

44TH SESSION OF THE IPCC
17 – 20 October 2016, Bangkok, Thailand

Decisions adopted by the Panel

Decision IPCC/XLIV-1. IPCC Programme and Budget

Based on the recommendations of the Financial Task Team, the Intergovernmental Panel on Climate Change:

1. Thanks the Secretariat of the IPCC for the 2015 IPCC Financial Statements and Audit Report as contained in document IPCC-XLIV/INF.1, the Statement of Contributions, 2016-2019 budget tables and the interim statement of comparison of budget and actual amount (as of 31 July 2016) as contained in document IPCC-XLIV/Doc.2 and the outline of the resource mobilization campaign and the resource mobilization strategy as contained in document IPCC-XLIV/INF.9.
2. Approves that the revised 2017 budget proposal should include the following modifications in **Annex 6** as compared to the budget approved at the 43rd Session of the IPCC:

Changes related to Governing Bodies, Scoping, Expert Meetings and Workshops

- Deletion of “Lead Author meeting – contingency” budget line; decrease of CHF 140,400;
- Adjustment in the number of journeys for “IPCC-46 and Working Group Sessions”; decrease of CHF 240,000;
- Adjustment in the number of journeys for budget line “Bureau”; decrease of CHF 288,000;
- Adjustment in the number of journeys for budget line “Executive Committee”; decrease of CHF 64,000;
- Addition of “Scoping Meeting (SR 2)” budget line; increase of CHF 234,000;
- Adjustment in the number of journeys and rename “Expert Meeting/workshops contingency” as “Expert Meeting on Mitigation, Sustainability and Climate Stabilization Scenarios”; decrease of CHF 140,400;
- Addition of SR 1-LA 3 meeting from 2018 to 2017 to budget line “SR 1–LA 1 and LA 2” and renamed as budget line “SR 1-LA 1, LA 2 and LA 3”; increase of CHF 210,600;
- Move of SR 2-LA 2 meeting from 2017 to 2018 and budget line renamed as “SR 2-LA 1”; decrease of CHF 210,600;
- Move of SR 3-LA 2 meeting from 2017 to 2018 and budget line renamed as “SR 3-LA 1”; decrease of CHF 210,600;
- Move of budget line “Workshop on Cities” from 2017 to 2018; decrease of CHF 468,000;
- Adjustment in the number of meetings and journeys for “TGICA” budget line; decrease of CHF 46,800;
- Addition of budget line “IPCC-45 1 day Briefing for developing countries”; increase of CHF 70,000.
- Deletion of budget line “IPCC-46, 1 day briefing for developing countries”; decrease of CHF 70,000.
- Adjustment in the number of journeys for “SR 1-LA1, LA2 & LA3” budget line; increase of CHF 70,200.

Changes related to TFI

- Adjustment in the number of meetings for budget line “TFI Methodological Development – Lead Author meetings”; increase of CHF 191,880;
- Adjustment in the number of meetings and journeys for “EFDB Data meeting” budget line; decrease of CHF 46,800;
- Move of budget line “TFI Methodological Development – Science meeting” from 2017 to 2018; decrease of CHF 51,480.

Changes related to Other Expenditures

- Adjustment in the amount for budget line “Publications/Translations”; decrease of CHF 100,000;
- Adjustment in the amount of “Advisory Services – COI” budget line; decrease of CHF 15,000;
- Deletion of budget line “TGICA staff position”; decrease of CHF 88,825.

3. Notes the forecast budget for 2018 (**Annex 6**) and indicative budget for 2019 (**Annex 7**), as proposed in these decisions.

4. Expresses its gratitude to the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) for financing one Secretariat position each, and to WMO for hosting the Secretariat. Thanks WMO for its contribution to the IPCC Trust Fund. Thanks the United Nations Framework Convention on Climate Change for its contribution to the IPCC Trust Fund.

5. Expresses its gratitude to member countries, especially those from developing countries, for their generous contributions to the IPCC Trust Fund, with special thanks to governments which support the Technical Support Units (TSUs) and a number of IPCC activities, including data centres, meetings and outreach actions.

6. Urges member countries to maintain their generous contribution in 2016 and invited governments, who are in a position to do so, to increase their level of contribution to the IPCC Trust Fund or to make a contribution in case they have not yet done so. Further urges member countries to make multi-year contributions, if they are in a position to do so. Reminded member countries, when transferring funds to WMO, to indicate that the contribution is “for the IPCC Trust Fund” to ensure proper identification of the recipient.

7. Requests the Secretariat to inform member countries of the possibility of making an in-kind contribution by supporting specific activities. A list of such activities should be shared with the National Focal Points.

8. Urges member countries, in a position to do so, to provide in-kind support to their government representatives, Bureau members and experts participating in the meetings and activities of the IPCC.

9. Requests the Secretariat to continue to strictly enforce the WMO travel rules.

10. Requests the Secretariat to develop, and present to IPCC-45, proposals for decreasing the expenditures associated with “journeys” (e.g. flight costs, reimbursement of actual vs pre-set expenditures, enforcing deadlines).

11. Further requests the Secretariat to develop and present to IPCC-45, proposals for restructuring the budget of the IPCC while ensuring the core functions of the IPCC continue (e.g. separate core budget vs participation budget).

12. Recognizes the importance of organizing a 1-day briefing session to reinforce capacity and enhance participation of developing countries in the IPCC process, noting that this briefing should be open to all member countries. Proposes that the briefing session takes place, as a pilot, 1 day before IPCC-45. In order to free up resources for this briefing and to account for concerns over the number of journeys for IPCC-46, the number of journeys has been reduced from 240 to 180. The outcome of the briefing session will be evaluated and a decision will be taken as to whether the activity should continue as in-session briefings at future Plenary sessions.

13. As part of its resource mobilization efforts, requests the Secretariat to explore co-sponsored IPCC workshops.

14. Requests the Secretariat to consider the “UNEP Partnership Policy and Procedures” (www.unep.org/about/funding/portals/50199/documents/partnership-policy.pdf), to report to IPCC-45 on its suitability for use by the IPCC and to continue informal discussions with potential partners.

15. Requests the Secretariat to determine the reasons for the decline in the number of countries contributing to the IPCC Trust Fund in an effort to finding solutions to reverse this trend. Suggests that in its discussions with member countries that no longer contribute to the IPCC Trust Fund, it should focus on raising awareness on the effects of climate change in addition to highlighting the difficult financial situation the IPCC Trust Fund is facing.

16. Encourages the Secretariat to continue to visit ambassadors in Geneva whose countries may be in a position to contribute to the Trust Fund and report back regularly to the Panel.

17. Proposes that, given the financial constraints of the IPCC Trust Fund, no new activities will be considered by the Panel unless funding has been secured to carry out that activity.

18. Further requests the Secretariat to dedicate an agenda item on the financial situation of the IPCC Trust Fund and to prepare a document on the resource mobilization strategy for consideration at IPCC-45.

19. Notes that **Annex 4** attached to document IPCC-XLIV/Doc.2, containing the list of 2015 in-kind contributions was amended. The revised table is attached to this decision as **Appendix 1**.

20. Notes that the total savings made in the 2017 budget as presented in Document IPCC-XLIV/Doc.2 is CHF 1,595,816.

2016 BUDGET ADOPTED BY IPCC-XLIII

Activity	Purpose	DC/EIT support	Other Expenditure	Sub-total
Governing bodies				
IPCC-43 3 days	Programme and budget SR, AR6 products & TGICA	480,000 120 journeys	210,000	690,000
IPCC-44 4 days	Programme and budget SR/MR outline approval	480,000 120 journeys	280,000	760,000
Bureau 4 days	2 sessions	288,000 72 journeys	120,000	408,000
Executive Committee 4 days	2 sessions and consultations	64,000 16 journeys	10,880	74,880
TFB	1 session	36,000 9 journeys	6,120	42,120
UNFCCC and other UN meetings		80,000 20 journeys	0	80,000
SUB-TOTAL				2,055,000
Lead Authors, scoping, expert meetings and workshops				
Expert meetings/workshops	contingency	240,000 60 journeys	40,800	280,800
Scoping meetings (SR 1 & SR 3)	2 meetings contingency	400,000 100 journeys	68,000	468,000
Co-sponsored mtg Lessons learned Gaps in knowl WG I/II/III AR5	(moved from 2015)	120,000 30 journeys	20,400	140,400
TGICA	1 meeting contingency	48,000 12 journeys	8,160	56,160
TGICA Vision for future	1 workshop/expert meeting	120,000 30 journeys	20,400	140,400
Lesson learned AR5 communications/outreach	1 expert meeting	80,000 20 journeys	0	80,000
EFDB Editorial Board	1 meeting	96,000 24 journeys	16,320	112,320
EFDB Data meeting	2 meetings	80,000 20 journeys	13,600	93,600
EFDB and Software Users Feedback (Japan)	1 meeting	44,000 11 journeys	0	44,000
TFI Expert meeting - Technical Ass'mnt (Cross-sectoral issues)	1 expert meeting	132,000 33 journeys	22,440	154,440
TFI Expert meeting - Technical Ass'mnt IPCC Inventory GL	1 expert meeting	132,000 33 journeys	22,440	154,440
TFI Scoping meeting - Future methodological devt.	1 scoping meeting contingency	196,000 49 journeys	33,320	229,320
SUB-TOTAL				1,953,880
Other Expenditures				
2006 GL software	maintenance/development			6,000
EFDB maintenance	update/management			7,000
Publication/Translation	IPCC publications			200,000
Publication	Wetlands & KP Supplements			100,000
Communication	AR6 material/travel/events			260,500
Distribution	IPCC publications			170,000
Webconferences	licences & communication costs			30,000
IT Infrastructure	web hosting/cloudflare/upgrade			41,818
Library facility	one-time fee			103,000
External Audit	fee			20,000
Advisory Services	Conflict of Interest			30,000
Co-Chairs	support			200,000
SUB-TOTAL				1,168,318
Secretariat				
Secretariat	staff/misc expenses			1,912,500
SUB-TOTAL				1,912,500
TOTAL				7,089,698

PROPOSED 2017 BUDGET ADOPTED BY IPCC-XLIV

Activity	Purpose	DC/EIT support	Other Expenditure	Sub-total
Governing bodies				
IPCC-45 4 days	Programme and budget Approval outline SRs	480,000 120 journeys	280,000	760,000
IPCC-45 1 day	Briefing for developing countries (pilot)	0	70,000	70,000
IPCC-46 + WG I, II, III 5 days	Programme and budget Approval AR6 outline	720,000 180 journeys	350,000	1,070,000
Bureau 4 days	2 sessions	0	120,000	120,000
Executive Committee 4 days	2 sessions and consultations	0	10,880	10,880
TFB	1 session	36,000 9 journeys	6,120	42,120
UNFCCC and other UN meetings		80,000 20 journeys	0	80,000
SUB-TOTAL				2,153,000
Lead Authors, scoping, expert meetings and workshops				
Scoping meeting (SR 2)	1 meeting	200,000 50 journeys	34,000	234,000
Expert meeting - Mitigation, Sustain & Climate Scenarios	1 meeting	120,000 30 journeys	20,400	140,400
SR 1 LA 1, LA 2 and LA 3	CLA/LA	600,000 150 journeys	102,000	702,000
SR 2 LA 1	CLA/LA	180,000 45 journeys	30,600	210,600
SR 3 LA 1	CLA/LA	180,000 45 journeys	30,600	210,600
Scoping meeting (AR6)		480,000 120 journeys	81,600	561,600
TFI Methodological devt. Lead Author meetings	4 meetings	848,000 212 journeys	144,160	992,160
TGICA	1 meeting	48,000 12 journeys	8,160	56,160
EFDB Editorial Board	1 meeting	96,000 24 journeys	16,320	112,320
EFDB Data meeting	1 meeting	40,000 10 journeys	6,800	46,800
EFDB and Software Users Feedback, Japan	1 meeting	44,000 11 journeys	0	44,000
SUB-TOTAL				3,310,640
Other Expenditures				
2006 GL software	maintenance/development			30,000
EFDB maintenance	update/management			7,000
Publication/Translation	IPCC publications			100,000
Communication	AR6 material/travel/events			260,500
Distribution	IPCC publications			100,000
IT Infrastructure	web hosting/cloudflare/upgrade			13,128
Webconferences	licences & communication costs			30,000
External Audit	fee			20,000
Advisory Services	Conflict of Interest			15,000
Co-Chairs	support			200,000
SUB-TOTAL				775,628
Secretariat				
Secretariat	staff costs/misc expenses			1,912,500
SUB-TOTAL				1,912,500
TOTAL				8,151,768

FORECAST 2018 BUDGET NOTED BY IPCC-XLIV

Activity	Purpose	DC/EIT support	Other Expenditure	Sub-total
Governing bodies				
IPCC-47 4 days	Programme and budget various	480,000 120 journeys	280,000	760,000
IPCC-48 4 days	Programme and budget Acceptance SR1	480,000 120 journeys	280,000	760,000
Bureau 4 days	2 sessions	0	120,000	120,000
Executive Committee 4 days	2 sessions and consultations	0	10,880	10,880
TFB	1 session	36,000 9 journeys	6,120	42,120
UNFCCC and other UN meetings		80,000 20 journeys	0	80,000
SUB-TOTAL				1,773,000
Lead Authors, scoping, expert meetings and workshops				
WG I AR6 LA 1	CLA/LA	400,000 100 journeys	68,000	468,000
WG II AR6 LA 1	CLA/LA	400,000 100 journeys	68,000	468,000
SR 1 LA 4	CLA/LA	180,000 45 journeys	30,600	210,600
SR 2 LA 2 and LA 3	CLA/LA	360,000 90 journeys	61,200	421,200
SR 3 LA 2 and LA 3	CLA/LA	360,000 90 journeys	61,200	421,200
Expert meeting Science of Communicating Science	1 meeting	80,000 20 journeys	13,600	93,600
Workshop on Cities (co-sponsored)	1 workshop (moved from 2017)	200,000 50 journeys	34,000	234,000
TFI Methodological devt. Science meeting	1 meeting	60,000 15 journeys	10,200	70,200
TFI Methodological devt. Lead Author meetings	2 meetings	872,000 218 journeys	148,240	1,020,240
TGICA	1 meeting (contingency)	48,000 12 journeys	8,160	56,160
EFDB Editorial Board	1 meeting	96,000 24 journeys	16,320	112,320
EFDB Data meeting	1 meeting	40,000 10 journeys	6,800	46,800
EFDB and Software Users Feedback (Japan)	1 meeting	44,000 11 journeys	0	44,000
SUB-TOTAL				3,666,320
Other Expenditures				
2006 GL software	maintenance/development			6,000
EFDB maintenance	update/management			7,000
Publications/Translations	IPCC publications			200,000
Communication	AR6 material/travel/events			260,500
Distribution	IPCC publications			100,000
Webconferences	licences & communication costs			30,000
IT Infrastructure	web hosting/cloudflare/upgrades			13,128
External Audit	fee			20,000
Advisory Services	Conflict of Interest			15,000
Co-Chairs	support			200,000
SUB-TOTAL				851,628
Secretariat				
Secretariat	staff costs/misc expenses			1,912,500
SUB-TOTAL				1,912,500
TOTAL				8,203,448

New activity as compared to budget noted in IPCC-42 subject to Panel approval in IPCC-46
All other activities with no colour are also subject to Panel approval in IPCC-46

INDICATIVE 2019 BUDGET NOTED BY IPCC-XLIV

Activity	Purpose	DC/EIT support	Other Expenditure	Sub-total
Governing bodies				
IPCC-49 4 days	Programme and budget Acceptance MR	480,000 120 journeys	280,000	760,000
IPCC-50 4 days	Programme and budget Acceptance SR 2 & SR3	480,000 120 journeys	280,000	760,000
Bureau 4 days	2 sessions	0	120,000	120,000
Executive Committee 4 days	2 sessions and consultations	0	10,880	10,880
TFB	1 session	36,000 9 journeys	6,120	42,120
UNFCCC and other UN meetings		80,000 20 journeys	0	80,000
SUB-TOTAL				1,773,000
Lead Authors, scoping, expert meetings and workshops				
WG I AR6 LA 2 and LA 3	CLA/LA meeting	800,000 200 journeys	136,000	936,000
WG II AR6 LA 2	CLA/LA meeting	400,000 100 journeys	68,000	468,000
WG III AR6 LA 1 and LA 2	CLA/LA meeting	800,000 200 journeys	136,000	936,000
SR 2 LA 4	CLA/LA meeting	180,000 45 journeys	30,600	210,600
SR 3 LA 4	CLA/LA meeting	180,000 45 journeys	30,600	210,600
SYR AR6	Scoping meeting 2	160,000 40 journeys	27,200	187,200
SYR AR6	CWT-1 meeting	60,000 15 journeys	10,200	70,200
TGICA	1 meeting (contingency)	48,000 12 journeys	8,160	56,160
EFDB Editorial Board	1 meeting	96,000 24 journeys	16,320	112,320
EFDB Data meeting	1 meeting	40,000 10 journeys	6,800	46,800
EFDB and Software Users Feedback (Japan)	1 meeting	44,000 11 journeys	0	44,000
TFI Methodological devt	1 prep meeting before Plenary (moved from 2017)	80,000 20 journeys	0	80,000
TFI Expert meeting	1 meeting (contingency)	100,000 25 journeys	17,000	117,000
SUB-TOTAL				3,474,880
Other Expenditures				
2006 GL software	maintenance/development			6,000
EFDB maintenance	update/management			7,000
Publications/Translations	IPCC publications			200,000
Communication	AR6 material/travel/events			260,500
Distribution	IPCC publications			100,000
Webconferences	licences & communication costs			30,000
IT Infrastructure	web hosting/cloudflare/upgrades			13,128
External Audit	fee			20,000
Advisory Services	Conflict of Interest			15,000
Co-Chairs	support			200,000
SUB-TOTAL				851,628
Secretariat				
Secretariat	staff costs/misc expenses			1,912,500
SUB-TOTAL				1,912,500
TOTAL				8,012,008

New activity as compared to budget noted in IPCC-43, subject to Panel approval in IPCC-48
All activities to be noted at IPCC-43 and subject to Panel approval in IPCC-48

**List of In-kind Contributions/Activities
(January-July 2016)**

(In the following cases no financial support for hosting/meeting facilities
was provided by the IPCC Trust Fund)

Government/Institution	Activity	Type
France	Technical Support Unit – WG I	Hosting
China	Technical Support Unit – WG I	Hosting
Germany	Technical Support Unit – WG II	Hosting
South Africa	Technical Support Unit – WG II	Hosting
India	Technical Support Unit – WG III	Hosting
United Kingdom	Technical Support Unit – WG III	Hosting
Japan	Technical Support Unit – TFI	Hosting
Peru	Technical Support Unit – TFI	Hosting
Germany	IPCC Data Distribution Centre	Hosting
United Kingdom	IPCC Data Distribution Centre	Hosting
United States of America	IPCC Data Distribution Centre	Hosting
WMO	Post of Secretary of the IPCC	Salary
UNEP	Post of Deputy Secretary of the IPCC	Salary
Japan	NGGIP – IPCC Expert Meeting to Collect EFDB, Kobe, Japan (25-28 January 2016)	Meeting facilities
WMO	TGICA – Expert Meeting, Geneva, Switzerland (26-27 January 2016)	Meeting facilities
Norway	IPCC Expert Meeting on Communications, Oslo, Norway (9-10 February 2016)	Meeting facilities
WMO	51 st Session of the IPCC Bureau, Geneva Switzerland (16-17 February 2016)	Meeting facilities
Australia	NGGIP – Expert Meeting for Technical Assessment of the IPCC Inventory Guidelines – follow-up on specific issues from the 2015 Expert Meeting, Sydney, Australia (25-27 April 2016)	Meeting facilities
Australia	NGGIP – Expert Meeting for Technical Assessment of IPCC Inventory Guidelines – Cross-sectoral Issues, Sydney, Australia (27-29 April 2016)	Meeting facilities
Finland	24 th Session of TGICA, Helsinki, Finland (6-8 July 2016)	Meeting facilities
Croatia*	IPCC-42, Dubrovnik, Croatia (5-8 October 2015)	Meeting facilities

* 2015

Decision IPCC/XLIV-2. Admission of Observer Organizations

The Intergovernmental Panel on Climate Change decides,

To admit the following new Observer Organizations:

1. Climate Alliance
2. C40 Cities Climate Leadership Group
3. Climate and Clean Air Coalition (CCAC)
4. World Climate Research Programme (WCRP)
5. Consortium of International Agricultural Research Centers (CGIAR)
6. Friends World Committee for Consultation (FWCC)
7. Mary Robinson Foundation – Climate Justice
8. Intergovernmental Technical Panel on Soils (ITPS)
9. Université catholique de Louvain
10. Pacific Community

Decision IPCC/XLIV-3. Procedural matters. Review of the IPCC Conflict of Interest Policy

The Intergovernmental Panel on Climate Change,

Recalling paragraph 12 of the IPCC COI Policy, which states that IPCC author teams are to include individuals with different perspectives and affiliations,

Decides,

1. To adopt and replace Annex B to the IPCC COI Policy by the revised COI disclosure form as contained in Annex 1 to this document, which includes the request that COI disclosure forms should be submitted together with a CV.
2. To delete paragraphs 23 and 24 of the Implementation Procedures of the IPCC COI Policy on the COI Expert Advisory Group (EAG), as well as the reference to the EAG in paragraphs 3, 4, 10, and 17 of the Implementation Procedures.
3. To replace the words “IPCC Bureau” in paragraph 7 of the Implementation Procedures by “COI Committee”.
4. To add and start the last sentence of paragraph 5 of the Implementation Procedures with the words: “Before a CLA, LA or RE can start working” and delete the word “then”.
5. To delete the phrase “in person” in paragraph (f) of the Method of Working of the IPCC COI Committee. This will allow virtual participation in COI meetings by the COI Committee members.

CONFLICT OF INTEREST DISCLOSURE FORM (REV.)

NAME:

ADDRESS:

E-MAIL ADDRESS:

TELEPHONE:

CURRENT EMPLOYER:

FUNCTION/ROLE IN IPCC:

NOTE: You have been invited to serve on the IPCC because of your professional standing and expertise. As outlined in the IPCC Conflict of Interest Policy, the role of the IPCC demands that it pay special attention to issues of independence and potential bias in order to maintain the integrity of, and public confidence in, its products and processes. It is essential that the work of the IPCC is not compromised by any conflict of interest for those who execute it. In view of this, disclosure of certain circumstances is necessary to ensure that the work of the IPCC is not compromised by conflicts of interest. In filling out this form, therefore, we rely on your professionalism, common sense, and honesty.

These arrangements and disclosure of interests are required as a matter of due diligence, to ensure appropriate assurance for the IPCC in matters of conflict of interest, professional and scientific integrity, and to protect the IPCC and participants from reputational risk.

This declaration of interests, and disclosure of conflicts of interest or potential conflicts of interest, is required under the IPCC Conflict of Interest Policy and Implementation Procedures.

You should disclose interests that could: i) significantly impair your objectivity in carrying out your duties and responsibilities for the IPCC, or ii) create an unfair advantage for you or any person or organization; and which could result in your securing a direct and material gain through outcomes in an IPCC product. For the purposes of this policy, circumstances that could lead a reasonable person to question your objectivity, or whether an unfair advantage has been created, constitute a potential conflict of interest and should be disclosed in this form.

You must also declare any relevant interests of parties with whom you have current contractual relationships or substantial common interests and which could be perceived as unduly influencing, or likely to unduly influence, your judgement (for example your employer(s), close professional associates, your administrative unit or department, sponsoring or funding entities).

A **brief** description of details should be provided in relation to any question below. You should aim to provide sufficient and explicit information to allow the IPCC to form a view on whether the circumstances disclosed give rise to an actual or potential conflict of interest. If in doubt about whether an interest should be disclosed, individuals are encouraged to disclose that information.

Please **sign** and **date** this form on the last page, and return the form to the Secretary of the IPCC with a **Curriculum Vitae** and information supporting these disclosures where applicable. **Retain a copy for your records.**

You must promptly inform the IPCC Secretariat if there is any change in this information prior to or during the course of your work or meetings for the IPCC. This form and the declarations contained therein must be completed before participation in the IPCC activity can be confirmed.

Answering “Yes” to a question on this form does not necessarily mean that a conflict is present or that you will be unable to perform your designated function/role in the IPCC. If in doubt about whether an interest should be disclosed, individuals are encouraged to disclose that information. This information will be assessed as a whole on the basis of the principles contained in the COI Policy (<http://ipcc.ch/pdf/ipcc-principles/ipcc-conflict-of-interest.pdf>). In particular, what constitutes or not a COI is defined in paragraphs 11 to 17 of that document (reproduced below). If in doubt about whether an interest should be disclosed, individuals are encouraged to seek advice from IPCC Secretariat (Legal Officer, sschlingemann@wmo.int).

Definition of « Conflict of Interest » (paragraphs 11 to 17 of the IPCC COI Policy <http://ipcc.ch/pdf/ipcc-principles/ipcc-conflict-of-interest.pdf>).

Conflict of Interest

11. A “conflict of interest” refers to any current professional, financial or other interest which could: i) significantly impair the individual’s objectivity in carrying out his or her duties and responsibilities for the IPCC, or ii) create an unfair advantage for any person or organization. For the purposes of this policy, circumstances that could lead a reasonable person to question an individual’s objectivity, or whether an unfair advantage has been created, constitute a potential conflict of interest. These potential conflicts are subject to disclosure.

12. Conflict of interest policies in scientific assessment bodies typically make a distinction between “conflict of interest” and “bias,” which refers to a point of view or perspective that is strongly held regarding a particular issue or set of issues. In the case of author and review teams, bias can and should be managed through the selection of a balance of perspectives. For example, it is expected that IPCC author teams will include individuals with different perspectives and affiliations. Those involved in selecting authors will need to strive for an author team composition that reflects a balance of expertise and perspectives, such that IPCC products are comprehensive, objective, and neutral with respect to policy. In selecting these individuals, care must be taken to ensure that biases can be balanced where they exist. In contrast, conflict of interest exists where an individual could secure a direct and material gain through outcomes in an IPCC product. Holding a view that one believes to be correct, but that one does not stand to gain from personally is not a conflict of interest.

13. The conflict of interest requirements in this policy are not designed to include an assessment of one's behaviour or character or one's ability to act objectively despite the conflict of interest.

14. This policy applies only to current conflicts of interest. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behaviour. Nor does it apply to possible interests that may arise in the future but that do not currently exist, as such interests are inherently speculative and uncertain. For example, a pending application for a particular job is a current interest, but the mere possibility that one might apply for such a job in the future is not a current interest.

15. Professional and other non-financial interests need to be disclosed only if they are significant and relevant. If in doubt about whether an interest should be disclosed, individuals are encouraged to seek advice from the appropriate IPCC body as defined in Annex A. Significant and relevant interests may include, but are not limited to, senior editorial roles, advisory committees associated with private sector organizations, and memberships on boards of non-profit or advocacy groups. However, not all such associations necessarily constitute a conflict of interest.

16. Financial interests need to be disclosed only if they are significant and relevant. These may include, but are not limited to, the following kinds of financial interests: employment relationships; consulting relationships; financial investments; intellectual property interests; and commercial interests and sources of private-sector research support. Individuals should also disclose significant and relevant financial interests of any person with whom the individual has a substantial business or relevant shared interest. If in doubt about whether an interest should be disclosed, individuals are encouraged to seek advice from the appropriate IPCC body as defined in Annex A "Implementation".

17. To prevent situations in which a conflict of interest may arise, individuals directly involved in or leading the preparation of IPCC reports should avoid being in a position to approve, adopt, or accept on behalf of any government the text in which he/she was directly involved.

1. APPOINTMENTS AND ACTIVITY

Do you hold any position or appointment, or any business or professional relationships (whether commercial or non-financial) with other bodies related to climate science, such as the UNFCCC or others? Yes No

Details:

2. EMPLOYMENT AND CONSULTING

Do you receive any remuneration from a commercial entity or other organization with an interest related to the subject of the IPCC work in which you are engaged?
Employment or consulting, including services as a technical or other adviser Yes No

Details:

3. RESEARCH SUPPORT

Do you receive financial support from any commercial entity or other organization with an interest related to the subject of the IPCC work?
Research support, including grants, collaborations, sponsorships, other funding Yes No

Details:

Non-financial support valued collectively in excess of US\$10,000 per year (premises, equipment, facilities, assistants, paid travel, etc.) Yes No

Details:

Support, including honoraria, for being on a speakers' panel, giving speeches or training for a commercial entity or other organization with an interest related to the subject of the IPCC work?

Yes No

Details:

4. INVESTMENT INTERESTS

Do you have investments in any commercial entity with an interest related to the subject of the IPCC work? (Please also include indirect investments such as a trust or holding company. You may exclude mutual funds, pension funds or similar investments that are broadly diversified and over which you exercise no control.)

Stocks, bonds, stock options, other securities (e.g. short sales) Yes No

Details:

Commercial business interests (eg, ownership, partnerships, joint ventures, board memberships, controlling interests)

Yes No

Details:

5. INTELLECTUAL PROPERTY

Do you own any intellectual property rights that might be affected by the IPCC work?

Patents, trademarks or commercial copyrights (including pending applications) Yes No

Details:

Proprietary knowledge in a technology or process being used for commercial purposes

Yes No

Details:

6. PUBLIC STATEMENTS AND POSITIONS

As part of a regulatory, legislative or judicial process, are you providing any expert opinion or testimony, related to the subject of the IPCC work, for a commercial entity or other organization?

Yes No

Details:

7. NON-FINANCIAL INTERESTS

Are you engaged in any professional or other activities which outside parties could consider might represent or give rise to a conflict of interest, or the perception of a conflict of interest with regard to your IPCC service?

Yes No

Details:

Are you involved in any:

- Senior editorial role or assignment? Yes No

Details:

- Official function in a government agency or international organization? Yes No

Details:

- Advisory committee associated with a public or private sector organization? Yes No

Details:

Are you a:

- Board member of a public or private sector organization? Yes No

Details:

- Board member of a non-profit organization? Yes No

Details:

- Board member of an advocacy group? Yes No

Details:

8. FINANCIAL INTERESTS

Do you hold any financial interests in excess of US\$10,000 per year which outside parties could consider might represent or give rise to a conflict of interest, or the perception of a conflict of interest with regard to your IPCC service? Yes No

Details:

9. ADDITIONAL INFORMATION

If not already disclosed above, are you aware of any aspect of your work for the IPCC that will enable you to obtain access to proprietary information or create for you a competitive advantage in your professional, financial or business dealings?

Yes No

Details:

To your knowledge, could the outcome of your work for the IPCC adversely affect the interests of any other persons or entities with whom you have substantial common personal, professional, financial or business interests (such as your adult children or siblings, close professional colleagues, administrative unit or department)? Yes No

Details:

Which organisation is covering, partly or in full, your IPCC related travel costs?

Details:

Are you receiving any payments (other than for travel costs) or honoraria for speaking publicly on the subject of the IPCC work in which you are engaged? Yes No

Details:

Is there any other aspect of your background or present circumstances not addressed above that you consider might be perceived as affecting your objectivity or independence?

Yes No

Details:

REMINDER

“Yes” responses do not necessarily affect or prevent your participation in IPCC activities. Answering “Yes” to a question on this form does not necessarily mean that a conflict is present or that you will be unable to perform your designated function/role in the IPCC. If in doubt about whether an interest should be disclosed, individuals are encouraged to disclose that information.

DECLARATION

I hereby declare that the information in and accompanying this disclosure is true and complete to the best of my knowledge and belief. I declare that I have disclosed all associations required for disclosure under the IPCC Conflict of Interest Policy; and that, except as declared, I do not consider that any of the associations present a conflict of interest.

Should there be any change to the above information and declaration, I will promptly notify the IPCC Secretariat and complete a new declaration of interest form that describes the changes. This includes any change that occurs before or during my work with the IPCC and through the period of my engagement up to finalization or publication of results, or completion of the activity concerned.

I understand that information about my interests will be held by the IPCC for a period of five years after the end of the assessment cycle during which I contributed, after which the information will be destroyed. Subject to requirement to notify the existence of a conflict of interest to others under paragraph 6 of the Implementation Procedures, I understand that these forms will be considered confidential and will be reviewed in accordance with the COI Implementation Procedures.

I hereby declare that I will comply with the IPCC COI Policy and the Implementation Procedures.

Name:

Signature:

Date:

Decision IPCC/XLIV-4. Sixth Assessment Report (AR6) Products, Outline of the Special Report on 1.5°C

The Intergovernmental Panel on Climate Change decides,

1. To agree to the outline of 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 as contained in Annex 1 to this document;
2. That this report responds to the invitation of the UNFCCC to the IPCC as contained in paragraph 21 of its Decision 1/CP.21, the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), and should also be seen in the context of paragraph 17 of the same decision;
3. That this report assesses literature relevant to 1.5°C, especially since the Fifth Assessment Report (AR5), consistent with the IPCC guidance on the use of literature;
4. That the bulleted text in Annex 1 to this Decision, that resulted from the scoping process and refined through comments by the Plenary, be considered by authors as indicative, taking into account the scope of the literature assessment referred to in bullet 3 and scientific gaps that will be explicitly identified;
5. That the time schedule for the production of the Special Report is as follows:
 - A call for nominations of Coordinating Lead Authors (CLAs), Lead Authors (LAs) and Review Editors (REs) will be issued after the 44th Session of the IPCC in October 2016.
 - Approval and acceptance of the Special Report is planned for the 48th Session of the IPCC in September 2018.
 - In order to achieve this, the timetable for the Special Report is as follows:

31 October - 11 December 2016	Call for author nominations
29 January 2017	Selection of authors
6-12 March 2017	1st Lead Author Meeting
5-11 June 2017	2nd Lead Author Meeting
31 July - 24 September 2017	First Order Draft Expert Review
23-29 October 2017	3rd Lead Author Meeting
1 January - 25 February 2018	Second Order Draft Expert and Government Review
9-15 April 2018	4th Lead Author Meeting
4 June - 29 July 2018	Final Government Review of Summary for Policymakers (SPM)
24-30 September 2018	IPCC acceptance/adoption/approval
6. That the budget for the production of the Special Report is as contained in Decision (IPCC/XLIV-1) on the IPCC Trust Fund Programme and Budget.

Proposed outline of the 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, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty

Title:

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

List of Contents

Front Matter (2 pages)
 Summary for Policy Makers (up to 10 pages, incl. headline statements, tables, figures)
 Chapter 1: Framing and context (15 pages)
 Chapter 2: Mitigation pathways compatible with 1.5°C in the context of sustainable development (40 pages)
 Chapter 3: Impacts of 1.5°C global warming on natural and human systems (60 pages)
 Chapter 4: Strengthening and implementing the global response to the threat of climate change (50 pages)
 Chapter 5: Sustainable development, poverty eradication and reducing inequalities (20 pages)
 Boxes - integrated case studies/regional and cross-cutting themes (up to 20 pages)
 FAQs (10 pages)
 Total: up to 225

Front matter

- IPCC context
 - Building on AR5
 - Assessing literature since AR5
 - Reports to come in this cycle
- Context of UNFCCC invitation
- Specificity of this report within the cycle (integration, systems- and solutions-based approach, near-term)
- Laying the foundations for the Special Report in the context of strengthening the global response to climate change, sustainable development and poverty eradication

Chapter 1:

Framing and Context

- Understanding 1.5°C; reference levels, probability, transience, overshoot, stabilization
- 1.5°C in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, with consideration for ethics and equity
- Key concepts central to understanding the report
- Building on AR5: new information, integrative approaches, response options
- Assessment and methodologies across spatial and time scales
- Treatment of uncertainty
- Storyline of the report

Chapter 2:

Mitigation pathways compatible with 1.5°C in the context of sustainable development

- Methods of assessment and assumptions in the literature
- Constraints on, and uncertainties in, global greenhouse gas emissions consistent with warming of 1.5°C compared to 2°C, considering short lived and other climate drivers and taking into account uncertainty in climate sensitivity
- Characteristics of mitigation and development pathways compatible with 1.5°C compared with 2°C and, where warranted by the literature, comparison with higher levels of warming. This may include short and long term timeframes, sectorial, regional, demand/supply-side, technological and socio-economic implications
- Technological, environmental, institutional and socio-economic opportunities and challenges related to 1.5°C pathways

Chapter 3:

Impacts of 1.5°C global warming on natural and human systems

- Methods of assessment
- Observed and attributable global and regional climate changes and impacts and the adaptation experience
- Key global and regional climate changes, vulnerabilities, impacts, and risks at 1.5°C, taking into account adaptation potential and limits to adaptive capacity
- Key sectoral vulnerabilities, impacts, and risks at 1.5°C, taking into account adaptation potential, limits to adaptive capacity and socio-economic aspects
- Avoided impacts and reduced risks at 1.5°C compared with 2°C and, where warranted by the literature, comparison with higher levels of warming
- Timeframe, slow vs. fast onset, irreversibility and tipping points
- Implications for impacts, adaptation and vulnerability of different mitigation pathways reaching 1.5°C, including potential overshoot

Chapter 4:

Strengthening and implementing the global response to the threat of climate change

- Assessing current and emerging adaptation and mitigation options, including negative emission methodologies, and associated opportunities and challenges
- Synergies, trade-offs and integration of adaptation and mitigation options
- The pace of the development and deployment of adaptation and mitigation options compared to pathways consistent with sustainable development and 1.5°C
- The potential and capacity limitations for development and deployment of adaptation and mitigation responses to accelerate transitions within and across scales and systems (e.g. food production, cities)
- Options for implementing far-reaching and rapid change; implications, challenges (e.g. lock in, spillover effects), enabling environments and across scales
- Case studies for implementation of adaptation and mitigation options at different scales and circumstances, and lessons learned

Chapter 5:

Sustainable development, poverty eradication, and reducing inequalities

- Linkages between achieving SDGs and 1.5°C
- Distributional impacts arising from response options
- Opportunities, challenges, risks, and trade-offs
- Positive and negative impacts of adaptation and mitigation measures including response measures and strategies, economic diversification, livelihoods, food security, cities, ecosystems, technologies
- Knowledge and experience from local to global, including case studies and integrated planning as relevant to aforementioned bullets
- Climate-resilient development pathways

Decision IPCC/XLIV-5. Sixth Assessment Report (AR6) Products, Outline of the Methodology Report(s) to refine the 2006 Guidelines for National Greenhouse Gas Inventories

The Intergovernmental Panel on Climate Change decides,

1. To prepare a Methodology Report to refine the 2006 IPCC Guidelines for National Greenhouse Inventories” with the following format and title:
 - The format should be one single Methodology Report comprising an Overview Chapter and five volumes following the format of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories (2006 IPCC Guidelines)*.
 - The title of the Methodology Report should be “*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*”.
2. To adopt the terms of reference for the production of a Methodology Report to refine the 2006 IPCC Guidelines for National Greenhouse Gas Inventories as contained in Annex 1 to this Decision.
3. To adopt the table of contents of the Methodology Report as contained in Annex 2 to this Decision.
4. To take note of document IPCC-XLIV/INF.7.
5. That the budget for the production of this Methodology Report is as contained in Decision (IPCC/XLIV-1) on the IPCC Trust Fund Programme and Budget.

Terms of Reference for the production of a Methodology Report to refine the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Background

1. The 26th Meeting of Task Force Bureau (TFB) (28 - 29 August 2014, Ottawa) concluded that:
 - The *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (2006 IPCC Guidelines) provide a technically sound methodological basis of national greenhouse gas inventories, and therefore fundamental revision is unnecessary.
 - To maintain the scientific validity of the *2006 IPCC Guidelines*, certain refinements may be required, taking into account scientific and other technical advances that have matured sufficiently since 2006.
2. Following these conclusions by the TFB and approval by the IPCC at its 40th Session, the Task Force on National Greenhouse Gas Inventories (TFI) started a technical assessment of IPCC Inventory Guidelines through an on-line questionnaire survey and four expert meetings in 2015 and 2016. The technical assessment revealed that there has 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. Consequently, the necessity and usefulness of *refining* the current methodological guidance (e.g. updating default emission factors) has been recognized by TFB.
3. A refinement of the *2006 IPCC Guidelines* is required as early as possible in order to address the issues that were identified through the technical assessment referred to in paragraph 2 above. The refinement will help all UNFCCC Parties use good practice inventory methodologies based on up-to-date scientific knowledge.

Scope

4. The IPCC at its 43rd Session (11-13 April 2016, Nairobi) approved the proposal on "Refinement of 2006 IPCC Guidelines for National Greenhouse Gas Inventories, including production of a Methodology Report(s)" as contained in the Decision IPCC/XLIII-8 "Update of methodologies on National Greenhouse Gas Inventories", and decided to consider the draft Methodology Report(s) at a Plenary session of the IPCC in May 2019 as contained in the Decision IPCC/XLIII-7 "Sixth Assessment Report (AR6) Products. Strategic Planning".
5. The overall aim of the refinement of the *2006 IPCC Guidelines* is to provide an updated and sound scientific basis for supporting the preparation and continuous improvement of national greenhouse gas inventories.
6. In order to achieve the overall aim, the Methodology Report will:
 - Provide supplementary methodologies for sources or sinks of greenhouse gases only where currently there are gaps or where new technologies and production processes have emerged requiring elaborated methodologies or for sources or sinks that are not well covered by the *2006 IPCC Guidelines*;
 - Provide updated default values of emission factors and other parameters based on the latest available science only where significant differences from currently adopted factors are identified;
 - Provide additional or alternative up-to-date information and guidance, where possible, as clarification or elaboration of existing guidance in the *2006 IPCC Guidelines*.

7. In line with paragraph 6 above, the Methodology Report will clearly indicate what type of refinement is provided in each section. The types of refinement are defined in Appendix 1. These terms should be used consistently throughout the Methodology Report.
8. For the purpose of elaborating on and clarifying the existing IPCC guidance, the Methodology Report should aim to address any important needs for clarification arising from GHG inventory reviews or the technical analysis of inventories as part of biennial update reports under the UNFCCC if such needs are identified in time during the elaboration of the report.
9. 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

10. The result of this work will be an IPCC Methodology Report “2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories”.
11. The authors will follow Appendix 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.
12. Literature will be considered up to a cut-off date at the start of the Government/Expert Review.
13. Table 1 provides the time table for this task.

Table 1: Work Plan

Date	Action	Comments
October 2016	IPCC-44	IPCC Plenary approves ToR, chapter outline, work plan and guidance to authors
November 2016	Call for Nomination of Authors and Review Editors	IPCC invites nominations from governments and international organizations
February 2017	TFB select Authors and Review Editors	Selection by TFB considering expertise and geographical coverage
June 2017	1 st Lead Author Meetings	LAM1a (non-AFOLU) and LAM1b (AFOLU) and LAM1c (General Guidance and Reporting). To develop zero order draft
September 2017	2 nd Lead Author Meeting	To develop first order draft for review
December 2017– January 2018	Expert Review	8 weeks review by experts
March 2018	Science Meeting	A small meeting of CLAs and some LAs to discuss specific issues that require intensive discussion to reinforce the writing process.
April 2018	3 rd Lead Author Meeting	To consider comments and produce second order draft for review
xxx 2018	Literature cut-off date	Only papers published before this date will be considered
July-August 2018	Government & Expert Review	8 weeks review by governments and experts
October 2018	4 th Lead Author Meeting	To consider comments and produce final draft
January 2019	Government Review	Distribute to governments for their consideration prior to approval (at least 4 weeks prior to the Panel)
May 2019	Adoption/acceptance by IPCC-49	Final draft submitted to IPCC Panel for adoption/acceptance
xxx 2019	Distribute Report	Distribute to governments and international organizations

Appendix 1: Types of refinement

The following three refinement types should be indicated in the refined sections of the Methodology Report.

1. Update	<p>This is to update existing guidance (table, section, or an entire chapter) to address the needs explained in the first or second bullet under paragraph 6 in this TOR. New elements that do not change default approaches in the existing guidance is considered “update”. A typical example is to provide new default values for EFs contained in a table in the <i>2006 IPCC Guidelines</i>, and in this case it is considered “Update of Table X.X (on default EFs)”.</p> <p>Update of section or entire chapter is to rewrite an existing section or chapter including existing information and new information in the case it is difficult to provide only the new information without overlap with existing guidance. From the inventory compiler’s view point, “update” of existing guidance means that they are encouraged to use the table/section/chapter in the new Methodology Report <u>instead of</u> the corresponding table/section/chapter in the <i>2006 IPCC Guidelines</i>.</p>
2. Elaboration	<p>This is to elaborate existing guidance to address the needs explained in the first or third bullet under paragraph 6 in this TOR.</p> <p>New elements that may be added to default approaches in the existing guidance is considered “elaboration”. Also, additional or alternative up-to-date information and guidance provided to clarify existing guidance is considered “elaboration”. A typical example is to include the contents in FAQs in TFI website in the new Methodology Report(s).</p> <p>Elaboration of section or entire chapter is NOT to rewrite an existing section or chapter, but to provide a sub-section or section which contains additional or alternative up-to-date information without overlap with existing guidance. From the inventory compiler’s view point, “elaboration” of existing guidance means that they are encouraged to use the table/section/chapter in the new Methodology Report <u>in conjunction with</u> the corresponding table/section/chapter in the <i>2006 IPCC Guidelines</i>.</p>
3. New guidance	<p>This is to add completely new guidance on issues for which there is essentially no guidance in the <i>2006 IPCC Guidelines</i> to address the needs explained in the first bullet under paragraph 6 in this TOR.</p> <p>Creation of default approaches to issues that are not well covered in the <i>2006 IPCC Guidelines</i> is considered “new guidance”.</p> <p>From the inventory compiler’s view point, “new guidance” means that they are encouraged to use the section/chapter in the new Methodology Report <u>without reference to</u> specific sections/chapters in the <i>2006 IPCC Guidelines</i>, recognizing that there is essentially no corresponding guidance in the <i>2006 IPCC Guidelines</i>.</p>

Besides, “**No refinement**” should indicate that no refinement has been made in that section.

Appendix: Instructions to Experts and Authors

Instructions to Experts and Authors

1. Work on a Methodology Report to refine the *2006 IPCC Guidelines for National Greenhouse Gas Inventories (2006 IPCC Guidelines)* will be guided by the IPCC procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of the IPCC Reports (Appendix A to the Principles Governing the IPCC Work¹). This document is consistent with the IPCC procedures, and applies to all experts engaged in the production of a new Methodology Report.
2. In this document the term “experts” covers Co-Chairs, members of the TFI Bureau (TFB), TSU Staff, Coordinating Lead Authors (CLAs), Lead Authors (LAs), and Review Editors (REs) as well as Contributing Authors (CAs) and Expert Reviewers.
3. These notes are intended as guidance to experts contributing to a new Methodology Report. They are intended to ensure a consistent and coherent approach across all the volumes or chapters and to promote common terms used.

Confidentiality

4. Authors meetings are closed meetings. Any discussions are confidential except for any published report of the meeting. This is to ensure that experts participating in the meetings can express themselves and discuss issues freely and openly.
5. The IPCC considers the drafts of a new Methodology Report, prior to acceptance, to be pre-decisional, provided in confidence to reviewers, and not for public distribution, quotation or citation.
6. The TSU will keep drafts of a new Methodology Report sent for the IPCC review, any comments received on them and the responses by authors. All written expert and government review comments will be made available to reviewers on request. These will be made available on the IPCC website as soon as possible after the acceptance by the Panel and the finalisation of the report.

Conflict of Interest

7. It is important that all experts involved in the IPCC activities avoid any conflict of interest or the direct and substantial appearance of a conflict of interest. It is recognised that many experts in Emission Inventories are employed by, or funded by, parties with some interest in the outcome (e.g. most inventory compilers are funded by national governments or industry). It is therefore important to be open and transparent about financial and other interests.
8. The IPCC implements a Conflict of Interest (COI) Policy^{2 3} that applies to all individuals directly involved in the preparation of IPCC reports, including senior IPCC leadership (IPCC Chair and Vice-Chairs), other Bureau and Task Force Bureau members, authors with responsibilities for report content (CLAs, LAs), Review Editors and staff of the Technical

¹ <http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a-final.pdf>

² <http://www.ipcc.ch/pdf/ipcc-principles/ipcc-conflict-of-interest.pdf>

³ The IPCC COI Policy including the COI Form is currently being reviewed and may be revised at the 44th Session of the IPCC in Bangkok, Thailand, on 17-20 October 2016. If it is revised at that session of the IPCC, paragraphs 8-11 of this document will be revised accordingly.

Support Units. The overall purpose of this policy is to protect the legitimacy, integrity, trust, and credibility of the IPCC and of those directly involved in the preparation of reports, and its activities.

9. Before an individual is appointed as a CLA, LA and RE for a new Methodology Report, the TFB will request the individual to complete a Conflict of Interest Disclosure Form ("the COI Form") contained in Annex B to the COI Policy which will be submitted to the TFI TSU. The TFB will then evaluate the form to determine whether the individual has a conflict of interest that cannot be resolved.
10. All CLAs, LAs and REs will inform the TFI TSU annually of any changes in the information provided in their previously submitted COI Form. The TFB will evaluate the revised information.
11. All COI Forms and any records of the deliberations of the COI Expert Advisory Group, deliberations and/or decisions of the COI Committee in relation to conflict of interest issues in respect of specific individuals and any information disclosed by individuals for the purposes of the COI Policy will be transferred to the Secretariat after they have been reviewed and will be securely archived by the Secretariat and retained for a period of five years after the end of the assessment cycle during which the relevant individual contributed, after which the information will be destroyed. Subject to requirement to notify the existence of a conflict of interest to others, the information referred to above will be considered confidential and will not be used for any purpose other than consideration of conflict of interest issues under these Implementation Procedures without the express consent of the individual providing the information.

Responsibilities of authors and other experts

12. The role of authors is to impartially assess ALL the available literature and to describe the best methodologies available. Experts should be impartial. Authors should review all literature available up to a cut-off date to be decided by the TFB as part of the agreed work plan.
13. After drafting the report authors will be asked to consider all comments received on the drafts and to adjust and revise the text accordingly. They should document their responses. If they do not accept a comment this should be explained. Review Editors should check whether the accepted changes were fully incorporated in the revised text.
14. Responsibilities and duties of authors and other experts are currently explained in more detail in the IPCC procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of the IPCC Reports (Appendix A to the Principles Governing the IPCC Work).

Literature

15. The use of literature should be open and transparent. In the drafting process, emphasis is to be placed on the assurance of the quality of all cited literature. Priority should be given to peer-reviewed scientific, technical and socio-economic literature if available.
16. It is recognized that other sources provide crucial information for IPCC Reports. These sources may include reports from governments, industry, and research institutions, international and other organizations, or conference proceedings. Use of this literature brings with it an extra responsibility for the author teams to ensure the quality and validity of cited sources and information. In general, newspapers and magazines are not valid sources of scientific information. Blogs, social networking sites, and broadcast media are not acceptable sources of information for IPCC Reports. Personal communications of scientific results are also not acceptable sources.
17. For any sources written in a language other than English, an executive summary or abstract in English is required.
18. All sources will be integrated into a reference section of an IPCC Report.
19. For more details of the procedure on the use of literature in IPCC Reports, see Annex 2 to the IPCC procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of the IPCC Reports (Appendix A to the Principles Governing the IPCC Work).

Principles of the new Methodology Report

20. Guidance in the **new Methodology Report** should be understandable and easy to implement. Lead authors should make efforts to balance the need to produce a comprehensive self-contained report with reasonable limits to the length and detail of the guidance. In particular:
 - a. The guidance should follow a cookbook approach by providing clear step by step instructions. It should not try to be a textbook. Detailed background information on emission processes, scientific studies, etc. is generally referenced rather than included.
 - b. Lead authors must consider all recent scientific developments and national methods used by countries in their inventories.
 - c. Significant changes from the *2006 IPCC Guidelines* will have significant implications for all countries. Parties to the UNFCCC use the IPCC Guidelines to prepare national inventories and national communications. Substantial changes should only be introduced if they can be justified on sound scientific and technical grounds.
 - d. Authors should bear in mind that the target audience is a diverse group of readers who are primarily concerned with the elaboration of national inventories. For this reason, the emphasis should be on ensuring clear communication of practical and understandable guidance.
21. This work aims to cover all IPCC inventory sectors but only those categories where the science is considered to have sufficiently advanced since the 2006 or where new or additional guidance is required, namely the categories that were selected through technical assessment carried out in 2015 and 2016 and the Scoping Meeting held in August 2016 using the significance and prioritization criteria as shown below. However, authors should also develop modifications for other parts of the *2006 IPCC Guidelines* if deemed necessary to achieve consistency with the refinements mandated by the IPCC Plenary. On the other hand, authors may conclude no refinement should be made even for the categories that

were selected through the process mentioned above, after comprehensive review of available literature.

Significance and prioritization criteria

- Significance of the source/sink and the gas within the sector on a global scale. Sources significant only for a limited number of particular countries, currently or in the foreseeable future, may not meet this criterion. The adequacy of the existing guidance for a particular category should be considered, as should the likelihood that new information would lead to a definite improvement in the IPCC Guidelines.
- Availability of relevant new scientific results.
- Sufficient data availability and maturity of scientific advances since 2006 to provide a basis for methodological development or refinement, including:
 - Ability to develop new or updated default emission/removal factors
 - Feasibility of obtaining the necessary data to implement the methods
- Emergence of new sources or gases meeting these criteria

22. The new Methodology Report will cover the same greenhouse gases and precursors as included in the *2006 IPCC Guidelines*.
23. The general structure, approach and definitions used in the *2006 IPCC Guidelines*, such as tiered approach and decision trees will be followed. Annexes may be used where necessary to contain additional data to support the methodologies, although large numbers of annexes will probably not be necessary. Appendices are not ruled out where scientific knowledge is insufficient for countries to agree full methodologies, but please avoid as far as possible work on areas that have to be relegated to an appendix. Appendices should be sub-titled by “Basis for future methodological development”.

Reporting Tables and worksheets

24. Refinement of worksheets and reporting tables may be required. Worksheets reflect the application of tier 1 methods only, due to the varied implementation of higher tier methods by countries. Lead authors should stress the importance of documentation and archiving of particular types of information of relevance to each category, although advice may be given of what needs to be reported for transparency at higher Tiers.

Emission factors and methods

25. Authors should provide default emission factors. In doing this work, they should draw on the widest possible range of available literature, including the IPCC Emission Factor Database (EFDB), scientific articles and country reports.
26. All new default data should be evaluated for scientific and technical appropriateness, and their development should be clearly described and referenced. The attached form (Appendix 3) should be used as the means for documenting data and the derivation procedure which will also facilitate future integration of the EFDB and the archiving of the derivation. Lead authors should be familiar with the draft cross-cutting guidance on data collection in Volume 1 and the guidance on cross-cutting issues in this note on terms, data types, data demands of methods and stratification requirements. Default data should also meet the EFDB evaluation criteria – robustness, documentation, and applicability.

27. Authors should develop guidance to provide additional information on rationale, references and background information on parameters used for estimating of default values where such information is available (similar to Annex 3A.3 of Wetland Supplement), with a view to enhancing the transparency and applicability of default values presented in the new Methodology Report.
28. IPCC default factors should in principle be presented as regional factors. In case regional factors are unavailable, single IPCC default factors might be provided, ensuring that the default are representative of typical conditions as far as can be determined. It may be necessary or appropriate to provide a range of default factors along with clear guidance about how countries should select from within the range. Lead authors may also provide multiple default emission factors, disaggregated by region, technology, or another classification scheme (e.g., livestock type),
29. It is important to provide more default emission factors that reflect the unique conditions of developing countries. Default emission factors for Tier 1 should represent emissions without category-specific mitigation measures.
30. Users of the guidelines should be encouraged to develop and use country specific data. Emission factors for higher tiers need not be specified in the *2006 IPCC Guidelines*. Default information is included primarily to provide users with a starting point from which they can develop their own national assumptions and data. Indeed, national assumptions and data are always preferred because the default assumptions and data may not always be appropriate for specific national contexts.
31. The basic principle concerning national methods will continue to apply – countries are encouraged to use national data or methods so long as they are consistent with the IPCC Guidelines.

Decision trees

32. Consistent with the format and structure the *2006 IPCC Guidelines*, the new Methodology Report may contain a decision tree for some sub-categories to assist countries in selecting from the IPCC methods. These decision trees link the choice of IPCC methods to national circumstances via specific questions about data availability and status as a key source category⁴.
33. To ensure consistency in decision tree logic and format across categories, lead authors should adhere to the following requirements:
 - a. The decision trees should be based on a series of questions with clear yes/no answers, and two subsequent branches along yes/no paths.
 - b. The decision trees should start with assessing data availability for the highest tier method, and then direct countries step-wise towards lower tier methods if activity data, emission factors or other parameters are not available.
 - c. The decision tree should indicate the lowest tier method that is judged to be appropriate for estimating emissions/removals from a key category.
 - d. If data are not available for the method referred to in 3, the 'No' response should direct the reader to the question "Is this a key category?" If the answer to this is 'Yes', the decision tree should recommend that the country collect the necessary

⁴ The most appropriate choice of estimation method (or tier) may also depend on national circumstances, including the availability of resources and advice on this will be given in the cross-cutting volume.

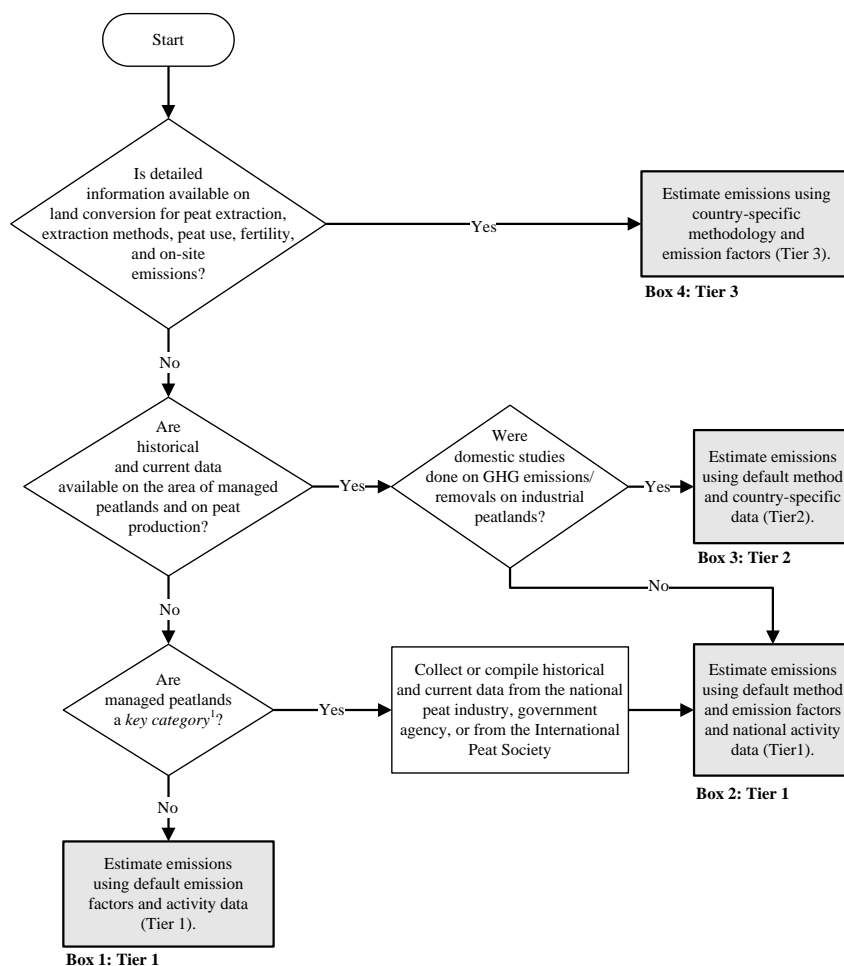
data to implement a higher tier method. If the answer is 'No', then the decision tree can recommend a lower tier method. There is no need to deal with the case for a key source where a country does not have the resources to gather additional data needed to implement higher Tier methods. This is dealt with in Volume 1 of the *2006 IPCC Guidelines*.

- e. The branches of the decision trees should end in 'out-boxes' that correspond to specific tiers identified in the guidance for that category and are labelled by Tier. Lead authors may also recommend out-boxes for hybrid tiers.
- f. Lead authors may develop separate decision trees for different sub-categories. Alternatively, they may include decision tree options for selecting different tiers for different sub-categories. This second option is appropriate if it is advantageous to recommend a higher tier method only for significant sub-categories rather than for the entire category. **Decision trees that use the 'significance' criterion must include the "25-30% rule" (i.e., a significant sub-category is one that makes up more than 25-30% of emissions/removals from a category).**

34. Additional Formatting Guidelines (see example):

- Decision trees should be drafted in separate Microsoft Word files. The TSU will integrate these files into the main text at a later date.
- Decision trees should NOT ask the question: “Does this source occur in the country?” This is because decision trees will only be used for sources which occur.
- There should be a “START” box.
- “Diamonds” should be used for questions/decisions.
- “Squares” should be used for all other information.
- The out-boxes should be individually numbered.
- The text font should be Times New Roman 10pt.
- Text should be centred within the boxes.

Decision tree to estimate CO₂-C and N₂O emissions from *Peatlands Remaining Peatlands*



Note:

1: See Volume 1 Chapter 4, "Methodological Choice and Identification of Key Categories" (noting Section 4.1.2 on limited resources), for discussion of *key categories* and use of decision trees.

IPCC Emission Factor Database (EFDB)

35. The EFDB is an important resource for this work, both as a source of emission factors for consideration by the LAs and as a repository of emission factors once agreed for use in the guidelines.
36. The new Methodology Report may contain Tier 1 methods and the corresponding default emission factors (once the guidelines are approved by the IPCC, the default emission factors cannot change). These defaults need to be recorded in to the EFDB, either because they are already there, or they will have to be entered as a result of the process of developing the Methodology Report. Preferably the EFDB should be populated with new emission factors as the Methodology Reports are drafted, but if this proves impossible the guideline emission factors should be entered in the EFDB with the underlying documentation information in the property fields as soon as possible, after guidelines completion.
37. The evolving information on peer reviewed emission factors in the EFDB will also be a useful source of information for countries to refer to in applying Tier 2 and 3 methods. In applying these methods (Tier 2 and/or 3) it will remain the country's responsibility to ensure that the choice of emission factors properly reflects national circumstances and is consistent with the requirements of the *2006 IPCC Guidelines*, and to document that this is the case.
38. It should be noted that Methodology Reports go through IPCC reviews, but the EFDB does not. The EFDB is a long(er)-term exercise. The TSU will provide technical advice/information to authors for their consideration.

Definitions

39. The following terms will be used throughout the new Methodology Report, and it is essential that all Lead Authors have a common understanding of their meaning and relevance:
40. **Tier** A Tier refers to a description of the overall complexity of a methodology and its data requirements. Higher tier methods are generally more complex and data-intensive than lower tier methods. The guidance for each category should contain at least a Tier 1 method, and in many cases there will be a Tier 2 and Tier 3. The general expectation is that Tier 2 and Tier 3 methods will both be consistent with good practice guidance for key sources, although in some cases Tier 3 will be preferred, for example with methane from coal mines where Tier 1 is a global default value, Tier 2 basin specific and Tier 3 mine specific.
41. **Tier 1** approaches are simple methods that can be applied by all countries in all circumstances. Default values for the emission factors and any other parameters needed must be supplied (see below for documentation needed).
42. **Tier 2** methods should in principle follow the same methodological approach as Tier 1, but allow for higher resolution country specific emissions factors and activity data. In some categories, this may not be the case. These methods should better replicate the parameters affecting the emissions. Country specific emission factors are needed and possibly more parameters will also be needed.
43. **Tier 3** methods give flexibility either for country specific methods including modelling or direct measurement approaches, or for a higher level of disaggregation, or both. This is a more complex method, often involving a model. This will replicate many features of nation emissions and require specific parameters for each country.
44. **Default information** is data that is appropriate for use where there is no better detailed, country specific information. If appropriate, authors may specify regional default data. Users of the guidelines should be encouraged to try to find better country specific data. Default

data are appropriate for Tier 1 methods and the guidelines should contain all the default values needed. Emission factors for higher tiers need not be specified because it is a function of higher tier methods to find data reflecting national circumstances. Volume 1 of the *2006 IPCC Guidelines* suggests that the EFDB may help identify data reflecting national circumstances, but reference to the EFDB should in no case be used as a device for evading the necessity of finding data for default methods. Default information is included primarily to provide users with a starting point from which they can develop their own national assumptions and data. Indeed, national assumptions and data are always preferred because the default assumptions and data may not always be appropriate for specific national contexts. In general, therefore, default assumptions and data should be used only when national assumptions and data are not available.

45. **Decision Trees**. A decision tree is a graphical tool to assist countries in selecting from the IPCC methods.
46. **Sector** refers to the four sectors of the guidelines (Energy; Industrial Process and Product Use (IPPU); Agriculture, Forests and Other Land Use (AFOLU) and Waste) these are divided into source/sink categories and sub categories.
 - a. Sector 1
 - b. Category 1.A
 - c. Sub-category 1st order 1.A.1
 - d. Sub-category 2nd order 1.A.1.a
 - e. Sub-category 3rd order, 1.A.1.a.i,
47. **Worksheets**. These will be printed versions of spreadsheet tables, that, when filled in, enable the user to perform the emission estimation. They should contain all the calculations and written text with any formulae. Additional worksheets may be required to compile the results of the worksheets into the reporting tables.
48. **Reporting Tables** are tables that present the calculated emission inventory and sufficient detail of other data used to prepare the inventories for others to understand the emission estimates.
49. Usage:
 - a. **Good Practice**, is defined as a set of procedures intended to ensure that greenhouse gas inventories are accurate in the sense that they are systematically neither over nor underestimates so far as can be judged, and that uncertainties are reduced so far as possible. Inventories consistent with good practice are those which contain neither over- nor under-estimates so far as can be judged, and in which uncertainties are reduced as far as is practicable. To say that "It is Good Practice to do x" implies x is part of the good practice procedures.
 - b. **"Shall"** should not be used. Either say "Good Practice is..." or say what needs to be done or what should be done. These all indicate what needs to be done to comply with Good Practice.
 - c. **"Be encouraged to"** indicates a step or activity that will lead to higher quality inventory, but are not required for ensuring consistency with the IPCC Guidelines.
 - d. **"Recommend"** should not be used. In the GPG2000, the word "recommend" was avoided and "Suggested" was used instead.
 - e. **"Inventory agency"** is the body responsible for actually compiling the inventory, perhaps from contributions from a number of other bodies while **"inventory compiler"** is the person actually compiling the inventory,

Units

50. SI units shall be used throughout: in text, equations, worksheets and tables. Emissions have to be expressed in mass units and units have to be used consistently within the each sector. When similar activity data is used for different sectors same units need to be used (CLAs have to take care about such harmonisation). Conversion factors have to be provided (for example to estimate N₂O from N). Where input data available may not be in SI units conversions should be provided.
51. Standard abbreviations for units and chemical compounds are given in Appendix 4. (See also a complete discussion available at <http://www.bipm.org/en/publications/si-brochure/>)
52. For the purpose of reporting, the sign convention is positive (+) for emissions, and negative (-) for removals (uptake). Where needed, for estimation of removals and carbon stock increases are counted positive, and the sign reversed for reporting purposes. This is consistent with the *2006 IPCC Guidelines* and other Methodology Reports on national GHG inventories in the past.

Appendix 3. Data Documentation

This form should be used to document all data used in the new Methodology Report. This gives the minimum information that should be considered by the authors.

Author ¹					
IPCC Source/Sink Category					
Fuel ² (applicable only in the Energy Sector):					
Gas ³ :	CO ₂	CH ₄	N ₂ O		
Value:					
Unit:					
Uncertainty (as +/-% or 2.5 and 97.5 percentiles) ⁴					
Applicability⁵ – fill in as necessary if data not generally applicable. Describe appropriate Technologies, Practices, Abatement Technologies, Region, and/or Regional Conditions					
Source of data (chose one)	Measurement - Scientific Literature Other Measurement National Inventory Report Calculated Based on fuel quality Expert Judgement				
Method of derivation of the value (e.g., arithmetic mean, weighted mean, adjustment of a literature data by expert judgment etc.					
Reference ⁶					

Note:

The author is the LA/CA/CLA who writes the relevant section and proposes the data.

Fuels as defined in the Energy volume

Add additional gases as required

As defined by cross-cutting volume

Only to be completed where it is necessary to specify the applicability of the data

As reference to document, report, calculation or if expert judgement to those involved (Names or group e.g. "Waste BOG on Solid Waste Disposal Sites")

Appendix 4 Units and Abbreviations

Abbreviations of, and how to Spell, Chemical Compounds

CH ₄	Methane
N ₂ O	Nitrous oxide ⁵
CO ₂	Carbon dioxide
CO	Carbon monoxide
NO _x	Nitrogen oxides
NMVOCS	Non-methane volatile organic compounds
NH ₃	Ammonia
CFCs	Chlorofluorocarbons
HFCs	Hydrofluorocarbons
PFCs	Perfluorocarbons
SF ₆	Sulphur hexafluoride
CCl ₄	Carbon tetrachloride
C ₂ F ₆	Hexafluoroethane
CF ₄	Tetrafluoromethane
S	Sulphur

Units and abbreviations

cubic metre	m ³
hectare	Ha
gram	g
gigagram	Gg
tonne	T
gigatonne	Gt
joule	J
degree Celsius	°C
calorie	Cal
year	Yr
capita	Cap
gallon	Gal
dry matter	Dm

⁵ In the IUPCA N₂O is officially named “Dinitrogen Oxide”. However, “nitrous oxide” is widely used and understood in the emission inventory community and by the UNFCCC and so, to avoid confusion, will be used.

Prefixes and multiplication factors

Multiplication Factor	Abbreviation	Prefix	Symbol
1 000 000 000 000 000	10 ¹⁵	peta	P
1 000 000 000 000	10 ¹²	tera	T
1 000 000 000	10 ⁹	giga	G
1 000 000	10 ⁶	mega	M
1 000	10 ³	kilo	k
100	10 ²	hecto	h
10	10 ¹	deca	da
0.1	10 ⁻¹	deci	d
0.01	10 ⁻²	centi	c
0.001	10 ⁻³	milli	m
0.000 001	10 ⁻⁶	micro	μ

Standard equivalents

1 tonne of oil equivalent (toe)	1 x 10 ¹⁰ calories
10 ³ toe	41.868 TJ
1 short ton	0.9072 tonne
1 tonne	1.1023 short tons
1 tonne	1 megagram
1 kilotonne	1 gigagram
1 megatonne	1 teragram
1 gigatonne	1 petagram
1 kilogram	2.2046 lbs
1 hectare	10 ⁴ m ²
1 calorie _{IT}	4.1868 joule
1 atmosphere	101.325 kPa

Draft Table of Contents

2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Draft Table of Contents

Introductory Note

The *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories* (2019 Refinement) will be a single Methodology Report comprising an Overview Chapter and five volumes following the format of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (2006 IPCC Guidelines).

Overview Chapter
 Volume 1: General Guidance and Reporting
 Volume 2: Energy
 Volume 3: Industrial Processes and Product Use
 Volume 4: Agriculture, Forestry and Other Land Use
 Volume 5: Waste

The draft table of contents is presented below for each volume. Its structure is the same as that of the *2006 IPCC Guidelines* so as to make it easier for inventory compilers to use this Methodology Report with the *2006 IPCC Guidelines*. For those Chapters/Sections/Subsections where refinement is expected, the following three elements are explained.

- **Issue** (which needs to be addressed)
- **Location in 2006 IPCC Guidelines** (location of relevant guidance in the *2006 IPCC Guidelines*)
- **Type of refinement** (Update, Elaboration or New guidance, as explained in the draft Terms of Reference)

On the other hand, for those Chapters/Sections/Subsections where refinement is NOT expected, “**No refinement**” is indicated.

However, the following two principles need to be noted.

- Authors should develop modifications even for those Chapters/Sections/Subsections where “No refinement” is indicated in this draft table of contents, if deemed necessary to ensure consistency with the refinements made in the other Chapters/Sections/Subsections.
- Authors may conclude no refinement should be made even for the Chapters/Sections/Subsections where refinement is expected in this draft table of contents, after comprehensive review of available literature.

In addition, authors should develop modifications for Annexes (e.g. Worksheets) at the end of each volume as well, if deemed necessary to ensure consistency with the refinements made in Chapters/Sections/Subsections in the same volume, even though those Annexes are not explicitly included in this draft table of contents.

Overview Chapter

- Background – Technical Assessment of IPCC Inventory Guidelines
- Fundamental principle (not revising, but refining)
- Relationship with the 2006 IPCC Guidelines
- Policy Relevance

Volume 1: General Guidance and Reporting

Chapter 1 Introduction to the 2006 Guidelines

Issue 1: Provide a better description on how to implement a national inventory management system that manages all parts of Volume 1, implements continuous improvement and leads to the development of mature inventories.

Location in 2006 IPCC Guidelines: New Section in Chapter 1

Type of refinement: New guidance

Issue 2: Clarify the concept of “anthropogenic emissions and removals”.

Location in 2006 IPCC Guidelines: Section 1.1 Concepts, with Guidance contained in the IPCC KP Supplement Chapter 2.3.4 and 2.3.5 and the IPCC Wetlands Supplement

Type of refinement: Update

Chapter 2 Approaches to Data Collection

Issue 1: Add guidance for the development of country-specific emission factors, focusing on developing countries.

Location in 2006 IPCC Guidelines: New guidance in Chapter 2

Type of refinement: New guidance

Issue 2: Add guidance for activity data collection; technical survey indicated there is a capacity problem to gather and manage national data which can be addressed by an additional guidance.

Location in 2006 IPCC Guidelines: New guidance in Chapter 2

Type of refinement: New guidance

Issue 3: Add guidance on the integration of GHG emissions reported from facilities into national GHG inventories

Location in 2006 IPCC Guidelines: New guidance in Chapter 2

Type of refinement: New guidance

Chapter 3 Uncertainties

Issue: Refine guidance on uncertainty based on the latest scientific knowledge and simplification of guidance by providing more default values, calculation examples and best practices.

Location in 2006 IPCC Guidelines: Chapter 3

Type of refinement: Update

Chapter 4 Methodological Choice and Identification of Key Categories

Issue: Add guidance on key category analysis to address treatment of disaggregation of categories, trend analysis, equations for trend analysis and the need for consistent definition of significant subcategories across the different volumes of the *2006 IPCC Guidelines*.

Location in 2006 IPCC Guidelines: Chapter 4 (and relevant guidance in the other Volumes)

Type of refinement: Elaboration

Chapter 5 Time Series Consistency

Issue: Provide practical guidance on how to apply existing guidance on time series consistency because this proved to be a problem for many countries.

Location in 2006 IPCC Guidelines: Chapter 5

Type of refinement: Elaboration

Chapter 6 Quality Assurance / Quality Control and Verification

Issue 1: Add guidance on the use and reporting of models

Location in 2006 IPCC Guidelines: New Section in Chapter 6

Type of refinement: New guidance

Issue 2: Elaborate user-friendly description of verification, validation, audit and QA/QC because users are unclear on their IPCC meanings compared to other definitions, such as ISO as used by CDM.

Location in 2006 IPCC Guidelines: Section 6.1, Box 6.1

Type of refinement: Elaboration

Issue 3: Update/elaborate verification guidance because the existing guidance is outdated (especially the guidance on comparisons with atmospheric measurements and new datasets).

Location in 2006 IPCC Guidelines: Section 6.10

Type of refinement: Update/Elaboration

Chapter 7 Precursors and Indirect Emissions

Issue: Elaborate clearer guidance for the calculation of indirect CO₂ emissions.

Location in 2006 IPCC Guidelines: Section 7.2.1.5

Type of refinement: Elaboration

Chapter 8 Reporting Guidance and Tables

No refinement

Volume 2: Energy

Chapter 1 Introduction

No refinement

Chapter 2 Stationary Combustion

2.1 Overview

No refinement

2.2 Description of sources

No refinement

2.3 Methodological issues

Issue: Link to issue related to biomass combustion and methodologies for Harvested Wood Products (HWP)

Location in 2006 IPCC Guidelines: Section 2.3.3.4

Type of refinement: Elaboration

2.4 Uncertainty assessment

No refinement

2.5 Inventory Quality Assurance/Quality Control QA/QC

No refinement

2.6 Worksheets

No refinement

Chapter 3 Mobile Combustion

No refinement

Chapter 4 Fugitive Emissions

4.1 Fugitive emissions from mining, processing, storage and transportation of coal

Issue1: Elaborate chapter to include guidance on emissions from exploration and CO₂ emissions (Underground coal mines, Surface coal mining)

Location in 2006 IPCC Guidelines: Sections 4.1.3 and 4.1.4 (Sections 4.1.1, 4.1.2 and 4.1.6 are relevant)

Type of refinement: Elaboration

Issue2: Include new section on abandoned surface coal mines

Location in 2006 IPCC Guidelines: Not applicable. (Next to Section 4.1.5. Sections 4.1.1, 4.1.2 and 4.1.6 are relevant)

Type of refinement: New guidance

4.2 Fugitive emissions from oil and natural gas systems

Issue: Update chapter including update/inclusion of EFs representative for current practice. Additional guidance for unconventional oil and gas production and abandoned wells.

Location in 2006 IPCC Guidelines: Sections 4.2

Type of refinement: Update

4.3 Fuel transformation [New]

Issue: Include new section on fuel transformation

Location in 2006 IPCC Guidelines: New Section in Chapter 4 (Next to Section 4.2)

Type of refinement: New guidance

Chapter 5 Carbon Dioxide Transport, Injection and Geological Storage

No refinement

Chapter 6 Reference Approach

No refinement

Volume 3: Industrial Processes and Product Use

Chapter 1 Introduction

No refinement

Chapter 2 Mineral Industry Emission

No refinement

Chapter 3 Chemical Industry Emissions

3.1 Introduction

No refinement

3.2 Ammonia production

No refinement

3.3 Nitric acid production

Issue: Update guidance on appropriate emission factors to use for dual pressure technologies for Nitric Acid Production

Location in 2006 IPCC Guidelines: Section 3.3.2.2 and Table 3.3

Type of refinement: Update

3.4 Adipic acid production

No refinement

3.5 Caprolactam, glyoxal and glyoxylic acid production

No refinement

3.6 Carbide production

No refinement

3.7 Titanium dioxide production

No refinement

3.8 Soda ash production

No refinement

3.9 Petrochemical and carbon black production

No refinement

3.10 Fluorochemical production

Issue: Update guidance and default Tier 1 emission factors for production of fluorinated compounds other than HCFC-22

Location in 2006 IPCC Guidelines: Section 3.10.2.2

Type of refinement: Update/Elaboration

3.11 Hydrogen production [New]

Issue: Develop guidance for estimating GHG emissions from hydrogen production

Location in 2006 IPCC Guidelines: New Section in Chapter 3 (Next to Section 3.10)

Type of refinement: New guidance

Chapter 4 Metal Industry Emissions

4.1 Introduction

No refinement

4.2 Iron & steel and metallurgical coke production

Issue: Update emission factors for Iron and Steel Production and elaborate methodological guidance.

Location in 2006 IPCC Guidelines: Section 4.2.2

Type of refinement: Update/Elaboration

4.3 Ferroalloy production

No refinement

4.4 Primary aluminium production

Issue: Elaborate guidance and emissions factors to incorporate “low-voltage anode effect” PFC emissions and integrate this guidance into the existing methodology on “high-voltage anode effect” PFC emissions. Update of the Tier 1 and Tier 2 defaults.

Location in 2006 IPCC Guidelines: Section 4.4

Type of refinement: Update/Elaboration

Issue: Develop a new methodology for the CO₂ emissions from the alumina production. Ensuring completeness and avoiding double counting

Location in 2006 IPCC Guidelines: New guidance in Section 4.4

Type of refinement: New guidance

4.5 Magnesium production

No refinement

4.6 Lead production

No refinement

4.7 Zinc production

No refinement

4.8 Rare Earth elements [New]

Issue: Develop a new guidance on GHG emissions (PFCs and CO₂) from production of Rare Earth elements

Location in 2006 IPCC Guidelines: New Section in Chapter 4 (Next to Section 4.7)

Type of refinement: New guidance

Chapter 5 Non-Energy Products from Fuels and Solvent use

No refinement

Chapter 6 Electronics Industry Emissions

Issue: Update guidance and default Tier 1 and Tier 2 emission factors for Semiconductor Industry, improvement of the Tier 3 guidance and elaboration of guidance on generation of by-products from abatement technologies (CF₄ from NF₃)

Location in 2006 IPCC Guidelines: Section 6.2.1 and 6.2.2, and 6.3.1 (uncertainty, to the extent necessary)

Type of refinement: Update/Elaboration/New guidance

Chapter 7 Emissions of Fluorinated Substitutes for Ozone Depleting Substances

7.1 Introduction

No refinement

7.2 Solvents (non-aerosol)

No refinement

7.3 Aerosols (propellants and solvents)

No refinement

7.4 Foam blowing agents

No refinement

7.5 Refrigeration and air conditioning

Issue: Add examples (collection of activity data, distribution of ODS substitutes by application within countries). Elaborate by adding a box with “recipe-style” guidance on how to launch the ODS substitutes inventory. Elaborate the reference to Montreal Protocol. Update emission factors by further segregating equipment types, regions, and time periods where possible.

Location in 2006 IPCC Guidelines: Sections 7.5.2.1 - for the recipe, 7.5.2.2 - for emission factors, 7.5.2.3 - for activity data

Type of refinement: Update/Elaboration

7.6 Fire protection

No refinement

7.7 Other applications

No refinement

Chapter 8 Other Product Manufacture and Use

8.1 Introduction

No refinement

8.2 Emissions of SF₆ and PFCs from electrical equipment

No refinement

8.3 Use of SF₆ and PFCs in other products

Issue 1: Develop guidance for PFCs (GHG) emissions from Textile Industry.

Location in 2006 IPCC Guidelines: New guidance in Section 8.3

Type of refinement: New guidance

Issue 2: Develop guidance for PFCs (GHG) emissions from water-proofing electronic circuit boards

Location in 2006 IPCC Guidelines: New guidance in Section 8.3

Type of refinement: New guidance

8.4 N₂O from product uses

No refinement

Volume 4: Agriculture, Forestry and Other Land Use

Chapter 1 Introduction

No refinement

Chapter 2 Generic Methodologies Applicable to Multiple Land-use Categories

2.1 Introduction

No refinement

2.2 Inventory framework

No refinement

2.3 Generic methods for CO₂ emissions and removals

2.3.1 Change in biomass carbon stocks (above-ground biomass and below-ground biomass)

Issue 1: Develop guidance on the use of allometric equations for biomass estimation

Location in 2006 IPCC Guidelines: New Subsection in Section 2.3.1

Type of refinement: New guidance

Issue 2: Develop guidance on how to use biomass density (amount per unit area) maps generated from remote sensing data for biomass estimation

Location in 2006 IPCC Guidelines: New Subsection in Section 2.3.1

Type of refinement: New guidance

2.3.2 Change in carbon stocks in dead organic matter

Issue 1: Update default values for litter stocks and develop default values for deadwood stocks

Location in 2006 IPCC Guidelines: Section 2.3.2.1, IPCC default values for litter and dead wood (Table 2.2),

Type of refinement: Update/Elaboration

Issue 2: Develop equation 2.18 for estimating DOMout and associated default values

Location in 2006 IPCC Guidelines: Section 2.3.2.1, IPCC default values for litter and dead wood (Table 2.2)

Type of refinement: Elaboration

2.3.3 Change in carbon stocks in soils

Issue 1: Update reference carbon stocks.

Location in 2006 IPCC Guidelines: Section 2.3.3.1, Table 2.3

Type of refinement: Update

Issue 2: Develop new Tier 2 method for mineral soils that requires less activity data than the current default method

Location in 2006 IPCC Guidelines: New guidance in Section 2.3.3.1

Type of refinement: New guidance

Issue 3: Elaborate Tier 3 Methodologies with case study examples for soils.

Location in 2006 IPCC Guidelines: Tier 3 methods, Section 2.3.3.1,

Type of refinement: Elaboration

2.4 Non-CO₂ emissions

Issue: Replace defaults for cropland mass of fuel with crop residue estimation method in Chapter 11 for soil N₂O method to ensure consistency in the calculation of residues between the two categories, and provide a basis to estimate mass of fuel for all crops instead of just the 4 crops listed in Table 2.4.

Location in 2006 IPCC Guidelines: Section 2.4, Table 2.4

Type of refinement: Update

2.5 Additional generic guidance for Tier 3 methods

Issue 1: Provide guidance on how to address inter-annual variability

Location in 2006 IPCC Guidelines: Chapter 2.5

Type of refinement: Elaboration

Issue 2: Elaborate guidance on the use of Tier 3 methods
Location in 2006 IPCC Guidelines: Sections 2.5.1 and 2.5.2
Type of refinement: Elaboration

Chapter 3 Consistent Representation of Lands

3.1 Introduction

No refinement

3.2 Land-use categories

No refinement

3.3 Representing land-use areas

Issue: Develop guidance on how remotely sensed data, ground based data, and ancillary data can be integrated and used to derive consistent time series estimates of land use and land-use change
Location in 2006 IPCC Guidelines: Section 3.3 and Annex 3A.1 and 3A.2
Type of refinement: Update/Elaboration/New guidance

3.4 Matching land areas with factors for estimating greenhouse gas emissions and removals

Issue: Provide guidance on how to use methodologies within different methodological tiers in combination with different approaches for land representation
Location in 2006 IPCC Guidelines: New Subsection in Section 3.4
Type of refinement: New guidance

3.5 Uncertainties associated with the Approaches

No refinement

Annex 3A.1 Examples of International land cover datasets

(See the above issue under Section 3.3)

Annex 3A.2 Development of land-use databases

(See the above issue under Section 3.3)

Chapter 4 Forest Land

4.1 Introduction

No refinement

4.2 Forest Land Remaining Forest Land

4.2.1 Biomass

No refinement

4.2.2 Dead organic matter

No refinement

4.2.3 Soil carbon

Issue: Provide guidance and develop new Tier 2 method for mineral soils that requires less activity data than the current default method
Location in 2006 IPCC Guidelines: New guidance in Section 4.2.3
Type of refinement: New guidance

4.2.4 Non-CO₂ greenhouse gas emissions from biomass burning

No refinement

4.3 Land Converted to Forest Land

(All issues for Section 4.2 above apply to this Section similarly.)

4.4 Completeness, time series, QA/QC, and reporting and documentation

Issue: Develop guidance on how to ensure methodological consistency of time series, such as through the use of age class structure data

Location in 2006 IPCC Guidelines: Section 4.4.2 on time series consistency

Type of refinement: Elaboration

4.5 Tables

Issue: Update values for BEF/BCEF and root/shoot ratio, average biomass stocks, and average biomass increments

Location in 2006 IPCC Guidelines: Tables 4.4, 4.5, 4.7, 4.8, 4.9, 4.10, 4.11A and 4.11B, 4.12

Type of refinement: Update/Elaboration

Chapter 5 Cropland

5.1 Introduction

No refinement

5.2 Cropland Remaining Cropland

5.2.1 Biomass

Issue: Update default biomass carbon parameters.

Location in 2006 IPCC GL: Section 5.2.1.2, Tables 5.1, 5.2, 5.3

Type of refinement: Update

5.2.2 Dead organic matter

No refinement

5.2.3 Soil carbon

Issue 1: Update carbon stock change factors.

Location in 2006 IPCC Guidelines: Section 5.2.3.2, Table 5.5

Type of refinement: Update

Issue 2: Develop new Tier 2 method for mineral soils that requires less activity data than the current default method

Location in 2006 IPCC Guidelines: New guidance in Section 5.2.3

Type of refinement: New guidance

5.2.4 Non-CO₂ greenhouse gas emissions from biomass burning

No refinement

5.3 Land Converted to Cropland

(All issues for Section 5.2 above apply to this Section similarly.)

5.4 Completeness, time series, QA/QC, and reporting

No refinement

5.5 Methane emissions from rice cultivation

Issue: - Develop regionally specific default EFs

Location in 2006 IPCC Guidelines: Section 5.5.2, Tables 5.11 to 5.14,

Type of refinement: Update

Annex 5A.1 Estimation of default stock change factors for mineral soil C emissions/removals for cropland

(See the above issues under Section 5.2.3.)

Chapter 6 Grassland

6.1 Introduction

No refinement

6.2 Grassland Remaining Grassland

6.2.1 Biomass

Issue: Update default biomass carbon parameters.

Location in 2006 IPCC Guidelines: Section 6.2.1.2, Table 6.1

Type of refinement: Update

6.2.2 Dead organic matter

No refinement

6.2.3 Soil carbon

Issue 1: Update carbon stock change factors.

Location in 2006 IPCC Guidelines: Section 6.2.3.2, Table 6.2

Type of refinement: Update

Issue 2: Develop new Tier 2 method for mineral soils that requires less activity data than the current default method

Location in 2006 IPCC Guidelines: New guidance in Section 6.2.3

Type of refinement: New guidance

6.2.4 Non-CO₂ greenhouse gas emissions from biomass burning

No refinement

6.3 Land Converted to Grassland

(All Issues for section 6.2 above apply to this Section similarly.)

6.4 Completeness, time series, QA/QC, and reporting

No refinement

Annex 6A.1 Estimation of default stock change factors for mineral soil C emissions/removals for grassland

(See the above issues under Section 6.2.3.)

Chapter 7 Wetlands

7.1 Introduction

No refinement

7.2 Managed peatlands

No refinement

7.3 Flooded Land

Issue: Update CO₂ emission factors for land converted to flooded land (Wetlands) and to develop, on the basis of comprehensive review of available literature, consistent methodologies that take into account factoring out of emissions and removals that would otherwise occur in the absence of the flooded area for estimating CO₂ and CH₄ emissions from flooded lands (both land converted to flooded land and flooded land remaining flooded land).

Location in 2006 IPCC Guidelines: Section 7.3 and associated good practice guidance in Section 7.4, and Appendices 2 and 3; also relevant to Chapter 2, Section 2.3 (Generic Methodologies for CO₂ emissions and removals).

Type of refinement: New guidance/Update

7.4 Completeness, time series consistency, and QA/QC

No refinement

7.5 Future methodological development

Issue: Clarify that this section of the 2006 IPCC Guidelines is no longer relevant

Location in the 2006 Guidelines: Section 7.5

Type of refinement: Elaboration

7.X. Additional guidance on Tier 2 method for mineral soils [New]

Issue: Develop guidance to implement new Tier 2 method for mineral soils that requires less activity data than the current default method, taking into consideration Chapter 5 of the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

Location in 2006 IPCC Guidelines: New Section in Chapter 7 (Between Sections 7.3 and 7.4)

Type of refinement: New guidance

Chapter 8 Settlements

8.1 Introduction

No refinement

8.2 Settlements Remaining Settlements

8.2.1 Biomass

Issue: Update default biomass carbon parameters.

Location in 2006 IPCC Guidelines: Section 8.2.1.2,

Type of refinement: Update

8.2.2 Dead organic matter

No refinement

8.2.3 Soil carbon

Issue: Develop new Tier 2 method for mineral soils that requires less activity data than the current default method

Location in 2006 IPCC Guidelines: New guidance in Section 8.2.3

Type of refinement: New guidance

8.3 Land Converted to Settlements

(All Issues for section 8.2 above apply to this Section similarly.)

8.4 Completeness, time series consistency, QA/QC and reporting

No refinement

8.5 Basis for future methodological development

Issue: Clarify the elements in this section of the 2006 IPCC Guidelines that are no longer relevant

Location in the 2006 Guidelines: Section 8.5

Type of refinement: Elaboration

Chapter 9 Other Land

9.1 Introduction

No refinement

9.2 Other Land Remaining Other Land

No refinement

9.3 Land Converted to Other Land

9.3.1 Biomass

No refinement

9.3.2 Dead organic matter

No refinement

9.3.3 Soil carbon

Issue: Develop new Tier 2 method for mineral soils that requires less activity data than the current default method

Location in 2006 IPCC Guidelines: New guidance in Section 9.3.3

Type of refinement: New guidance

9.4 Completeness, time series, QA/QC and reporting

No refinement

Chapter 10 Emissions from Livestock and Manure Management

10.1 Introduction

No refinement

10.2 Livestock population and feed characterisation

Issue 1: Update Section 10.2.2 to include guidance on improved description of feeding systems

Location in 2006 IPCC Guidelines: Section 10.2.2

Type of refinement: Update

Issue 2: Develop consistent system descriptions for manure management between source categories (regionally/climatically stratified) for basic and enhanced characterisation for livestock populations

Location in 2006 IPCC Guidelines: Section 10.2.2

Type of refinement: Update

10.3 Methane emissions from enteric fermentation

Issue: Improve parameters based on different feeding strategies for cattle and sheep.

Location in 2006 IPCC Guidelines: Section 10.3.2, Table 10.11 and Table 10.12

Type of refinement: Update

10.4 Methane emissions from manure management

Issue 1: Update methodology, temperature relationships, Tier 1 Emission Factors and Tier 2 parameters for different manure management systems

Location in 2006 IPCC Guidelines: Section 10.4.2

Type of refinement: Update

Issue 2: Update guidance on how to deal with non-CO₂ emissions due to biogas production.

Location in 2006 IPCC Guidelines: Section 10.4.2, Table 10.17

Type of refinement: Update

10.5 N₂O emissions from manure management

Issue 1: Update N excretion parameters for all livestock categories considering updated livestock characterization in Section 10.2.

Location in 2006 IPCC Guidelines: Section 10.5.2

Type of refinement: Update

Issue 2: Update emission factors for N₂O for manure management system descriptions.

Location in 2006 IPCC Guidelines: Section 10.5.2, Table 10.21

Type of refinement: Update

Issue 3: Update manure management volatilization and leaching factors with manure management systems identified in Section 10.2.

Location in 2006 IPCC Guidelines: Section 10.5.4, Tables 10.22 and 10.23,

Type of refinement: Update

Issue 4: Provide text on quality control procedures that use a mass balance approach to evaluate C and N flows through animal management systems.

Location in 2006 IPCC Guidelines: Section 10.5.6

Type of refinement: Elaboration

Chapter 11 N₂O Emissions from Managed Soils, and CO₂ Emissions from Lime and Urea Application

11.1 Introduction

No refinement

11.2 N₂O emissions from managed soils

11.2.1 Direct N₂O emissions

Issue 1: Update N₂O EF1, stratification by climate

Location in 2006 IPCC Guidelines: Section 11.2.1.2, Table 11.1

Type of refinement: Update

Issue 2: Update crop parameters for calculating residue quantity and N.

Location in 2006 IPCC Guidelines: Section 11.2.1.4, Table 11.2

Type of refinement: Update

Issue 3: Update the EF3 for N applied to soils, pasture, range and paddock by grazing animals.

Location in 2006 IPCC Guidelines: Section 11.2.1, Table 11.1

Type of refinement: Update

Issue 4: Update emission factor for rice production (N₂O)

Location in 2006 IPCC Guidelines: Section 11.2, Table 11.1

Type of refinement: Update

11.2.2 Indirect N₂O emissions

Issue: Evaluate emissions factors for indirect N₂O, both the amount of leaching/runoff and volatilization, as well as the indirect emission factor.

Location in 2006 IPCC Guidelines: Section 11.2.2, Table 11.3

Type of refinement: Update

11.2.3 Completeness, Time series, QA/QC

No refinement

11.3 CO₂ emissions from liming

No refinement

11.4 CO₂ emissions from urea fertilization

No refinement

Annex 11A.1 References for crop residue data in Table 11.2

No refinement

Chapter 12 Harvested Wood Products (HWP)

Issue 1: Update the relevant technical parameters, maintaining the existing approaches in the 2006 IPCC Guidelines

Location in 2006 IPCC Guidelines: Chapter 12

Type of refinement: Update

Volume 5: Waste

Chapter 1 Introduction

No refinement

Chapter 2 Waste Generation, Composition and Management Data

2.1 Introduction

No refinement

2.2 Waste generation and management data

Issue: Update default data on Municipal Solid Waste (MSW) generation and management

Location in 2006 IPCC Guidelines: Section 2.2.1, Table 2.1

Type of refinement: Update

2.3 Waste composition

Issue 1: Update default data on MSW composition data

Location in 2006 IPCC Guidelines: Section 2.3.1, Table 2.3

Type of refinement: Update

Issue 2: Add information on nitrogen (N) content, Biochemical Oxygen Demand (BOD) or Chemical Oxygen Demand (COD) of sludge

Location in 2006 IPCC Guidelines: New guidance in Section 2.3.2

Type of refinement: New guidance

Annex 2A.1 Waste Generation and Management Data - by country and regional averages

Issue: Update default data on MSW generation and management

Location in 2006 IPCC Guidelines: Table 2A.1

Type of refinement: Update

Chapter 3 Solid Waste Disposal

3.1 Introduction

3.2 Methodological issues

Issue 1: Elaborate on the First Order Decay (FOD) method taking into account active aeration of landfills

Location in 2006 IPCC Guidelines: New guidance in Section 3.2.1.1

Type of refinement: New guidance

Issue 2: Elaborate on default DOC which decomposes (DOC_f) values for different waste components

Location in 2006 IPCC Guidelines: Section 3.2.3 (Fraction of degradable organic carbon which decomposes (DOC_f))

Type of refinement: Elaboration

3.3 Use of measurement in the estimation of CH₄ emissions from solid waste disposal site (SWDS)

No refinement

3.4 Carbon stored in SWDS

No refinement

3.5 Completeness

No refinement

3.6 Developing a consistent time series

No refinement

3.7 Uncertainty assessment

Issue: Update uncertainty for DOC_f values

Location in 2006 IPCC Guidelines: Section 3.7.2

Type of refinement: Update

3.8 QA/QC, reporting and documentation

No refinement

Annex 3A.1 First Order Decay Model

No refinement

Chapter 4 Biological Treatment of Solid Waste

No refinement

Chapter 5 Incineration and Open Burning of Waste

5.1 Introduction

No refinement

5.2 Methodological issues

No refinement

5.3 Choice of activity data

No refinement

5.4 Choice of emission factors

Issue 1: Update oxidation factors for open burning of MSW

Location in 2006 IPCC Guidelines: Section 5.4.1, Table 5.2 (Oxidation factor for open burning of MSW)

Type of refinement: Update/Elaboration

Issue 2: Elaborate on EF for CH₄ from incineration related to new technologies gasification, pyrolysis, and plasma technology)

Location in 2006 IPCC Guidelines: Section 5.4.2, Table 5.3

Type of refinement: Elaboration

Issue 3: Elaborate on EF for N₂O from incineration related to new technologies (e.g. gasification, pyrolysis, and plasma technology)

Location in 2006 IPCC Guidelines: Section, 5.4.3, Table 5.4

Type of refinement: Elaboration

5.5 Completeness

No refinement

5.6 Developing a consistent time series

No refinement

5.7 Uncertainty assessment

No refinement

5.8 QA/QC, reporting and documentation

No refinement

Chapter 6 Wastewater Treatment and Discharge

6.1 Introduction

Issue 1: Update introduction language to reflect current understanding of CH₄ and N₂O emissions from wastewater treatment.

Location in 2006 IPCC Guidelines: Section 6.1

Type of refinement: Elaboration

Issue 2: Update Figure 6.1 and Table 6.1 to reflect additional types of treatment and disposal systems, such as aerobic/anaerobic treatment systems (e.g., anaerobic/anoxic/oxic (A2O), nitrification/denitrification, etc.) and constructed wetlands, as well as various types of septic systems (e.g., bottomless systems).

Location in 2006 IPCC Guidelines: Section 6.1

Type of refinement: Elaboration

Issue 3: Discuss updates/changes from 2006 IPCC Guidelines.

Location in 2006 IPCC Guidelines: Section 6.1.1

Type of refinement: Elaboration

6.2 Methane emissions from wastewater

6.2.1 Methodological issues

6.2.2 Domestic wastewater

Issue 1:Update Section 6.2.2.1. Some inventory compilers are misinterpreting Equation 6.1 and combining zero emissions from aerobic systems with recovered methane from sludge digestion, but missing the step of calculating emissions from sludge digestion.

Location in 2006 IPCC Guidelines: Section 6.2.2.1

Type of refinement: Update

Issue 2:Develop new Methane Correction Factors (MCFs) to reflect treatment processes that may be a combination of aerobic and anaerobic or anoxic zones (e.g., anaerobic/anoxic/oxic (A2O), modified Ludzack-Ettinger (MLE), etc.).

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Update

Issue 3:Consider the development of new MCFs to reflect different types of septic system (e.g., bottomless) and also to consider the effect of temperature on the MCF.

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Potential update

Issue 4:Elaborate guidance on what systems are classified as “not well managed”/overloaded for centralized aerobic treatment plants.

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Elaboration

Issue 5:Provide guidance on estimating emissions from septic systems that are connected to larger centralized treatment plants.

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Elaboration

Issue 6:Determine whether methane emissions from treated effluent should be included, particularly that discharged to stagnant water or overloaded receiving waters.

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Update

Issue 7:Provide guidance on the origin of the (maximum CH₄ producing capacity) Bo values presented in the chapter.

Location in 2006 IPCC Guidelines: Section 6.2.2.2

Type of refinement: Update

6.2.3 Industrial wastewater

Issue 1: Develop new MCFs to reflect treatment processes that may be a combination of aerobic and anaerobic or anoxic zones (e.g., anaerobic/anoxic/oxic (A2O), modified Ludzack-Ettinger (MLE), etc.).

Location in 2006 IPCC Guidelines: Section 6.2.3.2

Type of refinement: Update

Issue 2: Elaborate guidance on what systems are classified as “not well managed”/overloaded for centralized aerobic treatment plants

Location in 2006 IPCC Guidelines: Section 6.2.3.2

Type of refinement: Elaboration

Issue 3: Determine whether methane emissions from treated effluent should be included, particularly that discharged to stagnant water or overloaded receiving waters.

Location in 2006 IPCC GL: Section 6.2.3.2

Type of refinement: Update

Issue 4: Update uncertainty tables to include new EFs and AD

Location in 2006 IPCC Guidelines: Section 6.2.3.5

Type of refinement: Update/Elaboration

6.3 Nitrous oxide emissions from wastewater

6.3.1 Methodological issues

Issue 1: Address “indirect” emissions and how this terminology interacts with Chapter 7.3, Volume 1 of the 2006 IPCC Guidelines.

Location in 2006 IPCC Guidelines: Section 6.3.1.1

Type of refinement: Elaboration

Issue 2: Add discussion on the latest research related to how N₂O is formed and emitted in treatment system

Location in 2006 IPCC Guidelines: Section 6.3.1.1

Type of refinement: Elaboration

Issue 3: Consider introducing Tier 1 and Tier 2 methods, similar to the CH₄ section.

Location in 2006 IPCC Guidelines: Section 6.3.1.1

Type of refinement: Update

Issue 4: Correct EF for nitrification/denitrification and develop N₂O emission factors for additional treatment system configurations (aerobic/anaerobic/anoxic systems) as well as activated sludge systems.

Location in 2006 IPCC Guidelines: Section 6.3.1.2

Type of refinement: Update/Elaboration

Issue 5: Add EF for septic systems.

Location in 2006 IPCC Guidelines: New guidance in Section 6.3.1.2

Type of refinement: New guidance

Issue 6: Update text regarding N (influent) to make consistent with Table 6.11.

Location in 2006 IPCC Guidelines: Section 6.3.1.3

Type of refinement: Elaboration

Issue 7: Clarify Food and Agriculture Organization (FAO) data in relation to protein supplied vs protein consumed

Location in 2006 IPCC Guidelines: Section 6.3.1.3

Type of refinement: Elaboration/Update

Issue 8: Addition of N₂O emission calculation for centralized plants and septic systems

Location in 2006 IPCC Guidelines: Sections 6.3.1.3/6.3.1.1

Type of refinement: Update

Issue 9: Improve the calculation of Neffluent

Location in 2006 IPCC Guidelines: Section 6.3.1.3

Type of refinement: Update/Elaboration

Issue 10: Addition of N₂O from industrial wastewater

Location in 2006 IPCC Guidelines: New guidance in Sections 6.3.1.1 and 6.3.1.3

Type of refinement: New guidance

6.3.2 Time series consistency

No refinement

6.3.3 Uncertainties

Issue: Update uncertainty tables to include new EFs and AD

Location in 2006 IPCC Guidelines: Section 6.3.3

Type of refinement: Update/Elaboration

6.3.4 QA/QC, completeness, reporting and documentation

No refinement

Decision IPCC/XLIV-6. Workshop on Climate Change and the Cities

The Intergovernmental Panel on Climate Change decides,

1. To approve the proposal for an International Conference on Climate Change and Cities contained in Annex 1. This is a co-sponsored workshop in line with Rule 7.2 on co-sponsored workshops.
2. To thank Cities Alliance, C-40, ICLEI-Local Governments for Sustainability, Future Earth, Sustainable Development Solutions Network (SDSN), United Cities and Local Governments (UCLG), UN-Habitat, the United Nations Environment Programme (UNEP) and the World Climate Research Programme (WCRP) for their offer to co-sponsor this workshop.

Proposal for an International Conference on Climate Change and Cities

1. Background

At the 43rd Session of the Intergovernmental Panel on Climate Change (IPCC) in Nairobi from 11-13 April 2016, the Panel agreed (Decision (IPCC/XLIII-6) “to consider working with academia, urban practitioners, and relevant scientific bodies and agencies, to organize an international scientific conference on climate change and cities early in the Sixth Assessment Report (AR6) cycle, in order to stimulate scientific reports and peer reviewed publications on this subject”.

This proposal from Cities Alliance, C-40, ICLEI-Local Governments for Sustainability, Future Earth, Sustainable Development Solutions Network (SDSN), United Cities and Local Governments (UCLG), UN-Habitat, the United Nations Environment Programme (UNEP) and the World Climate Research Programme (WCRP) is in response to this decision of the IPCC and suggests an international scientific conference to be co-organized by Cities Alliance, C-40, ICLEI-Local Governments for Sustainability, Future Earth, SDSN, UCLG, UN-Habitat, UNEP and WCRP and co-sponsored by IPCC. One Working Group II Co-Chair and Working Group III Vice-Chair were consulted in the preparation of the proposal which was thereafter reviewed by the Working Group I Co-Chairs and the Secretariat.

The scientific conference is planned for early 2018 and will bring together representatives from academia, scientific bodies and agencies; concerned member states of the United Nations; city and regional governments; and urban and climate change practitioners. The main aim is to stimulate scientific research (including peer review publications) around cities and climate change and to provide inputs to the IPCC products of the sixth assessment cycle (AR6) and to establish the foundation for the Special Report (SR) on cities and climate change that will be undertaken during the seventh assessment cycle (AR7).

2. Objectives

The overall objectives of the 2018 international scientific Conference on Climate Change and Cities are to: identify key research and knowledge gaps with regard to cities and climate change; inspire global and regional research that will lead to peer-reviewed publications and scientific reports; and stimulate research in Cities and Climate Change over the AR6 cycle.

The specific aims of the conference are to:

- i. Take stock of the scientific literature, data and other sources of knowledge that have emerged around cities and climate change since the close of the Fifth Assessment Report (AR5) (i.e. March-October 2013⁶) and build on ongoing work as part of the AR6 cycle.
- ii. Identify key gaps in the scientific literature, in keeping with the emphasis that arises from the scoping of the AR6 and its three Special Reports (SRs) and international, regional and national policy and implementation imperatives that emerge from 21st Session of the Conference of the Parties (COP21) to the United Nations Framework Convention on

⁶ The IPCC AR5 reports were based on publications accepted for publication before the following dates: WG I: 15 March 2013; WG II: 31 August 2013 and WG III: 3 October 2013

- Climate Change (UNFCCC), the Sustainable Development Goals (SDGs) and the New Urban Agenda.
- iii. Identify key research and knowledge gaps, with the aim of stimulating new research, the findings of which to be assessed in AR7's Special Report on Climate Change and Cities⁷.
 - iv. Develop novel assessment frameworks that take into account the systemic linkages, synergies and trade-offs between urban systems and climate change, especially action at the local scale.
 - v. Identify the research gaps in terms of policy and implementation in order to facilitate the consideration of such areas in anticipation of the Special Report on Climate Change and Cities.
 - vi. Bring together key urban and climate change stakeholders⁸ to identify priorities for scientific and policy research during the AR6 cycle and to stimulate the co-design and co-production of actionable knowledge.
 - vii. Building on established United Nations, member state and research network initiatives, help define appropriate global, regional and local monitoring systems and data architectures, including quality control, to facilitate scientific research and to help inform evidence-based policy development on climate change and cities.
 - viii. Establish a partnership-based platform to systematically accumulate, assess, analyze and disseminate information on science-policy-practice linkages that enable an upscaling and mainstreaming of urban climate actions at all scales.

3. Outcomes

The expected outcomes of the conference include:

1. A report of the meeting will be prepared under the guidance of the Scientific Steering Committee with inputs from meeting participants. This report will provide a summary of the meeting discussions. These proceedings will:
 - Include a full list of participants;
 - Indicate when and by whom they were prepared;
 - Indicate whether and by whom they were reviewed prior to publication;
 - Specify all sources of funding and other support; and
 - Prominently display the following disclaimer at the beginning of the document:

“IPCC co-sponsorship does not imply IPCC endorsement or approval of these proceedings or any recommendations or conclusions contained herein. Neither the papers presented at the Workshop nor the report of its proceedings have been subject to IPCC review”.
2. Scientific Proceedings and commissioned background papers to inform discussions at the conference.
3. A paper on key short to mid-term research themes during the AR6 cycle and opportunities to support these.

⁷ Decision IPCC/XLIII-6 # 6 “AR7 cycle will include a Special Report on climate change and cities.”

⁸ This includes UN member states, representatives of city and regional governments, UN and international organizations, representatives of the scientific community, universities and think tanks, urban and climate practitioners; organizations of the urban poor, development partners and donor institutions.

4. A proposal on appropriate global, regional and local monitoring and data architecture to assist in scientific research and inform evidence-based policy development on climate change and cities.
5. A proposal to build a partnership-based platform to systematically accumulate, assess, analyze and disseminate information that enables upscaling and mainstreaming of urban climate actions at all scales.

4. Scientific Background

Cities account for over 70% of global fossil fuel CO₂ emissions (Seto et al., 2014) and are vulnerable hotspots of climate impact (Revi et al., 2014). The scale of ongoing urban expansion (and associated infrastructure and buildings that are yet to be built) provide a unique opportunity for cities to "bend the curve" to avoid dangerous climate change. Cities and regions may also be powerhouses of ambitious mitigation and adaptation measures that are hard to legislate and implement at national level. Hence, cities could play an important role in safeguarding our collective human future.

Recognizing the importance of cities in both mitigating and adapting to climate change, the IPCC's Fifth Assessment Report (AR5) included a chapter on urban adaptation to climate change (Ch. 8 of WG II - Revi et al., 2014) and a new chapter on the role for spatial planning and urban areas in mitigating climate change (Ch. 12 of WG III - Seto et al., 2014). In spite of special efforts to build an integrated assessment framework, via an indicative set of consultations between Working Groups II and III in a special convening (Kolkata, India 2013), the discussion of adaptation and mitigation for cities was not integrated. Moreover, the WG I report did not cover the expanding field of physical science observations, process studies and modeling knowledge on urban climate, including the interplay with energy and vegetation, and local sea level aspects that are important for coastal cities. There are, thus, many important unanswered questions in the AR5, and it is crucial to mobilize the scientific community to build on these earlier initiatives and to address these gaps during the AR6 cycle.

This conference aims to take stock of post-AR5 scientific work on cities and climate change (at the level of research, policy and practice); and define a set of key research themes and questions that can be addressed in advance of the IPCC's AR7 Special Report on Climate change and Cities. To do this, it will: build on the momentum of AR5 and interrogate the issues that were limited in their coverage by the availability of literature; mobilise and bring together a diverse set of stakeholders, starting with the global scientific community, United Nations member states, local and regional governments, the practitioner and other communities in order to help inform AR6 products and the AR7 Special Report on Climate Change and Cities.

To make maximum progress on these objectives, it is proposed the conference is co-organized by the UN-Habitat, UNEP, the global urban community represented by Cities Alliance, C-40, ICLEI-Local Governments for Sustainability, UCLG and SDSN (to ensure policy relevance) and Future Earth and WCRP (representing the research community) and co-sponsored by IPCC. This will create synergies with the three agreed intergovernmental processes: the SDGs, Sendai Framework for Disaster Risk Reduction and Habitat III and will facilitate engagement with Future Earth's emerging research agenda on cities and sustainable urbanization currently being built around a growing international network of over 50,000 researchers.

5. Scientific Grounding and Open Research Questions

The AR5 identified critical gaps in the literature and knowledge on cities and climate change. A review of subsequent publications outlines a range of areas that need to be addressed as described below.

1) Systemic understanding and approach to cities

The scientific study of the urban spans many different fields and traditions. There is also no sole body of scientific knowledge on urban mitigation and adaptation. Rather, multiple lenses have been used in various studies on urban climate change to reflect diverse disciplinary perspectives e.g. from planning, technology, industrial ecology, economics, urban climate including air quality, and disaster studies. These diverse framings have led to a diversity of implementation pathways and solution spaces, creating a growing but fragmented mainstream scientific literature on cities and climate change. Addressing the consequent structural gaps as identified in the AR5 assessment and beyond is the focus of this proposal.

Firstly, most current assessment frameworks are sector focused, without sufficient exploration of interlinkages that are central to the dynamics of urban systems, and hence, to effective and appropriate impact and implementation pathways. This has made a scientific assessment of the synergies and trade-offs amongst different urban sectors and planning and management actions difficult to undertake. Urban mitigation and adaptation processes are also multi-scalar, typically crossing local, regional and national scales. Insufficient acknowledgement of this multi-scalar dimension could lead to missed opportunities in delivering systemic urban outcomes, in leveraging co-benefits, and in effectively addressing cross-sectoral trade-offs. The conference will therefore prioritise regional issues and consider cities of all sizes.

Secondly, urban mitigation and adaptation are currently typically addressed in silos. Effective urban climate adaptation and mitigation needs better knowledge integration. Many cities that have attempted to implement siloed strategies (that look positive on paper) have not been very effective in terms of mitigation, and in some cases have led to mal-adaptation. Much more rigorous scientific enquiry regarding the linkage between urban adaptation and mitigation is indicated, including a better understanding of the limitations to adaptation in particular contexts.

Thirdly, in most cases, Integrated Assessment Models do not incorporate spatiality—a key characteristic of urban areas—or address questions that are relevant to the urban scale. Measures to address this will need to be explored, given the importance of cities to emissions reduction, impact minimization and adaptation measures. As regards scenarios and climate drivers, the role of urbanization and cities in shaping local climate, emissions and air quality, land-use dynamics and extreme events, needs further research. A finer grained understanding of different urban development pathways could help improve the understanding of mitigation options and a clearer understanding of scalable adaptation strategies. The development of innovative approaches to assess greenhouse gas emissions from megacities based on monitoring and atmospheric modeling tools may also contribute to the monitor, report, verify approach (MRV) that is central to the implementation of the Paris Agreement.

Overall, there is a strong need for deeper systems perspectives to understand the complex nexus between cities and climate change. This should include a consideration of urban sub-systems, spatial and temporal scales, sectoral, stakeholder and institutional dynamics and the consequent emergent behaviour. This will assist in creating a better understanding of the boundary conditions linked to deep decarbonisation, transformative adaptation, disaster risk reduction and realizing the SDGs.

2) Urban governance

Some cities have become frontrunners in advanced climate action and are demonstrating the potential to become laboratories and engines of deep decarbonisation and transformative adaptation, while action at national and federal levels faces a range of implementation, legislative and political challenges. Some cities are even starting to inspire national and international action.

Nevertheless, addressing global concerns at city level is challenging, due to the spatial, temporal and institutional mismatches, limitations of financial resources and human and institutional capacities, especially in smaller cities. A vast diversity of city types across size, income and levels of informality has hindered the process of generalisation and theory building, and also hindered the rapid and effective cross-city transfer of knowledge and effective practice. Additional focused research appears to be necessary on factors that enhance innovative urban climate governance practices and the effectiveness of policy and management interventions. In particular, governance and institutional arrangements to enhance systemic urban climate action need further exploration.

The role of multiple non-state urban stakeholders, from individual citizens to informal and formal-sector enterprises and knowledge institutions in mainstreaming climate action is also not well understood. A better understanding of the effectiveness of development and implementation pathways and science-policy-practice interfaces, appear to be important, especially because local and regional governments have limited human and financial capacities to experiment with deep decarbonisation or transformatory adaptation pathways. Currently, much of our understanding about local adaptation and mitigation comes from a few urban case studies that are similar in size (large), income (high) and governance (good). An expansion of the breadth and geographic range of these case studies on emissions, impact pathways, adaptation and mitigation appears necessary. In addition it would be valuable, if they could account for the distribution of the climate action costs, benefits, and risks across age cohorts, socio-economic groups, and geography.

3) New streams of data

The availability and compatibility of urban scale data and information is limited and often not comparable across cities. Relevant datasets from the private sector (e.g. insurance, energy, water, etc) may not be available for integrated analyses. The SDG global and regional monitoring frameworks are attempting to bridge the gap, but focused climate inputs into these processes could make a considerable difference to research quality and policy relevance. There are also substantial gaps to be addressed between place-based and global downscaled research in order to link urban-scale, regional and global assessments. New technology, data and analytical methods that are emerging across the urban space (e.g. big data, deep learning, machine learning, data science, the internet of things (IOT), smart systems, and artificial intelligence) may hold some promise. A better use of these tools and technologies to support urban climate change science seems imperative, but examples of effective use are rare. It is also unclear as to how revolutionary developments in technology and information and communications technology (ICT) (e.g. sharing economy and driverless mobility) in cities influence systems behaviour, emissions and resilience.

4) Transformative change and alternative urban futures

Current urban climate actions are typically fragmented and incremental while the AR5 clearly identified the need for transformative and systemic change. Cities provide such transformative

and systemic intervention opportunities in many regions around the world. In this regard, the drivers, patterns and impact of individual and collective behavioural change on emerging urban transformation, new technologies and media need additional attention. While initial attempts have been made in this space, an effective global platform to compile case studies of successful implementation and scaling-up of urban climate actions and good practices is necessary, especially to enable systemic meta-analysis and building up of transferable knowledge.

The economics and financing of urban mitigation and adaptation is another underdeveloped area, and a deeper understanding of effective financial and institutional arrangements, across regions and urban contexts to address urban climate change mitigation and adaptation would be useful. Most urban development decisions are path-dependent with long term implications and lock-ins. Currently climate scenarios and development pathways are challenged in incorporating plausible urban futures e.g. based on low to zero carbon cities. A better understanding of the mitigation and adaptation potentials of diverse urban development pathways would assist integrated assessments, co-benefit and trade-off analyses. Cross-sectoral (e.g. food systems, transport, land use) and sustainable development goal oriented interaction in cities (to address poverty, pollution, better health) are reported to be pivotal for urban climate mitigation and adaptation, but need deeper research. The exploration of granular strategies to avoid negative lock-in effects in urban systems and enabling positive lock-in also need to be much better understood.

6. Partner Organisations

The conference will include contributions from a set of five primary partners. Additional partners may be incorporated at a later stage.

1. IPCC through its scientific guidance and co-sponsorship;
2. UN-Habitat and UNEP (via Cities Alliance), co-organizers, representing the United Nations system;
3. Future Earth, a co-organizer, representing academia and the scientific community, with a specific focus on cities and transdisciplinarily approaches, together with WCRP as a co-organizer representing the climate research community;
4. Cities Alliance, C-40, ICLEI-Local Governments for Sustainability, UCLG and SDSN, co-organizers, representing city and regional governments, universities and research institutions, the enterprise sector, and a range of member states; and
5. A national/city government to serve as host (to be confirmed after an open call to be coordinated by the Global Task Force including C40, ICLEI-Local Governments for Sustainability and UCLG).

7. Timing and Duration

The conference is expected to be held early in 2018, synchronised with other ongoing international conferences and IPCC events and consultations around complimentary themes. This timing is critical in order to allow sufficient time for the research to be undertaken and published in order to inform the Special Report on Climate Change and Cities which was approved by the Panel for AR7 (paragraph 7 of Decision IPCC/XLII-6).

The conference is expected to last three days, with an opening plenary on the morning of the first day; and a closing plenary on the evening of the third day.

8. Proposed Content and Agenda

Content

The format of the conference will be finalised by the Scientific Steering Committee at its first meeting. An indicative three-day agenda is presented below:

Day 0

- Arrivals
- Scientific Steering Committee meeting

Day 1

- Further arrivals and Registration
- Inauguration and Opening Plenary
- Initial working group discussions
- Welcome dinner by City Mayor

Day 2

- Breakout Group discussions (morning)
- Breakout Group discussions (afternoon)
- Conference banquet

Day 3

- Breakout Group discussions (morning)
- Closing Plenary
- Some Departures

Day 4

- Voluntary city tours
- All departures

9. Conference Participants

The conference is expected to draw between 250-300 participants from across the world, of which over a third will be from developing countries. Developing country participants who do not have institutional support for travel would be provided travel funding including from the IPCC Trust Fund in the scale indicated in Decision (IPCC/XLIV-XX) on the IPCC Trust Fund Programme and Budget.

10. Scientific Steering Committee, Organizing Committee and Management arrangements

A Scientific Steering Committee (SSC) will manage the conference and its proceedings. The SSC will be co-chaired by the IPCC and all three working group bureaux will be involved in providing scientific input into the preparations for the conference. Members of the SSC will be drawn from partner organisations and key stakeholder groups and will strive to maintain a balance across regions, gender and scientific themes, with the IPCC playing a prominent role.

The conference will be administered by an Organizing Committee, including representatives from the IPCC Secretariat and at least one Working Group Technical Support Unit as appropriate, and the Head of the local Conference Secretariat. The bulk of the logistical organization will be overseen and implemented by the partner organizations.

11. Timeline

An indicative timeline for the conference is as follows:

1. Submission of conference proposal to partner organisations and IPCC Secretariat (August 2016).
2. Submission to IPCC Executive Committee –ExCom- (September 2016).
3. Submission to the IPCC (October 2016).
4. Confirmation of conference location, dates and partners after a limited call (January 2017).
5. Announcement of the Conference, initiation of Organising Committee and local Secretariat and launch of website (February 2017).
6. First meeting of the Scientific Committee. Commissioning of preparatory papers (March 2017).
7. Call for nomination of participants and initiation of outreach and advocacy activities (June 2017).
8. Second meeting of the Scientific Committee and selection of Participants (August 2017).
9. **International Conference on Climate Change and Cities** (early 2018).
10. Third meeting of the Scientific Committee and clearance of Proceedings for publication (June 2018).
11. Publication of proceedings (September 2018).

12. IPCC Financial Implications

The estimated full cost budget for the conference at USD 4,000 per participant is expected to be roughly USD 1 million.

An amount of USD 0.25 million each have been committed by Cities Alliance and C-40. UN-Habitat has committed USD 0.1 million.

In-kind contribution, of the conference venue, local Secretariat and conference banquets of between USD 0.1-0.2 million is expected to be made by the partner government/city. The financial contribution of the IPCC will be of the scale indicated in Decision (IPCC/XLIV-XX) on the IPCC Trust Fund Programme and Budget.

13. References:

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Decision IPCC/XLIV-7. Expert meeting on mitigation, Sustainability and Climate Stabilization Scenarios

The Intergovernmental Panel on Climate Change decides,

To adopt the proposal for the Expert Meeting on Mitigation, Sustainability and Stabilization Scenarios as contained in Annex 1.

Proposal for an IPCC Expert Meeting on Mitigation, Sustainability and Stabilization Scenarios

(Prepared by the Co-chairs of Working Group III)

1. Context

Two of the central challenges facing IPCC, and Working Group III (WG III) in particular, in the Sixth Assessment Report (AR6) are:

- a) the need to assess the linkages between high-level climate stabilization goals and scenarios on the one hand and the practical steps needed in the short- and medium-term to make the realization of these goals possible; and
- b) the need to anchor climate responses firmly in the context of development needs. Practical steps need to be articulated in ways that are meaningful to stakeholders, in government, business and civil society, as they formulate their responses to climate change. The Sustainable Development Goals (SDGs) now provide an internationally agreed framework for exploring climate response-sustainability linkages.

These twin challenges have been recognised by governments and IPCC observer organizations in proposals for the AR6 Special Reports notably the proposal from the Government of Norway on *Mitigation, climate stabilization scenarios and sustainability* (IPCC-XLII/INF.13, Corr.1, Add.2) and from CAN International on *Decarbonisation and low carbon development* (IPCC-XLII/INF.13, Corr. 1). The premise underlying this proposal for an Expert Meeting is that stronger links between the scientific communities that will contribute to AR6 need to be forged if these challenges are to be met.

2. What was achieved in the Fifth Assessment Report (AR5) and science gaps

AR5 made some progress in addressing these challenges. The WG III report compared high-level scenarios developed using Integrated Assessment Models (IAMs) with sectoral approaches. It also interpreted high-level scenarios and derived implied indicators of change, especially in the energy supply system and energy demand sectors. However the flow of information was largely one-way. A two-way exchange of information and insights between those with detailed knowledge of specific sectors and technologies with those developing high-level scenarios. Greater transparency about assumptions underlying IAMs will facilitate this dialogue.

The AR5 also started to open up the linkage between the SDGs and climate responses by addressing co-benefits, specifically in terms of air quality and energy security as measured by import dependence. However more effort is needed to explore these linkages in a coherent and comprehensive manner. A fuller range of SDGs, notably that relating to energy access, need to be explored more systematically.

Furthermore, more effort is need to understand how climate responses that jointly address mitigation and adaptation challenges can be formulated, especially in human settlements, agriculture, forestry and land use. This requires communication, to a far greater extent than achieved in the AR5, between the mitigation research communities and those concerned with impacts, adaptation and vulnerability.

A final gap relates to the sustainability implications, not only of climate change itself, but also the mitigation measures required to achieve ambitious stabilization pathways involving negative emission technologies (NETs).

3. Recent initiatives

The science gaps have been recognised by the research community and have begun to be addressed through IPCC meetings and workshops and initiatives from third parties. Relevant IPCC meetings include: the IPCC Expert Meeting on Scenarios, held on 18-20 May 2015 in Laxenburg, Austria; and the IPCC Workshop on Regional Climate Projections and their Use in Impacts and Risk analysis Studies, held on 15-18 September 2015 in Sao Jose dos Campos, Brazil. In addition, the International Institute for Applied Systems Analysis (IIASA) is undertaking the project “the world in 2050” (TWI2050) using scenarios to address the linkage between climate responses and the Sustainable Development Goals (SDGs), the Integrated Assessment Modelling Consortium (IAMC) continues to foster modelling comparison exercises, including those that implement the Shared Socio-Economic Pathways (SSPs) and the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP) project which takes a scenario-based approach to impact assessment.

The aim of this Expert Meeting is to build on rather than duplicate these activities, specifically by developing engagement between scenario-builders and modellers and those with a more sectoral, bottom-up perspective.

4. Goals of the Expert Meeting

The expert meeting would have the following aims:

- To develop dialogue between different research communities that can be advanced later through cross-cutting groups linking different chapters of the AR6 reports.

What forms of data could be used to underpin dialogue between scenario builders and others, including those concerned with mitigation at the sectoral level and those primarily concerned with sustainable development? How can scenarios, models and their input assumptions build plausibly on the insights derived from sectoral or regional perspectives? Conversely, what are the implications do top-down stabilization scenarios hold for the pace of change in specific sectors?

- To stimulate interdisciplinary research activity that will lead to new literature that can be assessed during the AR6 cycle.

5. Participation

The Expert Meeting would primarily engage research communities and stakeholders concerned with mitigation but would also need to include representatives of WGI and WGII science. Relevant communities include:

- Integrated assessment modellers and scenario builders
- Sectoral experts (energy supply, AFOLU, energy demand sectors)
- Policy scientists
- Risk assessment experts
- Development experts
- Impacts, adaptation and vulnerability experts
- Climate modellers

6. Timing

In order to inform the Scoping Meeting for the AR6, we propose that the meeting take place in late March 2017. In the event that this deadline proves infeasible, a second option is July 2017 in time to inform the 46th Session of the IPCC which will approve the outline of the AR6.

7. Hosting

Norway has indicated its willingness to host such an Expert Meeting.

Decision IPCC/XLIV-8. Future on the Task Group on Data and Scenario Support for Impact and Climate Analysis (TGICA)

The Intergovernmental panel on Climate Change decides,

1. To establish an Ad Hoc Task Force to design a strategic plan and revised mandate and terms of reference for the transformation of TGICA functions to serve the needs of IPCC during and beyond the Sixth Assessment. The membership and Terms of Reference of this Task Force are defined in Annex 1 to this decision. The Task Force will conclude its work in time for its proposals to be considered at the 46th Session of the IPCC.
2. To request TGICA to continue its activities until the revised mandate and terms of reference are approved by the Panel, but no later than the time of the 46th Session of the IPCC. In doing so to proceed with the activities already in progress, undertake additional tasks as may be required by the IPCC in the course of Sixth Assessment Report (AR6) preparations, and continue oversight and operations of Data Distribution Centre (DDC) functions, mindful of existing resource constraints.
3. To request the Secretary of the IPCC to explore with governments, observer organizations and other entities ways of providing administrative support to TGICA in this interim period, including through the provision of a secondment arrangement or through direct financial support to the Secretariat.

Annex 1 to decision on the future of the Task Group on Data and Scenario Support for Impact and Climate Analysis (TGICA)

Terms of Reference for the Ad Hoc Task Force on the Future of the IPCC Task Group on Data and Scenario Support for Impact and Climate Analysis (TGICA)

1. PURPOSE

The purpose of the Ad Hoc Task Force (Task Force) on the future of the IPCC Task Group on Data and Scenario Support for Impact and Climate Analysis (TGICA) is to design a strategic plan as well as a mandate and terms of reference for the transformation of TGICA functions to serve the needs of IPCC during and beyond the sixth assessment cycle, to be considered by the IPCC at its 46th session. This plan and the related ToRs and mandate should take into consideration identified priority objectives of the Task Group and the IPCC Data Distribution Centre (DDC) it oversees, including emerging needs in relation to regional data and scenarios and results from a mapping exercise of other organizations and stakeholders, paying due attention to constraints on both human and financial resources.

2. TERM

The Task Force will initiate its work immediately after the 44th Session of the IPCC and continue its activities until the revised mandate and terms of reference are approved by the Panel, but no later than the time of the 46th Session of the IPCC, which is provisionally scheduled for September 2017.

3. MEMBERSHIP

The Task Force will comprise of at least:

- Two Vice-Chairs from each of the three Working Groups, one from a developed country and the other from a developing or economy in transition (EIT) country;
- Current TGICA Co-Chairs;
- Six Government representatives, three each from developed and developing/EIT countries. DDC host countries will be given priority if they are willing to participate;
- One representative from each of the Working Group technical support units; and
- A representative of the IPCC Secretariat.

The Task Force will be Co-Chaired by two Working Group Vice-Chairs from different Working Groups, one from a developed country and another from a developing country/EIT. At least one of the Co-Chairs should preferably be female. The Task Force may consider inviting DDC managers and relevant TSU staff from the AR5 cycle to share their views and experiences. This Task Force will be open to government representatives and Bureau members who may be co-opted for supporting specific tasks, as required.

4. ROLES AND RESPONSIBILITIES

The Task Force will be responsible for:

- i. Reviewing options and identifying priority objectives for the future of TGICA, including those presented to the Panel at the 43rd Session and to the Bureau at its 52nd Session;
- ii. Reviewing options and identifying priority objectives for the DDC including those presented to the Panel at the 43rd Session and to the Bureau at its 52nd Session;

- iii. Scoping, implementing and overseeing a mapping exercise of activities undertaken by external organizations that are similar or related to TGICA or the DDC, including but not limited to what is presented in the documents listed in (i) and (ii) above. The objective of this exercise is to evaluate the potential overlap, sustainability, and relevance of other products and services compared to TGICA and DDC functions, so as to identify remaining gaps and help refine priorities, and to explore potential partnerships;
- iv. Developing, based upon the information and findings from the above activities, a proposal for a longer-term vision, and a short-term strategy, which will enable the transformation of existing TGICA functionalities and to identify priority objectives of the DDC. This strategy should ensure continuity, transparency, accessibility, and integration across Working Groups of existing and emerging support needs for data and scenarios by the IPCC; mindful of human and financial resource constraints;
- v. Proposing a new mandate and ToRs for the transformed TGICA functionality and for the core functions of the DDC;
- vi. Proposing options for sustainable resourcing to support the needs of the transformed functions, including possible ways to expand country contributions; and
- vii. Providing a progress report about its activities to the IPCC at its 45th Session.

5. MEETINGS

All meetings will be held through teleconferencing and/or in combination with existing IPCC meetings where Task Force members will be present. They will be chaired by the Ad Hoc Task Force Co-Chairs who will be responsible for preparing meeting agendas. Teleconferencing arrangements and meeting minutes will be prepared by the Secretariat.

Decision IPCC/XLIV-9. Communications for the Sixth Assessment Report (AR6) - Communications and the scoping processes

The Intergovernmental Panel on Climate Change,

Recalling the first indent of paragraph 1 of Decision IPCC/XLIII-10 on Communications for the Sixth Assessment Report (AR6) “to engage with governments and a wide range of stakeholders in the scoping process, seek greater input from stakeholder groups in the scoping process, and identify, with the help of governments and observer organizations, audiences and stakeholders who can provide input”;

Recalling the second indent of paragraph 1 of the same Decision IPCC/XLIII-10 on Communications for the Sixth Assessment Report (AR6) “to consider different options to enable stakeholders to contribute to the scoping process”;

Decides:

1. That when preparing scoping meetings, in addition to consulting governments, the relevant bureaux should consider the following options in order to obtain contributions from other relevant stakeholders in advance of the meeting:
 - Circulating a pre-scoping questionnaire to observer organizations to identify issues and questions that could be addressed in the scoping meeting, keeping in mind the necessary transparency around comments and suggestions received by the IPCC;
 - Working with National Focal Points and observer organizations to identify actors from the wide range of stakeholders that can contribute to the scoping process, and to promote possible consultations with them, including through virtual means, in order to inform the scoping process.
2. That such pre-scoping activities are to be undertaken in a balanced and transparent way.

Decision IPCC/XLIV-10. Communications for the Sixth Assessment Report (AR6) - Review of the IPCC Communications Strategy

The Intergovernmental Panel on Climate Change,

Recalling the recommendation of the InterAcademy Council on IPCC communications that the IPCC “should complete and implement a communications strategy that emphasizes transparency, rapid and thoughtful responses, and relevance to stakeholders, and which includes guidelines about who can speak on behalf of IPCC and how to represent the organization appropriately”;

Recalling its decision taken at the 35th Session of the IPCC to adopt the “*IPCC Communications Strategy*”;

Recalling Decision IPCC/XLIII-10 which requests the Secretary of the IPCC, in consultation with the Communications Action Team, to update the Communications Strategy in the light of the experience of communication and outreach around the Fifth Assessment Report and the recommendations of the Expert Meeting on Communication, and to submit these proposals to the 44th Session of the IPCC;

Decides:

1. *To adopt* the update of the “*IPCC Communications Strategy*” as provided in Annex 1 to this decision;
2. *To request* the Executive Committee to update the Implementation Plan in line with this revised Communications Strategy, and to report upon its completion to the Bureau and National Focal points by 1 February 2017;
3. *To request* the Executive Committee, in updating the Implementation Plan, to consider the set of procedures, including the role, tasks and responsibilities of the involved individuals, to allow the IPCC to make effective rapid responses to urgent enquiries. These procedures should include a contingency plan for managing rapidly escalating communications needs; and
4. *To request* the Executive Committee to keep the Implementation Plan under review and develop it further, as circumstances require, if necessary before completion of the Sixth Assessment Report.

IPCC COMMUNICATIONS STRATEGY

Introduction

The IPCC at its 33rd Session in Abu Dhabi in May 2011 approved the *Guidance on IPCC Communications Strategy*⁹ following the recommendations of the InterAcademy Council (IAC) in August 2010 to develop a communications strategy. This Guidance continues to serve as a framework for IPCC communications and relevant parts of it have been taken up in this document.

The 35th Session of the IPCC in Geneva in June 2012 adopted the “*IPCC Communications Strategy*” and requested the Executive Committee to elaborate an Implementation Plan for the Strategy. At its 43rd Session in Nairobi in April 2016, in Decision IPCC/XLIII-10, the Panel requested the Secretary of the IPCC, in consultation with the Communications Action Team, to update the Communications Strategy and its Implementation Plan in the light of the experience of communication and outreach around the Fifth Assessment Report and the recommendations of the Expert Meeting on Communication, held in Oslo in February 2016¹⁰. The Communications Strategy supports the IPCC in its work of providing robust assessments of climate-related science for sound policymaking.

Goals

- 1) The IPCC has two main communications goals:
 - to communicate its assessment findings and methodologies, by providing clear and balanced information on climate change¹¹, including scientific uncertainties, without compromising accuracy;
 - to explain the way the IPCC works, selects its authors and reviewers and produces its reports and other products. This will promote the understanding of the reports and underpin its reputation as a credible, transparent, balanced and authoritative scientific body.

Principles

- 2) IPCC communications are based on the Principles Governing IPCC Work².

Communications are an important aspect of the work of the IPCC, essential to its mission of providing decision-makers and other stakeholders with rigorous and balanced scientific information on climate change² and its impacts. The following set of principles should guide the IPCC’s approach:

- **Objective and transparent.** The IPCC’s communications approach and activities should, at all times, be consistent with the IPCC’s overarching principles of objectivity, openness and transparency.

⁹ http://www.ipcc.ch/meetings/session33/ipcc_p33_decisions_taken_comm_strategy.pdf

¹⁰ http://www.ipcc.ch/pdf/supporting-material/EMR_COM_full_report.pdf

¹¹ “The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies.” (Principles Governing IPCC Work, paragraph 2). (<http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf>)

- **Policy-relevant but not policy-prescriptive.** It is an essential quality of the IPCC's work that it is policy-relevant but not policy-prescriptive. The presentation of its assessments and reports should remain policy-neutral and maintain scientific balance. The IPCC's communications approach and activities should be consistent with these qualities.
- **Drawn from IPCC Reports.** While the IPCC's work and process of preparing reports aim to reflect a range of views and expertise addressing some highly specialized scientific matters, its communications should reflect the language that has been subject to the IPCC's review process and has been accepted, adopted or approved by the members of the Panel.
- **Aiming to establish the IPCC as the key science/policy interface organization for climate change.** The IPCC's process of international assessment by scientists and review by the scientific community, governments and stakeholders is central to the authority and quality of IPCC reports. The IPCC should always seek to be clear in its communications about what the organization is and what it does – providing up to date assessments of the latest authoritative science. The objective is to ensure that the IPCC provides a context to guide the interpretation of its reports and to ensure that the public has unbiased information about the IPCC.
- **Timely and audience-appropriate.** In order to be effective, the IPCC communications approach and activities should be aimed at ensuring that timely and appropriate information enters the public domain – both proactively to communicate reports, and reactively in response to questions or criticism.
- **Consistent messages.** To ensure that the IPCC delivers consistent messages externally, it is essential that internal communications and decision-making are disciplined and well coordinated.

Activities

- 3) IPCC communications address four main groups of activities:
 - Day-to-day communications, both proactive and reactive;
 - Planned activities including:
 - the launch of reports,
 - outreach activities to present the work of the IPCC to the audiences described below, and
 - participation in major international conferences;
 - Rapid responses, which require particular procedures to ensure they are handled in a timely manner that is representative of the whole Panel, and
 - Contributing to better communication of scientific and technical advice and guidelines to the UNFCCC and other relevant UN intergovernmental processes.

Audiences

- 4) The primary target audiences of the communications efforts of the IPCC are governments and policy-makers at all levels, the UNFCCC, and the UN-wide system intergovernmental processes more broadly.
- 5) Broader audiences, such as IPCC observer organizations, the scientific community, the education sector, non-governmental organizations (NGOs), the business sector and the wider public also have an interest in the work and assessments of the IPCC. While these

are not the primary audiences of the IPCC communications efforts, the IPCC should look for ways to ensure that information is available and accessible for these audiences.

- 6) Third parties can play an additional valuable role taking elements of IPCC assessments to create accessible products aimed at specific audiences. The IPCC takes note of such derivative products, and may engage with relevant organizations that produce them. However, such products must not be considered joint productions or in any way products of the IPCC.
- 7) Engaging and building relationships with the media is an important way in which the IPCC can communicate the information contained in its reports, as well as its processes and procedures.
- 8) IPCC audiences are truly global in extent and are therefore very diverse. In its communications and outreach activities, the IPCC will take the specific context of different countries into account, which may require tailor-made outreach activities. For instance, communications needs of developing countries may be different to those of developed countries.

Governance and management

- 9) The Plenary is ultimately responsible for ensuring that the Communications Strategy is appropriate, that it meets the expectations and needs of the Panel and is being delivered suitably. Between Plenary sessions, the Bureau and the Executive Committee will act on the Panel's behalf, in accordance with the Communications Strategy, as appropriate. Decisions regarding fundamental communications issues, according to their importance, should be debated and approved within the framework of the IPCC and/or the IPCC Bureau, as appropriate.
- 10) The Working Group/Task Force Co-Chairs are responsible for the substantive aspects of communications activities around reports in their areas of responsibility, while the IPCC Chair is responsible for the substantive aspects of communications on the Synthesis Report. The Executive Committee oversees the implementation of the Communication Strategy.
- 11) The IPCC Chair, IPCC Vice-Chairs, Working Groups/Task Force Co-Chairs, members of the Bureau and National Focal Points will rely on the Secretariat, for expert advice related to communication as necessary. The Senior Communications Manager at the Secretariat is responsible for the day-to-day coordination and coherence of IPCC communications.
- 12) The Executive Committee will maintain an Implementation Plan that gives effect to this Strategy. This Plan will identify, in accordance with this Communications Strategy, those groups or individuals that can approve different types of communications materials and activities in different situations, including rapid response. The Executive Committee will update and develop this Plan as circumstances require and report to the Panel on any updates.
- 13) The Secretary of the IPCC will evaluate IPCC communications and report to the Panel, including the type and extent of outreach and media coverage. Evaluation reports should also be made to the Bureau and Executive Committee at regular intervals. The Secretary will investigate the use of metrics to support evaluation.
- 14) The Executive Committee should consider how to ensure continuity of outreach and the website between assessment cycles, and elaborate this in the Implementation Plan.

Methods and tools

- 15) Consistent with its status as a UN body, the IPCC's reports should be made available in the six UN languages to the extent possible according to IPCC Principles. IPCC communication practices should follow this model where possible, and communications products, including brochures and press releases, should be translated and made available.
- 16) The Secretariat will support National Focal Points in communications activities in their countries, and will encourage the translation of texts into local languages, by providing IPCC materials, where practical. The National Focal Points will receive communications materials and information about events in a timely manner, and may seek advice from the Secretariat on IPCC communications-related matters.
- 17) Approved IPCC reports and other products form the basis for communications materials. These materials should be developed to facilitate greater understanding of the IPCC's work among governments, media and other non-specialists unfamiliar with scientific terminology¹². When preparing the final draft of the Summary for Policymakers, Overview Chapters of Methodology Reports and the Synthesis Report, Working Group/Task Force Co-Chairs, the IPCC Chair and authors should be aware of the need to produce clear, comprehensible, accessible and user-friendly texts and graphics that support the key findings in the report.
- 18) The IPCC website serves its target audiences (see 'Audiences' above) by providing access to all public IPCC material in a consistent and user-friendly manner. The Secretariat is responsible for ensuring that the IPCC website is reviewed regularly to ensure content is up to date, to improve user-friendliness and navigability and to benefit where useful from the latest technology and practices, including access on different platforms.
- 19) Social media provide important tools to reinforce the communications activities of the IPCC and to reach civil society, the scientific community and other audiences directly. The Secretariat will keep the appropriate use of social media under review, bearing in mind the specific scientific and intergovernmental nature of the IPCC and the accessibility of some tools in some groups of countries. It will monitor the evolution of new technology and media, including video and infographics, and take advantage of these for IPCC communications as appropriate. In consultation with the Communications Action Team, it will prepare guidelines on the use of social media for the use of all those working for the IPCC.

IPCC spokespeople

- 20) To ensure objectivity and scientific accuracy, as well as efficiency and timeliness, authorized spokespeople must be designated for various situations. The Chair of the IPCC and IPCC Vice-Chairs are the lead spokespeople for the organization as a whole; the Working Group/Task Force Co-Chairs are the lead spokespeople for the activities of their Working Group/Task Force; the Secretary and Senior Communications Manager may speak on activities and the procedures of the IPCC as well as on institutional matters.

¹² Decision IPCC/XLI-4, §10: "To enhance the readability of IPCC products, advice from various specialists should be sought."

- 21) Besides these designated spokespeople, authors or Working Group Vice-Chairs will often be the most appropriate people to speak on their area of science or provide regional perspectives and may be delegated by the Working Group/Task Force Co-Chairs, the IPCC Chair or the Secretary to talk to the media or represent the IPCC at conferences.
- 22) People speaking on behalf of the IPCC in an official capacity must focus on communicating a factual, objective presentation of information from the approved IPCC reports and refrain from public statements that could be interpreted as advocacy and compromise the IPCC's reputation for neutrality.
- 23) Those who represent the IPCC in an official capacity are strongly encouraged to undergo media training. Such training should include specific guidance on how to approach speaking on behalf of the IPCC versus speaking in other capacities. The Secretariat will arrange this training as opportunities allow, subject to available resources, and will provide guidelines on communicating with the media and public. Outreach activities may benefit from training on presentations.

Resources

- 24) Communications activities must operate with the resources available in the IPCC. These may be augmented by additional funding or support from external communications experts, in coordination with the Secretariat, including for specific communications activities at times of heightened media activity, such as around the release of a report or in rapid response. This must not compromise the independence of the IPCC or cause a conflict of interest. External human and financial resources must be reported to the Panel at the earliest session following the provision of these resources.

Decision IPCC/XLIV-11. IPCC Scholarship Programme

The Intergovernmental Panel on Climate Change,

Recalling its strong support to the continued use of the Nobel Peace Prize funds to build capacity in the understanding and management of climate change in developing countries through providing opportunities for young scientists from developing countries to undertake studies that would not be possible without the intervention of the Funds;

Decides,

To request the Science Board to consider options for the future of the IPCC Scholarship Programme in the light of the findings of the review of this Programme, the views expressed by the members of the Panel and consultations with partner organizations; and to submit proposals for consideration by the Panel at its 45th Session.