

WORLD CLIMATE PROGRAMME PUBLICATIONS SERIES

WMO/UNEP INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

REPORT OF THE SECOND SESSION
OF THE WMO/UNEP INTERGOVERNMENTAL PANEL
ON CLIMATE CHANGE (IPCC)

Nairobi, 28-30 June 1989

IPCC - 3



World Meteorological
Organization



United Nations Environment
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LIST OF ACRONYMS

REPORT OF THE SECOND SESSION OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

1. ORGANIZATION OF THE SESSION (agenda item 1)

1.1 Opening of the session (agenda item 1.1)

1.1.1 Prof. Bert Bolin, the Chairman of IPCC, called the meeting to order at 10.10 hours on Wednesday, 28 June 1989, in the UNEP Headquarters building in Nairobi, Kenya.

1.1.2 The list of participants is given in Annex I to this report.

1.1.3 In welcoming the delegates to the UNEP Headquarters, to Nairobi and to Kenya, Dr. M.K. Tolba, the Executive Director of UNEP, hailed the fruitful alliance between WMO and UNEP. The firm commitment of Prof. Obasi, the Secretary-General of WMO, coupled with the determination of UNEP leadership has resulted in a partnership which is helping to unify the scientific and policy-making communities of the world to lay the foundation for effective, realistic and equitable action on climate change.

The Executive Director stated that the impacts of climate change and global warming would have serious consequences for humanity. In Egypt alone, global warming could flood much of the Nile Delta and drown 70 centuries of civilization in less than one, and could inundate one fifth of the nation's arable land.

He expressed his satisfaction that since the first meeting of the Panel in November 1988, its three Working Groups had been hard at work. It would be desirable for the Panel's report to be ready by August 1990 for presentation to the Second World Climate Conference and to the United Nations General Assembly. It should be borne in mind that both the Governing Council of UNEP and the Executive Council of WMO expected the first report of IPCC to form the basis for international negotiations on a global convention on climate change. The report can also play a valuable guiding role for the large number of conferences, meetings and symposia on climate change being held all over the world. For all of these reasons, the report should be completed in good time.

Dr. Tolba stressed that independent but swift actions by governments reflected the anxiety of the public on the issue of global warming and other atmospheric environment issues: during 1989, the Montreal Protocol entered into force on 1 January; in March at The Hague, 24 governments called for tough measures to combat ozone depletion and global warming; and in April, in Helsinki, 81 countries committed themselves to the complete phase-out of chlorofluorocarbons by the turn of the century, if not sooner. He added that all the 103 countries attending the 15th session of the UNEP Governing Council (Nairobi, 15-26 May 1989) signalled their desire to increase the efforts to protect the global environment and supported fully the work of IPCC.

Developing countries needed to be assured of full participation in all actions for limiting the emission of greenhouse gases and for preparing for global warming. Dr. Tolba noted with appreciation the increased participation of developing countries in the second session of IPCC and the active contribution by some to the various sub-group activities. He, however, observed that more remains to be done in this respect and added that financial and technical assistance, education and other concrete support mechanisms were needed immediately. This would necessitate large sums of money. Dr. Tolba noted with concern that thus far, WMO and UNEP had provided the bulk of the financial support to enable developing countries to participate in the Panel's work. There was little money left in the fund established for the Panel. Even if all the pledges were paid, the expenses for 1989 would barely be covered; nothing would be left for 1990.

Decisions also had to be reached on the role of the Panel's Bureau until the tabling of the IPCC report in 1990, as well as the role of the IPCC thereafter. The session should review the progress made by the three Working Groups so as to identify gaps and to revise workplans for the timely completion of the first assessment report.

The issuance of the report would only be the beginning of a far more arduous task. To tackle the problem of climate warming effectively, radical changes would be necessary in international relations, trade, technology transfer, and bilateral and multilateral strategies. The Panel's continued work would be the only guarantee of concerted response to the global threat of climate change.

1.1.4 In his address to the session, Prof. G.O.P. Obasi, the Secretary-General of WMO, recalled the events that had taken place since the Panel met in November 1988 such as resolution 43/53 of the UN General Assembly on preserving global climate, the Ottawa meeting on legal aspects and the The Hague meeting on the Protection of the Global Atmosphere. Political leadership in many parts of the world is responding to the widely-perceived environmental threat of climate warming with a vigour that could not be foreseen a few months ago. In this context, it is imperative that the political leaders be given adequate and reliable information - the unvarnished truth - for them to make timely and effective decisions for the common good.

Professor Obasi said that the Executive Council of WMO, in its last session (Geneva, 5-16 June 1989) had approved three important resolutions on:

- (a) the need for expanding the requisite knowledge base, with speedy and effective actions, through the creation of a special fund for climate and atmospheric environment studies,
- (b) further steps towards the full and equal partnership of the developing world in the task of expanding and contributing to that knowledge base, and
- (c) the need "for the Secretary-General of WMO in co-operation with the Executive Director of UNEP to begin preparations for negotiations on climate change, taking into account the work of the IPCC" with actual negotiations to begin after IPCC's first assessment report is received.

Noting that the demands for climate predictions on regional and smaller scales are increasing, he asked for help from the Panel in improving climate monitoring and accelerating climate research; rapid progress could be achieved with increased funding.

Turning to the problem of the inadequate level of participation from the developing countries in IPCC activities, he suggested that there are two aspects of the problem: one is to ensure that invited experts from the developing countries are given the travel assistance to attend the meetings of the sub-groups and the Working Groups; and the other is to ensure that these nations develop within themselves the capability to contribute to the scientific issues associated with climate change, and to formulate their policies in a manner consistent with their national aspirations for economic development and betterment of living standards.

The former required allocation of travel funds. He suggested that, as a first step, specific countries could be identified for travel assistance. They could include those

- (a) that are most likely to be seriously affected by global warming and the consequent sea level rise,
- (b) where national actions could have a major impact on carbon dioxide emissions and uptake,
- (c) with special expertise and
- (d) that are centres of major relevant regional projects, such as ACMAD, with participation of more than one nation.

Professor Obasi said that several other UN agencies have expressed willingness to second staff to the IPCC Secretariat to handle the latter's increased workload. He referred to the WMO Executive Council's action in endorsing his strong support for the IPCC Secretariat, in co-operation with the Executive Director of UNEP.

He brought to the attention of the Panel the desire of the WMO Executive Council to have the IPCC first (1990) assessment report ready no later than September 1990, in time for the Second World Climate Conference (SWCC). He announced the joint WMO/UNEP appointment of Prof. J. Dooge of Ireland as the Programme Committee Chairman, and that of Mr. Howard L. Ferguson of Canada as the Co-ordinator, for the SWCC.

1.1.5 In his opening remarks, Prof. Bolin said that the primary objective of IPCC, in making its first assessment, is to produce a document which could provide guidelines for the formulation of global policy and which would enable the nations of the world to contribute to this task. He said that the complexity of the task was such that a fine balance would have to be struck between available scientific evidence for climate change and the uncertainties in that knowledge base. Further, the sense and the significance of the balance would have to be conveyed in unambiguous terms.

There are some key issues on which much uncertainty exists. For example, how has climate changed in the last 100 to 150 years? How much have human activities contributed to such changes? What will be the regional distribution of the expected climate change? Despite the uncertainties, there is little doubt about the role of human intervention and its potential in causing these changes.

Thus, caution has to go hand in hand with prudence. While the model results of the warming and their possible attendant effects have to be interpreted with care, there should be no delay in preparing to act to safeguard the future of the planet. Even with the Montreal Protocol and its contemplated strengthening, the development towards a warmer climate will not be stopped. And the obvious actions will not suffice to avoid the impacts but would delay the change thus providing time for developing more adaptation/limitation options.

The IPCC first assessment report should include a proposal for action. The work of IPCC should now be viewed as the first step in a series that the community of nations will be taking over the years. Consideration of a convention on climate change is such a first step. The report will include the elements of a possible framework convention. One of the effective ways of developing the elements would be to produce an outline (not a draft) of a convention.

Turning to the work plan of IPCC, Professor Bolin said that part of the task of this session would be to prepare carefully for the report, specifying who will do what and when. The schedule that IPCC has been working towards is the completion of its first report by September/October 1990. In light of the requests of the UNEP Governing Council and the WMO Executive Council (see references 1 and 2) and in view of the desires of the Executive Director of UNEP and the Secretary-General of WMO, this schedule may have to be re-examined.

IPCC's first report will contain the 20-page summaries for policy-makers to be produced by the Working Groups and an overall integrated summary of these placed in perspective. Professor Bolin suggested that the integrated summary be written by a drafting group consisting of the officers of IPCC and the chairmen of the Working Groups. He asked that this plan of his be endorsed by the Panel.

Prof. Bolin said that the reports of the Working Groups (each approximately 200 pages long) should be the responsibility of the groups themselves and should not be discussion items at the session which would approve the report. But the (three) summaries for the policy-makers and the integrated summary should be matters of discussion and amendment at that session.

He conveyed to the Panel the offer of the Government of Sweden to host that session of the IPCC which will approve its first assessment (1990) report in Stockholm in late August/early September 1990.

1.2 Approval of the agenda (agenda item 1.2)

The provisional agenda was approved as submitted. However, in the course of the session several members had expressed a wish to become core members of one or more of the Working Groups. Several international organizations had offered experts to participate in the peer review process. These two items, namely, the core membership of the Working Groups and the contributions of international organizations (other than UNEP and WMO) were discussed under agenda item 6 (Other Matters). The agenda given in Annex II, reflects these and other additions.

1.3 Programme of work of the session (agenda item 1.3)

The Panel decided that its working hours would be 09.30 - 12.30 and 14.30 - 17.30 hours with appropriate breaks. It further decided to arrive at decisions by consensus.

The Soviet delegation registered its displeasure at the lack of simultaneous interpretation into Russian. They pointed out their difficulty to contribute to the discussions in a fruitful manner as a result. This was especially regrettable in view of their Chairmanship of Working Group II.

The Panel shared the concern of the delegation of the USSR and the Chairman expressed his appreciation for the co-operation shown by that delegation despite the inconvenience.

The Deputy Executive Director of UNEP explained that the circumstances were outside of their control and apologized for the inconvenience. He also expressed his appreciation for the co-operation shown by the Soviet delegation.

2. REPORT ON THE FIRST SESSION OF THE IPCC BUREAU (agenda item 2)

2.1 IPCC Chairman's briefing on the Bureau session (agenda item 2.1)

Briefly summarizing the report of the first session of the IPCC Bureau (see reference 3), Professor Bolin recalled that the Bureau had reviewed the plans of the Working Groups. He further recalled the concern expressed by the Bureau on the inadequate participation of the developing countries in IPCC activities. The Bureau had agreed that the IPCC report to the 44th (1989) session of the of the UN General Assembly would contain the arrangements and the plans of IPCC for its work. With regard to the IPCC budget and other support, the Bureau had reviewed the 1989 IPCC budget and had found it to be reasonable.

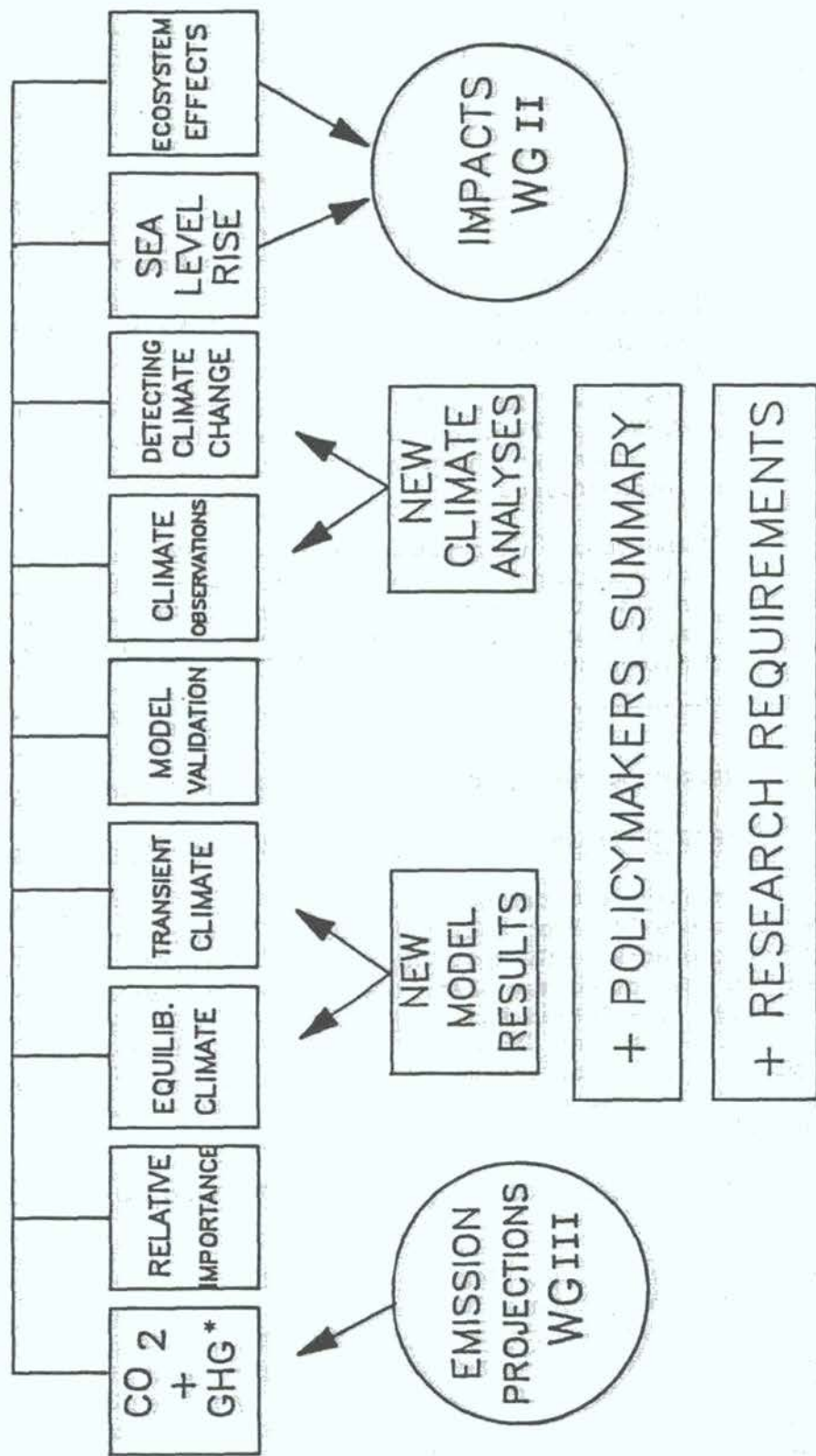
2.2 Update report by the Chairman of Working Group I (Science)
(agenda item 2.2)

2.2.1 On behalf of Dr. John Houghton, the Chairman of Working Group I, Dr. G.J. Jenkins presented the report and the update. The report, it may be recalled, had been presented to the IPCC Bureau in February 1989. (For a summary of the report to the Bureau, see reference 3.) Since then, some of the sections had been modified so that there would be 11 sections in all. The structure of the report, and areas where new work will be undertaken and special interaction needs with Working Groups II and III have been identified, are shown in Figure 1. The listing of lead authors and work plans for the different sections appear in Figures 2 (a), 2 (b) and 2 (c).

IPCC Working Group I

SCIENTIFIC ASSESSMENT OF CLIMATE CHANGE

Structure of 1990 Report to IPCC



* GHG: Greenhouse gases (other than CO₂)
The numbers I-II refer to the sections.

Figure 1

SECTION 1

GREENHOUSE GASES AND OTHER FORCING AGENCIES

Lead Authors: WATSON
SIEGENTHALER/OESCHGER
RODHE

- * Meeting of section lead authors
Brocknell, 25 April 1989
- * Meeting of contributors
Berne, 11-13 September 1989
Stockholm, September 1989

New areas discussed:

- * Biosphere feedbacks of CO₂, CH₄
- * Anthropogenic aerosols as CCN
- * Ecosystem flux measurements

Liaison with WG3 (Emissions)

- * Scenarios from US/NL SG
Bilthoven 7/8 April 1989

SECTION 2

RELATIVE IMPORTANCE OF CLIMATE FORCING AGENCIES

Lead Authors: MORCRETE
RAMANATHAN

- * Meeting of contributors
Reading, UK, 5 August 1989

New areas discussed:

- * Revised calculations of relative effect of gases
- * CFC substitutes

SECTION 3

PROCESSES AND MODELLING

Lead Authors: CUBASCH
CESS

- * Meeting of section lead authors
New York, 15 May 1989
- * Next meeting
FRG, October 1989

New areas discussed:

- * Review of critical processes
- * Details of models used for climate predictions

SECTION 4

HOW BIG ARE POTENTIAL EFFECTS

Lead Authors: MITCHELL
TOKIOKA
MANABE
MELESHKO

- * Contributors meeting
Amherst, 13 May 1989
- * Contributors workshop
Brisbane, December 1989

Updated areas:

- * Paleo-analog and GCM modelling
- evaluation
- * Effects of critical feedbacks
(eg. cloud)
- * Changes in extremes

Figure 2 (a)

SECTION 5

VALIDATION OF CLIMATE MODELS

Lead Authors: GATES
ROWNTREE
ZENG

Updated areas:

- * Simulation of extremes
- * Simulation of feedbacks
- * Response to anomalies

SECTION 6

TRANSIENT CLIMATE CHANGE

Lead Authors: SCHLESINGER
BRYAN

- * Contributors meeting
Amherst, 13 May 1989
- * Contributors workshop
Brisbane, December 1989

New areas discussed:

- * Simple transient models to investigate policy scenarios
- * Coupled A-O GCMs - differences from equilibrium results
- * Ocean circulation changes

SECTION 7

CLIMATE OBSERVATIONS

Lead Authors: FOLLAND
KARL/TRENBERTH
VINNIKOV

- * Section lead authors meeting
Washington, March 1989
- * Contributors meeting
Amherst, 13 May 1989
- * Contributors workshop
UK, 29 Nov - 1 Dec 1989

New areas discussed:

- * Changes in frequencies of extremes (temp, ppn)
- * Temperature corrections (urbanisation, screens)
- * Cryosphere observations

SECTION 8

COMPARISON OF OBSERVATION AND SIMULATIONS

Lead Authors: WIGLEY
BARNETT

New areas discussed:

- * Natural variability
- * Greenhouse signal detection
- * Climate sensitivity

Figure 2 (b)

SECTION 9

SEA LEVEL RISE

Lead Authors: WARRICK
OERLEMANS

- * Section lead authors meeting
Utrecht, March 1989
- * Contributors workshop
Reading, UK, 25-26
September 1989

New areas discussed:

- * Estimation of contributions to
sea level change
- * Estimation of uncertainties

SECTION 10

EFFECTS ON ECOSYSTEMS

Lead Authors: MELLILO
SALATI
SINHA
WOODWARD

Liasion with WG2:

- * Interaction with Section B/WG2
Birmingham, 21 April 1989
- * Interaction with Section A/WG2
Bracknell, 16 May 1989
Toronto, 5-7 July 1989
- * Scientific basis for impacts
assessments carried out in
WG2 report

SECTION 11

RESEARCH REQUIREMENTS

Lead Authors: McBEAN (JSC)
McCARTHY (IGBP)

Figure 2 (c)

2.2.2 The first meeting of Working Group I took place at Nuneham Park, UK, on 24-26 January 1989. The contents and structure of the 1990 report to IPCC was discussed and agreed. The report would be wide ranging, but particular attention would be given to regional climate predictions, changes in extreme events, transient climate change, and uncertainties and the communication of their import to policy-makers. The lead authors were selected from among those proposed at the meeting. They met at Princeton, USA, on 7-8 March 1989. Some restructuring of the report was agreed, in particular on separating the roles of equilibrium and transient models and to compare observations with model predictions.

2.2.3 Each section will endeavour to incorporate its own peer review process during its preparation. In addition, once the complete report has been agreed upon at the lead authors meeting (February 1990), it will be sent to all IPCC countries with a request to arrange for a further scientific peer review. Comments received will be discussed at the Working Group I Plenary meeting in mid-1990, which will agree on the final report of the Working Group to IPCC and to the Second World Climate Conference. The Plenary will also discuss and approve a 20-page draft summary of the report, which would bring out the aspects of special relevance to policy decisions. In order to facilitate this process, it would be desirable to hear from policy-makers what questions they wish to have addressed.

2.2.4 Interaction with the other two Working Groups has been an on-going process. Interaction with Working Group III (WG III) has been through the Bilthoven meeting (April 1989) where emissions scenarios from the Steering Committee of WG III were presented. Discussion would continue with the Steering Committee and revised emissions scenarios would be awaited.

2.2.5 Involvement of developing countries has been frustrated by problems with travel plans, visas etc. This reflects in part the speed with which meetings have had to be set up. The Working Group has the agreement of a number of developing country scientists to contribute to the report and hopes for greater success in involving them in future drafting workshops.

2.2.6 With regard to the areas which have been chosen on scientific grounds for a study of regional effects, several countries enquired whether it would be possible to select additional areas or widen the boundaries of existing areas. Dr. Jenkins pointed out that the investigation of regional changes predicted by model results was being carried out to show, in a general way, the capability of models to identify regional changes by choosing a few climatologically different areas for study. The purpose was not to provide reliable regional predictions for use in impact assessments. Thus, the inclusion of further regional areas in the study would be unlikely to contribute significantly to the conclusion of the study. However, the possible changes in frequency and intensity of tropical cyclones would be addressed in the report of the Working Group. It was also confirmed that the general topic of climate variability would be discussed in detail in the report.

2.2.7 Several countries supported the view that, although the report of the Working Group would not be defining a climate change research programme, the opportunity should not be lost to make forceful recommendations about support for research and monitoring in the document. In this context, it is essential to stress the importance of ongoing research and monitoring activities.

2.2.8 Concern was expressed about the inclusion of ecosystems effects in the plan of the Working Group, while the impacts would be dealt with by Working Group II. Dr. Jenkins explained that liaison between Working Groups I and II is excellent; two meetings had already taken place and another was planned.

2.2.9 Responding to a suggestion, Dr. Jenkins agreed that, whereas uncertainties attach to all model predictions, categorization of the degree of certainty (for example, as high, medium or low) for predictions of global or regional, mean or extreme, changes would be highly helpful.

2.2.10 With regard to the peer review process, a question was raised whether non-atmospheric scientists such as statisticians and physicists would be invited to participate. Dr. Jenkins responded that the lead authors would be submitting material to peer reviewers from their own and other disciplines.

2.3. Update report by the Chairman of Working Group II (Impacts)
(agenda item 2.3)

2.3.1 On behalf of Prof. Ju.A. Izrael, the Chairman of Working Group II, Dr. S.S. Hodkin presented the report and the update.

2.3.2 In accordance with the decision of the first session of the IPCC, the first meeting of the Working Group was held in Moscow from 2 to 3 February 1989. The task of the Working Group is to assess the possible global and regional impacts of anticipated climate change on natural and managed ecosystems, the space-time scales of these impacts and their possible socio-economic consequences for the major fields of human activity. These assessments are to be the basis for the report of the Working Group to be submitted in 1990 to IPCC.

2.3.3 Whilst being aware of their responsibility for the preparation of assessments of possible socio-economic impacts of climate change, the Working Group realized that the reliability and well-foundedness of their assessments would largely depend on the evaluation of the climate change scenarios to be prepared by Working Group I (Science).

2.3.4 Since the conclusions of Working Group II would, in turn, be the basis for Working Group III's recommendations on the development of response strategies, it is vital for all the groups to work in close liaison in view of their great responsibility to the world community as regards the recommendations to be submitted to the UN General Assembly in 1990.

2.3.5 The Working Group was also aware of the concern of Working Group I (Science) about the lack of time for substantially improving the climate change scenarios. Hence, considering the short time available for the preparation of the first IPCC assessment report to the WMO Executive Council and UNEP Governing Council, the group decided to proceed with its work on the basis of existing climate change scenarios, with the hope that efforts would be made to reach the final conclusions and recommendations of IPCC based on improved scenarios.

2.3.6 The Working Group decided at its first meeting to form six sub-groups as indicated below:

- Sub-group A: Agriculture and forestry;
- Sub-group B: Natural terrestrial ecosystems;
- Sub-group C: Hydrology and water resources;
- Sub-group D: Energy, industry, transport, settlements and human health;
- Sub-group E: World oceans and cryosphere;
- Sub-group F: Steering Committee.

2.3.7 The Working Group decided that the Steering Committee should assist its Chairman in co-ordinating the work of the five other sub-groups and should include experts from USSR, USA, Australia, UK, Canada, Algeria, Japan and IIASA. (This does not, however, preclude the Chairman from nominating other participants to the Steering Committee.)

2.3.8 Because of the shortness of time, the Working Group agreed that all its sub-groups should work on the basis of the same scenarios of climate change. It authorized the Steering Committee to work closely with Working Group I to provide all the sub-groups with unified scenarios of anticipated climate change, so that all sections of the Working Group report would be consistent and based on the same scenarios.

2.3.9 It was also decided that each sub-group should assess the socio-economic impacts in its area of responsibility.

2.3.10 The sub-groups met subsequently and discussed the main objectives for the assessment of environmental and socio-economic impacts of climate change, and selected specific elements for inclusion in the report, and identified authors to draft each of the sections.

2.3.11 As decided at the first session of the Working Group, a meeting of the co-chairmen of its sub-groups was held in Moscow (18-19 May 1989) to prepare an outline of their respective sections. At this meeting, the co-chairmen discussed the principles, general structure and basic content of the report. In line with the recommendations of the IPCC Bureau, it was agreed that the report should not exceed 200 pages and should cover all the topics equally, and that the final version should be submitted to IPCC in May 1990.

2.3.12 Reiterating the view of the first session, the co-chairmen expressed their concern at the absence of recommendations from Working Group I on climate change scenarios. They particularly stressed the need for an analysis from Working Group I of all existing scenarios and assessments of possible climate change obtained using both numerical modelling methods and empirical analogue methods of analyzing the past, present and future climates.

2.3.13 The structure of the report was examined and approved as given in Table 1.

Table 1

	<u>Number of pages</u>
<u>Executive summary</u>	20
Yu.A. Izrael	
<u>Section I*</u>	
Prediction of future climate, including analogue methods, recommendations on their application	25
<u>Section II</u>	
Agriculture, forestry and land-use M. Parry, G. Mendzhulin, S. Sinha	40
<u>Section III</u>	
Environmental and socio-economic impacts of climate change on natural ecosystems K. Dawson, S. Seymonov	25
<u>Section IV</u>	
Hydrology and water resources I. Shiklomanov, H.F. Lins	30
<u>Section V</u>	
Energy, industry, transport, settlements, human health M. Hashimoto, M. Styrikovich	40
<u>Section VI</u>	
World oceans and coastal zones A. Tsyban, J. Titus	25
<u>Section VII</u>	
Climate change and cryosphere (permafrost issues) USSR, Canada	20

Structure and Lead Authors of the Report of Working Group II (Impacts)

(* See also para 2.4.16)

2.3.14 Considering that the sensitivity of different territories and systems to climate change needed to be analyzed, and that, because of the time limit, Working Group I was not able to submit new climate change scenarios, the co-chairmen agreed that a short section (Section I of Table 1) should be included in the Working Group II report summarizing the main scientific results of climate change research and containing recommendations on their use to ensure a unified approach to preparing the different sections of the report.

2.3.15 Concern was expressed at the lack of adequate coverage in the report of the Southern Hemisphere and of Africa. The co-chairmen agreed that the consequences of climate change for these areas and especially for developing countries needed to be covered in greater depth.

2.3.16 The co-chairmen also advocated wider representation of developing countries in the work of preparing the report, since, when forming the IPCC Working Groups and their sub-groups, great importance had been attached to the broadest possible representation of these countries in the work of IPCC.

2.3.17 The co-chairmen agreed that the problems of the cryosphere, including the permafrost, should be covered in a separate section. Thus the task of sub-group E (para. 2.3.6) was divided into two parts : (a) world oceans and coastal zones and (b) cryosphere including the special problems associated with permafrost. Appropriate references to the cryosphere could, however, be made under the world oceans and coastal zones section also.

2.3.18 The Panel agreed that peer reviews, as in the case of Working Group I, should be undertaken.

2.3.19 Many members expressed the view that a session of the Working Group would be desirable in October/November of 1989 to be held, if possible, in Geneva.

2.3.20 The representative of IGBP offered the assistance of the Programme to the Working Group in formulating future research requirements.

2.4 Update report by the Chairman of Working Group III (Policy) (agenda item 2.4)

2.4.1 Dr. F.M. Bernthal, the Chairman of Working Group III, presented the report and the update.

2.4.2 The Working Group met in January 1989 and established four sub-groups in the areas of: (1) Energy and Industry, co-chaired by China and Japan; (2) Agriculture and Forestry, co-chaired by the Federal Republic of Germany and Zimbabwe; (3) Coastal Zone Management, co-chaired by the Netherlands and New Zealand; and (4) Resource Use and Management, co-chaired by Canada, France and India. Also established in January was the Steering Committee to co-ordinate the work of the sub-groups and to undertake cross-cutting tasks such as development of emissions scenarios to be used by the sub-groups and the other two Working Groups, and consideration of response strategy implementation mechanisms. Thirty-three countries and eleven international organizations attended the meeting.

2.4.3 The sub-groups met from 8 to 9 May 1989 in Geneva; a meeting of the Steering Committee followed from 10-12 May also in Geneva. The meetings of the sub-groups demonstrated much progress and co-operation, which is expected to continue. The Steering Committee agreed on a multidisciplinary approach to consider legal, institutional and other implementation processes. These implementation measures would be considered at a meeting of the Working Group in October 1989, which would be open to all governments and relevant international organizations.

2.4.4 The Energy and Industry Sub-group (EIS) heard in-depth reports from five countries, the IEA and UNEP. The presentations revealed the important relationships between greenhouse gases and individual economies. Analytical tools and various models had been discussed at an earlier (10-11 April) meeting of experts in Paris. A detailed nine-month workplan to develop global reference, and options up to the year 2010, was agreed to. The EIS reached substantial consensus on the importance of improving energy efficiency in the short-term and reducing carbon intensity of energy sources in the longer-term. The papers provided a valuable information base and an excellent introduction to important factors in long and short-term policy options. The need to increase contact with the developing countries and centrally-planned economies was stressed.

2.4.5 The Agriculture, Forestry and Other Human Activities Sub-group (AFOS) agreed on a very substantial workplan including three forestry workshops and one agricultural workshop. The forestry workshops would focus on the role of tropical, temperate and boreal forests as sources and sinks for carbon dioxide. The agricultural workshop would seek to identify baseline emissions/uptake of methane (CH_4), nitrous oxide (N_2O) and carbon dioxide (CO_2) and possible reduction strategies. AFOS work is scheduled for completion in April 1990. The group is working in co-ordination with FAO in these efforts.

2.4.6 The Coastal Zone Management Sub-group (CZMS) adopted a workplan which includes two workshops on adaptive options and associated costs for sea-level rise induced by climate change. CZMS will hold workshops in the United States in November 1989 and in Australia in February 1990. Its work is scheduled for completion in May 1990.

2.4.7 The fourth sub-group, the Resource Use and Management Sub-group (RUMS), adopted a workplan calling for one workshop to which papers would be invited on water resources, forestry, agriculture, fisheries, animal husbandry, salinization and desertification, unmanaged ecosystems and land use management. The workshop would be held in Geneva from 30 October to 1 November 1989. RUMS work is scheduled for completion in April 1990.

2.4.8 The focus of the Steering Committee's discussion on emissions scenarios was the presentation from the Netherlands and the United States of three scenarios. These correspond to the radiative equivalent of a doubling of the atmospheric concentration of carbon dioxide from its pre-industrial value assumed to occur by the years (a) 2030, (b) 2060 and (c) 2090 respectively and, in the case of (c), stabilizing thereafter. The need for other scenarios was discussed but decisions were deferred. The Committee agreed that the expert group on scenarios should work with Working Group I on developing new scenarios and answering questions on positive and negative feedbacks. The Committee discussed trade-offs among emissions reductions, technological

changes, population growth, and growth in per capita GNP. The Japanese delegation presented an analysis which implies that a technological revolution would be required to stabilize the atmosphere by the year 2090, if world economic growth is to be maintained at acceptable levels.

2.4.9 The Steering Committee devoted a substantial portion of the meeting to discussing a timetable and procedure for consideration of several implementation measures. It finally adopted a workplan to examine a range of potential measures to implement response strategies to climate change including: legal measures; technology transfer and development; financial measures; public education and information; economic (market) measures. The Steering Committee will examine both existing and new legal processes, including the elements of a framework convention on climate change.

2.4.10 The Working Group agreed that Canada, Malta and the United Kingdom should act as co-ordinators for legal measures; France and the Netherlands for financial measures; India and Japan for technology transfer and development; China and the United States for public education and information; and Australia and New Zealand for economic measures. The task of the co-ordinators, it was further agreed, should be to provide a faithful summary of views submitted by participating countries. As agreed, the Chairman of Working Group III had invited all members of the WMO and UNEP and relevant international organizations to submit papers on the five topics by 15 August 1989. In October 1989, the Working Group would meet to discuss the summary papers and develop that portion of the report for the IPCC.

2.4.11 The Working Group had recognized from the outset the very great importance of full participation by developing countries in all activities of the Working Group and, in fact, of the IPCC. The concerns of the developing countries are being addressed in all the sub-groups of Working Group III and in the consideration of the implementation strategies. Dr. Bernthal invited the Panel to especially note the section of the May report (reference 4) of the Steering Committee devoted to this issue. The report had recommended several immediate practical steps.

2.4.12 Dr. Bernthal also indicated the possible direction of work on response strategies following completion of the IPCC's 1990 report. First, as had already been mentioned, the conclusions of the report would be the starting point for formal negotiations on a framework convention. Second, concurrently with those negotiations, each country should use the 1990 report to prepare its own strategy for response actions (short-term and longer-term) at the national level. These national strategies could then be discussed collectively and form the basis for developing a co-ordinated international strategy at future response strategy meetings.

Emissions scenarios

2.4.13 Concern was expressed about the interpretation of the three emissions scenarios developed by the Steering Committee of Working Group III. The scenarios should be such that their implications can be explained in easy, lay terms. They should be described and annotated carefully so that misuse and misinterpretations do not occur. In particular it should be made clear that scenarios are not predictions of the future nor are they descriptions of a desirable goal; they are statements of "what might be" so that the environmental and socio-economic consequences of such conceivable future states might be clarified and evaluated.

2.4.14 Several delegations asked that a wider range of emissions scenarios be considered. The Federal Republic of Germany proposed the following additional scenarios and offered to assist in developing them:

- (a) one corresponding to "business-as-usual";
- (b) one in which the radiative equivalent of a doubling of atmospheric carbon dioxide concentration would occur by the year 2050, stabilizing thereafter;
- (c) one with the radiative equivalent of an increase in the atmospheric concentration of carbon dioxide by a factor well below two.

2.4.15 Dr. Hodkin, speaking on behalf of Working Group II, noted that Working Group II recognized the views expressed by the Panel on the use of scenarios for the further work by the Working Group. It was not possible, within the time schedule of the IPCC first assessment report, to obtain reliable predictions of climate change on regional and smaller scales. Nevertheless, available scenarios enable preliminary evaluations of impacts on global and regional scales. In this connection, it would be useful to consider alternative approaches to obtaining scenarios; where such a possibility did not exist, available scenarios should be used to explore the impacts of climate change. (See also Section 2.3.)

2.4.16 Working Group II would welcome joint discussions with Working Group I to study the question of climate change scenarios more in depth. It pointed out the necessity of obtaining from Working Group I predictions of possible changes of climate which are obtained using both numerical modelling and empirical analogue methods. The use of available scenarios at present would serve as substitutes to explore the impacts of a range of possible future climate states. Dr. Jenkins, speaking on behalf of the Chairman of Working Group I, stated that a meeting would be convened as soon as possible to discuss paleo-analogue climate forecasting. Section I of the report of Working Group II would reflect the outcome of the discussion (see also Table 1).

2.4.17 Dr. Jenkins further stated that he appreciated that the development of emissions scenarios is a complex matter and, for this reason, Working Group I would accept the three emissions scenarios which have been delivered by Working Group III to explore climate change implications. One further scenario, with stabilization of equivalent carbon dioxide concentrations well below doubling the pre-industrial level could be defined after discussions between the Steering Committee of Working Group III and Working Group I.

2.4.18 The Chairman, in his summary remarks, stated that scenarios serve two useful purposes. One is to explore the range of possibilities in a long-term perspective. The scenarios, as for example those developed by Working Group III, imply major efforts to achieve stabilization of the concentrations of the greenhouse gases, at the low levels implied. They serve to illustrate the stringent measures that would be needed to cope with the current problems of climate warming.

2.4.19 The second use of scenarios is to assess how well the future can be managed step by step. They could be used to explore the efficiencies of various mitigation/limitation measures, as for example, reductions in the rate of growth of fossil-fuel use say from 2% to 1% or, as the Swedish government has decided, down even to 0%. Such applications may open up new action options. For example, the cost effectiveness of measures that are desirable for reasons unrelated to climate (but which would be helpful in the context of climate warming) can be explored and action options developed. This application may also be helpful in determining the flexibility of response.

2.4.20 The socio-economic consequences and the international implications of various scenarios will be a key issue in decision-making. Thus, scenarios should be chosen so as to enable the clear communication of such consequences and implications in a simple, understandable manner.

2.4.21 After further discussion, the Panel agreed:

- (a) that the 2030 scenario of Working Group III could be considered as the "business-as-usual" scenario;
- (b) that the 2060 scenario may serve the purpose of the 2050 doubling of carbon dioxide (scenario b of paragraph 2.4.14); the stabilization aspect would still need to be explored;
- (c) that the 2090 scenario would be available for use; and
- (d) that one additional scenario along the lines suggested by scenario c of paragraph 2.4.14 would be developed by Working Group III in consultation with Working Group I and others as appropriate.

3. PARTICIPATION OF THE DEVELOPING COUNTRIES IN IPCC ACTIVITIES (agenda item 3)

3.1 Dr. A. Al-Gain, the Vice-Chairman of IPCC and the Chairman of the IPCC Ad-hoc Sub-group on Ways to Increase the Participation of the Developing Countries in IPCC Activities, presented the report of the sub-group. The other members of the sub-group were Brazil, Senegal and Zimbabwe (see reference 3). The report is reproduced in Annex III in two parts, the first being the concept paper and the second on action items.

3.2 The Panel expressed its deep appreciation for, and approval of, the report. The report should serve as the guideline for future IPCC planning in this vital area. In the context of this agenda item, a preliminary budget estimate for supporting the increased participation of the developing countries was presented to the Panel by the Executive Heads of UNEP and WMO (see Annex IV). The ensuing discussion brought out clearly the enthusiasm on the part of the developing countries for the work of IPCC and their genuine concern about climate change, and the full recognition on the part of the others of the needs of the former in shouldering their share of it.

3.3 The Panel agreed that measures in both the short-term and medium- to long-term are needed. The latter falls within the scope of the assignment of Working Group III. Thus, that Working Group should include, in the context of its work on technology transfer and development measures, financial and economic (market) measures and public education and information measures (see reference 4), recommendations for action items and/or programmes for this purpose. The recommendations should be specific and contain as much detail as possible. They should be such as to assure within each nation the full development of scientific and other expert capability to integrate the underlying science of, impacts of, and response measures to, climate change. It is vital that the economic development objectives and needs of the developing countries be considered in the course of developing the international policy options on climate change.

3.4 With regard to short-term measures, the following needs were identified, in addition to the travel support for the invited experts from the developing countries to attend the meetings of IPCC, its Working Groups and their sub-groups:

- (a) the need to raise the awareness and promote the understanding of the public and of the opinion-makers, and
- (b) the need for assistance to develop and carry out the necessary research and monitoring, and other information gathering and analysis activities, in the national context, to provide effective inputs into IPCC work. (This activity would continue into the long-term).

3.5 A number of countries, including China, and the World Wide Fund for Nature (WWF) announced new or further contributions to the joint WMO/UNEP IPCC Trust Fund for the purpose of assisting developing countries to participate in IPCC activities. The details of the contributions are given in Annex V.

3.6 The Panel agreed that the following concrete short-term measures should be undertaken forthwith:

- (a) Identify experts in countries, chosen on the basis of the criteria proposed in para 2 of Annex IV, and ensure their participation in the meetings and other activities of IPCC and, especially, of its Working Groups and their sub-groups.
- (b) Formulate and implement a "crash programme" of seminars to disseminate information to opinion-makers and others; such seminars will include the one planned on the subject matter of Working Groups I and II in late May/early June 1990.

3.7 Many delegations from both developed and developing countries expressed strong support for the establishment of an IPCC Special Committee on the Participation of the Developing Countries, indicating their willingness to serve on the Committee. The Panel agreed to the proposal of Prof. Bolin that the Special Committee be composed of 5 members each from the developed and the developing worlds, to be chaired by France.

3.8 The Panel also agreed that the IPCC Chairman and the delegates of France and Saudi Arabia be authorized to designate the composition of the Committee. Such designation has since been done and it is as follows:

France (chair)	Japan
Algeria	Kenya
Brazil	Norway
India	USA
Indonesia	USSR

4. OTHER RELEVANT INTERNATIONAL ACTIVITIES (agenda item 4)

4.1 Update on the preparation of the Second World Climate Conference (SWCC)
(agenda item 4.1)

4.1.1 Mr. J.P. Bruce, Acting Deputy Secretary-General of WMO, informed the Panel that the WMO Executive Council in its last session (Geneva, June 1989) had agreed to hold the Conference in Geneva from 12 to 21 November 1990. The co-ordinator of the Conference, Mr. H.L. Ferguson of Canada, appointed jointly by the Secretary-General of WMO and the Executive Director of UNEP, would be assuming his duties in mid-August 1989. Substantial financial contributions are being made by UNESCO to the Conference. The WMO Executive Council had expressed a desire to have the Conference provide the forum for the first major public debate of the IPCC first assessment report.

4.1.2 Mr. Bruce stated further that the first six days of the Conference would be devoted to a review of the World Climate Programme (since its inception immediately after the 1979 World Climate Conference) and to a discussion of the IPCC first assessment report. A break of two days would follow. The last two days of the Conference would be held at a ministerial level for discussion of policy matters.

4.1.3 Pointing out that a major part of IPCC work is concerned with policy matters including the elements of a possible framework convention on climate change, Prof. Bolin requested a clarification of the preparations by WMO and UNEP for a convention (see paras 4.2.1(a) and 4.2.4 below). In response, Mr. Bruce stated that in accordance with the wishes of the governing bodies of WMO and UNEP, the two Executive Heads had formed a small group to decide (1) how the two agencies can contribute to the negotiations and (2) on the time schedule for the negotiations. He stressed that the negotiations would begin after the completion of the IPCC first assessment report and that close liaison would be maintained between IPCC Working Group III and the UNEP/WMO group.

4.1.4 In order to ensure wide participation in the Conference, efforts would be made to provide limited financial support to participants from developing countries. In this connection, Switzerland indicated its willingness to provide some support to a number of delegates to the Conference from developing countries.

4.2 Relevant decisions/discussions of the 15th session of the UNEP Governing Council (Nairobi, 15-26 May, 1989) and the 41st session of the WMO Executive Council (Geneva, 5-17 June, 1989) (agenda item 4.2)

4.2.1 Reporting on pertinent decisions by the Executive Council of WMO, Mr. J.P. Bruce, informed the session that three resolutions were adopted by the council:

- (a) On global climate change, similar to a resolution adopted by the UNEP Governing Council earlier. It defines the relationship of the Panel to the parent body. It also, inter alia, calls on the Secretary-General of WMO to work closely with the Executive Director of UNEP on preparations for negotiations on a framework climate convention;
- (b) On the establishment of a special fund for climate and atmospheric environment studies from extra-budgetary sources. The fund would support, inter alia, such activities as ocean observations for the World Climate Research Programme, and observations of greenhouse gases. The fund would also be used for assisting developing countries to improve their capabilities in climate-related studies.
- (c) On ways to improve the participation of the developing countries in the activities of the World Climate Programme and IPCC.

4.2.2 The Executive Council in the course of its consideration of the report of the 10th session of the WMO Commission for Climatology, inter alia, recommended two important projects:

- (a) the development of an effective climate change detection project, through intensive mobilization and analysis of global climatological data, and
- (b) investigation of the best way of maintaining long-term climatological stations around the world.

4.2.3 Further, the Council decided to establish a Global Atmosphere Watch (GAW) programme which combines two existing programmes, namely the Background Air Pollution Monitoring Network (BAPMoN) and the Global Ozone Observing System. Emphasis would be placed on the expansion of observations in the tropics and the Southern Hemisphere under the new programme.

4.2.4 In introducing the relevant decision (see reference 1) of the UNEP Governing Council, Mr. W.H. Mansfield III, the Deputy Executive Director of UNEP, stated that the Council stressed the importance of active involvement in the activities of IPCC by developing countries. The Council also urged the Executive Director to work closely with the Secretary-General of WMO on preparations for negotiations on a framework convention, taking into account the work of the Panel and the past and planned ministerial and other conferences.

5. IPCC BUDGET AND OTHER SUPPORT (agenda item 5)

5.1 The Secretary of IPCC informed the Panel that the budget presented covered only the activities for 1989. It had been assumed earlier that the level of expenditure for 1990 would be similar to that of 1989. However, the tremendous (and welcome) enthusiasm shown by the developing countries to participate in IPCC activities makes such an assumption invalid. Dr. Sundararaman reminded the Panel of the budgetary proposals made by Dr. Tolba and Prof. Obasi amounting to US\$ 1,000,000 for the provision of support to developing countries (see Annex IV).

5.2 The Chairman made the following proposals which the Panel accepted:

- (a) The 1989 expenditures as agreed upon by the Bureau at its first session (see Annex VI) be accepted as such;
- (b) The Chairman be authorized to deal with any shortfall in receipts for 1989, should any occur;
- (c) A 1990 budget be prepared for consideration at the first meeting of IPCC or its Bureau, whichever is earlier, in 1990; until the approval of that budget, the level of expenditure for 1990 remain the same as that for 1989;
- (d) The Panel take note of the resolutions of the UNEP Governing Council and the WMO Executive Council (see references 1 and 2) which, inter alia, request the two Executive Heads to consult with IPCC in the determination of its internal structure and procedures, its budget and the means of financing such budget.

5.3 A number of countries made new or further pledges to the joint WMO/UNEP IPCC Trust Fund for Secretariat expenses. The details of the contributions are given in Annex V.

5.4 With regard to the IPCC Secretariat staffing, UNESCO expressed its readiness to second a professional staff member to help with public information and other activities.

6. OTHER MATTERS (agenda item 6)

6.1 Membership in IPCC and its Working Groups

The Panel reiterated its view expressed at its first session (see reference 5) that IPCC being intergovernmental is open to all Members of UNEP and WMO. They are welcome to participate in all its activities. In particular, the Panel agreed that the designation of "core members" of the Working Groups should no longer apply. The Chairmen of the Working Groups are given the discretion and the responsibility to conduct their business in the most effective way.

6.2 Liaison on IPCC matters

Formal letters of invitation, the reports of the Panel and its subsidiary bodies and other communication is normally transmitted to the Ministers of Foreign Affairs. In almost all cases copies for information are sent to the Principal Delegates of Members and contact points of international agencies. The Panel requested that Members establish one or more focal points for direct liaison, if they so wish, and communicate to the IPCC Secretariat the full contact information on the focal points. This will be in addition to the formal links of communication.

6.3 Research and monitoring needs

6.3.1 On the basis of the presentations of the Working Groups at the session, the Panel agreed with the Chairman's proposal that increased efforts both with regard to research and monitoring are of vital importance for the long-term development of the knowledge base which is fundamental for the successful conduct of the IPCC tasks. The Working Groups should specify in broad terms the research and monitoring needs as they become apparent in the course of their work.

6.3.2 In the light of the very active pursuit of the World Climate Programme jointly fostered by WMO, ICSU, UNEP and UNESCO, and particularly the plans for extensive global research efforts under the World Climate Research Programme, the monitoring activities carried out by WMO and UNEP as well as the research plans being developed by ICSU for its International Geosphere-Biosphere Programme/Global Change, the Panel considered it appropriate to concentrate its efforts on the prime objectives as formulated by WMO and UNEP and which are recorded in the report of the first session:

- "(i) Assessing the scientific information that is related to the various components of the climate change issue, such as emissions of major greenhouse gases and modification of the Earth's radiation balance resulting therefrom, and that needed to enable the environmental and socio-economic consequences of climate change to be evaluated;
- (ii) Formulating realistic response strategies for the management of the climate change issue." (Reference 5, para. 3.1.)

6.3.3 There is thus, a clear division of work between the assessment work of IPCC and the ongoing work that the two parent organizations are responsible for in other ways which they have undertaken in collaboration with other organizations. However, while the planning and implementation of the research and monitoring programmes is not to be the responsibility of IPCC, the status and future directions of such activities would constitute part of the IPCC first assessment report.

6.3.4 The Panel also emphasized the need to maintain and expand, especially in the developing world, the basic observational networks such as that of the World Weather Watch Programme of WMO.

6.3.5 The Panel noted that, for fully informed considerations of the impacts of climate change on environment and society, reliable information on phenomena in addition to climate - such as vegetation patterns, wildlife distributions etc. - is required. Both research into the relationships between these phenomena and climate, and documentation and monitoring of their changes, is required, particularly in developing countries where the knowledge base is as yet insufficient to confidently assess climate impacts. In this respect, the Panel noted the work being carried out under such programmes as the Man and the Biosphere of UNESCO and the IGBP of ICSU.

6.4 Invitation to international, non-governmental and other organizations to collaborate in the work of IPCC

The Panel invited interested UN organizations, regional or global intergovernmental and non-governmental organizations and private institutions that wish to contribute in the matter, to collaborate with appropriate analyses. It encouraged them to establish appropriate links with the Working Groups as well as their sub-groups. The essential need is to arrange for collaboration at the working level. The Panel invited the contribution from these organizations in order that its own work may be improved.

6.5 Forthcoming meetings and other items

Two meetings of relevance to IPCC activities were announced:

- (a) Ministerial Conference of Small States on Sea Level Rise, Malé, Maldives, 19-22 November 1989, organized by the Government of Maldives;
- (b) Conference on Tropical Forests, Vienna, Austria, 5 September 1989, organized by the Government of Austria and UNEP.

6.6 International Year of Global Climate Change

The Panel noted the proposal of the United States of America that all IPCC members consider extending the support of their governments for the designation of the year 1990 as the "International Year of Global Climate Change" by the United Nations General Assembly. Such designation would help focus international attention and concern on the problem of global climate change, more so as the Second World Climate Conference and the release of the IPCC first assessment report will take place in 1990.

7. AGENDA, DATE AND PLACE OF THE NEXT SESSION OF IPCC (agenda item 7)

7.1 The Panel agreed to meet in its third session in Washington D.C., USA from 5 to 7 February 1990 (until noon on 7 February) at the kind invitation of the Government of the United States of America. The Panel further agreed to meet in its fourth session in Stockholm, Sweden in late August 1990 at the kind invitation of the Government of Sweden.

7.2 The Panel set the dates and venue for the second session of the Bureau. The Bureau will meet in Washington D.C., USA, on 7 and 8 February 1990 (starting on the afternoon of 7 February) at the kind invitation of the Government of the United States of America.

7.3 A list of IPCC and related meetings is attached as Annex VII.

8. ADOPTION OF THE REPORT

The Panel authorized the Chairman to approve the report of the session before its distribution.

9. CLOSURE OF THE SESSION

The Chairman closed the second session of IPCC at 16.40 hours on Friday 30 June 1989.

REFERENCES

1. UNEP Decision 15/36 of the 15th session of the UNEP Governing Council (Nairobi, 15-26 May, 1989).
2. WMO Resolution 4(EC-XLI) of the 41st session of the WMO Executive Council (Geneva, 5-17 June, 1989).
3. IPCC, Report of the first session of the IPCC Bureau, IPCC-2, WMO TD-No. 294, WMO, Geneva, 1989.
4. IPCC, Report of the second session of the Steering Committee of IPCC Working Group III/Response Strategies Working Group, Geneva, 10-12 May, 1989.
5. IPCC, Report of the first session of IPCC, Geneva, IPCC-1, WMO TD-No. 267, WMO, Geneva, 1989.

SECOND SESSION OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

Nairobi, 28-30 June 1989

LIST OF PARTICIPANTS

1. OFFICERS OF THE SESSION

B. Bolin	Chairman
A. Al-Gain	Vice-chairman
J.A. Adejokun	Rapporteur

2. REPRESENTATIVES OF MEMBERS

<u>Member</u>	<u>Name</u>	<u>Capacity</u>
ALGERIA	M.K. Mostefa-Kara	Principal delegate
ARGENTINA	J.E. Valenzuela	Principal delegate
AUSTRALIA	W.J. McGregor Tegart J.W. Zillman D.C. Griffiths D. Campbell	Principal delegate Alternate Delegate Delegate
AUSTRIA	W. Siegl	Principal delegate
BELGIUM	M. Ardui	Principal delegate
BOTSWANA	G.K. Ramothwa (Ms)	Principal delegate
BRAZIL	L.P. Teixeira Soares A.R. Magalhaes L.P. Medeiros A.C. Do Prado E. Cordeiro	Principal delegate Delegate Delegate Delegate Delegate
BURUNDI	P. Nkundwa	Principal delegate
CANADA	H.L. Ferguson J.D. McTaggart-Cowan A.C. de Hoog D.K. Dawson T.G. Brydges	Principal delegate Alternate Delegate Delegate Delegate
BRITISH CARIBBEAN TERRITORIES	C.E. Berridge	Principal delegate

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KENYA	S.J.M. Njoroge L.N. Njau J.K. Nganga P.M. Mungai M. Macodras J.N. Onyango M.P. Tole	Principal delegate Alternate Delegate Delegate Delegate Delegate Observer
MALDIVES	A. Majeed	Principal delegate
MALTA	D.J. Attard G.N. Busuttil H. Taylor-East	Principal delegate Delegate Adviser
MEXICO	M.-A. Caceres	Principal delegate
THE NETHERLANDS	H.M. Fijnaut W.J. Kakebeeke P. Vellinga H. van der Kooi J.F. Boddens Hosang W.K. Hoogendoorn	Principal delegate Alternate Delegate Delegate Adviser Adviser
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NORWAY	P.M. Bakken O. Saetersdal A. Grammeltvedt	Principal delegate Alternate Delegate
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SAUDI ARABIA	A. Al-Gain M. Al-Deghaither A.H. Al-Shahri T.M. Zatari	Principal delegate Delegate Delegate Delegate
SENEGAL	M. Seck	Principal delegate
SPAIN	A. Pou E.A. Lines	Principal delegate Delegate
SUDAN	A.R. Muna (Ms)	Principal delegate
SWEDEN	S. Bodin	Principal delegate
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UNITED KINGDOM	D. Fisk	Principal delegate
	G. Jenkins	Alternate
	R. Beetham	Delegate
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UNITED STATES OF AMERICA	F.M. Bernthal	Principal delegate
	E.W. Friday	Alternate
	J. Easton	Alternate
	L.J. Fisher (Ms)	Alternate
	W.A. Nitze	Delegate
	R.J. Ford	Delegate
YEMEN ARAB REPUBLIC	N.A. Othman	Principal delegate
ZIMBABWE	M.C. Zinyowera	Principal delegate
	R. Karimanzira (Ms)	Alternate
	Dudza Gavi (Ms)	Delegate

3. REPRESENTATIVES OF THE UNITED NATIONS ENVIRONMENT PROGRAMME

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W.M. Mansfield III	Deputy Executive Director
S. Evteev	Assistant Executive Director Programme
R. Olembo	Deputy Assistant Executive Director Programme
M.D. Gwynne	Director GEMS/PAC
S. Sangweni	Senior Programme Officer DES/PAC
P.E. Usher	Senior Programme Officer GEMS/PAC
W.V. Kennedy	Senior Programme Officer GEMS/PAC
C. Boelcke	Programme Officer GEMS/PAC
M. Gerges	Programme Officer OCA/PAC
W.-L. Cheng	Programme Officer GEMS/PAC
C. Schlosser	Consultant GEMS/PAC

4. REPRESENTATIVES OF THE WORLD METEOROLOGICAL ORGANIZATION

G.O.P. Obasi	Secretary-General
J.P. Bruce	Acting Deputy Secretary-General

5. REPRESENTATIVES OF INTERNATIONAL ORGANIZATIONS

K. Brendow	Economic Commission for Europe
J. Henningsen	Commission of European Communities
R. Brinkman	FAO
F. Niehaus	IAEA
T. Roswall	IGBP/ICSU
P.W.N. Wessendorp	UNDP

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F. Verhoog	Unesco and IOC
V. Aalto	WHO
A. Heidenreich	Environmental Liaison Centre International
R. Wilson	Greenpeace International
A. Kerr	
P. Stevenson (Ms)	
J.S. Lemlin	International Petroleum Industry Environmental Conservation Association (IPIECA)
F. Briand	IUCN - The World Conservation Union
J.W. Shiller	Organisation of International Constructors of Automobiles (OICA)
W.J. Maunder	Stockholm Environment Institute
G.M. Woodwell	Woods Hole Research Center
K. Ramakrishna	
T. Robertson (Ms)	World Wide Fund for Nature (WWF-UK)
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INTERGOVERNMENTAL PANEL
ON CLIMATE CHANGE
SECOND SESSION

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INVOLVEMENT OF DEVELOPING COUNTRIES IN THE WORK OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

(Submitted by Saudi Arabia, Senegal, Brazil and Zimbabwe)

The issue of closely involving the developing countries
in the work of the Panel is discussed and suggestions
are made on steps that might be taken by UNEP and WMO
to facilitate greater involvement.

INTRODUCTION

1. At the first session of the Bureau of the IPCC held in Geneva 6-7 February, considerable attention was given to the issue of strengthening the participation of scientists from developing countries in the work of the Panel and its Working Groups.
2. This will be essential to the work of the Panel and its Working Groups because in each of the three main areas of work - the scientific aspects, the impacts, and the policies, the work to be done is truly global.
3. Among the most widely accepted scenarios for climate change, areas of the globe occupied by developing countries would be most seriously affected. At the same time, the developing countries are not economically or technologically equipped to implement some of the practical and policy measures that are necessary to address the problems.
4. It would be unreasonable to ask developing countries to forego all of the benefits of economic and industrial development already enjoyed by the developed world. Nor should they have to pay directly or indirectly for the repair of damage caused by the scale of industrial development in the developed countries. It is essential that the developing countries be fully involved in a global action plan to address the scientific, social, economic and policy aspects of climate change.
5. This paper addresses the short-term practical steps that might be taken during the life of the IPCC as well as some medium to long-term measures that might be considered by UNEP and WMO for incorporation into their medium and long-term plans.

ACTIONS TO BE TAKEN IN THE SHORT TERM

Involvement in IPCC Activities

6. A simple and essential measure for ensuring the full participation of developing countries in the work of the Panel is through financial support for the attendance of representatives from developing countries at meetings of the Panel and its Working Groups and for involvement in other IPCC activities. This is already being accommodated to some extent through the allocation of funds from the IPCC Trust Fund. Some contributing countries have specified additional amounts expressly for this purpose.
7. Further donations from IPCC Member States should be encouraged as well as contributions from all WMO and UNEP Members. A regular report on the status of contributions to the fund should be made.
8. WMO and UNEP should examine the possibility of increasing their regular budget support to the IPCC to enable the use of Trust Fund monies exclusively for the support of developing countries.

9. Because the work of the IPCC requires the involvement of disciplines beyond the scope usually involved in WMO and UNEP work, especially in relation to Working Group III, the Working Groups, with the support of the WMO and UNEP Secretariats, should seek to identify possible funding sources beyond those traditionally associated with the work of WMO and UNEP.

10. In response to a request from the IPCC Bureau in February 1989, other funding sources including UNDP, the World Bank, the Islamic Development Bank and other multilateral financial institutions are being explored by the Executive Heads of WMO and UNEP.

11. It is recommended that WMO and UNEP explore the possibilities of support from private foundations and research-oriented companies.

12. As well as seeking more support through increased donations to the Trust Fund, efforts should be made to give priority to support of IPCC activities in existing technical cooperation programmes. The use of a portion of funds available for short-term fellowships under UNDP and agency regular budget sources is recommended.

List of Experts Contributing to IPCC Activities

13. The actions already being taken by Working Groups to identify expertise required in various disciplines and geographic regions should be supported and encouraged further. It would be helpful if, at the time of nominating people, Working Groups would identify those individuals likely to need support and consider possible funding sources.

14. The lists of actual and potential contributors, whether individuals or organisations, should be made available to governments so that they become resource lists for any actions that may be started at the national level.

Establishment of National Committees

15. A way of assisting more effective participation in the work of the Panel by developing countries would be through the formation of national committees or the inclusion of the Panel's work in the agenda of existing relevant national committees. This would also help marshaling of resources for national action programmes.

16. WMO and UNEP should jointly recommend this course to their Members. They should provide guidance on the formation, terms of reference and constitution of national committees as well as information on existing committees.

Conferences and Seminars

17. IPCC should consider the possibilities for arranging conferences and seminars in developing countries to help mobilise national and regional action.

18. For example, a conference to heighten the awareness of developing country scientists on climate change matters would contribute to the objectives of the IPCC.
(WCP-586)

19. Roving seminars held on a regional basis have proven to be a cost-effective method of reaching a wide audience and stimulating valuable national action in developing countries. At least one series of roving seminars on a regional basis should be held during the course of the IPCC.

ACTIONS TO ASSIST MEDIUM AND LONG-TERM DEVELOPMENT

20. While the work of the IPCC must be accomplished in a short period and it is essential that urgent measures be taken to fully involve the developing countries, the opportunity exists to identify measures that will assist developing countries to address climate change issues and implement response strategies in the medium to long term.

Existing Technical Cooperation Programmes

21. The work of the IPCC is a valuable opportunity to inject new ideas and emphasis into existing technical cooperation programmes. The work of the Panel even in its early stages has served to indicate already that the size and scope of the task facing the world in addressing climate change issues is substantial. It is logical that steps can be taken now or will be identified as an outcome of the work of the Panel, that will contribute to the ability of developing countries to address these issues in the medium to long term.

22. This process can take place as part of the normal review of technical cooperation programmes.

23. It is valuable to note, however, that special opportunities already exist in relation to plans for new regional centres or the upgrade of existing facilities. The African Centre of Meteorological Applications for Development (ACMAD) is a good example where it should be possible to incorporate a small climate research and service group as part of the operations of the centre. In a similar way, plans to establish or upgrade existing Regional Specialised Meteorological Centres might with small modification include specific provision for climate research.

24. It is recommended that this matter be taken up by WMO and UNEP with the UNDP and that it be the subject of reports to the respective governing bodies of UNEP and WMO.

Emphasis on Climate in Existing International Programmes

25. Apart from specific technical cooperation activities, the Panel might ask the Executive Directors of UNEP and WMO to identify activities under other existing programmes that would contribute directly to the transfer of relevant information, technology and expertise to developing countries.

26. Examples of this include actions under WMO's World Climate Programme and World Weather Watch Programme, and under UNEP's Global Environmental Monitoring System (GEMS) and its GRID system.

27. A relevant example under WMO programmes is the development of the personal-computer-based climate data base and analysis system known as CLICOM. This successfully uses affordable, maintainable technology to enhance the capacity of national meteorological services to handle and analyse climatological data.

28. Another example is the transmission of climatological summary data over the WMO Global Telecommunication System as part of the World Weather Watch. This system also presently carries analysis and computer model outputs of expected atmospheric behaviour over 1-10 days. The question needs to be addressed of the possibility of using this facility in the future to disseminate climate model outputs.

Emphasis on Climate in National Development Plans

29. The capacity of developing countries to address the climate change issue in the medium and long term will only increase if the countries themselves give this priority in development plans. It is important then that national planning agencies have available to them information and decision-making tools and accord climate change issues appropriate priority.

30. In this respect, emphasis should be placed on linkages between climate-related issues and other issues of vital interest to developing countries. Deforestation, for example, is not only a negative development from the point of view of local and global climatic change but also a serious form of destruction to many developing nations' economic and genetic resources. Assisting developing countries in enhancing their own capability for cost-benefit analysis of climate-related strategies, policies and programmes in the context of their own development objectives is vitally important.

31. In this respect, the Panel need not generate significant new material. Rather it would be valuable to draw attention to the concepts in documents such as the Report of the World Commission on Environment and Development, UNEP's Environmental Perspectives to the Year 2000 and Beyond, and to the decisions of the UN itself in affording the climate change issue high priority.

Developing the Intellectual and Scientific Resources

32. Problems arising from climate change are global in nature. These problems demand concerted action by all countries based on a common understanding of the potential impacts of climate change and the measures to be taken to minimize adverse impacts. This common understanding will not emerge except under condition of free exchange of information and know-how and full participation in assessment and analysis by all countries. It is recognised that the developing countries lack the scientific resources to fully participate in the scientific assessment and policy analysis. Therefore, a massive and sustained flow of scientific and technological expertise towards the development of the intellectual resources of the developing countries is a necessary pre-requisite.

33. A critical issue for the medium to long-term capacity of developing countries to participate fully in international programs on climate change issues is the development of an indigenous intellectual and scientific base backed up by appropriate technologies.

34. Special emphasis needs to be placed on developing the capacity and infrastructure from within as far as possible using appropriate technology rather than the importation of technology and solutions that only increase dependence on aid from developed countries. This idea needs to be linked with the comments on development of centres such as ACMAD and WMO Regional Specialized Meteorological Centres and systems such as CLICOM and the GRID-GIS.

35. A specific example would be in the development of climate models for national application. It is realised that the development of the larger sophisticated models capable of studying the global situation must take place in major centres with powerful computing power and large teams of scientists and programmers. However, the development or at least local adaptation of smaller-scale national and regional models might well take place in developing countries with modest computing power and using local scientists perhaps led by a more experienced scientist from a developed country.

36. This aspect places special emphasis on the need for increased training. The panel is invited to request the Executive Heads of UNEP and WMO to study this aspect in consultation with UNDP to identify existing and possible new opportunities for training and education activities for developing countries that will increase the pool of suitably qualified scientists. At the same time, they should consider how best to involve other agencies with responsibility for other topics such as agriculture, water resources, and economics so that training programmes in these areas might reflect the increased importance of climate change from the impacts and response aspects.

CONCLUSION

37. This paper identifies some options for actions to increase the involvement of developing countries in the work of the IPCC and, in the medium to long term, to enhance their capacity to deal with the climate change issue. The Panel is invited to discuss these options and decide on the specific steps to be taken.

A PROPOSAL FOR ASSISTING DEVELOPING COUNTRIES TO MORE EFFECTIVELY CONTRIBUTE TO AN IMPROVED UNDERSTANDING OF THE PHYSICAL BASIS OF GLOBAL CLIMATE CHANGE, ASSESSMENT OF THE SOCIO-ECONOMIC IMPACTS RESULTING FROM CLIMATE CHANGE, AND THE FORMULATION OF SUITABLE RESPONSE STRATEGIES.

INTRODUCTION

1. At the first session of the Bureau of the Inter-Government Panel on Climate Change held in Geneva 6-7 February 1989, Saudi Arabia was invited to collaborate with Brazil, Senegal and Zimbabwe for the purpose of preparing a proposal as to how developing countries might be assisted and encouraged to participate more fully and more effectively in the work of the Panel and its Working Groups.
2. This proposal responds to the invitation of the Panel by suggesting a number of ways that might be considered to lift the participation of developing countries in the work of the Panel as well as making that participation as effective as possible; and, the proposal takes the opportunity to put forward some ideas that might be considered by UNEP and WHO for enhancing the capability of developing countries to make an ongoing contribution to considerations of climate change and its consequences.
3. In putting together the proposal, the Executive Directors of UNEP and WHO and the Chairman of the each of the IPCC Working Groups were invited to suggest how the objective of assisting the developing countries to participate more fully and effectively in the work of the IPCC, might be achieved. The proposal that is herein presented has taken into account suggestions put forward.

WHY ASSIST DEVELOPING COUNTRIES

4. The climate change being examined by the IPCC is global. It knows no national boundaries. It will impact on the developed and developing countries without discrimination. However its devastation may not be equally distributed. The poorer developing countries, in many cases, stand to lose much more than the relatively wealthy developed world. And yet the developing countries are contributing but a fraction to the causes of climate change compared with the developed world. They deserve to be assisted to have their say.

5. Because the climate change is global, and because strategies designed to limit or slow down the rate of change or ameliorate its worst impacts will require a global response, it is imperative that the developing as well as the developed countries participate effectively in any decisions regarding response strategies. Otherwise the commitment needed, to ensure that agreed strategies are pursued, may not be universal.

WHAT ASSISTANCE IS NEEDED

6. Participation by developing countries in the decision taking process concerning matters of climate change requires, in the first instance, assisting them to participate as members of the IPCC and its Working Groups. Participation by developing countries is constrained to some extent by a lack of funds and this impediment is obviously alleviated or eliminated through financial assistance.

7. However more than financial assistance is required if participation by developing countries is to be effective. The developing countries additionally need to be assisted to ensure that they are competent to address the issues of concern. To this end arrangements will need to be put in place that enable the developing countries to enhance their scientific appreciation of the physical basis for global climate change, to better comprehend the potential impacts of climate change, and to be adequately informed for assessing practical response strategies.

8. Such arrangements would need to proceed on two time-scales.

9. The first and immediate requirement is for a 'crash programme' to inform opinion leaders and scientists in the developing countries of the basis for concern regarding global climate change, its potential impacts, and the need to identify practical response strategies. This would need to get underway without delay and be completed well within the lifetime of the the IPCC. The objective here would be to assist the developing countries to quickly achieve a familiarity with the issues of concern so that they will be in a position to make an effective input to the final recommendations of the IPCC.

10. The second and more important requirement is to put in place arrangements that will ensure that developing countries maintain and develop their competence in the longer term to effectively consider issues relating to global climate change. Such arrangements, if they are to be successful, will require that the scientific knowledge base as well as the scientific infrastructure of the developing countries be upgraded. There will need to be a technology transfer from the developed to the developing countries.

11. Each of the above types of assistance, namely:

- . facilitating membership of the IPCC and its Working Groups
- . a 'crash programme' of information sharing and
- . technology transfer

are discussed subsequently.

Facilitating Membership of the IPCC and its Working Groups

12. A simple and essential measure for ensuring as full a participation as possible by developing countries in the work of the IPCC and its Working Groups is to provide financial support for attendance of representatives from developing countries at meetings of the Panel and its Working Groups, and for involvement in other IPCC activities.

13. This is already being accommodated to some extent through the allocation of funds from the IPCC Trust Fund. Some contributing countries have allocated specific additional amounts expressly for this purpose.

14. Further donations from IPCC Member States, as well as contributions from all UNEP and WHO members, should be encouraged. A regular report on the status of contributions to the Fund should be made.

15. UNEP and WHO might also examine the possibility of increasing their regular budget support to the IPCC to enable Trust fund monies to be used exclusively for the support of developing countries.

16. Because the work of the IPCC requires the involvement of disciplines beyond the scope usually involved in UNEP and WHO work, especially in relation to Working Group III (Response Strategies Working Group), the Working Groups, with the support of the UNEP and WHO Secretariats, should seek to identify possible funding sources beyond those traditionally associated with the work of UNEP and WHO.

17. In response to a request from the IPCC Bureau in February 1989, other funding sources including UNDP, the World Bank, the Islamic Development Bank and other multilateral financial institutions are being explored by the Executive Heads of UNEP and WHO.

18. It is suggested that UNEP and WHO also explore the possibility of support from private foundations and research oriented companies.

19. As well as seeking more support through increased donations to the Trust Fund, efforts should be made to give priority to support of IPCC activities in existing technical cooperation programmes. The use of a portion of funds available for short-term fellowships under UNDP and agency regular budget sources is recommended.

20. And there may be ways that the developing countries can help themselves. For instance, if they have a National Airline, they might consider convening IPCC Working Groups/Sub Groups in their countries and arrange with their National Airline to meet, wholly or in part, the travel costs of invited experts from developing countries. Otherwise they might be able to meet the subsistence expenses of such experts.

A 'Crash Programme' of Information Sharing

21. A 'crash programme' of information sharing would go hand-in-hand with arrangements for supporting attendance of representatives of developing countries at meetings of the IPCC and its Working Groups. It would assist the representatives to make a more effective contribution to the IPCC and at the same time raise the awareness of a wider group of opinion leaders in the developing countries of the urgent need to address global climate change and its potential consequences. Such a programme would be funded principally from the same sources suggested in paras 12-20 above. It would need to be completed well before the final recommendations of the IPCC were to be brought down.

22. A first step in implementing such a programme would be the identification of relevant experts in the developing countries who would be invited to participate in an information sharing programme. Although this action is specifically for promoting a more effective contribution to the work of the IPCC and its Working Groups, it could have a lasting benefit in that it could be the catalyst for creating networks of climate experts (multidisciplinary not only climate) who would be a national focus for climate change and related issues beyond the life-time of the IPCC.

23. Taken further, such networks might provide a basis for the formation of National Climate Committees in developing countries. If the IPCC sees this as a desirable end it might consider providing some guidance on the setting-up, terms of reference and working arrangements for such committees, by drawing upon the experience of existing National Committees in the developed countries.

24. Having identified the experts in developing countries who would be invited to participate in an information sharing programme, the next step would be to put the programme into effect.

25. Bearing in mind that the time for completing such a programme is extremely short (not more than 12 months), the only practical way forward would be to arrange a series of seminars/conferences on climate change in the developing countries. These could be followed up and reinforced with literature and audio/video cassette material specially prepared for this purpose.

26. Roving seminars held on a regional basis have proved to be a cost effective method of reaching a wide audience and stimulating national action in developing countries in the past. It is suggested that at least one series of roving seminars be held during the next 12 months on a regional basis for assisting nominated climate experts in the developing countries to achieve an improved understanding of global climate change and related issues.

Technology Transfer

27. Actions to facilitate developing countries participate effectively in the IPCC and its Working Groups are a first step that must be taken by UNEP, WHO and the developed countries if the response strategies and recommendations that the IPCC will eventually present are to have a reasonable chance of being universally supported.

28. As stated in para 9, a second and more important requirement is to put in place arrangements that will ensure that developing countries, after having achieved a heightened awareness of climate change and related issues, are able to maintain and develop their competence in the longer term to effectively contribute to an inevitable on-going consideration and review of climate change, its perceived impacts and favoured response strategies. These arrangements will inevitably involve technology transfer. Both the scientific knowledge base as well as the scientific infrastructure of the developing countries will need to be enhanced. And the time-scale of this action is well beyond the life of the IPCC - maybe 5-10 years or more.

29. How might such an objective be pursued? There are several approaches that suggest themselves as warranting further exploration. Taken together they might constitute an effective way to proceed.

30. The first is for the developed countries to assist scientists in the developing countries create climate models for national and/or regional applications. In doing this though, emphasis needs to be placed on using support technologies appropriate to the developing countries, rather than simply importing technology and solutions that only increase dependence on aid from developed countries. As a start it should not be difficult to set-up a one dimensional radiation transfer model or a one-dimensional chemical kinetics-transport model to run on an IBM PS/2 Personal Computer, nor should it be difficult to promote acquaintance and use of, for example, gas chromatography techniques to observe trace substances. Current programmes in WHO such as CLICOM and INFOCLIMA can be exploited for the purpose as well as the current and planned efforts within the WHO Technical Cooperation Programme.

31. The second is to include provision for climate change research in plans for new Regional Centres or the upgrade of existing facilities in developing countries. The African Centre for Meteorology and Development (ACMAD) is an example where it should be possible to incorporate a small climate research and service group as part of the operations of the centre. In a similar way, plans to establish or upgrade existing Regional Specialised Meteorological Centres might, with small modification, include specific provision for climate research. This might be assisted through bilateral/multilateral arrangements governing technical cooperation among developing countries.

32. It is recommended that this matter be taken up by UNEP and WHO with the UNDP and that it be the subject of reports to the respective governing bodies of UNEP and WHO.

33. The third approach is for UNEP and WHO to identify activities under their existing programmes that would contribute directly or indirectly to the transfer of relevant information, technology and expertise to developing countries. WHO's World Climate Programme and World Weather Watch Programme, and UNEP's Global Environmental Monitoring System are possible vehicles that might be used for this purpose. WHO's Global Telecommunication System might also be employed to distribute climate model outputs for different climate change scenarios.

34. A fourth approach is for UNEP and WHO to consult with UNDP to identify all existing and new opportunities for training and education activities for developing countries that will increase the pool of suitably qualified scientists. At the same time they should consider how best to involve other agencies with responsibility for other topics such as agriculture, water resources and economics so that training programmes in these areas might reflect the increased importance of climate change from the impacts and response aspects.

35. Finally it must be said that the capacity of developing countries to address the climate change issue in the medium and long term will only increase if the developing countries themselves give climate change and related issues a priority consideration in their plans for the future. With this in mind, it is important that National Planning Agencies have available to them information that will enable them to take climate change into consideration when drawing up new plans. In this respect the network of climate experts and/or the National Climate Committees referred to in paragraphs 22 and 23 above might be crucial to ensuring that information on climate change and its consequences is brought to the attention of the appropriate authorities. And, it is highly desirable that the level of representation from developing countries on the IPCC and its Working Groups, especially Working Group III (Response Strategies Working Group), be more at the policy or decision making level than is the case at present for some developing countries. High level representation will make it easier to implement any programmes developed specifically for the developing countries.

RECOMMENDATION

36. It is recommended that the IPCC note the Proposal and request the Executive Directors of UNEP and WHO to seek additional IPCC Trust Fund support either in cash or in kind from the following sources:

- . IPCC Member States,
- . UNEP and WHO regular budgets,
- . Private foundations and research oriented companies,
- . Other United Nations' agencies,
- . The World Bank, The Islamic Development Bank, UNDP and other like institutions,
- . Existing technical cooperation programmes of UNEP and WHO,
- . National Airlines,

for, in the short term,

- . facilitating developing countries a higher representation of the IPCC and its Working Groups; and,
- . implementing a 'crash programme' of information sharing by way of roving seminars on a regional basis and the preparation and distribution of appropriate literature and audio/video cassette material to heighten the appreciation of global change and related issues amongst opinion leaders and scientists in the developing world;

and, in the longer term, putting arrangements in place that will maintain and develop the competence of developing countries to contribute effectively to an on-going consideration and review of climate change, its perceived impacts and favoured response strategies.

PRELIMINARY BUDGET ESTIMATE FOR THE SUPPORT OF THE PARTICIPATION
OF THE DEVELOPING COUNTRIES IN THE ACTIVITIES OF IPCC

(Proposal by Dr. M.K. Tolba and Prof. G.O.P. Obasi)

1. It may be recalled that the IPCC Bureau in its first session had, in the strongest terms, urged the promotion of the participation of experts from the developing world in all IPCC activities. The various Working Groups and their sub-groups had made similar recommendations. The view is that this is necessary for the mutual benefit of the developing as well as the developed countries.

2. Countries

- (a) that could be seriously affected by the global warming and consequent sea level rise,
- (b) where national actions can have major impact on carbon dioxide emissions and uptake,
- (c) with special expertise and
- (d) that are centres of major relevant regional projects with participation from more than one nation

are initial natural candidates in our ensuring the full participation of the developing world in IPCC activities.

3. A sample listing of such countries could include island nations vulnerable to sea level rise, nations prone to increased dryness, nations with possible enhanced frequency of severe weather, nations in the tropical belt, nations that have developed scientific manpower, and nations where, for example, such centres as the Regional Meteorological Training Centres of WMO are located.

4. Some 20 or so nations can readily be identified from such a listing in a first step. It should be feasible to further identify an average of five experts per nation in different IPCC-related disciplines.

5. The task of Working Group I is divided into 11 sections and those of Working Groups II and III have been assigned to six and four sub-groups respectively, together with the two Steering Committees leading to about 20 working parties among the three Working Groups.

6. Assuming that each expert from the list of nations is able to attend an average of three meetings related to IPCC (two sub-group meetings + a meeting of a Working Group, for example), some 300 trips would need to be financed to ensure adequate, initial participation of the developing countries. Costing each trip at an average of \$3,500, about \$1,000,000 would be needed between now and the preparation of the draft first report of IPCC.

7. The two sponsor organizations would, between them, be able to contribute \$100,000 towards this cost.
(WCP-425)

CONTRIBUTIONS TO THE JOINT WMO/UNEP IPCC TRUST FUND

1. Table I is a listing of all contributions, remitted and pledged for 1989. They are shown in both their original currency and amount and in equivalent Swiss Francs credited to the Fund.

2. Table II is a listing of all pledges for 1990.

3. Table III lists those contributions that are exclusively for the support of the participation of the developing countries in IPCC activities for both 1989 and 1990, excerpted from tables I and II. It should be noted that some of the unearmarked contributions in tables I and II is also used for the support of the developing countries (unless the contribution is expressly meant for other purposes).

4. It may be noted that several delegations, which are not yet in a position to commit a contribution to the Fund, have expressed their willingness to consider favorably specific allotments for travel assistance to invited participants from the developing countries.

5. It may be noted further that many Members and organizations directly provide an impressive amount of help in kind (including such activities as hosting the meetings of IPCC Working Groups and their subgroups, and supporting the travel of experts). In addition, several Members are providing assistance through bilateral and regional arrangements.

6. The annual cash contributions of WMO and UNEP each of SF 125,000 are not reflected in the tables.

TABLE I

1989

MEMBER	CONTRIBUTION			REMITTED
	or cur	or amount	Sfr eq.	
Japan	\$	50,000	75,500	yes
Denmark	\$	5,000	7,550	yes
Finland	\$	5,000	7,950	yes
Canada	Can\$	11,000	14,519	yes(1)
	Can\$	5,000		
Saudi Arabia	\$	10,000	16,500	yes
UK	£	10,000 25,000	27,193	yes(2)
Norway	\$	15,000	25,050	yes
USA	\$	10,000	16,700	yes(3)
	\$	50,000	83,500	yes
France	FF	100,000	25,303	yes
Switzerland	SF	10,000	10,000	(4)
	\$	5,000		
Netherlands	\$	25,000		
FRG	DM	50,000		
Australia	Aus\$	10,000	12,677	yes

1. Out of the Canadian contribution, Can\$ 5,000 is for the support of the participation of a representative from the Caribbean region.

2. The contribution of £25,000 from UK is for the support of the participation of selected developing countries in IPCC activities. This amount will be spread over 1989 as well as 1990.

3. The contribution of \$ 10,000 from USA is for the support of the participation of the developing countries in the activities of IPCC Working Group III.

The other contribution of \$ 50,000 is for IPCC Secretariat support.

4. The contribution of \$ 5,000 from Switzerland is for the support of the participation of the developing countries in IPCC activities.

TABLE II

1990		
MEMBER	CURRENCY	CONTRIBUTION amount
China	\$	10,000(1)
Japan	\$	50,000
Canada	Can\$	22,400
Italy	\$	50,000
Finland	\$	10,000
FRG	DM	160,000(2)
USA	\$	50,000
	\$	100,000(3)
WWF	\$	8,000(4)
Norway	\$	100,000(5)

1. Acknowledging the gravity of the consequences of the predicted warming as a common problem for all humanity, and in a fine gesture of co-operation between the developing and the developed worlds, China pledged \$ 10,000 to assist the participation of colleagues from other developing countries.

2. DM 160,000 from the Federal Republic of Germany is its combined contribution for IPCC activities and the Second World Climate Conference.

3. The contribution of \$ 100,000 from the USA is for the support of the participation of the developing countries in IPCC activities.

4. The contribution of \$ 8,000 from the World Wildlife Fund International is for organizing "crash seminars" related to climate change in developing countries.

5. Norway is willing to make available upto \$ 100,000 for "crash seminars" related to climate change in developing countries.

TABLE III

 SPECIFIC CONTRIBUTIONS FOR SUPPORTING THE PARTICIPATION
 OF THE DEVELOPING COUNTRIES

MEMBER	CONTRIBUTION	YEAR
Canada	Can\$ 5,000	1989
USA	\$ 10,000	1989
Switze- rland	\$ 5,000	1989
UK	£ 25,000	1989-90
China	\$ 10,000	1990
USA	\$ 100,000	1990
WWF	\$ 8,000	1990(1)
Norway	\$ 100,000	1989-90(2)

For explanations of footnotes 1 and 2, see table II.



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Organisation météorologique mondiale

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Environment Programme
Programme des Nations Unies
pour l'Environnement
PO Box 30552 - Nairobi, Kenya



INTERGOVERNMENTAL PANEL
ON CLIMATE CHANGE
BUREAU, FIRST SESSION

GENEVA, 6-7 FEBRUARY 1989

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IPCC BUDGET AND OTHER SUPPORT

(Submitted by Secretary, IPCC)

IPCC Bureau is invited to comment on this document, especially with respect to meeting the shortfall in the 1989 estimate.

1. IPCC Secretariat is responsible for developing budget proposals for consideration by the executive heads of WMO and UNEP, who will approve, control, and exercise other oversight functions on the expenditures. The Secretariat can commit funds up to the approved amounts and has the responsibility of drawing the attention of the Executive Heads to potential problems.

2. The budget estimates presented in this document are in Swiss francs.

1989 Budget estimate

3. The summary of the 1989 costs of the sessions of IPCC and its Bureau and working groups, together with the assumptions made in arriving at them, are:

(a) IPCC second session	SFR 89 000
- 3-day meeting (28-30 June 1989). - Simultaneous interpretation in English, French Russian and Spanish - Documentation prepared during session in English only, with subsequent translation into French, Russian and Spanish - Support for participants from Nigeria, Brazil, Senegal, China, Malta, Zimbabwe, Tanzania, Algeria, India, Mexico, Indonesia - 2 IPCC Secretariat staff attending	
(b) IPCC Bureau sessions	SFR 64 000
- Two 2-day sessions, one in February and another in late 1989, both in Geneva - Simultaneous interpretation in English, French and Russian - Documentation prepared during sessions in English only, with subsequent translation into French, Russian and Spanish - Support to one participant each from Nigeria, Brazil, Senegal, China, Malta, Zimbabwe	
(c) Working group sessions	SFR 180 000
- two rounds of sessions, one in January-February and another in October-November 1989 - working language English - support to one participant from each of the five LDC-Core Members of each of the WGs - 1 IPCC Secretariat staff attending each session	
SUBTOTAL	SFR 333 000

It may be noted that, in the above considerations, travel support for the attendance of invited experts at the working group and/or the panel sessions is not included.

4. The IPCC Secretariat costs are:

- IPCC Secretary	SFR 188 000
- Programme Officer	145 000
- Administrative Assistant and part-time typist/clerk	144 000
- Overhead at 12.5% of personnel costs	60 000
- Unspecified travel for Secretariat staff (4 trips) for co-ordination purposes	10 000
SUBTOTAL	SFR 547 000

5. Thus the total estimated needs are SFR 880 000 for 1989. Further details are given in Annex 1.

WMO/UNEP IPCC Trust Fund

6. It may be recalled that, during the first session of IPCC, several Members pledged financial contributions to the Trust Fund. The pledges were as follows:

Denmark	US \$5 000
Finland	US \$5 000
Japan	US \$50 000
USA	US \$50 000
UK	£10 000

Since then, Canada has promised Can \$11 000 (this to be per annum until 1991) and Switzerland SFR 5 000.

Of these amounts, Japan has already remitted US \$50 000 to the WMO Secretariat through its Voluntary Co-operation Programme agreement.

7. A WMO/UNEP IPCC Trust Fund has been established at the WMO Secretariat and will be administered by WMO.

8. Letters have been sent out jointly by the Executive Director of UNEP and the Secretary-General of WMO requesting contributions to the Trust Fund from Australia, FRG, France, GDR, Israel, Italy, Netherlands, New Zealand, Norway, Saudi Arabia, Sweden and the USSR.

WMO support

9. The person-year cost of the IPCC Secretary is borne by WMO.

UNEP support

10. The person-year cost of the Programme Officer is borne by UNEP.

Status of 1989 budget

11. Of the 1989 budget estimate of SFR 880 000, the WMO/UNEP support amounts to SFR 333 000. The Trust Fund pledges and remittances amount to approximately SFR 205 000. There is then, a shortfall of SFR 342 000. Both WMO and UNEP have been approached for further contributions of SFR 125 000 each.

1990 budget

12. The budget to cover IPCC activities in 1990 is estimated at the same level as that for 1989.

IPCC Secretariat staff

13. IPCC Secretariat, at present, consists of (a) IPCC Secretary, (b) Programme Officer and (c) a temporary full-time secretarial assistant.

Annex 1

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

Proposed budget for 1989

SECTION A: INSTITUTIONAL SUPPORT

1.	SESSIONS OF WORKING GROUPS	SFR
1.1	<u>Working Group I, UK, 24-26 January 1989</u>	
1.1.1	Interpretation	-
1.1.2	Translation of report (F, R, S) (15 pages)	2 500
1.1.3	Reproduction of reports (15 pages) - 300 copies	500
1.1.4	Travel of Secretariat staff (1 officer)	2 150
1.1.5	Support to developing countries, (Brazil, Senegal, China, Tanzania, Kenya)	23 310
1.2	<u>Working Group I, UK, ca. October 1989</u>	
1.2.1	Interpretation	-
1.2.2	Translation of report (F, R, S) (30 pages)	5 100
1.2.3	Reproduction of report (30 pages) - 300 copies	500
1.2.4	Travel of Secretariat staff (1 officer)	2 150
1.2.5	Support to developing countries (Brazil, Senegal, China, Tanzania, Kenya)	23 310
1.3	<u>Working Group II, Geneva, 1-2 February 1989</u>	
1.3.1	Interpretation (Russian/English) (25 people)	1 000
1.3.2	Translation of report (F, R, S) (20 pages)	3 400
1.3.3	Reproduction of report (20 pages) - 300 copies	500
1.3.4	Travel of Secretariat staff	-
1.3.5	Support to developing countries (Algeria, India, Mexico, Nigeria, Indonesia)	14 670
1.4	<u>Working Group II, USSR, ca. October 1989</u>	
1.4.1	Interpretation (R/E)	-
1.4.2	Translation of report (E, F, S) (40 pages)	6 800
1.4.3	Reproduction of report (40 pages) - 300 copies	600
1.4.4	Travel of Secretariat staff (1 officer, 1 administrative assistant)	5 760
1.4.5	Support to developing countries (Algeria, India, Mexico, Nigeria, Indonesia)	20 220
1.5	<u>Working Group III, Washington DC, 30-31 January 1989</u>	
1.5.1	Interpretation	-
1.5.2	Translation of report (F, R, S) (15 pages)	2 500
1.5.3	Reproduction of report (15 pages) - 300 copies	500
1.5.4	Travel of Secretariat staff (1 officer)	4 250
1.5.5	Support to developing countries (China, Malta, Zimbabwe, Brazil, India)	25 000

1.6	<u>Working Group III, USA, ca. October 1989</u>	SFR
1.6.1	Interpretation	-
1.6.2	Translation of report (F, R, S) (30 pages)	5 100
1.6.3	Reproduction of report (30 pages) - 300 copies	500
1.6.4	Travel of Secretariat staff (1 officer)	4 250
1.6.5	Support to developing countries (see 1.5.5)	25 000
2.	MEETINGS OF THE BUREAU	
2.1.	<u>First session of the Bureau, 6-7 February 1989, Geneva</u>	
2.1.1	Interpretation (E, F, R) (30 people)	1 500
2.1.2	Translation of report (F, R, S) (40 pages)	6 800
2.1.3	Reproduction of report (40 pages) - 300 copies	600
2.1.4	Secretariat travel	-
2.1.5	Support to developing countries (Brazil, China, Malta, Nigeria, Senegal, Zimbabwe)	23 000
2.1.6	Hospitality	300
2.2	<u>Second session of the Bureau, Geneva, ca. November 1989</u>	
2.2.1	Interpretation (E, F, R) (30 people)	1 500
2.2.2	Translation of report (40 pages)	6 800
2.2.3	Reproduction of report (40 pages) - 300 copies	600
2.2.4	Secretariat travel	-
2.2.5	Support to developing countries (See 2.1.5)	23 000
2.2.6	Hospitality	300
3.	SESSIONS OF THE PANEL	
3.1	<u>Second session of the panel, Nairobi, 28-30 June 1989</u>	
3.1.1	Interpretation (E, F, R, S) (150 people)	25 000 *
3.1.2	Translation of report (50 pages)	8 500
3.1.3	Reproduction of report (50 pages) - 300 copies	700
3.1.4	Travel of Secretariat staff (2 officers)	9 480
3.1.5	Support to developing countries (Brazil, China, Nigeria, Senegal, Malta, Zimbabwe, Tanzania, Kenya **, Algeria, India, Mexico, Indonesia)	45 000
3.1.6	Hospitality (approx. 150 people)	500

* Includes DSA and travel for interpreters from Geneva to Nairobi

** Not included in costing.

SECTION B: PERSONNEL

SFR

1. IPCC Secretary * (P.5)	188 000
2. Programme Officer ** (P.4)	145 200
3. Administrative assistant (G.6)	108 000
4. Typist (half-time)	36 000

* will be paid by WMO

** Will be paid by UNEP

SECTION C: OVERHEAD COSTS

Telephone, telexes, telefax, postage, etc.
(12,5% of personnel cost)

60 000

SUMMARY (Swiss francs)

	Interpretation	Translation	Reproduction	Travel (Sec)	Support (DC)	Hospitality	TOTAL
A. WG 1 (1)	-	2 500	500	2 150	23 310	-	28 460
WG 1 (2)	-	5 100	500	2 150	23 310	-	31 060
WG 2 (1)	1 000	3 400	500	-	14 670	-	19 570
WG 2 (2)	-	6 800	600	5 760	20 220	-	33 380
WG 3 (1)	-	2 500	500	4 250	25 000	-	32 250
WG 3 (2)	-	5 100	500	4 250	25 000	-	34 850
BUREAU (1)	1 500	6 800	600	-	23 000	300	32 200
BUREAU (2)	1 500	6 800	600	-	23 000	300	32 200
IPCC (2)	25 000	8 500	700	9 480	45 000	500	89 180
TOTAL	29 000	47 500	5 000	28 040	222 510	1 100	333 150
(Per cent)	(9)	(14)	(2)	(8)	(67)	-	(100)
B. TOTAL PERSONNEL							477 200
C. OVERHEAD COSTS (12% of total personnel costs)							60 000
D. UNSPECIFIED TRAVEL (Secr. staff)					10 000		10 000

LIST OF IPCC MEETINGS

<u>Date</u>	<u>Venue</u>	<u>Meeting/activity</u>	<u>Organization</u>
<u>AUGUST</u>			
8	Toronto	Ecosystems subgroups	IPCC WGI/WGII
<u>SEPTEMBER</u>			
11-15	Berne	Workshop: Greenhouse Gases Subgroup	IPCC WGI
18-20 (postponed to 26-27 Oct. 1989)	Geneva	Hydrology and Water Resources Subgroup	IPCC WGII
18-20	Toronto	Meeting of Subgroup on Cryosphere and Permafrost	IPCC WGII
18-21	Tokyo Japan	Subgroup on Energy, Industry, Transportation, Settlements and Human Health	IPCC WGII
21-22 (postponed)	Paris	Agriculture and Forestry Subgroup	IPCC WGII/OECD*
25-26	Pangbourne, UK	Workshop: Sea level rise Subgroup	IPCC WGI/Univ. of East Anglia
28-29	Paris	IPCC Special Committee on Developing Countries	Govt. of France/ IPCC
28-29	Geneva	Energy and Industry Subgroup	IPCC WGIII
-	Washington	Agricultural Data and Practices: Subgroup on Agriculture and Forestry (AFOS)**	IPCC WGIII
-	Helsinki	Workshop on Boreal Forests: (AFOS)	IPCC WGIII
<u>OCTOBER</u>			
2-6	Geneva	Second session	IPCC WGIII
2-6	Moscow	Climate Change and World Fisheries: Subgroup on World Oceans and Cryosphere	IPCC WGII

* OECD - Organization for Economic Co-operation & Development

** AFOS - Agriculture and Forestry Subgroup of WG III
(WCP-478)

18-20	Boston	Workshop: Greenhouse gases (non-CO ₂)	IPCC WGI
30-31	Bonn	Workshop on Temperate Forests (AFOS)	IPCC WGIII
30-1 Nov.	Geneva	Resource Use & Management Subgroup	IPCC WGIII
31-3 Nov.	Geneva	Second session	IPCC WGII

NOVEMBER

2-3	Geneva	Agriculture & Forestry Subgroup	IPCC WGIII
23-24	Egham, UK	Paleo-analogue Climate Forecasting	IPCC WGI/WGII
27-1 Dec.	Miami	Coastal Zone Management Subgroup	IPCC WGIII
29-1 Dec.	Bracknell, UK	Climate Trends Subgroup	IPCC WGI

DECEMBER

11-15	Brisbane	Subgroup on Model Predictions and Validation	IPCC WGI
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SECTION B: 1990

JANUARY

-	Reading, UK	Workshop: Climate Forcing Agencies	IPCC WGI
-	San Diego, USA	Workshop: Comparison Transient Simulations	IPCC WGI
-	Brazil	Workshop: Tropical Forests, WGIII (AFOS)	Govts. of USA/ Brazil/IPCC WGIII

FEBRUARY

5-7	Washington	IPCC third session	Govt. of USA/IPCC
7-8	Washington	IPCC Bureau second session	Govt. of USA/IPCC
26-2 Mar.	UK	Meeting Lead Authors	IPCC WG I
- (WCP-478)	Australia	Coastal Zone Management Subgroup	IPCC WGIII

MAY

8-10 (tentative)	TBD	Third session, approval or report of WG	IPCC WGIII
23-25	UK	Second session, approval of report of WG	IPCC WGI
-	Moscow	Third session, approval of report of WG	IPCC WGII

AUGUST

-	Stockholm	IPCC fourth session, approval of first assessment report of IPCC	Govt. Sweden/IPCC
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LIST OF ACRONYMS

ACMAD	African Centre of Meteorological Applications for Development
EC	Executive Council of WMO
ECE	Economic Commission for Europe
FAO	Food and Agriculture Organisation of the United Nations
GAW	Global Atmosphere Watch (WMO)
GC	Governing Council of UNEP
GHG	Greenhouse Gases
GIS	Geographical Information System
GNP	Gross National Product
GRID	Global Resources Information Database (UNEP)
IAEA	International Atomic Energy Agency
ICSU	International Council of Scientific Unions
IEA	International Energy Agency (OECD)
IGBP	International Geosphere-Biosphere Programme (ICSU)
IIASA	International Institute for Applied Systems Analyses
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IPCC	Intergovernmental Panel on Climate Change (WMO/UNEP)
JSC	Joint Scientific Committee for the World Climate Research Programme (WMO/ICSU)
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCP	World Climate Programme
WCRP	World Climate Research Programme
WMO	World Meteorological Organization
WWF	World Wide Fund for Nature
WWW	World Weather Watch (WMO)

