TFEIP/EIONET 2017: MEETING CONCLUSIONS

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1. INTRODUCTION AND OBJECTIVES

The TFEIP held their annual meeting jointly with the EEA Eionet network on 11-12th May 2017 in Krakow, Poland. There were 115 participants, representing over 40 Parties.
The co-chairs were pleased to note good progress in developing both science and administrative tasks related to emission inventories since the 2016 TFEIP/EIONET meeting.

The meeting was hosted by AGH University of Science and Technology, Krakow City Council and the Norwegian Institute for Air Research (NILU).

Prof. Jozef Pacyna (NILU and AGH University) gave a welcome speech.
The meetings' hosts also gave introductions:

- Prof. Jerzy Lis, the Vice President of the AGH University of Science and Technology
- Mr Andrzej Łazęcki representative of the Krakow City Council

The co-chairs warmly thanked the AGH University of Science and Technology, Krakow City Council and NILU for hosting the meeting.

Prof. Jozef Pacyna and Dr Chris Dore reflected on the TFEIP reaching its 25th Anniversary.

The meeting objectives were presented:

1. Promote outreach activities that support countries in improving emissions estimates and reporting
2. Review best practice in emissions inventory QA/QC and consider how communicating uncertainties can be improved
3. Discuss the implications of changes to the emissions inventory review processes under the CLRTAP and NECD
4. Consider the next steps in resolving the PM filterable/condensables issue
5. Provide a forum for discussion between emission inventory compilers, especially through the expert panels;
6. Continue to collate information on new and improved methods for estimating air quality pollutant emissions to air;
7. Propose items for the EMEP 2018-2019 Workplan, and seek ways of resourcing the workplan.

2. ANNUAL REPORTING AND UN/ECE DEVELOPMENTS

Alina Novikova (EMEP Secretariat) provided an update on activities within the different bodies of the Convention, including the Scientific Assessment Report, capacity building activities and outreach activities.

Chris Dore (UK) presented information on activities within the LRTAP Convention, and in particular the input of the TFEIP to the EMEP Steering Body and Executive Body meetings across 2016 and 2017. Items of particular relevance (such as the TFEIP workplan) are detailed in following sections.

Katarina Mareckova (CEIP) showed an overview of results from the latest reporting cycle. More IIRs are being reported, and data quality is considered to be improving, but there is still progress needed.

Martin Adams (EEA) provided a summary of the 2016 update to the EMEP/EEA Guidebook, and activities since the update, including the availability of a new online viewer for Guidebook emission factors.

3. NECD AND THE REVIEW OF EMISSIONS INVENTORIES

Peter Meulepas (EC) presented information on the new EU NECD, and in particular presented an options paper highlighting opportunities to potentially streamline emission inventory review activities under the NECD and CLRTAP, which could create an opportunity to reduce the work load in the CLRTAP review (Parties, CEIP)..

The TFEIP considered the numerous options for aligning/streamlining/merging review activities under the NECD and the CLRTAP.

1. **Independent, but Aligned:** The TFEIP agreed that there was a need to ensure aligned guidance for the two review processes. However, retaining a second independent review process for EU Member States under the CLRTAP was considered to be important, to help ensure that findings from one review process were not merely repeated by a second review team.
2. **Added Burden:** Whilst this would lead to an added burden on EU Member States that would be subject to two review processes for the main pollutants every 5 years, the current frequency of review under CLRTAP (only once every 5 years) was not considered to be overly demanding for Parties.
3. **Implementation Committee:** It was recognised that while the intention of the new 'technical corrections' process defined in the 'Methods and procedures document'([1]) is to support Parties and EMEP in a capacity building perspective, such information should where relevant also support the work of the CLRTAP Implementation Committee.
4. **EMEP Steering Body Meeting:** The TFEIP recommended further discussion of the EU paper during the next EMEP Steering Body Meeting.

4. MEETING OF TFEIP EXPERT PANELS

The Projections Expert Panel met in Plenary

The following presentations were given:

1. The new requirements from the EC for MS to report air quality "control programmes" were presented by Melanie Hobson (UK).
2. An overview of the new air pollution programme in France was presented by Nadine Allemand (France).
3. Emission projections for the Netherlands were presented by Benno Jimmink (Netherlands).

[1] Emission review guidelines for the technical review of air pollutant emission inventories reported under the Convention and its Protocols.

Combustion and Industry:

1. The Guidebook chapter on "small-scale combustion" was discussed.
2. IVL presented new emission factors for residential wood combustion resulting from the Nordic SLCP project.
3. Estonia presented a project where they have updated emission factors in their inventory for domestic combustion based on new measurements.
4.
5. A gridding module for the spatial distribution of residential emissions was presented by the JRC.
6. New information from Concawe on emission factors of heavy metals from refineries was discussed.

The updated "Tier 1.5" methodology and Guidebook chapter for emissions from domestic combustion was accepted by the expert panel for incorporation into the Guidebook, subject to inclusion of several final corrections.

It was agreed that the newly available information from Concawe would be made available through the expert panel website and will inform a future update of relevant Guidebook chapters.

Agriculture and Nature:

The UNFCCC Guidelines are being updated, and Barbara Amon (Germany) will be lead author for selected agriculture chapters. This will ensure good co-ordination between the UNFCCC Guidelines and the EMEP/EEA Guidebook, which is particularly relevant for N_2O, NH_3 and NOx in the agriculture sector.

Nick Hutchings (Denmark) and Barbara Amon (Germany) led discussion on the following Guidebook chapters/methodologies:

1. NH3 from mineral fertilisers: The methodology for the 2016 version of the Guidebook has been finalised.
2. Growing crop and crop residues: The methodology proposed for the 2016 version of the Guidebook was rejected. Emissions from growing crops is not reported consistently across countries, and dialogue with several stakeholder groups is needed, particularly because there is limited scientific information available.
3. Indirect emissions: It was noted that only the agriculture sector considers indirect emissions, and whilst this component from other sources would be small, it is an inconsistency in the emissions inventories.
4. Anaerobic digestion: The methodology for the 2016 version of the Guidebook has been finalised.
5. Emissions from anaerobic digestion: New information is available to allow a future update of the Guidebook methodology.
6. Emissions from manure management: It was agreed that reviewing the current literature to update NH_3 emission factors from livestock and manure management was a high priority.

The following presentations were also given:

1. Anaerobic digestion in Germany: The methodology used for estimating emissions from Anaerobic Digestion in Germany was presented by Sebastian Wulf (Germany).
2. Ammonia emissions from Anaerobic Digestion in the UK and potential mitigation options, presented by Sam Tomlinson (UK) & Mariana Ghosh (UK).
3. Emissions of POPs in Agriculture, presented by Ulrike Döring (Germany). The expert panel agreed that the guidebook chapters on POPs emissions in Agriculture require updating.

Transport and Mobile Machinery:

Presentations were given on:

1. UK Shipping Emissions Improvements work, presented by Yvonne Pang (UK)
2. Updates on the Aviation Chapter of the Guidebook, presented by Robin Deransy & Mark Whiteley (Eurocontrol)
3. COPERT 5: Status and New Road Transport Guidebook Chapter, presented by Leon Ntziachristos (ETC)

The Guidebook chapter on road transport was discussed, and accepted subject to Parties providing final comments within two weeks from the meeting.

The Workplans of the Expert Panels for 2017-18 were discussed and agreed, and will form a part of the TFEIP workplan.

5. NEW SCIENCE

Presentations were given on:

1. Road transport emissions, looking back at 'dieselgate', presented by Norbert Ligterink (Netherlands)
2. CO2 and NOx LDV emissions, Initiatives and Challenges, presented by Georgios Fontaras (JRC)
3. Progress in estimating PM emissions in UK, presented by Richard Claxton (UK)
4. The national emissions inventory, Republic of Turkey, presented by Ağça Gül Yilmaz (Turkey)
5. New POP emissions factors from waste combustion and cremation, presented by Kristina Juhrich (Germany)
6. Horizon 2020: ClairCity, presented by Carlo Trozzi (Italy)

Chris Dore (UK) presented the current status of the filterable/condensable PM issue, and the paper by Task Force on Measurements and Modelling. The Co-Chairs then led discussion.

The TFEIP agreed that:

1. **Consistency and transparency**: There is a clear need to improve the consistency of reporting across countries, and to improve the transparency of the PM metrics being used in emissions inventories.
2. **National reporting**: The preferred way forward with regards to reporting "condensable" PM, is for all Parties to include the condensable component when reporting emissions from selected source sectors (e.g. residential combustion and road transport). Other sectors (e.g. industrial sources) would use emission factors consistent with the filterable PM fraction, consistent with established measurement technologies for these sectors.
3. **Guidebook content**: Information in the Guidebook would need to provide emission factors consistent with the principles above i.e. clear guidance on whether "condensable" PM was included for each sector or not.

6. EIONET

After an overview of EEA activities, presentations were given on:

1. The status of recent reporting of Member States under the new EU NEC Directive – Anke Lükewille (EEA)
2. Examples of new EEA online tools and data services - Federico Antognazza (EEA).

7. WORKPLAN

The Expert Panel leaders reported back from their panel meetings. All of the EPs will update their workplans by 20th May.

The draft TFEIP workplan for 2017-2018 was presented and agreed. This included the following items:

Core Work Programme:

- This remains unchanged and includes items such as: arranging the annual meeting, providing effective co-ordination of information for the air quality pollutant emissions inventory community, communications and outreach activities as funding allows.

Guidebook Development:

- The long-term aim is to secure annual budget/funding to support the development of the Guidebook.
- Two items will be proposed for EMEP funding: A review of NH_3 EFs for livestock & manure management, and collaboration with the TFMM on the filterable/condensable PM issue.

8. CONCLUSIONS AND CLOSE

Draft conclusions from the meeting were presented and agreed.

The Co-chairs warmly thanked AGH University of Science and Technology, Krakow City Council and NILU for hosting the meeting, and their hospitality.

The Co-Chair also thanked the UK, the EEA and Finland for supporting the co-chairs of the TFEIP.

The meeting was then closed.

Meeting documents and presentations can be found on the following Websites:
TFEIP: http://www.tfeip-secretariat.org/meetings/

TFEIP Expert Panels:
http://www.tfeip-secretariat.org/expert-panels-combustion-industry-meetings/
http://www.tfeip-secretariat.org/expert-panel-on-transport-meetings/
http://www.tfeip-secretariat.org/expert-panels-agriculture-nature-meetings/
http://www.tfeip-secretariat.org/expert-panels-projections-meetings/

ANNEX 1: CONCLUSIONS FROM THE TFEIP2017 WORKSHOP

The TFEIP 2017 Workshop was divided into three separate sessions:

1. Discussion with Countries from the Eastern Part of the EMEP Coverage
2. Uncertainties in Emissions Inventories
3. Quality Assurance and Quality Control in Emissions Inventories

Discussion with Countries from the Eastern Part of the EMEP Coverage

Representatives from countries in Eastern Europe, Caucasus and Central Asia were invited to attend a discussion session on the barriers of reporting good quality emissions inventories under the CLRTAP.

Countries flagged the need for help with generating emissions projections, and therefore being able to use the emissions inventory as an effective policy support tool.

1. Activity Data

The completeness of historic timeseries data is very variable from source to source, even for the largest sources. However, some detailed data is readily available. Time series consistency can be a challenging issue.
It was noted that countries tend to avoid making approximate emission estimates, rather than using best practice where there are challenges with sourcing data e.g. indicators or rescaling information from neighbouring countries. They were encouraged to focus on completeness at the outset (even if results would be approximate), and technical support would probably help with this initiative.

2. Lack of Co-ordination Between Ministries

Several countries noted challenges in this area. There was a clear distinction between the AQ emissions estimates and climate change – the latter having a much stronger legal remit to obtain data, which drives co-ordination across Government Ministries/Departments.
The EMEP/EEA Guidebook provides guidance on institutional arrangements, and support

3. Lack of Staff and Funding

Some countries have no officially defined team, and the work can therefore be somewhat ad hoc. Other countries have small teams, and find is challenging to undertake all of the work required.
It was noted that the CLRTAP inventory reviews can provide a useful mechanism by which under-resourcing can be flagged, and recommendations made to the relevant Government.

4. Institutional Barriers

Moldova and Georgia have signed an understanding with the UN/ECE, and are planning to ratify the Gothenburg Protocol. The Ukraine are also considering this. Uzbekistan is not party to CLRTAP, but is considering sign up to the CLRTAP and then the Gothenburg Protocol. Kazakhstan want to ratify the Heavy Metals and POPs Protocols, but need new national legislation first.

Some countries noted a lack of communication between the climate change and air quality communities, and the need to improve institutional arrangements.

5. Outputs

All countries agreed that support on generating gridded data would be helpful.
It was also considered that gaining a better understanding of GAINS would be valuable. IIASA indicate their willingness to hold a workshop to help with this.

6. QAQC

Support on QA/QC would be welcomed by countries, although it was appreciated that there is extensive guidance in the EMEP/EEA Guidebook.

7. **Highest Priorities**

Countries flagged their highest priorities including:

- Technical support on compiling gridded data.
- Support in developing the quality of available activity data.
- Improving institutional arrangements within the country.
- Increased funding/resources for the inventory team.

The TFEIP co-chairs thanked the representatives for attending, and thanked the EMEP Secretariat for providing financial support to country representatives.

Uncertainties in Emissions Inventories

Presentations were given about the generation and use of uncertainties in air pollutant emission estimates.

- Introduction and challenges of uncertainties – Chris Dore (UK): This explained the current shortcomings of the statistical approaches used, and suggested a new complementary approach to predict that extent to which estimates may be revised in the future. There was general interest, although the process requires development and testing.

- Calculation of uncertainties in the German inventory – Kevin Hausmann (UBA): This showcased a database tool for generating uncertainties. The tool required substantial development, but is now working and available for others to use.

- Uncertainty evaluation in regional air quality management - Carlo Trozzi: This showed that not much progress has been made on better evaluating uncertainties across the last decade. A system was shown that separately considers different aspects of uncertainties in emissions estimates: measurement method (quality), source specificity (relevance), spatial congruity (e.g. variability across countries), temporal congruity (e.g. representativeness for a specific year, and applicability to annual estimates).

Discussions concluded that:

- There needs to be improvement in the way that the emissions inventory community present uncertainty and changes in uncertainty.
- There are tools/approaches that can be used to better reflect the different aspects of uncertainty in emissions inventories. However, these are not currently being supported, and are therefore not being developed into readily usable methodologies.

Quality Assurance and Quality Control in Emissions Inventories

Presentations and discussion around quality assurance and quality control procedures within air pollutant inventories.

- Introduction to QA/QC procedures – Chris Dore (UK): This explained that most of the QA/QC guidance material in the EMEP/EEA Guidebook systems draws heavily on systems set up under the GHG emissions inventory requirements. It was also noted that the CLRTAP emissions inventory reviews have not ever reviewed the QA/QC systems in countries.

- Recent improvements to QA/QC procedures in the UK inventory – Ross Hunter (Ricardo Energy & Environment): Improvements to, and investment in, QA/QC systems in the UK emissions inventory have been driven by changes in the needs of the UK Government. Models, which encompasses a ride range of spreadsheets and databases, are assessed using a quality scoring, and more critical models are required to have higher quality standards. The

improvements are still on-going so it has not yet been possible to assess the benefits of the increased investment.

- Stage 1 & 2 checks of AQ inventories– Katarina Mareckova/Sabine Schindlbacher (CEIP): The current semi-automated checks that are performed were outlined. It was noted that typically every country carries out annually at least one recalculation of more than 10% of the national total - even for "mature" inventories.

- What can we learn from GHG QA/QC? A South Africa example – Rich Claxton & Kathryn Hampshire (Aether): This explained the development and implementation of automated systems for QA/QC work at the national scale. It was clear that the air quality technical area has the potential to draw heavily on the investment work being done for greenhouse gas emissions inventories.

Discussions concluded that:

- There is scope for countries to invest more time and effort in improving QA/QC systems.
- There are tools currently being developed that allow QA/QC to be undertaken in a highly efficient/automated way.