



Expected Outcome of Scoping Meeting

IPCC Scoping Meeting
Methodology Report on Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage
Copenhagen, Denmark, 14-16 October 2024

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Outline

- Expected outcome:
 - Recommendation on the title and format of the Methodology Report
 - Draft Terms of Reference (TOR)
 - Draft Table of Contents (TOC)
 - Draft Instructions to Experts and Authors
 - Workplan

TSU have prepared working drafts of these documents to initiate discussion at the Scoping Meeting

- These outputs will be core documents of the proposal by IPCC TFI Bureau (TFB) to the IPCC Panel for its consideration at the 62nd Session (IPCC-62) currently scheduled in February 2025

Recommendation on title and format of Methodology Report

- Methodology Report needs to provide guidance on preparation and reporting of national inventories on Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage.
- This can be a stand-alone report or refinement to the IPCC Guidelines
- Refinement means we need to update and provide new guidance to the IPCC Guidelines regarding issues on CDR/CCUS

[for example – stand-alone report]

- **Title:** “2027 Methodology Report on Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage”
- **Format:** One single stand-alone report

[for example – refinement]

- **Title:** “2027 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage”
- **Format:** One single report following the format of the 2006 IPCC Guidelines

Recommendation on title and format of Methodology Report

- Expert meeting in Vienna, Austria on 1-3 July 2024 discussed and identified several areas that can be updated in the IPCC Guidelines (e.g. guidance on fugitive emissions, CCS, etc.)
- It implies the refinement work of the existing guidance and providing new guidance on CDR/CCUS which is not previously covered
- Refinement of the existing guidance or Refinement to the 2006 IPCC Guidelines means refinement to three methodological reports:
 - *2006 IPCC Guidelines*
 - *Wetlands Supplement*
 - *2019 Refinement*
- Discussion on content will influence the title and the format as well as TOR and TOC documents

Draft TOR

- Simple formal document (1-2 pages)
 - Background
 - Scope
 - Approach
- Highlights the following:
 - Title and format
 - Issues already covered by existing guidelines
 - Issues that need to be updated in the existing guidance
 - New guidance needed to cover issues related to CDR/CCUS

Background

1. At the 60th Session (IPCC-60) held in January 2024 (Istanbul, Türkiye) the IPCC decided that the Task Force on National Greenhouse Gas Inventories (TFI) will hold an Expert Meeting on Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage and provide a Methodology Report on these by the end of 2027 (Decision IPCC-LX- 9).

2. IPCC TFI held the Expert Meeting in July 2024 (Vienna, Austria) and the Scoping Meeting in October 2024 (Copenhagen, Denmark). These meetings considered Carbon Dioxide Removal (CDR) methods mentioned in the AR6 WGIII Report as a starting point for discussion and noted that several CDR activities have been already covered by the existing IPCC Guidelines.

3. The Scoping Meeting produced the draft Table of Contents of the new Methodology Report, which is outlined in Annex 1.

Scope

3. The IPCC WGIII AR6 Report listed the following CDR methods: Afforestation/Reforestation, Soil carbon sequestration in croplands and grasslands, Peatland and coastal wetland restoration, Agroforestry, Improved Forest Management, Biochar, Direct air carbon capture and storage (DACCS), Bioenergy with carbon capture and storage (BECCS), Enhanced weathering (EW), "Blue carbon management" in coastal wetlands, Ocean alkalinity enhancement (OAE), and Ocean fertilisation.

4. The IPCC Guidelines already cover issues related to Afforestation/Reforestation, Soil carbon sequestration in croplands and grasslands, Peatland and coastal wetland restoration, Agroforestry, Improved Forest Management, Biochar, Bioenergy with carbon capture and storage (BECCS).

5. The aim of the new Methodology Report is to provide an updated and sound scientific basis for supporting the preparation and continuous improvement of national greenhouse gas inventories in relation to estimation and reporting of carbon dioxide removal technologies, carbon capture utilization and storage. In order to achieve the overall aim, the new Methodology report will:

- provide new methodological guidance for removals of carbon dioxide only where currently there are gaps in the existing guidelines or where new removal technologies have emerged that could provide scientifically sound and empirically robust methods, activity data, removal factors and other parameters;
- provide, where needed, updated guidance and information of the existing guidance in the 2006 IPCC Guidelines in relation to carbon dioxide removal technologies.

6. The refinement work will not revise the 2006 IPCC Guidelines, but will update, supplement and/or elaborate the 2006 IPCC Guidelines where gaps or out-of-date science have been identified. The Methodology Report will not replace the 2006 IPCC Guidelines, but will be used in conjunction with the 2006 IPCC Guidelines.

Approach

7. The result of this work will be an IPCC Methodology Report "2027 Refinement to the 2006 IPCC Guidelines on National Greenhouse Gas Inventories: Carbon Dioxide Removal Technologies, Carbon Capture Utilization and Storage".

8. The authors will follow Annex 2 "Instructions to Experts and Authors" to ensure a consistent and coherent approach across all the volumes or chapters, including the use of common terminology.

9. Annex 3 provides the timetable for this task. Literature will be considered up to a cut-off date at the start of the Government/Expert Review.

Draft TOC

- IPCC WGIII AR6 Report identified a number of CDR methods
- IPCC Guidelines already cover some CDR/CCUS issues (e.g. afforestation/reforestation, etc.)
- IPCC Expert meeting in Vienna, Austria highlighted areas that can be refined in the 2006 IPCC Guidelines
- Experts' contribution and literature search suggested certain areas for further consideration
- The working draft of TOC was prepared based on the above considerations, addressing all known issues.
- This draft should be considered as a starting point for discussion at the Scoping meeting not prejudging any outcome and decision by participants

Draft TOC – Refinement issues

- There can be various types of refinement of existing guidance, for example based on 2019 Refinement: update, new guidance and no refinement:
 - Update means either that the table/section/chapter in the new Methodology Report should be used instead of the corresponding table/section/chapter in the 2006 IPCC Guidelines or in conjunction with the corresponding table/section/chapter in the 2006 IPCC Guidelines.
 - New guidance means that the section/chapter in the new Methodology Report may be used without reference to specific sections/chapters in the 2006 IPCC Guidelines.
 - No refinement means no further action required.

Draft TOC – Types of Refinement

- The use of <elaborate> type of refinement was difficult to manage during the 2019 Refinement and the Steering group suggested to use only <update> and <new guidance>.
- TSU have prepared a draft template (MS Excel file) to be used during work of the Break-out Groups (BOGs) on identifying sections/chapters that need to be refined in the existing guidelines
- It relates to three methodological reports (2006 IPCC Guidelines, Wetlands Supplement, 2019 Refinement), but please note that in 2019 Refinement not all chapters of 2006 IPCC Guidelines were refined

Draft TOC

- It covers pieces of the existing guidance that need refinement and new guidance that was not previously covered by the IPCC guidelines, for example:
 - General Guidance: Reporting issues
 - Energy: fugitive emissions related to enhanced oil, gas and coal-bed methane recovery
 - IPPU: production of new chemicals including synthetic fuels from CO₂ and use of CO₂ containing products

Overview Chapter

Volume 1: General Guidance and Reporting (Update)

Chapter 8 Reporting Guidance and Tables

- Refinement in relation to categorization of new source/sink categories or recategorization of existing (e.g. 1.C). Refinement of all reporting tables, clarifying that the CO₂ emissions are adjusted by CO₂ removals (negative quantities) to derive net CO₂.

Volume 2: Energy (Update)

Chapter 4 Volume 2 of the 2006 IPCC Guidelines – Fugitive Emissions

- Refinement in relation to the Enhanced oil, gas, and coal-bed methane recovery and related elements

Volume 3: Industrial Processes and Product Use (New)

Chapter 3 of the 2006 IPCC Guidelines – Chemical Industry

Chapter 3 of the 2019 Refinement of the 2006 IPCC Guidelines – Chemical Industry (New)

- Refinement in relation to the production of products containing or derived from captured CO₂, including synthetic fuels.

Chapter 9 of the 2006 IPCC Guidelines – Consumption and Use of other CO₂ containing products

Chapter 9 of the 2019 Refinement of the 2006 IPCC Guidelines – Consumption and Use of other CO₂ containing products (New)

- Refinement in relation to the consumption and use of CO₂ containing products not elsewhere classified.

Draft TOC

- AFOLU: update of SOC factors, biochar issues, carbon export from organic soils, tidal marshes, seagrass and macro algae, HWP and other lasting biomass products
- Waste: wastewater-based CDR/CCUS

Volume 4: Agriculture, Forestry and Other Land Use (Update and New)

Chapters 2, 4, 5, 6, 7, 8 and 9 Volume 4 the 2006 IPCC Guidelines - Generic Methodologies Applicable to Multiple Land-Use Categories, Forest Land, Cropland, Grassland, Wetlands, Settlements, Other Land

Chapters 2, 4, 5, 6, 7, 8 and 9 Volume 4 the 2019 Refinement of the 2006 IPCC Guidelines - Generic Methodologies Applicable to Multiple Land-Use Categories, Forest Land, Cropland, Grassland, Wetlands, Settlements, Other Land (Update)

- Refinement in relation to default factors for SOC estimates. Soil Inorganic Carbon. Biochar.

Chapter 11 Volume 4 the 2006 IPCC Guidelines – N₂O Emissions from Managed Soils, and CO₂ Emissions from Lime and Urea Application (Update)

- Refinement in relation to Tier 1 default factor for N₂O emissions associated with biochar

Chapters 2, 3, 4 of the Wetlands Supplement (New)

- New guidance in relation to carbon export from organic soils (lateral transfer of carbon from organic soils is a subject of Appendix 2a.1 and of Appendix 4a.1 of the Wetlands Supplement)

Chapter 4 of the Wetlands Supplement – Coastal Wetlands (Update)

- Refinement in relation to tidal marshes and seagrass and macro algae in coastal waters.

Chapter 12 Volume 4 the 2006 IPCC Guidelines – HWP (Update)

- Refinement in relation to other lasting biomass products.

Volume 5: Waste (New)

Chapter 6 Volume 5 of the 2006 IPCC Guidelines – Wastewater treatment and discharge

Chapter 6 Volume 5 of the 2019 Refinement to the 2006 IPCC Guidelines – Wastewater treatment and discharge

- New guidance in relation to wastewater-based CDR/CCUS

Draft TOC

- New Guidance on CDR removal and utilization
- Update of Chapter 5 of Volume 2 of the 2006 IPCC Guidelines on Carbon Dioxide Transport and Storage

[moved from Volume 2 to Volume 7]

Volume 6. Carbon Dioxide Removal Technologies (IPCC Sector 5) (New)

Chapter 1. Introduction

- The basic concepts and terms and definitions related to CDR should be addressed inter alia: technology, removal, short- and long-term storage, “negative” emissions.

Chapter 2. Direct Air Capture (DAC)

Chapter 3. Carbonation

- Cement/concrete carbonation
- Carbonation of wastes and slags in Metal industries
- Enhanced alkalization in water bodies (rivers, coastal water systems)
- Enhanced Weathering

Chapter 4. Direct Removal of CO₂ from Waterbodies

- Direct CO₂ removal from water bodies inside territorial boundaries

Chapter 5. Ocean Fertilization and ocean alkalization

- Activities outside of national territorial boundaries.

Volume 7 Carbon Dioxide Transport, Utilization and Storage (IPCC Sector 6) (New and Update)

Chapter 1. Introduction (New)

Chapter 2. Carbon Dioxide Utilization (New)

- Possible ways of CO₂ utilization, tracking of captured CO₂, national carbon dioxide balance matrix (sources of captured CO₂ vs. final use and short- and long-term storage).

Chapter 3. Carbon Dioxide Transport, Injection and Geological Storage (Update)

- Refinement in relation to all sub-categories (CO₂ transport and cross-border transfers, injection, long term storage, other)

Draft Instructions to Experts and Authors

- 12-page document similar to that used for 2006 IPCC Guidelines and 2019 Refinement
- Provides background information on confidentiality, conflict of interest, tasks and responsibilities of authors, use of literature, etc.
- Provides information necessary for consistency across IPCC Methodology reports, e.g. use of terminology, methods/Tiers, default emission factors and parameters, decision trees, units and abbreviation, etc.

Workplan

- Workplan is provided for information and comments
- It shows the process until 2027 (adoption of the Methodology report)
- TFB will consider it in conjunction with other Methodology report on SLCFs and with overall IPCC schedule

Main messages

- Participants at the Scoping meeting have to decide what should be in the Methodology report and what should be not (issues that are considered to be premature for inclusion).
- This task has two parts: i) to consider existing guidance and to decide which elements need to be updated and ii) to consider new guidance on CDR/CCUS and to decide which CDR methods/technologies should be in the Methodology report
- This decision will influence the TOC of the Methodology report
- Participants also need to consider other documents: TOR and Instructions to Experts and Authors. Some specific guidance might be given there
- Participants are encouraged to collect relevant literature and to include it in the background paper, this will help to produce the scoping meeting report and inform the future writing process

Thank you

<https://www.ipcc-nggip.iges.or.jp/index.html>