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IPCC Updates Methodology for Greenhouse Gas Inventories

KYOTO, Japan, May 13 – The Intergovernmental Panel on Climate Change (IPCC) released on Monday an update to its methodology used by governments to estimate their greenhouse gas emissions and removals.

Governments are required to report their national greenhouse gas inventories -- comprising estimates of greenhouse gas emissions and removals -- to the United Nations Framework Convention on Climate Change (UNFCCC) including under processes such as the Kyoto Protocol and Paris Agreement.

The updated IPCC methodology improves this transparency and reporting process by ensuring that the methodology used to determine these inventories is based on the latest science.

The new report, the *2019 Refinement to the 2006 IPCC Guidelines on National Greenhouse Gas Inventories (2019 Refinement)*, was prepared by the IPCC's Task Force on National Greenhouse Gas Inventories (TFI). A plenary session of the IPCC Panel in Kyoto, Japan, adopted the report's Overview Chapter and accepted the main report.

"The *2019 Refinement* provides an updated and sound scientific basis for supporting the preparation and continuous improvement of national greenhouse gas inventories," said Kiyoto Tanabe, Co-Chair of the TFI.

The *2019 Refinement* provides supplementary methodologies to estimate sources that produce emissions of greenhouse gases and sinks that absorb these gases. It also addresses gaps in the science that were identified, new technologies and production processes have emerged, or for sources and sinks that were not included in the *2006 IPCC Guidelines*.

It also provides updated values of some emission factors used to link the emission of a greenhouse gas for a particular source to the amount of activity causing the emission. Updates are provided where authors identified significant differences from values in the *2006 IPCC Guidelines*.

Over 280 scientists and experts worked on the *2019 Refinement* to produce many changes to the general guidance as well as methodologies for four sectors: energy; industrial processes and product use; agriculture, forestry and other land use; and waste.

"Our authors have examined a wide range of inventory methodologies and updated them where scientific advances and new knowledge made this necessary, following the IPCC decision," said Eduardo Calvo, Co-Chair of the TFI.

The *2006 IPCC Guidelines* continue to provide a technically sound methodological basis for measuring national greenhouse gas inventories. The *2019 Refinement* updates, supplements and elaborates them where the authors identified gaps or out-

of-date science. The *2019 Refinement* is to be used in conjunction with the *2006 IPCC Guidelines*.

The meeting of the UNFCCC's subsidiary bodies in June 2019 will provide a first opportunity for Governments in the UNFCCC to receive and review the updated methodology, and determine the best pathway towards implementing the *2019 Refinement*.

“The 2019 Refinement is to provide an updated scientific basis for supporting the preparation of national greenhouse gas inventories. I would like to thank the authors of the *2019 Refinement* for their dedication and diligent work updating this methodology, which provides transparency that is vital to international efforts addressing dangerous climate change,” said IPCC Chair Hoesung Lee.

The IPCC's 49th Session in Kyoto also transacted other business, including consideration of a report from the IPCC Task Group on Gender.

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Notes for Editors

About the IPCC

The Intergovernmental Panel on Climate Change (IPCC) is the UN body for assessing the science related to climate change. It was established by the United Nations Environment Programme (UN Environment) and the World Meteorological Organization (WMO) in 1988 to provide policymakers with regular scientific assessments concerning climate change, its implications and potential future risks, and to put forward adaptation and mitigation strategies. It has 195 member states.

IPCC assessments provide governments, at all levels, with scientific information that they can use to develop climate policies. IPCC assessments are a key input into the international negotiations to tackle climate change. IPCC reports are drafted and reviewed in several stages, thus guaranteeing objectivity and transparency.

The IPCC assesses the thousands of scientific papers published each year to inform policymakers about the state of knowledge on climate change. The IPCC identifies where there is agreement in the scientific community, where there are differences and where further research is needed. It does not conduct its own research.

To produce its reports, the IPCC mobilizes hundreds of scientists. These scientists and officials are drawn from diverse backgrounds. Only a dozen permanent staff work in the IPCC's Secretariat.

The IPCC has three working groups: Working Group I (the physical science basis of climate change); Working Group II (impacts, adaptation and vulnerability); and Working Group III (mitigation of climate change). It also has a Task Force on National Greenhouse Gas Inventories that develops methodologies for estimating anthropogenic emissions and removals of greenhouse gases. All of these are

supported by Technical Support Units guiding the production of IPCC assessment reports and other products.

IPCC Assessment Reports consist of contributions from each of the three working groups and a Synthesis Report. Special Reports undertake a shorter assessment of specific cross-disciplinary issues that usually span more than one working group.

IPCC Methodologies

Greenhouse gases are gases in the atmosphere such as water vapour, carbon dioxide, methane and nitrous oxide that can absorb infrared radiation, trapping heat in the atmosphere. This greenhouse effect means that emissions of greenhouse gases due to human activity cause global warming.

IPCC assessments have found that in scenarios addressing climate change, emissions of greenhouse gases fall sharply, and governments have agreed that such emissions should peak and fall rapidly. These agreements require information about participating countries' net emissions – emissions less removals.

Emissions can arise from different activities such as burning fuel for energy, industrial processes, some farm activities and deforestation. Greenhouse gas emissions can also be removed from the atmosphere by trees and other plants and by industrial carbon dioxide removal techniques.

The IPCC's Task Force on National Greenhouse Gas Inventories (TFI) develops and refines an internationally agreed methodology and software for the calculation and reporting of national greenhouse gas emissions and removals, and encourages the use of this methodology by countries participating in the IPCC and by Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

Parties to the UNFCCC regularly report greenhouse gas emissions and removals to the UNFCCC. By communicating information on greenhouse gas emissions and actions to reduce them, this transparency and reporting system helps Parties understand ambition and progress on climate action.

This methodology includes the formulation of emission factors used to link the emission of a greenhouse gas for a particular source to the amount of activity causing the emission.

The TFI has produced several methodology reports, starting with a set of guidelines in 1994. These were replaced by the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*.

The current methodology is the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. This has been supplemented with the *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol* and the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

A full list of IPCC Methodology Reports can be found [here](#).

2019 Refinement

In August 2014 the Bureau of the TFI (TFB) concluded that the 2006 IPCC Guidelines provide a technically sound methodological basis of national greenhouse

gas inventories. However, to maintain their scientific validity, certain refinements might be required, taking into account scientific and other technical advances that had matured sufficiently since 2006.

Following the conclusions by the TFB, the TFI carried out a technical assessment of IPCC inventory guidelines through an on-line questionnaire survey and four expert meetings in 2015 and 2016.

This assessment showed that there had been abundant new scientific and empirical knowledge published since 2006, which the IPCC should take into account, particularly with respect to data for emission factor development for some categories and gases.

At its 43rd Session in April 2016, the Panel decided to update its methodologies through a refinement of the 2006 IPCC Guidelines in order to assist all UNFCCC Parties in the preparation and continuous improvement of their national greenhouse gas inventories by ensuring they are supported by the best and latest available science.

A scoping meeting for the Methodology Report was held in August 2016.

At its 44th Session in October 2016, the Panel agreed to the outline of the *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*, consisting of a single Methodology Report comprising an Overview Chapter and five volumes following the format of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

The *2019 Refinement* covers all IPCC inventory sectors but refinements are included for only those categories where the science was considered to have sufficiently advanced since 2006 or where new or additional guidance was required.

The *2019 Refinement* was prepared by over 280 scientists and experts from 47 countries.

About the Sixth Assessment Cycle

At its 41st Session in February 2015, the IPCC decided to produce a Sixth Assessment Report (AR6). At its 42nd Session in October 2015 it elected a new Bureau that would oversee the work on this report and Special Reports to be produced in the assessment cycle.

In its [decision](#) on the adoption of the Paris Agreement, the Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) invited the IPCC to provide a special report in 2018 on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways. At its 43rd Session in April 2016, the IPCC accepted the invitation from the UNFCCC and decided to produce two other Special Reports, a Methodology Report and the AR6.

Global Warming of 1.5°C, An IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty was released on 8 October 2018.

Besides the *2019 Refinement*, the IPCC will finalize two Special Reports in 2019:

- *Climate Change and Land, an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems* in August 2019
- *Special Report on the Ocean and Cryosphere in a Changing Climate* in September 2019.

The three working group contributions to AR6 will be released in 2021, and the AR6 Synthesis Report will be finalized in the first half of 2022.

For more information go to www.ipcc.ch