions mitigation is a systemic challenge, requiring shifts in public investment, development finance, household behaviour, and other complex arenas as much as, if not more, than intense regulation or environmental policy. The governance “domain” for emissions mitigation is intertwined with other aspects of socio-economic policy.

The Interdisciplinary and Global Working Group (IG-WG) was established in 2012 to contribute to the development of an integrated approach to SLCPs. In its first meeting in December 2012 at the IASS in Potsdam, the IG-WG Members identified the development of SLCP “metrics” (meaning the methods through

which technical measurements of variables such as emissions, concentrations, and climate and health impacts are translated into policy goals and frameworks) as an area where the IG-WG could make a seminar contribution to the discussion.

“Metrics,” in effect, form a language that diverse stakeholders use to communicate about a policy problem, and to evaluate the efficacy of various proposed solutions. As summary measures of an underlying reality, metrics shape stakeholders’ understanding of challenges, opportunities and successes/failures for SLCP mitigation policies. The process of defining a metric is often treated as a purely technical matter, and yet it almost always involves meaningful decisions about what to measure and how; what parts of reality should be included in rigorous detail, and which simplified; which considerations deserve more weight, and which are less relevant to the problem as it is currently understood. All of these decisions contain implicit, and sometimes explicit, value judgments, with each decision carrying potentially significant consequences. Metrics may strip away important dimensions of the phenomena that policymakers, investors, and society seek to measure. Aspects of reality that do not get included in the metric become effectively invisible to stakeholders in their dialogue, strategy formation, and implementation of mitigation efforts. Only through effective design processes for metrics and the inherent value judgments be made via public decision making processes, rather than simply scientific deliberative.

As an example, Global Warming Potential (GWP) figures commonly used in climate discussions do not provide insight into more specific climate-affecting impacts of emissions and the summary picture that they present depends on the time frame over which GWP is measured. And yet GWP has been used as a foundational metric for creating financial ‘equivalence’ between mitigating highly diverse climate-warming emissions within carbon market trading schemes.

The aim of this workshop is to identify, as best as possible, the types of “stresses” that integrated metrics for SLCP mitigation are likely to face when introduced into the real world of diverse policy communities. With an understanding of such stresses, it may be possible to design a “stress-testing” methodology for new SLCP metric proposals that would identify potential vulnerabilities to these stresses, providing valuable feedback for both the development of metrics and the development of policy frameworks that emerge around such metrics.

We believe that this activity is especially important in today’s policy arenas, since new metrics for characterizing SLCPs and their impacts are being developed even as the policy and regulatory approaches for mitigation are evolving. Conversations throughout the day on October 3 will consecutively: set the scene of the current ‘policy moment’ within the global SLCP discussion; consider the lessons from the specific case of GWP; and examine the stresses that integrated SLCP metrics might face when applied in urban contexts, both through one sectoral case study (transport) and a broader discussion of the diversity of policy arenas potentially implicated by such metrics.