

**Options for cooperation on the review of reported emissions between
EU and EMEP (LRTAP Convention)**

Date: 14 June 2017

Produced by: EC, DG Environment, unit C.3 - Air (PMe)

Contents

1. Introduction	2
2. Context.....	4
2.1 New NECD	4
2.2 EMEP - LRTAP Convention	6
3. Disadvantages and risks of separate review processes	8
4. Advantages, objectives, opportunities and risks for cooperation and streamlining.....	9
5. Scope for cooperation and streamlining - listing relevant issues	10
6. Approaches for cooperation and streamlining	10
7. Proposed way forward and preferred option for cooperation.....	15

Preamble

Aligning review activities on emission inventory data carried out under EMEP with similar review activities carried out under the new NECD and seeking cooperation on those activities with the EC, could significantly reduce the review burden for EMEP, providing EMEP the opportunity to employ saved resources on other key priorities (e.g. increase efforts on reviewing EECCA countries and/or POPs and HM inventories largely neglected so far). The objective is to be as efficient as possible with the limited resources available. The discussion paper is not about promoting a full merger of the EU and EMEP review activities with the EU taking full control of the review process.

1. Introduction

The new National Emission Ceilings Directive (Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants, further called the new NECD) was adopted on 14 December 2016 and entered into force on 31 December 2016. It replaces and repeals the previous National Emission Ceilings Directive 2001/81/EC.

The new NECD sets national emission reduction commitments for 2020 and 2030 for the air pollutants covered by previous NECD 2001/81/EC (SO₂, NO_x, NMVOC and NH₃), as well as for PM_{2.5}. In accordance with article 21(1) of the new NECD the 2010 NEC ceilings as set in NECD 2001/81/EC, will remain applicable until 31 December 2019.

Review of national emission inventory data under new NECD

In order to improve the completeness and quality of the reported national emission inventory data, a prerequisite for inter alia proper compliance checking with national reduction commitments and ensuring equal treatment across all Member States, **article 10(3)** of the new NECD specifically requests the Commission, assisted by the European Environment Agency and in consultation with Member States to review the national emission inventory data in the first year of reporting and regularly thereafter.

An EU in-depth review is currently being conducted on reported emissions in 2017, focused on the five main pollutants under the new NECD and delivering recommendations, revised estimates and technical corrections for Member States' inventories.

In accordance with article 10(3) this 2017 EU in-depth review will have to be repeated on a regular basis. Furthermore, in accordance with the full scope of article 10(3) further review work will at least also have to include reviews of reported emission inventory data of CO, heavy metals (Cd, Pb, Hg), POPs (PAH, dioxins/furans, PCB's, HCB), PM10 (and BC) (pollutants for which the new NECD sets out mandatory reporting) and reviews of spatially disaggregated national emission inventories (gridded data). These reviews are needed not only to fulfil international obligations on reporting of heavy metals, POPs and gridded data or future impact assessments to be carried out under the new NECD (**article 11**), but with respect to mercury, also to inform the review of mercury emissions that the Commission is required to do under **article 13(3)** of the new NECD.

Within the context of article 10(3) or as part of the examination of the national air pollution control programmes by the Commission in accordance with **article 10(1)**, reported emission projections could/should also be reviewed on a regular basis (e.g. every four years).

Review of adjustment applications under new NECD

Under **article 5(6)** of the new NECD the Commission, assisted by the European Environment Agency, shall review and assess whether reported adjusted national annual emission inventories fulfils the applicable conditions set out for the use of adjustment applications. An adjustment application must be reviewed within 9 months from the date of receipt of the supplementary information as included in the informative inventory report. This means at the latest by 15 December if the reporting date of the informative inventory report is respected. Where the Commission has raised no objections in this period, the adjustment application shall be considered as valid and accepted for that year. In

case of rejection the Commission shall adopt a decision within these 9 months informing the Member State concerned that the adjustment application cannot be accepted and stating the reasons for that refusal.

In accordance with **article 5(8)** of the new NECD the Commission must take into account the relevant guidance documents developed under the LRTAP Convention for conducting its reviews.

In line with the stipulation of article 5(6) that the use of flexibilities (adjustment applications) can be considered by the Commission as valid and accepted in the year it has been submitted, adjustments will have to resubmitted and reviewed for each year the MS requests its application.

Review of national emission inventory data and adjustment applications under LRTAP Convention

Similar reviews on emission inventories (stage 3 reviews) and adjustments than those to be carried out under articles 10(3) and 5(6) of the new NECD have been established under the LRTAP Convention.

For more introduction and background on the review of emission inventories under the LRTAP Convention: see

http://www.ceip.at/ms/ceip_home1/ceip_home/review_process/

For more introduction and background on the review of adjustment applications under the LRTAP Convention: see

http://www.ceip.at/ms/ceip_home1/ceip_home/adjustments_gp/

<p>This paper outlines possibilities and opportunities for cooperation and streamlining between these two parallel review circuits.</p>

2. Context

2.1 New NECD

Following table provides an overview of the relevant articles on review activities under the new NECD, with an indication of reporting and review frequencies and dates.

Article N°	Relevance	Text of Article	Frequency / dates
5(6)	Review of adjustments (flex)	“The Commission, assisted by the European Environment Agency, shall review and assess whether the use of any of the flexibilities for a particular year fulfils the relevant conditions set out in paragraph 1 of this Article and in Part 4 of Annex IV or in paragraphs 2, 3 or 4 of this Article, where applicable. [...]”	Annual reporting and review
10(1)	Review of projections (as part of NAPCP examination)	“[...] The Commission shall examine the national air pollution control programmes and their updates in the light of the requirements set out in Article 4(2) and Article 6.”	Reporting projections is every 2 years (2017, 2019, 2021, 2023, ...) Reporting NAPCP/updates is every 4 years (2019, 2023, 2027, ...) Examination of NAPCP (including projections) is every 4 years (not necessarily in the same year of reporting)
10(3)	Review of national emission inventory data	“The Commission, assisted by the European Environment Agency and in consultation with the Member States concerned, shall review the national emission inventory data in the first year of reporting and regularly thereafter. That review shall involve the following ... [...]”	Reporting of national emission inventories is annual; review is regular Reporting of gridded data is every 4 years (2017, 2021, 2023, ..); review is regular
11(1)(d)	Reference to article 10(1)	“The Commission shall, by 1 April 2020 and every four years thereafter, report to the European Parliament and the Council on the progress made in the implementation of this Directive, including an assessment of its contribution to the achievement of the objectives referred to in Article 1, including (d) the results of the Commission examination of the national air pollution control programmes and their updates pursuant to the third subparagraph of Article 10(1);”	Due to the deadline of 1 April 2020 the examination of the first NAPCPs (including projections) must be carried out in 2019
13(3)	Review of Hg national emission inventories	“On the basis of the reported national emissions of mercury the Commission shall assess their impact on achieving the objectives set out in Article 1(2) and shall consider measures for reducing those emissions and, if appropriate, submit a legislative proposal.”	Deadline for reviewing Directive is 31 December 2025 Review of Hg inventories is regular (under article 10(3))

The review needs of the new NECD as outlined in table above will require the setup of a multi-annual review programme, aiming to translate the ‘regular’ review request of article 10(3) into 5 year cycles (reviewing the national emission inventory data in-depth at least every 5 years).

The first review cycle, running from 2017 up to 2021, could look as follows

Year	Tasks
2017	(i) Review of national emission inventories of SO ₂ , NO _x , PM _{2,5} , NH ₃ and NMVOC, including technical corrections and recommendations (ii) Review of all 2017 NECD adjustment applications (with distinction between 'new' applications not yet reviewed before under NECD and applications reviewed (accepted) in previous year under CLRTAP)
2018	(i) Follow-up to 2017 review of national emission inventories of SO ₂ , NO _x , PM _{2,5} , NH ₃ and NMVOC; verification of implementation of technical corrections and recommendations (ii) Initiate review of national emission inventories of POPs (PAHs, dioxins/furans, PCBs, HCB) and heavy metals (Cd, Hg, Pb), including recommendations, not yet including technical corrections (iii) Review of all 2018 NECD adjustment applications
2019	(i) Complete review of national emission inventories of POPs and HM, including technical corrections and recommendations (ii) Review of all 2019 NECD adjustment applications (iii) Review (examination) of national air pollution control programmes (including projections)
2020	(i) Follow-up to 2019 review of national emission inventories of POPs and HM; verification of implementation of technical corrections and recommendations (ii) Review of national emission inventories of CO, PM ₁₀ and BC, including technical corrections and recommendations (iii) Review of all 2020 NECD adjustment applications
2021	(i) Follow-up to 2020 review of national emission inventories of CO, PM ₁₀ and BC; verification of implementation of technical corrections and recommendations (ii) Review of national emission inventories of gridded data reported in 2021, including recommendations (iii) Review of all 2021 NECD adjustment applications

(note that proposal above is adjusted in section 7 to align with next EMEP Stage 3 in-depth reviews)

Additional tasks that should / could be carried out on a regular basis during the first review cycle are:

- (i) horizontal evaluations of entire review process (applied for the reviews)
- (ii) updates of the review guidelines, guidance on procedures and reporting templates to adapt to the review work to be delivered in a given year and based on horizontal evaluations (lessons learned and experience gathered in previous years);
- (iii) capacity building (country missions, thematic workshops ...).

The Second cycle would run from 2022 till 2026 and could start with a follow up to the 2021 review of the gridded data. The second cycle could be a similar reiteration of the first cycle or be organized in a different way: by selected groups of Member States, sectors or pollutants or combinations or targeted to specific issues. Mind that where the reviews of emission inventories and the adjustment applications in the first cycle are carried out in the context of compliance checking vis-à-vis the NEC 2010 ceilings, the reviews of emission inventories and the adjustment applications in the second cycle are to be carried out in the context of compliance checking vis-à-vis the NEC 2020 emission reduction commitments (with an impact on the scope and with a new frame of reference to review adjustment applications against).

Aligning the first and second review cycle with in particular the stage 3 in-depth reviews carried out by EMEP would be very useful and in everyone's interest. Most pressing is to address possible cooperation on conducting the reviews for AT, MT (national emission inventories) and ES (adjustment applications), scheduled for 2017 both under the new NECD and LRTAP Convention.

2.2 EMEP - LRTAP Convention

Reviews of national emission inventory data under the LRTAP Convention follow a three staged approach, as follows:

- Stage 1 reviews: annual initial checks of submissions for timeliness, completeness and formats, published in March
- Stage 2 reviews: annual checks of submissions with respect to consistency, key category analysis, trends and implied emission factors with recommendations for improvement, published in May
- Stage 3 reviews: in-depth reviews of selected inventories according to a workplan agreed by the Executive Body; up to 10 countries are checked annually (5 year review cycle)
 - 1st stage 3 review cycle: period 2008 - 2012: 44 countries reviewed, including all EU MS
 - 2nd stage 3 review cycle: period 2013 - 2017 (2018): 37 countries reviewed in period 2013-2016, including 25 EU MS; review of several countries, scheduled for 2017, will be postponed to 2018 (incl. FI and possibly MT)
 - 3rd stage 3 review cycle: workplan to be agreed by Executive Body in December 2017: new cycle will likely cover period (2018)2019 - 2023

(USA and CA are at the moment not involved in the Stage 3 in-depth reviews)

The recently revised and adopted 'Methods and procedures' document laying down the process for the EMEP emission inventory reviews (replacing the 2007 version) specifies the approach and responsibilities of in the different review stages and details how the stage 1, 2 and 3 reviews should be conducted.

With respect to the Stage 3 EMEP reviews, for which aligning and cooperation with the EU-in-depth review under the new NECD is most useful, the following elements, with respect to aligning, are worth noting:

- The purpose of the in-depth (stage 3) review is to examine in detail, and in a transparent manner, the reported inventory information for consistency with the Reporting Guidelines and the EMEP/EEA Guidebook, providing recommendations for improvement and where appropriate calculation of technical corrections.
- The stage 3 review will normally take place as a 'centralized review' i.e. the expert reviewers will perform initial checks of the data and prepare questions to Parties, prior to meeting for finalising the review of the inventory information of Parties
- The stage 3 review of the annual emission inventories will focus upon those pollutants for which Parties have emission reduction commitments established under the protocols to the Convention. This is the main air pollutants (NO_x, NMVOC, NH₃, PM_{2.5} and SO₂). Other pollutants, for which reporting is required under the Reporting Guidelines i.e. priority heavy metals (Cd, Hg, Pb), particulate matter (BC, PM₁₀ and TSP) and POPs (dioxins and furans, the PAH compounds and HCB) shall also be reviewed as resources allow.
- The review shall cover all the NFR emission source categories relevant for each of the pollutants under review, but should focus particularly on the key categories for a Party.

- All Parties should be reviewed at a minimum every 5 years. If significant quality issues are identified during the stage 3 review, a more frequent review period can be agreed.
- The review of other data, which is officially reported under the Convention, such as gridded data, projections and large point source data, should be performed regularly, at least every four years to coincide with the reporting frequency. These reviews shall be carried out by the EMEP Centres that are the key users of these data.

Above elements of the revised EMEP review guidelines explain the current focus of the EMEP reviews on the annual national emission inventories of the key pollutants (NO_x, NMVOC, NH₃, PM_{2.5} and SO₂), with a minimum review frequency of at least every 5 years. Also, in accordance with the EMEP review guidelines and EMEP emission reporting guidelines, it is clear that the next EMEP review of gridded data and large point source data should be performed this year (2017) and subsequently in 2021, while the next EMEP review of projections should take place in 2019.

These frequencies may need to be adapted in order to allow proper aligning with the review tasks envisaged under the new NECD.

The reviews of new adjustment applications are desk reviews conducted by a team of expert reviewers. A lead reviewer coordinates the work of the team to ensure that a consistent approach is taken across all Parties/ pollutants/ source categories. CEIP supports the reviewers by managing the review process overall, including the provision of Party information to the reviewers. CEIP also acts as an intermediary between the Party and the reviews should there be points which require clarification during the review. Approved adjustments if reported in the requested Annex VII reporting template are compared in a developed on-line tool and checked by the expert reviewers as needed. National review reports are only prepared for new adjustments. The reporting on the assessment of previously approved adjustments is covered in the annual CEIP reports on the review of adjustment applications.

Guidance on adjustments (application and review) has been adopted in several EB decisions (EB 2012/3, 2012/4, 2012/12, 2014/1). Additional technical guidance for Parties making adjustment applications and for the expert review of the adjustment applications is available in document ECE/EB.AIR/130. In accordance with article 5(8) of the new NECD the Commission is required to take these guidance documents developed under the LRTAP Convention into account when conducting its review of adjustment applications under the new NECD. Such a provision of using LRTAP guidance has not specifically been included in the new NECD with respect to the review of national emission inventory data, although the main elements to be covered by the NECD review of national emission inventory data as set out in article 10(3) (verification of transparency, accuracy, consistency, comparability and completeness of information) are the same as for the EMEP reviews under the LRTAP Convention.

3. Disadvantages and risks of separate review processes

Separate and completely independent parallel circuits under the new NECD and EMEP (LRTAP Convention) for reviewing the same reported data and information involves certain risks and disadvantages. Some examples are listed below:

- duplication of efforts and inefficient use of scarce resources;
- unavailability of sufficient expert reviewers to cover both review work under the new NECD and the LRTAP Convention in a given year;
- capacity issues in certain Member States to provide the necessary support for both review work under the new NECD and the LRTAP Convention taking place at the same time
- reviews of the same data and information conducted in parallel and independently potentially resulting in split views in the outcome of the reviews - different findings, conclusions, recommendations and technical corrections;
 - subsequently, potentially resulting in inconsistencies in reporting under the new NECD and the LRTAP Convention (different reporting), which is opposite to the intent of the new NECD as set in article 10(2) ("*NECD reporting shall be consistent with the reporting to the Secretariat of the LRTAP Convention*") and article 10(3) ("*... that review shall involve (b) checks to identify cases where inventory data is prepared in a manner which is inconsistent with the requirements set out under international law, in particular under the LRTAP Convention*")
 - subsequently, potentially also resulting in different compliance conclusions with respect to the same reduction commitments applicable under the new NECD and the LRTAP Convention (Gothenburg Protocol), in particular when adjustment applications are approved under the LRTAP Convention that are not approved under the new NECD or vice versa.
 - subsequently, potentially making the EMEP reviews ineffective given that when similar reviews under the NECD and EMEP are carried out in parallel, priority will have to be given to the mandatory EU outcomes in case of different outcomes on same issues/sectors (technical corrections). This will happen if current practices continue.
- wasting resources that are so needed to improve (part of) the emission inventories of non-EU countries (EECCA). Only emission inventories of a minimum quality will enable these countries to (meaningfully) accede/ratify the revised Gothenburg protocol (key priority number 1 of the LTS). At the moment Annex II of the revised Gothenburg protocol only includes reduction commitments for the 28 EU MS, the European Union, Norway, Switzerland and Belarus. If countries like Russia, Kazakhstan, Ukraine or any other non-EU country want to ratify and implement the revised Gothenburg Protocol, they are supposed to propose adjustments to Annex II (propose reduction commitments) in line with article 13.1 of the revised Gothenburg protocol. This requires emission inventories of a minimum quality. Hence it is becoming real urgent that with the next EMEP stage 3 review cycle sufficient resources are dedicated to the review of the emission inventories of non-EU countries. This focus on improving emission inventories is also one the main conclusions of the ad-hoc policy review group of experts in its report proposing a policy response to the 2016 scientific assessment of the Convention (see §92(b) of doc ECE/EB.AIR/WG.5/2017/3).

4. Advantages, objectives, opportunities and risks for cooperation and streamlining reviews

Joining forces and (partially) integrating the reviews of reported data and information under the new NECD with the reviews of same reported data and information under the LRTAP Convention could bring several advantages:

- avoiding duplication of efforts, save scarce resources of EMEP (with respect to budgets, review experts and national emission experts involved); avoid wasting resources needed to improve emission inventories of non-EU countries;
- possibility to divert and allocate saved resources where there is a higher need, for example for use in capacity building projects to further improve national emission inventories of EECCA countries;
- avoiding different outcomes of two independent review processes working in parallel, with the potential negative consequences as identified in section 3 above.

A key objective of any cooperation and streamlining between EMEP and NECD review work should be to save/free up resources (under EMEP), while retaining the necessary autonomy of both the EC and the LRTAP Convention (EMEP). EC could be stricter (as a result from differences in ambition level / more demanding on the QA/QC and technical corrections), but that should not necessarily be an issue if the outcome of the EU in-depth review is subsequently reflected in Member States' reporting both under the new NECD and the LRTAP Convention.

There are many opportunities for cooperation between EC and EMEP to save on resources, including on (i) the review of MS' emission inventories of main pollutants (SO₂, NO_x, PM_{2.5}, NH₃ and NMVOC), (ii) the review of MS' emission inventories of other pollutants (POPs, HM, ..), (iii) the review of gridded data and LPS data and (iv) the review of adjustment applications, and perhaps even the review of projections (not discussed further). Section 6 further details possible approaches on cooperation for these opportunities.

The biggest risks of close cooperation and joining forces on the review of inventory data is loss of autonomy and for EMEP, to the degree that EMEP would rely on EU's in-depth review results, to be seen as not carrying out independent reviews of EU MS' inventory data. In addition the EU can also be seen as 'reviewing its own' (by non-EU countries).

5. Scope for cooperation and streamlining - listing relevant issues

As further explained in section 6 below there are several levels at which EC and EMEP can cooperate in reviewing data under NECD and LRTAP Convention. There are several relevant issues to be considered when deciding on ways to cooperate. These include

- Review guidelines including guidance on technical corrections: harmonization of guidelines (review process, approach, review against same basis, i.e. latest version of EMEP/EEA inventory Guidebook) and technical guidance is important for avoiding different outcomes in reviews; in particular guidance on technical corrections should be harmonized.
- Training: joint training workshops for the EU and EMEP review experts could reduce the risk in different interpretations of the applicable review guidelines and guidance
- Frequencies of review: aligning frequencies in review activities is an important element to be considered in seeking effective cooperation and joining forces.
- Timing of reviews: different timing of different steps in reviews under NECD and EMEP (preparatory phase, desk review, centralized review, ...) carried out on the same inventory data/adjustments in the same year can influence cooperation / streamlining possibilities (whether EMEP review can rely on outcome of EU review or vice versa)
- Scope: effective cooperation on in-depth reviews between EC and EMEP ideally demands the same review scope (reviewing same pollutants, sectors, ...)
- Information sharing (at technical level) between EC and EMEP can be done in different ways and during different steps of the review process.
- Mandatory character of recommendations and technical corrections: the results of the EU in-depth reviews are more binding than the corresponding results of EMEP stage 3 reviews.
- Timing of new updates of EMEP/EEA inventory Guidebook.
- Confidentiality issues when sharing information between EC and EMEP, issues around transparency and possible conflict of interests (?).
- the extent in which EC and EMEP both want to keep their independency in reviewing the inventory data of EU MS; the extent in which both the autonomy of EC and EMEP can be respected and what type of cooperation would politically be acceptable by non-EU Parties.

6. Approaches for cooperation and streamlining

The EMEP stage 3 in-depth reviews have predominantly focused on the main pollutants (SO₂, NO_x, PM_{2,5}, NH₃ and NMVOC) so far. The first EU in-depth review of emission inventories of the main pollutants (SO₂, NO_x, PM_{2,5}, NH₃ and NMVOC), initiated in 2017, will be finalized in 2018. By then the 2nd EMEP stage 3 in-depth review cycle will also end, having covered by then all 28 MS.

The second EU in-depth review of emission inventories of the main pollutants should ideally be conducted in 2022 (with proper follow up in 2023). The emission inventories reported by 15 February 2022, which include emissions reported for 2020 for the first time, should be the basis for this second EU in-depth review. Such review in 2022 would be timely for the first compliance checking with the 2020 national emission reduction commitments applicable by then, with the aim to ensure equal treatment across Member States vis-à-vis the new 2020 commitments.

In the intermediate period between the first and second EU in-depth review (2019-2021) of emission inventories of the main pollutants, the EC intends (will be required) to conduct reviews of emission inventory data of other pollutants (POPs, HM, ...) and gridded data.

There are different ways (at different levels of intensity) in which EC and EMEP can seek cooperation and join forces with respect to the in-depth reviews of inventory data and adjustment applications from EU MS. The type of cooperation and streamlining can depend on timing and type of data and pollutants to be reviewed. Distinction can be made between:

- cooperation and streamlining for in-depth review of MS' emission inventories of main pollutants (SO₂, NO_x, PM_{2,5}, NH₃ and NMVOC) for period 2017-2018 (2nd EMEP stage 3 review cycle) (AT, FI, MT)
- cooperation and streamlining for in-depth review of MS' emission inventories of main pollutants (SO₂, NO_x, PM_{2,5}, NH₃ and NMVOC) for period 2019-2023 (3rd EMEP stage 3 review cycle) (all MS)
- cooperation and streamlining for in-depth review of MS' emission inventories of other pollutants (POPs, HM, PM10, TSP ...)
- cooperation and streamlining for in-depth review of MS' emission inventories of gridded data and LPS data
- cooperation and streamlining for review of MS' adjustment applications

Most profit from cooperation and streamlining activities between EC and EMEP can be achieved on the in-depth reviews of EU MS' national emission inventories (of main pollutants) in the period 2019-2023 (aligning with 3rd EMEP stage 3 review cycle). Following options/approaches are available:

1. EMEP stage 3 reviews before EU in-depth reviews:

EMEP stage 3 reviews of EU MS' inventories in years 2019-2021 and EU in-depth reviews of EU MS' inventories in year 2022 → EMEP findings (review reports) to EC as input for EU in-depth reviews in 2022:

- a. opportunity to avoid split views and inconsistencies in outcome of the EMEP and EU reviews, while leaving the option open for a more demanding EU review in 2022, of which the outcome can then subsequently be reflected in Member States' reporting both under the new NECD and the LRTAP Convention in 2023;
- b. no real savings on resources for review work under EMEP.

2. EMEP stage 3 reviews after EU in-depth reviews:

EMEP stage 3 reviews of EU MS' inventories in 2023 (at the end of 3rd stage 3 review cycle) and EU in-depth reviews of EU MS' inventories in 2022 → EC findings (review reports) to EMEP as input for EMEP stage 3 reviews in 2023:

- a. internal EU review of MS' inventories in 2022 will further improve quality of reviewed inventories and in this way help in reducing the review burden for EMEP in 2023 (a more targeted/lighter EMEP review could in this context be acceptable, but likely also necessary to allow EMEP to review all EU MS in one year)
- b. saved resources on the EMEP review of EU MS' inventories can be dedicated to more thorough in-depth reviews of inventories of non-EU countries (EECCA countries) in the period 2019-2022, and where appropriate to capacity building.

3. EMEP stage 3 reviews simultaneously (in parallel) with EU in-depth reviews in 2022:
EMEP stage 3 reviews and EU in-depth reviews of EU MS' inventories both in 2022 → Opportunity/necessity for cooperation and joining forces. For EMEP to be able to conduct stage 3 reviews on all EU MS in one year, it will have to rely on strong cooperation (joining forces) with the EC (details provided in a. to d. below would also be applicable for cooperation on a selected number of EU MS per year (see point 4))
Cooperation can be pursued at different levels (of intensity), leading to different savings in efforts and resources under EMEP, and potentially different risks in split review outcomes:
- a. Findings of EU expert review teams (results of desk reviews and even centralized review) are shared with EMEP expert review teams
 - i. avoids duplication of technical review work under EMEP while still respecting EMEP's autonomy (to draw its own conclusions and recommendations)
 - ii. less risk on split views in conclusions of reviews between EC and EMEP
 - iii. sharing of EU review results with EMEP may lead to problems with confidentiality → to be solved with approval of MS concerned
 - b. Organization of a joint centralized review bringing together the EU and EMEP expert review teams that have independently conducted their desk reviews
 - i. does not avoid duplication of (preparatory) technical work in the run up to the joint centralized review
 - ii. the joint centralized review can ensure a (more) harmonized approach between EU and EMEP reviews and reduce risks of split views and inconsistencies in outcomes of the reviews
 - iii. confidentiality (?)
 - c. EU and EMEP in-depth reviews of MS' emission inventories are conducted by the same expert review teams that report their findings and recommendations (review reports) to both EC and EMEP simultaneously → the review work would be delivered under a contract with EC, but with the EC and EMEP agreeing together on the review guidelines (approach) to be applied for the reviews and on the expert review teams to be conducting the reviews: the arrangements on cooperation between EC and EMEP can be formally agreed at the kick off meeting of the EC service contract and at the EMEP meeting
 - i. full cooperation, avoiding duplication of any technical work and resulting in large savings for EMEP
 - ii. EMEP keeps responsibility and control in the review, while also retaining the autonomy to make its final considerations of the technical review work produced by the expert review teams.
 - d. No cooperation at any level → than resulting in duplication of efforts and no savings and potentially resulting in split views and inconsistencies in the outcomes of the reviews
(nevertheless the (different) timing of EU and EMEP reviews may still offer some opportunities for streamlining of results)

4. EMEP stage 3 reviews simultaneously (in parallel) with EU in-depth reviews in period 2019-2023:

For each year in period 2019-2023 (corresponding to the 3rd EMEP stage review cycle) the same selection of a number of EU MS are simultaneously reviewed under NECD (EU in-depth review) and the LRTAP Convention (EMEP stage 3 review): the review of a selected number of countries per year is the current approach under EMEP → Opportunities for cooperation and joining forces (see point 3 above).

The disadvantage of not reviewing all EU MS in the same year (2022), but spread over a number of years is that they may be reviewed on a different basis in a given review cycle (in particular due to updates of the EMEP/EEA inventory guidebook, given that in-depth reviews should be carried out against latest version of the EMEP/EEA inventory guidebook).

5. No duplication of reviews under EMEP:

EC to clearly demonstrate to EMEP/EB that the EU requirements on the review of emission inventories are more or at least equally demanding than the EMEP requirements on the review of emission inventories, upon which EMEP/EB can (on temporary basis) decide not to duplicate the reviews carried out by the EU and accept them as such → EC to share all its findings (review reports) with EMEP:

- a. will fully avoid inconsistencies and different review outcomes
- b. will considerably free up resources under EMEP for use elsewhere
- c. but, EMEP may not be seen anymore has having its independent review process for EU MS and non-EU countries may have concerns on the fact that the 'EU reviews its own': possibly these concerns can (partially) be addressed by agreeing on ad-hoc reviews (randomly) (of specific issues) of EU MS' inventories by EMEP, to be conducted on a regular basis.

6. Other approaches :

(i) No aligning: for example by continuing current practice of stage 3 reviews under EMEP (in-depth reviews of a selected number of countries each year by EMEP each year), while conducting the reviews under the NECD at different moments in time or in one specific year (e.g. 2022).

(ii) ...

It is important to note here that several of the approaches for cooperation outlined above may require amendments to the EMEP review guidelines (methods and procedures document - version 2016), in particular with respect to responsibilities, approaches and frequencies set in these GL.

With respect to the cooperation and streamlining for the in-depth reviews of emission inventories of AT, FI and MT in 2017-2018, the same approaches and options outlined above are also applicable here, although with respect to the EMEP stage 3 review scheduled for AT (and MT) this year, it may already be too late to agree on very strong cooperation (which ideally should be decided by Parties at the next EB session in December this year). Further harmonizing the EU and EMEP review guidelines and guidance on technical corrections and mutual sharing of results of technical reviews between EC and EMEP could already be a good step in the right direction for AT (at least to avoid / reduce split views and in consistencies in outcomes of EC and EMEP reviews) (with the okay from EC,

EMEP, AT). The same would apply for the review of the 'new' adjustment application from ES under the new NECD and the LRTAP Convention.

With respect to the cooperation and streamlining for the in-depth review of MS' emission inventories of other pollutants (POPs, HM, PM10, TSP ...), there are similar opportunities for cooperation and aligning as outlined above, acknowledging that reviews of these pollutants by EMEP are performed as resources allow (see §20 of EMEP review guidelines). EC could take the lead here and conduct a first round of in-depth reviews on POPs and HM in the period 2018-2019. Improved MS' inventories on POPs and HM will help in reducing future review burden under EMEP for these inventories.

With respect to the cooperation and streamlining for in-depth review of MS' emission inventories of gridded data and LPS data, the following:

- according to § 18 of the EMEP review guidelines the review of gridded data and LPS data under EMEP should be performed at least every 4 years coinciding with the reporting frequency (i.e. 2017, 2021, 2025, ...), to be carried out by the EMEP centres that are the key users of these data;
- according to article 10(3) of the new NECD there is no direct obligation for the EC to perform reviews on LPS data;
- the EC could rely on the periodic reviews of gridded and LPS data conducted by the EMEP centres, while envisaging additional (more targeted) review checks of these data as appropriate (in the year 2021 for gridded data). EU checks of LPS data could also be part of the EU in-depth review of national emission inventories, including e.g. consistency checks with the use of LPS data in national emission inventories.

With respect to the cooperation and streamlining for the review of MS' adjustment applications, distinction can be made between current adjustment applications submitted under the regime of compliance with 2010 ceilings and future (and different) adjustment applications submitted under the regime of compliance with the 2020 emission reduction commitments.

- review of adjustment applications for compliance checking with 2010 ceilings (up to 2021)
 - regarding the adjustment applications reviewed (and accepted) in previous years under LRTAP Convention, the EC can - with due scrutiny of EMEP's technical assessment of the quantification of the impact of the adjustment - focus on consistency in reporting;
 - regarding new adjustment applications, both submitted under NECD and LRTAP Convention (e.g. ES this year) sharing of results of technical review work or sharing of work (see point 3 above) are possibilities.
- review of adjustment applications for compliance checking with 2020 emission reduction commitments (from 2022 onwards)
 - cooperation can be decided at a later stage (based on past experiences)

7. Proposed way forward and preferred option for cooperation

The discussion paper was presented at the TFEIP meeting in Krakow (11-12 May 2017). In the subsequent discussion the few experts (from EU MS) that intervened were in favour of keeping separate review processes, arguing that a double review would not cause too much extra burden on EU MS and pointing to the positive effect of having two independent reviews. These views were retained in the conclusions of the meeting. It was agreed at the meeting that as a minimum aligning on the review guidelines and guidance between EC and EMEP is worth further pursuing and the EC was invited to submit its discussion paper to the EMEP Steering Body for further discussion.

Based on views expressed at the TFEIP meeting the EC amended its discussion paper with the

(i) addition of a preamble clarifying that the main objective of any aligning or cooperation between EC and EMEP on review activities would be to be as efficient as possible with the limited resources available, without resulting in a full merger of the EU and EMEP review activities with the EU taking over from EMEP;

(ii) the inclusion of a recommendation on the preferred way of cooperation (see below) that takes due consideration of the concerns and views expressed at the TFEIP meeting.

The amended discussion paper will be forwarded as an informal or formal document to the LRTAP Secretariats for discussion at the EMEP SB meeting in September 2017. Based on the outcome of the discussion at the EMEP SB session, the discussion paper can again be updated and amended.

The revised discussion paper including recommendations can be forwarded to the EB for discussion at its session in December 2017. The EB can then agree on how EMEP and EC should/could best cooperate and align reviews under NECD and LRTAP Convention. A positive decision on strong cooperation and joining forces may free up resources and have an impact on the workplan 2018-2019 (and more specifically on the new EMEP stage 3 review cycle to be adopted).

Preferred option for cooperation / aligning

A strong integration of EU' and EMEP's review activities for the next couple of years, as explained under options 3 and 4 in section 5 above, is likely premature. The EC proposes therefore to further explore option 2, where the EU reviews would precede EMEP's reviews and EMEP would as such be able to profit from the improved inventories from EU MS. EMEP's review efforts on EU MS' inventories could - as a consequence of the improved inventories - be scaled down, allowing a more targeted or lighter review by EMEP. This approach requires careful streamlining between EU's multi-annual review programme and EMEP's new stage 3 review cycles. Table below attempts to align EU in-depth reviews on main pollutants with similar reviews under EMEP during its 3rd stage review cycle. More specifically it is proposed that EU reviews of the 27 MS is split over 2021 and 2022 and EMEP follows one year later (with reviews on 27 MS split over 2022 and 2023): this proposal differs already from proposed EU cycle in section 2.1 above. The proposed timing allows using the new updated Guidebook (version 2019) as reference for the next in-depth reviews on the main pollutants (EU, EMEP).

Year	EU Review	EMEP stage 3 reviews ⁽¹⁾	Comments
2017	(i) Review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of 28 EU MS	7 reviews	10 countries were scheduled for review in 2017, but due to lack of reporting of inventory data and/or IIR, review for part of countries is/will be postponed to 2018. Therefore likely that 3 rd stage 3 EMEP review will not yet start in 2018
2018	(i) Review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of 28 EU MS (follow up to 2017 review) (ii) Review of POP and HM inventories of 28 EU MS (part I)	3 reviews planned for 2017 but definitely postponed to 2018, plus a further 3 planned for 2017 and probably postponed to 2018.	End of second stage 3 EMEP review cycle Start of 3 rd stage 3 EMEP review cycle
2019	(i) Review of POP and HM inventories of 28 EU MS (part II)	7 reviews of non-EU countries	Start of 3 rd stage 3 EMEP review cycle. Next major update of Inventory Guidebook, to be used as reference for second review on main pollutants (allow time for MS to switch to new version of Guidebook and start second review in 2021)
2020	(i) Review of POP and HM inventories of 28 EU MS (follow up to 2018/2019 review) (ii) Review of CO, PM ₁₀ and BC inventories of 27 EU MS	7 reviews of non-EU countries	
2021	(i) Review of CO, PM ₁₀ and BC inventories of 27 EU MS (follow up to 2020 review) (ii) review of gridded data of 27 EU MS (iii) Second review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of 13 EU MS (BE, BG, HR, CY, DK, FR, IT, LV, LT, PL, PT, RO, SE)	8 reviews of non-EU countries	Review of gridded data to coincide with next year of reporting of gridded data (= 2021)
2022	(i) Second review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of 13 EU MS (follow up to 2021 review) (ii) Second review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of remaining 14 EU MS	13 reviews of EU countries	EC 2021 review findings of 13 MS (review reports, summaries of TC and recommendations) should be shared with EMEP
2023	(i) Second review of SO ₂ , NO _x , PM _{2.5} NH ₃ and NMVOC inventories of remaining 14 EU MS (follow up to 2022 review)	14 reviews of EU countries	EC 2022 review findings of 14 MS (review reports, summaries of TC and recommendations) should be shared with EMEP End of third stage 3 EMEP review cycle.

⁽¹⁾ Next stage 3 review cycle will cover 49 Parties (excluding US and Ca). The distinction between EU and non-EU parties in the planning is included only for indicative purposes, to illustrate the implications of the preferred option 2.

Suggested timing above limits EMEP reviews for the first 3 years in EMEP's next stage 3 review cycle (2019, 2020, 2021) to 7 countries (allowing a more thorough review or more assistance/support for these non-EU countries), while in the last 2 years of its next stage 3 review cycle EMEP will have to cover all 27 MS (13 MS in 2022 and 14 MS in 2023).

In the context of aligning and cooperation following recommendations are also suggested

- align EU and EMEP review guidelines and guidance;

- hold joint expert review trainings and/or make similar training material and tools available for training workshops;
- mutual sharing of information: EC sharing its findings to EMEP and vice versa;
- make due consideration for the timing of next major update of the EMEP/EEA inventory Guidebook (scheduled now for 2019);
- note the mandatory character of technical corrections and other recommendations proposed as outcome from the NECD inventory reviews versus the non-mandatory character of the output from EMEP reviews. Output/findings (incl. technical corrections, recommendations) from EMEP's reviews could be made more binding if these findings are shared with the EC that then can use these findings in subsequent reviews, or even on ad-hoc basis (for faster implementation of EMEP's findings).

In the longer term (after 2023) and based on gained experience and lessons learned in aligning review activities between EU and EMEP further integration or undoubling could be explored.