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TNO report

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REVISION OF THE EMEP/CORINAIR ATMOSPHERIC EMISSION INVENTORY GUIDEBOOK
Inception Report

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1.0	23/03/2007		Version sent to DG Environment
2.0	20/04/2007		Second version, sent to Commission
2.0	20/04/2007		

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1 Introduction

This report is the Inception Report for the DG Environment funded project to update and revise the Guidebook, following the agreements between DG Environment, TFEIP/EMEP and EEA [Ref 1]. Further relevant documents are the Technical Annex to the Tender [Ref 2] and the Proposal prepared by TNO and AEA-T [Ref 3]. The project is governed by two separate contracts:

1. Lot 1: Update of emission estimation methods, contract number 070501/2006/452114/MAR/C5
2. Lot 2: Cross cutting issues, contract number 070501/2006/45122/Mar/c5

Both contracts have been signed on December 21st, 2006. At the kickoff meeting in Copenhagen it was agereed that the inception reports for both contracts would be integrated in one and be available to the Commission within four months of signing the contract.

The report outlines:

1. Background to the project
2. The project brief as outlined at the project's kick off meeting (Copenhagen, January 12th, 2007) including:
   - ✓ Project objectives;
   - ✓ The delivery approach and roles and responsibilities of the different stakeholders;
   - ✓ Critical success factors; and,
   - ✓ Time schedule and meeting calendar for the project.
3. The to be agreed overall structure of the Revised Guidebook to provide for:
   - ✓ An official formal good practice document.
   - ✓ And a user friendly web based emissions inventory compilers tool, both providing
     - structured web based guidance and
     - a searchable database system, allowing users to find sufficient information on the numerical values of (default) emission factors and related parameters, to decide on applicability of these in the own inventorying activity.

   Including details of the table of contents of the revised Guidebook and the format, functionality and contents of the numerical part of the Guidebook

2 Background

The EMEP/CORINAIR Guidebook (the Guidebook) contains the most influential set of emission estimation methods used in air pollution studies in Europe and elsewhere. It has been developed jointly by the UNECE Task Force on Emission Inventories and Projections (TFEIP), the EEA and its European Topic Centres. Norway is currently co-chairing the TFEIP, and maintains the TFEIP secretariat. EEA is presently one of the TFEIP co-chairs, EEA and ETC ACC regularly update the chapter on road transport, and develop the associated software tool COPERT, and EEA hosts the Guidebook on its web servers. EEA/ETC ACC have in 2006 developed a prototype Emission Factor Database (EFDB), building on the experiences of the existing IPCC EFDB. The European Commission has started end of 2005 a project, with consultants, to improve all parts of the Guidebook that do not contain information of sufficient quality on particulate matter emissions. This project has been finalized by the end of 2006.

The UNECE Convention on Long Range Transboundary Air Pollution (LRTAP) and its Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe (EMEP) stresses the importance of a Guidebook that would be useful for its intended main users, the experts responsible for preparing national air pollutant emissions inventories to be reported under a number of LRTAP Protocols, including the Gothenburg Protocol (1999) and the 1998 Protocols on Heavy Metals and Persistent Organic Pollutants (POP).

The primary objective of the Guidebook is to support national experts in compiling emission inventories complying with the requirements of specific legal obligations (LRTAP and its protocols and EU NEC Directive). The first key function therefore needs to be clearly defined and fully implemented.

In addition the Guidebook should support continuous improvement and reflect key new scientific and methodological insights and to support knowledge based and effective policy making. For this the Guidebook also needs to provide science and methods needed for emission inventorying so that countries that have the resources can produce the highest quality inventory. This is needed in order to ensure that the scientific quality of the inventories that feed into various types of models and policy assessment, including establishment of emission ceilings and compliance checking of emission targets, remains of the highest standard.

The Guidebook has been developed over a long period (more than ten years) to obtain a comprehensive set of emission estimation methods. This great effort has mainly been achieved through work undertaken by TFEIP experts. Some parts of the Guidebook have been regularly updated but there are gaps in the available information (both source coverage and emission factors), while other information (emission factor and technology description) needs updating. Furthermore the method description in the Guidebook is not consistent between chapters and generally there is little or no guidance on methodological choice and good practice aspects in preparing inventories:

1) the Guidebook falls short in its present form when reviewing countries' submissions in response to international reporting obligations (NEC Directive and LRTAP Convention)

2) much of the Guidebook material is old and possibly outdated and that there are gaps in the emission estimation methodologies for important source categories and pollutants

3) The Guidebook is expensive and resource intensive to update.

These problems embrace technical, infrastructural and organisational issues. In order to enhance the Guidebook and to ensure that the Guidebook can take on board all new science that is and will be developed within the Expert Panels and will be accepted by TFEIP in the future (the Guidebook’s use in enhancing emission inventorying practice and science) it will be necessary to put in place a work programme that addresses each of these 'challenges'.

3 The project brief

3.1 Objectives of the Guidebook Revision

The core objectives of this project are:

1. To update the guidebook to provide the minimum requirements for compiling an inventory for the purpose of complying with obligations under LRTAP and NEC in line with the main quality requirements of Transparency, Consistency, Completeness, Comparability and Accuracy (TCCCA criteria)
2. To provide estimation methods and emission factors for inventory compilers at various level of sophistication to encourage the highest possible quality in reporting, and ensure continuous improvement in inventory quality.
3. To provide a user friendly interface to methods and emission factors that will encourage consistent and efficient use of the guidebook.
4. To develop and support the improvement and flow of the technical material into the Guidebook and ongoing management of the guidebook and it's content.

To achieve these objectives the Guidebook must provide a description of methods at a three Tier level (see Annex A, section A.1) with emphasis on providing at least Tier 1 methods for all sources and pollutants. Consistently with the 2006 IPCC Guidelines the Guidebook must lead inventory compilers to the appropriate methodological choice, taking into account data availability and the importance of the source (see definition of key source in see Annex A, section A.5) through providing decision trees. The Guidebook must offer higher tier options for improved estimates where feasible. In designing the new Guidebook thought must be put into how the guidebook will be efficiently maintained and managed in the future.

3.2 Critical Success Factors

The critical success factors for this project are outlined below:

Critical Success Factor	Actions required to achieve:
The Guidebook facilitates compliant emissions inventory reporting:	Clear and concise definitions of compliant reporting and agreed scope of support expected from the Guidebook by the Commission. The Guidebook is referencable by policy documents & reporting requirements. The guidebook can be a politically endorsed good practice document. Its use is applicable to all Parties. It is complete in time for national reporting & compilation activities. It includes a minimum standard for emissions inventory compilation.
Inclusion of Tier 1 methods for all NFR Categories	Adaquate methodological contribution, guidance on prioritisation and review is provided by the EPs and the TFEIP.

Critical Success Factor	Actions required to achieve:
Maintaining the Scientific Credibility of the Guidebook	Maintaining all suitable and sound tier 3 methods & offering sound and quality assured tier 2 methods for key categories. Ownership of the Guidebook content remains with the Stakeholders (TFEIP & EPs) All guidance and material provided via the EPs EPs to act as a focal point and clearing house for technical information. It continues to support the scientific advancement of national inventories. A focus on HMs & POPs and provision of Technology specific factors.
Timely completion of the Guidebook.	Appropriate and efficient contributions from the AEG to the project: Establishing a clear and coherent role for the AEG and other stakeholders Communication Strategy needed Clear leadership of the AEG in decision making Agree definitions Agree and use templates and formats for communication on chapters and emission factor data
Production of concise and clear guidance	Easy for users to find information. Agreeing a standardised chapter detail level, subheading outline, use of standardised decision trees, Agreeing a table format of emission factor tables and terminology for all chapters (sectoral and cross cutting). IPCC harmonisation. Stakeholder ownership. Easy to maintain.
Sources that will potentially be included in the reporting obligations	The structure and the contents of the revised Guidebook should allows new legislation (decisions based on comitology for instance) to make an easy reference to sectors and tiers EU Member States have to use when reporting their national emission total for comparison with the NECD.
A clear and agreed plan for future maintaining the Guidebook (Agreed between EEA and EMEP):	Development of standardised templates for communicating emission factor data. Development of roles and responsibilities for future maintenance (systems and content). Revisions must not change co-operation between the EEA and EMEP.

3.3 The delivery approach

3.3.1 Management & Delivery of the Project

Figure 3-1 presents the Project Structure. DG Environment is the client for this project. As such the responsibilities of the Commission are described in the contract between DG Environment and TNO. The project's terms of reference have been agreed between the Commission, EEA, TFEIP and EMEP.

The Commission will convene a "Steering Group" in case the progress of the project requires significant adaptations of the project plan or issues relating to the legislative aspects of the project arise.

One of the important issues in the revision of the Guidebook is the necessity to closely involve the expertise as organized in TFEIP's four Expert Panels. These Expert Panels advise the TFEIP and through this the EMEP Steering Body and the LRTAP Convention Executive Board. Involvement of these Expert Panels therefore is instrumental for the success and the acceptance of this revision by the relevant policy

circles. To enable this, the Technical Description proposes an “Advisory Editorial Group”.

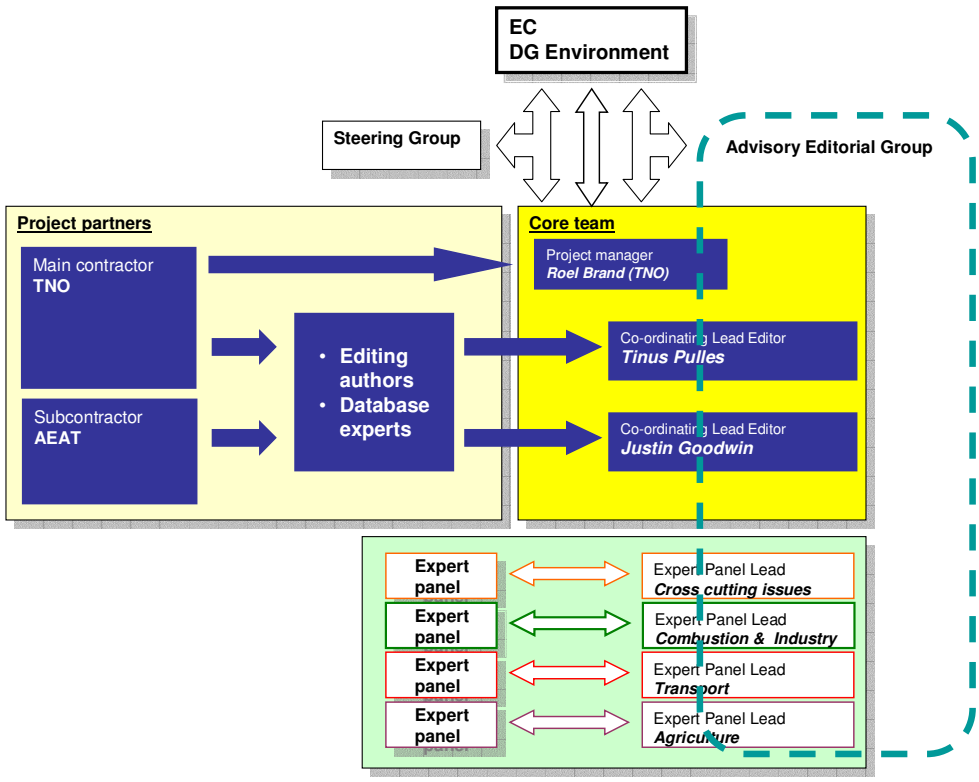

Figure 3-1 Project structure

In a later stage the Expert Panels will be asked to comment on draft emerging chapters to ensure that the TNO/AEA TECHNOLOGY editing teams are on track. This procedure will expectedly:

- Ensure that all available knowledge within each Expert Panel is made available for inclusion into the revised Guidebook
- Facilitate the endorsement process of the revised chapters by the TFEIP.
- Prove to be an efficient and effective way of drafting the new/revised chapters.

We propose to use a standardised table as the format to exchange information between the editing authors and the Expert Panels. The exact format of this table needs to be agreed within the Advisory Editorial Board. To start up the drafting work, the editing authors will produce such tables from the existing data in the present Guidebook for review, correction and completion by the Expert Panels.

The Consultants will coordinate all other aspects of the project (in consultation with DG Environment). Specific roles and commitments of the Consultants and the toher stakeholders are outlined below.

Role of the Consultants

The consultants are responsible for performing all tasks and actions required by the contract and as agreed with the Advisory Editorial Group.

The main contractor (TNO) is the main contact point for all financial and legal issues concerning the contract and the project. The main contractor will inform the Commission of any problems in the progress or budget spendings as soon as possible and will propose solution to these when they occur.

The Core Team which includes TNO and AEA Energy & Environment will:

- participate in the Advisory Editorial Group meetings and the meetings of TFEIP to:
  - ✓ present progress of the project
  - ✓ identify issues for advice and / or decision by either the Advisory Editorial Group or the TFEIP
  - ✓ identify possible problems and deviations from the work plan and present these at the Advisory Editorial Board meetings
- ensure that all decisions from the Advisory Editorial Group will be incorporated into the revised Guidebook
- ensure a common style and structure for all textual parts of the revised Guidebook
- propose technical solutions for the numerical part of the Guidebook
- prepare a draft Guidebook Maintenance Plan together with EEA IT experts and present this plan in the Advisory Editorial Group
- ensure that the deadlines of the project are met.
- Provide Co-ordinating Lead Editors to co-ordinate, coache and lead the teams of Editing Authors. The Co-ordinating Lead Editors will be the persons responsible for the quality of all individual chapters and will ensure consistence between all these chapters. Co-ordinating Lead Editors will be listed in an annex to the Guidebook.
- Provide Editing authors, selected on the basis of their expertise and knowledge of individual source categories or cross cutting issues, as coordinators and administrators for the stakeholder consultation phases and for all individual chapters of both the Cross Cutting chapters and the sectoral chapters. Editing authors will be listed in an annex to the Guidebook.

  These authors will:

  - amass all available material from the present version of the Guidebook, including the chapters updated in the PM2.5 project
  - draft chapters as prepared and provided by the expert panels
  - all additional material that can be identified by either the editing authors themselves or that is brought to their attention by expert panel members or other experts.
  - identify gaps in the existing technical guidance, both in the Cross Cutting Issues section and in the sectoral chapters, including default Tier 1 emission factors for all relevant pollutants for all NFR source categories
  - list all “not applicable” notation keys for pollutants that are not relevant for each source category
  - technology specific Tier 2 emission factors for all relevant pollutants for key source categories (to be identified in consultation with the Advisory Editorial Board)
  - propose solutions for these gaps
  - draft Guidebook chapters following the agreed style and structure for the textual part of the Guidebook

- update the drafts incorporating comments from expert panels and the Advisory Editorial Group towards final drafts for endorsement by the TFEIP
- design and implement the numerical part of the Guidebook, reusing as much as possible the functionality of the ETC-ACC pilot TFEIP EFDB system
- prepare input tables for the numerical part of the Guidebook, including all numerical information in each draft chapter

- Manage a maximum of 20 % of the project budget to support Expert Panels members to attend consultation meetings and to provide technical guidance during the drafting and editing of chapters. Spending of this budget will be discussed within the Advisory Editorial Board and, if needed, decided upon in consultation with the Steering Group.

The responsibilities of other Stakeholders

- **Advisory Editorial Group:** The advisory Editorial Group is the pivot body for consultation and discussion with both the EMEP/TFEIP bodies and with the European organisations (DG Environment, European Environment Agency, JRC, …) on any contents issue related to the revision of the Guidebook. The advisory Editorial Group will:
  - ✓ Attend relevant meetings organised by the Consultants
  - ✓ advise the Commission and the consultants on any issue the group feels is important for the revision of the Guidebook
  - ✓ discuss and decide on structural issues of the Guidebook, including table of contents of the textual part of the Guidebook, (both the cross cutting issues and sectoral chapters) and the role and function of the numerical part ("EFDB")
  - ✓ provide the link between the project team and other experts including those of of the TFEIP and the expert panels to ensure that:
  - ✓ Ensure all relevant expert panel members and experts are included in the review process
  - ✓ Ensure the editing authors have available all material that is currently in a drafting phase within each expert panel
  - ✓ Ensure any other experts are included and involved at the earliest possible time
  - ✓ Ensure draft chapters are reviewed and commented by experts of each expert panel or other relevant experts
  - ✓ Ensure review modifications by the editing authors in response to Expert Panel member comments and recommendations
  - ✓ Ensure review and comment on the input tables used to populate the numerical part of the Guidebook, containing all numerical data for each chapter
- **Expert panels:** The expert panels will act as the "scientific conscience" of the Guidebook. Using the administrative and editorial support of the Editing Authors the expert panel members will be the formal "authors" of the Guidebook Chapters. They will have final responsibility for the chapters' contents as they are presented to the TFEIP for endorsement. We propose to include those expert panel members who have actually participated in the review of draft chapters be listed as chapter authors. The expert panels will be expected to:
  - ✓ review and comment the gaps identified by the editing authors
  - ✓ review and comment the editing authors'proposals to fill these gaps

- ✓ provide the project team of editing authors with all Guidebook chapters, currently in a drafting stage and all relevant underlying material
- ✓ Nominate Expert Panel individuals as the "Authors" for chapters. These Authors will be used as a first point of contact by the Editing Authors from the technical core team of consultants. These authors will be attributed the authorship of the new guidebook chapters.
- ✓ review and comment on draft chapters within the competence of each expert panel (see Table 3-1 for an overview of the expert panels expertise)

Table 3-1 Chapter responsibilities of the expert panels

Expert panel	**NFR source categories included**	
Combustion and Industry	1 (except 1.A.3)	Energy
	2	Industrial Processes
	3	Solvent and other product use
	6	Waste
Transport	1.A.3	Transport
Agriculture and Nature	4	Agriculture
	5	Land use and land use change
Review	Cross cutting issues	Key source analysis
		Data collection issues
		QA/QC
		Uncertainties
		Gridding
Projections	Cross cutting issues	Projections

- o **TFEIP:** The final responsibility for the technical content of the Guidebook lies with the TFEIP. The Guidebook needs to be technically accepted by the TFEIP, adopted by the EMEP Steering Body and finally endorsed by the LRTAP Executive Body (EB).
  - ✓ The TFEIP will be responsible for ensuring that contributions from the Expert Panels are timely and scientifically correct.
- o **EEA:** The European Environment Agency is involved in this process along different lines:
  - ✓ Support the TFEIP as co-chair in ensuring timely and correct contributions are provided to the Consultants
  - ✓ Engage with the consultants to define a Guidebook Management plan for future updates and hosting.

3.3.2 Improving the content of the guidebook

The revision of the Guidebook will be based upon existing material, including the present version of the Guidebook as well as draft chapters that presently are being considered within the TFEIP and its Expert Panels. The Technical Description lists a series of activities that are undertaken in contracts with the Commission (fine particulates, EU database of transport vehicle stock, ammonia emissions, natural and biogenic emissions), JRC (non-road mobile machinery, new and updated BREFs). The results of these projects will also to be incorporated into the revised Guidebook as far as

possible. In addition other information from the open and possibly grey literature needs to be considered for inclusion in the Guidebook and included where relevant for updating or adding Tier 1 and priority Tier 2 methods.

To meet the Guidebook's objective and key functions as outlined in section 2 the following needs to be in place:

- A complete source description for sources as defined in the NFR (Nomenclature For Reporting);
- Simple, so-called Tier 1 methods to estimate emissions of all relevant pollutants from each of these sources; for combustion sources, Tier 1 methods should be available for each relevant fuel;
- Tier 2 methods for potential key sources taking into account specific technologies
- Generically described Tier 3 methods and exceptionally including information for such methods where Tier 3 methods are the expected methods because the source is particularly important and such methods already are included in the Guidebook1
- Uncertainty estimates for emission factors

It is our understanding that within this project new emission measurements, aimed at establishing emission factors are not foreseen.

In addition, the Guidebook should contain general guidance on good practice aspects such as Quality Assurance/Quality Control (QA/QC) systems, uncertainty management and projections.

Emission factors will include both default (technology independent factors) and technology dependent values for a range of process conditions and abatement technologies that might occur in different countries as inputs for the derivation of country specific emission factors. As in the IPCC Guidelines, the Tier 1 methods should result in estimates that are not an underestimation and encourage countries to use higher Tier methods.

Dealing with Process/Combustion EF issues : Principal for separating energy from process.

For a number of activities both emissions due to combustion and non combustion processes occur. These activities include:

- Cement (combustion of solid fuels for energy, emissions from materials handling and the chemistry)
- Iron & Steel (carbon is used as a reducing agent and blast furnace gas is used as energy source)
- Road Transport (tail pipe emissions and brake and tyre wear)

Together with the EPs some principals will be defined to apply through chapters in separating emissions from process & fuel combustion. This will recognize that the split in combustion (all source categories in 1.A) and non combustion (all other source categories) as implemented in the IPCC sector definitions in the CRF is not completely

[1] For example road transportation building on the COPERT method and for ammonia from agriculture building on the current Guidebook chapter

followed in the NFR, where the non-tail pipe emisiosns from road transport appear to be included in sector 1.A.3.b.

Assigning method tiers and deciding on the need for new methods

The Core Team will initially assign existing methods to relevant Tiers using expert judgement and the definitions of tiers outlined in the annex. Adjustments to this will be made in consultation with the EPs and in response to development of the methods. To begin with, the general principal will be applied:

- Simple = Tier 1,
- Detailed = Tier 2 or 3

Prioritisation of new methods will be done by the Core Team in consultation with the EPs and Commission.

New methods will be allocated to the appropriate tiers using the definitions of Tiers presented in the annex and in discussion with the EPs.

In order to address the difficulties associated with providing Tier 2/3 guidance we propose to apply a similar approach here as in the 2006 IPCC Guidelines. An example of what this would mean in the revised Guidebook is given in the textbox below. A similar approach is foreseen for other sectors where these higher Tier methods are available or under development.

Textbox 1

Example of proposed treatment of sophisticated Tier 3 models in the revised Guidebook

An example of a source sector where sophisticated methods are available is road transport.

A very sophisticated “Tier 3” emission model is developed within the European Union and applied in a broad range of policy studies. This model is built in the successive versions of the software tool COPERT. Consistently with the way the IPCC 2006 Guidelines treat these "Tier 3" methods, we propose not to fully rewrite these Tier 3 methods in the revised Guidebook but to provide a relatively brief overview of the COPERT methodology and include in the revised Guidebook clear and extensive referencing to the technical and scientific reports and publications that underpin the various versions of the COPERT methods. By doing so, the scientific development of COPERT could continue without severe consequences for the maintenance of the Guidebook.

Of course all emissions factors derived from COPERT could and should be included in the numerical part of the revised Guidebook and we believe that the range of country specific emission factors that has been provided by the COPERT team for the pilot TFEIP EFDB is exactly what is needed: an interpretation of "Tier 3" emissions estimation method towards country specific "Tier 2" emission factors that can be used in a "Tier 2" estimation method of road transport emissions.

In a similar way also default Tier 1 emission factors and the associated ranges or uncertainties could be derived from the detailed COPERT model

Linking to IPCC and other documents.

Where the requirement to guidance is the same as that provided in the IPCC 2006 guidance documents reference and links to the IPCC guidance will be made. However, the key objective to ensure that the Guidebook is easy to use and focussed on LRTAP pollutants will take priority. Similarities and key differences will also be highlighted in the text of this Guidebook.

Identifying & filling gaps in the present Guidebook

The process for identifying gaps is described in detail in section 3.5 below. Analysis of the existing Guidebook emission factors and methods along with a review of NFR sectors where emissions are expected will be carried out by the Core Team and presented in tables with accompanying instructions to the EPs. The EPs will be expected to provide feedback on the proposed default tier 1 and tier 2 factors and advise on priorities and actions for options for filling emission factor gaps and revising/adding outdated or overly complex and missing methods.

In addition, we propose to use standardized tables to communicate and discuss default emission factor values. We also propose to use "notation keys" to indicate pollutants that:

- are not expected to occur in each source category (NO for "not occurring"),
- are not known, but expected to occur (NE for "not estimated")
- other alternatives to be discussed with the Advisory Editorial Group.

Table 3-2 Example of a standardized data table for Tier 1 default emission factors and other parameters

Tier 1 default emission factors				
	Code	Name		
NFR Source Category				
Fuel				
			95% confidence interval	
Pollutant	**Value**	**Unit**	Lower	Upper
SOx				
NOx				
NMVOC				
CO				
…				
…				

Table 3-3 Example of a standardized data table for Tier 2 default emission factors and other parameters

Tier 2 default emission factors				
	Code	Name		
NFR Source Category				
Fuel				
SNAP (if applicable)				
Technologies/Practices				
Region or ragional conditions				
Abatement technologies				
Other				
			95% confidence interval	
Pollutant	**Value**	**Unit**	Lower	Upper
SOx				
NOx				
NMVOC				
CO				
…				
…				

Using the pilot TFEIP Emission Factor Database, under development of ETC-ACC, we will produce the standardized tables as discussed above for all combustion sources. This pilot database contains most emission factors in the SNAP main sectors 1, 2, 3, 7 and 8 as available in the present version of the Guidebook.

The resulting tables will be sent to the expert panel leaders for review by the expert panels. The review should

- check the interpretation by the editing authors of the information in the present Guidebook
- add any additional information that is available in the expert panel
- identify missing pollutants
- provide technical references that could improve the tables
- provide any information that could support or improve the editing authors' estimates of the uncertainty ranges
- identify any missing source categories or relevant subcategories or technologies
-
- Responses from the Expert Panels will be prioritised by the Core Team who will then implement the filling of gaps (using data from the EPs or by commissioning research) and drafting of Guidebook text.

3.3.3 Improving the structure and usability of the Guidebook

One of the leading principles in the Guidebook will be on improving the usability of the Guidebook as well as providing a document against which to judge good practice. The Guidebook will comprise a formal document containing descriptions of good practice sector methods and inentory management (Cross Cutting) and links to an emission factor database. The Guidebook will need to be structured to facilitate efficient maintenance and update.

A Formal Document:

The formal Guidebook will take the form of a collection of PDF documents containing Cross Cutting, Sectoral Chapters and a number of annexes. The documents will provide a source description (including a general description about technologies and abatement technologies in use), guidance on methodological choice (including decision trees), a Tier description, cross cutting issues and tables of the default and technology specific emission factors (Tier 1 & Tier 2).

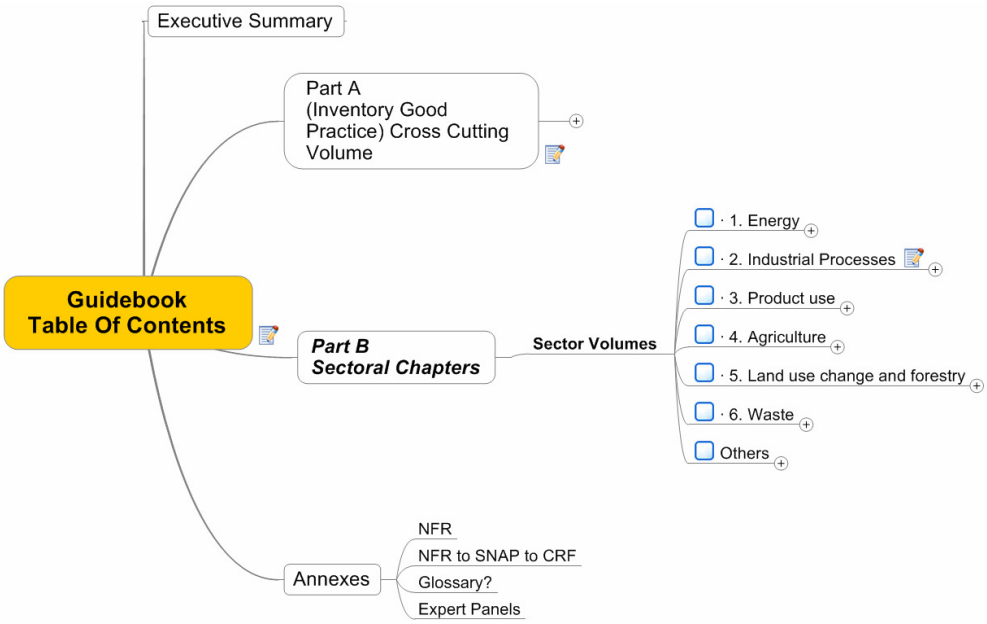

Figure 3-2 Proposed volume structure for the Revised EMEP / Corinair Guidebook

Cross Cutting (General) Chapters

The present Guidebook contains already a number of chapters that are consistent with the IPCC 1996 Guidelines. The Cross Cutting Issues chapters (CC) of the revised Guidebook need to be adapted to the improved treatment of these issues in the IPCC 2006 Guidelines.

We propose to mirror the chapters and structure of the chapters of the IPCC 2006 Guidelines, Volume "General Guidance and Reporting" (GGR) into the revised Guidebook. We understand that the guidance provided in the CC chapters should be fully compatible with the guidance as provided in the GGR volume of the 2006 Guidelines. An outline of the proposed chapter structure, as derived from the IPCC Guidelines is presented in Figure 3-3.

As has been done in the present Guidebook, the CC chapters will concentrate on those issues that are specific for air pollutants. Important text will be copied from the IPCC 2006 Guidelines and summaries of and references to specific elabourations and examples in the IPCC 2006 Guidelines will be included. If however the Commission and the TFEIP/EMEP would prefer to copy larger parts of the 2006 GLs text into the CC chapters to make these self-contained, this could of course be done. We assume that the Commission and or the TFEIP arrange the copyright issues that might be connected to doing so.

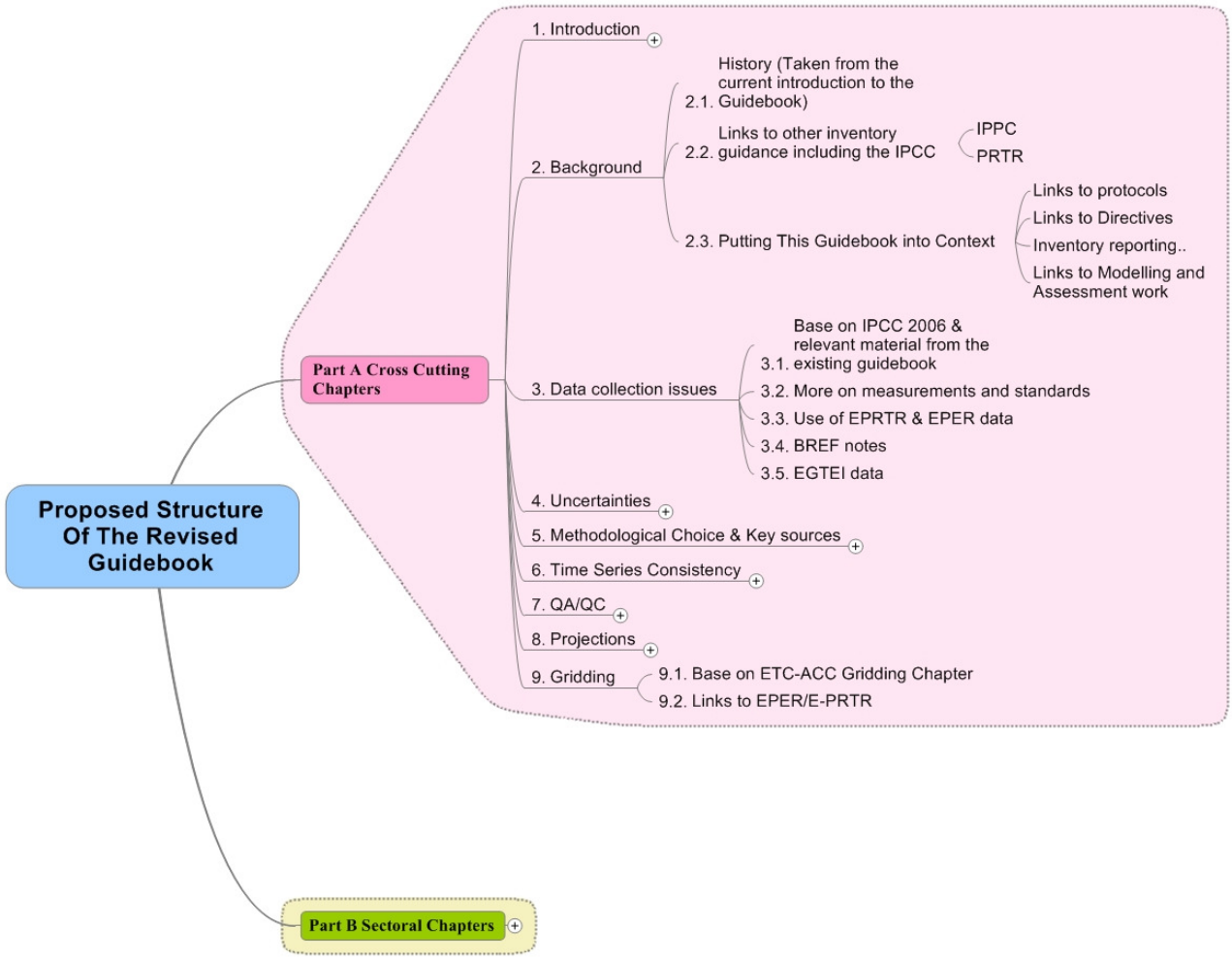

Figure 3-3 Proposed chapter structure in the Cross Cutting Isssues volume of the revised Guidebook (Part A)

Sectoral Chapters

The sectoral structure of the Guidebook will be based on the new **Nomenclature For Reporting** (NFR) source categories with appropriate links to the currently used **Selected Nomenclature for reporting of Air Pollutants** (SNAP) classification as process based sub-categories. Each chapter will follow a structure consistent with the IPCC Guidelines, adding a paragraph on gridded data (as indicated in section 4.2 below). All sectoral chapters will follow a standardized outline as indicated in section 4.3 below. We propose to add to this at the heading of each chapter.

- a standardized table providing version and updating information
- a standardized table providing a link to
  - ✓ a list of NACE sectors where the source category typically appears
  - ✓ the SNAP nomenclature and the technical guidance for the sector as provided in the IPCC 1996 and IPCC 2006 Guidelines
- Each chapter will further clearly separate simple methods (“Tier 1”) and more sophisticated methods (“Tier 2” and “Tier 3”) and could provide a decision tree, comparable to the IPCC decision trees to facilitate methodological choice (see

Figure 3-4. For higher tier methods the descriptions will cover guidance on how country specific or technology specific parameters could be derived or where they could be found (e.g. EFDB), but will not include all such values in the formal guidebook chapters as the choice of the appropriate values will be subject to specific circumstances.

A common theme throught the sectoral chapters will be guidance on how to select appropriate levels of detail with the view of prioritising the efforts and resources towards those sources that are the important ones. Following IPCC's definition of the "Tiers" (see Annex A, section A.1), the use of country-specific or "technology-specific" parameter values instead of "default values" (for definitions see Annex A, sectionsA.2 and A.3), makes the difference between a Tier 1 and a Tier 2 approach. Guidance must be given on when Tier 1 methods will be sufficient and when application of higher Tiers would be "good practice" (see Annex A, section A.4). To enable this, the concept of "Key Source" is used (see Annex A, section A.5).

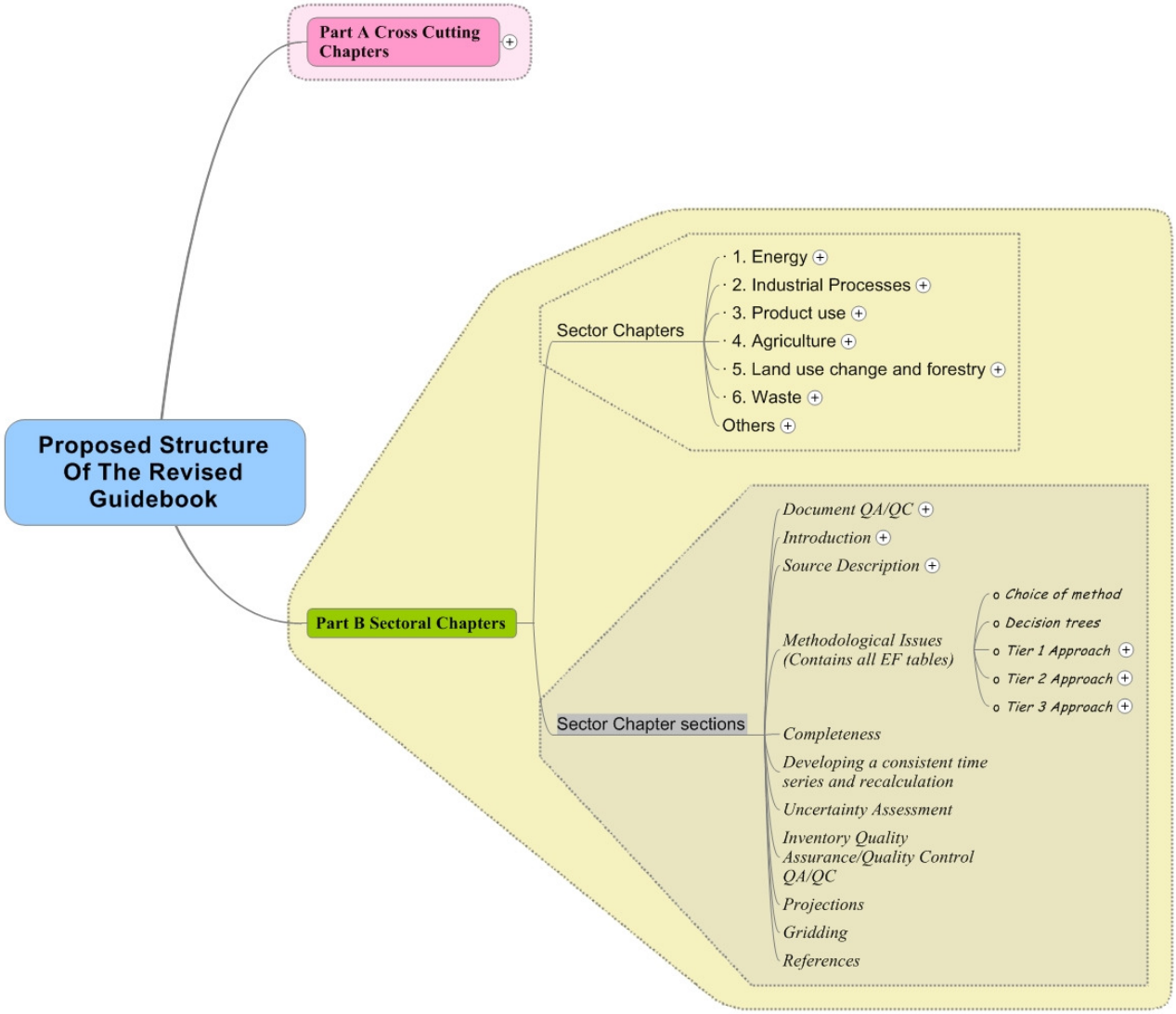

Figure 3-4 Proposed chapter structure in the Sectoral Chapters volume of the revised Guidebook (Part B)

An Emission Factors Database

The formal Guidebook documents will be supplemented with an emission factor database (EFDB) which will contain all default and technology specific emission factors contained in the formal guidebook as well as additional country specific and composite (detailed) emission factors and parameters. Emission factors used in the formal Guidebook documents will be flagged in the EFDB. The EFDB will offer users and reviewers with a wider resource of parameters and emission factors to use for country specific estimates and for cross checking inventory estimates.

ETC ACC has been working in 2006 on developing a pilot Emission Factor DataBase (EFDB). The pilot EFDB has been presented and discussed at the 2006 joint TFEIP/EIONET meeting (Thessaloniki, 31/10-2/11).

- Use of an EFDB will enable numerical information being available in an easily searchable form. Use of an EFDB would also enable a separation of data from the text. Updates and additions of this information could occur more frequently than the general method description and therefore such information could be organised in a way that it should be relatively easy to update and expand. Furthermore, an EFDB could enable collection of information beyond the information given in the Guidebook, for example related to more detailed processes, EGTEI information and EPER data.
- The role of an EFDB also has a more formal side since the EMEP SB formally approves updates of the Guidebook (see Section 6). The IPCC 2006 Guidelines for example included emission factors for Tier 1 (and normally also Tier 2) in both tables in the main document and in the EFDB. The reason is that IPCC plenary only formally accepted the information in the text. For the same reason the Guidebook must include default emission factors. The tables in the Guidebook should therefore be developed in a way that supports the maintenance of the Guidebook.

Facilitating maintenance and future update

The work of this contract should set a framework for future ongoing updates (and content management) as part of the work of the TFEIP and the Expert Panels. The EEA will ultimately be responsible for the editorial maintenance and hosting of the Guidebook while the TFEIP will continue to be responsible for the content. Maintenance procedures shouls be based on the well developed TFEIP and Expert Panel system to provide new technical information. This project will help to formalise and clarify the areas of expertise, roles, responsibilities and procedures required to maintain the content of the Guidebook documents and the wider databases of country specific and detailed parameters. Editorial and hosting maintenance plans will also need to be developed and embedded in the EEA's annual management plan.

The work of this project will need to be steered through careful collaboration between the stakeholders including the Commission, the UNECE, EEA, EMEP centres, TFEIP and the Expert Panels to ensure that a suitable framework can be developed for future updating and maintenance of the scientific content.

The objective is to minimise the need for revisions to the formal Guidebook documents and ensure that inventories remain up-to-date. For higher tiers, methods descriptions will offer flexibility in the use of parameter values to enable users to choose the most up-to-date and relevant parameters from a wide range of data sources. The TFEIP will

need to agree a procedure on how to provide users with access to a wider choice of parameters (possibly through inclusion in an EFDB) and on a procedure for maintaining a wider dataset of parameters (possibly be under the responsibility of the TFEIP Expert Panels).

3.4 Scope of the Guidebook

3.4.1 Pollutants

The revised Guidebook must contain as a minimum emission estimation methods for all pollutants that are included in the LRTAP Convention and NEC Directive reporting requirements and must additionally include plus primary emissions of $PM_{2.5}$, PM_{10}, TSP, heavy metals defined in the LRTAP emission reporting guidelines and POPs emitted as by-products (see Table 3-4).

Table 3-4 Pollutants to be included in the Revised Guidebook and those already included in IPCC's 2006 Guidelines.

Substance	Reporting required under	According to
CO	UNFCCC/CLRTAP	EMEP/Corinair Guidebook
Heavy metals	CLRTAP	EMEP/Corinair Guidebook
NH_3	CLTRAP/NECD	EMEP/Corinair Guidebook
NMVOC's	UNFCCC/CLTRAP/NECD	EMEP/Corinair Guidebook
NO_x	UNFCCC/CLTRAP/NECD	EMEP/Corinair Guidebook
PM_{10}	CLRTAP	EMEP/Corinair Guidebook
$PM_{2.5}$	CLRTAP/NECD future	EMEP/Corinair Guidebook
POPs	CLRTAP	EMEP/Corinair Guidebook
SO_2	UNFCCC/CLTRAP/NECD	EMEP/Corinair Guidebook
TSP	CLRTAP	EMEP/Corinair Guidebook
Additonal direct GHGs	-	IPCC Guidelines
CH_4	UNFCCC	IPCC Guidelines
CO_2	UNFCCC	IPCC Guidelines
N_2O	UNFCCC	IPCC Guidelines
PFC's/HFC's/SF_6	UNFCCC	IPCC Guidelines

Additional pollutants can be included, wherever available or known to the authors of the chapters.

3.4.2 Sectors

The Guidebook must be complete and should as a minimum cover all source categories as defined in the LRTAP Reporting Guidelines (NFR: Nomenclature For Reporting). For each NFR more detailed splits according to SNAP or SNAP extensions should be defined if necessary. For each source category defined at the most detailed level default emission factors for all relevant pollutants within the scope of the Guidebook, must be available. The understanding of the reader must be such that if a pollutant is not

included in a specific source, emissions from this pollutant are not expected (cf. the notation key “NA” for “not applicable”).

Where available, information on more detailed or additional sources can of course be included and the outline of the Guidebook should be formatted such that adding more detailed source descriptions or additional source categories is relatively easy.

The sectors defined in the current LRTAP Convention reporting Guidelines (called “NFR”, Nomenclature for Reporting) are derived from the sectors as defined in the IPCC 1996 Guidelines. Both NFR and IPCC sector definitions are organised as a hierarchical structure. The figure below schematically presents the upper levels of this structure. In many sources as presented in this graph, deeper levels of source categories are defined. In some instances, such sources are defined up to six levels deep. Where deeper levels are defined, this is indicated in the figure by little triangles at the end of the lines.

Figure 3-5 Schematic representation of the higher level source category definitions hierarchy in NFR

Recently, the IPCC has presented the 2006 Guidelines, that have merged the agricultural and land use change and forestry sectors into one new sector called “AFOLU”. This new sector structure however will not be used for reporting until the end of the Kyoto commitment period. We therefore assume that in the revision of the

Guidebook a similar merging is not expected in the near future. However, we propose to keep this issue in mind when designing the revised Guidebook structure.

3.4.3 Geographical areas

The methods provided in the Guidebook must be applicable for all of the parties of the LRTAP Convention, including non EU Member States. For some source categories, primarily in agriculture and biogenic sources, emission estimation methods might depend on climate or other location dependent properties of the party. In these cases the Guidebook must cover such differences in geographical areas for all parties in the convention. For other source categories, emissions might depend on the specific technology mix applied within each country. The Guidebook must provide methods on how to deal with these more technological differences between parties.

Annual reporting under the Convention and under the NEC Directive requires no higher spatial resolution than national totals. The present Guidebook and also the updated and restructured Guidebook therefore concentrates on the estimation of national total emissions by source category and by pollutant. To enable the five-annual reporting of gridded emission maps, the Guidebook should contain a chapter on how to convert national totals to the required gridded information.

3.5 Project Phases, Tasks and Steps

3.5.1 Technical process and procedures:

The table below presents the tasks processes and procedures expected for the delivery of the project.

Get numerical data from the existing Guidebook into database	1) Prepare bulk import files a) Include old Technology specific EFs from earlier GBKs b) Pre 2003 c) 2006 draft 2) Version problems a) Include revised (Dec) Industrial Processes b) PM2.5 updates c) Carlo updates 3) Separating Process from Combustion EFs 4) Flag Default factors (used in printed Guidebook) 5) Upload into EFDB 6) Export to MS Access 7) Flag gaps and absence of references in GBK

Analyse factors, identify issues and Prepare overview Tables and communications for EP Review	8) Design tables a) Show SNAPS/NFR with no Efs that ned EFs b) Show where gaps are OK c) Make table easy to analyse and comment on by EPs d) Show detailed factors and aggregated "Proposed" defaults e) Show number of values for each group f) Show uncertainty indicators (based on analysis of existing data) g) Space for comments on methods 9) Populate tables & Prepare data for EPs a) Take out errors double counts from EFDB b) Check everything in GBK is in tables c) get EPs to comment on methods as well as EFs i) Include comment box for review of existing method or the highlight need for new method for each tier by NFR? ii) Propose Tier level for for existing methods iii) Ask for coment on (keep, lose or amend) iv) Priority for improvement v) Need to show list of methods & Simple/detailed flags for existing text d) Need to link/flag where we know of new research data that might be used to help remind EPs to consider it 10) Submit to EPs for comments: a) Covering note needed i) tier definitions ii) outlinint/explaining questions iii) commenting instructions iv) outlining next steps v) Reminding them to consider other data vi) Re-explain approach (1) averaging (2) Tier classification approach (3) not expecting them to drill down but it's there for functionality vii) Explain communication approach b) Tier 1 & 2: excel tables i) Simple averages with range ii) Drill down to detail derived from the GBK iii) Instructions in read-me c) Possible questions for EPs to accompany the data i) Can we use the existing averages as the default factors (see average for each fuel type)? ii) Could we use new similar averages as default tier 1 factors once the SNAP level detailed data has been tided (old EFs removed & any new added)? iii) What gaps need filling and at what level (is an average by fuel for the NFR OK or do detailed SNAP level EFs need adding? iv) What EFs that are there at the detailed SNAP level need updating/removing?
Solve Gaps & Problems	11) Core team consult with EPs on data sent a) Review comments from EPs and prioritise work b) set-up subcontracts for key method developments c) Need some standard terms & output format requirements d) Agree what Project Teams will do i) simplifying methods ii) categorising methods iii) set-up contracts e) Agree what EPs will do f) Address disagreements 12) Facilitate EPs consideration of new material a) brefs b) JRC data c) IVL d) other.... e) EGTEI 13) Project Team incorporation of new material proposed by EPs and supplied by subcontracts
Send out Draft Guidebook Chapters for review	14) Agree Authors Lists 15) Identify consultation approach (Managed by TFEIP?) 16) Send to TFEIP, EEA, Commission, EPs and other contributing experts

3.6 Project Deliverables and Time Frame

The main project deliverables are draft texts for all chapters of the revised Guidebook. These draft chapters will be available for formal review and comments by the expert panels and other stakeholders (to be identified by the Commission and the TFEIP chairs) in March 2008.

Since involvement of the TFEIP and expert panels in the revision is important, The project team will produce at least one pilot chapter to be presented at the TFEIP meeting in May 2007 (Dessau, Germany). A first, incomplete draft for the process emissions in Cement Production (NFR 2.A.1) is available and submitted with this Inception Report for information. The combustion emissions associated with Cement Production are to be reported in source category 1.A.2.f.

The TFEIP will be asked to comment on:

- The proposed approach to split process and combustion emissions; cement production is an interesting sopuirce category in this respect
- The overall structure of the methodological chapter
- The proposed approach to the Tier descriptions and the implementation of these Tier definitions in the pilot chapter
- The proposed approach to define the emission factors in all Tiers

At the TFEIP meeting the project team will also present an overveiw of gaps and problems in the available emission estimation methods. The expert panels will be asked to identify work needed to fill these gaps and solve the problems. An overview of problems encountered and gaps identified is available and submitted with this report. Most emifssion factros that are available in the present version of the database are now included in an electronic database and form the basic material form which to extract and iterpret the emisison factors to be included in the revised Guidebook.

The interaction with the Expert Panels includes agreeing on additional work to be done to fill the gaps and solve the problems in individual chapters. Apart from the AEG meetings where priorities in the use of the abvailable budget to facilitate this work will be discussed, the project team will also initiate bilateral contacts with expert panel leaders to decide and agree on the use of the budget. This activity will start shortly after the Dessau TFEIP meeting.

The drafting will be arranged such that

- The Cross Cutting chapter drafts are available early 2008 and all Sectoral Chapters by March 2008.
- The draft Guidebook can be endorsed at the Spring meeting of the TFEIP in 2008 (expected dates May 2008)

The draft chapters, produced by February 2008 (CC chapters) and March 2008 (Sectoral Chapters) will be reviewed by the expert panels. The project team will provide a standard commentiong format (MS Excel) to be used by the reviewers. The comments received will be accomodated by the project team and all resulting changes in the drafts will be transparently documented in a similar excel format.

Figure 3-6 presents an overview of the deliverables and the associated time schedule. The deliverables are indicated in bold italic print and include:

- The inception report (document)
- At least one pilot chapter (document)
- Database and summarizingh spreadsheets, identifying gaps and problems in the available emission factors
- The draft texts for the revised Guidebook (a set of documents suitable to be
  - ✓ printed as the formal Guidebook texts
  - ✓ included in an HTML and hyperlinked website
  - ✓ where possible link to a pilot EFDB for all numerical information
- A file documenting all comments and the responses to these received during the review by the Expert Panels.
- A pilot TFEIP EFDB, derived from the pilot EFDB as developped by ETC-ACC, populated with all numerical values included in the sdectoral chapters of the revised Guidebook (an update of the present pilot TFEIP EFDB developed by ETC-ACC);
- The draft maintenance plan as requested in the Terms of Reference (document).

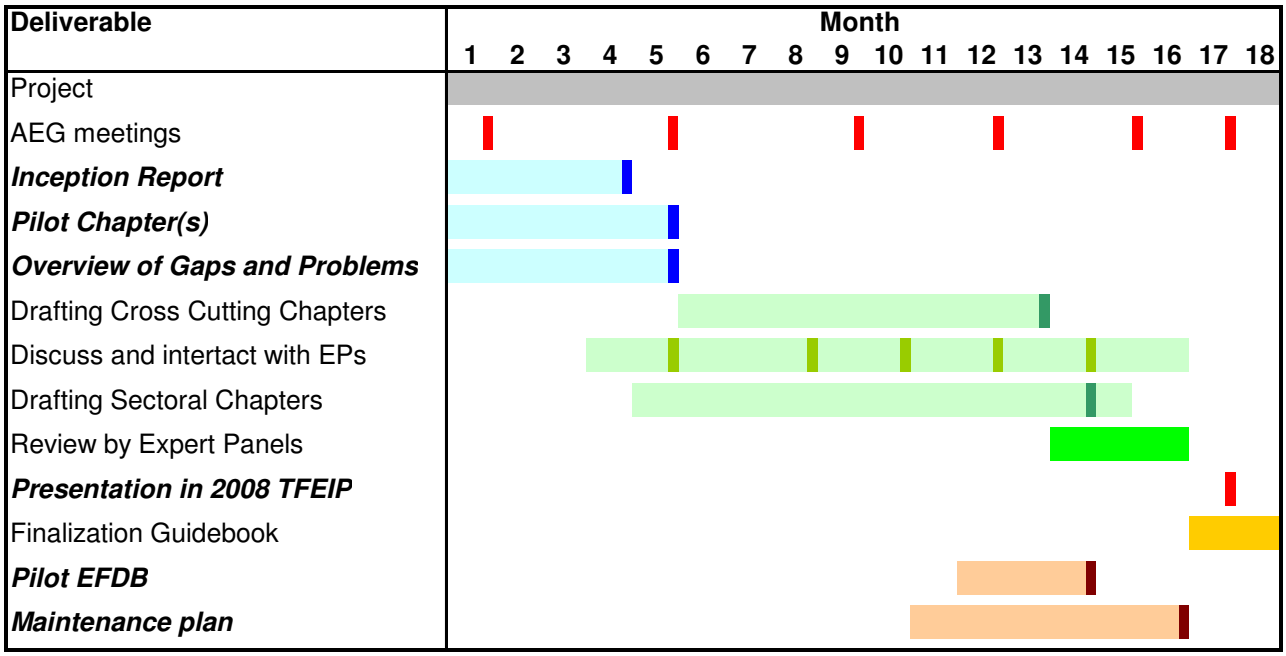

Figure 3-6 Proposed time schedule for the deliverables of the project.

4 Proposed structure of the Revised Guidebook

We propose to keep the distinction between the parts A and B as is the case in the present Guidebook. Part 1 will contain general guidance while Part B will contain the sectoral guidance.

The revised Guidebook is split in two separate parts:

- Part A: cross cutting issues
- Part B: sectoral guidance

4.1 Part A Cross Cutting Chapters

This main task is the development of the revised general guidance chapters of the Guidebook.

The table of contents of each Cross Cutting chapter could be derived from the similar chapters in the IPCC 2006 GLs. The Guidebook CC chapters should

- link to the IPCC 2006 GLs where possible
- concentrate on the issues that are specific for air pollutants and add to the guidance provided by the IPCC 2006 GLs.

In order to meet the objectives of providing guidance that is user friendly and because much of the emphasis of the IPCC 2006 guidelines are on greenhouse gases and IPCC systems we propose to prepare self-contained set of cross cutting chapters. These chapters will be focussed on LRTAP pollutants and build on text already in the current GPG section of the Guidebook. Where possible important and relevant text will be copied from the IPCC sections. However, relevant elaborations and examples will be referenced to the IPCC text. The Chapter structure will follow that of the IPCC 2006 guidance where feasible. An outline of the sections and notes on priorities/issues are presented below.

4.1.1 Introduction

- *Concepts: Good Practice, Verification and Validation, Inventory Quality*
- *Overview of inventory Good Practice, Inventory Management, Continuous Improvement*
- *ESTIMATION METHODS Tiers, Decision Trees*
- *This Guidebook: Purpose & Structure of the Guidebook, Guidebook Management*
- *Inventory strategy Focus for user, resource constrained issues, New to inventories, Introduces approaches needed, Systems and Skills needed, Improvement Programme*

4.1.2 Background

- *History (Taken from the current introduction to the Guidebook)*
- *Links to other inventory guidance including the IPCC*
- *Putting This Guidebook into Context*
- *Links to protocols*
- *Links to Directives*
- *Inventory reporting..*
- *Links to Modelling and Assessment work*

- *IPPC*
- *PRTR*

4.1.3 Data collection issues

- *Base on IPCC 2006 & relevant material from the existing guidebook*
- *More on measurements and standards*
- *use of EPRTR & EPER data*
- *BREF notes*
- *EGTEI data*

4.1.4 Uncertainties

- *Base on IPCC 2006 & relevant material from the existing guidebook*

4.1.5 Methodological Choice & Key sources

- *Base on IPCC 2006& relevant material from the existing guidebook*
- *No GWP approach… What to do…*
- *Derive approach*
- *How to identify Key Sources for AQ Pollutants*

4.1.6 Time Series Consistency

- *Base on IPCC 2006& relevant material from the existing guidebook*

4.1.7 QA/QC

- *Base on IPCC 2006& relevant material from the existing guidebook*

4.1.8 Projections

- *Collaborate with EP on Projections to prepare general projections guidance*

4.1.9 Gridding

- *Base on ETC-ACC Gridding Chapter*
- *Links to EPER/E-PRTR*

4.2 Part B Sectoral Chapters

We propose to use a similar Table of Contents (ToC) structure as used in IPCC's 2006 Guidelines. Since the Guidebook will not integrate Industrial Processes with Product Use or Agriculture with Land Use, Land Use Change and Forestry (LULUCF), the revised Guidebook could contain 6 sectoral volumes, folowing the ,main source sectors of the NFR. Presentation of the intended strusture is broken down into two elements. 1) the overall chapters to be included and 2) the breakdown of subheadings within each chapter.

4.2.1 1) Technical Sectoral chapters proposed for new Guidebook

4.2.1.1 The chapters

1. Energy

- *Define some principals to apply throught chapters in separating emissions from process & fuel conmbustion.*

1.A Combustion

1.A.1 Energy Industry

1.A.1.a Power and Heat Plants

1.A.1.b & c Fuel Transformations

1.A.2 Combustion in Manufacturing Industries

1.B Fugitive emissions

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

2. Industrial Processes

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

3. Product use

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

4. Agriculture

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

5. Land use change and forestry

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

6. Waste

- *Breakdown of subchapters to include all subsectors presented in the NFR reporting templates fro the UNECE 07 Guidelines.*
- *Some rationalisation (grouping of sectors) where appropriate to prevent duplication of text*

4.2.1.2 The generalized subheadings for each of the Technical Chapters:

Document QA/QC

- *a standardized table providing version and updating information*
- *a standardized table providing a link to*
- *a list of NACE sectors where the source category typically appears*

- *the SNAP nomenclature and the technical guidance for the sector as provided in the IPCC 1996 and IPCC 2006 Guidelines*

Introduction

- *Context tables showing guide pollutants > Quantitative & Qualitative importance.. Using latest CLRTAP reporting to derive qualitative table… + Pollutants that are not reported well*
- *Emissions*
- *Caveats*
- *Avoiding double counting activity data with other sectors*

Source Description

- *Process Description*
- *Process Diagrams (showing activity data input & Emission Factors data &differentiating Tiers/Process components as appropriate).. To be consistent with BREF but not at BREF detail level*
- *Description for different tiers*
- *Clarify where emissions should be included elsewhere (e.g. fuel combustion emissions from cement)*
- *Techniques (alternative approaches to the process)*
- *Controls (Add on Abatement: Additional reduction achieved with add-on abatement)*

Methodological Issues (Contains all EF tables)

- *Choice of method*
- *Decision trees*
- *Tier 1 Approach (Don't mention technologies or abatement but they are implicit in the EF. Use averages of the data we have..)*
- *Choice of emission factors*
- *Default Emission factor tables*
- *Choice of activity data*
- *Tier 2 Approach (Introduce Technologies & Process differences Excluding add-on abatement even if always occurring… Refer to "Add on Abatement" section to apply additional reduction)*
- *Choice of emission factors by process, technology and including abatement efficiency either as general table or part of standard EF tables)*
- *Technology Specific Emission factor tables*
- *Choice of activity data*
- *Tier 3 Approach (Introduce facility level, detailed models or complex EGTEI EFs EPER & COPERT) What a tier 3 could be.*
- *(Probably not needed…….) Choice of emission factors*
- *(Probably not needed…….) Choice of activity data*
- *Avoiding double counting activity data with other sectors*

Completeness

- *Sector specific guidance on avoiding gaps*

Developing a consistent time series and recalculation

- *Sector specific guidance on avoiding gaps*

Uncertainty Assessment

- *Sector specific issues for uncertainties*

Inventory Quality Assurance/Quality Control QA/QC

- *Sector specific needs for QA/QC*

Projections

- *Specific instructions for sectoral projections*

Gridding

- *Specific instructions for sector*
- *…When using Tier 3 include Facility level data…*

References

- *Data sources used for guidance*

5 References

[Ref 1] Proposal for a major restructuring, updating and subsequent maintenance of the EMEP/CORINAIR Atmospheric Emission Inventory Guidebook, paper presented at the TFEIP/EINOET meeting in Thessaloniki, October 2006.

[Ref 2] Technical Annex to the Call for Tenders “Revision of the EMEP/Corinair Atmospheric Emission Inventory Guidebook”, OJ 2006/S143-153038

[Ref 3] TNO and AEAT, A proposal to the Tender ENV.C.5/SER/2006/0082, Revision of the EMEP/CORINAIR Atmospheric Emission Inventory Guidebook

Annex A Definitions

A.1 Tiers

Emissions can be estimated at different levels of complexity. Within the IPCC Guidelines these are expressed in terms of three Tiers:

Tier 1: a method using readily available statistical data on the intensity of processes (“activity rates”) and default emission factors. These emission factors assume a linear relation between the intensity of the process and the resulting emissions. The Tier 1 default emission factors also assume an average or typical process description.

Tier 2: is similar to Tier 1 but uses more specific emission factors developed on the basis of knowledge of the types of processes and specific process conditions that apply in the country for which the inventory is being developed.

Tier 3: is any method that goes beyond the above methods. These might include the use of more detailed activity information, specific abatement strategies or other relevant technical information.

In other words: the ”Tier 1” method is a “quick and dirty” method, using default emission factors only. To upgrade a Tier 1 to a Tier 2 method, the default emission factors should be replaced by country specific or technology specific emission factors. This might also require a further split of the activity data over a range of different technologies, implicitly aggregated in the Tier 1 method. A Tier 3 method could be regarded as a method that uses the latest scientific knowledge in more sophisticated approaches and models.

The present Guidebook structure is less clear in this respect, but provides a ”Simpler Methodology” and a ”Detailed Methodology” in all technical chapters.

A.2 Default parameters

We propose to restrict the use of the term “default emission factor” or “default parameters” to averaged or typical emission factors or parameters that apply at the level where the Reporting Guidelines require an estimate. Generally this level is the highest level of detail in the NFR source category structure, expanded with fuel types in case of combustion sources. To express this, the definition of a “Default Parameter” could read as follows:

> A *default emission* factor or *default parameter* is a value for an emission factor or other parameter in a Tier 1 method to estimate the emissions of a specific NFR source category (and in case of combustion a specific fuel) that can be applied when information on the technologies applied in the source category are not available.

Each default emission factor or default parameter is accompanied with an uncertainty range, surrounding it. This uncertainty range should express the variability that may exist between countries and regions in the actual technology options that could occur within the source category.

The point value of the default emission factor or other parameter should be chosen such that a typical or averaged distribution of technologies within a country would be reflected. This, in principle, makes the default value time dependent, since new technologies will be introduced in many countries, resulting in a different typical or averaged penetration of all technologies.

A.3 Technology specific parameters

Technology specific emission factors and parameters allow adding more detail to the emission inventory. They are applicable to subgroups of sources within a specific NFR source category where certain technologies and practices are applied.

Since these factors and parameters are valid for more precisely defined technologies and practices and hence describe a more homogenous group of sources, the uncertainty ranges surrounding the point values for these parameters are typically narrower than for the Tier 1 default values defined at the level of the NFR source category. This leads to the general understanding that applying technology specific parameters and emission factors in a Tier 2 approach decreases uncertainties as compared to the application of default emission factors in the Tier 1 approach.

Since a Tier 1 default emission factor should reflect the typical distribution of technologies in a country, technology specific values typically will fall in the uncertainty range defined for the default value. This is not necessarily true for technology specific values for new technologies.

In a number of inventory studies, the concept of “country specific” emission factors is used. These values are assumed to represent specific technologies and practices applied in the country or are dependent on the specific climatology in a country. In the Guidebook such values should always be presented in relation to such specific technologies and practices or climatological circumstances.

A.4 Good Practice

“In order to promote the development of high quality national greenhouse gas inventories a collection of methodological principals, actions and procedures were defined in the previous guidelines and collectively referred to as *good practice*. *The 2006 Guidelines* retain the concept of *good practice* including the definition introduced with *GPG2000*. This has achieved general acceptance amongst countries as the basis for inventory development and says that inventories consistent with *good practice* are those which *contain neither over- nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable*.”

A.5 Key sources

The IPCC Definition of a Key Category reads as follows:

> "A key category is one that is prioritised within the national inventory system because its estimate has a significant influence on a country's total inventory of greenhouse gases in terms of the absolute level, the trend, or the uncertainty in emissions and removals. Whenever the term key category is used, it includes both source and sink categories".

The Guidebook and LRTAP terminology is still using the concept of "Key Source". We propose to adopt the IPCC definition as cited above with the replacement of the word "category" by "source".

In the Cross Cutting Issues, the criteria to decide whether or not a source is a key source will be described.