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TECH-97-149
2/18/97

TO: AIAM Technical Committee

FROM: Gregory J. Dana
Vice President and Technical Director

RE: GLOBAL CLIMATE COALITION - Science and
Technology Assessment Committee (STAC) - Minutes of
the January 16, 1997 Meeting

Enclosed is a copy of the minutes of the January 16, 1997 meeting of the Science and Technology Assessment Committee (STAC) of the Global Climate Coalition. The next meeting will be held by conference call on February 20, 1997. An agenda for that meeting is also enclosed.

GJD:jai

FACSIMILE TRANSMISSION COVER SHEET

TO: SCIENCE AND TECHNOLOGY ASSESSMENT COMMITTEE

FROM: L. S. Bernstein - February 12, 1997 (Cover + 34 pages)

Committee Members

Mitchell T. Baer - 202/682-8031
Tim Banfield - 412/838-6888
Greg Dana - 703/525-8817
Dennis J. Devlin - 908/873-6009
Howard Feldman - 202/682-8270
Brian P. Flannery - 908/730-3301
Bronson Gardner - 216/475-9674
Robert P. Gehri - 205/257-7294
Jon M. Heuss - 313/556-9001
Eric Holdsworth - 202/638-1043
John Holt - 703/907-5517
Russell Jones - 202/682-8408
John Kinsman - 202/508-5150
Eric C. Kuhn - 513/287-3499
Ned Leonard - 703/907-6161
John M. McManus - 614/223-2897
Terry E. Pritchett - 313/556-2644
Tom Rasmussen - 202/833-9636
Eric Reiner - 612/778-6176
John Shiller - 313/594-4271
Jerrel D. Smith - 314/554-4830 or 314/231-1890
James A. Smithson - 217/362-7649
Fred Starheim - 330/384-5433
Mike Stroben - 704/875-5493
Marie Takemoto - 810/576-7928
Porter J. Womeldorff - 217/422-9174

Information

George Lauer - 213/486-2021
Robert H. McFadden - 202/326-5528
Tom Parker, Jr. - 703/741-6916
James Pinto - 914/253-7895
John Shlaes - 202/638-1043
Charles R. Sharp - 616/533-6391

Liaison

Chuck Hakkarinen - 415/855-1069

GCC - Science and Technology Assessment Committee

February 12, 1997

Member of GCC - STAC

Agenda and Materials for the
February 20 GCC-STAC Conference Call


The February meeting of GCC-STAC will be a conference call starting at 1:00 p.m (EST) on Thursday, February 20. To participate in the call, dial 800-982-5961. Your participant code for the call is 921515.

The agenda for the call will be:

1. Approval of the minutes of the January 16 meeting (attached)
2. Status of the American Council on Science and Health Study
3. Plans for GCC participation in the IPCC Workshop on Integrated Assessment
4. IPCC Special Report on "Methodological and Technological Aspects of Technology Transfer" (See attached material)
5. API questions on extreme weather events
6. Plans for the March 20 meeting
7. Any other business

The call should be finished by 2:00 p.m. If you have any other items for the agenda, please let me know by phone (703-846-3530) or fax (703-846-2972).

One other item: an updated STAC mailing list is also attached.



L. S. Bernstein

**GLOBAL CLIMATE COALITION
SCIENCE AND TECHNOLOGY ASSESSMENT COMMITTEE
MEETING MINUTES FOR JANUARY 16, 1997**

**L.S. BERNSTEIN
FEB 3 1997
RECEIVED**

- Meeting was held at the offices of Southern Company at 1130 Conn. Ave. N.W. Tim Banfield from Alleghny Power and Marie Takemoto from Chrysler were in attendance by conference phone.
- From 12:00 noon until 1:00 p.m., a luncheon speaker was provided for the STAC members. Dr. Lou Pitelka of the Appalachian Environmental Laboratory of the University of Maryland gave a luncheon presentation on Plant Migration and Climate Change. A copy of his presentation overheads are attached for your information.
- The business portion of the meeting began at 1:00 p.m.. A copy of the attendees list is attached. Minutes from the November 21, 1996 STAC Meeting were approved with a couple of minor editorial changes.
- **Discussion of December AGBM Negotiating Sessions** - Lenny Bernstein and Bob Gehri led a discussion of the most recent negotiating sessions under the Framework Convention on Climate Change. Lenny summarized the negotiations under the AGBM and Bob discussed the subsidiary body meeting of the SBSTA.
- **GCC Report** - John Shlaes gave a summary of recent GCC activities.
 - ⇒ The State Department will hold a briefing on their submission to the FCCC Secretariat on the language for a protocol or other legal instrument, Friday Jan. 17, 1997 at 2:00 p.m.. This will be a combined briefing for both environmental and business NGO's.
 - ⇒ The German Government is making progress toward being able to handle communications and other logistics at the next negotiating session that will be held in Bonn. The GCC has a block of rooms at the Bristol Hotel in Bonn, and each person is responsible for making his/her reservations directly with the hotel. The GCC has a FAX form for this purpose.
 - ⇒ Through participation in various meetings with Clinton Administration officials, the GCC has learned that the Administration is willing to drop all caveats associated with the science of the climate change issue when speaking publicly. These caveats are those directly from the IPCC Second Assessment Report.
 - ⇒ The health issue is increasing in importance with the climate change issue, as well as with other environmental issues such as PM standards and ozone standards. The GCC has got to be prepared to respond to the issue this year.

- **Status of the ACSH Health Effects Study** - The ACSH proposal that was selected by the STAC at the last meeting has now been through all of the approval process.
 - ⇒ The agreement between ACSH and the GCC will be in the form of a grant and not a contract.
 - ⇒ The GCC lawyers have commented on the draft letter of understanding that was prepared by Lenny for the GCC.
 - ⇒ Dr. Thomas Orem has been selected as the principal investigator for the ACSH Study.
 - ⇒ A week or ten days of additional time should be enough to resolve the remaining issues so that work can proceed.
 - ⇒ Phase 1 of the study will be funded from the GCC budget and Phase 2 will be funded from the GCC Special Projects Fund when the fund become available.
- **Watson Paper on the IPCC and the Third Assessment Report** - The GCC obtained a draft copy of a paper by Bob Watson on the future of the IPCC and the structure of the IPCC Third Assessment Report. Copies of the paper were distributed to STAC members. Comments on this draft are to be given to Lenny by noon on Tues. January 21. Chuck Hakkarinen showed an overhead on how the emissions scenarios development and the GCM runs should drive the IPCC Working Group Third Assessment Report process sequentially rather than in parallel. This would require that approximately two more years would be needed to produce the Third Assessment Report than the schedule laid out in the Watson paper. This concept is important so that Working Groups II and III would be performing their assessments with the most up to date science available. This is particularly significant since much of the work of Working Group I will be on the development of regional climate impacts.
- **American Geophysical Union Meeting** - Chuck Hakkarinen summarized this recent meeting for the GCC STAC members. He provided an abstract of the papers presented and noted several papers that may be of interest to the STAC membership.
- **IPCC Workshop on Integrated Assessment** - The question was posed to the STAC if any GCC member companies were planning on sending anyone to the IPCC Workshop in March. No one responded that they had plans to send someone directly. EPRI is planning on sending an EPRI contractor to the meeting. The STAC discussed the situation and made the recommendation that Lenny offer as an action item to the Operating Committee Meeting the next day, that the STAC use some of the IPCC Tracker budget to send a representative to this meeting since the outcome is of vital importance to the GCC STAC. This was a consensus opinion of the STAC.

- **Twin Cities Conference** - Eric Reiner discussed presentations that were made at the recent Twin Cities Conference. Overview summaries of presentations by Schneider, Mendleson, Richels, and Claussen among others were presented.
- **Next STAC Meeting** - The next STAC meeting will be on Feb. 20th and will be by conference call. The time will be 1:00-3:00 p.m. EST. The March meeting will be a face-to-face meeting after the next AGBM negotiating session. It will be hosted by John Holt at NRECA.

GCC STAC Meeting January 16, 1997
Attendees List

Attendee	Company	Phone/FAX
Robert P. Gehri	Southern Company	(205) 257-6720 & 257-7294
Jerrel Smith	Union Electric	(314) 554-2106 & 554-4830
Howard Feldman	API	(202) 682-8340 & 682-8270
Chuck Hakkarinen	EPRI	(415) 855-2592 & 855-1069
Chuck Sharp	GM & AAMA	(616) 533-8127 & 533-6391
Lenny Bernstein	Mobil	(703) 846-3530 & 846-2972
Terry Pritchett	GM	(313) 556-7566 & 556-2644
Jim Smithson	Illinois Power	(217) 362-7979 & 326-7649
John Holt	NRECA	(703) 907-5805 & 907-5517
Eric Reiner	3M for CMA	(612) 778-5079 & 778-6176
Eric Kuhn	Cinergy Corp.	(513) 287-4061 & 287-3499
Louis Pitelka	Univ. of Maryland	(301) 689-3115 ext.212
Marie Takemoto	Chrylser	By Conference Call
Tim Banfield	Alleghny Power	By Conference Call

Plant Migration and Climate Change

To what extent will limits on rates of plant migration constrain the capacity of ecosystems to adjust to climate change?



Plant Migration and Climate Change

2 January, 1997

Equilibrium Analyses of Biome and Species Shifts

- Comparisons of two hypothetical equilibrium states
- Maps of biome and species shifts imply potential for rapid migration
 - VEMAP results (4/95 presentation to GCC)
 - IPCC chapters



Plant Migration and Climate Change

2 January, 1997

Problems with Equilibrium Analyses

- Equilibrium analyses ignore transient dynamics - lags due to:
 - dieback of existing vegetation
 - dispersal/migration
 - establishment, competition, maturation, succession
- Time lags may have important implications
 - e.g., for carbon storage, esthetics



Plant Migration and Climate Change

2 January, 1997

The Potential Importance of Migration

Two extreme points of view:

- The capacity of plants to migrate is so limited that species will have to evolve in place - migration will not be able to keep up with climate change

vs.

- Plants will be able to migrate sufficiently fast so that migration potential is not an issue



Plant Migration and Climate Change

2 January, 1997

What Do We Know About Plant Migration?

Evidence comes from a variety of sources:

- Paleoecological records of pollen
- Contemporary invasions
- Experimental analyses
- Modeling



Plant Migration and Climate Change

2 January, 1997

Insights from the Paleo Record

- Plant (tree) species were able to rapidly repopulate regions following glacial retreat
- Species were able to cross major barriers (mountains, lakes) with no trouble
- Two major patterns of spread observed:
 - wave-like over large areas with low relief and minimal habitat variability (e.g., E. North America)
 - from refugia in topographically complex areas (e.g., Great Basin)



Plant Migration and Climate Change

2 January, 1997

The Puzzle of Rapid Spread

Experimental and modeling analyses of actual dispersal patterns of plants suggest very limited migration potential, vs. observed rapid rates from paleo record

Solution may be rare, long distance jumps that are difficult or impossible to observe

- Limited pollen evidence
- Contemporary evidence
- Modeling - if “tail” of dispersal curve is extended, models predict rapid and accelerating migration



Plant Migration and Climate Change

2 January, 1997

Additional Insights from Fossil Record

- Long distance jumps and “outliers” are key
- There were some periods (e.g., Younger Dryas) of extremely rapid climate change, and plants successfully migrated
- Holocene migration rates were fast and then slowed, the opposite of what modeling predicts - migration may have been limited by rate of climate change



Plant Migration and Climate Change

2 January, 1997

Contemporary Invasions

- Invasions by exotic plants increasingly frequent
- Exotic plant invasions offer some insights but also differ in important ways
- Example of *Bromus tectorum* (cheatgrass)
 - invasion of Great Basin took only 40 years
 - most of spread in last 10 years of that period
 - initially 5, then close to 50 foci, then coalescence
 - an annual, rapidly dispersing weed



Plant Migration and Climate Change

2 January, 1997

Other Considerations

- Dispersal mode - does it make a difference?
 - availability of animal dispersers
 - role of human-aided dispersal
- Habitat heterogeneity and fragmentation - fragmentation lowers migration rates beyond some threshold
- Role of disturbance (fire) in facilitating invasion
- Generation time - varies among species; can be long and limit rate of migration



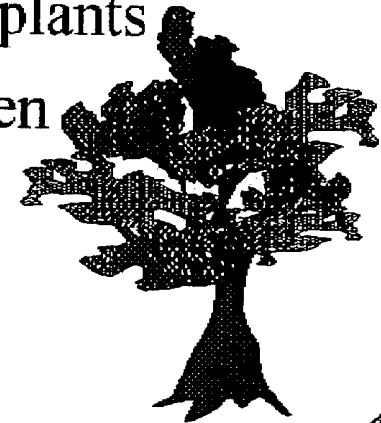
Plant Migration and Climate Change

2 January, 1997

Modeling Transient Dynamics of Vegetation Change

Dynamic Global Vegetation Models (DGVMs) are being developed as next generation of models to predict carbon cycle and ecosystem consequences of climate change and vegetation shifts

- Operate at coarse spatial scale ($0.5^\circ \times 0.5^\circ$)
- Incorporate only 5-10 functional types of plants
- Unclear how to incorporate migration given these constraints



Plant Migration and Climate Change

2 January, 1997

What Can We Say About Plant Migration in the Future?

- Dispersal capacity *per se* is not as serious a limitation as some once thought
- Habitat loss and fragmentation threaten species directly and also can restrict migration
- Outliers are key; humans establish outliers in gardens
- Capacity to disperse will vary among species; rare species may be most threatened
- Competition, maturation time, and succession may create greater lags than migration



Plant Migration and Climate Change

2 January, 1997



GLOBAL CLIMATE COALITION

L.S. BERNSTEIN

FEB 4 1997

RECEIVED

MEMORANDUM

DATE: January 31, 1997
TO: GCC Operating Committee
FROM: John Shlaes
SUBJECT: IPCC *J. Shlaes*

Please find attached information from N. Sundararaman (Secretary of the IPCC) announcing that the IPCC Technical Paper titled, **Methodological and Technological Aspects of Technology Transfer** has been reclassified as a "Special Report". The letter also asks Organizations for their nominations for Lead Authors and Contributing Authors to this report. The deadline for submission of Authors by Organizations is March 7, 1997. Please fill out the attached form and return to the GCC offices by no later than March 6 if you wish the GCC to nominate you or one of your colleagues.



GLOBAL CLIMATE COALITION

PLEASE FAX BACK TO THE GCC OFFICES AT (202) 638-1043 BY NO LATER THAN MARCH 6,
1997

GCC NOMINATION FOR IPCC AUTHORSHIP

Please fill out the relevant information below including area of expertise, experience and other information you may deem relevant as indicated by the attached IPCC cover letter.

PLEASE SUBMIT MY NAME FOR NOMINATION AS AN AUTHOR TO THE IPCC'S SPECIAL REPORT
ON METHODOLOGICAL AND TECHNOLOGICAL ASPECTS OF TECHNOLOGY TRANSFER

Please register me as a **LEAD AUTHOR** _____

Please register me as a **CONTRIBUTING AUTHOR** _____

NAME: _____

ORGANIZATION: _____

ADDRESS: _____

PHONE: _____

FAX: _____

EMAIL ADDRESS: _____

AREA OF EXPERTISE: _____

EXPERIENCE: _____

PUBLICATION(S): _____

OTHER: _____



WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



UNEP

No. 27010/M/IPCC/WG2

GENEVA, 17 January 1997

Annexes: 2

Sir/Madam,

I have the honour of informing you that the Intergovernmental Panel on Climate Change (IPCC) at its Twelfth Session (Mexico City, 11-13 September 1996) reprogrammed its earlier Technical Paper on Methodological and Technological Aspects of Technology Transfer as a Special Report. The reason for this decision was to enable the inclusion of useful information on the subject which has become available since the completion of the IPCC Second Assessment Report (1995). The paper was initiated originally at the request of the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UN Framework Convention on Climate Change (UN FCCC) and that body has been informed of the IPCC decision.

The Special Report is expected to be completed in early 1999. The schedule is under development and includes a number of expert meetings. Copies of the draft schedule and the suggested contents are attached for your reference. The Special Report is intended to assess experience on such issues as

- (i) types of transfer, technology evaluation, and options,
- (ii) sectors targeted,
- (iii) role of participants (e.g., Governments, private sector, IGOs, NGOs),
- (iv) approaches to promoting cooperation, and
- (v) issues related to capacity building.

The Special Report will also assess experience with a variety of arrangements which have brought about transfer of technology, ranging from commercial agreements among private-sector firms to transfers facilitated through support from government or multilateral institutions.

Each section of the Special Report will be drafted by a Writing Team of Lead Authors. According to the IPCC Procedures, at least one member of each Writing Team must be from the developing world. Organizations must be prepared to support *their* Lead Author(s) for participation in the drafting, revising and finalizing the chapter(s).

To: Executive Heads of International and Other Organizations

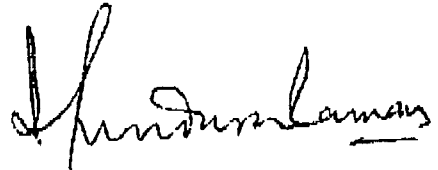
I am writing to seek nominations from your Organization for Lead Authors and Contributing Authors for the Writing Teams. A copy of the functions of an IPCC Lead/Contributing Author as described by the IPCC is attached for your information.

The nominations should include complete contact information (address, phone/fax numbers, e-mail), area of expertise, experience in that area and publication record of the nominee(s), and other information that you deem relevant. Experts nominated as Lead Authors should be willing and able to devote approximately two to three months to preparing the report in each of 1997 and 1998. Those who served as Lead and Contributing Authors during the preparation of the IPCC Second Assessment Report will be considered for inclusion in the Writing Teams.

I should be grateful to receive your Organization's nomination(s) as soon as possible but no later than 7 March 1997. Please send your nomination(s) directly to the IPCC Working Group II Technical Support Unit, attention: Dr. Richard Moss, Code YS-1, 300 E Street SW, Washington, DC, USA, fax: +1 202 358 4104, email: ipcc@usgcrp.gov. The composition of the Writing Team will be decided by the Bureau of Working Group II of the IPCC, which is responsible for the completion of the Special Report, in consultation with the Chairman of the IPCC and, as necessary, the Co-Chairmen of the other two IPCC Working Groups.

Copies of this letter are being sent to the IPCC Contact Points of your Organization, if any, for information.

With best regards,



N. Sundararaman
Secretary of the IPCC

**IPCC Special Report on Methodological Issues in Technology Transfers:
Opportunities for Technology Cooperation**

Draft Outline

I. Introduction

- A. Definition of technology transfer/cooperation
- B. Aims of technology cooperation (production/investment/innovation capability)
- C. Sources of new information
- D. Terms of reference for the report

II. Technology cooperation for climate-change adaptation and mitigation

- A. Characteristics of the climate change issue and implications for technology cooperation
 - i. Context of UNFCCC and dual goal of economic development and atmospheric stabilization
 - ii. Long time horizons and lags in both the climate and energy systems
 - iii. Integrating climate-change adaptation and mitigation with overall path of economic and technological development
 - iv. Need for wide participation and global co-operation
 - v. North-South and South-South dimensions
 - vi. Challenges of and opportunities for technological leap-frogging
 - vii. Challenges of and opportunities for private-sector involvement
- B. Technology classifications (equipment, infrastructure, and processes) relevant to climate change
 - i. Adaptation technologies
 - ii. Energy demand management technologies
 - iii. Energy supply technologies (fossil-based; renewable; and other)
 - iv. Land-use technologies (agriculture and forestry; waste management)
 - v. Mature vs. cutting edge technologies
- C. Key players and roles in technology cooperation for climate change
 - i. Players: Private firms; risk capital community; entrepreneurs; universities; technology brokerage organizations; government agencies/policymakers; IGOs; NGOs; local communities and cooperatives
 - ii. Roles: technology sources and users; transfer intermediaries; support roles

III. Types/Mechanisms of technology cooperation for climate change

This section will illustrate how can the conditions be created/improved which encourage private sector involvement in technology cooperation for sustainable energy (and other

climate) technology. It will also examine the appropriate roles for governments, and intergovernmental organizations in creating these conditions?

- A. Technology development -- joint R, D&D
- B. Transfer of information and know-how (e.g., exchange of technical personnel; information dissemination; demonstrations)
- C. Hardware transfer through private-sector business transactions (e.g., investments, subsidiaries), foreign assistance, and other mechanisms
- D. Joint activities among players (e.g., joint implementation and emissions trading; production sharing; marketing/service agreements; technology licensing)
- E. Financing support (transaction costs; insurance; bi- and multi-lateral transfers, including foreign assistance; and international financial institutions -- private sector, regional and global multilaterals, etc.)
- F. Legal/institutional support (e.g. developing rules/guidelines for protection of intellectual property, trade-secret protection, etc.)

IV. Barriers to technology cooperation and application

- A. Lack of adequate financing
- B. Different expectations of private sector and players in developing countries
- C. Institutional/legal barriers (e.g., different regulatory policies; inadequate rules for protecting intellectual property rights, trade secrets, etc.; export controls)
- D. Macro-economic barriers (e.g., failure to internalize externalities in energy and other resource prices; subsidies; uncertainty regarding prices and markets; high costs of capital in many developing countries; poverty and lack of financial resources for households/small businesses to access technologies and commercial forms of energy)
- E. Project-level barriers (e.g., lack of infrastructure/capacity, need for training; need for maintenance; replicability problems; different objectives; transactions costs)
- F. Informational barriers (e.g., isolation from markets/suppliers/investors; lack of demonstration opportunities)
- G. Cultural and attitudinal barriers

V. Case studies of successful technology cooperation and application

Case studies will be selected, using the promising list of technologies identified in the SAR and the Technologies, Policies, and Measures Technical Paper, for adaptation and mitigation technologies (energy demand management, supply, and land-use).

Each case study will be based on a common template, illustrating issues identified above relevant to each case, including:

- A. identification of opportunities for multiple benefits (promoting adaptation/mitigation while also promoting sustainable economic development, reducing other environmental problems, etc.)

- B. barriers, as above
- C. roles of different players and institutions in overcoming barriers and promoting technology cooperation (including financing support, policies/measures, etc.)
- D. potential replicability and market/economic potential to enhance adaptation or reduce emissions
- E. evaluation

Examples could include successful/unsuccessful attempts to apply various technologies, including:

- A. Replacing unsustainable traditional uses of bio-fuels with modern energy carriers
- B. Modern bio-energy and other renewable energy forms
- C. Energy efficiency improvements in buildings, industry, and transportation end-use sectors
- D. Improvements to agricultural practices (e.g., low-tillage agriculture)
- E. Large-scale substitution of CFCs under the Montreal Protocol

VI. Issues for future analysis and assessment

VII. Conclusions

**IPCC Special Report on Technology Transfer
Preliminary Schedule**

1997

January 17

Letter soliciting nominations of lead authors sent from IPCC Secretariat.

March 7

Author nominations due to WG II TSU from governments.

March 10-26

WGII TSU compiles nominations and sends them to IPCC Chair and Secretary. WGII Bureau, and Co-Chairs of other Working Groups, who review nominations and send comments to the TSU and WG II Co-chairs. Author team finalized by March 26.

March 26-27

Letters sent to authors and governments from IPCC Secretary, notifying them of final author selection.

May 6-8

First Lead Authors' Meeting: review/revise draft outline and common definitions/concepts; develop detailed workplan for preparation of the report.

May 12 - September 12 (17 weeks)

Authors prepare zero-order draft. Authors and WG II Bureau identify potential expert reviewers of zero-order draft; authors distribute chapters to TSU and reviewers by September 12.

September 15 - October 13 (4 weeks)

Informal expert review of zero-order draft. Expert comments due to WG II TSU by October 13.

October 27-29

Second Lead Authors' Meeting.

October 30 - December 12 (6 weeks)

Authors revise zero-order drafts; prepare first drafts.

December 15-19

TSU collates first drafts, distributes to expert reviewers for formal expert review.

December 22 - January 31, 1998 (6 weeks)

Formal expert review of first draft; expert comments due on January 31.

1998

February 2-6

TSU collates comments and forwards them to Lead Authors.

February 24-26

Third Lead Authors' Meeting.

February 27 - April 24 (8 weeks)

Revisions by lead authors in response to review comments; second drafts due to WG II TSU by April 24. TSU coordinates preparation of list of government contacts, with IPCC Secretariat, for government review.

April 27 - May 8

TSU production of government-review draft, with distribution to governments.

May 11 - July 17 (10 weeks)

Government/Organization Review.

July 20-24

TSU collates comments and distributes them to lead authors and WG II Bureau.

August 4-6

Final Lead Authors' Meeting

August 10 - September 25 (7 weeks)

Authors make final revisions to report in response to Government/Organization review comments.

September 28 - October 9

TSU finalizes and formats final draft and sends to governments for pre-plenary review.

December 1-3

WG II Plenary for review and acceptance of report, approval of Summary for Policymakers.

February 1999

Special Report distributed.

**TASKS AND RESPONSIBILITIES FOR
LEAD AUTHORS, CONTRIBUTORS AND EXPERT REVIEWERS OF
IPCC REPORTS
AND IPCC GOVERNMENT CONTACTS**

1. LEAD AUTHORS (LAs)

Function: To produce designated sections addressing items of the work programme on the basis of the best scientific and technical information available.

Comment: Lead authors will typically work as small groups which have responsibility for ensuring that the various components of their sections are brought together on time, are of uniformly high quality and conform to any overall standards of style set for the document as a whole.

The task of lead authors is a demanding one and in recognition of this the names of LAs should appear prominently in the final report. During the final stages of report preparation, when the workload is often particularly heavy and when lead authors are heavily dependent upon each other to read and edit material, and to agree to changes promptly, it is essential that the work should be accorded the highest priority.

The essence of the lead authors' task is synthesis of material drawn from the peer reviewed literature, generated at workshops or submitted by contributors. Lead authors may not necessarily write original text themselves, but they must have the proven technical ability to develop text that is scientifically sound and that faithfully represents, to the extent that this is possible, contributions by a wide variety of experts. The ability to work to deadlines is also a necessary practical requirement.

Principles Governing IPCC Work² require LAs to record views which cannot be reconciled with a consensus view but which are nonetheless scientifically or technically valid.

Lead authors may convene meetings with contributors, as appropriate, in their preparations of their sections and to suggest any workshops in their relevant areas to the Subgroup or Working Group co-chairs.

² See appendix A.

2. CONTRIBUTORS

Function: To prepare technical information in the form of text, graphs or data for assimilation by the lead authors into the draft section.

Comment: Input from a wide range of contributors is a key element in the success of IPCC assessments, and the names of all contributors should be acknowledged in the reports. Contributions are sometimes solicited by Lead Authors but unprompted contributions are positively encouraged.

Contributed material may be edited, merged and if necessary, amended, in the course of developing the overall draft text.

3. EXPERT REVIEWERS

Function: To comment on the accuracy and completeness of the scientific/technical content and the overall scientific/technical balance of the drafts.

Comment: Expert reviewers will comment on the text according to their own knowledge and experience. They may be nominated by Governments, national and international organizations, Working Group Bureaus, Lead Authors and contributors.

4. GOVERNMENT REVIEW

Function: To comment on the accuracy and completeness of the scientific/technical content and the overall scientific/technical balance of the drafts.

Comment: Government review will typically be carried out within and between a number of Departments and Ministries. Countries may convene their own seminars and workshops to review draft reports and advise on comments. For administrative convenience, countries should nominate a single IPCC Government Contact.

APPENDIX A

PRINCIPLES GOVERNING IPCC WORK

Introduction

1. The IPCC shall concentrate its activities on the tasks allotted to it by the relevant WMO Executive Council and UNEP Governing Council resolutions and decisions.

Organization

2. The IPCC Bureau shall reflect balanced geographic representation. IPCC Working Groups and any task forces established by the Plenary shall reflect balanced geographic representation with due consideration for scientific and technical requirements.
3. IPCC Working Groups and any task forces constituted by the Plenary shall have clearly defined and approved mandates and work plans as established by the Plenary, and shall be open-ended.

Participation

4. Invitations to IPCC Plenary, Working Group and task force sessions shall be extended to Governments and other bodies by the Chairman of the IPCC.
5. Experts from WMO/UNEP Member countries or international, intergovernmental or non-governmental organizations may be invited in their own right to contribute to the work of the IPCC Working Groups and task forces. Governments should be informed in advance of invitations extended to experts from their countries and if they wish may nominate additional experts.

Procedures

6. In taking decisions, drawing conclusions, and adopting reports, the IPCC Plenary and Working Groups shall use all best endeavours to reach consensus. If consensus is judged by the relevant body not possible: (a) for decisions on procedural issues, these shall be decided according to the General Regulations of the WMO; (b) for conclusions and adoption of reports, differing views shall be explained and, upon request, recorded.
7. Conclusions drawn by IPCC Working Groups or task forces are not official IPCC views until they have been discussed and accepted by the IPCC Plenary.
8. Invitations to IPCC Plenary, Working Group and task force sessions should be extended at least six weeks in advance.

9. Major reports, basic documentation and other available reports for consideration at IPCC Plenary and Working Group sessions shall be made available by the IPCC Secretariat four weeks in advance, to the extent possible, in all official UN languages. Working papers shall be circulated as far in advance as possible.
10. Interpretation into all official UN languages should be provided for all IPCC and Plenary and Working Group sessions.
11. The sessions of IPCC working Groups and task forces shall be co-ordinated with other international meetings, including sessions of the INC and UNCED Preparatory Committee.
12. These Principles are to be reviewed at least annually and amended as appropriate.

SCIENCE AND TECHNOLOGY ASSESSMENT COMMITTEE
GLOBAL CLIMATE COALITION

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