



Minutes from the TFEIP/EIONET 2020 Annual Meeting

Draft 1.2 for circulation to TFEIP for comment.

The TFEIP held its annual meeting jointly with the EEA's EIONET network on 11-14th May 2020. The meeting was held remotely due to restrictions in place in response to the Covid-19 pandemic. The meeting was well attended with attendance peaking at over 140 people.

TFEIP Workshop: TFEIP for Newcomers

This session was presented by the Co-chairs.

Overview

Chris Dore gave an overview of the TFEIP including who typically attends the annual meeting, its purpose, general activities, and how work is organised. The overview explained how the TFEIP fits within the CLRTAP framework, and how TFEIP outputs contribute to reporting within the CLRTAP.

The EMEP/EEA Guidebook

Martin Adams provided an update on the 2019 EMEP/EEA Guidebook. The updated Guidebook has been published and will be used as the basis of compliance assessment with the 2020 reduction commitments. It was noted that not all needs could be addressed at once and that a Guidebook Maintenance and Improvement Plan is held as a key document that indicates the priorities for future updates. The 2019 EMEP/EEA Guidebook included updates to chapters throughout:

- General guidance chapters: These were updated, and to the extent possible aligned with the 2019 Refinement to the 2006 IPCC Guidelines.
- Energy chapters: Significant updates were made to 1.A.1 Energy industries, 1.A.3.b Road transport, 1.A.3.b.v Gasoline evaporation, 1.A.4 Small combustion, and 1.B.2.c Venting and flaring
- Industrial Processes and Product Use chapters: Updates were made to 2.A.5.a Quarrying and mining of minerals other than coal, and 2.D.3.i and 2.G Other solvent and product use
- Agriculture chapters: Refinements and additions were made to 3.B Manure management, 3.D Agricultural soils, 3.D.f and 3.I Use of pesticides and limestone, and 5.B.2 Anaerobic digestion and biogas facilities. An "N-flow" tool was also released with the Guidebook.

Managing a National Inventory

The Co-chairs ran a session on managing a national emissions inventory. This covered the inventory compilation cycle, considerations when organising funding and resources, organising data flows, and organising a team. Quality metrics were outlined with an explanation of the TCCCA principles. Accompanying this session were spreadsheets demonstrating examples of an inventory compilation file and QA/QC checking.

TFEIP Eionet Meeting 2020

1 Introduction and International News

1.1 Work Completed and Future TFEIP Work

An overview of recent international news was presented by the Co-Chairs. In 2019, updates to the 2019 EMEP/EEA Air Pollutant Emissions Inventory Guidebook (the 'Guidebook') were completed and published. The revised guidebook included updates to the estimation methodologies, updated general guidance and an agriculture N-flow tool. The reporting guidelines were improved through the updating of the Annex I reporting template. A working group was established concerning black carbon.

Priorities for the 2020-2021 Work Programme include planning for TFEIP 2021, the Guidebook Maintenance and Improvement Plan and the black carbon working group. Subject to resource availability, other tasks could include a paper on Earth Observation, guidance on Fine Timescales and support and collaboration for the Task Force on Hemispheric Transport of Air Pollution (TFHTAP).

A review of the Gothenburg Protocol is currently underway. This is considered in more detail in Section 7 Conclusions and Forward Look.

The Co-chairs also presented the 10-year strategy, setting out actions for the next 10 years that fall into two categories:

1. Improving the emissions inventory reporting
2. Improving the science

These are expanded upon in Section 7 Conclusions and Forward Look.

1.2 Report from the "NMR" Condensables Workshop

The Co-chairs presented the finding of the Condensables Workshop held in March 2020. This workshop was organised by Norwegian Meteorological Institute and supported by the Nordic Council of Ministers. Work on this subject is ongoing with a report due in Autumn 2020. Consideration has been given to what could be achieved within the next ~12 months, and longer term.

Those attending the meeting agreed that the TNO "Ref2" emissions estimates for the EMEP region (which include condensable PM in a consistent way) should be used for scientific purposes. The attendees also agreed that there continues to be an immediate need for greater transparency in terms of what is actually included in, or being reported by, national emissions inventories.

Longer term aims include:

- The involvement of measurement experts to define PM metrics
- A review of the Guidebook contents, and development to align the information to support Parties with reporting commitments to the CLRTAP
- Recognising that the needs of the science community and those dealing with policy/compliance issues may differ, and that future developments will need to carefully balance delivering to both.
- Establishment of a database for emissions information and detailed bottom up estimates for selected emissions sources.

Additional information on this can be found in Section 7 Conclusions and Forward Look.

1.3 News from the European Commission

Zlatko Kregar presented an update from the European Commission (EC) on Directive (EU) 2016/2284. The policy framework for the EU Clean Air Policy was summarised, demonstrating the interaction between the Air Quality Directive, the NEC Directive and source-specific emission standards. An overview of the European Green Deal was also given.

Preliminary 2005-2018 emission trends for NH₃, NMVOC, NO_x, PM_{2.5} and SO₂ were presented. All Member States (MS) are in compliance with NO_x and SO₂ ceilings however 5 MS are not in compliance for NH₃ and one MS is not in compliance for NMVOC. Collectively, the EU28 is below the required emission ceilings for all pollutants in every year since 2010.

An overview of the 2019 inventory review process was presented along with some summary findings. For the 2020 inventory review, methods are largely similar to previous years but gridded data and large point sources were added to the scope. The results of the review will be available later this year.

An overview of MS reporting of projected emissions and National Air Pollution Control Programmes (NAPCPs) was presented. These submissions have undergone technical review, and results will be presented to MS later in the year, with a meeting planned for June.

The EC NEC implementation report is planned for Q2 2020 and considers all NEC requirements. A methodology for tracking Clean Air Funding has also been developed. The 2nd Clean Air Outlook report is planned for Q4 2020 and work is currently being undertaken to update the modelling framework and analyse the differences between policy scenarios and the baseline.

1.4 The Centre for Emission Inventories and Projections

The Centre for Emission Inventories and Projections (CEIP) presented a review of emission inventories for 2020. There were 42 Annex I tables submitted, 26 resubmissions, 36 Parties providing activity data and 36 IIRs submitted. Overall, completeness of time series reporting has improved over the last year. However, there were ongoing challenges identified with gridded and large point source emissions relating to incorrect coordinates and missing data with more than 50% area being gap-filled by expert estimates.

The 2020 in-depth inventory reviews will be held via web conferences between 25-28 June and will look at submissions from Liechtenstein, Switzerland, Iceland, Kyrgyzstan, Kazakhstan, Monaco, North Macedonia, and the EU.

The extended Annex 1 reporting template was tested in 2019 and was approved by SB/EB meeting in 2019 to be used from 2020 onwards.

1.5 The Task Force on Hemispheric Transport of Air Pollution

Tim Butler of the Task Force on Hemispheric Transport of Air Pollution (TFHTAP) gave a presentation on the EDGAR-HTAPv3 Emissions Mosaic. This version of the model aims to implement a longer time series, improved sectoral resolution and additional regional inventories. Initial release is planned for Q1 2021 and publication in Q4 2021.

It is hoped that the TFEIP can find resources to support this work, and a meeting between TFHTAP and TFEIP was arranged.

2 Projections Expert Panel

The projections expert panel meeting was well attended with over 115 people.

Melanie Hobson (co-chair) presented the updates made to the projection chapter for inclusion in the 2019 EMEP/EEA Guidebook. The work was undertaken by an Ad-hoc group consisting of Natacha Cleys (Belgium), Steven Lauwereins (Belgium) and Savio Moniz (UK) as well as the group's co-chairs in Autumn 2019. New sections are now included on planning, institutional arrangements, QA/QC, how to deal with different methodologies being used between the historic and projected emission estimates, and continuous improvement of projections.

Two presentations were then given on the expected impact of the coronavirus lockdown on the 2020 emission inventory results and projections. Chris Dore (United Kingdom) presented an assessment of the impact on Member States' compliance with the NECD and CLRTAP commitments, and Morgan Crenes (France) presented on the unprecedented drop in 2020 energy consumption in France.

Actions from the meeting are as follows:

- The outcomes and recommendations from the European Commission's NAPCP review project will be presented at the 2021 TFEIP meeting
- Following on from this, a separate ad hoc group will be created to formalise the update of the Annex IV projections reporting template. The template currently lacks transparency due to the level of detail provided.
- In the meantime, interest in hosting an online workshop will be ascertained. Topics suggested so far include sensitivity analysis and information for newcomers.

3 Agriculture and Nature Expert Panel

A presentation was given by panel co-chairs Nick Hutchings and Barbara Amon. The presentation covered the development of a methodology for indirect emissions of nitric oxide from agricultural soils. In discussion with Ute Skiba (United Kingdom), it had been decided that the mechanisms driving indirect nitric oxide emissions are similar to those driving direct nitric oxide emissions. The co-chairs therefore propose updates to the Tier 1 methodology for indirect emissions which can be incorporated into the Guidebook when it is next updated (expected to be 2022 or 2023).

Regarding the workplan for 2020-2021, the following actions are priorities:

- Continue the development of a method to estimate ammonia emissions from liquid manure applied to soil
- Continue the development of a method to estimate ammonia emissions from synthetic fertilisers
- Develop a method to estimate ammonia emissions from crops
- Assess the need for a methodology for marine NH₃ emissions
- Develop specific guidance on accounting for the import/export of manure
- Cooperate with JRC on improved emission inventory tools
- Continue the collaboration with TFRN, international projects and developments under IPCC

Following the panel session, a demonstration of the EEA's agriculture N-flow Tool was given. This spreadsheet tool can be downloaded from the 2019 EMEP/EEA Guidebook website.

4 Combustion and Industry Expert Panel

This session was co-chaired by Carlo Trozzi and Chris Dore.

- An overview of the Condensables Workshop was given (details are presented in Section 7 Conclusions and Forward Look).
- A summary of the EU H2020 project ClairCity was also given. This project concerns city level emissions inventories and developed methodologies for current and projected emissions from cities.
- A case study was presented on estimating NMVOC emissions from solvents and other product use in Italy.

The Work Plan for 2020-2021 was presented which was dominated by the need to continue to work through a prioritised list of EMEP/EEA Guidebook improvements:

- Responding to the changing needs of information on condensable PM emissions
- Continuing to review and improve methodologies for PM emissions from residential combustion
- Supporting Parties to improve their emission estimates of NMVOC from solvent manufacture and use. It was thought that significant improvements could be made by collating country specific information currently being used in national inventories and sharing this across the EMEP domain.

It was recognised that current resource constraints mean that it will be important to prioritise improvement activities. There was a call for all Parties to support the Expert Panel in improving the Guidebook, and an updated priority list will be finalised and circulated. Parties will be approach for voluntary contributions.

5 Transport Expert Panel

An update was given on the progress since the 2019 TFEIP meeting. Presentations were given on gas and LPG vehicle emission performance, the Flanders programme on updating emission factors, the upcoming Euro 7 regulation, new developments on the road transport Guidebook chapter and the update of the aviation emission factor annex in the Guidebook (both of which were approved to be updated on the Guidebook website), the plan for revising black carbon in the Guidebook, and the remaining items in the 2020-2021 Workplan.

There was a summary of actions that are now included in 2021 plan including:

- A revision of non-exhaust emission factors for particulate matter from tyre wear
- A review of emission degradation functions for light duty vehicles
- A review of Euro 6 emission factors taking into account new RDE measurements
- Revision of particulate matter characteristics as a result of Horizon 2020 projects.
- There is also ongoing work to collect feedback from work on ship emissions, rail and non-exhaust emissions.
- Navigation, road transport and brake/tyre/road wear emissions were highlighted as priority areas for the black carbon update.

6 New Science and EIONET

6.1 Black Carbon Working Group

A Black Carbon Working Group is one of the priority actions in the TFEIP Work Plan 2020-21 and the establishment of such a group was accepted by the EMEP Steering Body in their meeting in September 2019. Expected outcomes of the work include checking and defining the current methodologies of the EMEP/EEA Guidebook, identifying possible gaps and improvement needs, and harmonizing the current presentation of methods in the Guidebook. The results can be used to support inclusion of black carbon in a revised Gothenburg Protocol.

TFEIP experts contributed to the task through a questionnaire in December 2019 and then worked in February and March 2020 in small expert teams or individually to analyze the original references behind the Guidebook emission factors. These were classified into four categories (Petzold et al. 2013¹):

- Elemental carbon (EC) where measurement was by chemical composition including Aerosol Time-of Flight Mass Spectrometry
- Equivalent black carbon (eBC) where measurement was by light absorption
- Refractory black carbon (rBC) where measurement was by thermal radiation or by Soot Particle Aerosol Mass Spectrometry
- Unknown (Un) where the literature method was unclear or not available.

The TFEIP discussed the next steps for the work at the Black Carbon Session and concluded on presentation of methods in the Guidebook and on how to arrange further work:

- Work is needed to provide information on measurement methods along with the emission factor in the EF tables and indicated according to the Petzold 2013 classification presented above.
- The aim is to provide actual emission factors (e.g. g/tonne) in addition to or instead of the current fraction (%PM_{2.5}). The issue will be subject to further discussion.
- Emission factors will be presented in the EF tables and more detailed information in the chapter as appropriate.
- Presentation of methods will be harmonized and completed where needed, e.g. clearly indicate that the current %-fractions are to be used for particles, including condensables.
- Possibility to provide information on regional applicability of methods will be studied. In the EMEP/EU area the impact of legislation should be included.
- Try to establish connections with emissions measurement community and to maintain up-to-date information on ongoing measurement projects in the EMEP area to be utilized in Guidebook development.
- It was concluded that the work listed above to improve the Guidebook currently relies on voluntary contributions, although it is possible that some funding from EU (via the European Environment Agency or European Commission) may become available when the Guidebook is due to be updated.
- When the TFEIP receive new data requests that require work that cannot be carried out on a voluntary basis, it is important to clearly communicate this to EMEP and the EC.
- With limited resources we need to prioritize efforts, determined by e.g. the age of existing reference material, key sources where there are missing references etc.

¹ <https://nilu.brage.unit.no/nilu-xmlui/bitstream/handle/11250/2384208/acp-13-8365-2013.pdf?sequence=3>

Colleagues from IPCC participated the BC session and Mr Tanabe informed the TFEIP about IPCC's work on short lived climate forcers (NO_x, NMVOC, CO, NH₃, BC, PM_{2.5}) in 2020-2022. IPCC is identifying cases where the methods in the EMEP/EEA Guidebook are not applicable in developing countries due to differences in technologies or due to lack of activity data. Also, for sources not addressed in the Guidebook but existing in developing countries. Thus, IPCC methods would not be duplicative but in addition to the EMEP/EEA Guidebook. The TFEIP could support this by providing information on identified improvement needs in the EMEP/EEA Guidebook and on the applicability of the methods in developing countries.

6.2 EIONET

Martin Adams (EEA) presented on the development of an EEA-Eionet Strategy 2021-2030. The vision is to enable a sustainable Europe through trusted and actionable knowledge for informed decision-making on priorities and solutions. The strategy will be implemented across 2020 and 2021.

Catherine Ganzleben (EEA) gave an update on recent and on-going EEA activities. Upcoming releases include 'Air quality in Europe – 2020', 'Healthy environments, healthy lives', a webpage on air quality and health, and a briefing on synergies across national actions to reduce air pollutant emissions and greenhouse gases.

Federico Antognazza (EEA) gave a presentation on the NEC Directive data and lessons learnt from the 2020 reporting cycle. This covered the positives from reporting and highlighted areas for improvement.

7 Conclusions and Forward Look

7.1 TFEIP Core Tasks

This session was presented by the TFEIP co-chairs. Core tasks for the 2020-2021 TFEIP Workplan were grouped into two categories:

- Expert Panels gathering information on priorities for improving the Guidebook
- Outreach and communications (meetings, newsletters, website improvements).

The co-chairs were pleased to note good progress with the Exert Panel's workplans. The Black Carbon Working Group will continue to work on improving the Guidebook contents and coordination with the UNFCCC. It was highlighted however that additional resources will be needed to continue this work.

7.2 Condensable PM

Regarding condensable PM, key points from the earlier "NMR" Condensables Workshop were summarised. These included use of the TNO "Ref2" estimate for scientific purposes, improved national inventory transparency, consultation with measurement experts on definitions and standards and a review of reporting requirements. Actions include agreeing on Guidebook contents, collation of emissions information into a database and preparation of bottom-up estimates for selected sources. Regarding the 2020-2021 Workplan, the following 3 actions were highlighted:

- **National inventory reporting** – This will be reviewed as part of the Gothenburg Protocol review at the EMEP Steering Body meeting in September
- **Improvements to Guidebook content** – Progress on this action is not possible until metrics have been decided and any improvements will only be possible if funding for the work is available. It was stressed that new guidance must be completed well ahead of the

introduction of any new or amended reporting requirements in order that Parties are in a position to meet their formal commitments.

- **Input into decisions** – The TFEIP Co-chairs will report to the EMEP Steering Body. Individuals were asked to work with their national representatives who attend the EMEP Steering Body meeting to ensure that the views of the emissions inventory community are reflected at the meeting.

7.3 Review of the Gothenburg Protocol

A review of the Gothenburg Protocol is underway.

Whilst the detail of the review has not yet been finalised, it is expected that it will include areas that are directly relevant to the emissions inventory community, such as:

- Consideration of whether emission inventory reporting remains fit for purpose to meet the scientific and legal needs of the Convention
- The increasing use of non-official data sources for scientific work under the Convention
- An assessment of the continuing need/relevance of mandatory versus voluntary reporting, as well as information on large point sources and gridded emissions
- The possibility of reporting emissions by fuel (in addition to by source)
- The potential to simplify the existing adjustments process.
- Consideration of whether the inventory review process is fit for purpose and strengthening of review follow-up mechanisms.

The TFEIP co-chairs will provide feedback to the TFEIP as/when more information about the review becomes available, and in particular the timelines for different activities.

7.4 Longer-term Strategy for the TFEIP

The Co-chairs presented the 10-year strategy for the TFEIP with priority actions falling under two headings:

Improving the emissions inventory reporting:

- Improved targeting of the review process and improved review follow-up
- Options for selective capacity building, including e.g. twinning parties, supporting the introduction of stronger institutional arrangements in Parties
- Options for reporting software and other tools
- The possibility of reporting emissions split by activity or fuel.

Improving the science:

- Establishing funding for the EMEP/EEA Guidebook
- Improving the ability to respond to topical initiatives across Task Forces
- Supporting EMEP initiatives to improve clarity over the use of “non-official” datasets in EMEP studies
- Consideration of whether it is better to estimate some sources at the EMEP level (such as shipping and non-anthropogenic sources)
- The development of methodologies that better account for climate change (e.g. agricultural emissions).

The Co-chairs closed the workshop by thanking TFEIP members for attending and those who presented.