



**IPCC NGGIP-LULUCF Programme**

**Third Authors/Experts Meeting on Good Practice Guidance  
for Land-Use, Land-Use Change And Forestry (Task 1)**

**and**

**Second Authors/Experts Meeting on the issue of “Degradation of  
Forests and Devegetation of Other Vegetation Types” (Task 2)**

**Meeting Report**

**Rio de Janeiro, Brazil**

**2-4 October 2002**

**Supporting material prepared for consideration by the Intergovernmental Panel  
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IPCC review and approval process.**

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## **EXECUTIVE SUMMARY**

The development of *Good Practice* Report for Land-Use, Land-Use Change, and Forestry (LULUCF) in response to the invitation of the UNFCCC, in its decision 11/CP.7 paragraphs 3 (a) and (b), was endorsed by the IPCC XVIII, in September 2001. The activity is also known as Task 1 in the IPCC NGGIP LULUCF Programme.

The IPCC, also in response to the invitation of the UNFCCC, in its decision 11/CP.7 in the Marrakesh Accords, prepared a work plan to develop definitions for direct human-induced degradation of forests and devegetation of other vegetation types, and methodological options to inventory and report emissions resulting from these activities. This task is known as Task 2. The implementation of Task 2 is synchronised with Task 1 to ensure consistency of methodologies and products.

The First Authors/Experts Meeting for Task 1 was held in March 2002 in Eisenach, Germany where substantive work on Chapters 2 to 5 was accomplished with an accelerated handling of Chapter 2 (Basis for Consistent Representation of Land Areas). The Second Authors/Experts Meeting for Task 1 and the First Authors/Experts Meeting for Task 2 were held simultaneously in July 2002, in Tampere, Finland. The meetings advanced the drafting of all the chapters of Task 1 and elaborated the draft outline and contents of different chapters of Task 2. The two meetings also identified the links between two tasks.

The Third Authors/Experts Meeting for Task 1 and the Second Authors/Experts Meeting for Task 2, on 2-4 October 2002, in Rio de Janeiro, Brazil, aimed to produce the first-order drafts of the reports for governments and experts review and to plan for the Fourth and Third Authors/Expert Meetings for Task 1 and Task 2, respectively. The Government of Brazil hosted the meetings. One hundred experts/authors participated in the meeting.

The two meetings largely advanced the drafting of the reports for the two tasks. Agreement was reached as to the contents of Task 1 Chapter 1 (Introduction). Task 1 Authors agreed to improve the user-friendliness of the draft, to add schemes or point-wise text on what a user should do, and to develop strong cross linking within and across chapters. Task 2 Authors made significant improvements to the preliminary draft report, agreed to fill in the gaps for some issues not properly addressed and to coordinate with Task 1 Authors in the finalisation of the chapters. Task 1 and Task 2 authors expressed strong commitments to produce the first-order drafts for first governments/experts review between December 2002 and January 2003.

**IPCC NGGIP-LULUCF Programme**  
**Third Authors/Experts Meeting on Good Practice Guidance**  
**for Land-Use, Land-Use Change And Forestry (Task 1)**  
**and**  
**Second Authors/Experts Meeting on the issue of “Degradation of Forests and**  
**Devegetation of Other Vegetation Types” (Task 2)**

**Rio de Janeiro, Brazil, 2-4 October 2002**

## **BACKGROUND AND OBJECTIVES**

1. IPCC XVIII, in September 2001, in Wembley, UK, endorsed the Land-Use, Land-Use Change, and Forestry (LULUCF) Programme of the National Greenhouse Gas Inventories Programme, which responds to the invitation to the IPCC in Marrakesh Accords (Decision 11/CP.7, paragraphs 3(a) to (d)). IPCC XVIII also accepted the Terms of Reference (TOR), the Table of Contents (TOC), and the Work Plan for the development of Good Practice Report for LULUCF. The activity is also known as Task 1 of the NGGIP LULUCF Programme and responds to the invitation in paragraphs 3 (a) and (b) in the decision 11/CP.7.
2. The First Authors/Experts Meeting for Task 1 was held on 12-14 March 2002, in Eisenach, Germany. The Eisenach meeting accomplished substantive work on Chapters 2 to 5 with an accelerated handling of Chapter 2 (Basis for Consistent Representation of Land Areas) to produce the zero-order draft. The meeting discussed the initial draft outline for each chapter of the report, paying special attention to consistency and harmonisation requirements and explored the availability of scientific and other relevant materials.
3. The IPCC, also in response to the invitation of the UNFCCC, in its decision 11/CP.7 (paragraph 3 (c)) in the Marrakesh Accords, prepared a work plan to develop definitions for direct human-induced degradation of forests and devegetation of other vegetation types, and methodological options to inventory and report emissions resulting from these activities. The work plan, TOR and TOC for this task were endorsed by IPCC XIX in April 2002. This task is known as Task 2 of the NGGIP LULUCF Programme. The implementation of Task 2 will be synchronised with Task 1 to ensure consistency of methodologies and products.
4. The Second Authors/Experts Meeting for Task 1 and the First Authors/Experts Meeting for Task 2 were held simultaneously on 10-12 July 2002, in Tampere, Finland. The meeting advanced the drafting of all the chapters of Task 1 and made considerable progress to prepare a draft outline and elaborated contents of different chapters of Task 2. The two meetings also identified the links between two tasks.
5. The Third Authors/Experts Meeting for Task 1 and the Second Authors/Experts Meeting for Task 2, on 2-4 October 2002, in Rio de Janeiro, Brazil, aimed to produce the first-order drafts of the reports for governments and experts review and to plan for the Fourth and Third Authors/Expert Meetings for Task 1 and Task 2, respectively.

## **ORGANISATION OF THE MEETING**

6. The meetings were held in Hotel Gloria, Rio de Janeiro, Brazil, and were hosted by the Government of Brazil. The Technical Support Unit of the IPCC National Greenhouse Gas Inventories Programme (IPCC-NGGIP-TSU) coordinated the meeting with support from the local organisers. One hundred experts/authors participated in the meeting (Attachment A).
7. The two meetings were preceded by a Co-ordinating Lead Authors (CLA) Meeting, which was held on 1 October 2002. The purpose of the CLA Meeting was to discuss how to proceed with the two main meetings; to examine the objectives of the Task 1 and Task 2 Authors/Experts Meetings; to clarify tasks of each breakout groups; and to clarify inter-linkages between the chapters of Task 1, and between Task 1 and Task 2. The main meeting consisted of Plenary Sessions and Breakout Group sessions.

## **ISSUES/DISCUSSIONS IN PLENARY SESSIONS AND BREAKOUT GROUP SESSIONS**

### ***Task 1 - Chapter 1: Introduction***

#### *Comments/Status of the Current Draft*

8. The proposal was for the chapter to have the following contents: Introduction; Present Work; Definition and Role of Good Practice; Outline of Present Document; and Policy Relevance.

#### *Progress and Conclusions Made in the Meeting*

9. The Introduction Section will discuss the request of SBSTA. The “Present Work” Section will explain why LULUCF was not covered in the Good Practice Report 2000. The Section on “Definition and Role of Good Practice” will describe what good practice is all about, the aim of the report, and its relationship with the Revised 1996 IPCC Guidelines for National Greenhouse Inventories (*IPCC Guidelines*). The “Outline of Present Document” Section will describe the outline of each chapter and how the report relates to SBSTA work on Clean Development Mechanism. The “Policy Relevance” Section will cover the relevance of the guidance in UNFCCC or UNFCCC plus Kyoto Protocol contexts and give information about the connection with the UNFCCC process during the preparation of the report.
10. The first draft of the chapter will be about 5 to 10 pages and will be available by 8 November 2002 for review by Task 1 Authors.

## ***Task 1 - Chapter 2: Basis for Consistent Representation of Land Areas***

### *Comments/Status of the Current Draft*

11. The current draft should emphasise the need for consistent application of the six broad categories overtime (e.g. with respect to managed/unmanaged lands). For the five approaches to representing land areas, some work would be needed to operationalise the good practice guidance (e.g. how to ensure that data acquisition methods are reliable).
12. Other chapter's cross references to Chapter 2 approaches could be made stronger. There is a need to make the best use of the cross references and to consider whether any additional practical guidance might be needed in Chapter 2, or in Chapters 3 to 5.
13. The decision tree for selection of approach to quantify land use and land use change covers possible hybrid methods. Other chapter may want to make more use of this decision tree.
14. Relationship between the six basic categories and the *IPCC Guidelines'* LUCF categories 5A to 5E is already included in the draft. Future draft might need more user-friendly bullet point text form either in Chapter 2 or Chapter 3 to improve the link.
15. The section on "Representing land for the Kyoto Protocol" needs to review material in the context of what Chapter 4 covers and to ensure consistency with the advice between Chapters.
16. For the section on "Sampling methods", the equations presented should be user-friendlier. Some practical questions that can be asked are: 1) How many sampling points per unit area under a particular land use and management practice are needed to obtain results with less than a certain error? How should this rule be applied if one is also trying to establish C stocks on the land?
17. In the estimation of classification errors in the use of remote sensing for inventories of LULUCF, it would be useful to explain how the advice about coefficient of agreement ( $\kappa$ ) can be operationalised.
18. The examples of international land use and land cover datasets, though useful, may need re-thinking (i.e. would a country use them in preparing its inventory or for verification). These datasets should be linked to Chapter 5.

### *Progress and Conclusions Made in the Meeting*

19. Major editorial issues were addressed by improving the contents of the draft. The improvements made include, among others, the text on how to operationally use the coefficient of agreement ( $\kappa$ ); the removal of the statement related to number of sample points and to be replaced by an "error vs. sampling density" graph; the improvement of the decision tree and the operationalisation of the five approaches to representing land areas.
20. Some smaller editorial issues, structural and style issues, and technical issues were given attention to improve the draft and to make it suitable for first government/expert review.

21. The text on the “sampling methods” will be further developed to provide adequate explanatory text on sampling advice, practical applications of the equations, how to achieve unbiased sampling, and what sampling density will give what level of precision.
22. Further action will be undertaken on the following: land use change matrices to cover all land use and activity changes; the issue of reporting; cross checking of Table 2.6 (Relationship between the uses and activities identified in the *IPCC Guidelines* and the basic land use categories) with Chapter 4; and additional text to discuss the implications of each “Approach” on the Kyoto Protocol.

### ***Task 1 - Chapter 3: LUCF Sector Good Practice Guidance***

#### ***Comments/Status of the Current Draft***

23. The current draft needs improvements on the following (general for all sections): the key category concept should be used more in the guidance on choice of methods; clear tiering and tier choices (harmonization of decision trees); clear mapping back to *IPCC Guidelines* in all vegetation types and clear mapping back to vegetation type of origin (for land converted to forest); uncertainty data and the specification of what causes uncertainty in such pools; references (information as complete as possible).
24. The following aspects have to be applied in the current text: a) land use change to be followed is 20 to 50 years under a “change into” regime; b) harmonizing the use of “stock of carbon” as the amount of carbon in a pool; c) move the sections on “completeness”, “consistent time series”, “uncertainty estimates”, “reporting and documentation”, and inventory QA/QC into one section per vegetation type; d) use of “net annual volume increment” (for forest) or NPP (for grassland or cropland) instead of “growth rate”; e) more web links to databases and modeling approaches; e) the structure of the biomass tiers and soils tiers will be made consistent; and f) consistency in presentation of equations, tables, and figures through out the section.
25. The following terminologies will have to be made clear: a) biomass expansion factor is a parameter; b) net annual increment data or N<sub>2</sub>O flux is an emission factor; and c) area cultivated in a certain manner is an activity.
26. The chapter is to be shortened as much as possible by making it less of a text book form but more of manual type with equations and tables. Figure 3.3 is complex and “not user-friendly” and can be replaced by an improved version of combined Figures 3.1 and 3.2.
27. Table 3.2 is not particularly helpful given similar information in Figure 3.2. The use of “levels” may confuse the use of “tiers” in the text. Furthermore, dead roots (either on the forest floor or below ground) are not explicitly mentioned in the table and how to separate woody debris and fine litter is not clear. Some of the discussion under tier(s) can be rearranged and transferred to Chapter 4.
28. The following sections/subsections are to be moved: a) the discussion on harvested wood products detailed calculation methods will be moved to Appendix; and b) the non-carbon greenhouse gases from forest to the end of the forest section or to create one section in the chapter for all discussions of non-CO<sub>2</sub> GHGs.



29. The following aspects are to be explored: a) to reconcile with decision tree the use of three tiers (instead of 4 tiers) in the wetland section; and b) to find average default values for carbon densities in biomass in cities/settlements.

*Progress and Conclusions Made in the Meeting*

30. Chapter 3 Authors agreed to apply the following “new decisions” in the next version of the chapter: a) to incorporate all carbon pools in all tiers including Tier 1; b) to subdivide land use categories into 3 broad pools: biomass, dead organic matter, and soil carbon; c) to incorporate key source/categories concept into Introduction Section and into decision tree charts; d) to improve default data tables with standard deviation or standard error estimates; e) to make clear the linkages between the *Good Practice* Report and the *IPCC Guidelines*; and f) to provide a glossary of terms.
31. The following are pending issues that will be addressed in the development of the new draft for government/expert review: a) shifting cultivation/slash and burn; b) uncertainty values for Tier 1 estimates; c) reporting issues and tables; d) rangeland linking-to belowground biomass of forest and land use; e) fire and other disturbances; and f) linking with Chapter 4 (Project Inventory) and National Inventory.
32. Authors of Chapter 3 agreed on the following time schedule: a) all CLAs and Lead Authors (LAs) will work on their land use type sections until 11 October; b) CLAs will work on harmonization of the whole draft from 11 to 18 October; c) Pre-final draft will be sent to TSU by 18 October; d) CLAs and LAs will check the harmonised draft from 18 to 23 October; e) Gert-Jan will do the final checking by 23 October and will submit the final first order draft to TSU by 1 November 2002.

***Task 1 - Chapter 4: LULUCF Monitoring, Reporting, and Accounting Requirements Under the Kyoto Protocol***

*Comments/Status of the Current Draft*

33. The following are issues which are linked with other chapters and need to be addressed: a) mapping back of managed forest in Chapters 2 and 3 and in which category land originates from (Chapter 3); b) how to facilitate totals (e.g. deforestation) possibly in line with the *IPCC Guidelines* (i.e. to Forest and Grassland Conversion); c) the duration (how long) of the “transition” category in Chapter 3; d) imbalance between the Forest Management section and Crop Management/Grazing Land Management Section in Chapters 3 and 4; e) the link to the approaches in Chapter 2; f) grasslands vs. grazing lands; g) interpolation vs. extrapolation in the land use change matrix, including the time period; and h) common terms.
34. The chapter has some internal issues that have to be dealt with which include: a) no precedence in Article 3.4; b) focus on direct human induced activities; c) focus on modeling; c) forest management aimed at sustainable management (link to Task 2); d) *good practice* to first provide interpretation/criteria on definitions; e) some generic information in cropland management and grazing land management sections that could be moved to

generic section of the chapter; and f) matters related to footnoting (or moving to appendix) of the Marrakesh Accords text.

35. It was agreed that the guidance on removal unit (RMU) accounting would not be included and that the focus would be on estimation, monitoring and reporting. Guidance on following issues would be improved: a) reporting and documentation; b) truing up (if possible); c) continuity of management; d) methods for showing that pool is not a source; and e) net-net for vegetation. The use of the key categories concept in Chapter 4 would be addressed (subject to inter- breakout group discussion).

#### *Progress and Conclusions Made in the Meeting*

36. For the LULUCF Projects, the authors reviewed, reorganised, and revised the draft and made several decisions regarding missing and incomplete sections. It was agreed that the section on reporting which was incomplete in previous drafts be removed. The authors believed that the guidelines coming from the UNFCCC Clean Development Mechanism (CDM) Executive Board would cover this topic and no additional GPG was needed other than what was already in the section. By the end of the meeting, a draft of the section was ready for final review by those members of the writing team who could not attend the meeting.
37. Revised sections of Chapter 4, which addressed most of the issues above, were made available for distribution and comments at the last the day of the meeting. The section on uncertainty was not incorporated. The section on “Reporting” was improved considerably. Final draft of the whole Chapter 4 would be available by 25 October for submission to TSU for editorial harmonization.

#### ***Task 1 - Chapter 5: Cross cutting Issues***

##### *Comments/Status of the Current Draft*

38. The current draft needs restructuring of the guidance on uncertainties. The text should reflect also lower tiers, and other vegetation types than forests, and Kyoto Protocol issues. Providing examples will be useful.
39. The quality assurance and quality control (QA/QC) and time series sections and the recalculation issues for Special Kyoto Protocol issues need to be refined. Similarly, the Verification section has to be refined and shortened. The whole chapter needs improvement in terms of consistency with Chapters 2 to 4.
40. The following cross-cutting issues would need to be addressed by inter-BOG meetings: a) the issue on how to harmonise the section on sampling and stratification in all chapters; b) how to present “Uncertainties” (i.e. in boxes, annexes, etc) and related gaps in Chapters 3 and 4; c) the gaps and inconsistencies in Chapters 3 and 4 on QA/QC and time series; and d) the method (quantitative and qualitative), aggregation level, and the application/implication of key categories in Chapters 3 and 4.

### Progress and Conclusions Made in the Meeting

41. The Uncertainty Section was developed into a new structure which is more tier oriented and with more emphasis on lower tier. Text was made user-friendlier and more technical materials were moved to boxes/appendices. Examples were being developed for inclusion in the final draft. An agreement with Chapters 2, 3, and 4 in terms of short descriptive text (for Chapters 2 and 4) and “default” factors uncertainties for lower tier in Chapter 3 would still be needed. Chapter 5 would provide the general guidance and technical material to be used by all Chapters.
42. Minor changes in the text were applied to the Section Key Categories. Assessment of Kyoto key categories would be based on the key category assessment on the UNFCCC inventory. Key categories would be used in Chapter 3 decision trees.
43. A new draft was developed for the Kyoto Protocol issues under the Section QA/QC and Time Series and the Verification Section. The Verification Section was restructured to focus on methods and new text on models and practical issues were added.
44. In general, the Kyoto issues in the whole chapter have been revised. The final draft would be submitted to TSU by 18 October.

### ***Task 2 – Chapter 2: Definitions for Degradation of Forests and Devegetation of Other Vegetation Types***

#### Comments/Status of the Current Draft

45. Chapter 2 draft was written based on the structure developed in Tampere Meeting in July 2002. The following issues have to be decided or clarified in future drafting of the chapter:
  - a) Points of integration with the LULUCF Good Practice Report (Task 1);
  - b) The use of the term “destocking” instead of “degradation”;
  - c) Whether to emphasize on the points requested by the Conference of Parties (COP) rather than added by IPCC (i.e. magnitude and scale of the effects and direct vs. indirect human induced activities);
  - d) Provide single definition or a range of options;
  - e) Whether ‘devegetation’ definition should be based on cover rather than Cstock;
  - f) The meaning of an ‘Activity’, is it a Management System or a component of a Management System;
  - g) Other vegetation types, is it the same as ‘non-forest vegetation’;
  - h) Standardize the use of the term crop-land, crop land or cropland;
  - i) The status of the text on revegetation in Chapter 4 of Task 1
  - j) Present the effects of Management Operations by region (i.e. America, Europe, Africa, Australasia) or a single unified text with regional annotated bibliography;
  - k) Present the effects of Management Operations as: 1) effects on C stocks; 2) effects on GHG emissions, and 3) effects on social, economic, and biological functions (planned to abandon point 3);
  - l) Realistic time scales for consideration of degradation and devegetation.

***Task 2 – Chapter 3: Methodological options to inventory emissions from direct human induced activities***

*Comments/Status of the Current Draft*

46. Listed below are gaps, overlaps and linkages in the current draft which have to be considered in improving the contents of the chapter:
- a) Revision of text as what is specific for degradation and devegetation (area, changes in carbon stocks, emissions and removals of GHGs);
  - b) Better “relationship to forest management and revegetation” (link to Task 1 Chapter 4);
  - c) Better guidance on methodological choice, activity data collection, and emission factors;
  - d) Consistency with other reporting requirements, completeness and avoidance of double accounting (link to Task 1 Chapter 4);
  - e) Development of time series;
  - f) Better uncertainty analysis (link to Task 1 Chapter 5);
  - g) Quality assurance/quality control (link to Task 1 Chapter 5);
  - h) Provision of tables and worksheets to facilitate computation and reporting of emissions

***Task 2 – Chapter 4: Implications of Different Methodological Options to Accounting Under the Provisions of Article 3.4 of the Kyoto Protocol***

*Comments/Status of the Current Draft*

47. Drafting of the chapter will be based on the outline developed in Tampere Meeting in July 2002. The outline will be reviewed and will be updated accordingly. Consultations between Task 2 and Task 1 Chapter 4 will be done to clarify the mandate. Writing task will be assigned to authors so as to aim for a decent draft by the end of the Rio Meeting.

*Overall Progress of Task 2 and Conclusions Made in the Meeting*

48. The whole Task 2 team made considerable progress in drafting the three chapters. The draft report was reviewed and updated. The developed ‘definitions’ were more focused. The list of existing definitions, which was prepared during the development of the ones included in the draft report, was proposed to be published as IPCC Supporting material and not to be included as part of the draft report to be sent out for review (See Attachment B: Supporting Materials on Definitions of Degradation and Devegetation).
49. Tables were provided to demonstrate the scale and magnitude of direct human influence which when carried to excess may trigger degradation of forest land and devegetation of non-forest land. Illustrative example and description of the scale and magnitude were conceptualized for incorporation to future draft. The longer tables developed on this issue were proposed to be published as IPCC Supporting material (see Attachment C: Supporting Material on Management Operations and Other Direct Human Influences that lead to Degradation and Devegetation).
50. Estimating emissions from degradation and devegetation will involve two steps: a) detection of activities leading to degradation and determination of their spatial extent; and

b) estimation of changes in carbon stocks and emissions and removals of non-CO<sub>2</sub> GHGs. A variety of approaches will be provided with reference to Task 1 Chapters 2 and 3.

51. Towards the finalization of the draft for government/expert review, examples and tables would be provided including the section on 'Reporting and Documentation'. Final drafts for all chapters would be submitted to TSU by 25 October 2002.

## **CONCLUSIONS**

52. Task 1 Authors agreed to be more focused in preparing the final draft, to take out textbook-type text, to add schemes or point-wise text on what a user should do, and to develop better cross-linking within chapter and among chapters of the report.
53. Task 2 Authors agreed to fill in the gaps in the current draft for some issues not properly addressed and to coordinate with Task 1 Authors in the finalisation of the chapters.
54. Task1 and Task 2 authors expressed strong commitments to produce the first-order drafts for first governments/experts review to be performed between December 2002 and January 2003.