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**Reporting from Parties not included in Annex I to the
Convention**

Provision of financial and technical support

Regional training workshops on sustainable national greenhouse gas inventory management systems and the use of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*

Report by the secretariat

Summary

In 2018 and 2019, the secretariat conducted six regional training workshops on building sustainable national greenhouse gas inventory management systems and using the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* for Parties not included in Annex I to the Convention. This report includes an outline of the proceedings of the workshops and a summary of the discussions.

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Abbreviations and acronyms

AFOLU	agriculture, forestry and other land use
FAO	Food and Agriculture Organization of the United Nations
GHG	greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
non-Annex I Party	Party not included in Annex I to the Convention
SBI	Subsidiary Body for Implementation
2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>

I. Introduction

A. Mandate

1. SBI 42 noted the requests from non-Annex I Parties for further technical support aimed at improving their domestic capacity to facilitate continuity in meeting reporting requirements through training on the use of the 2006 IPCC Guidelines,¹ building sustainable national GHG inventory management systems, and understanding and applying examples of best practice relevant to the setting up of domestic measurement, reporting and verification systems. The SBI, therefore, encouraged the secretariat, in coordination with the United Nations Environment Programme and the United Nations Development Programme, to make every effort to ensure that the relevant training is made available to all non-Annex I Parties.²

2. In response to this request, in 2018 and 2019, the secretariat planned and organized six regional hands-on training workshops for non-Annex I Parties on building sustainable national GHG inventory management systems and using the 2006 IPCC Guidelines. All of the workshops were conducted in collaboration with the IPCC and FAO, and some of the workshops with the Global Research Alliance on Agricultural Greenhouse Gases³ and the Consultative Group of Experts.⁴

B. Scope of the note

3. This report contains a summary of the proceedings of and discussions at the following six regional hands-on training workshops:

- (a) Two workshops for the Africa region, held in:
 - (i) Lusaka, Zambia, from 5 to 9 June 2018;
 - (ii) Victoria, Seychelles, from 4 to 8 March 2019;
- (b) Two workshops for the Asia-Pacific and Eastern Europe regions, held in:
 - (i) Beijing, China, from 20 to 24 August 2018;
 - (ii) Malé, Maldives, from 22 to 26 September 2019;
- (c) Two workshops for the Latin America and Caribbean region, held in:
 - (i) Montevideo, Uruguay, from 21 to 25 May 2018;
 - (ii) Santiago, Chile, from 2 to 6 September 2019.

4. The report also includes a brief description of the presentations made by resource persons and the secretariat and the subsequent discussions held, as well as feedback on possible improvements to, and the implementation of, possible future regional training workshops.

C. Possible action by the Subsidiary Body for Implementation

5. The SBI, having considered this report, may wish to note the feedback from workshop participants and provide further guidance to the secretariat, as appropriate, on the provision of further technical assistance to non-Annex I Parties to support them in fulfilling their reporting obligations under the Convention.

¹ Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

² FCCC/SBI/2015/10, para. 29.

³ All three workshops held in 2018.

⁴ The workshops held in 2018 in Montevideo and Beijing.

II. Proceedings of the workshops

A. Objectives

6. The main objectives of the regional training workshops were to enhance the capacity of developing country national experts and national focal points with respect to building sustainable national GHG inventory management systems and using the 2006 IPCC Guidelines in the preparation of their country's national GHG inventory, and to provide a platform for exchanging views, lessons learned and experience.

B. Scope and engagement

7. The six regional training workshops were similar in design and structure, and therefore followed similar agendas.⁵ They were designed to cover the key role of a national GHG inventory management system and the process of developing such a system, and the use of the 2006 IPCC Guidelines in preparing national GHG inventories. An interactive training approach was used, including presentations, discussions, and hands-on exercises using realistic data sets with spreadsheets and software. The content of the workshops was supplemented with the sharing of country experience by participants and question and answer sessions. The workshops were hosted and attended as follows:

(a) The 2018 workshop for the Africa region, hosted by the Government of Zambia, was attended by 85 national experts representing 47 non-Annex I Parties. Jean Kapata, Minister of Lands and Natural Resources of Zambia, delivered the keynote statement;

(b) The 2019 workshop for the Africa region, hosted by the Government of Seychelles, was attended by 55 national experts representing 44 non-Annex I Parties. Wills Agricole, Principal Secretary for Energy and Climate Change in the Ministry of Environment, Energy and Climate Change of Seychelles, delivered the keynote statement;

(c) The 2018 workshop for the Latin America and Caribbean region, hosted by the Government of Uruguay, was attended by 36 national experts representing 33 non-Annex I Parties. Ignacio Lorenzo, Director for Climate Change in the Ministry of Housing, Land Planning and Environment of Uruguay, delivered the keynote statement;

(d) The 2019 workshop for the Latin America and Caribbean region, hosted by the Government of Chile, was attended by 37 national experts representing 28 non-Annex I Parties. Eve Crowley, Deputy Regional Representative of FAO in Chile, delivered the keynote statement;

(e) The 2018 workshop for the Asia-Pacific and Eastern Europe regions, hosted by the Government of China, was attended by 53 national experts representing 43 non-Annex I Parties. Xu Huaqing, Director General of the Chinese National Center for Climate Change Strategy and International Cooperation, delivered the keynote statement;

(f) The 2019 workshop for the Asia-Pacific and Eastern Europe regions, hosted by the Government of Maldives, was attended by 56 national experts representing 42 non-Annex I Parties. Abdulla Naseer, Minister of State for Environment of Maldives, and Ajwad Musthafa, Permanent Secretary of the Ministry of Environment of Maldives, delivered keynote statements.

8. The training sessions were conducted by resource persons, including representatives of the secretariat, members of the Technical Support Unit of the IPCC Task Force on National Greenhouse Gas Inventories and FAO staff, as well as, in some cases, members of the Global Research Alliance. United Nations Development Programme country offices provided logistical support for the workshops.

⁵ A sample agenda is contained in the annex.

9. The training materials used at the workshops included:
 - (a) The Consultative Group of Experts *Handbook on Building Sustainable National Greenhouse Gas Inventory Management Systems*;⁶
 - (b) The United States Environmental Protection Agency template workbook for developing a national GHG inventory system;⁷
 - (c) The 2006 IPCC Guidelines and presentation materials from the IPCC Task Force on National Greenhouse Gas Inventories that assist in explaining their content;⁸
 - (d) Relevant templates, spreadsheets and IPCC inventory software.⁹
10. Each of the training sessions was followed by a question and answer session. Breakout group sessions focusing on the application of the 2006 IPCC Guidelines for the AFOLU and non-AFOLU (i.e. energy, industrial processes and product use, and waste) sectors were organized. Each group session included exercises for participants to practice using the relevant templates, spreadsheets and inventory software.

C. Summary of the discussions

1. Country presentations

11. At each workshop, representatives of the participating countries¹⁰ presented overviews of their national GHG inventory systems and their experience of using the 2006 IPCC Guidelines. The participants also outlined lessons learned, best practices and areas for improvement. Each country presentation was followed by a question and answer session. All participants were encouraged to share their national experience throughout the workshop.

2. Key role of the national greenhouse gas inventory management system and related institutional arrangements

12. The participants were introduced to the various terms, definitions and concepts used in the Handbook referred to in paragraph 9(a) above, which, together with the template workbook referred to in paragraph 9(b) above, was used by participants as the basis for discussing and sharing experience of institutional arrangements; conducting quality assurance and quality control procedures; addressing methods, data and documentation; developing archiving systems; establishing or refining national inventory improvement plans; and performing key category analyses and managing uncertainty.

13. The training emphasized the core elements and good practices of GHG inventory planning and management, including establishing and operating national-level GHG inventory management systems and implementing an effective inventory cycle that covers the three critical aspects of an inventory: planning, preparation and improvement. The discussions highlighted how GHG inventory system concepts could be scaled up to build effective national systems for measurement, reporting and verification, and how good-quality national GHG inventories could form the basis for developing, implementing and tracking the progress of national climate change mitigation policies and actions.

⁶ Available at <https://unfccc.int/process-and-meetings/bodies/constituted-bodies/consultative-group-of-experts/cge-training-materials/cge-training-materials-for-the-preparation-of-biennial-update-reports>.

⁷ Available at http://ledsgp.org/resource/greenhouse-gas-inventory-system/?loclang=en_gb#ghg-toolkit.

⁸ Available at <http://www.ipcc-nggip.iges.or.jp/support/support.html>.

⁹ Available at <http://www.ipcc-nggip.iges.or.jp/software/index.html>.

¹⁰ Algeria, Angola, Argentina, Armenia, Bangladesh, Belize, Benin, Brazil, Cambodia, Central African Republic, China, Colombia, Congo, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, Georgia, Ghana, Guatemala, India, Indonesia, Jamaica, Kenya, Kyrgyzstan, Lebanon, Madagascar, Malawi, Malaysia, Maldives, Mexico, Mongolia, Mozambique, Myanmar, Nicaragua, Nigeria, Panama, Paraguay, Peru, Republic of Moldova, Serbia, Seychelles, Singapore, South Africa, Sri Lanka, Suriname, Thailand, Togo, Tunisia, Uganda, Uruguay, Viet Nam and Zambia.

3. Using the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and Intergovernmental Panel on Climate Change software

14. Participants were provided with an overview of the 2006 IPCC Guidelines, including the differences from previous IPCC guidelines. Discussions were held regarding uncertainty analysis, key category analysis, approaches to data collection and the IPCC Emission Factor Database.

15. Following the general discussion about the cross-sectoral aspects of the 2006 IPCC Guidelines, participants were divided into two groups: one for the AFOLU sector and one for the energy, industrial processes and product use, and waste sectors. Participants were made aware of the various theoretical choices and decisions involved in applying the 2006 IPCC Guidelines.

16. In addition to the discussions on theory, participants also attended hands-on training sessions that introduced them to the various functionalities of the IPCC inventory software. The exercises in these sessions covered the following topics: inventory management (user management and management of different versions of the inventory; the workflow producing the final version of the national GHG inventory); key cross-cutting issues (key category analysis; completeness and consistency checks); and all sectors (energy, industrial processes and product use, AFOLU and waste). The participants were given sufficient time to interact with the resource persons as well as to practise using the software and thereby gain a better understanding of its functionalities and confidence in using it to implement the 2006 IPCC Guidelines for both generating estimates of emissions and removals and facilitating reporting of their GHG inventories.

III. Feedback from participants

17. Feedback was welcomed from participants throughout each workshop. Participants were encouraged to complete an anonymous online survey immediately after the closure of the workshop regarding the training materials and the workshop's structure and content.

18. The participants expressed their appreciation to the secretariat, the IPCC and FAO for organizing the regional training workshops, and to the Governments of Chile, China, Maldives, Seychelles, Uruguay and Zambia for hosting them.

19. The online surveys indicate that participants were satisfied with both the content and the organization of the workshops.¹¹

20. Participants acknowledged the usefulness of the training, especially with regard to the application of the 2006 IPCC Guidelines and hands-on training sessions. The workshops were successful in achieving the following:

- (a) Disseminating useful tools for supporting the establishment or enhancement of national GHG inventory management systems;
- (b) Familiarizing national experts from non-Annex I Parties with the 2006 IPCC Guidelines and the IPCC inventory software;
- (c) Fostering a general understanding of the methodologies used for estimating national GHG emissions by sources and removals by sinks;
- (d) Increasing recognition of the relevance of institutional arrangements and the link between national GHG emissions and national climate mitigation policies and actions;
- (e) Serving as a platform for sharing experience and lessons learned among national experts from the same region;

¹¹ Utilizing a four-point rating scale (excellent, good, fair and poor), the total rating for all workshops indicates that 95 per cent of the participants rated the organization of the training as good or excellent. Regarding content, more than 89 per cent of the participants rated the balance between general guidance and interactive discussion sessions as good or excellent, and more than 90 per cent rated the balance between presentations and hands-on sessions as good or excellent. No participants rated either the organization or the content of the training as poor.

(f) Promoting networking among national experts involved in compiling national GHG inventories.

21. A recurring suggestion from participants concerned the need to have more than one expert per country participate given that the hands-on training sessions on the AFOLU and non-AFOLU sectors were conducted in parallel. Some participants highlighted the need to organize the workshop in two or three tiers (i.e. beginner, intermediate and advanced) catering for different levels of expertise of the participants.

22. Some participants highlighted the need for the availability of IPCC GHG inventory software in other United Nations languages, specifically French and Spanish. Also noted was the need for improvements in the software in terms of data exchange with other specialized tools and software, the user interface, time-series data management and the possibility to implement higher-tier approaches.

23. Some participants, acknowledging the need to train more experts than can participate in the regional workshops, noted the need to supplement the workshops with e-learning courses on the 2006 IPCC Guidelines, and to make these courses available in other official United Nations languages, specifically French and Spanish.

24. Some participants noted the need to improve relevant energy statistics in their countries, as the energy sector is the lead contributor to national total emissions, and most countries are still having difficulty developing energy balances, which affects transparency.

25. In response to the need identified at the workshops to assist countries in increasing their understanding of and capacity to address uncertainties associated with their GHG emission estimates, during the most recent workshop, held for the Asia-Pacific and Eastern Europe regions in September 2019, in-depth training on uncertainty management using the @RISK tool¹² for Monte Carlo simulation was carried out for the first time.

¹² Risk analysis software using Monte Carlo simulation for Microsoft Excel that is part of the Palisade DecisionTools Suite.

Annex

Sample agenda of the regional training workshops on building sustainable national greenhouse gas inventory management systems and using the 2006 IPCC Guidelines for National Greenhouse Gas Inventories¹

Day 1

08:00 - 09:00 *Registration*

Session 1 – Opening

09:00 - 10:15 **Opening session**

- Introduction
- Opening Remarks – UNFCCC Secretariat
- Self-introduction by participants

10:15 – 10:30 - Presentation of the workshop objectives, expectations and agenda – UNFCCC Secretariat

10:30 - 10:45 *Coffee break*

Session 2 – The Key Role of the National GHG Inventory Management System

10:45 - 11:15 - Country Presentation: National GHG Inventory Management System and use of the 2006 IPCC Guidelines

11:15 - 12:30 - US-EPA Template Workbook on Developing a National GHG Inventory System

- Institutional arrangements for national inventory systems – UNFCCC Secretariat

12:30 - 14:00 *Lunch break, DSA Payment*

Session 2 – The Key Role of the National GHG Inventory Management System (cont.)

14:00 - 14:30 - US-EPA Template Workbook on Developing a National GHG Inventory System

- Practice of the Institutional Arrangements Template – UNFCCC Secretariat
- Exercise #1

14:30 - 15:30 - General discussion on the experience of countries in establishing their institutional arrangements for national GHG inventories – UNFCCC Secretariat

15:30 - 15:50 *Coffee break*

Session 2 – The Key Role of the National GHG Inventory Management System (cont.)

15:50 - 16:10 - Country Presentation: National GHG Inventory Management System – Methods and Data Documentation

16:10 – 17:30 - US-EPA Template Workbook on Developing a National GHG Inventory System

- Methods and Data Documentation Presentation – UNFCCC Secretariat
- Practice of the Methods and Data Documentation Template

Day 2

Session 2 – The Key Role of the National GHG Inventory Management System (cont.)

09:00 - 9:20 - Country Presentation: National GHG Inventory Management System – Quality Assurance and Quality Control (QA/QC)

9:20 - 10:45 - US-EPA Template Workbook on Developing a National GHG Inventory System

- Quality Assurance and Quality Control (QA/QC) Presentation – UNFCCC Secretariat
- Practice of the QA/QC Template
- Exercise #2

10:45 - 11:00 *Coffee break*

11:00 - 12:30 - Country Presentation: National GHG Inventory Management System – Archiving System

- US-EPA Template Workbook on Developing a National GHG Inventory System

¹ Presented as in a typical workshop agenda.

- Developing an Archiving System Presentation – UNFCCC Secretariat
- Practice of the Archiving System Template

12:30 - 14:00 *Lunch break*

- 14:00 - 14:20 - Country Presentation: National GHG Inventory Management System – Key Category Analysis
- 14:20 - 15:30 - US-EPA Template Workbook on Developing a National GHG Inventory System
- Key Category Analysis Presentation – UNFCCC Secretariat
 - Practice of the Key Category Analysis Template
 - Exercise #3

15:30 - 15:45 *Coffee break*

- 15:45 - 16:45 - Country Presentation: National GHG Inventory Management System – National Inventory Improvement Plan
- US-EPA Template Workbook on Developing a National GHG Inventory System
- National Inventory Improvement Plan Presentation – UNFCCC Secretariat
 - Exercise #4
- 16:45 - 17:15 - Group Discussion:
- Experience of countries in using the proposed templates to support the establishment/refinement of their national GHG inventory management systems
 - Action plan for disseminating and utilizing proposed templates

Day 3

Session 3 – 2006 IPCC Guidelines - General guidance and reporting

- 09:00 - 10:30 - Overview of 2006 IPCC Guidelines for National Greenhouse Gas Inventories – including differences between the Revised 1996 IPCC Guidelines and the 2006 IPCC Guidelines – IPCC TFI TSU
- Uncertainty Analysis – IPCC TFI TSU
 - Key category Analysis – IPCC TFI TSU
 - Approaches to Data Collection – IPCC TFI TSU
 - Questions and answers

10:30 - 10:45 *Coffee break*

2006 IPCC Guidelines - General guidance and reporting (cont.)

- Introduction to, and hands-on session on, the IPCC Emission Factor Database (EFDB) – IPCC TFI TSU
- Introduction to, and installation of, the IPCC Inventory software – IPCC TFI TSU

12:30 - 14:00 *Lunch break*

Session 4 – Methodology on each sector (two break-out Groups in parallel: Group A on Energy, IPPU and Waste, Group B on AFOLU)

- | | |
|---|---|
| <p>14:00 - 15:45</p> <p>Session 4A1: Energy Sector – Resource Persons and IPCC TFI TSU</p> <ul style="list-style-type: none"> - Energy sector – source categories, methodologies and improvements under 2006 IPCC Guidelines - Hands-on session on the IPCC software based on an exercise for the sector | <p>Session 4B1: Agriculture Sector – FAO and IPCC TFI TSU</p> <ul style="list-style-type: none"> - Agriculture sector – source categories, methodologies and improvements under 2006 IPCC Guidelines - Hands-on session on the IPCC software based on an exercise for the sector |
|---|---|
- 15:45 - 16:00 *Coffee break*
- | | |
|--|--|
| <p>16:00 - 16:20 - Country Presentation: National GHG Inventory - Energy Sector</p> <p>16:20 - 18:00 Session 4A1: Energy Sector – Resource Persons and IPCC TFI TSU</p> <ul style="list-style-type: none"> - Energy sector – source categories, methodologies and improvements under | <p>- Country Presentation: National GHG Inventory – Agriculture Sector</p> <p>Session 4B1: Agriculture Sector – FAO and IPCC TFI TSU</p> <ul style="list-style-type: none"> - Agriculture sector – source categories, methodologies and improvements under |
|--|--|

2006 IPCC Guidelines

- Hands-on session on the IPCC software based on an exercise for the sector

2006 IPCC Guidelines

- Hands-on session on the IPCC software based on an exercise for the sector

Day 4

Session 4 – Methodology on each sector (cont.)

08:00 - 10:00

Session 4A2: Industrial Processes and Product Use Sector – Resource Persons and IPCC TFI TSU

- Country Presentation: National GHG Inventory – Industrial Processes and Product Use Sector
- Industrial Processes and Product Use sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

Session 4B2: Forestry and Other Land Use Sector – FAO and IPCC TFI TSU

- Country Presentation: National GHG Inventory – Forestry and Other Land Use Sector
- Forestry and other land use sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

10:00 - 10:15

Coffee break

10:15 - 12:30

Session 4A2: Industrial Processes and Product Use Sector (cont.) – Resource Persons and IPCC TFI TSU

- Industrial Processes and Product Use sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

Session 4B2: Forestry and Other Land Use Sector (cont.) – FAO and IPCC TFI TSU

- Forestry and other land use sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

12:30 - 14:00

Lunch break

14:00 - 15:45

Session 4A3: Waste Sector – Resource Persons and IPCC TFI TSU

- Country Presentation: National GHG Inventory – Waste Sector
- Waste sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

Session 4B2: Forestry and Other Land Use Sector – FAO and IPCC TFI TSU

- Country Presentation: National GHG Inventory – Forestry and Other Land Use Sector
- Hands-on session on the IPCC software based on an exercise for the sector – continued

15:45 - 16:00

Coffee break

16:00 - 18:00

Session 4A3: Waste Sector (cont.) – Resource Persons and IPCC TFI TSU

- Waste sector – source categories, methodologies and improvements under 2006 IPCC Guidelines
- Hands-on session on the IPCC software based on an exercise for the sector

Session 4B2: Forestry and Other Land Use Sector (cont.) – FAO and IPCC TFI TSU

- Hands-on session on the IPCC software based on an exercise for the sector – continued

Day 5

Session 5 – Integration of work done for each sector – IPCC TFI TSU

8:00 - 10:00

- Time series consistency
- Hands-on session on ensuring time-series consistency using an Excel file

10:00 - 10:15

Coffee break

12:30 - 14:00

Lunch break

Session 5 – Integration of work done for each sector (Cont.) – IPCC TFI TSU

- 14:00 - 15:30
- Key category analysis using the IPCC Inventory Software
 - Producing reporting tables using the IPCC Inventory Software
 - Questions and answers (overall)

15:30 - 15:45 *Coffee break*

Session 6 – Closing – Moderated by the UNFCCC Secretariat

- 15:45 - 16:30
- Discussion on lessons learnt throughout the workshop
 - Closing remarks
 - Workshop evaluation
-