ipcc
INTERGOVERNMENTAL PANEL ON climate change
Task Force on National Greenhouse Gas Inventories (TFI)

Annex II

Role and Responsibilities of Editorial Board

Emission Factor Database – Procedures

(Revised at the 3rd meeting of Editorial Board and updated with the conclusions of the 8th, 9th, 12th, 14th, 15th and 16th Editorial Board meetings)

Contents

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1 Background

The overall objective of the Emission Factor Database (EFDB) is to be:

> *an always up-to-date companion for the IPCC Guidelines for National Greenhouse Gas Inventory that is seen as a worldwide resource for greenhouse gas inventory developers.*

This implies:

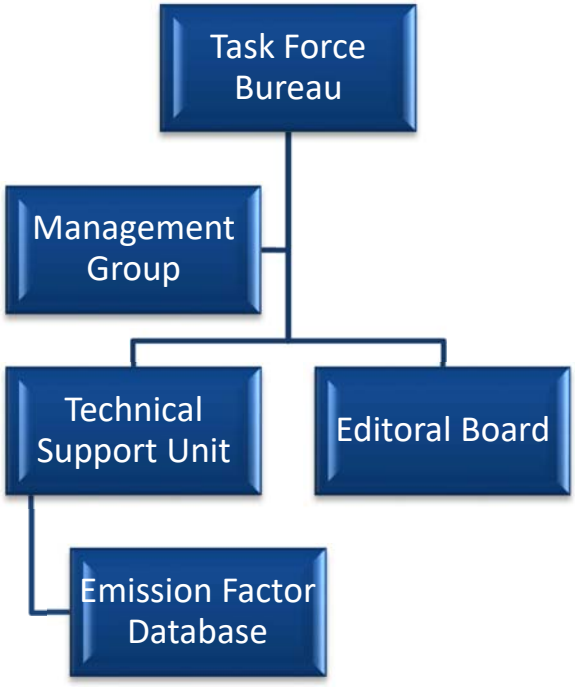
- A database with a wide range of useful data included
- A system that is updated regularly and
- A fast response to users' needs and to data submissions.

Thus, an overall criterion for data acceptance should be that data is useful to users – users should be able to determine how to apply the data and how it may reduce uncertainty in the inventory.

2 Management Structure

The management structure of the EFDB is outlined in Figure 1. The Technical Support Unit (TSU) has an active and central role in the day-to-day activities needed to consider new data for the EFDB. The Editorial Board can then concentrate on scientific matters rather than procedural ones. The responsibility for managing the data approval process and ensuring that the information exchange proceeds quickly is with the TSU. The Editorial Board has the final decision making powers over acceptance or non-acceptance of new data with the final authority residing with the Editorial Board Co-Chairs. The Task Force Bureau (TFB) has a supervisory role as they are responsible for the activities of the IPCC's Task Force on National Greenhouse Gas Inventories (TFI) as a whole.

Figure 1 - Management Structure



TFB = Task Force Bureau
TSU = Technical Support Unit
EFDB = Emission Factor Database

2.1 Editorial Board Role

The role of the Editorial Board is to:

- Oversee the data acceptance process
  - Evaluate data proposals
  - Support data providers to improve/complete submitted information
  - Final decision on data acceptance/non-acceptance
- Review database contents
  - Identify gaps/areas for improvement
- Identify new data to be added
  - Make data proposals
- Publicise EFDB

2.2 Management Group Role

The management group consists of the two Editorial Board Co-Chairs, the two TFB Co-Chairs and two members of the TSU. If necessary the management group will meet in margins of Editorial Board meetings. Their role is to:

- Provide strategic direction
- Give advice and oversight to TSU and Editorial Board
- Propose and make decisions on database developments
- Propose developments
- Publicise EFDB

2.3 TSU Role in EFDB

The role of the TSU is to:

- Collect data proposals
- Manage the data evaluation/review process and support the Editorial Board
- Facilitate communication ensuring timely information flow
- Check that if the data meets general criteria and applicability and documentation requirements
- Prepare draft decisions for consideration by EFDB Editorial Board
- Manage the EFDB
- Support users of the EFDB

3 Reviewing Data Submissions

While the Editorial Board has responsibility for the review and acceptance of any data, the TSU has overall responsibility for facilitating the data evaluation process and ensuring that data is dealt with in a timely manner. Figure 2 shows how this would work.

The Editorial Board Co-chairs shall have oversight of the entire process. This process has five steps and entails the TSU and Editorial Board work in parallel:

1. A data proposal is received.
2. The TSU gives an advance notice to the Editorial Board member concerned. A list of Editorial Board members with responsibility for the individual sectors is maintained[1] and thus one designated Editorial Board member would have a central role. However, the data will be circulated to all Editorial Board members in the appropriate sector[2].
3. The TSU checks that the data meets the general criteria. The TSU prepares a draft proposal that is forwarded to the Editorial Board.

[1] The maintenance of this list is the responsibility of the Editorial Board Co-Chairs.

[2] The fives sectors are: Energy; Industrial Processes& Solvent and Other Product Use; Agriculture; Land-Use Change and Forestry; and Waste

4. The designated Editorial Board member checks that the proposed data meets the robustness, applicability and documentation criteria. (The criteria section below gives more details on the criteria and who checks what.) The designated Editorial Board member can contact the data provider directly while including the TSU in this communication. The TSU may also contact the data provider to seek clarifications but avoiding multiple enquiries to the data provider is preferred. The TSU has the responsibility for tracking the communications. The data proposal will be considered by the Editorial Board and revised if necessary. The final responsibility for any decision lies with the Editorial Board. The designated Editorial Board member circulates the draft decision to the Editorial Board members of the sectors for approval within 3 weeks[3]. In the case of differing opinions, with the TSU or members of the Editorial Board the final authority for decisions is with the Editorial Board Co-Chairs[4]. The decision can be "accept", "not accept" or "pending awaiting response from data provider" (for a fixed number of weeks).
5. The approved data is published in the EFDB.

Figure 2 Steps in Data Review Process

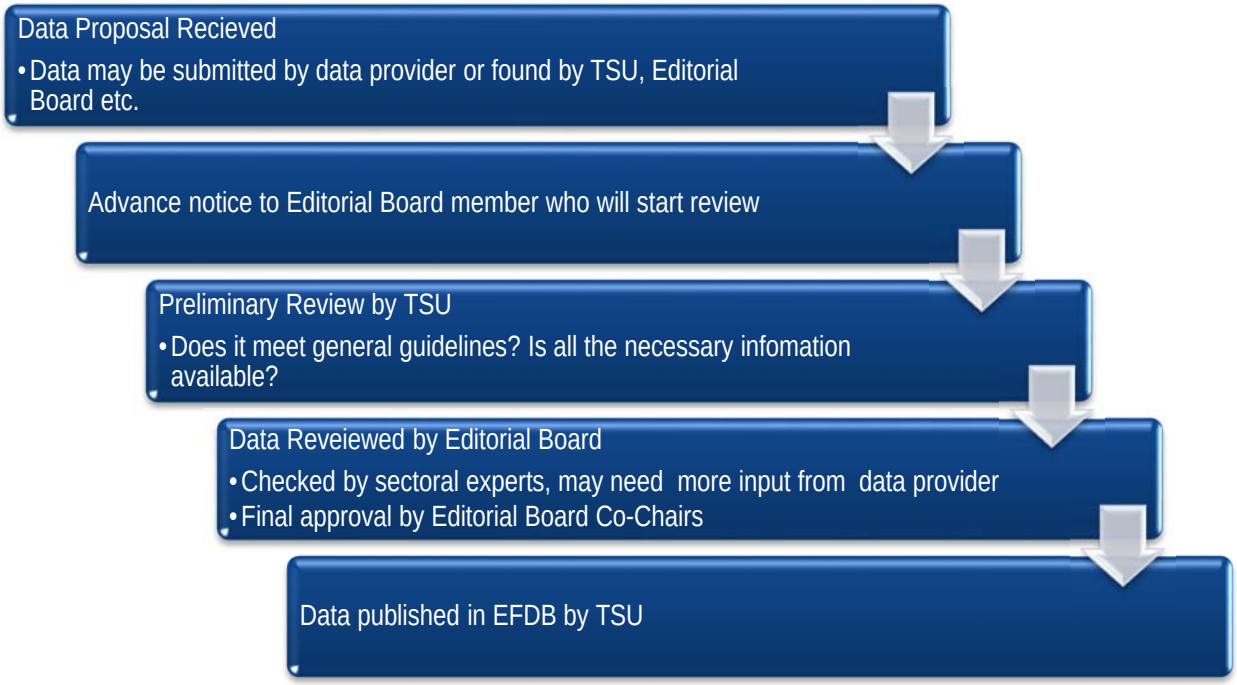


Table 1 shows the time scale. It is important to note that, to date, one source of delay has been the time taken for data providers to respond. As this is outside TSU's or Editorial Board's control this cannot be timetabled accurately and so it is not included in these time scales.

Table 1 Schedule of Data Acceptance (time spent waiting for response form data provided ignored)

Task / Week	1	2	3	4	5	6	7
Step 1&2 - TSU receives data & notifies Editorial Board							
Step 3 - TSU evaluates proposed data & communicates with data provider							
Step 3 - TSU prepares draft proposal & forwards to Editorial Board							
Step 4 - Editorial Board evaluates robustness and applicability & reaches decision							
Step 5 - Publish new information in the EFDB							

[3] Editorial Board members will have an opportunity to agree or disagree with a decision. If they do not comment they will be deemed to have agreed.
[4] All decisions shall be of the Editorial Board as a whole, not as individual Editorial Board members.

Table 2 Data Review Actions and Responsibilities

TSU	Editorial Board
Acknowledge receipt	
Check completeness of supplied data	
Distribute to Editorial Board	Review proposal
Check Criteria	Check data robustness (Section 4.1)
Is documentation supplied (Section 4.3)?	Is this demonstrated by the supplied data?
Is information about robustness (Section 4.1) supplied?	Is the information supplied about applicability (Section 4.2) sufficient?
Is information about applicability (Section 4.2) supplied?	
Prepare proposal	Consult with TSU, review proposal and take final decision & forward decision to TSU.
Publish decision, inform data provider and add to database	*(The Editorial Board has complete oversight of the process and the final say in decisions)*

The designated expert of the Editorial Board shall have responsibility to review the data on behalf of the Editorial Board and to co-ordinate the decision making process.

3.1 Non-English Data and Documentation

Currently it is difficult to evaluate documentation that is not in English. In such cases, the TSU should ask the data provider for an abstract in English. The abstract should, in principle, provide the information required by the Editorial Board to evaluate the data[5] in relation to the criteria. If the data are acceptable based on this abstract and other information (if required) the data can then be accepted without translation of all the background documentation. Editorial Board members are encouraged to search out datasets in non-English literature as these may be less accessible to those who do not use the language concerned.

3.2 Data in Other (non-EFDB) Formats

The Editorial Board should consider non-EFDB format submissions. The Editorial Board will accept paper and/or email submissions but this would require someone to spend the time entering the data[6]. The data review could be before data entry to avoid wasting effort. Formatting and entering the data will be the responsibility of the TSU who may do it themselves or use consultants. Where a report contains many data the report itself could be reviewed and accepted as a whole. Then the TSU will ensure the data is added one by one. This would be a significant saving over accepting each data item one by one.

3.3 IPCC Guidelines Data

Default data from the *Revised 1996 IPCC Guidelines* and the *2006 IPCC Guidelines* have been added to the EFDB. The acceptance and adoption of the underlying reports by the IPCC Panel is sufficient without further consideration by the TFB. This will apply to any upcoming methodology reports.

Updating Existing data[7]

[5] This abstract should include information on how data was measured and/or compiled. Methodologies and statistical methods and uncertainty estimations should be described.

[6] Hence this like the other proposals here is critically dependant on resources being available to edit and enter the data manually.

[7] All new or revised data has to be approved by the normal process.

In principle once a data record has been approved and included in the database it should not be removed[8]. Where a clear error is identified this needs to be indicated in the appropriate record. Where new data replaces older, less accurate old data should be marked as superseded.

3.4 Peer-reviewed Data (i.e. from a peer-reviewed journal)

Data from peer reviewed journals are likely to be accurate but may not be useful for compiling inventories. Therefore, all the documentation is required to demonstrate the data meets the criteria described above.

3.5 Data from National Inventories for the UNFCCC

Data from national inventories submitted to the UNFCCC can be useful to other countries that are responsible for the selection and use of data suitable for their national inventories. Acceptance of such data in the EFDB should ensure that the data is independently derived (e.g. not default data from IPCC Guidelines) and meet the acceptance criteria.

4 Acceptance Criteria

One important concept is that it is up to the users to determine if particular data in the EFDB are appropriate to their specific situation (which may be national, regional or project based estimates). General criteria have been proposed in the Terms of Reference (ToR) for the Editorial Board.

A proposed emission factor or parameter should:

- be in line with the fundamental principles and approaches of the IPCC guidelines;
    - Note that it may be for a source/sink not identified by the guidelines, or only applicable for only a part of a sub-category in the guidelines
- be accompanied by documentation describing the conditions of its derivation and information regarding the level of uncertainty, preferably quantified;
    - The most important part of the documentation is providing the users with sufficient information to evaluate the data and its applicability for themselves. Uncertainty information is desirable but not mandatory.
- be unbiased and as accurate as possible;
    - However, even where data seems biased for an entire source or sink category, it may be possible to define a region where the data is applicable (e.g. for a specific machine type, management regime, fuel type, specific geographic or climate condition). The Editorial Board should define the properties fields so that the data can be used appropriately. Clearly data should be as accurate as possible. However, the EFDB has gaps in the coverage of emissions data (e.g. regions, mitigation techniques) and so data in these areas, even with relatively large uncertainties, will be useful. This uncertainty should be clearly described in the database fields even if it cannot be quantified.
- contribute to the EFDB by adding a value for a source/sink not already covered or by providing an independent value for an existing emission factor or parameter type;
    - One of the roles of the Editorial Board is to identify gaps in the EFDB and to identify relevant data that may fill them.

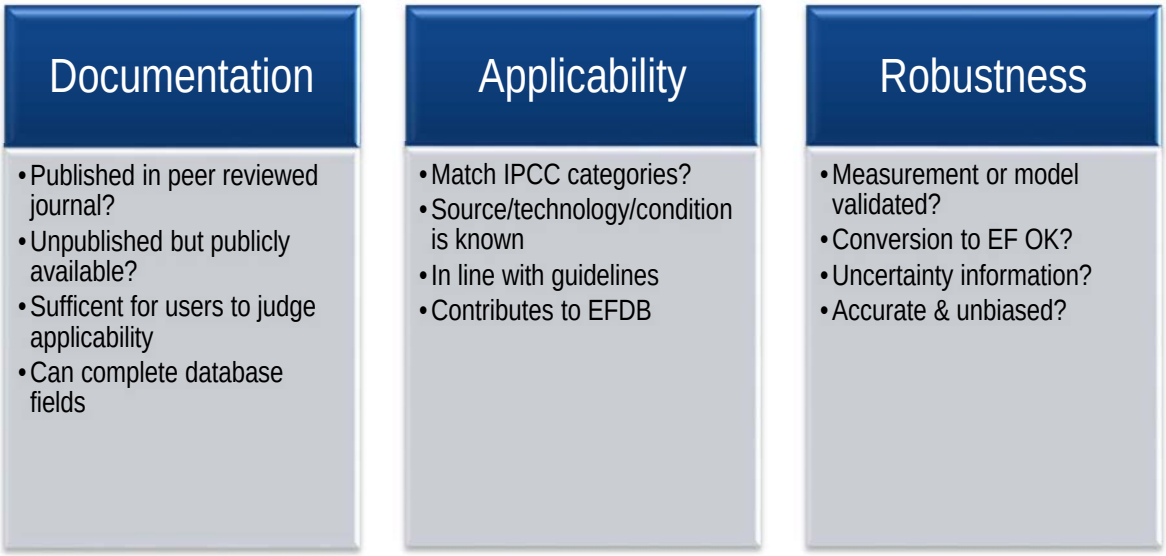
To meet these standards, the proposed emission factor or other parameter should be

- Documented
- Applicable
- Robust

According to the ToR for the Editorial Board, data proposals should be assessed according to these three criteria.

[8] Where new information provides additional information to an existing data item (but does not change the value) this should be included in the existing record and a comment added to indicate the addition.

Figure 3 Acceptance Criteria



4.1 Is the Emission Factor or Other Parameter Robust?

In evaluating data for the EFDB, the Editorial Board should consider robustness in a realistic and pragmatic way. The aim is not to undertake a full scientific assessment but to collect data that may be useful to potential EFDB users. Where there are gaps in the EFDB then data with large uncertainties is helpful and useful. Data from papers published in peer reviewed journals should generally be regarded robust. If data are applicable only in limited circumstances, information on this need to be clearly documented in the "properties" fields of the data input form.

A robust emission factor or other parameter is one that, within the accepted uncertainty, is unlikely to change if there was repetition of the original measurement programme or modelling activity (Editorial Board ToR). The term "accepted uncertainty" refers to the uncertainty provided for IPCC default emission factor values for that category. Specific issues concerning robustness are:

1. Are the measurement techniques including raw data validated and/or verified?
2. Are the modelling techniques including supporting data validated and/or verified?
3. Is the conversion (if any) from model assumptions or measurement conditions to annual or other forms of emission factors or other parameters sufficiently explained and justified?
4. Is an uncertainty assessment on the emission factor or other parameter presented?

Items 1 and 2 would be met if standard measurement and modelling techniques were met. It would be exceptional for a peer reviewed paper not to meet this standard. 3 should be clear in most papers and as mentioned below, 4, while desirable, is not absolutely required.

While the aim of the Editorial Board is to ensure the robustness of the data entered into the EFDB, there is also a need not to omit any data that may be useful. Even if data does not appear to be robust for national greenhouse gas inventories, it may still be useful for other purposes:

- Project level estimates (where data relating to the specific conditions are needed rather than national defaults);
- Development of models covering different conditions;
- Researchers making similar measurements;
- Providing information on a specific situation (if this is the only measured data from a particular region it is useful even if it may not be very representative).

If the Editorial Board are not satisfied with the robustness of a dataset for use as a national emission factor then they should consider if it can be entered into the EFDB by qualifying the situation it applies to; e.g. by entering appropriate uncertainties and qualifications or by entering it as data rather than derived factors, or by including the data on the Extra Page of the EFDB

The definition of robust parameters is in two parts:

A robust emission factor or other parameter is one that,

i. within the accepted uncertainty,
ii. is unlikely to change if there was repetition of the original measurement programme or modelling activity.

4.1.1 Accepted uncertainty

By "accepted uncertainty" we are referring to the uncertainty of IPCC defaults for that category. For example, we would expect fuel carbon contents to be known within a few per cent while soil N_2O estimates may have uncertainties of an order of magnitude. For many emission factors, the uncertainty is determined by the measurement technique and, where there are standards, these could provide information on the "accepted uncertainty".

It is reasonable to expect measurement and modelling studies to at least achieve the same level of accuracy as for the default values in the IPCC guidelines. However, if the parameter is for a source/sink for which there is scarce or no data in the EFDB, data may be useful and uncertainties outside IPCC default range can be acceptable. If the data is for a part of an existing source/sink category (e.g. a new mitigation technique), data will often be useful even if it does not meet this level of accuracy.

Questions may arise if measurement data is truly representative or is, in some way, biased. Too few or not representative samples may have been taken to support the estimation of a regional or national emission factor or not all types of plant or conditions sampled. In this case there are some ways the data can be still be used in the EFDB.

i. the small number of sample is reflected in the uncertainty field where the limited number of samples is clearly documented;
ii. the property fields should reflect the limited situations in which the data was measured. In this case it might be better to enter the individual sample data rather than any regional or national factor that has been derived from them;
iii. the data can be flagged as measurements rather than emission factors;
iv. a combination of the above.

4.1.2 Are the measurement techniques including raw data validated and/or verified?

If the measurement follows a standard technique (e.g. ISO etc.) then the answer to this question will be "Yes". Editorial Board members should check that the method used for measurements is clearly described in the reference.

4.1.3 Are the modeling techniques including supporting data validated and/or verified?

Models should have been calibrated, validated and verified. If it is a widely used model, then this is not a problem but if the model was specifically developed then some evidence of its evaluation is needed.

4.1.4 Conversion (if any) to emission factors

This should be clearly documented and reasonable to the Editorial Board.

4.1.5 Is an uncertainty assessment on the emission presented?

Although this is desirable, this is not a requirement. If no uncertainty data is available, the Editorial Board may wish to add some textual comment (see above) describing any limitations of the data (e.g. few measurement replicates, potential for bias, variability of measurements).

4.2 Is the Emission Factor or Other Parameter Applicable?

An applicable emission factor or parameter is:

- one that matches either a specific IPCC Source/Sink Category or subcategory, or another well-defined source/sink category that can be used in a national inventory compilation.

- one for which the source/sink, related process, abatement technologies as well as operating and environmental conditions under which the emission factor was measured or modelled are clear and allow the user to see how it can be applied.

Data for a source or sink not explicitly identified by the IPCC Guidelines can also be included in accordance with the IPCC guidelines. However, special attention needs to be paid when the data are relevant to the sources/sinks identified as issues for future methodological development.

4.3 Is the Emission Factor or Other Parameter Documented?

For emission factors or other parameters to be transparent, access information to the original technical reference must be provided to evaluate the robustness and applicability as described above. This can preferably be done by providing sufficient information through a scientific or technical publication in an internationally available journal or a report or book with an ISBN number. The information provided in the database should be detailed and comprehensive enough so that users may be able to evaluate the applicability to a national greenhouse gas inventory.

4.4 Repetition

If the data has the same value as existing data in the EFDB for the same category, this should not be considered a reason for rejection where the underlying source of the data is different.

4.5 Checklist

A checklist (Table 3) has been developed to assist in answering these questions and assessing data. See below.

Table 3 Checklist for Assessment of Data Proposals

	If Yes, actions	If No, actions that may allow the data to be used
Documentation		
Is the data from a peer reviewed journal, or book with an ISBN number? *OR* Is the data from a freely available report, available either from the data provider or through the TSU?	Provide reference For non-English documents provide English translation of Abstract	Ask the data provider if they can provide sufficient documentation to be given to the TSU and made publicly available via the TSU web site
Applicability		
Does the data match either an IPCC source/sink category or another well-defined source/sink category that could be used in a national inventory?	Check that details of source/sink category are given.	Can the data provider supply the source/sink category?
Is the mix of technology, operating and environmental conditions and abatement and control technologies under which the emission factor was measured or modelled clear?	Check that the properties field is filled with sufficient information for the user to be able to determine if the data is applicable or not.	Can the data provider supply and document this information?
Robustness		
Are standard methods or models used *OR* Is the measurement and/or modelling approach well described?		Is more information available from the data provider?
For measurements: were there replicate measurements, was equipment used described?		Is more information available from the data provider?
For models: has the model been validated and verified? A reference to a publication describing the model, for example.		Is more information available from the data provider?
Is the conversion (if any) from model assumptions or measurement conditions to annual or other forms of emission factors or other parameters sufficiently explained and justified?		If the conversion to an emission factor is not reasonable, are the original data still useful? Is more information available from the data provider?
Can the results be used in the EFDB as they are or can they be used with limitations in described in the parameters and uncertainties fields?		

5 Publicity and Outreach

Two important roles of members of the Editorial Board are to search out new data and to publicise the EFDB. The Editorial Board should lead in publicising the EFDB and in encouraging as wide range of users as possible. A large user base is required to ensure the success of the database. To support this publicity and outreach the TSU can prepare material such as CD ROMs, posters and electronic presentations. The TSU shall ensure that the information on the EFDB is kept up to date and that publicity information is available on the EFDB web site. The TSU will continue promoting the EFDB at international meetings where opportunities arise specifically at inventory training workshops. Assistance from UNFCCC in doing this is appreciated.

The Editorial Board and Management Group should:

- Identify suitable data for inclusion in the database. The Editorial Board should not be passive and wait for data. It should be proactive and seek out new data. The Editorial Board, the TFB and authors of the guidelines etc. could be asked to propose datasets
- Editorial Board members are encouraged to search out datasets in non-English literature as these may be less accessible to those who do not use the language concerned.
- Promote the EFDB for data submission and as a resource for use by inventory compilers.
- Identify and prepare promotional material (along with the TSU) for use at international meetings and conferences.
- Consider using the EFDB at meetings and conferences.