

## ***Draft, to be completed***

# **Report of the TFEIP Expert Panel on Review Secretariat on the trial third stage review of the LRTAP and NEC air emission inventories**

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## ***Introduction***

This chapter presents a summary of the main findings from the trial centralised review performed on the air emission inventories submitted by Parties to the Convention on Long-Range Transboundary Air Pollution (LRTAP) and by Member States under the requirements of the National Emissions Ceilings Directive (NEC Directive). This was the first year that a centralised review of air emission inventory data has been performed using LRTAP and NEC inventory data. The review builds on the results of the annual Stage 1 and 2 review performed by the Expert Review Team in 2005 (EMEP/EEA 2005).

The Task Force on Emission Inventories and Projections (TFEIP) Expert Panel on Review thanks the national experts that contributed to this 3<sup>rd</sup> Stage review, and the national Agencies that provided funding to allow their participation. The European Environment Agency (EEA) is thanked for hosting the review team and providing meeting facilities.

## ***Mandate***

The EMEP Steering Body, at its twenty-ninth session welcomed the ‘Draft methods and procedures for the technical review of air pollutant inventories reported under the Convention and its Protocols’ (EB.AIR/GE.1/2005/7, annex III), as developed by the TFEIP (<http://www.emep.int/emis2006/annex3.pdf>). These were subsequently adopted by the Executive Body at the 23<sup>rd</sup> session (ECE/EB.AIR/87). The review and improvement of emission data is an important part of the work of the Convention’s TFEIP in its aim to achieve high quality emission inventories. The Executive Body, the Working Group on Strategies and Review (WGSR), the EMEP Steering Body (SB) and the European Commission (EC) have all underlined in recent years the importance of data quality for the effective implementation of the Protocols under the Convention and for policy development. The decision to conduct a trial centralised review was agreed at the 6<sup>th</sup> joint TFEIP/EIONET meeting, held in Rovaniemi, Finland October 2005. The review has been performed in accordance with the UNECE EMEP ‘Draft methods and procedures’ document (EB.AIR/GE.1/2005/7, annex III).

As the 3<sup>rd</sup> Stage review this year was a trial process only, the country specific review results were only communicated to the Party concerned.

## ***Objectives***

The overall objectives for the LRTAP review process are outlined in the 'Draft methods and procedures' document (EB.AIR/GE.1/2005/7, annex III, para 2).

- The review will check and assess Parties' data submissions with a view to improving the quality of emission data and associated information reported to the Convention.
- The review also seeks to achieve a common approach to prioritizing and monitoring inventory improvements under the Convention with those of other organizations with similar interests such as the United Nations Framework Convention on Climate Change and the European Union National Emission Ceilings (NEC) Directive.

In addition, the objective for this trial stage 3 review was to gain experience from a detailed review exercise in order to provide feedback to the TFEIP for future development of the reporting and review process. Issues for consideration were to:

- evaluate the perceived value added from a stage 3 review over stages 1&2;
- evaluate if the centralized review is an efficient stage 3 model;
- estimate resource requirements;
- assess the usefulness of the present Emission Reporting Guidelines (ECE/EB.AIR/80, Air Pollution Studies series, No. 15) and the Emission Inventory Guidebook (EEA, 2005) for detailed review purposes;
- discuss timing issues;
- consider organisation and management issues.

## ***Review management***

The trial review was planned and coordinated by the TFEIP Expert Panel on Review in cooperation with the European Topic Centre for Air and Climate Change (ETC-ACC). The review took place from 27th of February to 3rd of March 2006 in Copenhagen, Denmark and was conducted by the following team of experts nominated by the volunteering participating countries: Generalist - Mr. Justin Goodwin (ETC-ACC); Energy - Mr. Tomas Gustafsson (Sweden), Mr. Tinus Pulles (ETC-ACC), Mr. Stephan Poupa (Austria); Industrial Processes - Ms. Zuzana Elenicova (Slovakia), Ms. Jitka Hlavicova (Czech Rep), Ms. Kristina Saarinen (Finland); Agriculture - Mr. Chris Dore (United Kingdom), Mr. Steen Gyldenkerne (Denmark). Mr. Justin Goodwin and Mr. Tinus Pulles were the lead reviewers. The review was coordinated by a trial review secretariat led by Ms. Karin Kindbom (co-chair of the Expert Panel on Review) with additional support from Mr. Martin Adams (ETC-ACC) and Ms. Vigdis Vestreng (EMEP MSC-W).

## ***Review planning process***

The planning and implementation of the trial stage 3 review followed the schedule outlined below.

- Sept-Oct 2005: TFEIP agreement to perform the trial review and invitation to countries to participate in the trial review issued;
- 11-12 Jan 2006: Planning meeting in Gothenburg (Kindbom, Goodwin, Vestreng);
- 27th Jan 2006: Review material and information distributed to review experts;
- 27 Jan - 27 Feb: Experts start to get acquainted and work with review material;
- 27 Feb - 3 Mar: Review week in Copenhagen;
- Lead reviewers edit draft review reports and send back to experts and review secretariat;
- Review experts and review secretariat approve of the draft reports;
- Draft reports sent by review secretariat to the individual country for comments and clarifications;
- Comments on reports from countries to review secretariat. Feedback from countries on the review process usefulness and timing;
- Clarifications of report comments from countries with Review Experts via review secretariat;
- Lead reviewers and review secretariat finalise review reports and send to countries;
- 15th July: Review Secretariat produce a trial review chapter for the annual review report.

## **Countries and data reviewed**

In September 2005, the Chairpersons of the TFEIP sent a preliminary invitation to Parties who had submitted informative inventory reports (IIRs) with their 2005 LRTAP inventory submissions to participate in a voluntary centralised review. Eleven Parties subsequently volunteered to have their inventory submissions reviewed:

- |                  |                  |
|------------------|------------------|
| • Austria        | • Finland        |
| • Belarus        | • Slovakia       |
| • Belgium        | • Spain          |
| • Cyprus         | • Sweden         |
| • Czech Republic | • United Kingdom |
| • Denmark        |                  |

As noted previously, a number of the volunteering participating countries also nominated national experts to contribute to the 3<sup>rd</sup> Stage review process. The trial review was organised in a way that the national experts participating as reviewers did not review their own country's submission.

The reviewers only assessed inventory data reported in the NFR reporting format and submitted up to 10<sup>th</sup> March 2005 to the UNECE secretariat under the LRTAP Convention. The scope of the review was on the pollutants covered by the Gothenburg Protocol, SO<sub>2</sub>, NO<sub>x</sub>, NMVOC and NH<sub>3</sub>, for the years 1980 – 2003, and covering the source sectors Energy, Industrial processes and solvent use, and Agriculture.

NEC data was not reviewed explicitly in this trial 3<sup>rd</sup> stage review. However results from the Stage 1 and 2 reviews performed in 2005 (EMEP/EEA 2005) indicated that, except for one of the countries reviewed, there were no differences larger than 0.1% between the respective LRTAP and NEC submissions.

Prior to the review, the following preparatory material was provided to the experts:

- (a) Background material
  - a. 2005 joint EMEP/EEA Review report ([http://emep.int/publ/reports/2005/emep\\_technical\\_1\\_2005.pdf](http://emep.int/publ/reports/2005/emep_technical_1_2005.pdf))
  - b. Informative Inventory Report template
- (b) Country Data and Reports
  - a. Officially reported data (Excel file), instructions for using the file
  - b. Informative Inventory reports (IIRs)
  - c. Country specific Review reports (Questions and Responses from review stage 1&2),
- (c) Guidelines
  - a. UNECE, 2002. Emission Reporting Guidelines
  - b. Link to EMEP/CORINAIR Guidebook
  - c. Guidebook Chapter on Good Practice Guidance
  - d. Overview of reporting requirements according to UN protocols signed by country (base year, pollutants, area included)
- (d) Review Mandate and Guidance
  - a. Guidance for Reviewers (draft, prepared for this trial centralized review).
  - b. Draft methods and procedures for the technical review of air pollutant emission inventories reported under the Convention and its protocols (Annex III of EB.AIR/GE.1/2005/7)
- (e) Review transcript and Review report template
  - a. Review Report Template (derived from UNFCCC template)
  - b. Review transcripts template (derived from UNFCCC template)
  - c. Instructions for review transcript

## Trial review roles and responsibilities.

Table 1 summarises the tasks and responsibilities of those involved with the trial stage 3 review process.

**Table 1. Roles and responsibilities for the trial stage 3 review process.**

Secretariat	Lead reviewers	Expert Review Team
Provide the background preparatory material, guidance and templates for the review to the Expert Review Team (ERT)	Prepare a brief work plan for the review activity	Examine the adherence of the inventory information to guidelines etc
Present stage 1 & 2 review findings and clarify use of the templates, data and guidance for review	Monitor the progress of the review activity and ensure that there was good communication within the expert review team	Review the transparency of the inventories and examine whether good practice was applied
Available to provide administrative advice on the review process	Coordinate queries of the expert review team to the Party and coordinate the inclusion of the	Compare emission estimates, activity data, implied emission factors and any recalculations to

	answers in the review reports	identify irregularities or inconsistencies
Communication of the ERT's questions and draft review reports to the parties and receipt of responses from the parties	Provide ad-hoc technical advice to the experts, if needed	Identify any missing sources and examine any explanatory information relating to their exclusion from the inventory
Finalisation of the review reports in cooperation with the Lead Reviewers	Ensure that the review is performed and the review report is prepared in accordance with the draft guidelines	Identify the reason for any differences between the Party's and the Stage 1 and 2 key source determination
Collecting and compiling experiences from the trial stage 3 review for a chapter in the annual review report	Verify that the review team gives priority to key source categories	Assess the consistency of information in the data with that in the IIR
		Identify if countries differ in terms of their implied emission factors and their sectoral allocation, and obtain explanations for differences
		Identify areas for further improvement of the inventories

## Technical review findings (by lead reviewers)

**TO BE COMPLETED**

### *Feedback from the expert review team on the Stage 3 review process and findings*

#### **Assessment of completeness in relation to reporting requirements**

A key problem experienced by the review team was that the legally required reporting requirements for each Party are not clear. The requirements as defined in the LRTAP Protocols, the Guidelines (Para 9 and 21) and the footnotes to the NFR reporting template in the Reporting Guidelines (Section D, Table IV 1 A and IV 1 B) are not consistent and therefore are somewhat ambiguous. This made it difficult for the expert review team to compare the reported data received from Parties against mandatory reporting requirements. It was a general agreement that for review purposes a clear guidance regarding what criteria to review against is needed in order to be able to assess completeness, especially concerning reporting years (time-series), pollutants and whether or not source categories or only national totals are required.

#### **Availability of information for the review**

A further challenge in performing a 3<sup>rd</sup> stage review was that the review team had to rely on additional information presently provided by countries on a voluntary basis such as an Informative Inventory report, IIR (Guidelines para 38). The review team considered the availability of IIRs to be essential to perform a stage 3 review. IIRs

received from countries varied in the amount of information, level of detail and format. Despite the provision of an IIR template, not all countries included the necessary information in terms of detailed methodology description, sources of activity, emission factors etc. Detailed information on activity data, emission factors and methodology (and references for these) is necessary to ensure sufficient transparency for the review. From the review team it was stressed that it is important that in future years the IIR become mandatory and that countries are requested to provide IIRs in a standard format to facilitate the review.

The experts felt that the availability of relevant activity data is important to be able to perform a detailed review. At present reporting of activity data under LRTAP is required every 5<sup>th</sup> year, and in a rather aggregated format which is not detailed enough for 3rd stage review purposes. In stage 2 of the review, activity data reported by Parties to UNFCCC were used, but due to differences in sources and timing of submission of data, the activity data cannot be fully used in the LRTAP review.

Not all countries included details of their QA/QC systems in their submitted IIRs. The expert review team encourages Parties in the future to report this information to further increase confidence in the reported data.

### **Transparency, reporting template**

The review team commonly found a lack of transparency of submitted data, especially for the NFR-codes “Other”. If the emissions included in “Other” are not separately explained in the IIR it is not clear what these emissions comprise. This limits the extent to which a detailed review can comment on the reported data. This problem was particularly noted for emissions from industrial processes reported as “Other”. It was also stressed from the expert review team that it would be helpful if relevant information on process types used in the industrial sector within countries would be reported in the IIRs.

### **Consistency, reporting template**

The stages 1&2 review consistency tests noted that for some of the countries reviewed in the stage 3 review, the reported aggregated data was not always internally consistent with the sum of the detailed sub sectors reported. This introduced an uncertainty if data in the sub-sectors provided really were meant to constitute all of the aggregated emissions, or if there were emissions added at aggregated level that were not allocated to any of the sub sectors. Alternatively, the inconsistencies could simply be a result of errors in summing the sub sectors to the aggregated level. These problems with inconsistencies in aggregations should be carefully considered in the revisions of the Guidelines and reporting template. The review team however, recognised the importance of not changing the reporting templates too often, which inevitably leads to problems and additional work for the Parties, as well as in the review process.

An additional problem for the reviewers was that for some countries only a limited set of data were available for review in the NFR format, and additional (older submissions) are only available in the SNAP system. There is a need to consider extending the review to cover data reported in other formats. It is however not always straightforward to compare data reported in different formats on a detailed level.

## **Comparability and source allocation**

During the trial review it was discovered, or suspected, in several cases that there are inconsistencies in source allocation between Parties. It is not always clear if this is a result of misinterpretation of the reporting guidance or if it is not possible to split out the data within a respective country's inventory. The allocation and separation of emissions between e.g. Energy and Industrial processes involving combustion may be a problem in some countries. The review team suggested that a reference could be made in the Emission Reporting Guidelines at a generic level to UNFCCC guidance to define separation of process emissions from combustion of fuels. Sometimes, primarily for less significant sources and/or for sources emitting only particulate matter, it is probably not defined clearly enough in the reporting guidance where to allocate emissions. The review team stated that emissions may be aggregated and need not necessarily be split and reported in the correct reporting code, but reported data need to be transparent and traceable.

## **Usefulness of Guidebook for reviewers and for national experts compiling inventory**

The guidebook was generally considered suitable as a point of reference for the purposes of detailed review for the pollutants covered in this review. In terms of assisting countries to compile emission inventories, the review team however commented that for some sources a large number (>30) of 'default' emission factors are provided in the Guidebook, which can encompass a wide range of values. It is maybe not clear for the inventory compiler to know what factor should be used in the first instance.

The review team anticipate that the guidebook won't provide sufficient information for other pollutants e.g. PM<sub>10</sub>, pesticides etc. and that the Guidebook needs to be further developed to support review activities if these substances are to be included in future review activities.

The review team considered that there is a need to distinguish between the function of available guidance for review purposes within the UNFCCC system and that of LRTAP. The UNFCCC system could be described as being a review primarily targeted towards compliance while in the LRTAP system the function of guidance is also to provide and reference best science for emission inventory.

## **Usefulness of Stage 1&2review**

Feedback received from the review team indicated that generally the country specific reports from the Stage 1 and 2 review provided useful input to the 3<sup>rd</sup> stage review. Stage 1 & 2 was considered an excellent way of giving feedback to countries, and several instances of e.g. flagged data had been adequately commented and explained by the countries already in their responses to the Stage 1&2 review.

It was however noted that the time series test (dips & jumps) could be further refined since it was felt that some irrelevant flagging, as well as some missing dips & jumps that could have been flagged existed in the material. It was suggested from the review team to consider investigating the use of different thresholds for key sources and non-key sources, or different thresholds for sector/pollutant combinations.

It was also noted that the usefulness of the Stage 1 and 2 tests would be further increased if Implied Emission Factor (IEF) checks could be performed for a greater number of sectors. More IEF checks in stages 1&2 would provide early comments from the countries as an input for a detailed review. This would however require better availability of relevant activity data. Some caution is needed when interpreting the results of IEF analysis, especially if it is conducted on an aggregated level. It has to be clear that a deviating IEF does not necessarily mean that something is wrong, but rather an issue to investigate further. For the countries the information from the IEF tests could be used as an indication on what sectors they need to provide additional information for.

The review team noted that the compliance checks on the inventory submission data presently included in the Stage 1 and 2 review are not directly used as an input for the stage 3 review work. However these checks were recognised as necessary to the initial review process and need to be retained.

### **Recalculations and time series**

In this trial review, data from only one inventory submission was examined and so the issue of recalculations could not be addressed through the available data. However, it is noted that recalculations, and country explanations for these, are presently covered in the stages 1&2 review country reports. The review experts assessed if the recalculations were transparently explained and justified in the responses to the stages 1&2 review and in the IIRs.

### **Value added from a stage 3 review over stages 1&2**

The feedback from the review experts on the value added from a stage 3 review over stages 1&2 concerned both the value added for countries being reviewed, as well as the benefits for the experts participating in the review.

The stage 1&2 review indicates possible errors and to a certain extent sets emissions in context, but the technical steps and tests during these first stages of the review does not have the possibility to go into detail and assess and give feedback on e.g. choice of methodology, assess appropriateness of emission factors or make recommendations on improvements. These issues are addressed in a detailed review, given that suitable information such as a well developed IIR is available.

The 3<sup>rd</sup> Stage review also provides a number of additional longer-term benefits by providing confidence in the quality of reported data for compliance purposes for the work of the Convention and Commission, by providing feedback on the development needed for the Guidebook and the Guidelines, and by providing Parties/MS and national experts with information concerning the judged quality of their reported data and issues that might be addressed in the future to further strengthen the national emission inventories. The possibility of developing an indicator(s) to monitor progress and reflect improvements in the submitted inventory datasets over time was suggested for future consideration.

The review team was concerned about the reactions from countries on the usefulness and also the added workload that will be the result of a detailed review. The review team noted that many countries under the Convention have been interested and positive with respect to the Stage 3 review process. It was also noted that it is

important that countries feel that the information received in the country reports from the review is useful for national inventory improvement, e.g. to prioritize future work. It is recognized that participation in a Stage 3 review will require additional resources from national inventory teams. An estimate of the resources required for participation in a Stage 3 review is provided in the Resource Requirements section below. Some countries will of course have other priorities in terms of inventory development. However, a clear aim of a Stage 3 review is to support the underlying objectives of the Protocols themselves, through encouraging and supporting countries to submit good quality inventory data. The fact that the national inventory has been reviewed by an independent international review team is seen to add credibility and importance to the submitted data and the work performed by countries.

The review team feedback was also that by participating in the review process the national experts themselves have the opportunity to study how other countries have organised and solved the inventory work. It is a good way of sharing best practice, to learn from other countries and to take ideas back for implementation in their own work etc.

One of the prime reasons for a detailed review is to help countries improve the quality of their inventories in the future. The feedback received from countries in terms of seeing whether they found the review to be useful or not should be an important factor in any future development of the review process.

Summary of responses received from participating countries **TO BE COMPLETED**

Members of the expert review team identified several clear benefits of their participation in a detailed review process. One benefit of the review noted by the review team is that countries can be made aware of the inventory systems, organisation and processes used in other countries. This information can, in the future, be made available through the country review reports if these are made public.

### **Is a centralized review an efficient model**

The feedback from the review team was that a centralised review is an efficient and appropriate way of conducting a detailed review. It was also discussed how to further develop and focus future detailed reviews. There are several options e.g. in terms of covering all reported sectors for selected pollutants, or concentrating on a specific sector and more or all pollutants, or concentrating on specific pollutants such as PMs, POPs and heavy metals. Irrespective of what a detailed review is planned to cover, a centralised review model could be applied. Depending on the focus and objective of a detailed review, the composition of the expert review team may need careful consideration. If appropriate the expert review team could include relevant scientific expertise as well as national inventory experts.

The review team also raised the issue of future scheduling of detailed review activities. Issues that need to be considered are how often a detailed review should be performed, should there be a cycling between countries, sources, pollutants? There could also be a cycling of detailed reviews with different objectives, e.g. focussing on the review of inventory submissions from a **compliance** perspective (similar to this trial review?), or a more scientific review etc. **(define scientific review?)**.

## **Timing issues**

The planning and implementation of the trial review, as described above, was a working timetable, which turned out to be too optimistic. The planning and preparation went according to schedule, as did the review week activities in Copenhagen. Eleven countries was considered to be just possible to review during one week, but this was largely made possible due to limited information being available for some countries which made more detailed (and lengthy) assessments impossible. In future centralised reviews, given the availability of more extensive background material, fewer country submissions for review are recommended given an equivalently sized expert review team.

The work items to be performed after the review week, compilation of draft reports, distribution of reports to countries for comments and collating final reports incorporating country comments was delayed compared to the original planning; time originally allocated for these activities was underestimated.

Internal schedule – feedback from the experts/countries once the process is completed. **TO BE COMPLETED**

## **Organisation and management issues**

The expert review team found the preparation of review material received prior to the review week appropriate and useful. An excel file (spreadsheet tool) prepared with all relevant data from WEBDAB, was considered by the review team to be very useful and should be used in future reviews. Some improvements in the original spreadsheet tool were made during the review week, such as adding summary tools and functions for creating overview graphs.

If the review process will be formalized, careful consideration has to be given to the roles and responsibilities of the participants, as well as that of the secretariat. Evidently, in a formal process, country experts from a reviewed country would not be present. A clear role and organization of the review secretariat needs to be defined, as well as the role of the UNECE secretariat. Generally, the roles and responsibilities for the lead reviewers and the review experts as defined for this trial review was considered to be appropriate.

## **Harmonization with UNFCCC**

One of the aims in the development of the LRTAP review process is to harmonize as far as possible with the UNFCCC process in order to make use of those experiences and the familiarity of that system within the countries and among the experts. From the discussions and feedback during the trial review it was concluded that the LRTAP review needs to take a somewhat different approach than the UNFCCC review approach since there are large difference in the information available, there are many more pollutants to cover within LRTAP etc. The purposes of the LRTAP review also go further than UNFCCC, which primarily checks compliance against IPCC guidelines, and which is also very procedural and extremely resource intensive with all steps described in detail. The LRTAP review process was considered to require a more scientifically oriented approach, aimed at policy needs, and sufficiently flexible in order to potentially focus on different issue s in different years thus fulfilling the

underlying objective of improving the quality of emission data. The conclusion is that for LRTAP it is not possible (or desirable) to copy the UNFCCC process directly, but that suitable elements from the UNFCCC system could be used as a basis to be further developed and adapted to the needs in the LRTAP system.

The harmonization between the two conventions is evident at country level in some of the IIRs in the review, where it is obvious that the IIR is derived and amended from the UNFCCC NIR (National Inventory Report). Harmonization is also justified by that the flow of data and information at the country level can be harmonized. This is apparently already the case in some countries, but not in all, where there are separate organizations compiling the LRTAP and UNFCCC inventories.

## Resource requirements

All costs for this trial review was covered by countries (ERT), ETC/ACC (Lead reviewers+ one person at secretariat) and EMEP (one person at secretariat).

To make an estimate of the resource requirements for performing a centralized review, all the parties concerned need to be considered. This includes the experts performing the review, the secretariat, and the resources available at the country level to answer questions and comment on the review report.

For one expert to participate in a one week centralized review the resources were estimated based on time required for:

1. preparation before the review week to read through the review preparatory material,
2. the week spent at the review,
3. checking the draft reports before distribution to the countries following the review week,
4. finally to go through country comments and revise the review reports as appropriate after comments have been received from the countries.

The level of resources used in this trial review are summarised in the following table.

Table 2 Resource requirements **TO BE COMPLETED**

<b>Role</b>	<b>Estimate of resources (days)</b>
experts (7)	10/expert
lead reviewers (2)	15/lead reviewer
Secretariat (3)	30 total ??
Country resources (11)	Z per country
<b>TOTAL 2006 Trial Review (11 countries)</b>	<b>XX days</b>

Should any future detailed Stage 3 review become more formalized, the estimated resources for a secretariat may well be different depending on how the organization will be set up and the respective responsibilities etc. The preparation of review material and communication with the reviewed countries will need to be performed, but the amount of resources required will depend on the level of ambition and also on the focus and objective of the specific review.

Resources are also required in the countries to answer questions communicated by e-mail during the review week varied between countries, depending on the number and nature of the questions. **ASK COUNTRIES TO BE COMPLETED**. Commenting on the review reports was estimated from the countries to require approximately **Z** working days.

Additional resources required for a Stage 3 review include costs for traveling and accommodation (approximately €1200 /person), as well as meeting rooms.

## ***Conclusions and Issues for consideration for the future development of a Stage 3 review***

This section summarise the general findings and main observations resulting from the trial Stage 3 centralized review .

- **GUIDELINES:** The Expert Review Team provided feedback on a number of issues where it was considered that the Emission Reporting Guidelines could be amended to better assist Parties in their reporting and to facilitate future in-depth reviews.
  - (a) For review purposes a clear guidance regarding what criteria to review against is necessary in order to be able to assess completeness i.e. the mandatory reporting requirements on a country-specific basis. The amended Reporting Guidelines need to refer to the review mandate (Annex 3), which can itself be updated as appropriate.
  - (b) Submission of an IIR is necessary for review purposes and should be made mandatory in the Guidelines if future detailed reviews are desired. It was recognised that there is a need to provide Parties with an improved template to provide guidance on the types and scope of information that should be included in the IIR. It is suggested that this is included in the GL.
  - (c) The experts felt that the availability of relevant activity data is important to be able to perform a detailed review and several options were discussed.
  - (d) Reporting template:
    - i. Comparability and source allocation: It was felt that the present template does not provide sufficient clarity for Parties as to where emissions from certain sources should be reported. Hence, Parties are allocating emissions to different sources
    - ii. Transparency: The review team found lack of transparency of reported data, especially for the reporting codes "Other". The transparency of reported data would increase if the NFR codes were extended, but the need to harmonise the NFR inventory reporting code system with UNFCCC as far as possible was also recognised.
    - iii. Consistency and aggregations: It was felt that the mix of aggregated and detailed sectors in the present reporting template does not allow a summary of emissions to be easily compiled for assessment purposes.

The format of the template also allows countries to report inconsistent aggregated emissions and increases the risk of errors in aggregation. Time series. The expert review team considered it to be useful for the purposes of future reviews if Parties were requested to report complete time series of emissions in NFR format.

- **GUIDEBOOK:** The Guidebook was considered suitable as a point of reference for the purposes of detailed review for the pollutants covered in this review. It was foreseen that the Guidebook will not provide sufficient information for other pollutants (e.g. PM<sub>10</sub>, pesticides etc) and will need to be further developed to support future review activities.
- **USEFULNESS OF STAGE 1&2 REVIEW:** The country specific reports from the stage 1&2 review were considered by the expert reviewers to provide very useful input to the detailed review and were considered an excellent way of giving feedback to countries. It was recommended to try to improve the time series test and to calculate IEFs for more sectors.
- **STAGE 3 ADDED VALUE:** The review team identified a number of issues concerning the value added from a stage 3 detailed review as compared with stage 1&2 review. A number of benefits that may be obtained from participating in a Stage 3 review were identified both for the countries being reviewed as well as for the experts participating in the review. The most important of these was seen as being able to provide country-specific feedback and recommendations to help in prioritisation and inventory improvement, as well as a deeper assessment of comparability, e.g. methodologies and emission factors used. The fact that several national experts cooperate in reviewing other countries submissions was seen an excellent way of sharing good practice and to learn from the other reviewers present.
- **STAGE 3 REVIEW MODEL:** The centralised review format was considered to be an efficient way of performing a detailed review. Possible options for future reviews were discussed although no firm recommendations were reached i.e. how often a detailed review should be performed; possibilities to cycle a review between countries, sources, pollutants; and benefits of having a **compliance-based review compared to a more scientific review**. Opportunities for harmonizing the LRTAP Stage 3 review process with the UNFCCC review process were discussed by the expert review team. For LRTAP purposes it was concluded that it was not possible (or desirable) to copy the UNFCCC review process directly, but that suitable elements from the UNFCCC system could be used as a basis to be further developed and adapted to the needs in the LRTAP system. The LRTAP review process was considered to require a more scientifically oriented approach and be aimed at policy needs (in comparison with the more compliance-focused UNFCCC review). Furthermore, the experts felt that the LRTAP review should be sufficiently flexible in order to potentially focus on different issues in different years thus fulfilling the underlying objective of improving the quality of LRTAP and NEC emission data.
- **STAGE 3 REVIEW ORGANIZATION:** If the review process will be formalized, careful consideration has to be given to organisation and management issues. Roles and responsibilities have to be defined for participants and for the secretariat and administrative functions. In this trial review the original planned

timing and resource requirements for the process was too optimistic. The various preparatory information and software tools provided to the expert reviewers was considered useful and it was recommended that this should be used in any future Stage 3 reviews.

- **TIMING AND RESOURCES:** September? The **resource requirements** for performing this trial review were estimated to **XXXX**. A future formal process would probably require **YYYY**.

## ***References***

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Annex [I] Timings of review 2006 (from letter to experts)

Annex II Template of the country specific report sent to countries