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INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

NATIONAL GREENHOUSE GAS INVENTORIES PROGRAMME

UNEP

DATABASE OF GREENHOUSE GAS EMISSION FACTORS

(IPCC-EFDB)

Second Meeting of the Editorial Board

and Meeting of the Steering Group

(18 – 20 February 2004, Tsukuba, Japan)

Meeting Report

Prepared by the Technical Support Unit
of the IPCC National Greenhouse Gas Inventories Programme

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Summary

The database on GHG emission factors (EFDB) web application was released to the public at the 8th session of the Conference of the Parties to the UNFCCC (COP8) in October 2002. The Task Force Bureau (TFB) for the IPCC National Greenhouse Gas Inventories Programme (IPCC-NGGIP), at its 9th session (Hayama, Japan, 25-27 November 2002), established the EFDB Editorial Board to evaluate data proposed for inclusion into the EFDB.

The second meeting of the EFDB Editorial Board and the meeting of Steering Group were convened in Tsukuba, Japan, on 18-20 February 2004. Its objectives were:

- To evaluate the proposed additions to the database since the 1st Session of the Editorial Board Meeting and to discuss further improvement of the EFDB,
- To consider strategies for population of the EFDB and cooperation with other organisations,
- To discuss the inclusion of the default parameters in IPCC report on Good Practice Guidance, for Land Use, Land-Use Change and Forestry in the EFDB,
- To consider EFDB linkage with IPCC work on 2006 Inventory Guidelines,
- To improve the user-friendliness, and
- To discuss sector specific issues.

In conclusion, the meeting participants agreed upon the following items as necessary future work.

- Technical modifications
- Import of the data in the GPG-LULUCF
- Further consideration as to how to relate EFDB to *2006 IPCC Guidelines*
- Improvement of guidance (Revision of User Manual)
- Revision of TOR (improvement of evaluation procedure)
- Analysis of weak area in each sector
- Development and dissemination of promotion materials/tools
- Development of off-line input form (simple package)

As for the improvement of evaluation procedure, it was considered too early to draw a conclusion since the Editorial Board had not gained so much experience yet. This issue will be further It was agreed that they needed more experience to assess the evaluation procedure's quality and effectiveness, and that these issues should be reviewed at a later stage.

1 Introduction

1.1 Objectives of the meeting

The second meeting of Editorial Board and the meeting of Steering Group were convened in Tsukuba, Japan, on 18-20 February 2004. The objectives were:

- To evaluate the proposed additions to the database since the 1st Session of the Editorial Board Meeting and to discuss further improvement of the EFDB,
- To consider strategies for population of the EFDB and cooperation with other organisations,
- To discuss the inclusion of the default parameters in IPCC report on Good Practice Guidance, for Land Use, Land-Use Change and Forestry in the EFDB,
- To consider EFDB linkage with IPCC work on 2006 Inventory Guidelines,
- To improve the user-friendliness, and
- To discuss sector specific issues.

1.2 Participants

The meeting was attended by 36 participants, including the EFDB Editorial Board members, the EFDB Steering Group members, a representative from the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), and the Technical Support Unit of the IPCC National Greenhouse Gas Inventories Programme (IPCC-NGGIP/TSU). The list of participants is attached to this report (Appendix 1).

The meeting was kindly hosted by the Greenhouse Gas Inventory Office of Japan, Center for Global Environmental Research, National Institute for Environmental Studies.

1.3 Proceedings

The meeting was opened at 10:30 on 18 February 2004 with opening remarks by TFB Co-Chair. It proceeded according to the agenda shown in Appendix 2. Following the opening session, the TSU gave several presentations to outline the objectives of the meeting, to show the web statistics (EFDB usage analysis), to show various developments since the 1st meeting of Editorial Board in January 2003, etc.

Subsequently, various issues listed in the agenda were discussed at plenary sessions as well as at breakout group sessions since the afternoon of 18 February through the morning of 20 February. In addition, as a special event, a poster session was organised by National Institute for Environmental Studies in the evening on 18 February.

At the final plenary session, the outcomes of breakout group discussions were presented by each breakout group. Then, Editorial Board Co-chairs made a wrap-up presentation to summarise the achievements and conclude the meeting.

The meeting was closed around noon on 20 February 2004.

Due to the time limitation, the participants could not reach full agreement on some issues at the meeting. After the meeting, therefore, follow-up discussions were made on those remaining issues via e-mail.

2 Discussions and Conclusions

This chapter summarises the discussions and conclusions at the meeting as well as after the meeting via e-mail communications.

2.1 Issues related to evaluation

2.1.1 Issues to be reviewed based on experiences in evaluation

The criteria and procedure for evaluation of new data proposals were agreed at the 1st meeting of the EFDB Editorial Board (Hayama, Japan, 28-30 January 2003), and stipulated in the terms of reference (TOR) of the EFDB Editorial Board.

At this meeting, the Editorial Board (both at a plenary and at a breakout session) tried to review these criteria and procedure based on the experiences gained through implementation of the evaluation[1], particularly with regard to the following points.

- Time frame for each phase in the evaluation process
- TSU initial check
- Allocation of work among Editorial Board members
- Guidance on "Properties" field
- Consistent application of criteria

The Board members considered these issues, and made the following comments and suggestions.

- Timeframe is not possible to assess – not enough experience.
- TSU initial check is very useful.
- Guidance on "properties" field needs improvement. Preferably, it should be more specific. Space available for information input is not adequate in many fields.
- In order to ensure consistent application of criteria, further elaboration of guidance on sector specific issues may be needed.
- Input procedure needs to be simplified – excel/hard copy of input form and improved guidance should be provided.
- Evaluation procedure may need to be simplified. After first check by selected group member, communication within the group will continue via email until consensus will be reached. Final decision will be posted on the web.
- TOR may need to be modified in line with comments form Board members.
- User Manual needs to be improved using comments from users and Board members. (E.g, a list of parameters as elaborated by sectoral groups should be attached.)
- Interface of web version needs to be revised to be more user friendly. Currently, the CD version is much better than the web version.)

[1] As of 13 February 2004, 63 new data proposals had been submitted to the EFDB and subjected to the TSU initial check. Some of those had been forwarded to the Editorial Board for evaluation.

Overall, however, it was considered too early to draw a conclusion on these matters since the Editorial Board had not gained so much experience yet. (For details of the discussion by each sectoral BOG, see Appendix 2.) It was agreed that they needed more experience to assess the evaluation procedure's quality and effectiveness, and that these issues should be reviewed at a later stage.

2.1.2 Other issues related to evaluation process

a) Involvement of original researchers/authors in the evaluation process

Submissions of secondary data compilations by non-authors can create problems with regards to proper usage of data, particularly in terms of author's intended usage and also may be a tangential issue of publication rights.

In order to ensure that information is properly presented with information that would allow for the proper usage in terms of preparing inventories, it would be desirable that the original researchers/authors should be involved (or contacted) in the evaluation process. Another solution to this problem would be to accept only those data submitted by the original authors (i.e. to reject proposals based on secondary data). However, too stringent a rule like this would seriously hamper the EFDB population.

The Board members discussed this issue, and concluded as follows.

- Involvement of original researchers is appreciated, however it is difficult to achieve in many cases in reality.
- Submissions from secondary sources should be accepted when appropriate documentation is available.
- It is encouraged to establish cooperative relationship between researchers and inventory coordinators.

b) Procedure and criteria for evaluation of data extracted from emissions models

There is a tendency for inventory methods to move towards emission models, since single sample-based emission factors tend to be static, not representative of a variety of conditions, and become outdated. As the EFDB evolves, it may become important to look at how to incorporate information from these models into the EFDB.

One of the possibilities is to connect EFDB users directly to the models. In this case, however, it should be carefully considered how the Editorial Board can evaluate those models in a consistent manner with the case of other data proposals. (This issue is discussed in Appendix 3 more in details.)

The Board members discussed this issue, and concluded as follows.

- Data (parameters) from emission models should be accepted:
  - ✓ When models are described in the IPCC Methodology Reports (e.g., the Revised 1996 IPCC Guidelines, GPG2000, GPG-LULUCF)
  - ✓ When the algorithm and/or equations are provided in the documentation

- At this stage parameters from complicated models should not be included, however links to the models can/should be provided.
- In principle, models should be described in IPCC Methodology Reports and parameters, EFs should be included in EFDB.

c) Procedure and criteria for bulk-imported data proposals from publications

The TOR of the EFDB Editorial Board stipulates:

> 13. … In principle, the EFDB Editorial Board will accept without further assessment the data already published by the IPCC. The data presented in emission factor handbooks or international scientific emission databases may be also accepted without further assessment on the condition that the Editorial Board collectively judges that those handbooks or databases are internationally recognised as authoritative information sources[2].

The 1st meeting of the EFDB Editorial Board (28-30 January 2004, Hayama, Japan) agreed that this issue might be reconsidered when such data proposals are actually made by "Bulk Import".

At this meeting, a possible approach to evaluation of bulk-imported data proposals was suggested (see Appendix 4), but this issue was not discussed as such data proposals had not been actually made by "Bulk Import" yet.

2.2 How to incorporate GPG-LULUCF into EFDB

The IPCC developed a report on *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (*GPG-LULUCF*) to ensure that country inventories on LULUCF are neither over- nor underestimated as far as can be judged, and uncertainties are reduced as far as practicable, and to facilitate the best use of available resources, taking different national circumstances into account. This report was adopted/accepted by the IPCC at its XXIst Session (Vienna, Austria, 3-7 November 2003) and welcomed by the Conference of the Parties to the UNFCCC at its 9th session (Milan, Italy, 1-12 December 2003).

In the *GPG-LULUCF*, Chapter 3 (LUCF Sector Good Practice Guidance) provides methodological advice on the estimation of emissions and removals of CO_2 and non-CO_2 greenhouse gases in the LULUCF Sector. It is divided into six sections based on land-use categories; and each section is further divided into two sub-sections based on the status and recent history of the land use. This structure of the *GPG-LULUCF* (Chapter 3) is different from that of the *Revised 1996 IPCC Guidelines* (Chapter 5 of Vol.3) which the EFDB structure follows. Also, it should be noted the relation between the *GPG-LULUCF categories* and *1996 categories* is not one-to-one, which makes it difficult to link these categories mechanically.

[2] For clarification, those publications or databases that were granted this special treatment (i.e. acceptance without further assessment) should be explicitly listed and marked somewhere on the EFDB webpage.

With this background, the Steering Group and the Editorial Board were invited to consider how to incorporate the *GPG-LULUCF* into the EFDB. This issue was discussed in the LUCF BOG, and they concluded to make several suggestions.

<EFDB structure>

- Based on demands of data providers and users, need to have the interface that allows the user to access both *1996 IPCC Revised Guidelines* and *IPCC LULUCF GPG*;
- When the data are submitted the provider should indicate where it should go (*Revised 1996 IPCC Guidelines* or *GPG-LULUCF*);
- For the terms of consistency, old data tables should be retained in the EFDB. The footnote should be provided to indicate that the table have been updated;
- Initial properties and terminology (identified at the First EFDB Meeting) are attributed to *Revised 1996 IPCC Guidelines*. These should be supplemented with new terms and parameters from the *GPG-LULUCF*.

<Optional proposals on how the changes could be implemented>

- The changes proposed are of technical issue;
- The EFDB parameters from the *Revised 1996 IPCC Guidelines* should be retained and updated wherever necessary (see bullet 3 in *EFDB structure*). New parameters from the *GPG-LULUCF* should be added;
- The mapping back table in the *GPG-LULUCF* should be used as the basis for developing the new structure and re-consideration of properties and terminology;
- Both re-structuring and supplementing properties and terms could be done in parallel. References to the *Revised 1996 IPCC Guidelines* and the *GPG-LULUCF* should be included in the User Manual.
- Involve colleagues from Agricultural Component of the EFDB for more competent consideration of the parameters to be provided.

This issue was further considered after the meeting by the TSU and Steering Group, based on these suggestions from LUCF BOG of Editorial Board. Finally, it was decided to take a temporary pragmatic approach for the time being as follows[3].

<Note on Processing Data from GPG-LULUCF in the CDROM version 1.1>

In processing data of emission factors and other parameters from the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (*GPG-LULUCF*), 18 new categories were temporarily added under "5 Land-Use Change & Forestry" in the list of "IPCC Category". These categories consist of 6 land use categories in GPG-LULUCF namely: Forest land (5-FL), Cropland (5-CL), Grassland (5-GL), Wetlands (5-WL), Settlements (5-SL), and Other land (5-OL). Each land use category is further sub-categorized into two based on the status and recent history of land use. Thus, for instance, for Forest land (5-FL), the sub-categories are: Forest land Remaining Forest land (5-FL-1) and Land Converted to Forest land (5-FL-2). These categories correspond to the sections and subsections of Chapter 3 of *GPG-LULUCF*. Linkage between these categories and the 1996 IPCC Guidelines' reporting categories is elaborated in Section 3.1.2 of *GPG-LULUCF* (pages 3.11-3.14)

[3] The data provided in the GPG-LULUCF were included into the updated CDROM (version 1.1) released at UNFCCC-COP10 in Buenos Aires in December 2004.

The EFDB will likely be remodeled after the completion of the 2006 IPCC Guidelines so that the new structure of the source/sink categories will be embodied. The current source/sink categories in the 1996 Guidelines will be retained in view of the need for the Parties to the UNFCCC to continue using the 1996 Guidelines for several years after the completion of the 2006 Guidelines. The search function will be improved so that users can search for data according to either source/sink classification (1996 Guidelines or 2006 Guidelines).

The 18 new categories that were temporarily added in the updated CDROM version will be integrated into the new source/sink classification when the EFDB is remodeled after the completion of 2006 Guidelines.

2.3 How to relate the EFDB to the 2006 IPCC Guidelines

In response to the decision of IPCC XX and the invitation from the SBSTA at its 17th session the IPCC will revise and update the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (*1996 Guidelines*). This work will be completed in 2006. The terms of reference (TOR), table of contents (TOC) and workplan for the new guidelines (*2006 Guidelines*) as agreed by the IPCC at its XXIst Session are shown in the attachment to this paper.

According to the TOR of the *2006 Guidelines*, the IPCC Emission Factor Database (EFDB) is regarded as one of the important resources on which the IPCC will base this work. Besides, the second expert meeting on the EFDB project (Bratislava, Slovakia, 23-24 April 2002) concluded that the amendment of the IPCC source categories laid out in the EFDB should be considered in future work when the current IPCC Guidelines are revised.

With this background, the EFDB Steering Group was invited to consider how the EFDB should relate to the *2006 Guidelines*.

2.3.1 What could be possible contributions of EFDB to the development of 2006 Guidelines?[4]

The participants recognized two possible ways for EFDB (and its Editorial Board) to contribute to the development of *2006 Guidelines*.

- Contribute as an on-line tool to collect up-to-date data for inclusion into the *2006 Guidelines*.
- Share the experiences, findings and outputs gained through the EFDB activities with authors of the 2006 Guidelines. For example, criteria for evaluation of data, guidance on "properties" as well as the list of fuel categories that the EFDB Editorial Board developed will be helpful to them.

In addition, it was noted that several members of EFDB Editorial Board would also join the development of *2006 Guidelines* as Lead Authors. In the expectation that this

[4] Essence of the outcome of this discussion was introduced by the Board Co-chair to the meeting of Co-ordinating Lead Authors of *2006 IPCC Guidelines* held in Oslo, Norway, in May 2004. Also, the EFDB and some experiences gained through its activities were introduced by TSU in a series of sectoral meetings for *2006 IPCC Guidelines* held from June to November in 2004.

would allow EFDB to take pro-active position within the *2006 Guidelines* process, several suggestions were made as follows.

- Closely link the *2006 Guidelines* and the EFDB
  - ✓ To support the process as much as possible with the functionality that was available within the EFDB
- Clearly define "tasks" for Guidelines and EFDB
  - ✓ Use the specific qualities of both textual information (Guidelines) and numerical information and query tools in defining.
    - ✧ what should/could be in either of the two?
    - ✧ what must be in both?
      - EFs and parameters as included in the Guidelines (defaults)
      - sector & fuel definitions
- A clear distinction between the two could be:
  - ✓ 2006 Guidelines should contain relatively stable, mostly textual information:
    - ✧ explanation of methods
    - ✧ definitions (e.g, definitions of sectors, fuels, units)
    - ✧ principles of the algorithms of emission calculation models
    - ✧ tables with default values (to be used if user doesn't know any better)
  - ✓ EFDB should contain numerical information (specific emission factors and other parameters) that is more sensitive to new scientific knowledge.
- Offer EFDB functionality to *2006 Guidelines* authors
  - ✓ EFDB would be able to offer its "forum" functionality to the authors and management of the *2006 Guidelines* development process. For example, separate user groups "volume authors" could be created within the system where the authors of *2006 Guidelines* could propose, and comment on, new emission factors or update proposals for existing ones. The advantages of this would be:
    - For EFDB: Inclusion of all newly proposed emission factors would be facilitated during the development of *2006 Guidelines*.
    - For 2006 Guidelines process: A well-organised web forum would be provided for exchange of views and information during the process. Also, it would facilitate harmonized and consistent documentation for emission factors throughout the *Guidelines*.

2.3.2 How and when should the EFDB structure be changed?

The current source/sink categories in the *Revised 1996 IPCC Guidelines* are very likely to be modified in the *2006 Guidelines*. Accordingly, the EFDB will likely need to be remodeled after the completion of the *2006 Guidelines* so that the new structure of the source/sink categories could be embodied. The current source/sink categories in the *Revised 1996 IPCC Guidelines* should be retained in view of the need for the

Parties to the UNFCCC to continue using the *Revised 1996 IPCC Guidelines* for several years after the completion of the 2006 Guidelines.

It was noted in the meeting that a clear distinction should be made between the understanding of:

- **Search structure**: both 1996 and 2006 sector structures would live simultaneously for several years, if not forever.
- **Database structure**: database structure could be hidden for the user and only tuned such that the above is possible.

It was agreed that the search function should be improved so that users can search for data according to either source/sink classification (1996 Guidelines or 2006 Guidelines). It was also agreed that this issue of necessary changes to structure should be considered after the completion of *2006 Guidelines*.

2.4 Issues related to population/promotion of EFDB

2.4.1 Incentives to submit data proposals

The data input process contains many requirements to ensure the quality and usability of EFDB, which may well discourage scientists/experts to submit their data. In order to motivate them to submit data, incentives should be devised and highlighted while efforts should be made to improve user-friendliness of the interface.

Two merits were highlighted by TSU and noted by the participants.

- Submission of data to EFDB will benefit data providers because it would promote their research results/publications, since references to relevant publications will be contained in the dataset.
- Data providers could be involved in ongoing IPCC activities. Submission of research results to EFDB may give them opportunities to make contributions to IPCC Methodology Reports (e.g., 2006 IPCC Guidelines) even in the case they are not designated authors of those reports."

The participants agreed to these merits, but they felt that they needed to further consider how to increase the incentives to submit data proposals.

2.4.2 Contact with potential data providers/Cooperation with the other organizations

The participants also recognized the importance of contacting potential data providers to facilitate EFDB population. Possible channels would include:

- IPCC Focal Points
- UNFCCC
- UNDP (National Communications Support Programme)
- UNECE/TFEIP
- FAO
- IPIECA

- ICAO
- IMO
- WRI

It was agreed that among others the co-operation with UNFCCC[5] was important. Several suggestions were made to make better use of UNFCCC process, such as:

- Official letter from TSU/TFB to UNFCCC, which they can forward/attach to their inventory focal point (this applies to Annex I only).
- Disseminate the official letter during reviews (in-country (reviewers/compilers), centralized). Then, Expert Review Teams would stimulate experts in the country being reviewed to upload their emission factors
- Read the letter (drafted/written by TSU) at lead reviewers meeting. Communicate with lead reviewers.
- Collect data of emission factors that can be found in national inventory reports (Annex I).
- In Non-Annex I National Communication countries that have EFs can easily be identified (4th Compilation and Synthesis: /SBI/2002/8, /SBI/2002/16, and 5th Compilation & Synthesis SBI/2003/13).
- Take advantage of strategic opportunities (technical workshops, CGE, etc)

It was also agreed that the members of Editorial Board and Steering Group should actively promote the EFDB within their own inventory community[6].

2.4.3 Materials/tools for promotion

The Steering Group and TSU had been making efforts to promote the EFDB on various occasions (e.g., UNFCCC-COP/SB sessions), using materials such as:

- Fact sheet
- PowerPoint presentation (in English)
- EFDB User Manual

The Editorial Board members were also encouraged to promote it using these materials.

In addition to these existing materials, development/use of the following materials/tools was suggested.

- A letter to potential data providers to stimulate submissions of data proposals.
- Posters (A0 or A1 size) to be used in meetings/workshops
- Non-English versions of PowerPoint presentations, fact sheets and posters
- Leaflet

[5] It was noted that many EFDB Editorial Board members are involved in the UNFCCC Review process as well.

[6] In relation to this, it was suggested that the names and contact details of the Board members should be shown on the poster, website, etc. However, a consensus could not be reached on this matter.

2.5 Other Issues

The participants agreed upon the need for technical improvements of EFDB based on the comments collected by TSU from users and Board members. (See Appendix 5.)

3 Future Work

In conclusion, the meeting participants agreed upon the following items as necessary future work.

- Technical modifications[7]
  - Search function taking GPG-LULUCF & 2006 Guidelines into account
  - Improvement of input form
  - Update information management, language management
- Import of the data in the GPG-LULUCF[8]
- Further consideration as to how to relate EFDB to *2006 IPCC Guidelines*
- Improvement of guidance (Revision of User Manual)
  - Highlight of importance of "Abstract in English"
  - Standardisation of units
  - Clarification of type of parameters
- Revision of TOR (improvement of evaluation procedures, particularly with regard to communication among EB members, para 17c-d)[9]
- Analysis of weak area in each sector
- Development and dissemination of promotion materials/tools
  - Letter to UNFCCC and/or potential data providers
  - Posters, Leaflet
  - Translated versions of PowerPoint presentations, fact sheets and posters
- Development of off-line input form (simple package)[10]

As for the improvement of evaluation procedure, it was considered too early to draw a conclusion since the Editorial Board had not gained so much experience yet. It was agreed that they needed more experience to assess the evaluation procedure's quality and effectiveness, and that these issues should be reviewed at a later stage.

[7] Some technical improvements were made by SPIRIT a.s. following the outcome of this meeting.

[8] The data provided in the GPG-LULUCF were included into the updated CDROM (version 1.1) released at UNFCCC-COP10 in Buenos Aires in December 2004.

[9] Some suggestions were made for revision of TOR (i.e., procedures for evaluation), but it was decided to keep to the existing TOR procedures as much as possible until the Editorial Board gain much experience enough to evaluate the process and how it works.

[10] Mini-batch import form (XLS) could be used.

Appendix 1: List of Participants

IPCC Emission Factor Database
The 2nd Meeting of the Editorial Board / Meeting of the Steering Group
18 – 20 February 2004, Tsukuba, Japan

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Appendix 2: BOG session reports

<Energy>

Issues to be reviewed based on experience in evaluation

1) Time frame

Too early to say. The time presently allowed seems appropriate for the evaluation of difficult cases. Review later.

2) TSU check

Demanding process which may create resource problems if and when significant numbers of contributions are offered. It would be interesting to hear TSU's experiences and comments.

3) Allocation of work to members

Too early to comments on demands for evaluation. Skills available seem adequate at present. No problems foreseen for the allocation procedure.

4) Guidance on properties field

Comments so far are general and not related to experience of problems.

a) User confusion could be created by differing classification of a specific characteristic as parameter or property or primary sort value within and across the different sectors.

b) Add to source category 1B, CO2 and to 1B2c (venting and flaring), N2O. Note: change 1B3 to 1B2c.

c) 1A3; non-CO2 from mobile combustion - add 'fuel economy'

5) Consistent application of criteria

Too early to say. The qualities and checks proposed for each criterion seem well chosen. Only time will reveal any inadequacies in the checks.

Other issues

1) Involvement of original researchers/authors

Pragmatism dictates procedure. If the database receives a large number of submissions from a secondary source only a light procedure examining the 'outliers' can be undertaken. Ideally, however, each individual data submission should be examined at source level to ensure database quality and integrity.

2) Criteria for evaluation of data from model

Already discussed in plenary. Energy group agrees that the coefficients in simple emission equations are eligible as EDBF entries. Evaluation of models should not be undertaken as part of the EDBF process. It should be borne in mind that the aim is to support the preparation of national annual inventories and simple summary factors that can help the process. Where these factors are derived from models there is an outstanding problem whether such factors should be admitted without entering into

their model derivation process. If not the potential work required for review may increase significantly.

3) Criteria for bulk imported data

See comments under item 1 above strengthened by requirement that bulk import should be from an internationally recognised source.

Incentives to submit proposals

EB experts should take primary initiative in stimulating data submissions by contacting main areas of activities and cooperating with them to forward data.

Include on main IPCC web site a small animated advert of EFDB.

Cooperation with other organisations

This should not be regarded as a priority area as some of the data may be common and the quality control by the organisations is largely unknown. National inventory reports are potentially useful provided that the sources are adequately referenced.

Comments on evaluation procedure

The evaluation procedure by the EB lies between data provision and data use. It adds value to the EFDB and contributes to our saleability.

The present arrangement for consideration of ef submissions is cumbersome because of the limitations of the web site. The format limitations also cramp the flexible use of the text field in the web page. One cannot add tables or footnotes. The following procedure is proposed as an alternative.

1. The nominated expert contacts the data provider to review and revise the submission. E-mail communications.

2. When satisfied with the submission the expert submits it to the remaining sector experts for their opinions. This is effected through a 'user group' list in which posts are maintained in a continuous sequence of related topics (threads) by the TSU. This keeps the TSU informed. If there is further discussion between experts this is done through the list. If the data provider must be consulted again the consultation will be outside the list by e-mail and through the nominated expert as gateway.

3. If a decision is reached it is then posted by the SC on the web site with justification. If decision cannot be reached the list discussions are transmitted to the EB Chairs for a finding.

This revised approach to evaluation may require amendment to the TOR.

It has also been suggested that the initial TSU cleaned data format be sent directly to the SC asking for the name of the nominated expert and then on to that expert. It will then be circulated to the sector experts at stage 2 above. This obviates the step of posting it on the web site with the possibility that it will need to be amended or removed as a result of the evaluation.

<Industrial Processes (and Solvent and Other Product Use)>

Issues to be reviewed based on experiences in evaluation

1) Time frame for each phase in the evaluation process

Limited experience so far, but time frame seems OK, if email is working OK and providers provide in their initial submission the required information to the reviewer.

Latter could be made more likely by providing some extra guidance to providers in advance. Notably by mentioning explicitly which information elements will be screened (based on TOR, par. 3 + 7).

a) *Type of measurement (and number) or type of model used; is detailed info in the reference?*
b) *Are measurements/model validated e/o verified; is detailed info in the reference?*
c) *How is the annual factor determined?*
d) *Type of uncertainty assessment (e.g. who & how)?*
e) *Where is the factor presently used?*
f) *If the reference is not easily available or not in English, is more summary of detailed info provided?*

2) TSU initial check

Example proved the usefulness in terms of correct allocation of information, cf. guidance.

However, if a lot or often shifts or often specific shifts are necessary, it may mean that the logic of the property field examples is not the natural one and has to be modified (see 4). The EF in INF5 showed an example (pressure under Conditions?).

Important is that the Description field should be as clear and specific as possible.

Should the first item, before or next to Gas/IPCC category (not after the "Properties").

- The Unit and Common unit should include the definition of the activity, bu separated from the pick list (will make picklist much shorter).

- The present form does not ask for a unit for the confidence limit (% or kg/unit). Should be checked now by TSU and included in software.

3) Allocation of work among Editorial Board members

Group filled the current gaps and added persons to some others; to be checked again after meeting.

4) Guidance on "Properties" field

Modifications not yet needed. Since only TSU sees the initial submission and the modified version, the experience of the TSU staff member is key to the IPS group discussion on this matter.

5) Consistent application of criteria

All group members posed same questions for the given example, so basically interpreting the TOT in a similar way. These were all related to the issues mentioned in TOR par. 3 to 7 (see list a-e under 1).

In order to be able to do this, the answers to questions a-e should be provided in data submitted.

E.g. a,b,c in summary form in the abstract; d in Other info on data quality and f either in separate word document or in extended abstract. [This should be added to the provider guidance].

So the ABSTRACT field should be extended to e.g. 20 lines.

Other issues relating to evaluation process

1) Involvement of original researchers/authors in the evaluation process

The data provider is responsible for correct interpretation; always requirement to consult the original authors is unwanted barrier for data provider and evaluation process. So only when it is felt necessary, one should ask or check this.

2) Procedure and criteria for evaluation of data extracted from emissions models

In IPS sector, there are models for emissions from F-gas usage, by countries (e.g. USA) or industry organisations (e.g. GGEEC). Factors resulting from these models as described in IPCC guidelines could be provided with a reference to web-address for more model info.

3) Procedure and criteria for bulk-imported data proposals from publications

No remarks

Incentives to submit data proposals

After 2nd bullet (presented in the discussion paper):

· You will be able to benefit from other factors submitted with similar information, e.g. for checking the comparability with your own data; in order to do so, the contribution of all is needed.

· You will assist in including the best default factors available to date in official reporting guidelines, thereby preventing that unrealistic figures will be used in national inventories and discussions with industrial subsectors.

· Your industry contributes to global efforts for protecting the environment, by making realistic assessments of the strength of the emission sources and their trend.

Submissions of secondary data compilations by non-authors

Encourage the data provider to provide as much as possible for primary references. For IPS sources this will be mostly either accessible technical reports or scientific papers. [This should be added to the provider guidance].

Extraction of data from emissions models for inclusion in EFDB

For IPS these should be primarily the factors identified in the IPCC guidelines and Good Practice.

Contact with potential data providers/Cooperation with the other organisations

In addition to the list made before:

United Nations Industrial Development Organisation (UNIDO)

Headquarters
Vienna International Centre
P.O. Box 300
A-1400 Vienna
Austria
Environmental Management
Mr. C. Gürkök, ext. 4575;
C.Gurkok@unido.org

Greenhouse Gases Emissions Estimating Consortium (GGEEC)
at http://www.ggeec.org

Non-sector-specific organisations:
OECD PRTR Task Force
UNEP

Materials/tools for promotion

For potential providers, in addition to the leaflet:

- example of spreadsheet to be filled (present min-batch + single-batch in vertical form)

- short explanation what info is expected in each field, among which the property field

- the list of criteria/questions that the data submitted will be checked in the evaluation (notably the items a to f mentioned above).

This should be made available all at 1 specific webpage, that we can refer to when promoting the EFDB, as the present internet software is too broadly designed for simple data providers (too many features, needed for factor EFDB evaluation en EF info seekers).

It could be considered making 3 separate but similar spreadsheets, to give more sector-specific help on the properties to be filled and the units to be used.

<Agriculture>

1) Annex review – List of Properties

- information on extrapolation

-e.g., should daily EF go into database?

-reaffirm or clarify importance and need for measurement details, in addition to the parameter information

-major review of usage information:

-extrapolation or interpolation to annual factors
- representativeness (size and other choices for sampling)
- caveats of usage

2) List of reviewer expertise

-reviewing of secondary data (how current, author accessible?, confidence in usage)

3) Example of review process

-units: drop-down menus should match Guidelines units

-categorization: e.g., cattle subcategories should match any refinements that result from Guidelines revisions.

-review tracking: when changes are made, how does reviewer check orginal or subsequent submissions.

-need field for 'Uncertainty reference"

4) Issue Paper No. 5 (Time Frame)

- need more experience

5) Issue Paper No.4 (Allocation of work)

- Possibly requires more expertise in some area (animal types, feeds, etc)

6) Guidance on "properties" field

- See above.

7) Consistent application of review criteria

- Helped by review examples – key elements

<Land-Use Change and Forestry>

Evaluation of new data proposals

1) Time frames:

- Not so much experience gained (the process is still under way);
- TSU checks generally fit in the previously agreed schedule.

2) TSU initial checks:

- Checks should be more routine and simplified;
- To make first judgment where the proposal should go;
- Separate references provided based on objectives.

3) Allocation of work among EFDB EB members:

- Need to control the process of submission and review to ensure that the timeframes are kept (notify all members on new submission and allocation of responsibilities);
- Inform on the progress achieved so far;

4) Guidance on "Properties" field:

- Some cells should be more clearly explained, notation keys should be used;
- "Others" could be removed;
- Introduce "Help" option and "drop down list" for more explanation of appropriate fields;
- If the reference material is not in English, provide the abstract (no more than 400 words) for more detailed description of methodology, ecosystem type, underlying assumptions and data, statistics and etc.);

5) Other issues related to evaluation process:

- Involvement of original researches and authors is good. It is relevant to extraction of parameters from emission models;
- Involvement of experts from regions/IPCC to overcome language problems and contribute for more objective and robust review;
- Request on additional expertise in Grassland/tundra; temperate and wet tropical forests;
- Support TSU proposal on "Bulk Import"

Population/promotion data to the EFDB

1) Popularization of the EFDB:

- EFDB EB members to participate in different meetings and make presentations;
- TSU to develop distribution kit and training package on EFDB, sets of slides and transparences on relevant issues;
- Apply to UNFCCC Roster of Experts, UNDP-GEF, UNEP and other international programs;
- Introduce training package to different courses and programs;

2) Promotion data to EFDB:

- Simplify submission format - skip "Other" fields from manual (these may be requested later, if necessary);
- Prepare a format for hard copy submission (use electronic format as the basis, but expand appropriate cells to allow for typing and indicate mandatory fields);
- Shorten amount of information that need to be filled in.

IPCC LULUCF GPG in IPCC EFDB

1) EFDB structure:

- Based on demands of data providers and users, need to have the interface that allows the user to access both *1996 IPCC Revised Guidelines* and *IPCC LULUCF GPG*;
- When the data are submitted the provider should indicate where it should go (*1996 Revised Guidelines* or *IPCC LULUCF GPG*);
- For the terms of consistency, old data tables should be retained in the EFDB. The footnote should be provided to indicate that the table have been updated;
- Initial properties and terminology (identified at the First EFDB Meeting) are attributed to *1996 IPCC Revised Guidelines*. These should be supplemented with new terms and parameters from the *IPCC LULUCF GPG*.

2) Optional proposals on how the changes could be implemented:

- The changes proposed are of technical issue;
- The EFDB parameters from the *1996 IPCC Revised Guidelines* should be retained and updated wherever necessary (see bullet 3 in *EFDB structure*). New parameters from the *IPCC LULUCF GPG* should be added to those in the EFDB;
- The mapping back table in the *IPCC LULUCF GPG* should be used as the basis for developing the new structure and re-consideration of properties and terminology;

- Both re-structuring and supplementing properties and terms could be done in parallel References to *1996 Revised Guidelines* and *IPCC LULUCF GPG* should be included in the User Manual.
- Involve Colleagues from Agricultural Component of the EFDB for more competent consideration of the parameters to be provided.

LIST OF PARAMETERS TO BE INCLUDED IN THE EFDB

Source: *IPCC LULUCF GPG*

Default data tables come from		
Chapter 3	Annex 3.A.1	Appendices
Table 3.2.1	Table 3A.1.2	Table 3a.1.1
Table 3.2.2	Table 3A.1.3	Table 3a.1.2
Table 3.2.3	Table 3A.1.4	Table 3a.1.3
Table 3.2.4	Table 3A.1.5	Table 3a.2.1
Table 3.2.5	Table 3A.1.6	Table 3a.3.2
Table 3.3.1	Table 3A.1.7	Table 3a.3.3
Table 3.3.2	Table 3A.1.8	Table 3a.3.4
Table 3.3.3	Table 3A.1.9	Table 3a.3.5
Table 3.3.4	Table 3A.1.10	Table 3a.4.1
Table 3.3.5	Table 3A.1.11	
Table 3.3.6	Table 3A.1.12	
Table 3.3.7	Table 3A.1.13	
Table 3.3.8	Table 3A.1.14	
Table 3.3.9	Table 3A.1.15	
Table 3.4.2	Table 3A.1.16	
Table 3.4.3		
Table 3.4.4		
Table 3.4.5		
Table 3.4.6		
Table 3.4.8		
Table 3.4.9		
Table 3.4.10		
Table 3.5.2		

<Waste>

- Need one more member for Waste Incineration
- Detailed suggestions for improving the properties field
- "Encourage" contact between data provider and original author (particularly useful in developing countries where researchers and people who know the

guidelines may be distinct; an involvement of the original author may not be required, but could be taken into account during the evaluation)

- Interface on CD-ROM is better than on Web
- Issue of unit: e.g. emissions per unit of "product" : need clarification how to deal with this.
- Facilitate input:
    - In the input form create direct hyperlink to relevant part of the guidance on property fields (Appendix) etc.
- Promotion suggestions;
    - Fact sheet should be put on main EFDB web site
    - Translate factsheet and PPT into other languages (Spanish: will be done by Carlos)
    - People to contact: E. Scheele: Worldbank; always cc: to TSU and other sectoral EB members

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Appendix 3:
Background Discussion on Extracting Data from Emissions Models for Inclusion in EFDB

1. Background

Some of the more the advanced inventory systems rely on emission models to prepare estimates for a source category. Emission models have the benefit of developing more representative emissions estimates (both spatially and temporally) than simplified Emission Factor * Activity Data approach. Typically the models have a number of variables as inputs that affect the emissions estimate. Some of the Tier 2 approaches in the IPCC Guidelines can be constructed along an emission model structure (for example, enteric fermentation).

There is a tendency for inventory methods to move towards emission models, since single sample-based EFs tend to be static, not representative of a variety of conditions, and become outdated. As the EFDB evolves, it may become important to look at how to incorporate information from these models into the EFDB. The 2000 India meeting on the development of the EFDB considered including such data, and reported as follows:

> Another issue is the inclusion or exclusion of expert systems or mathematical models that can be used to calculate emission factors as a function of various parameters.
>
> Advantages of inclusion:
>
> - A better match of emission factors to local circumstances would be allowed.
> - Emission factor information would be available in one software package, compared to the situation where internet links to the modeling software would be required. This is an important consideration in developing a database that would ensure direct and simple access to data.
>
> Disadvantages:
>
> - It is technically complicated to build a mathematical model into a database.
> - It requires extra person-time to fully understand the mathematical models and to include them in the database.
> - Stand-alone modelling software will offer more modelling features. These features will be absent in the EF database.
>
> However, it should be noted that including complex and detailed models in a database of emission factors would lie beyond the scope of such a database.

2. Issues to be considered in regard to utilizing emission model data in EFDB

1) Are there intermediate outputs available that are useful and in a form suitable for submission to the EFDB?
   - Is there an emission factor or similar type parameter?
   - What temporal and spatial scale is the output available for?

- Would the factor/parameter have value beyond the national or regional conditions?
- Is the output dependent on very specific activity data or inputs not available to other users?
- Is the format of the output suitable for mapping to database (e.g., table of factors)
- Is the background data for model sufficiently documented to allow preparation of data submittal?

2) If there are not output data readily available, can such data be extracted from the model?
   - Same questions as (1) but also, how to prepare and process the output data.

3) Is the model complexity such that the only appropriate way to utilize it is through direct implementation (i.e., link to the emission model itself)?
   - Is the model available to other users?
   - Is there a common platform and user's guide to use the model?
   - Has the model been validated?
   - Can the model be adopted for use by other users?
   - How can model be linked to EFDB? (e.g., link from website, listing of contacts for models, etc.)
   - Are there other mechanisms besides EFDB to connect users to the model?
   - Should there be a review process for such models? What kind of review?

Some of these issues (1) and 2)) may require significant efforts both for EFDB designing and for EFDB use, and the central question will be how to make it happen. Issues of 3) could be as simple as facilitating contact between model developer and end-user, and letting it go from there. In these cases, this may be something best accomplished outside the EFDB.

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Appendix 4:
A possible approach to evaluation of data from other database

In case a data provider offers to contribute data in bulk from an existing database, it may be difficult for the EFDB Editorial Board to evaluate each and every data record one by one according to the criteria defined in the TOR (robustness, applicability, and documentation).

One possible approach for the Editorial Board to take would be as follows.

(1) Ask the data provider for as much and detailed information as possible on the criteria, rules, or principles that were applied in developing their database. In case the Editorial Board has found a serious defect(s) in their criteria etc that would undermine the robustness of the EFDB, those data proposals cannot be accepted. Otherwise, proceed to the next step.

(2) Request the data provider to restructure the information fields laid out in their original database. (This may not be too difficult if the data set is prepared in the form of Excel or Access file. If it is not easy, then a solution has to be sought on a case-by-case basis.)

(3) Carry out sampling checks - pick up some sample data from the data set and apply the normal evaluation procedure to check the robustness, applicability and documentation. In case the Editorial Board has found some problems, a consultation must be held between the data provider and the Editorial Board to seek a solution.

(4) After confirming that the sampling checks have detected no serious problems, the data set will be accepted in bulk.

One of the difficulties is how to ensure that the data meet "applicability" requirements, in other words how to ensure that the necessary information is given in the "properties" fields in each data record.

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Appendix 5:
Comments collected by TSU on the Emission Factor Database

#	Subject	Version	Item	Comment	Proposal
1	Structure of the Database	Web and CD-ROM	IPCC Sectors	Already the GPG-LULUCF has introduced a structure that is somewhat different from the source categories of the 1996 IPCC Guidelines. The revision of these Guidelines will further change the structure, and users may want to have information available and searchable according to the new structure.	Restructuring the database (main categories) should be considered

Data Input

2	Input Format	Web: Submission form	Format	There is not enough default space in the following boxes: - Equation - Data quality reference - Abstract in English - Worksheet Number (in case of GPG-LULUCF) The end of these some references could not be written thus leading to insufficient information.	Increase the space for these fields
3	Input Format	Web: Submission form	Field: “IPCC Worksheet”	This may not be required for very special values that are used in Tier 2 or Tier 3.	Add “if applicable” in the title of the field

#	Subject	Version	Item	Comment	Proposal
4	Input Format	Web: Submission form	Unit	Data providers must correctly specify the unit(s) when they submit new data. Currently, the EFDB provides a single drop-down list of possible units, but this is not always useful. A single drop-down list system can neither be comprehensive nor perfect nor efficient, because units are normally combinations of various elements and there can be an infinite number of such combinations. Currently, data providers can type in, define and register new units as they like when they cannot find appropriate units in the existing drop-down list. Thus, the drop-down list is designed to evolve to include new units, but the resulting long list may not be useful at all. It is necessary to explore better ways for data providers to specify correct units easily without any confusion.	One option could be to use multiple drop-down lists, though this is not a straightforward procedure. Another option would be simply to give up using any drop-down list, and to urge data providers to type in the adequate unit each time they input their data. This option would enable us to remove the cumbersome list
5	Input Format	Web: Submission form	Uncertainties	At present uncertainties should be given as upper and lower limits of the confidence interval. It should be clear that these should be values, not percentages. (Values are more useful for the actual user, percentages need to be transformed, which is another source of error).	The form could be expanded to allow the user to enter uncertainties as either percentages of the mean, or as values for the confidence limits, or both. The description of the underlying distribution function should be in the immediate proximity to these fields.
6	Input Format	Web: Submission form	Format	The Distribution shape would perhaps be nice to describe more in details, e.g. gamma distribution - there is now no space to add this	Include more detailed options in the drop-down list. Or Add a free text space to enable data providers to give detailed explanation.
7	Input Format	Web: Submission form	Format	Data providers cannot fill in only the measurement/calculation year. Sometimes only the year is known, not the month and day.	Enable data providers to specify only the year (i.e. to leave month and day fields blank). Or Delete the fields for month and day (All data providers are required to specify the year only.)

#	Subject	Version	Item	Comment	Proposal
8	Input Format	Web: Submission form	Interface	It would be nice to have the option to save the filled-in table to be used in the next submissions (like e.g. on the webservice when you are paying your bills through the internet) – sometimes most of the data only needs to be changed slightly - this would save a lot of time!	Option 1: Mini-batch import can be used for this purpose. (The MBI file can be used even for submission of only one data.) Option 2: Make amendments to enable data providers to copy an existing data record to a new submission form so that data providers can save time to type in the same information repeatedly. (In this case, all they have to do is only to change the information where necessary.)

Processing Data Proposals

9	Checking and processing submitted EFs	Web	Notification	For the TSU it would be helpful if they could be notified automatically by email if new data are proposed or submissions have been modified.	Provide email notification service
10	Checking and processing submitted EFs	Web	Searching data	To check the list of pending request in the section “Editorial Board – List of pending request”, for a very long list of data to go through (currently 10 records per screen), it would help if the function “go to end of record” can be added.	Add function or choice “go to end of record”
11	Checking and processing submitted EFs	Web	Searching data	In the same section as above, after selecting “EF detail” to view the information, and then by clicking “back to Editorial Board”, it would be user-friendly if the selected EF is highlighted.	To highlight the selected “EF detail”

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Searching Data: User-friendliness

12	User-friendliness	Web	Interface/ Searching Data	The Step-approach is quite clumsy. For illustration of what kind of data is stored in there, but any serious user will find it extremely tiring to work with it. The CD-ROM version of the interface is much more natural for inventory compilers.	Use the same interface for the Web as for the CD-ROM
13	User-friendliness/ Search Function/ Structure of the Database	Web and CD-ROM	Searching data efficiently	First, currently the database does not contain vast amounts of data, so some of what follows does not pose serious problems yet. However, once the database seriously starts to grow the issues become more pressing. If the search feature has little structure there is a danger that there are too many hits, and the user will spend a lot of time finding a value in the "hits", but if the search feature has too much structure, distinct by related information may not be found. The Full-text search is in general a useful feature, but there should be other ways of searching as well. The Filter function (Page 14 of the User Manual) is already useful and exporting to Excel is an option, but users may not be very familiar with this way of searching. On a more fundamental note, it is not clear how regionally applicable factors can be found efficiently, in particular once the database is populated more extensively. However, regional information can be very diverse, and it is doubtful whether any useful search options can be implemented (think of discontinuities and overlaps, e.g. Soviet Union, FSU, Russia etc. and incommensurabilities in resolution, such as North America, Western Europe, ROW - vs - detailed country-	To offer free full-text search (Web) and category-specific search (CD-ROM) option could be a way forward. This would allow the user to combine these two methods intelligently and appropriately for their purposes. Other search option should be considered. The structure of the database could be reconsidered, in particular whether or how regional information could or should be provided and searched for.

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				specific information). As the contents of the database changes (increases) more specific information will be added. The usefulness of the emission factors and hence of the database will depend on the information provided, and to be able to search for and find relevant information will be key. Ideally the structure of the database reflects the type of information that helps identifying factors that are most appropriate for the user.	
14	User-friendliness	**CD-ROM**	Interface: Searching	Initially it is not obvious what one needs to do for searching a value.	Given some instructions on the initial page