

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

Workshop Summary Report

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Introduction

Often in the policy-making process, metrics are used as ‘signposts’ to indicate, in quantifiable terms, the effects of policy actions on areas of importance. These signposts are influential aspects of the policy process but are seldom recognized as choices in and of themselves. They also necessarily simplify, highlighting and thereby prioritizing some areas, but also allowing certain dimensions of the underlying problem to be glossed over or left out. Metrics are designed for certain policy objectives as indicators to measure success or failure. They are however often transferred into other contexts where they may be inadequate (e.g. inaccurate, less completely descriptive of progress toward goals), and this can lead to inconsistencies between policy goals and the ability to track their achievement. The mismatch between metrics and underlying reality can also mislead incentives for action.

In the emerging SLCP policy arena the signposts haven’t yet been chosen, but due to the characteristics of the complex problems being addressed and diversity of policy goals and relevant actors and stakeholders involved, they are likely to be highly influential. For these reasons the IG-WG on SLCPs gathered to discuss the importance of choosing appropriate metrics for SLCP policy creation and assessment.

A policy moment: The current SLCP landscape

The publication of two major reports on SLCPs by UNEP and WMO in 2011 and subsequent formation of the Climate and Clean Air Coalition (CCAC) have opened the door for SLCP policy, creating a need for high quality information and data on emission sources, health, agricultural and climate impacts, costs of policy implementation, and other areas of relevance. CCAC and its member organizations and states, as well as other institutions around the world who have taken note of the opportunities SLCP policy may provide are beginning to implement SLCP policy initiatives and are in need of ways for monitoring policy impact and aggregating costs and benefits across a diverse range of interconnected sectors, regions, and issue areas.

Research to date has focused on global-level analysis, whereas SLCP science has pronounced regional impacts. This is an important area for future research efforts. There is also a significant list of literature confirming the existence of ‘co-benefits’ and ‘trade-offs’ for air quality and climate change mitigation through the use of SLCP policy. These too are important areas for future exploration by this and other groups working at the SLCP science/policy interface.

Fundamentally, there is a need for experts to provide the tools—including the metrics—for policy-makers at local and national levels (and beyond) to make and evaluate SLCP policy that works within their unique contexts and connect it to related efforts across the globe.

What can we learn from the usage of the Global Warming Potential (GWP) metric?

The utility of a metric is dependent on the policy objective and the context where it is used. By examining the case of the GWP we can learn some important lessons for the creation of future SLCP impact metrics. The GWP was developed to compare the influence of a variety of substances on the radiative balance of the atmosphere and was used as an example in the first assessment report of the Intergovernmental Panel on Climate Change (IPCC). Thereby it unintentionally paved the way for multi-pollutant carbon trading schemes which have figured prominently in climate policy to date. However, the GWP metric has a somewhat arbitrarily chosen time horizon that could be altered in order to justify a range of scientific or policy perspectives. The predominant 100 year time horizon for GWP is therefore a policy reflection of current conceptions of the climate problem and not an objective reflection of reality. A major caveat of the GWP metric is that the information it provides is not directly relevant for policy goals in terms of global mean temperature rise.

The history of the GWP that has “accidentally” shaped policy processes and entire market schemes, calls for a carefully directed process to design impact metrics for SLCPs that steer and evaluate policy for air quality, climate, agriculture and further context dependent areas at the same time. Therefore an open policy process is better served not by a single ‘silver-bullet’ metric—which does not exist—but instead by a suite of metrics to be utilized within the specific contexts for which they are best suited, and which explicitly rather than obliquely reflect certain value judgments or policy goals. Currently, the CCAC is developing a tool with a variety of indicators to support National Action Plans.

The role of SLCPs in international climate negotiations

SLCPs do not enter the policy discourse from a blank slate; they are tied much more to the climate than air quality issue and all of the often polarizing discourse that surrounds it as well as the subtle tensions that run under its surface. Among these are trust issues between the global North and South and the tenuousness of public support for action on the most important climate forcer, CO₂. Some countries’ refusal to join the CCAC because of suspicion that it is simply an annex 1 country negotiating strategy, and the reticence to include SLCPs under the UNFCCC because they further complicate an issue that is already too complex for many decision-makers, are manifestations of these issues that were pointed out during the workshop.

There are however first motivations and strategies for potentially including SLCPs in the UNFCCC process. The ramp-up of action on SLCPs through CCAC and other efforts will likely lead to calls for a global-level aggregation of SLCP policy impact. The UNFCCC could be the authority that enforces standardized processes for measuring SLCP policy impact towards this end. Additionally, if climate change is framed more in terms of ‘risk’ at future UNFCCC negotiations, SLCPs could become more relevant due to their potential utility in a risk management framework for climate change mitigation which values a diversity of policy actions and the ability to slow the rate of climate change and avoid tipping points, rather than solely reduce its magnitude.

Regardless of the potential inclusion of SLCPs in the global climate negotiations, the main leverage to mitigate global warming in the long-term and for certain regions also in the short-term is the reduction of CO₂.

Cases: transport sector, sustainable urbanization, rural energy access

SLCP emissions often result from activities that are intertwined with infrastructure and other development policy goals. The transport sector, for example, focuses primarily on improving mobility for goods and passengers. But stakeholders' investment in long-lived infrastructure, the same is true for fuel and energy systems, and regulation of emissions and efficiency, affect SLCP (and CO₂) emissions. Similarly, urban governance covers many aspects of cities' economic and social development, but decisions about land use, waste management, wastewater treatment, public transport, and other aspects of the urban setting affect SLCP missions. Rural energy access gaps can also affect the extent of reliance on solid fuels, biomass for cooking and heating, and other sources of health-affecting SLCPs.

With such complexity comes the need for reliable information on which to base sound policy. Highlighted at the workshop was the immense challenge of acquiring this information, especially in developing world contexts. Furthermore, interpretation of such information in order to create policy that achieves concurrent air quality and climate goals—as well as the other, more primary goals in each of these policy areas—require a holistic scope of analysis.

Employing a top-down approach for some sectors such as transport (as is the case in California, and currently in China) was supported by many of the workshop participants as a way of ensuring steady action in a sector characterized by a multitude of different interests not all supportive of short- and long-term investments for air quality and climate change.

Experts can support these policy efforts by providing statistics and metrics to policy champions that are easily communicated to relevant political constituencies. Graphs and figures which clearly indicate important aspects of the problem and what can be done about it are useful tools in this regard. Experts and policy-makers must also work together to streamline SLCP policy actions into existing plans and co-develop the tools to quantify the various costs and benefits in a way that they can be clearly communicated externally to justify policy efforts. At the municipal level, such justifications appear especially critical, especially within the current economic environment which has left many cities strapped for cash.

Conclusion

The goal of SLCP policy is one of integration, and this requires more than just appropriate metrics. Integration of the climate and air quality policy realm requires dialogue between political constituencies as well as the related scientific disciplines. A basket of metrics for divergent use cases and policy orientations (e.g., primary goal is air quality management vs. primary goal is climate change mitigation) may aid such a dialogue. However, a narrative within which to frame air emissions policy integration which speaks to these various political groups is needed to get the conversation started in earnest. The present narrative, which has focused on globally aggregated assessment of prospective policy impacts, has been successful in generating increasing amounts of scientific scrutiny aimed at supporting the policy process and some high-level political buy-in which promises to lead to some policy implementation. It is an open question however, how far the current framing and the indicators that have emerged from it and continue to support it, will be able to drive further progress in integrating the air and climate policies. It is the task of expert groups to examine this landscape and to support further progress through the development of robust policy tools such as metrics, and if necessary to help sculpt a narrative that speaks to the multiple political constituencies in question.