

**CLIMATE AND CLEAN AIR COALITION SCIENTIFIC ADVISORY PANEL EXPERT WORKSHOP  
“Metrics for Evaluating and Reporting on Black Carbon and Methane Interventions”**

16-17 March 2017

**ANNOTATED AGENDA**

**Overarching Objectives:**

1. Advance efforts toward a scientifically credible consensus on metrics for accounting for black carbon and methane interventions
2. Agree on a way forward on the development of a widely applicable inventory and reporting guideline for black carbon.

**DAY 1 – ACCOUNTING METRICS**

Time	Duration	Agenda Item
08:30-09:00		ARRIVALS AND REGISTRATION
09:00-09:10	10 mins	WELCOME AND REASON FOR WORKSHOP <i>[Rita Cerruti, CCAC Co-Chair]</i>
09:10-09:25	15 mins	KEYNOTE ADDRESS <i>[Dan McDougall, Assistant Deputy Minister Strategic Policy Branch, Environment &amp; Climate Change, Canada]</i>
09:25–10:25	60 mins	<p><b>SESSION 1 - PLENARY</b></p> <p><b>CONTEXT SETTING; LATEST SCIENCE AND KNOWLEDGE ON METHANE AND BLACK CARBON</b>  <i>Session Description and Objective:</i> This session will aim to provide context for the overall goal of the workshop. It would include highlights of latest science and knowledge on black carbon and methane, including latest understanding of emissions sources, trends, projections and policy implication of current trends and projection. It will also feature presentation on the role of black carbon and methane in current global agreements and actions such as the Post-2015 Development Agenda including the Sustainable Development Goals (SDGs) and the Paris Agreement including the associated Nationally Determined Contributions (NDCs). The session will also highlight why having accounting metrics and methodology for quantification and reporting is important.</p> <p><b>MODERATOR:</b> <i>Rita Cerruti</i></p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• A pathway to achieving the climate and development targets and why metrics are needed <b>20 minutes</b> <i>[Drew Shindell]</i></li> <li>• Overview of recent science on black carbon and methane and their implications <b>20 minutes</b> <i>[AR Ravishankara/V. Ramanathan, TBD]</i></li> <li>• Questions and Discussions <b>20 minutes</b></li> </ul> <p><b>Expected outcome:</b> At the end of the session, participants would have a clear understanding of the context of the workshop and latest knowledge on methane and black carbon. It is expected that participants would have a common understanding of the emission sources, trends, projections and impacts of black carbon and methane, as well as their role in achieving the Paris Agreement and the SDGs, hence will be well prepared for the discussions on accounting metric and reporting.</p> <p><b>NOTE:</b> The moderator for this session would seek to gear the discussion towards ensuring that all participants have a common understanding of the latest knowledge on black carbon and methane and their role in the Paris Agreement and the SDGs. This will be important for achieving the overarching objectives of the workshop.</p> <p><b>Background documents:</b> <i>Review of recent publications on methane and black carbon emissions and impacts; A pathway to the target paper; SLCPs and SDGs paper.</i></p>
10:25-10:45	20 mins	Health Break

10:45–12:30	105 mins	<p><b>SESSION 2 - PLENARY PANEL SESSION</b></p> <p><b>ACCOUNTING METRICS FOR BLACK CARBON &amp; METHANE</b>  <i>Session description and objectives:</i> This panel session would seek to discuss the latest knowledge on metrics for evaluating the impacts of black carbon and methane from the climate, health, agriculture, economic and development perspective. The session will set the stage for the breakout discussions, providing an overview of issues to be discussed in greater details during the breakout groups.</p> <p><b>MODERATOR:</b> <a href="#">Ray Minjares</a></p> <ul style="list-style-type: none"> <li>• <b>Panellist 1 – Metrics for evaluating the climate impacts of methane and black carbon interventions</b> – A presentation on the general landscape of climate metrics for black carbon and methane. Talk would highlight available metrics, their merits and drawbacks, the uncertainties, and propose which of the available metrics are most appropriate with justification. [<a href="#">Keith Shine</a>] 20 minute</li> <li>• <b>Panellist 2 – Metrics for accounting for the health impacts of black carbon and methane interventions</b> - A presentation on the general landscape of available metrics for accounting for the health impacts and benefits of black carbon and methane interventions, with highlights of the merit and demerit of available options and associated uncertainties. [<a href="#">Susan Anenberg</a>] 15 minute</li> <li>• <b>Panellist 3 – Metrics for evaluating the agricultural impacts of black carbon and methane interventions</b> – A presentation on agricultural-related metrics to characterise black carbon and methane interventions. Presentation would provide insight on available metrics, their merits and demerits, the uncertainties, and propose which is most appropriate with justification. [<a href="#">Lisa Emberson</a>] 15 minute</li> <li>• <b>Panellist 4 – Economic perspective on accounting metrics for black carbon and methane interventions</b> - A presentation on economic valuation of impacts related to black carbon and methane interventions, including market and non-market cost as well as some mention of implementation cost and monetization of the benefits. Presentation could also touch on appropriate metrics relevant to attracting black carbon and methane mitigation finance. [<a href="#">Mike Holland</a>] 15 minute</li> <li>• <b>Panellist 5 – Social impact of methane and black carbon and associated metrics</b> - A presentation on the interactions between climate, health, agricultural and economic impacts of methane and black carbon emissions providing a context for appropriate metrics for accounting for these impacts. Presentation could also include the variation of impacts on different socio-economic groups as well as linkage to the SDGs [<a href="#">Drew Shindell</a>] 15 minute</li> <li>• Questions, comments and discussions - 25 minutes</li> </ul> <p><b>Expected outcome:</b> This session will prepare the ground for further discussion at the breakout session after lunch. At the end of the session, all participants should have a clear understanding of the metrics that are out there, their merit and demerits.</p> <p><b>Background documents:</b> CCAC/SAP Paper: <i>Good practice for quantifying, estimating, and reporting on SLCP interventions; relevant publications on accounting metrics, Brief on Quantification Methodologies for Black Carbon (BC) Reduction Benefits</i></p> <p>NOTE: Moderator of this session should agree on breakout group participants before breaking for lunch</p>
12:30-14:00	90 mins	Lunch Break
14:00-15:45	105 mins	<p><b>SESSION 3 - BREAKOUT GROUPS</b></p> <p><b>DEEPER DIG INTO ACCOUNTING METRICS</b>  <i>Session description and objectives:</i> The breakout session will dig deeper into the various aspects of accounting metrics for black carbon and methane. There will be four breakout groups: climate, health, agriculture, and economic valuation.</p>

Each of the four groups will look into the impacts of methane and black carbon, the benefits of mitigation actions, and discuss appropriate metrics for quantifying these impacts and benefits.

The overall goal will be to achieve some form of agreement and/or set of recommendations, at the end of the group discussion, on the appropriate metrics for characterizing these impacts/benefits, with adequate justification, further work as needed, remaining questions, and how to pursue the recommendations.

The breakout group will start with 2 or 3 presentations digging deeper into the topics and would be followed by a moderated discussion.

**SESSION MODERATOR:** *Johan Kuylenstierna*

- **Group 1: Climate Metrics** *[Group Moderator – Borgar Aamaas]*

***Presentation 1:** How climate metrics work: climate impacts of methane and black carbon and relevance for metrics development *[Marianne Tronstad Lund] - 15 minutes**

***Presentation 2:** Accounting metrics for climate impacts and benefits of black carbon and methane interventions; challenges and barriers: a deeper look. *[Tami Bond] - 20 minutes**

***Moderated group discussion - 70 minutes***

- **Group 2: Health Metrics** *[Group Moderator – Jeff Brook]*

***Presentation 1:** How health metrics work: Health impacts relevant to estimating the impact of BC and methane interventions and relevance for metrics development *[Jill Baumgartner] - 15 minutes**

***Presentation 2:** Accounting metrics for health impacts and benefits of black carbon and methane interventions; challenges and barriers: a deeper look. *[Patrick Kinney] - 20 minutes**

***Moderated group discussion - 70 minutes***

- **Group 3: Agricultural Metrics** *[Group Moderator – Harry Clark]*

***Presentation 1:** How agriculture metrics are developed: agricultural impacts relevant to estimating the impact of BC and methane interventions and relevance for metrics development *[Fidelity Hayes] - 15 minutes**

***Presentation 2:** Accounting metrics for agricultural impacts and benefits of black carbon and methane interventions; challenges and barriers: a deeper look. This should also include the climate and air pollution impacts on agriculture *[Keith Smith] - 20 minutes**

***Moderated group discussion - 70 minutes***

- **Group 4: Economic Valuation and Metrics** *[Group Moderator – Gary Kleimann]*

***Presentation 1:** Economic valuation of the impacts of black carbon and methane mitigation from climate perspective and relevant metrics *[Steffen Kallbekken/Stine Aakre] - 20 minutes**

***Presentation 2:** Economic valuation (market and non-market) of the impacts of black carbon and methane interventions from development perspective and relevant metrics *[Milan Ščasný] - 20 minutes**

***Moderated group discussion - 70 minutes minimum***

***Expected outcome:** At the end of the breakout groups, there should be some form of agreement and/or set of recommendations from each group on possible metrics for accounting for the climate, health, agriculture and economic impacts of methane and black carbon, with credible scientific justification. The breakout groups should also provide recommendations on further activities related to the discussion in the groups. This may include developing scientific*

		publications, preparing briefings, reports or guidance documents on how to use the metrics, or further research on the metrics.  <i>NOTE:</i> Moderators for this should take note of the expected outcomes and guide discussion towards achieving them.
15:45-16:00	15 mins	Health Break
16:00-18:00	120 mins	<p><b>SESSION 4: PLENARY</b></p> <p>SESSION MODERATOR: <i>Johan Kuylenstierna</i></p> <p><b>REPORTING BACK FROM THE GROUPS AND FURTHER DISCUSSIONS</b>  <i>Session description and objectives:</i> Each group will report on their outputs, including main findings, conclusions and recommendations. Participants will discuss these further in the plenary, with the goal of strengthening the recommendations and achieving some form of agreement and/or set of recommendations.</p> <ul style="list-style-type: none"> <li>• <i>Group 1 Presentation: Climate Metrics [Nominated Presenter] 10 minutes</i></li> <li>• <i>Plenary Discussion on findings 15 minutes</i></li> <li>• <i>Summary and agreement on next steps [Johan Kuylenstierna] 5 minutes</i></li> <li>• <i>Group 2 Presentation: Health Metrics [Nominated Presenter] 10 minutes</i></li> <li>• <i>Plenary Discussion on findings 15 minutes</i></li> <li>• <i>Summary and agreement on next steps [Johan Kuylenstierna] 5 minutes</i></li> <li>• <i>Group 3 Presentation: Agriculture Metrics [Nominated Presenter] 10 minutes</i></li> <li>• <i>Plenary Discussion on findings 15 minutes</i></li> <li>• <i>Summary and agreement on next steps [Johan Kuylenstierna] 5 minutes</i></li> <li>• <i>Group 4 Presentation: Economics Metrics [Nominated Presenter] 10 minutes</i></li> <li>• <i>Plenary Discussion on findings 15 minutes</i></li> <li>• <i>Summary and agreement on next steps [Johan Kuylenstierna] 5 minutes</i></li> </ul> <p><i>Expected outcome:</i> The session will improve on the recommendations from the breakout groups and come up with a final agreements on the recommendations and way forward.</p>
18:00-18:10	10 mins	Close of Day 1
19:30		<b>Reception hosted by Environment and Climate Change, Canada</b>
<b>DAY 2 – BLACK CARBON INVENTORY AND REPORTING PROTOCOL</b>		
<b>Time</b>	<b>Duration</b>	<b>Agenda Item</b>
08:30-09:00		ARRIVALS AND REGISTRATION
09:00-09:10	15 mins	RECAP OF DAY 1 AND PLANS FOR DAY 2 <i>[Drew Shindell]</i>
09:10–09:50	40 mins	<p><b>SESSION 5A - PLENARY</b>  <b>BLACK CARBON IN CURRENT REGULATORY AND POLICY FRAMEWORKS</b>  <i>Session Description and objective:</i> This session aims to set a context for Day 2 discussion on inventory development and reporting on black carbon. It will discuss how black carbon are being managed under current regulatory and policy frameworks at the national, regional and global levels. It will also highlight existing and emerging reporting protocol taking into consideration relevance to the Paris Agreement including the associated NDCs and the SDGs.</p>

		<p>SESSION MODERATOR: <a href="#">Farhan Akhtar</a></p> <p><b>Presentations:</b></p> <ul style="list-style-type: none"> <li>• Overview of black carbon in current regulatory/policy frameworks, including reporting (inventory) protocols as well as gaps and challenges <a href="#">[Martin Williams]</a> 20 minutes</li> <li>• Questions and Discussions 20 minutes</li> </ul> <p><b>Expected outcome:</b> At the end of the session, participants would have a broad overview of how black carbon is currently regulated at the national, regional and global levels as well as existing reporting mechanisms and methodologies. This is expected to help prepare participants for further discussion on developing improved inventory and reporting methodology.</p> <p><b>Background documents:</b> Review of recent publications on methane and black carbon emissions and impacts; CCAC secretariat paper: an overview of black carbon policy framework.</p>
09:50–11:35	105 mins	<p>SESSION 5B - PLENARY PANEL SESSION INVENTORY AND REPORTING: EXAMPLES; GAPS AND CHALLENGES; EMERGING SOLUTIONS</p> <p><b>Session Description and Objective:</b> The panel discussion will look at the gaps and challenges in inventory and reporting black carbon and will also seek to highlight emerging solutions putting them in the context of the NDCs and the SDGs. The session will set the stage for the breakout groups by providing an overview of issues to be discussed in greater details during the breakout groups.</p> <p>SESSION MODERATOR: <a href="#">Zbigniew Klimont</a></p> <ul style="list-style-type: none"> <li>• <b>Panellist 1 – Black carbon emissions inventory and reporting; successes, gaps and challenges: an example from CLRTAP</b> – A short presentation/talk on CLRTAP activities on black carbon emissions inventory, successes, drawbacks, needed improvements, and emerging solutions <a href="#">[Chris Dore, Aether Ltd]</a> 15 minute</li> <li>• <b>Panellist 2 – Black carbon emissions inventory and reporting; successes, gaps and challenges: an example of the CCAC SNAP LEAP-IBC</b> – A short presentation/talk on the CCAC SNAP LEAP-IBC tool for black carbon inventory development, highlighting its successes, drawbacks, as well as opportunities for improvement. It talk will also highlight relevance for emissions sources in industrialized and developing countries <a href="#">[Harry Vallack, SEI]</a> 15 minute</li> <li>• <b>Panellist 3 – IPCC perspective on inventory development including for black carbon</b> - <a href="#">[Dominique Blain]</a> 10 minute</li> <li>• <b>Panellist 4 – Perspective from the Multilateral Fund for the Implementation of the Montreal Protocol on data reporting</b> - <a href="#">[Ico San Martini]</a> 10 minute</li> <li>• <b>Panel 5 – National perspectives to black carbon emission inventory, challenges, gaps, opportunities for improvement and emerging solutions</b> - A brief (5 minutes) intervention from selected countries on the challenges they have faced in developing black carbon inventory. <ul style="list-style-type: none"> <li>○ <b>Mexico</b> <a href="#">[Abraham Ortinez]</a> 5 minute</li> <li>○ <b>Japan</b> <a href="#">[Satoru Chatani, TBC]</a> 5 minute</li> <li>○ <b>Chile</b> <a href="#">[Mauricio Osses]</a> 5 minute</li> <li>○ <b>China</b> <a href="#">[Kejun Jiang]</a> 5 minute</li> </ul> </li> <li>• Questions, comments and discussions – 25 minutes</li> </ul> <p><b>Expected outcome:</b> This session will prepare the ground for further discussion at the breakout group session. At the end of the session, important gaps and needs, as well as emerging solutions and their relevance to the NDCs and SDGs would have been identified, thereby preparing participants for the breakout group aimed at identifying solutions and way forward.</p> <p><b>Background documents:</b> CCAC/SAP Paper: Good practice for quantifying, estimating, and reporting on SLCP interventions; Review of recent publications on methane and black carbon emissions and impacts</p>

	<b>NOTE</b>	Coffee/Tea will be available during Session 5B
11:35-13:00	85 mins	<p><b>SESSION 6 - BREAKOUT GROUPS</b> <b>IMPROVING BLACK CARBON INVENTORY AND REPORTING</b></p> <p><i>Session Description and Objective:</i> This breakout session will discuss further the issues raised during the panel discussion with the goal of coming to an agreement on how to improve existing inventory and reporting protocols for black carbon across different sectors, taking into consideration differences between industrialized and developing countries as well as relevance to the NDCs and the SDGs.</p> <p><b>SESSION MODERATOR:</b> <i>Gregory J Smallwood</i></p> <p>There will be three groups all focusing on inventory and reporting for black carbon.</p> <ul style="list-style-type: none"> <li>• <b>Group 1: Inventory and reporting on black carbon</b> <i>[Moderator – Amanda CurryBrown]</i></li> <li>• <b>Group 2: Inventory and reporting on black carbon</b> <i>[Moderator – Neeraja Penumetcha]</i></li> <li>• <b>Group 3: Inventory and reporting on black carbon</b> <i>[Moderator - Kevin Thomson]</i></li> <li>• <b>Group 4: Inventory and reporting on black carbon</b> <i>[Moderator - Johan Kuylenstierna]</i></li> </ul> <p>The breakout group will seek to answer the following questions moderated discussion.</p> <p>Suggested questions to guide discussions:</p> <ol style="list-style-type: none"> <li>1. Which black carbon emitting sector lacks inventory/reporting protocols? How can this be developed?</li> <li>2. Are some existing protocols less robust than others? If so, which would most benefit from refinement?</li> <li>3. How can existing methodologies be adapted for black carbon sectors?</li> <li>4. What are the underlying data needs for supporting robust inventories? How can we address these gaps?</li> <li>5. How can inventory and reporting protocols be aligned with NDCs and SDGs reporting?</li> <li>6. How can protocols be made relevant for both industrialized and developing countries?</li> <li>7. What are the issues with consistency in the measuring and reporting of black carbon emissions? How does sampling affect the measurements? What is the impact of using different measurement instruments? What should we be measuring (mass concentration, number concentration, absorption, etc.)?</li> <li>8. What are the needed actions to ensure broad acceptance &amp; implementation of new protocols?</li> <li>9. What are the next step actions in developing a robust, widely acceptable and easy-to-implement reporting protocol</li> </ol> <p><i>Expected outcome:</i> Each group will come up with recommended actions on how to improve existing methodologies for black carbon emissions inventory and reporting for all emitting sectors, taking into consideration relevance for the climate and sustainable development. The groups will also provide suggestions on how to pursue the recommendations. The breakout group could also provide recommendations on further activities related to the discussion in the groups, which could include developing scientific publications, preparing briefings, reports and further research needs.</p> <p><b>NOTE:</b> Moderator for this should take note of the expected outcome and guide discussions toward achieving this.</p>
13:00-14:00	60 mins	Lunch Break
14:00-15:30	90 mins	<p><b>SESSION 7: PLENARY</b> <b>REPORTING BACK FROM THE GROUPS AND FURTHER DISCUSSIONS</b></p> <p>Each group will report their outputs to the plenary, including main findings, conclusions and recommendations. Participants will discuss these further in plenary, with the goal of strengthening the recommendations and achieving plenary agreement on the findings and recommendations.</p> <p><b>SESSION MODERATOR:</b> <i>Gregory J Smallwood</i></p> <ul style="list-style-type: none"> <li>• <b>Group 1 outcomes presentation:</b> <i>[Nominated Presenter] 10 minutes</i></li> <li>• <b>Group 2 outcomes presentation</b> <i>[Nominated Presenter] 10 minutes</i></li> <li>• <b>Group 3 outcomes presentation</b> <i>[Nominated Presenter] 10 minutes</i></li> </ul>

		<ul style="list-style-type: none"> <li>• <i>Group 4 outcomes presentation [Nominated Presenter] 10 minutes</i></li> <li>• <i>Plenary Discussion on findings: 40 minutes</i></li> <li>• <i>Summary and agreement on next steps [Gregory J Smallwood] 10 minutes</i></li> </ul> <p><i>Expected outcome:</i> The session will improve on the recommendations from the breakout groups and come up with a final agreements on the recommendations, as well as way forward.</p>
15:30-15:50	20 mins	Health Break
15:50-17:10	90 mins	<p><b>SESSION 8: PLENARY WORKSHOP CONCLUSION AND AGREEMENT ON FOLLOW-UP ACTIONS</b></p> <p>This session will seek to pull together the discussions of the past two days and agree on way forward on the two core goals of the workshop: <i>advancement of efforts toward a scientifically credible consensus on metrics for accounting for black carbon and methane interventions and a way forward on the development of a widely applicable inventory development and reporting protocol for black carbon.</i></p> <p><b>SESSION MODERATOR:</b> <i>Drew Shindell, TBC</i></p>
17:10-17:30	20 mins	<p><b>CLOSING STATEMENTS</b></p> <ul style="list-style-type: none"> <li>• Helena Molin Valdes – Head, CCAC Secretariat</li> <li>• Drew Shindell – Chair, CCAC Scientific Advisory Panel</li> <li>• Rita Cerutti –Co-Chair, CCAC</li> </ul>
<b>17:30pm</b>		<b>Close of Workshop</b>