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): NOx, 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

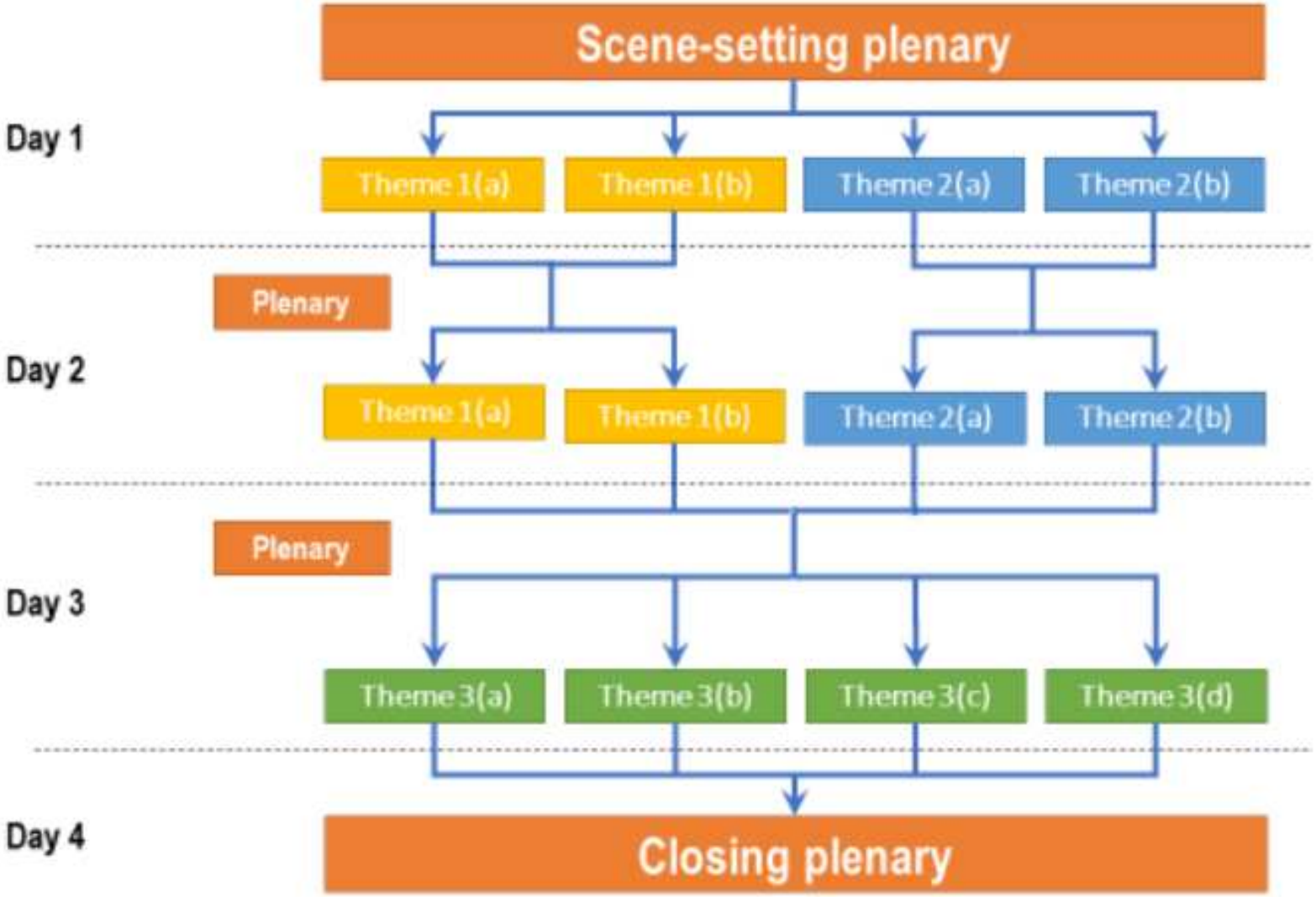


Figure 1: Flow of BOG sessions at the Expert Meeting on SLCF. BOG participants were shuffled within each theme so that both TFI experts and WGI experts participated in each group.

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

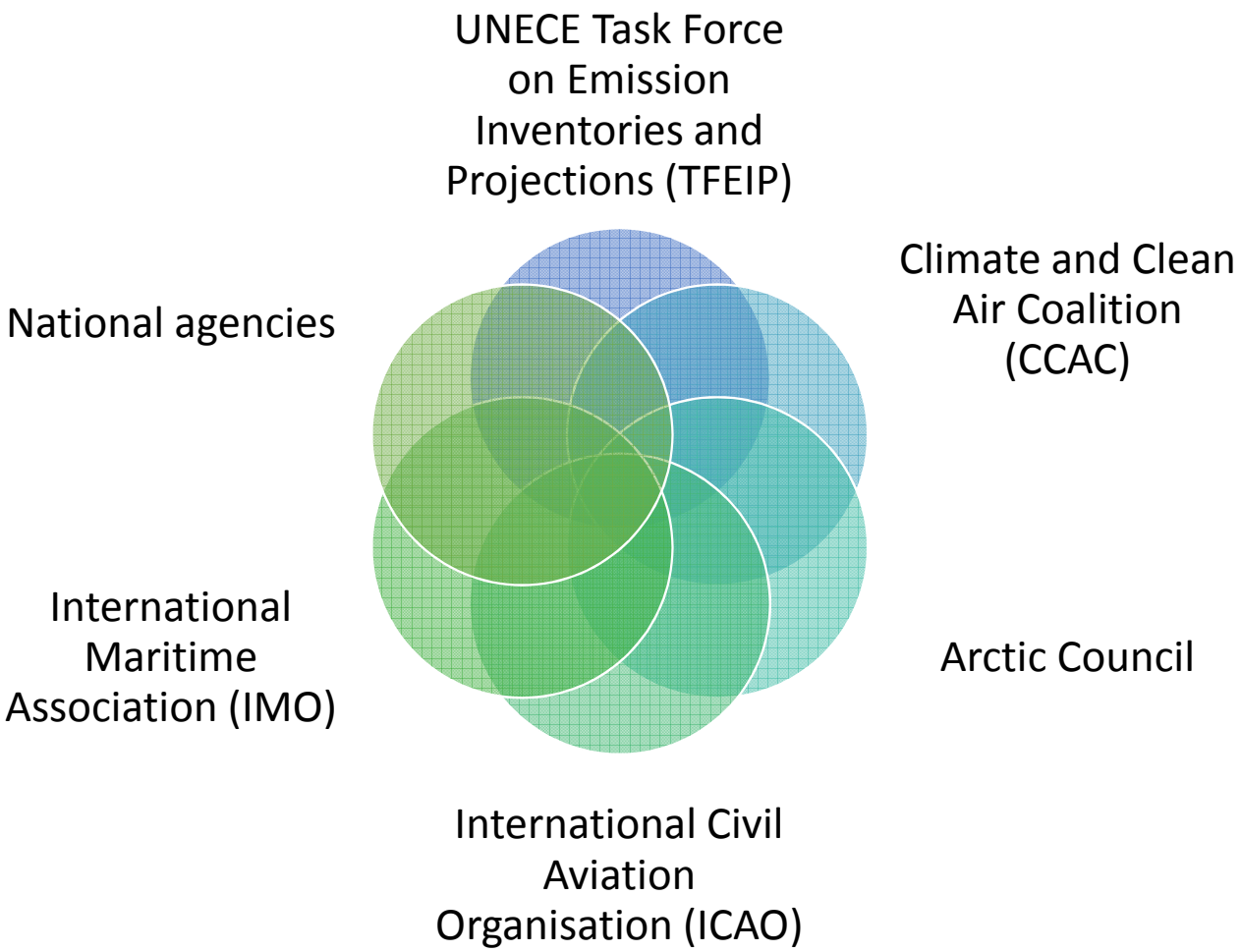
Role of the IPCC

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

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Thanks for your attention!