

Summary from the IPCC expert meeting on SLCFs

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Organizers: IPCC Task Force on National Greenhouse Gas Inventories (TFI) and IPCC Working Group I (WGI).

Host: World Meteorological Organization (WMO), Geneva, 28-31 May 2018.

Following the 2005 Expert Meeting on Emission Estimation of Aerosols Relevant to Climate Change 80 participants selected, taking into account regional and gender representation, expertise and experience in this field

Background

Relevant IPCC decision: 6- 10 September 2017, Montreal, to discuss:

- issues on estimation of emissions and estimations of climate effects:
- estimations of climatic effects (direct and indirect effects on radiative forcing, including implications on clouds)

SLCF species considered during the Expert Meeting:

- Aerosols: Black Carbon (BC), Organic Carbon (OC), PM2.5
- Precursors (ozone precursors and aerosol precursors): NO_x, CO, NMVOC (including BVOC), SO₂, NH₃

Most of SLCF species are included in existing guidance, except OC.

Current approach for BC emissions as a fraction of PM2.5 or PM10 might need improvement or elaboration. Existing guidance does not cover all global sources.

Meeting objectives

To review existing methodological work to estimate emissions of SLCF – feasibility for the IPCC to develop methodological guidance

To consider which species of SLCF should be prioritized in the possible future work to develop inventory methodology – contribute to inform decision making in mitigation policies and measures

To consider how the inventory methodology on SLCF would relate to the existing inventory methodology on greenhouse gases

To identify gaps in scientific understanding on estimates of SLCF emissions that need to be filled in by scientific research community

To review existing methodological work to quantify the global radiative direct and indirect effects of SLCF, with a focus on new developments since the AR5

To identify gaps in scientific understanding on estimates of direct and indirect climate effects of SLCF on radiative forcing, including implications on clouds, that need to be filled in by scientific research community

Themes discussed

Theme 1: Assessment of existing methodological framework, observation of atmospheric concentrations and methods to estimate emissions of SLCF

Theme 2: Assessment of climate impacts of SLCF emissions

Theme 3: Suitability for IPCC to develop inventory methodology for SLCF

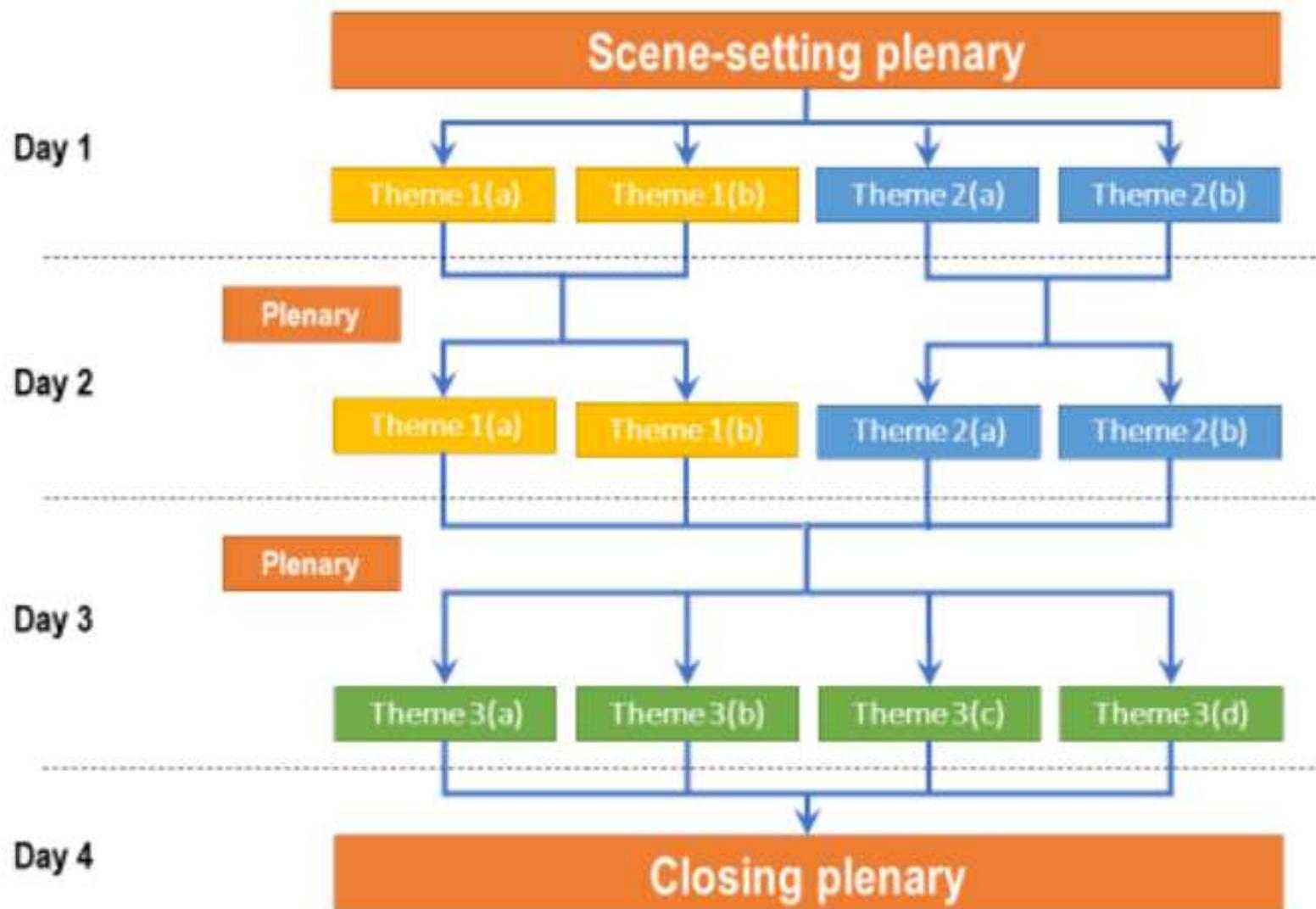


Figure 1: Flow of BOG sessions at the Expert Meeting on SLCF. BOG participants were shuffled within each theme so that both TFI experts and WGI experts participated in each group.

General conclusions and recommendations

SLCF emission inventories

The importance of SLCFs in the climate system has become clearer, including both positive and negative forcing implications.

Improved SLCF emission inventories are necessary. Existing methodologies are not yet globally applicable.



Internationally-agreed, globally applicable methodologies and emission factors for SLCF emission inventories are necessary

There may be data gaps that limit their application

Role of the IPCC

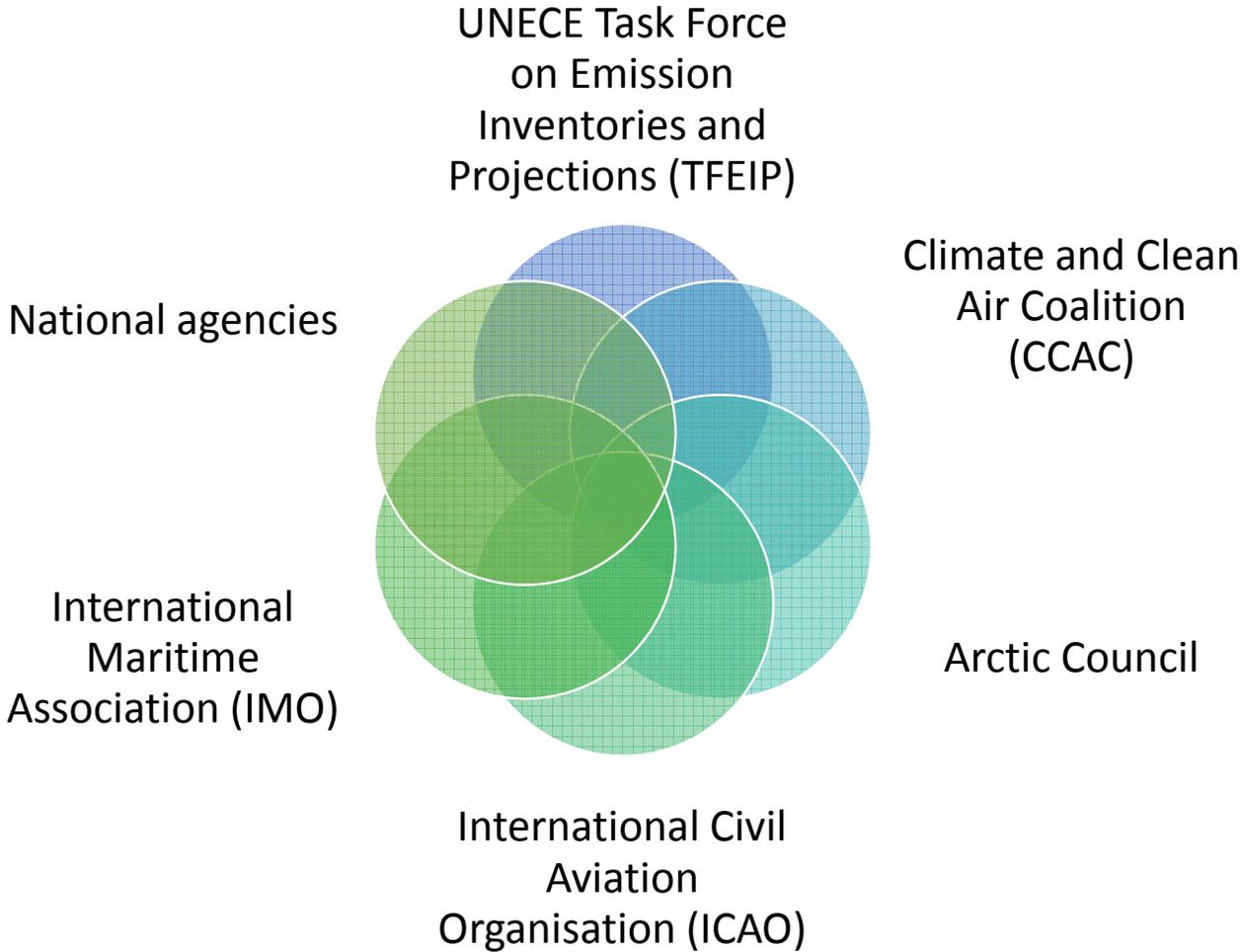
The IPCC is the right organization to fill gaps in existing methodologies and to develop and disseminate guidance based on existing methodologies

Careful consideration needs to be given to possible issues in consolidating existing inventory methodologies on GHGs and SLCFs



- Harmonizing methods
- Aligning source categories
- Documenting emission factors
- Linking to climate processes and climate change
- Cooperating and exchanging information

Bodies working on these issues



Which SLCF species should be prioritized?

Several different criteria should be considered for prioritization of SLCF species:

- Climate impact
- Availability and global applicability of existing methodologies
- Availability of relevant data such as measurements of emission sources to develop local emission factors
- Relevance of mitigation efforts to other benefits

Prioritization according to these criteria may vary depending on spatial and temporal resolution.



Taking various criteria into account, all SLCF species discussed at this expert meeting are considered important

How will inventory methodology on SLCFs relate to existing inventory methodology on GHGs?

Much of the existing guidance is applicable to, or can be a good basis for, SLCF inventory at a national level, although additional information may be required

There are areas where existing inventory methodology on GHGs does not provide a good basis for SLCF inventory (e.g., combustion of biofuels for cooking and heating, open burning of domestic waste, and mobile sources).

How will inventory methodology on SLCFs relate to existing inventory methodology on GHGs?

There are possible issues that need further careful consideration in consolidating inventory methodologies, such as spatial and temporal requirements and aligning source categories

Reporting of SLCF inventories and GHGs should be in mass units for each individual emitted compound. SLCF inventories addressed in this meeting report should not be converted to CO2 equivalent units

How will inventory methodology on SLCFs relate to existing inventory methodology on GHGs?

The issue of metrics and how they can be used may be further considered **based on new scientific literature** for coordination across Working Group reports (WGI and WGIII – SYR AR6)

2006 IPCC Guidelines do not require inventory compilers to calculate and report national total emissions in CO₂ equivalent unit. However, for some elements/processes, aggregation of emissions of different gases in CO₂ equivalent units is suggested in the existing methodology

To know more:

- Full report and presentations are available at

https://www.ipcc-nggip.iges.or.jp/public/mtdocs/1805_Geneva.html

Task Force on National Greenhouse Gas Inventories

ipcc
INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

IPCC web sites

Publications

Expert Meeting on Short-Lived Climate Forcers (SLCF)

- Meeting report "Expert Meeting on Short-Lived Climate Forcers (SLCF)"
28-31 May 2018, Geneva, Switzerland

Presentations

Presentations on general background

- Background of this expert meeting, Relevant IPCC decisions and history of relevant discussion (Eduardo Calvo Buendia)
- Overview of planned IPCC products during AR6 cycle and their relevance to this expert meeting (Valérie Masson-Delmotte)
- Overview of IPCC Guidelines for National Greenhouse Gas Inventories, including on-going work on 2019 Refinement (Kiyoto Tanabe)
- Guidance to the participants on the key themes and expected outcomes of this expert meeting (Panmao Zhai)

Presentations on issues relating to key questions

- Introduction of new scientific findings from recent literature since AR5 about SLCF emissions and their climate effects
 - AR5 main findings & knowledge gaps on SLCFs and Radiative Forcing (Olivier Boucher)
 - Recent findings on effects of aerosols on climate (Bjorn Hallvard Samset)
 - Emission metrics for SLCFs (Keith P. Shine)
 - Impacts of atmospheric chemistry on the lifetimes of SLCF (Detlev Helmig)
- Introduction of existing inventory methodologies or experiences in estimating emissions of SLCF
 - EMEP/EEA Emission Inventory Guidebook (Kristina Saarinen)
 - Estimating emissions of Black Carbon and other SLCFs within CCAC activities (Valentin Foltescu, Harry Vallack, Zbigniew Klimont)

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Thanks for your attention!