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INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

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ON CLIMATE CHANGE

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PROGRESS REPORT ON OUTREACH

Detailed list of activities submitted by the Technical Support Units of Working Groups 2 and 3

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WORKING GROUP II REPORT

Outreach Activities by Participants in the IPCC Working Group II Fourth Assessment Report

27 June 2008

Name: Neil Adger

Conferences and workshops:

- IPCC WG2 results, University of East Anglia, Norwich 17/9/07
- Adger, W. N. (2008) Are there limits to adaptation? Opening Lecture, 'Living with Climate Change: Are there Limits to Adaptation?' Royal Geographical Society, London, 7-8th February.
- Adger, W. N. (2007) Can we Adapt to the Climate Crisis? Inaugural Gene and Carol Willeke Frontiers in Environmental Science Distinguished Lecture, Miami University, Oxford Ohio, 7th November.
- Adger, W. N. (2007) The Science of Climate Change Impacts and Adaptation. Presented at the Launch Meeting of the Northern Ireland Climate Change Coalition, Stormont Assembly, Belfast, 22nd October.
- Adger, W. N. (2007) Adapting to Climate Change: Governance Challenges. Presented at DFID Headquarters, London, 11th September.
- Adger, W. N. (2007) Governments, responsibilities, barriers and actors in adaptation action for climate change. Presented at National Summit on Coping with Climate Change, University of Michigan, Ann Arbor Michigan, 8-10 May

Name: Rais Akhtar

Briefings:

- After the announcement of Nobel Prize to the IPCC, Reporter of Indian Express interviewed me about the IPCC activities, and impact on India. The write up along with my profile was published on 21st October, 2007.

Name: Abdelkader Allali

Briefings:

- Conceptualizing and preparing technical and policy documents on climate change and food security. International Expert on Climate Change under the direct supervision of the FAO Assistant Director-General and Director of the Natural Resources Management and Environment Department (NRD), and in coordination with the ad hoc Inter-Departmental Task Force on Global Challenges and its Core Group.

Name: Samar Attaher

Publications:

- Attaher, S. M., Medany, M. A., Abdel Aziz, A.A. and El-Gindy, A.,2007, Assessment of Irrigated Agriculture Vulnerability and Adaptation to Climate Change in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April , 2007 (in press).
- Attaher, S. M. and Medany, M. A., 2007, Climate Change and Irrigation in Mediterranean Region, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).

- Medany, M. A., Attaher, S. M. and Abou-Hadid, A. F., 2007, Socio-economical analysis of agricultural stakeholders in relation to adapting capacity to climate change in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April , 2007 (in press).
- Medany, M. A., Hassanien, M.K. and Attaher, S. M., 2007, Analysis and Mitigation Options of Methane Emissions from Egyptian Paddy Rice, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Reports: Shared as an assistant editor in Chapter 9 of " Impact of Climate Change on Arab Countries" included in the special report of the Arab Forum for Environment and Development (AFED) of " ARAB ENVIRONMENT: FUTURE CHALLENGES", 2007 (in press).

The following papers abstracts are accepted and shared in the international conference on "climate change and Agriculture", that will be held in April 8-11, 2008, in Sadat Acadamy of envirionmental science, Minofya, Egypt:

- Attaher, S. M. and Medany, M. A., Analysis of crop water use efficiencies in Egypt under climate change.
- Medany, M. A. and Attaher, S. M., Vulnerability Assessment of agriculture sector in the Nile Delta Region.
- Khalil, A. A., Hassanien, M.K., Attaher, S. M. and Medany, M. A., Observed changes in surface air temperature over Egypt.

Conferences and workshops:

- The International Conference on Climate Changes and Their Impacts on Costal Zones and River Deltas: Vulnerability, Mitigation and Adaptation. 23-25 April 2007, Alexandria, Egypt.
- UNFCCC Workshop on Climate Related Risks and Extreme events under the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, 18-20 June 2007, Cairo, Egypt.
- UNFCCC Workshop on Exchange of Experiences and Good Practices Among Non-Annex I Parties in Preparing National Communication and Cross Cutting Issues, 20-22 September 2007, Cairo, Egypt.

Name: Richard Betts

Conferences and workshops:

- Many of my public talks include many AR4 results. eg: South West Chamber of Rural Enterprise, various local environmental groups or visitors to the Met Office.
- I gave a presentation on WGII stuff at the House of Commons to the All-Party working group on climate change, and one to the board and staff of the Eden Project on both WGI and WGII. I wrote one on WG1 and WG11 for the Climate Group to give by videoconference but the technology failed and their boss had to give it on my behalf!
- I gave a briefing to the Live Earth production team on AR4 results (both WG1 and WG11).

Briefings:

- At the Bali conference, I publicly debunked Viscount Monckton's outrageous claims about the IPCC review process being flawed - fortunately he only attracted an audience of 9 people, including some of his cronies, but at least the media saw an IPCC author setting the record straight.

Name: Marco Bindi

Publications:

- F. Miglietta, M. Bindi, F. Vaccari, M. Moriondo, 2008. Chapter 5: Impact of climate change on agriculture. In: Vulnerability and Impacts of climate change in Italy: elements for possible national adaptation strategies (Eds. S. Castellari, V. Artale) (in press) (in Italian)
- M. Moriondo, M. Bindi, 2008. Impact of climate change on the phenology of typical Mediterranean crops, Italian Journal of Agrometeorology, (in press) (in English)
- M.Bindi and J.E. Olesen, 2008. The responses of the agriculture in Europe to climate change. In "Climate impact hotspots – Key vulnerable regions and climate change" (Eds. B.Hare, A. Battaglini, C. Jaeger and Wolfgang Cramer) (in press) (in English)
- S. Orlandini, M. Bindi, M. Howden, 2008. Chapter 6: Plant Biometeorology and adaptation. In: Biometeorology for Adaptation to climate Vulnerability and Change: Research Frontiers and Perspectives (Eds. K.L. Ebi, I. Burton, and G. McGregor) (in press) (in English)
- M. Moriondo, C. Giannakopoulos, M. Bindi, 2008. The role of climate extremes in crop yield climaye change impacts assessments. Climatic change (submitted) (in English)

Conferences and workshops:

In the conferences or workshops reported below, I presented results reported in the IPCC report or the main outputs of WGI, WGII and WGIII:

- M. Bindi, "Climate change and Agriculture: Impacts, Uncertainties and Adaptation Options" at Expert JRC Meeting on Climate Change impacts on European Agriculture, 8-9 March 2007, Ispra (Italy) (in English)
- M. Bindi, M. Moriondo, "Impact of climate change on agricultural ecosystems: status and perspective of research" at Convegno Nazionale di Fisica della Terra Fluida e Problematiche Affini: Sezione n. 5 - Climatologia Applicata e Storica, 11-15 June 2007, Ischia (Italy) (in Italian)
- M. Bindi, "Climate change and cultural ecosystems vulnerability" at Workshop: Vulnerabilità dei sistemi colturali ai cambiamenti climatici, 18-19 October, Bari (Italy) (in Italian)
- M. Bindi, "Agronomic techniques to cope with climate change" at Workshop: Le giornate di Studio di GranoItalia, III SESSIONE: Le Ripercussioni Tecniche dei Cambiamenti Climatici nel Settore dei Seminativi: Ipotesi e Scenari Futuri, 27-28 Septeber 2007, Bologna (Italy) (in Italian)
- M. Bindi, J. Olesen, "IPCC Fourth Assessment Report: Climate change Impacts, Adaptation and Mitigation Strategies for agricultural ecosystems", at XXXVII Convegno della Società Italiana di Agronomia, 13-14 September, Catania (Italy)
- M. Bindi, "Adaptation strategies to climate change in agriculture: the role of climate extreme events", at National Conference on Climate Change, 12-13 September 2007, Roma (Italy) (in Italian)
- M. Bindi, "ADAPT OR DIE: The response of agriculture to address climate change", at Preparing Workshop for the National Conference on Climate Change, 20 July 2007, Bridisi (Italy) (in Italian)

Briefings:

- Interviews in Local and National newspaper, magazine, and TV channels

Name: Michel Boko

Conferences and workshops:

- I attended an African Regional Workshop on Water Resources in changing climate context in June 2007 in Cotonou (Benin). During this meeting I gave an oral presentation (PowerPoint) on the outlines of our Chapter 9 (Africa and Climate change).

- Presently, the Beninese minister in charge of Environment issues and Natural Resource Protection is preparing a sub-regional meeting (named Sub Regional Dialog) on Climate Change of which I am the president of the scientific sub-committee. We are in charge of identifying the topics related to climate change and regional development issues. This meeting will take place on June 24 - 27th, 2008.
- 20 - 21st March 2008 in Porto-Novo (capital of Benin) the first ordinary session of the Beninese National Committee of Climate Change will take place. During this session, a presentation will be given on the synthesis report of AR4 in the form of PowerPoint document. I am in charge of this presentation, since I am the scientific secretary of the National Committee for Climate Change

Briefings:

- During June 2007, a chairlady of Radio Canada International interviewed me by phone. She was living in Dakar, Senegal and we talked about thirty minutes on Africa capability to face climate change impacts.

Name: Lino Briguglio

Publications:

- Lino Briguglio, Kanayathu Koshy, Leonard Nurse and Poh Poh Wong. "Climate Change and Small Island Developing States." A Commonwealth Policy Studies Unit Briefing. Commonwealth Heads of Governments Meeting at Kampala. November 2007

Name: James P. Bruce

Publications:

- Contributed (with many other IPCC – WG2 participants) to "From Impacts to Adaptation: Canada in a Changing Climate, 2007)", http://adaptation2007.nrcan.gc.ca

Conferences and workshops:

- Canadian Meteorological and Oceanographic Society Annual Conference; Plenary Lecture: Extreme events in a changing climate. St. John's Nfld., 28-31 May, 2007
- Canadian Standards Association Conference; Should construction standards be modified in a changing climate Halifax, N.S., 11-12 June, 2007
- Latornell Conservation Conference – Annual Conference; Lecture: Planning for Extremes; Aliston, Ontario, 14-16 Nov. 2007
- Conference Board of Canada – National Workshop, Ottawa, 22-23 Jan; Keynote Address: Adaptation to Climate Change, several IPCC Speakers - e.g. Linda Mortsch
- Workshop on Adaptation for Aboriginal Communities. Winnipeg, Manitoba, 14-15 Feb. 2008
- Conference of Confederation, Adaptation Summit – Water. Keynote Address: Toronto, Ontario, 31 Mar. – 1 April, 2008

Briefings:

- TV Interview with Red Cross representative on increasing disasters in a changing climate. Ottawa, Canada, 27 Feb., 2008
- Extensive media coverage of Nobel Peace Prize and Canadian IPCC contributors. Canadian Newspapers, December, 2007
- Reception for IPCC contributors on Parliament Hill by all Opposition Parties of Gov't. Ottawa, Canada, Feb. 13, 2008

Name: Virginia Burkett

Conferences and workshops:

- George Wright Society Annual meeting in Minneapolis (April 16, 2007)
- U.S. House and Senate committees (April 17, 2007)
- US Fish and Wildlife Service, headquarters staff in Arlington, VA (April 18, 2007)
- Staff of US Senators Landrieu and Young (May 1, 2007)
- US Congressional Research Service (May 1, 2007)
- US Department of Interior Assistant Secretary Mark Limbaugh and members of his staff (May 2, 2007).
- Center for Clean Air Policy (May 10, 2007)
- Symposium on Urban Climate Change at Columbia University (May 11, 2007)
- US Department of Interior's Climate Change Task Force (May 22, 2007)
- Louisiana Coastal Area Science Board (June 26, 2007)
- Directors and staff leaders of the US Geological Survey and the US Fish and Wildlife Service (July 23, 2007)
- US Fish and Wildlife Service, Southeast Region's Project Leaders Meeting in Auburn, Alabama (August 1, 2007)
- Association of Fish and Wildlife Agencies annual meeting in Louisville Kentucky (September 18, 2007)
- Many Junior High School, Louisiana (September 21, 2007)
- Directors of the US National Estuarine Research Reserve System (October 23, 2007)
- Arkansas Environmental Federation (November 7, 2007)
- Louisiana School for the Math, Arts, and Sciences (November 9, 2007)
- Wildwood (a Citizens Organization in North Louisiana) (November 9, 2007)
- Symposium on Urban Coasts and Climate Change, sponsored by New York Sea Grant (November 15, 2007)
- International Delta Workshop hosted by the US Geological Survey (November 30, 2007)
- All employee national broadcast for the staff of the US Fish and Wildlife Service (December 4, 2007)
- Everglades Task Force (December 6, 2007)
- Galveston Bay Council (January 23, 2008) US Association of Zoos and Aquariums (January 24, 2007)
- Workshop on Climate Change and South Florida (February 7, 2007)
- Deans and Directors, National Association of State Universities and Land Grant Colleges (February 19, 2007)
- Workshop on Biodiversity and Climate Change in the Americas, hosted by the Smithsonian Institution (February 28, 2008)
- NOAA Coastal Services Center, Workshop on Climate Change and Coasts (March 12, 2008)

Briefings:

- Canadian Broadcasting System (public television),
- National Public Radio,
- Interviewed by Fortune Magazine, Associated Press,
- Planning Magazine,
- Emergency Management Magazine,
- Geotimes magazine,
- National Geographic magazine
- Several newspapers for help on stories they were doing on the effects of climate change (this is over period of a few months)

Name: Ian Burton

Conferences and workshops:

- Outreach presentations in Botswana in September 2007
- Presentation to Conference Board of Canada, 5 February 2008: "IPCC and the Future of Adaptation".
- Presentation to Scarborough College Conference organized by Monirul Mirza, 19 February 2008
- Various informal presentations at the National Round Table on Environment and Economy. Canada.
- Ditto at the Premier's Advisory Panel on climate change Adaptation - Ontario.
- Others....

Briefings:

- Numerous press briefings... Globe and Mail, Ottawa Citizen, etc.

Name: Terry Callaghan

Briefings:

- Presentations almost every week that acknowledge and refer to our polar chapter. These presentations range from school kids and reindeer herders to religious leaders of the world and 27 of the world's ministers of the environment together with 50 climate negotiators/ambassadors whom I hosted at Abisko last year.

Name: Gillian Cambers

Publications:

- Cambers, G. 2007. Islands, tsunamis, flooding and destruction: Reconstruction after the disaster. Marejada, 1 (1), University of Puerto Rico Sea Grant College Program, pp 17-19
- Cambers, G., Diamond, P. (Editors). 2007. The Sandwatcher, Special Issue on Climate Change, 2 (3), 14 pages
- Lead author of CCBIC report "Climate change impacts on coastal and marine biodiversity", December 2007
- Cambers, G., Richards, L., Roberts-Hodge, S. 2008. Conserving Caribbean beaches. Tiempo, 66, pp 18-22
- Cambers, G. 2008. 2008. (In press). Communities coping with climate change: a perspective from the Caribbean. Paper submitted to Aquatic Ecosystem Health and Management Journal

Conferences and workshops:

- Presentation on "Community approaches to coping with beach erosion"
- One day workshop, Jakarta, Indonesia Audience of government agencies & NGOs. 01.05.07
- Participation in a round table discussion on "Facing the consequences of climate change in Puerto Rico"
- Audience: Scientists and professionals working in the field of climate change in Puerto Rico. 08-11.05.07
- Working Group Leader in project "Climate Change and Biodiversity in the Insular Caribbean (CCBIC)" supported by the John D and Catherine T Mac Arthur Foundation and executed by the Caribbean Natural Resources Institute. April 2007-December 2008
- Workshops: February 2007, September 2007, February 2008, June 2008, November 2008
- June – September 2007: Workshops and meetings relating to a community-based climate change project: "Beach communities coping with climate change, Punta del Mar Coastal Forest, Rincon, Puerto Rico"
- Presentation on "Impact of climate change on the beaches of the Caribbean" at the Commonwealth Association of Planners Regional Conference 25-27: 06.07

- Presentation on "Communities coping with climate change: a perspective from the Caribbean at the Beaches World Tour 2007: a conference on best practices and key issues at beaches and coastal environments around the world 10-11: 10.07
- Participation in a regional consultation on Climate change and poverty reduction in the Latin America and Caribbean Region, organized by the International Development Research Council, Canada 24-25.01.08
- Joint coordinator of an international video competition targeting children and youth with the theme "Coping with climate change: Sandwatch leading the way 2008 Video Competition" March – December 2008

My work involves a lot of community outreach with schools, youth groups, NGOs and CBOs, and many of the activities listed related to translating some of the findings of AR4, WGII for those different audiences.

Name: Osvaldo F. Canziani, Co-Chair Working Group II

Note: The events presented include only those performed after the approval of the WG II contribution to AR4, in Brussels, (April 2007).

Conferences and workshops:

- Official activity developed on 10th April 2007, in the UN Information Centre, in Buenos Aires. This activity also served to report to other countries in South America, through the communication channels and media links, the UN Information Centre, in Buenos Aires, manages for South America. The newsmen who attended the meeting disseminated the news in Latin America. This outreaching activity was developed by a team integrated by Drs Graciela Magrin, Jorge O. Codignotto and Osvaldo F. Canziani and Engineer Juan Carlos Gimenez.. The coordination was undertaken by Dr Canziani with Mr Gustavo Poch, communications officer of the UNIC Buenos Aires. The presentation included a general view of the WG II ´s conclusions, by Dr Canziani; as presented in the WG II SPM; followed by a description of Chapter 13- Latin America Findings, by Dr Magerin; the issue on coasts and low lying areas by Dr Codignotto, and the water problems in the region, by Eng. Gimenez. The presentations were made using complete power point imagery and notes ion the main issues.
- In early May 2007, the Superior School of the Argentine Navy organized an event to inform. its members and students on the conclusions of the IPCC, and its relationship with marine activities. The presentations were made by Drs Osvaldo F. Canziani and Jorge O. Codignotto and Erng. Juan Carlos Gimenez, who presented, respectively, a general view of the AR4 ´s conclusions and those of WG II; a view of the problems to be faced by coasts and low-lying areas and the water problem in the Latin America.. A general discussion followed the presentation, attended by some 100people.
- Invited by the Organizing Committee of the International Conference on Climate Change (ICCC2007), integrated by an important group of Hong Kong private enterprises and the Hong Kong University. This group received the support of 21 international groups and general consulates of European countries, in Hong Kong and some international agencies, like the WMO, IFC/WB. The ICCC2007 also had the auspices of the Chinese Government, represented by the Vice-Minister, of the China ´s Ministry of Science and chairman of the National Committee for the International Human Dimensions Programme and Global Environmental Change. The ICCC2007 was held from 29 to 31 May 2007. The closing ceremony was attended by the China-´s Minister of. Science. A video presentation by Dr R. Pachauri, IPCC Chair, opened the participation of three of the IPCC Co-chairs representing the developing regions of the world, i.e. Drs Q. Dahe, O.F. Canziani and O. Davidson. They presented the findings of their respective working groups. Moreover, integrating the individual presentations made during the three days events, the Co-Chair of WG II presented a lecture on "Climate Change, whose responsibility?", describing the responsibilities to be assumed by the developing countries of the world, for their own sake The impact of the ICCC 2007 went further with the establishment of the Hong Kong Climate Forum, a non-governmental

organization already associated to the UNFCCC Secretariat. At the request of its Chair, Eng. Otto Poon, Dr O.F. Caznaini has become advisor to the Forum.

It should be remarked that the IPCC Co-Chairs also assume the duty of referees for the evaluation of the papers to be presented at this International Conference. Moreover, at the request of the WG II Co-chair, funds we awarded for the participation of two CLAs of the this Working Group.

- Participation at the Meeting of the Chamber of Commerce of the City of Lima, Peru. The President of this Chamber invited, Dr O.F. Canziani to present the conclusions of the IPCC WG II, to an audience, of more than 300 people (14-15 July 2007).
- National Congress of ACREA-(Asociación de Consorcios Regionales de Empresas Agrícolas). At the request of the President of ACREA the conclusions of the IPCC WG II were presented. Special emphasis was given to the vulnerability of natural and human-made systems with emphasis in the agricultural and cattle-rising activities. The audience was made of 3,500 farmers and estancieros from the Argentina's provinces. Lecturers from different countries of the Americas and Europe completed the three-day event. A two-person panel discussion, on the geophysical, environmental, and social implications of climate change, was developed with Mrs Dr Yolanda Kakabadse, a sociologist, former UN/CSD officer and Ecuadorean Minister of the Environment. The moderator was Dr Ernesto Vigglizzo, IPC C-WG II-LA. During the lecture presented, emphasis was put in the conclusions reached in many of the AR4 ´s chapters, regarding the lack of basic information. The idea to involve farmers and estancieros in the integration of their own observing systems into the national meteorological network was presented and initially accepted. Further action is currently on the way. The meeting was followed through Internet by enterprisers from Uruguay, Paraguay, Perú, Australia and New Zealand. The addition of the Internet followers brought the assistance up to 5,500 people involved in agricultural activities, who followed became aware of the IPCC conclusions and their global and regional implications.
- ClimaLatino: An International Meeting on Climate Change in Latin America. This meeting took place in two cities of Ecuador, the first two days (15 & 16 October 2007) in Guayaquil and the other two days (17 & 18 October 2007) in Quito. These two-events were organized by the Comunidad Andina and the Municipalities of the Cities of Guayaquil and Quito, with the sponsorship of the Government of Ecuador, through the Ministries of Foreign Relations, Commerce and Integration and the Ministry of the Environment, and the support of the Agencia Española de Cooperación Internacional, y GTZ (German Bilateral Assistance). The outreaching activities in this important international event, where addressed to the CAN (Comunidad Andina de Naciones) which members are: Bolivia, Colombia, Ecuador and Perú. Their representatives participated in the different workshops (a total of 21). The meeting also included nine (9) main lectures. Those involving the IPCC were delivered by Dr Graciela Magrin, under the title "Food Security and Agricultural Production" and Dr Osvaldo F. Canziani Coasts and Oceans: "The effects of Climate Change on islands and costal cities in Latin America". Both IPCC representatives also participated in some of the workshops, Graciela Magrin in those involving agricultural aspects and Osvaldo F. Caznaini on those related to water issues and human health. In this regard, the Workshop on Impact of Climate Change on Health, enabled a thoughtful discussion on the health problems in the Andean-Amazonic Region. This workshop was also attended by the UNEP Regional Director, the Pan-American Health Office and a group of medical doctors from Venezuela, Colombia, Ecuador, Perú and Bolivia. These medical doctors integrate the Andean Health Organism, depending from the "Hipolito Unanue" Convention. During this Workshop, the IPCC Co-chair was requested to present the main conclusions of the IPCC WG II on Health Issues. The discussions enabled him to identify the researchers involved in the malaria, leishmaniasis and chagas disease ´s investigations, for the sake of the coming IPCC assessment report. The second part of ClimaLatino took place in the City of Quito. The opening ceremony was attended by the President of Ecuador, his Vice-President and the Minister of the Environment, as well as the Major of the City of Quito and important personalities of the Republic. The outreaching activities were developed by Drs Graciela Magrin and Osvaldo F. Canziani. The event took place in the Theatre Sucre, the main theatre of the city, and the lectures delivered

were:. “Climate Change in Latin America. Terrestrial Ecosystems. Relevant conclusions of the AR4-IPCC, by Dr Canziani and Food Production under Climate Change, by Graciela Magrin.

- Workshop on Climate Change and Financing for the Environment, between the Academy and the Private Sector, held in Quito on 30 November 2007. This event was sponsored by the Universidad San Francisco de Quito, Fundación Ciceron and GTZ- Regional Team for Environmental Financing. The outreaching activity was developed in the lecture on Climate Change: Trends and perspectives, presented by Dr Canziani. The subsequent discussions, involving the action the private sector should undertake, as well as the immediate actions to be implemented by the Government, enabled the IPCC Co-chair to emphasize the AR4 and its Synthesis Report’s recommendations for the sake of the human and social security as well as the water security in the critical area water-dependant of the ice melting from the disappearing Inter-tropical Andean glaciers.
- Lecture delivered to the paediatric doctors of the Unión de Pediatras Argentinos, on the effect of climate change on human health with specific reference to children’s health. In the Convention ´s Hall of the Paediatric Doctor’s Union, in Buenos Aires, 20 December 2007.
- A meeting with Dr A. Brignone, Dean of the Faculty to coordinate Dr R Pachauri´s participation in the Seminar on the Economic Implications of Climate Change, was held in February 2008. This international seminar will join Nobel Prize specialists from different parts of the world. From the point of view of the outreaching effects, an interview with the Lady President Mrs Cristina Fernandez de Kirchner is programmed. Further action would involve the development of specific training on environmental issues, for which effort Dr O.F. Canziani is invited to participate.
- The convening of a series of events in Northern Peru, in the City of Piura and the summer resort in Mancora city, on the Ecuadorean-Peruvian frontier, followed by a two meetings in Lima, in the premises of the Comunidad Andina de Naciones (CAN), enabled a wide outreaching impact as well as the participation of Drs Graciela Magrin and Osvaldo F. Canziani, in a number of activities, related to climate and climate change issues, which took place, in Peru, from 11 to 15 February 2008. These activities, developed under the auspices and financial support of the GTZ- German Technical Assistance for Rural Areas, involved the following local institutions:
    - Radio Cutivalu, in Piura
    - The Chamber of Commerce and >Production, Piura
    - The School of Engineers, Piura
    - The Post-Grade Centre, of the University of Piura
    - CAN, in Lima.
- The main event in Mancora was the Workshop for Researchers (senior and junior levels, organized by a group of national and private university and tertiary training centres, in a contest involving the study and research of critical issues in the Andean-Amazonic region (i.e. the cold spells in the Altiplano and its health problems; wildfires in the foothills of the Andes). The main one in Piura was related to fully outreaching activities in the above mentioned institutions. The events in Linma were two:
    - one related to the issue on how to face the problems of climate change, involving a TV conference with participants from the CAN countries and the ECLAC, in Santiago, Chile,
    - the other an outreach session, where the activities of the IPCC as well as those undertaken by CAN were presented to a large audience, in the Conference Hall, of the CAN premises
- The above mentioned activities were furthered by Dr Canziani who sent training material and meteorological and climatological data of the South American countries and other training material, for the sake of the researchers participating in the Mancora workshop.
- The Insurance National Organization, in Argentina, invited Dr O.F. Canziani to present them conclusions of the IPCC AR4, as related to the insurance market. The event was held in the City of Rosario, Province of Sanmta Fe, from 14 to 15 March 2008. A lecture on “Insurance Market and Climate Change was presented and followed by an extensive number of questions.
- 4-8 May 2008: Presentation, in a round the table discussion with the Brazilian Minister of Environment, reporting the IPCC AR4 findings and explaining their application to their trade, in the XXXV International Seminar on National Public Budgets, of the International

Association of Public Budget, a UN second level organisation. Held in Brasilia, with the participation of 15,000 delegates from all the Ministries of Economy / Finance, from all countries in Latin America.

- 9 May 2008: Outreaching activities before the National Federation of City Majors, in the Province of Buenos Aires. Participation 240 people
- 10 May 2008: Participation in a round the table discussion organized by the Club of Rome. The table was made of the former Secretaries of Water Resources, of Argentina and Brazil. After the presentation of the AR4 conclusions, a general discussion on the water issue took place.
- Participants about 80 people.
- 12 May 2008: Lecturing in the Course organized by Fundación Bariloche, in the National University of San Martín (province of Buenos Aires). The post-grade training course is devoted to the Global Environmental Change. My segment dealt with the Global Climate Change and its regional and national implications. (40 students)
- 19 -21 May 2008: Opening and participation in the Provincial Seminar on Climate Change and its Effects in the Province´s Economy. Faculty of Engineering of the National University of the Centre of the Province of Buenos Aires. The event takes place in Olavarría (4500 km SW of the City of Buenos Aires). A participation of 300 people is expected
- 28 May 2008: Opening Conference in the Training Cycle for the Preparation of Secondary and Primary Professors and Teachers on Climate Change Outreaching Methodology. This course has been organized under my recommendation to the Association of Private Schools in the City and Province of Buenos Aires. It will be based in the experience gained by the national official levels as a result of the Second National Communication to the UNFCCC. The National Minister of Education has informed us about the intention to develop a simila course in the whole country.
- 29 May 2008: Up-dating of the IPCC findings in the Post-grade Course of Environmental Lawyers, in the Argentina´s Catholic University.
- June 2008: Opening of ECON 08. This is the National Conference on Economy, sponsored by the Faculty of Economical Sciences, of the University of Buenos Aires and the Italian Embassy. Dr R. Pachauri was invited to open the Conference; however he will be present "virtually", through a video presentation. The Conference will the be opened by the former National Minister of Education, Eng J.C. Ginmenez (WG 2 LA) and myself.
- 4- 7 June 2008: Presentation of the IPCC AR 4 ´s conclusion in the National University of Santiago del Estero, in the National Conference on the Environment Day.
- 9-12 June 2008: Conference on the Physics and Chemistry of Climate. Climate Change and its Implications. In the Ceremony in which I will be awarded the title of Doctor In Physics "Honoris Causa"
- 17-18 June 2008: Presentation of the IPCC AR 4 ´s finding, in the Chamber of Senators, of the Province of Buenos Aires
- 24-26 June Presentation of the IPCC conclusions in the National Congress of Agronomic Engineering, In Rosario, Province of Santa Fe.

Briefings:

- Meeting of the Chamber of Commerce of the City of Lima, Peru. TV, radio and newspaper interviews, along the two days of the meeting.(14-15 July 2007).
- TV Presentation of the IPCC AR4 Report, in the evening programme on social and community problems in Argentina, conducted by Dr Nelson Castro. Twenty minutes speech, combined with questions relative to deforestation and its effects on climate and environmental conditions, as related to the Tartagal (NW of Argentina) dramatic consequences of severe flooding. In TN (Todo Noticias) TV, Buenos Aires, 12 July 2007.
- LT8 Radio Station in Santa Fe. Three-hour round-the-table discussions on climate and climate change and its effects. Questions from the listeners and people attending the broadcast, in the studio were answered and commented. This broadcast took place on 5 August 2007, at the Los Notables radio programme, in the capital town of the Province of Santa Fe. Local magazines gave printed form to the issues discussed.

- TV broadcast on “Elemento Vital” (Water), under the auspices of the private company (AySA) supplying water and sewage services to the City of Buenos Aires and its Metropolitan Area. A 20 minutes presentation on the IPCC and the AR4 ´s conclusions was made to an audience of secondary students, public and the jury of the contest. A DVD is available and may be reproduced, if necessary. The event was Buenos Aires, on Sunday 23 September 2007.
- Final Broadcast for the year 2007, of the TV Programme “Elemento Vital”, where Dr Canziani was invited to summarize the IPCC activities during the year 2007. The final broadcast was a largely attended TV show, presenting the finalists of the 2007 ´contest on water, water pollution, potabilization processes and sewage systems and their management. In this opportunity a homage was rendered to the IPCC for having been awarded the Peace Nobel Prize. A summary of the year’s activities was presented, together with information on the Synthesis Report and the development of the IPCC Technical Note on Water. The broadcast took place on Sunday 30 December 2007 and among the important conclusion reached, was the one on the decision to include, in the 2008 programmes, of this TV contest students from all the provinces of Argentina. The conductor of the show, Mr Jorge Romano Bustamante, thanked for the information provided and invited the IPCC for the 2008 broadcasts.
- Mancora workshop (see above), interviews for local newspapers, in Mancora and Piura and national newspapers in Lima, and in TV and Radio Stations in Piura and Lima, were held in Peru.
- Dr O.F. Canziani has a blog in the BBC broadcasts to Latin America, involving 15 minutes chat every 15 days. An internet site of the BBC provides continuous information on the issues dealt with.
- In addition to the abovementioned activities, several TV programmes and a large number of radio stations from Buenos Aires and the interior of Argentina, as well as numerous articles in newspapers and periodicals, were undertaken to explain the extreme weather and climate events registered along 2007 and the beginning of 2008.

Name: Tim Carter

Conferences and workshops:

- 19 April 2007: Introduction to the Working Group II Fourth Assessment Report (AR4): The drafting process and linkages with Working Groups I and III. IPCC Seminar, Climate Impacts, Adaptation and Vulnerability, University of Helsinki.
- 27 September 2007: Impacts on the regional level. Stakeholder Consultation Workshop and Round Table: Northern Europe, European Commission Green Paper: "Adapting to Climate Change in Europe - Options for EU Action", Finnish Environment Institute, Helsinki.
- 10 January 2008: Some implications of climate change for agriculture at global and regional scale, Agricultural Information Days, Helsinki.
- 28 January 2008: A brief introduction to the IPCC. Master's Course on Climate change and forestry - preparing for the future, University of Helsinki.
- 28 January 2008: Highlights of the IPCC Working Group II Fourth Assessment Report. Master's Course on Climate change and forestry - preparing for the future, University of Helsinki.

Briefings:

- 19 April: Introduction to the Working Group II Fourth Assessment Report (AR4), Press Briefing, Helsinki

Name: Jean-Paul Ceron

Publications:

- Ceron JP and G Dubois. « Adaptation au changement climatique et développement durable du tourisme. Etude exploratoire en vue d’un programme de recherche ». Rapport d’étude,

collection « Les rendez-vous de la statégie » Ministère des transports, de l'équipement du tourisme et de la mer. Direction du tourisme. Mai 2006. 135p

Conferences and workshops:

References to the AR4 process are particularly central in the Davos Conference, where Daniel Scott made one of the opening speeches based on the collective work quoted beneath:

- Deuxième conférence mondiale sur le tourisme et le Changement climatique, OMT, PNUE Davos septembre 2007

- Ceron JP Main speaker « tourisme et changement climatique, impacts et adaptations » Energaïa : salon international des énergies renouvelables ; Montpellier 6-8 décembre 2007
- Conference « Tourisme et changement climatique » Séminaire d'économie de l'environnement et du développement durable, coorganised by Iddri and Ecole Polytechnique Paris feb 2008.
- Ceron JP Présentation « Le changement climatique : quelles sont les chances et les dangers pour le tourisme en général et pour les régions e montagne en particulier. Cinquième Congrès mondial du tourisme de la neige et de la montagne. Principauté d'Andorre, Organisation Mondiale du Tourisme 27-29 mars 2008.
- Ceron JP Présentation d'une communication introductive "Overview of issues regarding impacts of, and adaptation to Climate change" in "Policy Dialogue on Tourism, Transport and Climate Change: Stakeholders meet Researchers" OCDE, UNESCO , UNWTO, 15th march 2007. Paris.

Name: Lynda Chambers

Conferences and workshops:

- Chambers, L.E. 2007. Climatic change and Australia's flora. Australian Plants Society lecture, Leongatha, Australia, 11 April, 2007.
- Chambers, L.E. 2007. Climate change impacts: Messages from the IPCC 4AR and how BoM aims to increase our knowledge base. DPI lecture, Melbourne, Australia, 23 April, 2007.
- Chambers, L.E. 2007. Observed and expected impacts of climate change on Australia's natural systems. University of Canberra Applied Ecology Seminar Series, Canberra, Australia, 1 May 2007.
- Chambers, L.E. 2007. Climate change and Australia's natural systems. Sustainable Tourism CRC Climate Change Workshop, Melbourne, Australia, 5-6 July, 2007.
- Chambers, L.E. 2007. Observed climate change impacts on plants and animals. Ringwood Field Naturalists Club, Ringwood, Victoria, Australia, 11 July 2007.
- Chambers, L.E. 2007. Improving our knowledge of Australian climate change impacts: development of systems to improve data exchange. Australian Entomological Society's 38th AGM & Scientific Conference 2007, Beechworth, Australia, 23-26 September 2007.
- Chambers, L.E. 2007. Climate change and Australia's natural systems: gaining knowledge and engaging the public. Greenhouse 2007, Sydney, Australia, 2-5 October 2007.
- Chambers, L.E. 2007. Living with climate change: a bird's eye view. BAYBOCA November Meeting, Beaumaris, Australia, 21 November 2007.
- Chambers, L.E., Keatley, M., Hughes, L. 2007. A meta database for Australasian natural systems data. Ecological Society of Australia Conference, Perth, Australia, 26-30 November 2007.
- Chambers, L.E. 2007. The impact of a changing climate on migration and breeding in Australian birds. Australasian Ornithological Congress 2007, Perth, Australia, 3-5 December 2007.
- Chambers, LE. 2008. Climate change as a threatening process on Australian species. ABSA/BOCA Scientific Day, Monash University, Australia, 8 March, 2008.

Planned 2008 presentations:

- Chambers, L.E. 2008. Invited lecture: Climate change impacts on Australia's avifauna. 12th PAN-African Ornithological Congress, Cape Town, South Africa, 7-12 September, 2008.
- Chambers, L.E. 2008. Phenology and climate change in Australia. 18th International Congress on Biometeorology, Tokyo, Japan, 22-26 September, 2008
- Chambers, L.E. 2008. Involving the community in climate research. Manningham Environmental Seminar Series, Melbourne, Australia, 1 October, 2008.

Name: Netra Chhetri

Conferences and workshops:

- Chhetri N.B. (February 13, 2008) - Impacts and adaptation to climate change, Presentation at the Tempe Public Library, Arizona
- Chhetri N.B. (February 25, 2008) – Adaptation to climate change – Presentation to the scientists of the USDA Arid Land Research Project, Arizona.
- Chhetri N.B. (March 8, 2008) – The science of climate: what is the fuss about? – Presentation at the Phoenix Chautari meeting

Note: I also teach an undergraduate (senor) level class on Global Change where the science, impacts, and adaptation to climate change is a major part of the class.

Briefings:

- Chhetri N.B. (April 22, 2007) – Is Dust Bowl A Possibility? Arizona Republic (a state level newspaper at Arizona)
- Chhetri N.B. (April 6, 2007) – Southwest Could Become Dustbowl – Study Warns - Arizona Republic (a state level newspaper at Arizona)
- Chhetri N.B. Impacts of Climate Change in Southwest US. – ABC TV Channel (April 6, 2007)

Name: Jorge Codignotto

Publications: are these publications or presentations?

- November 16 2007. Jornadas Sobre Cambio Climático. Universidad De Buenos Aires. Argentina - Vulnerabilidad y Adaptacion al Cambio Climático
- September 25 2007 Vi Jornada Bonaerenses Sobre Cambio Climático. Gobierno de La Provincia de Buenos Aires. Argentina. - Calentamiento Global y Áreas Costeras

Conferences and workshops:

- September 29 2007- Jornadas de Intereses Marítimos Universidad Nacional de Mar del Plata. Argentina. - Cambio Climático y Áreas Costeras
- November 6 2007-Liga Naval Argentina. Los Intereses Argentinos En El Mar. Universidad Católica Argentina (Uca). Buenos Aires. Argentina - Cambio Climático y Erosión Costera.
- November 12 2007 Universidad De La Marina Mercante. Buenos Aires. Argentina - Calentamiento Global y Su Influencia en Áreas Costeras

Name: Stewart Cohen

Publications:

- Climate Change in the 21st Century, by Stewart Cohen with Melissa Waddell. McGill-Queens University Press, Montreal.

Conferences and workshops:

- Environment Canada, Vancouver, WG2-Ch20,
- Vancouver local chapter, Waste Management Association, WG2, Vancouver,
- University of British Columbia graduate course, WG2, Vancouver,
- University of Toronto, WG2-Ch20, Toronto,

Name: R. Corobov

Publications:

- 2008: Ecosystems in changing climate: Key problems and assessments. In: On 120 years of the birth of academician P.Zhukovskii. Collection of scientific articles. Eco-Tiras, Chişinău (in Russian)
- 2007: Provision with water resources in climate change problem context. In: Assessment of the situation and the ways of amelioration of Dnestr River ecological conditions. Materials of an information-practical seminar. Tiraspol, pp.14-21 (in Russian).

Conferences and workshops:

- "Global environmental change: Challenges to science and society in South-eastern Europe", 19-21 May 2008, Sofia. Presentation: 'Climate change and human health: today's vision'.
- "Biodiversity of Moldova ecosystems: Problems of the use and conservation", 27 March 2008, Chishinau. Presentation: 'Ecosystems in changing climate: IPCC AR4 assessments'

Name: Mike Coughlan

Conferences and workshops:

- Briefing to the Regional Meteorological Services Directors meeting (SW Pacific) in July 2007. Also present were Jim Salinger and Pene Lefale.
- The Australian Water Summit 2008, 29th-30th April & 1st May 2008 http://www.acevents.com.au/water2008/

Briefings:

- 'Climate Change: What to Expect for Australia' National media briefing on the IPCC Working Group II Report , Sydney, 10 April 2007, with Roger Jones, Nick Harvey, Tony McMichael, Lesley Hughes, Mike Coughlan, Colin Woodroffe, see http://www.aussmc.org/IPCCWG2_Briefing.php.

Name: Wolfgang Cramer

Conferences and workshops:

- Workshop to report the results of Working Group II of the IPCC Climate Change Impacts, Adaptation and Vulnerability, Potsdam Institute for Climate Impact Research, Germany, 16 April 2007

Name: Robert J. N. Devoy

Conferences and workshops:

- Beach/ Coastal Users Committees, Dublin Bay region, Ireland, Public meetings on the impacts of "Climate/ Global warming on Coasts_ Adaptations & Responses"_ October & December 2007 & January 2008.
- Annual (National level) Lecture Series, Geographical Society of Ireland, Public Lecture on "Sea-levels, Storminess & Global Warming", held in University College Cork, November 2007
- Presentation to the EU's Northern Peripheries Programme, Copenhagen, Directorate Offices_ Feb. 2008, on "Adaptation & Capacity Building for Global Warming at the Coast (in Coastal Communities).

Briefings:

- Television documentary series on "Global Warming Impacts" presentations made in Episode 1 on National TV channel, TG4, March 2008
- Newspaper articles various topics on "Sea-level Rise; Coastal Erosion; Coastal Planning under Climate Change; Global Warming and Floods" since August 2007, in the Irish Examiner, Irish Times, Cork Evening Echo, Coastal users magazines (e.g., Surf) etc.

Name: Kristie L. Ebi

Publications:

- Ebi KL, Burton I. Identifying practical adaptation options: an approach to address climate change-related health risks. In press, Environmental Science and Policy.
- Ebi KL. Climate change and health: public health responses to the risks of climate variability and change in the United States. In press, Journal of Occupational and Environmental Medicine
- O'Neill MS, Ebi KL. Temperature extremes and health: Impacts of climate variability and change in the United States. In press, Journal of Occupational and Environmental Medicine
- Ebi KL. Healthy people 2100: modelling population health impacts of climate change. In press, Climatic Change.
- Pitcher H, Ebi KL, Brenkert A. Population health model for integrated assessment models. In press, Climatic Change.
- Tol RSJ, Ebi KL, Yohe GW. Infectious disease, development, and climate change: a scenario analysis. Environment and Development Economics 2007;12:687-706.

Plus 3 papers under review

Conferences and workshops:

2007:

- Paediatric Academic Societies' Annual Meeting - May
- First National Summit on Coping with Climate Change (University of Michigan) - May
- Urban Climate Change Research Network Symposium in New York - May
- World Congress on Disaster and Emergency Medicine - May
- World Economic Forum for Africa - June
- UNFCCC Workshop on Climate Related Risks and Extreme Events under the Nairobi Work Programme - June
- Climate Impacts Workshop - June
- WHO Workshop on Climate Change and Health, Kuala Lumpur - Energy Modelling Forum - July
- WHO Workshop on Climate Change and Health, Costa Rica - August
- International Society for Epidemiological Research - September
- 4th Annual Healthy Indoor Environments Conference - September
- Public Health Response to Climate Change: Drinking Water and Public Health - October
- IDRC Workshop Climate Change, Human Health, and Water Resources - October

- UNFCCC Workshop on Adaptation Planning and Practices under the Nairobi Work Programme - October
- Excessive Heat: confronting climate change, vulnerability, and urbanization by improving heat health services, mitigation, strategies, and communication - Symposium for Climate Change and Health in Asia - November
- Conference of the Parties and Development and Adaptation Days - December
- American Geophysical Union - December

2008:

- IDRC workshop on Climate Change, Human Health, and Water Resources - January
- Focus the Nation (on climate change) - January
- American Association for the Advancement of Science - February
- Climate Change: Impacts and Adaptation (University of Toronto) - February
- Climate Change Workshop (European Respiratory Society) - March
- American Health Journalists Conference - March
- Climate Knowledge for Global Health (Earth Institute) - March
- National Academy of Sciences workshop on New Directions in Vulnerability, Impacts, Mitigation, and Adaptation - March
- World Health Day (George Washington University) - April
- Symposium on Climate Change, American Public Works Association - April
- Oceans and Human Health Annual Meeting - April
- Virginia Climate Change Commission - April
- Children's Health Protection Advisory Committee - April
- International Buddhist Workshop - May
- WHO Global Burden of Disease Workshop (London) - May
- Workshop on Climate Change Health Impacts and Adaptation in the Mediterranean - June
- Course on global climate change - Energy Modelling Forum - July
- NCAR Summer Colloquium on Climate Change and Health - August
- UCLA conference on climate change and health - August
- International Conference of Biometeorology - September
- International Society for Environmental Epidemiology - October
- American Public Health Association - October

Briefings:

- Multiple briefings of Congressional staffers
- Testimony to the House Select Committee on Energy Independence and Global Warming (April 2007)
- Quoted in news articles in Business Week, Associated Press, Washington Post, others

Name: Pete Falloon

Conferences and workshops:

- Talk to James Richotte, FCO Washington, on IPCC working group 1, 3rd October 2007
- Presentation on IPCC AR4 impacts science to FCO Chevening fellows (1 Feb 2008)

Name: Andreas Fischlin

Publications:

- Warren, R., Price, J., Santiago de la Nava, S., Fischlin, A. & Midgley, G., 2007. Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise. Global Change Biol.: 29pp. (submitted).

- Fischlin, A., 2007. Auswirkungen des Klimawandels auf die Ökosysteme. Hotspot 16(10): 5-6.
- Fischlin, A., 2007. Leben im und mit dem Klimawandel – Lebensgrundlagen in Gefahr? Systems Ecology and Obwaldner Bildungsforum. Also in: Lohmann, V. & Halter, O. (eds.), Klimawandel – Anzeichen und Perspektiven in Obwalden, Melchtal, Switzerland. Obwaldner Bildungsforum (obf): 17pp.

Conferences and workshops:

- Fischlin, A. Webcast «Sectoral impacts - ecosystems» from the presentation given by Andreas Fischlin at UNFCCC 26th sessions of Subsidiary Bodies (SBs) on May 12th 2007.
- IPCC Autoren inkl. Fischlin, A., 2007. Zusammenfassung für politische Entscheidungsträger. In: Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. & Hanson, C.E. (eds.), Klimaänderung 2007: Auswirkungen, Anpassung, Verwundbarkeiten. Beitrag der Arbeitsgruppe II zum Vierten Sachstandsbericht des Zwischenstaatlichen Ausschusses für Klimaänderung (IPCC). Cambridge University Press, Cambridge, UK, pp. 20-39. Deutsche Übersetzung durch ProClim, ein Forum der Schweizerischen Akademie der Naturwissenschaften (SCNAT), österreichisches Umweltbundesamt, deutsche IPCC Koordinationsstelle, Bern/Wien/Berlin.

Briefings:

- IPCC Press Conference, Europe and the Alps, Geneva, Switzerland, 11th. Apr. 07

Name: Hans-Martin Fuessel

Conferences and workshops:

- 25 May 2007 "Ausgewählte Ergebnisse des 4. IPCC-Sachstandsberichts". Guest Lecture at the Institute for Energy Technology, Technical University of Berlin, Berlin, Germany
- 12 June 2007 "Ausgewählte Ergebnisse des 4. IPCC-Sachstandsberichts". Presentation to the Deutsche Kälte- und Klimatechnischer Verein Berlin-Brandenburg, Berlin, Germany
- 19 Sept 2007 "Recent Findings on Climate Change and Climate Impacts, and their Equity Implications". Presentation to a delegation from the Danish Ministry of Foreign Affairs, Potsdam, Germany,
- 26 Nov 2007 "Auswirkungen des Klimawandels auf Bio- und Soziosphäre". Presentation at the Conference „CO2-Herausforderung" („CO2 Challenge"), AutoUni, Wolfsburg, Germany

Briefings:

- 9 Nov 2007. "Noch mehr Katastrophen?". Presentation at the journalist seminar „Nothilfe und globaler Klimawandel - Wie Naturkatastrophen die Aufgaben von Hilfsorganisationen verändern?", Berlin, Germany

Name: Christos Giannakopoulos

Publications:

Conferences and workshops:

Workshop on climate change organised by WWF Greece on 29/2/2008 in Athens aimed to the general public and media. In the workshop there were panel members: the climate activities WWF responsible, me (as an expert on climate change impacts), Dr. Sevastianos Mirasgentis (a lead author of WGIII also from the National Observatory of Athens, as an expert on mitigation and policy) and Dr. Ierotheos Papadopoulos, director of the Greek EU representation office (as an expert on EU policy targets). A leading newspaper journalist was coordinating the discussion with the public.

Briefings:

- http://www.ethnos.gr/article.asp - published in newspaper "ETHNOS" on 8/12/2007
- http://www.enet.gr/online/online_hprint - published in newspaper "ETHNOS" on 9/12/2007

In the published versions of these newspapers (not the online ones), graphs that summarised the impacts in Europe from the Europe chapter were also included.

Name: Kevin Hennessy

Conferences and workshops:

- 5th World Conference of Science Journalists – 18 April 2007, Melbourne
- AMOS Sydney – 1 May 2007, Sydney
- Natural Resources Conference 2007 – 23 May 2007, Brisbane
- NIWA – 24 May 2007, New Zealand
- NZ Royal Society meeting – 25 May 2007, New Zealand
- Communiqué Australasia Pty Ltd – Cost of Fire Conference – 29 May 2007, Sydney
- NCC NSW – 31 May 2007, Sydney
- Geoscience Australia – 6th June, Canberra
- Citigroup Investor Lunch on Climate change Impacts, Adaptation & Vulnerability – 12 June 2007, Sydney
- United Dairy farmers of Victoria – 19 June 2007, Melbourne
- Municipal Association of Victoria MAV – 27 June 2007, Melbourne
- Tourism & Transport Climate Change summit – 10 July 2007, Sydney
- Australian Institute of Energy – 24 July 2007, Sydney
- Citigroup – 25 July 2007, Sydney
- Department of Primary Industries – 8 August 2007
- IHEA Hospital engineering Talk – 12 September 2007. Melbourne
- MunichRe concise Climate Change Conf. – 28 September 2007, Sydney
- Greenhouse 2007 – 2 October 2007, Sydney
- School of Mathematical & Physical Sciences – Uni of Newcastle – 10 October 2007, Newcastle, NSW
- Department of Human Services – 16 October 2007, Melbourne
- Tas PWS – 17th October 2007, Hobart
- IPCC Public lecture – 18th October, Melbourne
- NSW Agriculture 23 October, Deniliquin
- NSW Agriculture 24th October, Albury
- Food Sciences Australia Conference 31st October, Werribee
- Dairy Aus workshop 1 Nov, Melbourne
- Dairy Aus workshop 7 Nov, Camperdown
- Dairy Aus workshop 8 Nov, Ellinbank (Vic)
- Dairy Aus workshop 9 Nov, Kyabram (Vic.)
- Dairy Aus workshop 20 Nov, Adelaide
- The Scots College to 160 teachers via video conf – 15 Oct, Sydney
- Garnaut Climate Change Review, Public Forum – 14 Nov, Melbourne
- Hydrological Consequences of Climate Change Symposium – 15 November, Canberra
- Water & mining Conference, Adelaide – 21 Nov, Adelaide
- Dairy Aus 14 Feb, Traralgon
- Vic DPI 20 Feb, Lakes Entrance
- WA Tourism 10 March, Perth
- Dairy Aus 17 March, Wodonga
- Dairy Aus 7 April, Colac

- Dairy Aus 8 April, Warrnambool
- Vic DPI 9 April, Tullamarine
- Dairy Aus 14 April, Kyabram
- Westernport regional ag forum 9 May, Warragul
- Dairy Aus 28 April, Sydney
- Dairy Aus 30 April, Leongatha

Briefings:

- Kevin Hennessy, 9th August 07, Adaptation; reducing Australia's climate impacts - http://www.csiro.au/news/IPCCClimateAdaption.html

Name: Chris Hope

Publications:

- Hope C, 2007, "Discount rates, equity weights and the social cost of carbon", Energy Economics, in press.
- Alberth S and Hope C, 2007, "Climate modelling with endogenous technical change: Stochastic learning and optimal greenhouse gas abatement in the PAGE2002 model", Energy Policy, 35, 1795-1807.
- Hope C and Newbery D, 2007, "Calculating the social cost of carbon", Chapter 2 of Grubb M., Jamasb T, and Pollitt M (eds), Delivering a Low Carbon Electricity System: Technologies, Economics and Policy, Cambridge University Press.

Conferences and workshops:

- 19/07/2007 - Climate change and the commonwealth - Round table-Royal Society
- 12/07/2007 - Climate change - McKinsey BA programme - JBS, Cambridge
- 27/06/2007 - Climate pricing - The Euromoney Forum - Hilton, Park Lane, London
- 11/06/2007 - The PAGE model: next steps - Electricity Policy Research Group E&E seminar - Economics, Cambridge
- 06/06/2007 - Climate change - Eco week - Mayfield school
- 15/05/2007 - The Social Cost of Carbon - Clare Hall JETRO CEI seminar - Law Faculty, Cambridge
- 03/04/2007 - What we can learn from PAGE2002 - Workshop at the Swiss Federal Office for the Environment - Bern, Switzerland
- 15/02/2007 - What we can learn from PAGE2002 about the SCC - Stern Review on the economics of climate change - Yale University
- 18/01/2007 - What we can learn from IAMs about the SCC - GES Economics of Climate Change Seminar - HM Treasury
- 13/11/2006 - The policy modelling of climate change - Chinese Advanced Leadership Development Programme - Pitt Building, Cambridge
- 10/11/2006 - Climate change impacts in the Stern report - Cambridge Energy Forum - JBS, Cambridge

Briefings:

- 02/07/2007 - GREEN BUSINESS: Is Pay-per-mile economically efficient? - Interview - Business Confidential
- 19/04/2007 - MBAs: Climate features on the curriculum - Article by Midge Gillies - Independent, London
- 05/03/2007 - La pesadilla del cambio climático - Article by Soledad Johnson - Diario Financiero, Chile - (may have appeared on a different date)
- 29/01/2007 - Economic research that saves the world - Professor to watch article - FT, London

- 24/01/2007 - Green taxes: green with envy - Article by Peter Bartram - Financial Director http://www.financialdirector.co.uk/financial-director/features/2173305/green
- 19/01/2007 - Impacts of climate change - Interview - tvnet.pt
- 20/12/2006 - Airlines in the Emissions Trading Scheme - Live interview on PM - Radio 4.
- 20/11/2006 - A carbon tax blueprint for saving Earth - Letter - FT, London

Name: Mark Howden

Publications:

- Tubiello, F.N., Soussana, J-F. and Howden, S.M. (2007) Crop and pasture response to climate change. Proceedings of the National Academy of Sciences, 104:19686-19690.
- Howden, S.M., Soussana, J.F., Tubiello, F.N., Chhetri, N., Dunlop, M., and Meinke, H.M. (2007) Adapting agriculture to climate change. Proceedings of the National Academy of Sciences, 104:19691-19696.
- Nelson, R. Hatfield Dodds, S., Howden, S.M. & Stafford Smith M. (2007) Using adaptive governance to rethink the way science supports Australian drought policy Environmental Science and Policy (submitted)
- Stafford Smith, D.M., McKeon, G.M., Watson, I.W. Henry, B.K., Stone, G.S., Hall, W.B., and Howden, S.M. (2007) Learning from episodes of degradation and recovery in variable Australian rangelands. Proceedings of the National Academy of Sciences online, 10.1073/pnas.0704837104
- Howden, S.M., Crimp, S.J. and Stokes, C.J. (2007) Climate change and its effect on Australian livestock systems. Aust. J. Experimental Agriculture (submitted)
- Sterk, B. P. Carberry, P., Leeuwis, C, van Ittersum, M.K. Howden, S.M. van Keulen, H. Rossing W.A.H. (2007) The interface between land use system research and policy: multiple arrangements and leverages. Land Use Policy (submitted)
- Steve Twomlow, S. Mugabe, F.T., Mwale M., Delve, R., Nanja, D., Carberry, P., Howden, M. (2007) Building adaptive capacity to cope with increasing vulnerability due to climatic change in Africa– a new approach. Climatic Change (submitted)
- Smith, P., Martino, D., Cai, Z., Gwary, D., Janzen, H.H., Kumar, P., McCarl, B., Ogle, S. O'Mara, F., Rice, C., Scholes, R., Sirotenko, O., Howden, M., McAllister, T., Pan, G., Romanenkov, V., Schneider, U., Towprayoon, S., Wattenbach, M., Smith, J. (2007) Greenhouse gas mitigation in agriculture. Philosophical Transactions of the Royal Soc Lond B Biol Sci. doi:10.1098/rstb.2007.2184
- Bruce, S.E., Ash, J.E. and Howden, S.M. (2007) Complementary seasonal growth patterns of C3 and C4 grasses in an intercropping farming system: impact on biomass and soil water. Agriculture, Ecosystems and Environment, (submitted)
- Tubiello, F.N., Amthor, J., Boote, K., Donatelli, M., Easterling, W., Fischer, G., Gifford, R., Howden, S.M., Reilly, J. and Rosenzweig C. (2007) Crop response to elevated CO2 and world food supply. European Journal of Agronomy, 26: 215-233.
- Harle, K. J. Howden S. M. Hunt L. P. and Dunlop M. (2007) The potential impact of climate change on the Australian wool industry in 2030. Agricultural Systems, 93: 61-89.
- Smith, P., Martino, D., Cai, Z., Gwary, D., Janzen, H.H., Kumar, P., McCarl, B., O'Mara, F., Rice, C., Scholes, R., Sirotenko, O., Howden, M., McAllister, T., Ogle, S., Pan, G., Romanenkov, V., Schneider, U., Towprayoon, S. (2007) Policy and technological constraints to implementation of greenhouse gas mitigation options in agriculture. Agriculture, Ecosystems and Environment, 118: 6-28

Conferences and workshops:

International Conferences:

- World Meteorological Organisation (Helsinki, July 2006);
- Climate Change and Governance Conference (Wellington, March 2006);

- Food Security and Environmental Change: Linking science, development and policy (Oxford, April 2008);
- Farming Systems Design Conference (Catania, September 2007), Australian and NZ Horticultural Science Conference (Gold Coast, July 2008);
- International Landcare Conference (Melbourne, October 2006), Climate Change and Animal Production Conference (Campinas, Brazil, May 2008)

Australian Conferences:

- Australian Agronomy Conference (Adelaide, September 2008);
- National NRM Knowledge Conference: Changing Landscapes (Melbourne, April, 2008);
- National Educators Conference (Geelong, January 2008);
- Australian Veterinarians Association Conference (Perth, May 2008);
- National Vegetation Management Conference (Toowoomba, October 2008); Australian Society of Animal Production conference (Brisbane, June 2008);
- Crawford International Development Conference (Canberra, September 2008)

Plus numerous other smaller workshops and seminars

Briefings:

- Media Release 5th Oct 07 - 'Original climate benchmark makes a comeback' http://www.csiro.au/news/GoydersLineMoving.html
- Media Release 4th Dec 07 - 'Adapting agriculture to climate change' http://www.csiro.au/news/AdaptingAgriculture.html numerous other interviews for print, radio and television

Other AR4 contributors media releases from CSIRO;

- Penny Whetton, 16th Oct 07 - http://www.csiro.au/news/NobelPeacePrizeWinners.html
- Pep Candell & Mike Raupauch, 23 Oct 07 - http://www.csiro.au/news/CarbonEmissionsConfirmed.html
- Wenju Cai, 4th Oct 07 - http://www.csiro.au/news/AustralianRainfallFuture.html
- Penny Whetton, 2nd Oct 07 - http://www.csiro.au/news/ClimateChangeInAustraliaReport.html

Name: Terry Hughes

Conferences and workshops:

- Substantial media coverage was generated by an international debate sponsored by the BBVA Foundation in Madrid, in which Prof. Terry Hughes reported on addressing the global threats to coral reefs. Hughes joined leading international experts to present their latest research into The scale, causes and consequences of global loss of coastal habitats. Eighty media stories in newspaper, television, radio and on the web were generated, principally across Europe and South America, in response to the event
- Forum on Coral Reef Futures, Australian Academy of Science. October 2007
- Climate Change Down Under. The Queensland Museum, Brisbane, hosted this one day public forum, including a talk on coral reefs: Recipe for killing a reef

Briefings:

- Reef 'at Risk in Climate Change' - The two main threats facing the reef are rising sea temperatures, which cause mass coral die-offs due to bleaching, and the gradual acidifying of the oceans from CO2 in the atmosphere, which prevents corals from forming their limestone skeletons. This press release generated 31 articles from media outlets

Name: Mostafa Jafari

Conferences and workshops:

- Jafari M. (2007), "Climate change unavoidable necessity, review of IPCC AR4" in RIFR amphitheatre with presence of experts, policy makers, university scientists. Location and date: Monday 13 August 2007, Research Institute of Forests and Rangelands
- Jafari M. (2007), Presentation on IPCC AR4 in IRIMO with presence of First Vice president of WMO and Head of IRIMO and policy makers and experts. Location and date: Islamic Republic of Iran Meteorological Organization (IRIMO), 2007
- Jafari M. (2007), Presentation on IPCC AR4 in FRWO with presence of Deputy Minister and Head Of FRWO and policy makers and experts. Location and date: Forests, and Rangelands and Watershed management Organization (FRWO), 2007
- Jafari M. (2007), Keynote Lecture of the Symposium on "Climate Change and IPCC Assessments" In cooperation with Japan and Turkey, Climate Change and IPCC Assessments (Abstract of Keynote Lecture of the Symposium), in The Final Report of ICCAP, The Research Project on the Impact of Climate Changes on Agricultural Production System in Arid Areas, March 2007, ICCAP Publication 10-Japan, ISBN 4-902325-09-8, pp 315-317. Location and date: Turkey, March 2007. Reference address: http://www.intecol.net/bbs/per_bbs/down.php

Briefings:

- One special radio program on "Climate Change and IPCC AR4". Location and date: 2007, Iranian radio broadcasting,
- International radio broadcasting (weekly live interview) on climate change (up to now – 12 March 2008 - 10 programs have broadcasted and still continue). Location and date: Iranian radio broadcasting, several

Name: Gregory V. Jones

Publications:

- Jones, G.V. and Goodrich, G.B., (2008). Influence of Climate Variability on Wine Region in the Western USA and on Wine Quality in the Napa Valley. Climate Research, 35: 241-254.
- Schultz, H-R. and Jones, G.V. (2008) Veranderungen in der Landwirtschaft am Beispiel de Weinanbaus in Warnsignal Klima: Gesundheitsrisiken Mogliche Auswirkungen fur Menschen, Tiere, und Pflanzen. Frankfurt, Germany, (In Press).
- Jones, G.V. (2007): Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production. Working Paper #7, Economics Department, Whitman College.
- Schultz, H-R. and Jones, G.V. (2008) "Veranderungen in der Landwirtschaft am Beispiel de Weinanbaus" in Warnsignal Klima: Gesundheitsrisiken Gefahren für Pflanzen, Tiere, und Menschen. Eds. J.L. Lozán, H. Graßl, G. Jendritzky, L. Karbe, and K. Reise. Frankfurt, Germany, (In Press).
- White, M.A., Jones, G.V., and N.S. Diffenbaugh (2008). "Climate Variability, Climate Change, and Wine Production in the Western United States." In Warming in Western North America/Evidence and Environmental Effects. Eds. Wagner, F.H., University of Utah Press (Accepted)
- Jones, G.V. (2007). Changement de climat : Les observations, les Projections, et les Implications Générales pour la Production de Viticulture et Vin. Proceedings from the UNESCO Wine and Culture Symposium, Dijon, France. March 28-30, 2007.
- Jones, G.V. (2007). Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production Proceedings from the Congress on Climate and Viticulture, Zaragoza, Spain. April 10-14, 2007.

- Jones, G.V. (2007). Climate Change and the Global Wine Industry Proceedings from the Australian Wine Industry Technical Conference, Adelaide, Australia. July 28-August 2, 2007. pp 91-98.
- Jones, G.V. (2007) Climate Change and Wine: Observations, Projections, and Implications Proceedings from the Romeo Bragato, 13th Annual New Zealand Wine Industry Conference, Auckland, New Zealand. August 23-25, 2007.
- Jones, G.V. and Garcia-Cortzar, I. (2007) La Situation de la Viticulture dans le Monde Proceedings from the Le Viticulture face au Changement Climatique : Enjeux et Adaptations, EUROVITI. November 28, 2007.
- Jones, G.V. (2008) Climate Structure, Variability, and Suitability for Viticulture and Wine Production in the Puget Sound of Washington. Proceedings from the Western Washington Horticultural Association Annual Meeting, January 9-10, 2008. Everett, WA.
- Book sponsored by the International Organization of Vine and Wine (OIV). "Climate Change, Viticulture, and Wine." By Gregory V. Jones and Hans R. Schultz. (In Progress)

Conferences and workshops:

- Jones, G.V., Changement de climat : Les observations, les Projections, et les Implications Générales pour la Production de Viticulture et Vin. UNESCO Wine and Culture Symposium, Dijon, France. March 29, 2007. (Invited)
- Jones, G.V., Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production. Wine and Global Warming Symposium, Whitman College, Walla Walla, Washington. March 30, 2007. (Invited)
- Jones, G.V. (2007). Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production Congress on Climate and Viticulture, Zaragoza, Spain. April 11, 2007. (Invited)
- Jones, G.V. (2007). Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production. Intervitis/Interfructa, Stuttgart, Germany. April 22, 2007. (Invited)
- Jones, G.V. (2007). Climate Change: the Social, Political, and Economic Impacts of a Complex Issue. Medford Rotary, June 1, 2007.
- Jones, G.V., and Goodrich, G.B. (2007). Influences of Climate Variability on the U.S. West Coast Wine Regions and Wine Quality in the Napa Valley. GESCO (Groupe d'Etude des Systèmes de Conduite de la Vigne), Porec, Croatia June 20-23, 2007. (Invited)
- Jones, G.V. (2007). Climate Change in the Western United States Wine Regions Climate Change Issues Impacting the California Wine Industry and Other Perennial Crops, UC Davis and the Robert Mondavi Institute. Davis, California July 13, 2007. (Invited)
- Jones, G.V. (2007). Climate Change: the Social, Political, and Economic Impacts of a Complex Issue. Medford Kiwanis Club, July 18, 2007.
- Jones, G.V. (2007). Climate Change and the Global Wine Industry Australian Wine Industry Technical Conference, Adelaide, Australia. July 28-August 2, 2007. (Invited)
- Jones, G.V. (2007) Climate Change and Wine: Observations, Projections, and Implications Romeo Bragato, 13th Annual New Zealand Wine Industry Conference, Auckland, New Zealand. August 23-25, 2007. (Invited)
- Jones, G.V. (2007). The Climate of Wine. The Nature Conservancy: Climate Science Conference, Portland, Oregon. September 5-7, 2007. (Invited)
- Jones, G.V. (2007). Climate Change: the Social, Political, and Economic Impacts of a Complex Issue. Grants Pass Rotary, September 12, 2007. (Invited)
- Jones, G.V. (2007). Overview of PNW Climate Change and Impacts. Business Sector Climate Change Preparation Meeting. Oregon Climate Leadership Initiative. Salem, Oregon October 5, 2007. (Invited)
- Jones, G.V. (2007). Understanding what Water Deficits, Climate Variability, and Climate Change Mean to Viticulture and Wine Production. U.S. Drought Monitor Forum. Portland, Oregon. October 10-11, 2007. (Invited)

- Jones, G.V. (2007). Climate Change: Observations, Projections, and General Implications for Viticulture and Wine Production. Whitman College Distinguished Visiting Professor. Walla Walla, Washington. October 17-19, 2007. (Invited)
- Jones, G.V. (2007). Overview of PNW Climate Change Impacts on Agriculture and Forestry. The Changing Climate Issue: Reporting Ahead of the Curve. Oregon Climate Leadership Initiative. Ashland, Oregon. October 27, 2007. (Invited)
- Jones, G.V. (2007) The Grapes of Warmth, 18th Annual Chicago Humanities Festival, Chicago. November 10, 2007. (Invited)
- Jones, G.V. and Garcia-Cortzar, I. (2007) La Situation de la Viticulture dans le Monde Le Viticulture face au Changement Climatique : Enjeux et Adaptations, EUROVITI. November 28, 2007. (Invited)
- Jones, G.V. (2007) Climate Change and Wine: Observations, Projections, and Implications Climate Change Impacts on Viticulture and Wine. Thessaloniki, Greece. December 1, 2007. (Invited Keynote)
- Jones, G.V. (2008) Climate Change: the Social, Political, and Economic Impacts of a Complex Issue. Ashland Garden Club, February 4, 2008. (Invited)
- Jones, G.V. (2008) Climate Change: Staying Informed and Competitive. Oregon Wine Industry Symposium, Eugene, Oregon. February 10, 2008. (Invited, Chair and Speaker)
- Jones, G.V., Schultz, H-R. (2008) Climate Change and Wine: Observations, Projections, and Implications. 2nd International Congress on Climate Change and Wine, Barcelona, Spain. February 15, 2008. (Invited)
- Invited to speak at the International Organization of Vine and Wine (OIV) Annual Meeting. Paris, France October 2008.

Served on the Oregon Governor's Climate Change Integration Group. (Governor appointed).

Name: Klaus Keller

Publications:

- Keller, K. (presenter): A slowing oceanic conveyor circulation? How can observations inform decision-making? Invited talk at the 2008 AAAS meeting. Boston (MA), February 17 (2008).
- Keller, K. (presenter) and D. McInerney: Rapid climate change: Would we see it coming early enough? Invited talk at the 2007 RAPID meeting. Plymouth (Great Britain), June 18-20 (2007).
- Keller, K. (presenter), L. I. Miltich, A. Robinson, and R. S. J. Tol: How overconfident are current climate change projections? Invited talk at the European Geophysical Union spring meeting. Vienna (Austria), April 15 (2007).

Conferences and workshops:

- Penn State: "Managing the risks of climate thresholds" Invited talk at the Focus the Nation on Climate Change teach in, University Park (PA), January 31 (2008).

Name: Richard Klein

Publications:

- Klein, R.J.T., 2007: The IPCC Fourth Assessment Report: Impact by Consensus? Centre for Climate Science and Policy Research, Linköping University, Norrköping, Sweden, 19 April 2007
- Klein, R.J.T., 2007: Adaptation to Climate Change and its Inter-Relationships with Mitigation. Briefing on the IPCC Fourth Assessment Report to the UNFCCC Subsidiary Body on Scientific and Technological Advice, Bonn, Germany, 12 May 2007.
- Klein, R.J.T., 2007: Links between Adaptation to and Mitigation of Climate Change. Third Workshop in the Dialogue on Long-Term Cooperative Action to Address Climate Change by

Enhancing Implementation of the Convention, "Addressing Action on Adaptation", Bonn, Germany, 17 May 2007.

- Klein, R.J.T., 2007: The IPCC Fourth Assessment Report: Does the Product Justify the Process? Stockholm Resilience Centre, Stockholm, Sweden, 7 June 2007.
- Klein, R.J.T., 2007: The IPCC Fourth Assessment Report: Some Results and their Implications for Development Policy. Swedish International Development Agency, Stockholm, Sweden, 12 June 2007.
- Klein, R.J.T., 2007: Adaptation to Climate Change: IPCC Findings and their Implications for Climate and Development Policy. Entwicklungspolitischer Workshop zur Klimakonferenz in Bali, Germanwatch, Bonn, Germany, 20 November 2007.
- Klein, R.J.T., 2008: Adaptation to Climate Change: IPCC Findings and their Implications for Climate and Development Policy. Annual retreat, Swedish Environmental Secretariat for Asia, Siem Reap, Cambodia, 11-13 February 2008.

Briefings:

- Aljazeera,
- Time Magazine,
- Deutsche Presse Agentur,
- Dagens Nyheter,
- Svenska Dagbladet,
- Radio Télévision Belgique Française.

Name: Wulf Killmann

Conferences and workshops:

- A meeting for participants of FAO's Committee on Agriculture (COAG) in Rome on April 27 with Joergen Olesen and Francesco Tubiello;
- Two briefings to FAO staff during 2007 in Rome;
- A briefing during the 65th session of the UNECE Timber Committee in Geneva on October 10;
- A briefing on climate change and food security for Ambassadors to FAO in Rome on October 11 with Francesco Tubiello;
- Citations in various side events organized by FAO during UNFCCC COP 13 and the Forest Day in Bali in December 2007;
- Briefings during this year's meetings of FAO's six Regional Forestry Commissions in Africa, Near East, Asia- Pacific, Latin America and the Caribbean, North America, and Europe.

AR4 will also be referred to in background documents for and during;

- Highlevel Conference on Worldfood Security: The Challenges of Climate Change and Bioenergy, which will be held on June 3-5 2008 at FAO in Rome,
- International Conference on Adaptation of Forests and Forest Management to Changing Climate with Emphasis on Forest Health, which will be organized jointly by FAO, IUFRO and SLU on August 25-28 in Umea, Sweden;
- Worldfood day which will be celebrated on October 16 in Rome with this year's theme: Foodsecurity and Climate Change. .

Briefings:

- Numerous press briefings on agriculture, food security and forestry, where we referred to the results of IPCC 4AR;

Name: Tord Kjellstrom

Publications:

- March 2008, Prepared a report (in Swedish) on the total public health impact of road transport in Sweden, in which a major section deals with the impact of greenhouse gases from Swedish vehicles on public health due to climate change in developing countries.

Conferences and workshops:

- June 2007, Keynote speaker at conference on Sustainability Research in Vasteras, Sweden, and also presented a paper on direct health effects of climate change
- October 2007, Presented major lecture (in Spanish) on Climate change and health at the University of Panama
- October 2007, Presented major lecture (in Spanish) on Climate change and health at the National University of Nicaragua, Leon
- October 2007, Presented lecture on Occupational health aspects of climate change in a symposium at the University of California, Los Angeles

Name: Rodel Lasco

Conferences and workshops:

- IPCC outreach workshop, Jakarta, Indonesia 9-10 Sept 2007
- First National Conference on Climate Change Adaptation, Albay, Philippines 23 Oct 2007
- National Convention, Intl Society for Southeast Asian Agricultural Sciences, Los Banos, Philippines 26 Oct 2007
- Youth Leaders Forum on the Impacts of Climate Change on Human Rights, Quezon City, Philippines 23 Nov 2007
- Third Energy Safety and Health Conference, Quezon City, Philippines 12 Dec 2007
- Symposium on Appropriate Technologies for Mitigating Global Warming: A Phillipine-Japan Cooperation Initiative 24 Jan 2008
- International Conference on Climate Change and Biodiversity, Manila, Philippines 19 Feb 2008

Name: Rik Leemans

Publications:

- Leemans, R. 2007. Effecten van klimaatverandering op ecosystemen. Ecologie & Ontwikkeling 15:2-5.
- Leemans, R. 2008. Personal experiences with the governance of the policy-relevant IPCC and Millennium Ecosystem Assessments. Global Environmental Change 18:12-17
- 2007. Het IPCC-rapport en de betekenis voor Nederland. PCCC Uitgave Mei 2007, PCCC - Platform Communication on Climate Change, de Bilt/Wageningen. - van Dorland, R., B. Janssen, H. van den Brink, S. Drijfhout, H. Haak, R. Haarsma, W. Hazelegger, B. van den Hurk, C. Katsman, A. Kattenberg, G. Komen, G. Lenderink, G. J. van Oldenborgh, M. Reijmerink, P. Siegmund, N. Weber, B. van Hove, J. Veraart, J. Verhagen, F. Berkhout, L. Bouwer, B. Eickhout, H. Haanstra, P. Kabat, R. Leemans, M. Tak, L. Meyer, D. P. Van Vuuren, A. Seedrechts, P. Bosch, B. Daniëls, R. Ybema, M. Van Drunen, and N. Meijer.
- Brochure naar aanleiding van de presentatie van het IPCC Working Group II Fourth Assessment Report April 2007, LNV, directie Platteland en Wageningen UR, Den Haag. - van Hove, B., J. Verhagen, J. Veraart, B. Jansen, F. Berkhout, L. Bouwer, B. Eickhout, H. Haanstra, P. Kabat, R. Leemans, and M. Tak. 2007. Klimaatverandering: Gevolgen, Adaptatie en kwetsbaarheid in beeld gebracht.

Conferences and workshops:

- Leemans, R. 2007. Communicating Impacts of Environmental Change. Keynote lecture: Expert Conference "Communicating Climate Science after IPCC - Exchanging Experiences on Communicating Scientific Concepts and Results on Climate Change", Heinrich Böll Foundation and the Environment Centre of the Charles University, Prague. 25 September 2007.
- Leemans, R. 2007. De effecten van klimaatverandering zijn overal ter wereld zichtbaar. Ons aanpassingsvermogen is beperkt. . Lezing: NOS KLimaatinformatieavond, NOS, Hilversum. 4 juni 2007.
- Leemans, R. 2007. De oorzaken, gevolgen en oplossingen van het klimaatprobleem. Algemene cursus: Volksuniveristeit, Wageningen. 5, 12 en 19 november 2007.
- Leemans, R. 2007. Module 1. Introduçã, conceitos e aplicação. Course: Curso International sobre construção de cenários ambientais, Governo do Estado de São Paulo, Secretaria do Meio Ambiente, Instituto Florestal o Reserva da Biosfera do Cinturão Verde da Cidade de São Paulo, São Paulo, Brasil. 24-27 de abril, 2007.
- Leemans, R. 2007. A resilience lens on IPCC's AR4 and its implications. Keynote lecture: Annual network meeting, Resilience Alliance, Lozari, Corsica. 27 September 2007.
- Leemans, R., and P. Kabat. 2007. De gevolgen, kosten en oplossingen van klimaatverandering. Lezing: Wereldlezing, Studium Generale, Hotel de Wereld, Wageningen. 15 maart 2007.

Name: Michael MacCracken

Conferences and workshops:

- International Reporting Project, The Johns Hopkins School for Advanced International Studies (January 22, Washington, DC);
- Course on Sustainable Energy Technologies, The Johns Hopkins School for Advanced International Studies (February 1, Washington, DC);
- World Affairs Council of Washington DC (April 30, Washington, DC);
- Council of Science Society Presidents (May 7, Washington, DC);
- Adirondacks Research Consortium (May 22, Tupper Lake, NY);
- Ecology Club of Summerville High School (May 29, Sonora, CA);
- Tuolumne Unitarian Universalist Fellowship for the City of Sonora (May 29, Sonora, CA);
- Capital Research and Management (June 5, Washington, DC);
- Future Forum (June 7, Cleveland, OH);
- International Association of Meteorology and Atmospheric Sciences special IPCC symposium (July 5, Perugia, Italy, substituting for Jean Palutikof);
- Fellow Seminar Series at Research Triangle Institute (Durham, NC, August 8);
- Exelon Corporation (Kennett Square, PA, August 14);
- Course on Climate and Energy Policy, The Johns Hopkins School for Advanced International Studies (September 17, Washington, DC);
- Rachel Carson Legacy Conference: Sustaining the Web of Life in Modern Society (Pittsburgh, PA, September 29);
- President's Sustainability Symposium, University of Idaho (Moscow ID, October 1);
- MIT Alumni Club of Cape Cod (Chatham, MA, October 10—on Web at http://alumweb.mit.edu/clubs/capecod/presentations.html);
- Telecosm 2007, organized by George Glinter and Steve Forbes (Lake George NY, October 16);
- Conference of the Gulf Coast Association of Geological Societies (Corpus Christi TX, October 22);
- Rotary Club of Washington DC (January 9, Washington, DC)
- National Council of Science and Engineering (January 16, Washington, DC)
- NASA Jet Propulsion Laboratory (January 24, Burbank, CA)
- Capital Group Companies (January 28, Los Angeles CA)
- Hofstra University public lecture series (May 1, New York, NY)

- Alexandria Methodist Church (May 20, Alexandria VA)
- Capital Research Group (May 22, Washington, DC)
- American Waste Management Association (June 25, Portland, OR)
- World Future Society (July 28, Washington DC)

Briefings:

- Also numerous media interviews and interactions, including NPR radio debate with Bjorn Lomberg (March 25); Nature Roundtable on Climate and Energy (October 26).
- Televisa executives [largest Spanish language media company] (January 31, Cozumel, Mexico)

Also continuing series of media contacts.

Name: Chris Magadza

Conferences and workshops:

- At the request of Renate Christ I gave a talk on behalf of IPCC at the International Organisation of Supreme Auditors Institutions - Working Group on Environmental Auditing 11 (INTOSAI-WGEA 11) in Arusha 25-29 June 2007, and
- At a Climate Change Worship In Maputo on Awareness raising seminar CC - Maputo - 25 July 2007.
- I organised a one day workshop on climate change for Zimbabwe Academy of Sciences/ Ministry of Science and Technology and presented a paper September 2007
- Lunch-time briefing on climate change, UNDP, February 2008

Name: Michael D. Mastrandrea

Publications:

- Tebaldi, C., M.D.Mastrandrea, and R. Smith, (2007): "Global Warming." In Encyclopaedia of Quantitative Risk Assessment, Everitt, B. and Melnick, E. (Eds.), John Wiley & Sons, New York.
- Luers, A., M.D. Mastrandrea, ,K Hayhoe, and P.C. Frumhoff (2007): "How to avoid dangerous climate change: a target for U.S. emissions reductions." Union of Concerned Scientists Research Report.

In Press:

- Mastrandrea, M.D. and S.H. Schneider, "Global Warming Resource Letter." American Journal of Physics (accepted).

In Preparation for Projected Publication 2008:

- Schneider, S.H., A. Rosencranz, and M.D. Mastrandrea, (Eds): Climate Change Science and Policy.

Submitted:

- Smith, J.B. et al. "Dangerous climate change: an update of the IPCC Reasons for Concern." PNAS (submitted).

Conferences and workshops:

- April, 2007 "The Intergovernmental Panel on Climate Change Fourth Assessment Report," Woods Institute for the Environment Seminar, Stanford University.
- June, 2007 "Changes in Current and Future Extreme Events in California," and "Probabilistic estimates of future global GHG emissions and radiative forcing for use in California's planning process," PIER 2008 Scenarios Project Meeting, Oakland.

- September, 2007 “Addressing Climate Risks Through Science/Policy Partnerships,” California Climate Change Conference, Sacramento.
- January, 2008 “Climate Impacts Today and in the Future,” Santa Clara University Focus the Nation Panel.
- January, 2008 Panellist, “The IPCC, from humble beginnings to the Nobel Prize: where should it go from here?” Energy Seminar, Stanford University.

Name: Bruce McCarl

Publications:

- McCarl, B.A., Adaptation Options for Agriculture, Forestry and Fisheries, A Report to the UNFCCC Secretariat Financial and Technical Support Division, http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/mccarl.pdf, 2007.

Conferences and workshops:

- McCarl, B.A., "OR Modelling for Government Policy Analysis: Agricultural related energy, climate change and farm policy," INFORMS Conference Applying Science to the Art of Business April 13-15, 2008 Baltimore Marriott Waterfront Baltimore, Maryland, 2008.
- McCarl, B.A., "Agriculture in the Climate Change Squeeze - Climate Sensitivity in Texas and Turkey," Presented at the International congress about Global Climate Change and Environmental Effects, Konya, Turkey, October, 2007.
- McCarl, B.A., "Data needs of a Climate Change, Animal Disease and Environmental Modeller," Presented at USDA, ERS Meeting on Data Needs for Agri-Environmental Policy Modelling and Analysis Washington D.C., October 15, 2007.
- McCarl, B.A., "Food, Fibre, and Forest Products Impacts: WGII Economic and Biophysical Effects plus Thoughts on Adaptation and Effects work," Presented at the Energy Modelling Forum Workshop on Climate Change Impacts and Integrated Assessment Snowmass, Colorado, July, 2007.
- McCarl, B.A., "Presentation on Adaptation Costs in Agriculture, Fisheries and Forestry," Presented at UNFCCC Workshop On Finance and Investment Flows to Address Climate Change: The Way Forward, Bonn Germany, Oct 31, 2007.
- McCarl, B.A., "Texas in the Climate Change and Energy Squeeze," Presented at the Annual Meeting of the Texas Economic Development Council, Amarillo, July 12, 2007, 2007.
- McCarl, B.A., "Texas in the Climate Change Squeeze: The Most Vulnerable State?," 2007 Sigma Xi Distinguished Scientist Lecture, Texas A&M University, College Station, November, 2007.
- McCarl, B.A., and I. Dellal, "Agriculture in the Climate Change Squeeze - Texas and Turkey," Presented at Conference on Climate Change and Drought, Ankara, Turkey Oct, 2007.
- McCarl, B.A., "Bio-fuels, Climate Change and Agricultural Research: Opportunities and Challenges," Paper to be given at the NC-1034 symposium on "Energy and Agriculture: Emerging Policy and R&D Issues", Washington, DC, March 7-8, 2008.

Name: A J McMichael

Publications:

Peer Reviewed Journals

- McMichael AJ, Powles J, Butler CD, Uauy R. Food, livestock production, energy, climate change and health. Lancet 2007; 370:1253-1263.
- Haines A, Smith KR, Anderson D, Epstein PR, McMichael AJ. Roberts I, Wilkinson P, Woodcock J, Woods J. Policies for accelerating access to clean energy, improving health, advancing development and mitigating climate change. Lancet 2007; 370:1264-1281.

- Blashki G, McMichael T, Karoly D. Climate changes and primary health care. Australian Family Physician, 2007, 36: 986-989.
- McMichael AJ, Friel S, Nyong A, Corvalan C. Global environmental change and health: impacts, inequalities, and the health sector. Brit Med J, 2008; 336: 191-194.

Non Peer Reviewed Journals

- McMichael AJ, Bambrick HJ. Greenhouse-gas costs of clinical trials. Lancet, 2007; 369:1584-5.
- McMichael AJ. Climate Change to Hit Health. Australasian Science, 2007; 28(5): 34-35.
- McMichael AJ. Threats Posed by Global Warming. Newsletter of the New England Research Institutes; Summer 2007:18-19.
- McMichael AJ. Contraction and Convergence is Good for our Health. Food Ethics, 2007 2(4): 5.
- McMichael, AJ. Comment: Widening a welcome debate, Environmental Health, 2 January 2008 online, http://www.ehjournal.net/content/6/1/38/comments#290586.
- McMichael, AJ. Population, human resources, health and the environment: getting the balance right. Environment. 2008; 50: 48-59.

Book Chapters

- McMichael AJ, Woodruff R. Climate Change and Infectious Disease. In: Walker K, Pizer H (eds) Social Ecology of Infectious Disease. New York: Academic Press, 2007.
- McMichael AJ, Dear K. Environment and disease. In: Wright A, Hastie N (eds.) Genes and Common Diseases – Genetics in Modern Medicine. Oxford: Oxford University Press, 2007, pp 164-175.
- McMichael AJ. Environmental and Social Influences on Infectious Diseases. In: Cassell G, Baquero F, Nombela C, Gutiérrez JA (eds), Evolutionary Biology of Bacterial and Fungal Pathogens. Washington DC, ASM Press, 2007.
- McMichael AJ. Foreword. In: Soskolne C, Westra L, Kotze LJ, et al (eds). Sustaining Life on Earth. Environment and Human Health Through Global Governance. Plymouth, Lexington Books, 2008; pp xiii-xv.
- McMichael AJ, Bunyavanich S, Epstein PR. Global environmental change and children's health. In: WHO Handbook on Children's Environmental Health, Geneva: WHO, 2005.

Reports

- McMichael AJ (lead author), et al. Healthy Planet, Places and People. Sydney: Research Australia, 2007, 32 pp. http://www.thankyouday.org/content/documents/e_EnviroReportRA.pdf

Conferences and workshops:

- Keynote Speaker, "Environmental and Climate change and Health", Global Health Forum, Melbourne, 4 April 2007
- Keynote Speaker, "Climate Change and Health Risks: Local and Global", 5th World Conference of Science Journalists, Melbourne, 18 April 2007
- Keynote Speaker, "Climate and Environment: Promoting Population Health through Sustainability". Australian Health Promotion Association 17th National Conference, Adelaide, 2-3 May 2007
- Keynote Speaker, "Overview" Climate Change and Health", National Summit on Coping with Climate Change, University of Michigan, Ann Arbor, MI, 8-10 May 2007
- Keynote Speaker, "Drought, Climate Change and Rural Health; Risks and Responses", Rural Health Research Colloquium, Tamworth, 15-16 May 2007
- Keynote Speaker, "Climate Change and Health: Implications for Local Government", Health Symposium, Hunter Area Consultative Committee, Newcastle, 27 June 2007
- Public Lecture, "Global Climate Change and Health: Rising Concerns", Municipality of Florence, Italy, 4 July 2007

- Lectures (8), "Climate Change and Health", European Educational Program in Epidemiology Summer Course, 9-11 July 2007
- Keynote Speaker, Westmead Hospital Week, Symposium on Global Warming and its Impact on Health, Sydney, 16 August 2007
- Invited seminar on climate change and health, National Department of Health and Ageing, Canberra, 21 August 2007
- Invited lecture, "Climate, Environment and Population Health: New Research Challenges", Department of Pathology, University of New South Wales, Sydney, 27 August 2007
- Lecture, Climate change and health, ANU Medical School, Canberra, 29 August 2007
- Keynote Speaker, "Environmental Change and Health, Research Capacity-Building", 19th Conference of the International Society of Environmental Epidemiology, Mexico City, 5-9 September 2007
- Keynote Speaker, "Climate Change and Infectious Diseases", Interscience Conference on Antimicrobial Agents and Chemotherapy, Chicago, IL, 17-20 September 2007
- Keynote Speaker, Review of topic: Climate Change and Human Health Conference, Melbourne, 16-17 October 2007
- Keynote Speaker, "Climate Change and Health: Implications for Health in Diverse Populations", 14th Canadian Conference on International Health, Ottawa, 4-7 November 2007
- Lectures (6), "Climate Change and Health", Johns Hopkins Bloomberg School of Public Health Fall Institute, Barcelona, 12-13 November 2007
- Lecturer and Coordinator, "National Climate Change and Health Short Course", Australian National University, Canberra, 4-6 December 2007
- Keynote Speaker, "Climate Change and Health in the Asia-Pacific Region", Regional Workshop on Climate Change and Human Health in Asia, WHO, Bali, 10-12 December 2007
- Speaker, National Government ABARE/AARES Climate Change Workshop, Canberra, 5 February 2008.
- Speaker, National Department of Climate Change Conference on 'Developing a Climate Science Research Strategy', Canberra, 12-13 March 2008.
- Keynote Speaker, "Climate Change, Health and Millennium Development Goals", Population, Peak Oil, Climate Change Conference, Canberra, 14-15 March 2008.
- Speaker and Chair, National (Climate Change-related Health Risks) Adaptation Research Plan workshop, Canberra, 19 March 2008.
- Speaker, "Environment, Climate and Health: Challenges for Public Health Research", Public Health Foundation of India Annual Oration, New Delhi, 28 March 2008.
- Keynote Speaker, "Climate Change and Infectious Diseases", 2008 Australian Society for Infectious Diseases Annual Scientific Conference 3-5 April, Sunshine 3-5 April 2008.

Other invited talks/lectures on/including Climate Change and Health:

- Keynote Speaker, 2nd ISEE East Asia Chapter Conference, South Korea, 17-19 April 2008.
- Lecture, Australian Institute of Health and Welfare Seminar, Canberra, 6 May 2008.
- Speaker, ACT National Parks Authority Conference, Canberra, 9-10 May 2008.
- Keynote Speaker, UNESCO Seminar on Future of Planet Earth, Paris, 3-5 June 2008.
- Speaker, Manning Clark House Conference on Imagining the Real Future on a Greenhouse Earth, 11-12 June 2008.
- Speaker, Kobe Centre Seminar, Japan, 20 June 2008.
- Keynote Speaker, Japan Science Council Meeting, Japan, 23-25 June 2008.
- Keynote Speaker, Global Health Conference, Taiwan, 27-28 June 2008.
- Speaker, Australian Medical Students' Association Conference, Melbourne, 4-6 July 2008.
- Keynote Speaker, Population Health Congress, Brisbane, 7-9 July 2008.
- Keynote Speaker, Arbovirus Research in Australia/Mosquito Control Association of Australia Symposia, Coffs Harbour, 15-19 September 2008
- Keynote Speaker, XVIII IEA World Conference of Epidemiology, Brazil, 21-24 September, 2008.
- Keynote Speaker, ISEE/ISEA Conference, California, 12-16 October 2008.

Briefings:

- McMichael, AJ. A cost of climate change that can't be counted in dollars - survival. Sydney Morning Herald, 8 March 2007.
- McMichael, AJ. Climate change a threat to our health and survival. Canberra Times, 30 Oct 2007.
- McMichael, AJ. A warmer future will also be unhealthier for us all. The Australian, 19 Nov 2007.
- Australian Science Media Centre Briefing, Sydney, 10 April 2007

Name: Mahmoud Medany

Publications:

- Medany, M. A., Attaher, S. M. and Abou-Hadid, A. F., 2007, Socio-economical analysis of agricultural stakeholders in relation to adapting capacity to climate change in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April , 2007 (in press).
- Medany, M. A., Hassanien, M.K. and Attaher, S. M., 2007, Analysis and Mitigation Options of Methane Emissions from Egyptian Paddy Rice, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Medany, M. A.; Hassanein, M. K.; Kadah, M. S. and Dalia M., Khalaf., 2007, Methane Emissions from Enteric Fermentation of livestock in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Medany, M. A.; Hassanein, M. K.; Kadah, M. S. and Dalia M., Khalaf., 2007, Methane Emissions from Manure Management of Livestock in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Abo Elmaaty, S. M., Medany, M. A. and EL-Hefnawy., N. N., 2007, Influence of Climate Change on Some Rust Diseases of Wheat in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Attaher, S. M., Medany, M. A., Abdel Aziz, A.A. and El-Gindy, A.,2007, Assessment of Irrigated Agriculture Vulnerability and Adaptation to Climate Change in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April , 2007 (in press).
- Attaher, S. M. and Medany, M. A., 2007, Climate Change and Irrigation in Mediterranean Region, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April , 2007 (in press).
- Fahim, M. M., Aly, H. Y. and Medany, M. A., 2007, Effect of some climatic factors and the climate changes on the epidemiology of potato late blight disease in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Hassanien, M.K. and Medany, M. A., 2007, Adapting the CERES-Wheat Model to Simulate Wheat under Current and Future Climates in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Hassanien, M.K. and Medany, M. A., 2007, The impact of climate change on production of maize (Zea Mays L.), Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).
- Saleh, S. M, Medany, M. A., El-Behiry, U.A. and Abou-Hadid, A. F., 2007, Effect of Expected Future Climate changes on Potato productivity in Egypt, Proc. of the international conference on "climate change and their impacts on costal zones and River Deltas", Alexandria-Egypt, 23-25 April, 2007 (in press).

- Medany, M. A. and Attaher, S. M., Vulnerability Assessment of agriculture sector in the Nile Delta Region. - Sadat Academy of environmental science, Minofya, Egypt, April 8-11, 2008
- Attaher, S. M. and Medany, M. A., Analysis of crop water use efficiencies in Egypt under climate change. - Sadat Academy of environmental science, Minofya, Egypt, April 8-11, 2008
- Khalil, A. A., Hassanien, M.K., Attaher, S. M. and Medany, M. A., Observed changes in surface air temperature over Egypt. - Sadat Academy of environmental science, Minofya, Egypt, April 8-11, 2008
- The editor of Chapter 9 of " Impact of Climate Change on Arab Countries" included in the special report of the Arab Forum for Environment and Development (AFED) of " ARAB ENVIRONMENT: FUTURE CHALLENGES", 2007 (in press).
- The editor of the agriculture section (GHGs inventory and adaptation) of the second national communication report of Egypt, ongoing.

Conferences and workshops:

- The International Conference on Climate Changes and Their Impacts on Costal Zones and River Deltas: Vulnerability, Mitigation and Adaptation. 23-25 April 2007, Alexandria, Egypt.
- Gave three presentations in three national universities (Ain-shames, Al Azhaer, Sadat Academy of Environmental sciences), under the title" Climate change and Agriculture".
- Present a national presentation about "climate change and agriculture: mitigation and adaptation", in the national activities of the international day of the environment, 5 June 2007.
- Thirteenth Conference of the Parties to the United Nations Frame Work Convention on Climate Change, 3-14 December 2007, Bali- Indonesia.

Name: Kathleen Miller

Conferences and workshops:

- April 2008 - Rutgers University, Symposium on the Climate Ahead: Impacts of Climate Change on Water Resources, “Climate Change and Water: A View of the Future through a Cloudy Crystal Ball”
- April 2008 - University of Nebraska Water Centre Seminar Series, “Uncertain Future for Water Resources: Grappling with Climate Change.”
- Nov. 2007 - Informal presentation on climate change and water for Kansas Lieutenant Governor, Mark Parkinson
- June 2007 - The Changing Climate Issue: Reporting Ahead of the Curve: A Seminar for Print, Radio and TV Journalists and Editors, Portland Oregon. “Climate Change and Water Resources.”
- April 2007 - House Committee on Energy and Commerce, Washington D.C. Staff Briefing on IPCC Working Group II Report, Sponsored by Pew Centre on Global Climate Change. “IPCC WGII Chapter 3: Freshwater Resources and Their Management”
- April 2007 - NCAR Directors Committee. “IPCC WG II Chapter 3: Freshwater Resources and Their Management”

Name: Evan Mills

Publications:

- Ross, C., E. Mills, and S. Hecht. 2007. "Limiting Liability in the Greenhouse: Insurance Risk-Management in the Context of Global Climate Change." Stanford Environmental Law Journal and the Stanford Journal of International Law, Symposium on Climate Change Risk, Vol. 26A/43A:251-334.
- Mills, E. 2007. "The Role of NAIC in Responding to Climate Change," forthcoming in the UCLA Journal of Environmental Law and Policy, Volume 26, Issue 1 (in press).

- Mills, E. 2007. "Responding to Climate Change – The Insurance Industry Perspective." In Climate Action, Sustainable Development International (in partnership with the United Nations Environment Programme), December, pp. 100-103.
- Mills, E. 2008. "Climate Research Development, Demonstration, and Deployment Road Map: Buildings Sector." Prepared for the California Air Resources Board. Draft of January 18.

Briefings:

- CNN American Morning - Melting Point (February 1, 2007)
- Wall Street Journal - How Insurers Can Help Reduce Warming Risks (June 4, 2007)
- Business Insurance - Climate Change Broadens Scope of Risk (February 11, 2008)
- Mills, E. 2007. "Eco-Solutions." Forbes. April 27.
- Scientific American.com - Insurers Claim Global Warming Makes Some Regions Too Hot to Handle (August 2, 2007)
- Mills, E. and E. Lecomte. 2007. "From Risk to Opportunity: How Insurers Can Proactively and Profitably Manage Climate Change." Kiplinger.
- National Public Radio. All Things Considered - Insurers Try to Calculate Risks of Climate Change (January 21, 2008)

Name: Jelle van Minnen

Publications:

- Strengers B, van Minnen JG, Eickhout B (2008) The costs and uncertainties in establishing C plantations in order to mitigate climate change. Climatic Change, in press.
- Van Minnen JG, Strengers BJ, Eickhout B (2008) Evaluating the role of carbon plantations in climate change mitigation including land-use requirements. Carbon Balance and Management, in press.
- Van Minnen JG, Eickhout B, Strengers BJ, Brinkman S, Van den Houd R, Leemans R (2008) The consequences of uncertainties in the vegetation response to climate change on the global and regional terrestrial C cycle. Ecological Modelling, submit.
- Van Minnen JG, Klein Goldewijk K, Eickhout B, Stehfest E, Van Drecht G, Leemans R (2008) The importance of three centuries of climate and land-use change for the global and regional terrestrial carbon cycle. Climatic Change, submit.
- EEA (European Environmental Agency) updating the report on 'Climate Change Indicators for Europe'

Name: Monirul Mirza

Conferences and workshops:

- 12-May-07, Special Presentation Session on IPCC AR4, Environment Canada National Headquarters, Toronto, Canada - "Environment Canada, Climate Change and Adaptation in the IPCC's AR4"
- 12-18 August, 2007, World Water Week, Stockholm, Stockholm Water Institute, Key Note Address: "Climate Change & Water: Findings of the IPCC AR4"
- 3-6 September, 2007, The Third International Conference on Climate and Water, Helsinki, Finnish Environment Institute - "Hydrological Extremes in the IPCC AR4"
- Hydro 2007 (15-17 October, 2007), Hydropower 2007, Grenada, Spain, International Journal on Hydropower & Dams - "Key Note Address: Climate Change and Hydropower in the IPCC AR4"
- 29-30 January, 2008, Parks Canada-Environment Canada Climate Workshop, Victoria, British Columbia, Canada, Environment Canada & Parks Canada - "Climate Change & National Parks : Case Studies of Impacts and Adaptation from IPCC AR4"

- 04-Feb-08, GEC3 Invited Seminar, McGill University, Montreal, Canada, Global Environmental and Climate Change Centre, McGill University - "Climate Change, Water, Food Security and Adaptation: Findings of the IPCC AR4"

Briefings:

- Adaptation Science Newsletter (Issue 7, July 2007) Adaptation Science Newsletter (Issue 8, November 2007)
- Anthropogenic Warming Caused Discernible Influence on Many Physical and Biological Systems, IPCC Releases AR4 Synthesis Report: Key Messages on Adaptation
- CBC Radio April 5, 2007
- CBC TV (Live) 16 November, 2007

Name: Ana Rosa Moreno

Conferences and workshops:

2007

- School of Medicine, National University of Mexico: Conference: Cambio climático y sus efectos en la salud humana, México, D.F. - April
- School of Medicine, University of Coahuila: Conference: Cambio climático y el impacto en la salud humana
- Torreón, Coahuila, México - April
- Fundación Global Democracia y Desarrollo: Conference: Impactos del cambio climático en la salud humana - May
- Conference: Cambio Climático en América Latina. Vulnerabilidad y Adaptación, Grupo de Trabajo II, IPCC, Sto. Domingo, Dominican Republic - May
- Colegio de México/LEAD/UEA/Norwich/Secretaría de Gobernación
- Conference: Efectos en la salud humana por el cambio climático, los hallazgos del IPCC, México, D.F. - May
- Dep.. of Public Health, School of Medicine, National University of Mexico: Conference: Cambio climático y su impacto en la sociedad y en la salud, México, D.F. - September
- Colegio de Chihuahua: Conference: Cambio climático y su impacto en la sociedad y en la salud, Cda. Juárez, Chihuahua. México. - September
- School of Medicine, National University of Mexico: Conference: El Panel Intergubernamental de Cambio Climático y sus Recientes Hallazgos
- México, D.F. - November
- Asociación para la Innovación Químico-Farmacéutica y del Cuidado de la Salud: Conference: Cambio Climático y sus recientes hallazgos
- Murcia, Spain - November
- School of Medicine, National University of Mexico: Conference: Cambio climático y enfermedades infecciosas México, D.F. - December 2008
- III Jornadas III de Salud Pública de la Ciudad de Madrid : Conference: Realidades del Cambio Climático, Madrid, Spain - January
- Centro de Investigación Científica de Yucatán,: Conference: Contribuciones de México al IPCC y su relevancia a nivel nacional , A.C. Mérida, Yucatán, México. - January
- ING Insurance Co. : Conference: El cambio climático y sus impactos., Juriquilla, Qro. México. - January
- EXPO-SALUD: Conference: El cambio climático y los impactos en la salud, Veracruz, Veracruz, México - April
- National Institute of Public Health, Environmental Health Seminar: Conference: Los hallazgos del IPCC respecto al cambio climático y la salud humana, Cuernavaca, Mexico - May
- Congreso Mexicano de Ortopedia :Conference: El IPCC y los hallazgos del cambio climático y sus impactos en la salud humana, Mexico, D.F., Mexico - May

- Reunión Internacional de Rotarios: Conference: Hallazgos del IPCC en los impactos de la salud por el cambio climático, Veracruz, Veracruz, México - May
- Reunión Anual del grupo MASISA: Conference: La salud y el cambio climático, hallazgos recientes del IPCC, Los Cabos, BCS, Mexico - May
- Fundacion Oswaldo Cruz, Conference: America Latina y el cambio climático y la salud, resultados recientes del IPCC, Rio de Janeiro, Brazil - July.
- School of Medicine, University of Coahuila: Conference: Cambio climático y el impacto en la salud humana, Torreón, Coahuila, México - August
- Asociación de Médicos de Satélite: Conference: Los efectos del cambio climático en la salud humana, Cd. Satélite, Edo. De México, México - October

Briefings:

- CNN Expansion (In Spanish) (TV)
- El Universal
- El Excelsior
- El Reforma
- Milenio
- El Siglo de Torreón
- Mexicanísimo

Name: Linda Mortsch

Conferences and workshops:

2008

- "The IPCC 4th Assessment (AR4) Climate Change Impacts, Adaptation and Vulnerability - North America: Personal Reflections of a Five Year Journey", Lecture Geog. 208, University of Waterloo, Waterloo ON, March 20, 2008.
- "Climate Change Impacts, Adaptation and Vulnerability - North America", Research & Practitioner Partnerships for Action on Climate Change: Developing Guidance for Communities, Vancouver, BC, March 6, 2008. (invited)
- "Climate Change Impacts, Adaptation and Vulnerability - North America", Lecture Geog. 208 University of Waterloo, Waterloo ON, February 29, 2008.
- "The Big Picture - Climate Change Effects Expected in Canada by 2027: Water Resources Challenges", Adapting to Climate Change: Business Planning, Risk Management, Emergency Preparedness, Conference Board of Canada, Ottawa ON, January 22, 2008. (invited) 2007
- "Climate Change – A Leadership Challenge", Catastrophes - Not Just an Insurance Issue, KPMG's 16th Annual Insurance Issues Conference: The Leadership Challenge, Toronto ON, November 22, 2007. (invited)
- "Current Understanding of Climate Change Impacts on Wetlands and Waters of Carolinian Canada", Carolinian Canada Coalition, The Nature of Climate Change: Implications and Adaptation for Natural Heritage, London ON, October 26, 2007. (invited)
- "Climate Change Impacts, Adaptation and Vulnerability - North America", Canada-Europe Parliamentary Association - Standing Committee of Parliamentarians of the Arctic Region, Ottawa ON, October 19, 2007. (invited)
- "Climate Change", Integrating Climate Change and Drinking Water Source Protection, Toronto ON, August 9, 2007. (invited)
- "Impacts, Adaptation and Vulnerability - WGII IPCC Fourth Assessment Report", National Conference of State Legislatures, Boston MA, August 7, 2007. (invited)
- "Climate Change Impacts, Adaptation and Vulnerability - North America", IPCC Briefing, University of Waterloo, Waterloo ON, June 4, 2007. (invited)

- "Climate Change Impacts, Adaptation and Vulnerability - North America", EECO 2007 – Session on Adaptation: The Critical Unspoken Challenge, Toronto ON, June 19, 2007. (invited)
- "Climate Change Impacts, Adaptation and Vulnerability – Great Lakes", 2007 Great Waters Institute for Environmental Journalists, Institutes for Journalism and Natural Resources Learning Experience, Alpena MI, May 5, 2007. (invited)
- "Climate Change 2007: Impacts, Adaptation, and Vulnerability in North America", Climate Change Impacts and Adaptation Directorate (CCIAD) Speaker Series, Ottawa ON, April 13, 2007. (invited)
- "Climate Change 2007: Impacts, Adaptation, and Vulnerability in North America", Environment Canada Climate Change Briefing, Ottawa ON, April 13, 2007. (invited)
- "Intergovernmental Panel on Climate Change Briefing: Climate Change Impacts, Adaptation and Vulnerability – North America", Meteorological Service of Canada Seminar Series, Downsview ON, April 12, 2007. (invited)
- "Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability IPCC WGII Fourth Assessment Report (AR4)", Canadian Foundation for Climate and Atmospheric Science and Institute for Catastrophic Loss Reduction Briefing, Ottawa, ON, April 10, 2007. (invited)

Briefings:

- Quarks and Quarks, Bob MacDonald, CBC Radio 1, http://www.cbc.ca/quirks/archives/06-07/apr07.html
- Print: Numerous but not catalogued.

Name: Susanne Moser

Conferences and workshops

- I have given at least 5 talks that included some/selected findings of the IPCC (at the highest level of SPM generality), but these talks were not specifically focused on the IPCC findings, so I am not sure this counts. The talks were to academic or public/lay audiences in the US.

Briefings

- Around the release of WGII I did a lot of press work, can't remember how many - at least 10 interviews with newspaper and TV.

Name: Daniel Murdiyarso

Conferences and workshops:

- 'Climate Change: Impacts, Adaptation and Vulnerability in Asia' to the Conference with Policy Makers co-organized by the Ministry of Environment of the Republic of Indonesia (11 September 2007).

Briefings:

- Media Briefing organized with the UN-Information Centre, (10 September 2007).

Name: Ivan Nijs

Briefings:

- Live interview national Belgian television (midday news reel) 13h on 2 April 2007.
- Live interview national Belgian television (programme Terzake) 20h15 on 2 April 2007.

- Morning interview national Belgian radio (RTBF) 7h20 on 28 March 2007.
- De Standaard: 31 March 2007
- Het Nieuwsblad: 3 April 2007
- Gazet van Antwerpen: 13 April 2007, 20 October 2007.
- Interview to magazine: "Keiner bleibt verschont". Neue Energie nr. 5 (May 2007), p.16-17. Bundesverbandes WindEnergie (BWE), Osnabrück.
- Presentation at press conference by Belgian Federal Science Policy (Belspo) 27 March 2007, afterwards radio interview (RTBF).

Name: Nguyen Huu Ninh

Conferences and workshops:

- Nguyen Huu Ninh (2008): Climate Change: Past, Present and Future Trend. Paper presented at the Workshop on Global Climate Change and Adaptation Solutions for Vietnam. Vietnam Association for Conservation of Nature and Environment (VASNE), Hanoi, Vietnam, February 26-29, 2008.
- Nguyen Huu Ninh (2008): Climate Change: Past, Present and Future Trend. Presentation at the Roundtable Meeting for Editors titled "Climate Change: Biggest Story of Century and Actions of Journalists". Hanoi British Embassy/VJA/VASNE/Internews Europe/EJN/VFEJ, Hanoi, February 25, 2008.
- Nguyen Huu Ninh (2008): World Research results on Global Climate Change . Paper presented at the MARD's Workshop Toward an Action Plan for Climate Change Mitigation and Adaptation in Agriculture and Development Sector. Hanoi, Vietnam, 11 January 2008

Briefings:

- Vietnam Television Channel 1, 2 (VTV1, VTV2),
- Vietnam Digital Television Channel 5 (VTC5),
- Hanoi Television (HTV),
- Vietnam's Radio "Voice of Vietnam",
- BBC Radio (in Vietnamese),
- Radio Free Asia (in Vietnamese),
- RFI Radio France Internationale (in Vietnamese).
- Interviews with several Vietnamese newspapers and electronic newspapers (about 20-30),

Name: Béla Nováky

Publications:

- Nováky B., 2007: Report of the UN's Intergovernmental Panel on Climate Change on the expected consequences of climate change. CLIMA-21 Broshures, 50. 6-11 (in Hungarian)

Conferences and workshops:

- Central and Eastern European Capacity Building and Awareness Raising Workshop on "Vulnerability Assessment and Adaptation Measures under the UNFCCC and Kyoto Protocol" was organised on November 19-20, 2007 by the REC (Regional Environmental Centre for Central and Eastern Europe). Title of my presentation: Climate change: impact, adaptation and vulnerability on the European resource base.
- Lecture on „Climate change, consequences and measures on the basis of Fourth Assessment Report of IPCC awarded by Nobel-piece prize in 2007" before the members of Academic Scientific Committees (Hydrological Scientific Committee, Water Management Scientific Committee, Agricultural Scientific Committee) and of Hungarian Hydrological Society on 8, December 2007. (in Hungarian).

Name: Jørgen E. Olesen

Conferences and workshops:

- Response of cropping systems to climate change to changes in water availability in Northern Europe. 13 February 2007. Time to adapt – Climate change and the European water dimension. Berlin. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany.
- Impacts and adaptation to climate change under environmental regulations – research issues. 8 marts 2007. Climate change impacts on European agriculture. JRC Ispra, Italy, CEC.
- Observed and projected climate changes and impacts on ecosystems, society and economy. 27 April 2007. 20th Session of FAO's Committee on Agriculture. FAO, Rome, Italy.
- Climate change impacts on agriculture. 13 juni 2007. Climate change impact and adaptation: Water resources management, agriculture and forestry. Danida Development Days. Eigtveds Pakhus, Copenhagen. Danida.
- IPCC views and prospects. 26 juni 2007. Towards future challenges of agricultural research in Europe. Bruxelles, CEC.
- The impact on the European resource base. 19 September 2007. Climate change impacts, adaptation and vulnerability. Royal Geographical Society, London. IPCC

Presentations at meetings in Denmark and Sweden

- Landbruget og klimaforhandlingerne. 7 marts 2007. Skov og Naturstyrelsen, København.
- Effekter af klimaforandringer på europæisk landbrug og vekselvirkninger med vandmiljøet. 19 april 2007. Global opvarmning - årsager og konsekvenser. H.C. Ørsted Instituttet. IGAS, COGCI og DSM
- Virkninger af klimaændringer. 26 november 2007. IPCC og klimaforhandlingerne. Klimaforum. Danmarks Meteorologiske Institut
- Klima og jordbrugsproduktion. 30 november 2007. Landbrugsrådets klimakonference 2007 om klima, jordbrug og fødevareproduktion. Kolle Kolle. Landbrugsrådet
- Er klimaændringer farlige? 12 December 2007. Forskning i fokus. Søauditorierne, Universitetsparken, Århus.

Briefings:

- Global opvarmning giver danske landmænd kæmpegevinst. 7 februar 2007. Mads Nyvold. Ingeniøren
- Varmere klima giver flere danske vinbønder. 9 februar 2007. Jakob Martini. Ingeniøren
- Varmere klima for danske landmænd. 6 April 2007. TV2 Nyhederne
- Vi må gøre noget. 7 April 2007. Morten Frich og Mads Kastrup. Berlingske Tidende
- Varmere klima en fordel for Danmark. 7 april 2007. Christina Wildfang Nissen. Jyllandsposten
- Klimaforandringer i Vestjylland. 18 april 2007. Johanne Bagge. TV Midt Vest
- Fordele ved de globale klimaændringer. 20 april 2007. Kurt Madsen Miljømagasinet. DR P1
- Landbruget får fordele ved klimaændringer. 9 maj 2007. TV2 Syd
- Professor: Vin og solsikke på danske marker. 10 maj 2007. Landbrugsavisen
- Global opvarmning. 5 juni 2007. Clement Kjersgaard. DR2 Temaaften
- Klimaet vil gøre godt for landbruget. 12 juli 2007. Anders Nyholm. DR P1 Morgen
- Danmark bliver hårdest ramt af storme og skybrud. 29 august 2007. Mads Nyvold. Ingeniøren
- Fagfolk: Klimaplan mangler handling fra regeringen. 14 September. Jakob Martini. Ingeniøren
- Forsker: Fint at dele fredspris med fejlagtig film. 12 oktober 2007. Mads Nyvold. Ingeniøren
- Århus-forsker får Nobels fredspris. 12 oktober 2007. TV2 Østjylland
- Foulum-forsker får del i Nobelprisen. 15 oktober 2007. Viborg Stifts Folkeblad
- Interview i morgennyhederne. 17 oktober 2007. DR P4 Midt-Vest

- Landbrugsforsker får del i nobels fredspris. 18 oktober 2007. Landbrugsavisen
- Klimaændringer kan gavne dansk landbrug. 22 oktober 2007. Niels Th. Dahl. Altinget
- Politikernes grønne retorik er overfladisk. 13 November 2007. Jørgen Steen Nielsen. Information
- Klimapanelets synteserapport. 14 November 2007. Karen Hjulmand. DR P1 Orientering
- FN-rapport: Klimaet forandrer sig i farlig retning. 17 November 2007. Alex Nybroe. DR Nyhederne
- Klimaændringer gavner Danmark. 19 November 2007. 24 Timer
- Klimaændringer gavner Danmark. 19 november 2007. TV2 Nyhederne
- Det nye moderne sammen- og gennembrud. 20 november 2007. Ejvind Larsen. Information
- Dansk landbrug vinder på klimaændringer. 25 November 2007. Ole Christensen. Århus Stiftstidende
- At dyrke forskningshøjden. November 2007. Forskerforum. s. 18-19
- Er klimændringer farlige? Morgenradio. 12 December 2007. Diana Bach. DR P4 Østjylland
- Er klimændringer farlige? Frokost-TV. 12 December 2007. TV2-Østjylland
- Er klimændringer farlige? TV-avisen 21-Nyhederne. 12 December 2007. Cecilie Warming. DR1
- Agronom har anpart i Nobelpris. 27 december 2007. Jord og Viden. Årgang 152, nr. 18, s. 4-5.
- Dig og mig og drivhuseffekten. 4 januar 2008. Leder. Landbrugsavisen
- Formiddag med Nis Boesdal. 31 januar 2008. Nis Boesdal. DR1.
- Klimaændringer kan ødelægge vores afgrøder. 31 januar 2008. Mette Holt og Thomas Lemke. Ingeniøren

Name: Jean Palutikof, Head of WGII TSU

Conferences and workshops:

Presentations to the following on WGII Fourth Assessment results and future of the IPCC:

- 12 May, 2007: Presentation to SBSTA, Bonn, Germany
- 15 May, 2007: Presentation to WMO Congress, Geneva, Switzerland
- 4-6 October, 2007: WCRP meeting on the future of the IPCC, Sydney, Australia
- 19 November, 2007: EC Symposium, Brussels, Belgium
- 10 January, 2008: Royal Borough of Kensington, London, U.K.
- 14 January, 2008: Dept. of Meteorology, Free University of Berlin, Germany
- 21 February, 2008: Climatic Research Unit, University of East Anglia, Norwich, U.K.
- 26 February, 2008: LTNetwork meeting, London, U.K.
- 18 April, 2008: University of Tokyo, Japan
- 1 May, 2008: Dept. of Geography, Michigan State University, U.S.A.
- 9 May, 2008: IGBP Congress, Cape Town, South Africa
- 21 May, 2008: China Meteorological Administration, Beijing, China
- 6 June, 2008: SBSTA, Bonn, Germany
- 8 July, 2008: World Nuclear University, Ottawa, Canada
- 21 July, 2008: International Expo "Water and Sustainable Development", Zaragoza, Spain

Name: Martin Parry, Co-Chair Working Group II

Working Group II outreach meetings

18th Apr 2007, Helsinki
31th Aug 2007, London
26-27th Mar 2008, Washington, DC
17 th Apr 2008, Tokyo
21st June 2008, Beijing (together with Working Group III)
10th July 2008, Moscow
29-30th Oct 2008, Brasilia and Sao Paulo, Brazil

3-4th Nov 2008, Belize City, Belize

Briefings

6th Apr 2007, Brussels
18th Apr 2007, Helsinki
31 Aug 2007, London
9th Dec 2007, Oslo
17th Apr 2008 Tokyo

Presentations at meetings

6th Sept 2007, UK Roy Met Soc, Edinburgh
12 Sept 2007, Ministerial meeting, The Hague
15th Oct 2007, International Policy Council, Stratford-upon-Avon, UK
22nd Nov 2007, ICRISAT, Hyderabad
19th Dec 2007, Inter-Agency Group on Climate Change, Geneva
25th Dec 2007, English Heritage, London
29th Jan 2008, IPIECA, Brussels
13th Feb 2008, Deloitte plc, London
12th Mar 2008, NATO, Brussels
26-27th Mar 2008, National Research Council, Washington DC
2-3rd April 2008 UK Met Office, Exeter
17th Apr 2008, Tokyo
1st May 2008, Inter-Agency Committee on Disasters, Geneva
19th May 2008, Guardian conference, London
4th June 2008, High-level meeting on food security, FAO, Rome

Name: Jan Pretel

Publications:

- Pretel, J. (2007): Změna globálního klimatu ve světle Nobelovy ceny míru 2007 (Global Climate Change in the Nobel Peace Prize 2007 perspective), Živa, LV(XCIII), č. 6, 2007, str. LXXXI, ISSN 0044-4812 (in Czech)
- Pretel, J. (2007): Současná realita globální změny klimatu (Global Climate Change Recent Stage), PRO-ENERGY, č. 3, 2007, str. 44-49, ISSN 1802-4599 (in Czech)
- Pretel, J. (2007): Globální oteplování a úloha adaptačních opatření (Global Warming and the Role of Adaptation), EKO, XVIII, č. 4, 2007, str. 20-23, ISSN 1210-4728 (in Czech)
- Pretel, J. (2007): Mezivládní panel ke klimatické změně (IPCC) – Nová hodnotící zpráva z roku 2007 (Intergovernmental Panel on Climate Change – New 2007 Assessment Report), Meteorologické zprávy, 60, č.2, 2007, str.33-36, ISSN 0026-1173 (in Czech)
- Pretel, J. (2007): Klimatická změna a její současná rizika (Recent Risks of Climate Change), Universum, XVII, č. 3, 2007, str. 20-23, ISSN 0862-8238 (in Czech)
- Pretel, J. (2007): Klima se mění (Climate in Change), Siemens Spektum, č. 3, 2007, str. 6 (in Czech)
- Pretel, J. (2007): Rizika klimatické změny (Risks of Climate Change), Geografické rozhledy, 16, č. 4, 2007, str. 2-5, ISSN 1210-3004 (in Czech)
- Pretel, J. (2007): Odhad dopadů klimatické změny na rozvoj území Plzeň - Jižní město (Climate Change Impacts Estimate on Urban Planning in Plzeň - Jižní město), Integra Consulting Services Ltd., Praha 2007 (in Czech)

Conferences and workshops:

- Pretel, J. (2007), Climate Change – Reasons and Impacts, Workshop "Climate Change and Impacts on Water in the Czech Republic", Institute of Hydrobiology, Ceske Budejovice, 12.4.2007 (in Czech)

- Pretel, J. (2007), Climate Change – Impacts on the Czech Republic, Workshop "Industry and Climate Change", UK Embassy and the British Council, Prague, 23.4.2007
- Pretel, J. (2007), AR4 IPCC 2007, Workshop "Climate Change" as a part of the festival EKOFILM, Ceske Budejovice, 9.10.2007 (in Czech)
- Pretel, J. (2007), Climate Change as the global problem, Workshop of the UN Centre in Prague, Prague, 26.10.2007 (in Czech)
- Pretel, J. (2007), Climate Change in 2020 and security relations, Workshop of the Czech Parliament "Future Security of the Czech Republic and the EU – how we are prepared on it", Prague, 23.11.2007 (in Czech)
- Pretel, J. (2007), Future Climate Change and Society Response, Workshop Czech Limnology Society "Climate Change and Water", Prague, 10.12.2007 (in Czech)
- Pretel, J. (2008), Climate Change on the beginning of 21. Century, Workshop "Czech Energy – trends and outlooks in European context", Prague, 30.1.2008 (in Czech)
- Pretel, J. (2008), Climate Change and Transport, International Conference "Transport Perspectives and CNG usage", Prague, 23-24.1.2008 (in Czech)
- Pretel, J. (2008), Climate Change – Myths and Facts, Workshops "Climate Change – Challenges for regions", UK Embassy and the British Council, Plzen 12.3.2008 and Brno 27.3.2008 (in Czech)

Briefings:

- Czech TV Broadcast TV1 – 2007: 6.4, 10.4, 12.6, 12.7, 26.7, 24.9, 12.10, 14.12, 2008: 23.1 (climate change forums, special climate change broadcasts]
- Czech TV Broadcast CT24 – 2007: 10.4, 16.7, 12.10, 22.12, 2008: 29.1 (climate change forums)
- Czech Radio Broadcast – approximately 20 climate change briefings and/or forums
- Czech Newspapers - approximately 20 interviews & short articles

Name: Sachooda Ragoonaden

Many high officials from International, Regional and National Organisations/Institutions, as well as several who have just retired, have formed an Association called the "Association for Sustainable Development", a non-profit NGO. Most of them are professional meteorologists, oceanographers and climatologists actively involved in IPCC activities. It was officially registered with the Government of Mauritius in February 2007. It has also applied for registration with various national, regional and international bodies. One of the objectives of the Association is to promote the IPCC AR4 findings and sensitize various stakeholders including policy makers, women, youth and the general public on climate change and sea level rise. It has so far participated in several IPCC- related activities.

Publications:

Conferences and workshops:

- Two talks have been given on climate change and sea level rise to schools. The first one was organised by a primary school- Baichoo Madhoo Government Primary school for 10-11 years old school children. The second one, a forum on climate and its impacts on development, was organised recently on 14 March 2008 by the Municipality of Curepipe, an important town in the centre of Mauritius, for the benefit of all high schools students in the final years in the region of Curepipe. The presentations included some details on WG II findings.

Briefings:

- A press conference was organised on the 22 February 2008 to provide some details on past and future activities of the Association. It was well attended by the print and visual media. Papers distributed during the briefing included a summary of IPCC WG II AR4 report with focus on Chapter 6- Coastal Systems and Low-lying areas

- The Association will focus on an awareness raising campaign on climate change and IPCC findings. The target audience will include women, social clubs, youth, senior citizens, schools and the public at large. Contact has already been made with various bodies- Municipalities of Curepipe and of Beau- Bassin/Rose-Hill and the District Council of Moka/Flacq. We are one of four NGOs which will participate in a series of talks organised by the District Council of Moka/Flacq. The launching ceremony will be held on 24 March 2008.
- An article by the Association based on the outcomes of the Bali's conference appeared in a popular daily newspaper- L'Express- on 19 December 2007. Some findings of the IPCC WG II were also included in the article
- A series of articles on climate change and IPCC findings is under preparation for publication in daily and weekly newspapers.
- An extended summary of WG II Chapter 6- Coastal Systems and low-lying areas – was prepared and discussed among members. The article will soon be released to the media.

Name: George Rose

Briefings:

- The Telegram (St. John's) Provincial, Saturday, December 29, 2007. "Eyes on the prize Newfoundland fisheries expert part of Nobel Prize-winning team"
- Memorial University Gazette – Jan 10, 2008. "Rose part of a nobel team"

Name: Steve Running

Conferences and workshops:

Government committee presentations

- U.S. Congressional Testimony, "Select Committee on Energy Independence and Global Warming" Hearing on Wildfires and the Climate Crisis, entered into the Congressional Record Nov 1, 2007
- Council of State Governments Invited Speaker, Jackson Hole, WY Sept, 2007
- MT State Environmental Quality Council, Climate Change testimony, Helena, MT, Sept, 2007
- Missoula Mayor's Climate Change Committee, April 2007
- MT Governors Climate Change Advisory Committee (CCAC) member, July, 2007

Educational presentations

- Salish-Kootenai Tribal College, Climate Change lecture, Nov 2007
- Hellgate High School lecture celebrating the Nobel Peace Prize, Nov 2007
- ADVANCE network "Future of Science" workshop, MT State Uni, Bozeman, MT August, 2007
- Nat Assoc. of State Universities and Land Grant Colleges Annual Meeting, Invited speaker, Whitefish, MT Aug 2007
- Earth Day Climate Presentation, Hellgate High School April, 2007
- Uni Montana Mansfield Library Lud Browman Award acceptance speech, Missoula, April 2007
- National Science Foundation, Debating Science Workshop, University of Montana August, 2007

Public Lectures

- Sonoran Institute Evening community Lecture, Choteau, MT Jan 2008
- Helena Community Lecture Series, Climate Change, Helena, MT Jan 2008.
- City Club of Missoula "Junk Science" Jan 2008.
- Montana Farm Bureau Annual Meeting, Invited Climate Change Speaker Nov 07.

- Northern Plains Resource Council Annual Mtg. Keynote speaker, Billings, MT Nov 07.
- Bitterroot Audubon Society Climate Change lecture. Oct 2007
- St. Patrick Hospital & Health Foundation, "Table Talk on Climate Change" for St. Patrick House, Oct, 2007
- Five Valleys Audubon Society Climate Change Lecture. Oct, 2007
- Climate Change Impacts on US Agriculture, US Dept Agri. Nov, 2007
- Montana- Wyoming Regional Congregational Church Meeting Speaker on Climate Change, Sept, 2007
- Natural Resource Defense Council Yellowstone Park Environmental Journalism Field Trip, July 2007
- 18th Lewis and Clark Trail Heritage Foundation, Keynote Speaker Great Falls, MT, July 2007
- Institute for Environmental Journalism invited speaker, Field Trip June 7-10, 2007
- Society for Environmental Journalism, Exec Board Meeting, Climate Change presentation. June 2007
- Nat Wildlife Fed/Clark Fork Coalition luncheon speaker. June, 2007
- Western Land Trust Alliance Keynote speaker May 2007
- Western Forestry Leadership Association Climate Change presentation, Whitefish, MT, May 2007
- Greater Yellowstone Coalition Climate Change conference speaker, Bozeman, MT, April 2007
- Missoula Retired Military Officers Luncheon presentation April 2007
- Society American Foresters Climate Change Presentation, Kalispell, MT April 2007
- Plum Creek Timber Co. Climate Change Presentation, Columbia Falls April 2007
- Nat'l. Forest Homeowners Assn. Annual Convention, Keynote Speaker, Vancouver, WA, April 2007
- USFS Restoration Conference, Missoula, MT April, 2007

Scheduled Future Presentations

- Montana Leadership Conference June 2008
- Montana-Wyoming Tribal Leadership Council mtg invited keynote speaker, June 2008
- Climate Change, Economics and the Courts Foundation for Research on Economics and the Environment, Bozeman MT July 2008
- Sierra Club Field trip, Glacier National Park, Aug 2008
- Natural Resource Defense Council Environmental Journalism Media Field Trip, Aug 2008
- Planned Parenthood Regional Mtg, Invited speaker Sept 2008
- Montana Council of Social Studies Annual mtg, Invited Speaker, Sept 2008
- National Assoc. Biology Teachers Annual Convention Keynote speaker, Oct 2008
- Montana Environmental Education speaker, Oct 2008

Briefings:

- "The 5 Stages of Climate Grief", 1hr multi media presentation - http://www.ntsg.umt.edu/
- "The 5 Stages of Climate Grief" essay about IPCC and public perceptions - http://www.ntsg.umt.edu/
- Missoulian,
- Spokane Spokesman Review,
- Billings Gazette,
- Helena Register Guard,
- New York Times,
- Washington Post,
- International Herald Tribune.
- Science Magazine "Newsmakers Feb 1, 2008"

Name: David Satterthwaite

Publications:

- Satterthwaite, David (2008), Climate Change and Urbanization: Effects and Implications for Urban Governance, Paper presented at the United Nations Expert Meeting on Population Distribution, Urbanization, Internal Migration and Development, Population Division, United Nations Secretariat, New York, 27 pages.
- Satterthwaite, David (2007), Integrating Adaptation to Climate Change in Decision-making at the Urban/Municipal Level in Low- and Middle-income Nations, Paper prepared for the OECD Development Assistance Committee, IIED, London.
- Satterthwaite, David (2007), Adaptation Options for Infrastructure in Developing Countries, Paper prepared for the UNFCCC, IIED, London, 27 pages.
- Moser, Caroline and David Satterthwaite (2008), Pro-poor Climate Change Adaptation in the Urban Centres of Low and Middle-Income Countries, Workshop on the Social Dimension of Climate Change, World Bank, Washington DC, 33 pages.
- Satterthwaite, David, Saleemul Huq, Mark Pelling, Hannah Reid and Patricia Lankao-Romero (2007), Adapting to Climate Change in Urban Areas; The possibilities and constraints in low- and middle-income nations, IIED Working Paper, IIED, London, 107 pages.
- Climate Change and Cities, id21 Insights 71, Institute of Development Studies, Sussex, January 2008, 6 pages (this included contributions from Saleemul Huq and David Satterthwaite; Tom Wilbanks was the academic advisor for this).
- Satterthwaite, David (2007), Adaptation to Climate Change and the Future of the IPCC, Worldchanging website, http://www.worldchanging.com/archives//007647.html.

Special issue of the international journal Environment and Urbanization on Reducing Risks to Cities from Disasters and Climate Change, April 2007, which included the following papers:

- The vulnerability of urban populations to disasters and the role of climate change - Saleemul Haq, Sari Kovats, Hannah Reid and David Satterthwaite
- The rising tide: assessing the risks of climate change and human settlements in low-elevation coastal zones - Gordon McGranahan, Deborah Balk and Bridget Anderson
- The vulnerability of global cities to climate hazards - Alex de Sherbinin, Andrew Schiller and Alex Pulsipher
- The vulnerability to climate change of Cotonou (Benin): the rise in sea level - Krystel Dossou and Bernadette Glehouenou-Dossou
- Vulnerabilities and responses to climate change for Dhaka - Mozaharul Alam and MD. Golam Rabbani
- Adapting to climate change: water management for urban resilience - Mike Muller
- Developing a Municipal Adaptation Plan (MAP) for climate change: the city of Cape Town - Pierre Mukheibir and Gina Ziervogel
- Are we missing the point? Particularities of urbanization, sustainability and carbon emissions in Latin American cities - Patricia Romero Lankao

Papers on climate change adaptation in the April 2008 issue of Environment and Urbanization:

- Climate, climate change and human health in Asian cities - Sari Kovats and Rais Akhtar.
- Unjust waters: climate change, flooding and the urban poor in Africa - Ian Douglas, Kurshid Alam, MaryAnne Maghenda, Yasmin McDonnell, Louise McLean and Jack Campbell.
- Climate change risk: an adaptation and mitigation agenda for Indian cities - Aromar Revi
- Climate change and coastal cities: the case of Mombasa, Kenya - Cynthia Brenda Awuor, Victor Ayo Orindi and Andrew Ochieng Adwera

Papers on climate change adaptation to be published in the October 2008 issue of Environment and Urbanization

- Thinking globally, acting locally - institutionalizing climate change at the local government level in Durban, South Africa – Debra Roberts
- Climate change and urban children: Implications for adaptation in low and middle-income countries, - Sheridan Bartlett

Name: Stephen H. Schneider

Publications:

- IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.
- Schneider, S.H. and P.R. Mastrandrea (2008): "Climate Change: Impacts and Implications for Justice." In Controversies in Science and Technology: Volume 2: From Climate to Chromosomes, Daniel Lee Kleinman et al., eds. Mary Liebert, Inc: 305-328.
- Sekercioglu, C.H., S.H. Schneider, J.P. Fay, and S.R. Loarie (2008): "Climate change, elevational range shifts, and bird extinctions," Conservation Biology 22, 140-150.
- S.H. Schneider (2008): "Dangerous' Climate Change: Key Vulnerabilities," in Global Warming: Looking beyond Kyoto, Ernesto Zedillo, ed. Brookings Institution Press and Yale Centre For The Study Of Globalization 2008, 55-81.
- Schneider, S.H., T.L. Root, and P.R. Mastrandrea (2008): "Climate Change and Wild Species," Encyclopaedia of Biodiversity 2008, Elsevier, 1-26.

In Press:

- Mastrandrea, M.D. and S.H. Schneider, "Global Warming Resource Letter." American Journal of Physics (accepted).
- In Preparation for Projected Publication 2008:
- Schneider, S.H., A. Rosencranz, and M.D. Mastrandrea, (Eds): Climate Change Science and Policy.

Submitted:

- Smith, J.B. et al. "Dangerous climate change: an update of the IPCC Reasons for Concern." PNAS (submitted).

Conferences and workshops:

US Congressional Testimonies

- "Climate Change Risks and Control Strategies" Wednesday, February 28, 2007: Testimony to the Committee on Ways and Means U.S. House of Representatives
- "Chapter 19. Assessing Key Vulnerabilities and the Risk from Climate Change" April 17, 2007 Testimony to the House Committee on Science and Technology Hearing, "The State of Climate Change Science 2007: The Findings of the Fourth Assessment Report of IPCC Working Group II Report, Climate Change Impacts, Adaptation, and Vulnerability."

US Congressional Briefings

- Summary for Policymakers of the Working Group II Report of the IPCC, Congressional briefing: Tuesday, April 17, Rayburn 2318, House Office Building, Washington, D.C.
- "Putting Science to Work in Developing Climate Policy" Congressional staff briefing: Friday, January 11, 2008, Rayburn 2168, House Office Building, Washington D.C.

University Lectures (in which IPCC was prominently featured)

- April 11, 2007 Woods Institute for the Environment - Energy Seminar on: IPCC Fourth Assessment Report. Stephen Schneider spoke as part of an IPCC panel covering how IPCC began and how it functions on the international scene.
- Moderator: Professor Buzz Thompson, Professor Chris Field, Carnegie Institution's Department of Global Ecology; Stanford, Department of Biological Sciences, Faculty Director of Stanford's Jasper Ridge Biological Preserve
- Michael Mastrandrea, Stanford, Interdisciplinary Program in Environment and Resources
- Professor Terry Root, Stanford, Senior Fellow at the Woods Institute for the Environment
- Professor Steve Schneider, Stanford, Melvin & Joan Lane Professor for Interdisciplinary Environmental Studies
- Professor John Weyant, Stanford, Management Science and Engineering
- April 18-19, 2007 Lecture at Butler University, Indianapolis
- April 24- 1 May, 2007 MIT- Delivered the 7th Annual Kendall Lecture
- April 27, 2007 Pennsylvania State University Spring Seminar Series talk. Title: Can we define, let alone fix, "dangerous" climate change?
- May 2-4, 2007 UW Seattle: Ethics and Climate Change Conference: Gave the keynote speech for a group of the interdisciplinary faculty, students, and practitioners, introducing the current state of the science of climate change and current IPCC report.
- May 11, 2007 Stanford University Symposium on the History of Global Climate
- May 25-June 4, 2007 South Australian University- Adelaide
- September 27, 2007 University of SF, Department of Environmental Sciences, Jose de Acosta Lecture
- June 8, 2007 Portland, lecture at a conference for journalists: "The Breaking Climate Story: Reporting Ahead of the Curve"
- August 22, 2007 Arizona State University School of Earth and Space Exploration
- October 8-10, 2007 University of Wyoming "Finding the Balance: Energy and Climate Conference"
- January. 22, 2008 Dartmouth College, The John Sloan Dickey Centre for International Understanding: keynote on the science and effects of climate change which addresses the question, "what should a policy maker know about global warming"
- January 23, 2008 Saint Mary's College Focus the Nation Event keynote speaker, Moraga, CA
- January, 30, 2008 IPCC Panel of the Stanford Participants in the 2007 Assessment Report: Energy Forum
- January 31, 2008 Focus the Nation event on campus at Stanford University
- February 12, 2008 Café Scientifique lecture at Stanford Research Institute, in Menlo Park, CA
- February 13, 2008 Planetary Society Workshop Panel: Earth Science and Climate Change
- March 4, 2008 University of Oregon Humanities Centre: Robert Clark Lecture
- March 10, 2008 Dempsey Environmental Lecture at Willamette University
- April 1-2, 2008 Hawaii Pacific University: Public Lecture: and campus lectures for faculty and students
- April 25, 2008 Brown University keynote, Providence, RI
- May 21-22, 2008 USC keynote lecture for Climate Change Conference
- June 2-5, 2008 MIT- Earth, Atmosphere, and Planetary Group's anniversary celebration climate change lecture.
- October 15, 2008 University of Indiana-Bloomington: to deliver the Bonser Series Lecture.

Municipalities

- August 15, 2007 Menlo Park, CA- Menlo Park's Green Ribbon Citizen's Committee Topic: Dr. Schneider's role on IPCC and the state of evolving knowledge and policy in the area of climate change.
- January 7, 2008 Sonoma County United Nations Association Chapter—co-sponsored by the Sonoma Academy and the Sonoma County World Affairs Council Chapter: public talk on climate change and IPCC AR4; the evening talk was preceded by an interview with local press before the event.

- January 24, 2008 lecture for Contra Costa USA, Concord, CA, on the science and impacts of climate change with an emphasis on ecology and equity issues

Corporations

- June 14, 2007 IDEO Design firm: lecture on climate change as it pertains to environmental sustainability, economic development, and the role design plays in achieving both
- June 26- 27, 2007 spoke on Climate Change Facts and Figures at the Richemont Group Annual Global Management Conference
- August 16, 2007 The LMI Board of Trustees keynote: "Climate change and how government agencies should be preparing for its consequences."
- August 29, 2007 Sun Microsystems: "Creating a Global Blueprint: Compliance, Sustainability and Eco-Responsibility."
- September 25, 2007 Pension Real Estate Association Conference
- October 18, 2008: Stephen Schneider will deliver a keynote to the Young Presidents' Organization in Tucson Arizona.

Federal and State Government Agencies

- June 6-7, 2007 EPA Region 4 (Southeast Region) Managers' workshop, Atlanta, Georgia: presentation to 100 regional EPA managers about potential global warming impacts on the southern US.
- October 11, 2007 Delivered the keynote address at an EPA Region 9 workshop: Impacts of Climate Change on Air Quality in the Pacific Southwest (CA, AZ, NV, HI).
- May 6, 2008 Stephen Schneider will meet with EPA managers who work on air quality planning about the relationship of climate change and air quality (impacts, policy, health, economic, legal, etc.).The discussion will include both scientific and policy issues related to this topic.
- May 15, 2007 CA Climate Registry Conference lead-off keynote: IPCC 4th Assessment Report: What It Means for Climate ActionProfessional Associations
- April 20, 2007 Association of American Geographers (AAG) 2007 Annual Meeting, San Francisco
- May 18, 2007 Gave keynote address at the national Audubon Leadership Retreat focused on global warming in Park City, Utah
- July 23, 2007 Keynote at Snowmass Climate Change Impacts Session, Snowmass, CO. SHS Topic: Summary of new insights on impacts from IPCC WG2 AR4 and a framework for identifying key risks and vulnerabilities Climate Change Impacts and Integrated Assessment (CCI/IA) Workshop XIII
- October 2-5, 2007 Greenhouse 2007, Sydney, OZ-keynote address: "Controlling Climate Change: Can we do it? Should we do it?"
- October 4-6, 2007 for the WCRP-GCOS Workshop -The World Climate Research Programme (WCRP), the Global Climate Observing System (GCOS), and the International Geosphere-Biosphere Programme (IGBP) Dr. Schneider participated in the workshop entitled: "Future Climate Change Research and Observations: GCOS, WCRP, and IGBP Learning from the IPCC Fourth Assessment Report", in Sydney, Australia
- November 4-6, 2007 The Science Teachers Association of New York State (STANYS) annual state conference. Delivered the keynote address and led a workshop.
- December 13, 2007 AGU (American Geophysical Union) celebration/acknowledgment of the many international scientists who contributed to the Nobel peace Prize-winning Intergovernmental Panel on Climate Change (IPCC) process. Stephen Schneider was a congratulatory speaker with Susan Solomon, and others.
- January 8-9, 2008 Steamboat Springs Weather Summit for TV meteorologists, keynote speaker and panellist
- February 11, 2008 Lecture at NCAR Lab "Joint Institutes" speech, sponsored by ISSE, IMAGE and TIIMES. Spoke about the IPCC, with attention to the topic of whether the science is settled enough for policy?

- February 20, 2008 American Nuclear Society dinner and lecture. Topic: “Is the Science of Global Warming Settled Yet?”
- March 13-14, 2008 American Society for Environmental History keynote, Boise, ID
- March 26-29, 2008 Lecture sponsored by the Southern Arizona Geographers Association (SAGA), U of Arizona, Tucson, AZ
- April 11-18, 2008 Planning Institute of Australia conference, Sydney, Australia

Environmental Organizations

- September 4-9, 2007 Society of Environmental Journalism: made presentations to environmental journalists.
- January 16-18, 2008 The National Council for Science and the Environment Conference on the topic of Climate Change: Science and Solutions in Washington D.C.

Briefings:

A small sample of interviews undertaken:

- April 23, 2007 Newton Science Magazine interview
- May 24, 2007 Interview with Anne Polansky Climate Science Watch
- June 5, 2007 Stanford Studio interview with Jon Stewart of the BBC for a radio program looking at climate change.
- June 5, 2007 ABC radio telephone interview for a programme about environment and climate change entitled: “Drive Time.”
- June 20, 2007 KCBS San Francisco phone interview
- July 14, 2007 Washington Post interview
- August 14, 2007 Interviewed by John Carey of Business Week
- August 30, 2007 Interview with a digital media executive regarding IPCC-related project
- December 13, 2007 KCBS San Francisco in studio interview with Sheryl Raines
- July 11, 2007 Audubon Magazine, Keith Kloor telephone interview
- August 15, 2007 Call from Louise Poirier, Associate Editor, Hart Energy Publishing
- February 26, 2008 Rivka Galchen call from Harper’s magazine.
- March 4, 2008 SHS TV interview for “UO Today,” Oregon Public Television.
- March 17, 2008 BBC documentary interview with Ben Santer on history of IPCC.
- April 2-5, 2008 Blue Planet Summit on Clean Energy to be filmed for international and national television distribution.

Name: Roger Sedjo

Publications:

- "Climate Change Impacts on Forestry," by Andrei P. Kirilenko and Roger A. Sedjo, in the Proceedings of the National Academy of Sciences, December 11, 2007, Vol. 104, no. 50, 19697-19702.

Name: Serguei Semenov

Publications:

- I have also prepared a paper "Some results of the Fourth Assessment Report of the IPCC" (15 pages) describing major findings of all three WGs. - The paper was sent to all members of the Section of Oceanology, Atmospheric Physics and Geography / Division of the Earth Sciences / Russian Academy of Sciences.
- Izrael Yu. A., Semenov S. M., Anisimov O. A., Anokhin Yu. A., Velichko A. A., Revich B. A., Shiklomanov I. A. Fourth Assessment Report of the Intergovernmental Panel on Climate

Change: contribution of the Working Group II. "Meteorology and Hydrology", N9, 2007, pp. 5-13:

Conferences and workshops:

- May 22, 2007, Institute of Geography of the Russian Academy of Sciences
- "Climate Change and the Environment. Main Results of the Fourth Assessment
- Report of the IPCC"
- February 10, 2008, Russian Academy of Agricultural Sciences, Crop Division,
- "Summary of the Fourth Assessment Report of the IPCC".

Name: Dr. Barry Smit

Publications:

- Wall, E., B. Smit, and J. Wandel. 2007. Farming in a Changing Climate: Agricultural Adaptation in Canada. UBC Press.
- Reid, S., B. Smit, W. Caldwell and S. Belliveau. 2007. Vulnerability and adaptation to climate risks in Ontario agriculture. Mitigation and Adaptation Strategies for Global Change. 12(4): 1381-2386.
- Ford, J., T. Pearce, B. Smit, J. Wandel, M. Allurut, K. Shappa, H. Ittusujurat and K. Qrunnut. 2007. Reducing vulnerability to climate change in the Arctic: The case of Nunavut, Canada. Arctic, 60(2): 150-166.
- Ford, J., B. Smit, J. Wandel, M. Allurut, K. Shappa, H. Ittusurjuat, and K. Qrunnuts. 2008. Climate change in the Arctic: current and future vulnerability in two Inuit communities in Canada. The Geographical Journal, 174(1): 45-62.
- Ford, J., T. Pearce, J. Gilligan, B. Smit, and J. Oakes. Climate change and hazards associated with ice use in northern Canada. Artic, Antarctic and Alpine Research. In press.

Conferences and workshops:

- Smit, B. 2007. Adapting to Environmental Change. Mountain Pine Beetle Conference, Grand Prairie, Alberta. July.
- Smit, B., J. Wandel, J. Ford, T. Pearce, J. Turner, F. Duerden, E. Beasley and G. Laidler. 2007. Vulnerability in the Canadian Arctic. UNFCCC Workshop on Adaptation Planning and Practices, under the Nairobi Work Plan, Rome, Italy, September.
- Smit, B. 2007. Community Adaptation and Vulnerability in Arctic Regions CAVIAR: Lessons for future policy. Program Introduction. UNFCCC Side Event, Bali, Indonesia, December 7.
- Smit, B. 2007. Vulnerability and Adaptation in Arctic Communities. Development and Climate Days at COP 13, Bali, Indonesia, December 9.
- Smit, B. 2007. Panel Discussion on Communicating to Communities, Across Sectors and Timescales. Development and Climate Days at COP13, Bali, Indonesia, December 9.
- Smit, B. 2008. Climate Change, Bali and Agriculture. Ontario Ministry of Agriculture, Food and Rural Affairs Seminar, Guelph, February 12.
- Smit, B. 2008. Geography and the Science and Politics of Global Climate Change. New Zealand Geographical Society, Auckland, New Zealand, March 18.
- Smit, B. 2008. Climate Change and Agriculture. Trinational Accord Meeting, Government of BC. Vancouver, BC. March.
- Smit, B. 2008. Adaptation to Climate Change: Canada-International. New Zealand Ministry of the Environment. Wellington, New Zealand. April 2.
- Smit, B. 2008. What we mean by institutional adaptation. Saskatchewan Institute of Public Policy Symposium: Adaptation to Climate Change in the Canadian Plains. April.

Briefings:

- Smit, B. 2008. Podcast. Climate change, Agriculture and the Bali Conference. Canadian Business Management Council. (www.farmcentre.ca). Feb 11.

Name: Joel Smith

Publications:

- Dangerous Climate Change: An Update of the IPCC Reasons for Concern, March 8, 2008 - Joel B. Smith, Stephen H. Schneiderb, Michael Oppenheimerc, Gary W. Yohed, William Haree, Michael D. Mastrandreaf, Anand Patwardhang, Ian Burtonh, Jan Corfee-Morloti, C. H. D. Magadzaj, Hans-Martin Füsselk, A. Barrie Pittockl, A. Rahman,m A. Suarezn, and Jean-Pascal van Yperseleo

Name: Avelino G. Suarez

Conferences and workshops:

- The conference ¨Climate Change 2007: Impacts, Adaptation and Vulnerability. IPCC AR4 Summary for Policymakers¨. At the V Meeting of the UNESCO Cuban Man and Biosphere Reserves and the Workshop for the XX Anniversary of the Cuchillas del Toa, Baconao and Guanahacabibes Man and Biosphere Reserves. Pinar del Rio July 10, 2007.
- The presentation Climate change and biodiversity at the Workshop ¨Environmental issues¨ organized by the Technical and Scientific branch of the Cuban National Organization for the Youth. Havana, July 13, 2007.
- The presentation Climate Change, Biodiversity and Complexity at the Complexity of the Climate Change Session of the 2nd Symposium on Complex Environmental Systems at the 3rd Biennial International Seminar COMPLEXITY Havana 2008. January 13-18 2008.
- The conference Climate Change and Biodiversity at the scientific session ¨Climate Change¨. During the International Book Fair. Havana 2008. February 20, 2008.
- Coordinator of the Climate Change and Biodiversity Panel at the VIII Botanical Symposium of the Cuban Botanical Society. Havana 23-27 June 2008.
- Two lectures Climate change and biodiversity and Vulnerability of different sectors and regions to climate change of the course ¨Climate Change: A Global Challenge¨ based on the IPCC AR4 WG I, II, and III results. A 50 lectures of 55 minutes TV course broadcasted since mid January 2008 by one of the Cuban national TV channels twice in a week and retransmitted by two other national TV channels at different hours and days of the week.

Briefings:

- As invited scientist to speak about the impact, vulnerabilities and adaptation to climate change (AR4) on the Cuban most important TV information programme called ¨Mesa Redonda¨ (Round table) broadcasted daily between 6.30 and 8.00 afternoon by three of the Cuban national TV channels. (March 30, 2007).
- Author of the article Climate change: A scientific alert two decades ago. Science warned two decades ago. (In Spanish) A. Centella, L. Paz and A.G. Suárez. Published June 4, 2007 at Granma, the most important newspaper in Cuba.

Name: John Sweeeney

Conferences and workshops:

- 12th March 2007 - 'The Impact of Climate Change on Irish Agriculture', Plenary Address to: Agricultural Research Forum, Tullamore Court Hotel, Tullamore, Co. Offaly.
- 2nd May 2007 - 'Climate change scenarios and challenges for the water environment', Institute of Irish Engineers, Royal Dublin Society, Dublin. (with C. Murphy, R. Charlton, and R. Fealy)

- 5th October 2007 - 'The impact of Climate Change on Irish Agriculture', 10th Anniversary Conference of NUIM (Kilkenny), Kilkenny Castle, Kilkenny
- 15th November 2007 - 'The Impact of Climate Change on Northern Ireland' - Northern Ireland Energy Forum, Stormont Hotel, Belfast.
- 27th November 2007 - 'The Impact of Climate Change on Irish Tourism' Tourism and the Environment, National Tourism Conference 2007, Shelbourne Hotel, Dublin.
- 19th February 2008 - 'Climate Change and Agriculture in Ireland', Future Land Use: Food or Energy Production?, Lismullin Institute Farming Seminar, Lismullin, Co. Meath.
- 21st February 2008 - 'Repositioning Geography and Repositioning Ireland in a Changing Climate', Presidential Address: Geographical Society of Ireland, Trinity College Dublin.

Name: Cristina Tirado

Publications:

- Background policy paper in collaboration with the International Food Policy Research Institute on "Nutrition, Climate change and Bio-energy for the FAO High Level Conference on Food Security and the Challenges of Climate Change and Bio-energy, June 2008.

Conferences and workshops:

- Two seminars at the School of Public Health of California Los Angeles (UCLA), USA:
    - "Climate change adaptation strategies for health" (Environmental Department Sciences) November 2007
    - "Climate change adaptation strategies for food security and food safety" (Community Health Sciences Nutrition Programme) Feb 2008
- Organizing two featured symposiums at the next Conference of the International Society of Environmental Epidemiologists, Pasadena October 2008 that will address climate change and health in different ways:
    - "Global Food Safety and Environmental Health" (I am presenting the impacts of CC on food safety among other issues)
    - "Infectious diseases in a Global Environment" (besides me, other invited speakers such as Tony Mc Michael and Kris Ebi will address issues related to CC and infectious diseases)
- Collaborating in the organization of a workshop at UCLA this summer on "Vulnerability Assessment of Public Health Climate Change".
- Presenting a paper at the next Conference of the International Society of Environmental Epidemilogists on "Climate Change challenges for food security and safety", October 2008.

Briefings:

- "Climate change and Health" issues at the Spanish regional journal "El Periodico" and the UCLA School of Public Health magazine in October 2007
- Mass media article on "Climate Change and Health" for EL PAIS (major Spanish newspaper) that will be published soon (contributor).

Name: Piotr Tryjanowski

Conferences and workshops:

- I give also more than 10 talks how climate changes are important to nature, especially in phenology and ecosystem context, both scientific ones and for general public.

Briefings:

- I had more that 15 interviews to Polish newspapers, radio and TV.

- Our local TV (Poznan one, in western Poland) even prepared a 5 min movie on academic job in IPCC, in very good way. I think I may ask on CD copy to you if you like, it was in Polish, but just for secretary documentation.

Name: Francesco N Tubiello

Publications:

- Tubiello, F.N., and Rosenzweig, C., 2008 Agricultural Impact Metrics to assess the benefits of climate policies. J. Integr. Assess. in press.
- Tubiello, F.N., Soussana, J.F., Howden, M., and Eaterling, W., 2007. Crop and pasture response to climate change; fundamental processes. Proc. Nat. Ac. Sciences 104: 19686-19690
- Schmidhuber, J., and Tubiello, F.N., 2007. Food security under climate change. Proc. Nat. Ac. Sciences 104: 19703-19708.
- Howden, M., Soussana, J.F., Tubiello, F.N., and Eaterling, W., 2007. Adaptation strategies for climate change. Proc. Nat. Ac. Sciences 104:19691-19698.
- Rosenzweig, C., and Tubiello, F.N., 2007. "Agricultural Impact Metrics". OECD Special Publication.

Conferences and workshops:

- Apr 27 2007 - FAO, Rome. Invited Presentation on IPCC findings for Agriculture (including forestry, fisheries etc.)
- May 6 2007 - University of Sassari, Italy. Invited Presentation on IPCC findings in Agriculture.
- June 18 2007 - Alghero, Italy. Italian Ministry of the Environment. Invited presentation on IPCC WGII Ch. 5 at preparatory workshop for Italian National Conference on Climate Change.
- Sept 20 2007 - Rome, Italy. Italian Ministry of the Environment. Invited presentation on IPCC WGII Ch. 5 at Italian National Conference on Climate Change
- Oct 11 2007 - FAO, Rome. Invited Presentation on IPCC (Agriculture and Food Security) at the Annual Meeting of FAO Country Representatives
- Feb 14 2008 - IFAD, Rome. Invited Panel Moderator on Roundtable on Climate Change and the Rural Poor
- Mar 6-8 2008 - FAO, Rome. Invited expert participation to preparatory workshop on Climate Change, Food Security and Adaptation/Mitigation.
- Upcoming - FAO and IFAD, Rome. Invited Expert participation to High-Level Conference on Climate Change and Food Security, June 5-8 2008, plus follow-up Political meetings in September and December 2008.

Briefings:

- Mar 2007 - Invited Interview at the Lopate Show, NPR, New York, with Stephen Long.
- Sep 2007 - Interview on Italian National Radio on IPCC findings in Agriculture
- Dec 2007 - Press release on several papers authored in PNAS. This press release was cited in over 500 websites, including International Herald Tribune. Main press release at: http://www.earth.columbia.edu/articles/view/2001

Name: Carol Turley

Conferences and workshops:

- Turley, C.M. Ocean Acidification: A perspective on vulnerabilities, timelines and research priorities. The IPCC Fourth Assessment Report & EC Integrated Climate Research, 19-20 Nov 2007, Brussels.

- Turley, C. Effects of Climate Change on Marine Life. Climate Change and Health Symposia, Global warming and food production: will we starve? Royal Society of Medicine, 12 November 2007.

Name: Alicia Villamizar

Conferences and workshops:

- Opening Talk for the "Open Classroom" for the Interdisciplinary Doctorate Program. Simón Bolívar University. Title: The IPCC and the Climate Change. Date: 02/26/2008
- Informal Talk into the programming of "One coffee with the Science", organized by the ASOVAC (Advance Science Venezuelan Association). Title: Are we melting or freezing? Date: 03/11/2008.
- Inaugural Conference for the scientific event "Thinking in Venezuela". Organized by the College of Engineer of Venezuela, National Academy of Engineering and Habitat and the Engineering Nucleus of the National Universities. Title: The challenges of climate change to the Venezuelan engineering. Date: 03/27/2008
- During the last two months, the Institute of Natural Resources from the Simón Bolívar University have been preparing the document: "Adaptation measurements to climate change to Venezuela" with the intention to present it to the Minister of Environment. I'm conducting this initiative with the participation of several colleagues from different scientific disciplines and different institutions. We hope to conclude this document before June 2008.
- Panel on Climate Change. This event will be the main activity into the programming of the World Environment Day (05/06/2008), organized by my Institute (Institute of Natural Resources). For this panel we are inviting to the IPCC members of Bureau from Latin America (active or not). Confirmed: Dr. Edmundo De Alba (Mexico), Dr. Armando Ramírez (Venezuela), and Dr. Eduardo Calvo (Perú). We are trying to contact Dr. Osvaldo Canziani. In respect to Dra María Teresa Martello (Venezuela), she will be in a similar activity the same day with another Institution.
- Conference to the Staff of Nokia-Siemens company in Caracas. Title: The social responsibility of the business in front the climate change. Date: 04/04/2008

Name: David Viner

Briefings:

- I did a fair few interviews, TV, radio, press, etc.,
- BBC1, Presented Inside Out: A special edition on climate change. The IPCC was specifically mentioned.

Name: Andrew Watkinson

Conferences and workshops:

- Climate Change Singapore 18/12/07
- New Civil Engineer Flood Risk Management Conference, London 16/1/08 08
- New Approaches to Coastal Risks, Paris 31/1/08
- Coastnet Climate Change at the Coast Cardiff 22/6/08
- IPCC WG2 results, University of East Anglia, Norwich 17/9/07
- Lectures to the general public at events around Norwich on 4/3/08 (Loddon) and 17/11/07(Bungay)

Name: Shaohong Wu

Publications:

- September, 2007, Article, WU Shaohong & YIN Yunhe, Impacts of climate change and its adaptation measurements, Scientific American (Chinese version), No. 9, p38~39

Conferences and workshops:

- April, 2007, Introduction report on AR4 WGII to The Meteorology Bureau of Guangdong Provinces, China
- September, 2007, workshop on "Climate Change" in Sino-Swedish Science and Technology Week, presentation on "Climate change and its ecological impacts in China under B2 climate scenario in the 21st century"
- October, 2007, Sino-UK workshop of climate change in Yinchuan, China, presentation on "Future impacts of climate change (B2 scenario) on natural ecosystems in China and its adaptation"
- December, 2007, workshop of China's Wetland Association on "Climate change", presentation on "Climate change and its impacts on ecosystems"

Briefings:

- April, 2007, News Brief (in Chinese) in the website of Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences (http://www.igsnrr.ac.cn)
- April, 2007, Press Release for Asian Region (in Beijing) on AR4 WGII, with Dr. Pachauri (Chairman of IPCC), Dr. QIN Dahe (Co-Chiar of WGI), and Dr. ZHENG Guoguang (Director of China's Meteorology Bureau)

Name: Gary Yohe

Publications:

- Yohe, G. and Lasco, R., "Climate and Development Plans must be Combined", SciDev.Net, April 16, 2007, available at http://www.scidev.net/opinions/.
- Yohe, G., "A Roadmap for Implementing Adaptation Policy", Tiempo Climate Newswatch, April 2007, available at http://www.tiempocyberclimate.org/newswatch/arcomment.htm.
- Yohe, G., "Thoughts on 'The Social Cost of Carbon: Trends, Outliers and Catastrophes'", http://www.economics-ejournal.org/economics/discussionpapers/2007.
- Yohe, G.,Burton, I., Huq, S., and Rosegrant, M., "Climate Change: Pro-poor Adaptation, Risk Management, and Mitigation Strategies", 2020 Focus Brief on the World's Poor and Hungry People, Washington, DC: IFPRI, October, 2007.
- Yohe, G., "Climate Change in Connecticut", What's New in Science and Technology, Hartford Courant, November 1, 2007.
- Yohe, G., "Clash: What will Climate Change Cost Us?", Scientific American, November 26, 2007, http://www.sciam.com/article.cfm?id=clash-what-will-climate-change-cost-us
- Yohe, G., "A Reason for Optimism" Tiempo Climate Newswatch, January 2008, available at http://www.tiempocyberclimate.org/newswatch/xp comment.htm.
- Yohe, G., "Inside the Climate Change Panel: Babel of Voices, a Single Conviction", The InterDependent 5: 14, Winter 2007/2008.

Conferences and workshops:

- "New England Climate Impact Assessment"
    - New York Botanical Gardens, July 11, 2007
- Connecticut Department of Environmental Protection and the Governor's Steering Committee on Climate Change, October 9, 2007.
- Forum on Climate Change with Congressman Christopher Murphy (5th District CT), Farmington, CT, April 28, 2007. .
- "Climate Impacts", The Climate Group, Swiss Re, New York, NY.
- "The Economic Impact of Global Warming", Northeast Utilities Environmental Expo, Berlin, CT. October 3, 2007.

- "Uncertainty can be a Reason to Act", Our Climate Matters, Chicago, IL, October 20, 2007
- "Climate Change: Impacts and Adaptation Globally and within Connecticut", Connecticut Business and Industry Association, October 26, 2007.
- "Climate Disclosure: Measuring Financial Risks and Opportunities", Banking Committee, United States Senate, October 31, 2007.
- "Lessons and Stories from the Climate Wars"
    - Wesleyan University Inauguration Weekend Lecture, November 4, 2007
    - Haddam-Killingworth Board of Education, February 27, 2008
    - Johnson Distinguished Lecture, Duke University, March 4, 2008
    - Carleton College, Northfield, MN. April 21, 2008
- "Response to Climate Change – an International Perspective", Focus the Nation, Wesleyan University, January 30, 2008.
- "Global Stewardship and Climate Change", First Congregational Church, Portland, CT., February 20, 2008.
- "Climate Change in Connecticut: Global Perspectives and Vulnerabilities", Connecticut Conference on Natural Resources Keynote Address, Storrs, CT. March 10, 2008.
- "The Economics of Climate Change", Rensselaer Energy Symposium Keynote Address, Hartford, CT., April 11, 2008.
- "The Future of the IPCC", Princeton University, Princeton, NJ, May 7, 2008.

Briefings:

- Coverage of IPCC News: Hartford Courant, April 6, 2007 and October 13, 2007.
- "Environminute" for Armed Forces Radio, May 17, 2007.
- WABC – TV in New York, August 13, 2007.
- WBT interview with Al Gardner (NPR), October 22, 2007
- "Where We Live" on Connecticut Public Radio, November 20, 2007 (live from Valencia)
- WMRD, March 13, 2008
- "Where We Live" on Connecticut Public Radio, March 20, 2008.

Name: Jean-Pascal van Ypersele

Conferences and workshops:

- 2007/04/16 - Brussels - VUB (University of Brussels)
- 2007/04/16 - Brussels - European Commission - Briefing of DG ENV
- 2007/04/19 - Brussels - Royal Society of Political Economy
- 2007/05/15 - Brussels - Private briefing for Prince Philippe, heir of the Belgian King
- 2007/05/15 - New York, NY - C40 Large Cities Climate Summit - Keynote speech for Mayors of 40 large cities of the World, and business CEO; co-hosted by Clinton Foundation
- 2007/05/15 - Brussels - Biodiversity and Climate Symposium
- 2007/05/23 - Brussels - Louvain Alumni
- 2007/05/23 - Brussels - French speaking Christian-democrat party political rally
- 2007/05/31 - Ostende - Total (oil company)
- 2007/06/02 - Namur - Society of Pharmacists
- 2007/06/03 - Brussels - French speaking Green party political rally
- 2007/06/08 - Liège - Public Water Utilities
- 2007/06/11 - Brussels - Stakeholders conference
- 2007/06/12 - Brussels - European Committee of the Regions
- 2007/06/14 - Brussels - STIB (Brussels Public transport)
- 2007/06/21 - Brussels - European Commission
- 2007/06/27 - Louvain-la-Neuve - Hamon (industry)
- 2007/06/28 - Brussels - IEEP Workshop on 2°C target - at EU Parliament
- 2007/07/03 - Brussels - European Commission - keynote speech at launch of EU Green paper on adaptation

- 2007/07/31 - Aspen - EMF meeting on future scenarios
- 2007/09/07 - Brussels - Diplomats Day - Annual meeting of all Belgian diplomats
- 2007/09/10 - Brussels - European Parliament Temporary Climate Change Committee Hearing
- 2007/09/12 - Brussels - Flemish Academy of Sciences
- 2007/09/20 - Noordwijkerhout - IPCC Workshop on scenarios
- 2007/10/04 - Brussels - Workshop on Global Assessments (European Commission)
- 2007/10/08 - Namur - Festival of Nature Film
- 2007/10/09 - Namur - Walloon Cities and Town Mayors annual meeting -
- 2007/10/11 - Brussels - Jette public lecture
- 2007/10/11 - Antwerp - Jesuit workshop on Africa & Climate
- 2007/10/20 - Brussels - Order of Merit annual meeting (Doyens d'honneur du travail) - In presence of HRH Princess Astrid
- 2007/10/22 - Brussels - Bank Degroof investors day
- 2007/10/25 - Rio de Janeiro - IPCC Outreach event
- 2007/11/05 - Leuven - Leuven University lecture - in Dutch
- 2007/11/08 - Namur - FGTB Board (socialist trade union)
- 2007/11/20 - Brussels - European Commission: Symposium on Direction for climate research
- 2007/11/20 - Louvain-la-Neuve - Graduating ceremony of economics Faculty at University of Louvain-la-Neuve
- 2007/11/22 - Waterloo - Public lecture
- 2007/11/24 - Brussels - Belgian Royal Meteorological Society (SRBA) Polar Year Outreach event
- 2007/11/27 - Brussels - Federal Parliament (Chambre) - Hearing on Belgium energy future
- 2008/01/08 - Brussels - Public lecture
- 2008/01/17 - Corroy-le-Grand - Primary school
- 2008/01/18 - Brussels - Foreign Affairs Society
- 2008/01/28 - Ottignies - Public lecture
- 2008/01/29 - Liège - University of Liège: hydrology day
- 2008/02/14 - Brussels - Private briefing for Prince Philippe, heir of the Belgian King
- 2008/02/19 - Brussels - Public lecture - in Dutch
- 2008/02/20 - Louvain-la-Neuve - Public lecture
- 2008/02/21 - Brussels - European Business Summit
- 2008/02/22 - Brussels - Belgian Army top brass
- 2008/02/23 - Amsterdam - International Seminar "Climate Change, Energy Revolution, and Social Transformation
- 2008/02/28 - Brussels - Batibouw (Building Industry Trade Fair) - Building industry professionals
- 2008/03/06 - Brussels - University of Brussels: Francqui Chair inaugural lecture
- 2008/03/07 - Brussels - Symposium on Climate Change & Aid Policy
- 2008/03/10 - Louvain-la-Neuve - Science Fair: workshops for primary schools students
- 2008/03/11 - Louvain-la-Neuve - Climate Day at Université catholique de Louvain
- 2008/03/13 - Louvain-la-Neuve - Secondary School
- 2008/03/14 - Louvain-la-Neuve - Science Fair keynote lecture
- 2008/03/15 - Liège - Public lecture
- 2008/03/17 - Namur - Wood & Building Trade Fair
- 2008/03/18 - Brussels - Private briefing for the United Kingdom Ambassador to Belgium
- 2008/04/01 - Brussels - Private briefing for the Belgian Federal Minister for Climate & Energy
- 2008/04/15 - Brussels - Keynote speech at launch of the "Environment Spring" (stakeholder consultative process) - in presence of Belgian Federal Prime Minister, Minister for Climate & Energy, and regional Ministers for environment
- 2008/04/17 - Brussels - CC impacts on migrations
- 2008/04/21 - Rhodes - Keynote speech at the Van Marcke training seminar for energy professionals - energy professionals

- 2008/04/25 - Brussels - Royal Society of Naturalists
- 2008/04/28 - Brussels - Presentation of King Review on low-carbon cars -
- 2008/04/29 - Louvain-la-Neuve - Public lecture
- 2008/04/29 - Chaumont-Gistoux - Public lecture
- 2008/05/05 - Ath - Public lecture
- 2008/05/07 - Brussels - European Savings Banks Association
- 2008/05/08 - Louvain-la-Neuve - Environment Forum at Université catholique de Louvain
- 2008/05/13 - Brussels - European Parliament
- 2008/05/13 - Brussels - Management School (ICHEC)
- 2008/05/16 - Spa - Bottled water producers (Spadel)
- 2008/05/20 - Brussels - CEC Briefing on IPCC & RTD
- 2008/05/21 - Brussels - Royal African Circle
- 2008/06/12 - Brussels - European Commission Conference on Soils and Climate Change
- 2008/06/13 - Brussels - Bottled water Federation
- 2008/06/16 - Brussels - Insurance Federation
- 2008/06/22 - Botrange - Seminar on Biodiversity & Climate Change
- 2008/06/25 - Heer - CNE Staff (Christian trade union)
- 2008/07/04 - Lima - IPCC Outreach event
- 2008/07/10 - Moscow - IPCC Outreach event
- 2008/08/15 - Quebec - Public lecture
- 2008/09/12 - Barcelona - Keynote speech at European Software Society
- 2008/09/25 - Milan - Keynote speech at European Christian Environmental Network assembly
- 2008/10/09 - Brussels - Petercam Investment bank briefing
- 2008/10/12 - Villers-la-Ville - Public lecture
- 2008/10/14 - Antwerp - Water & Climate Belgo-French meeting
- 2008/10/17 - Brussels - Keynote speech at Emerging animal diseases symposium
- 2008/10/23 - Mons - Public lecture
- 2008/11/04 - Brussels - Public lecture
- 2008/11/13 - Brussels - Symposium on a "zero-carbon Belgium in 2050 ?"
- 2008/11/24 - Paris - Science in Society Workshop
- 2008/11/25 - Charleroi - Joint Trade Unions training
- 2008/12/15 - Louvain-la-Neuve - Climate Change & Energy Security
- 2008/12/20 - Brussels - Royal Academy of Medicine: Keynote speech on Climate impacts on Health

Briefings:

- 2007/06/25 - Brussels - European Journalist Centre - briefing for 100 European journalists
- 2007/04/06 - Brussels - End of WGII Plenary - about 35 interviews to national & international medias
- 2007/04/16 - Brussels - Book presentation & press conference
- 2007/10/12 - Nobel peace prize interviews - about 20 interviews to national medias
- 2008/01/16 - Charleroi - TV documentary on polar regions climate impacts - Belgian TV (RTBF)
- 2008/01/30 - Brussels - Insulation industry federation - Press conference
- 2008/03-28 - Gembloux - TV show on climate change & biodiversity - Belgian TV (RTBF)

Remark: In addition to the two specific News briefings intensive period mentioned (April 6 and October 12), I gave between 50 and 100 interviews on climate issues between April and December 2007.

END REPORT OF WG II

WORKING GROUP III

IPCC Outreach Meeting for Business and Industry on WGIII Fourth Assessment Report (AR4)

25 September, Albany, New York

Co-sponsored by

General Electric

Meeting report

Rutu Dave and John Kessels

IPCC Technical Support Unit- Working Group III

Supporting material prepared for consideration by the Intergovernmental Panel on Climate Change. This material has not been subjected to formal IPCC review processes.

This expert meeting was agreed in advance as part of the IPCC work plan, but this does not imply working group or panel endorsement or approval of this report or any recommendations or conclusions contained herein.

Steering Committee IPCC Outreach Meeting for Business and Industry on WG III Fourth Assessment (AR4)

Dr. Lenny Bernstein	L.S. Bernstein & Associates, L,L.C., USA
Dr. Mike Bowman	General Electric, USA
Dr. Nick Campbell	Atofina, France (chair)
Prof. Ogunlade Davidson	Co chair WG III IPCC, Siera Leone
Ms. Rutu Dave	Technical Support Unit Working Group III IPCC, Netherlands
Dr. Haroon Kheshgi	ExxonMobil Research and Engineering Company, USA
Mr. John Kessels	IEA Clean Coal Centre, UK
Ms. Norrine Kennedy	United States Council for International Business, USA
Dr. Greg Tosen	ESKOM, South Afrika
Dr. John Scowcroft	Eurelectric, Belgium

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(http://www.ipcc-wg3.org)

Contents

1. Introduction

1.1 Goal and Background

This meeting summary report presents the discussion and results of the Outreach Meeting for Business and Industry on WG III AR4.

The Intergovernmental Panel on Climate Change (IPCC) has completed the Fourth Assessment Report (AR4), which assessed the scientific, technical, and socio-economic information relevant to understanding human-induced climate change, its potential impacts, vulnerability to it, and options for adaptation and mitigation. Several IPCC expert meetings have been organised in order to support the scientific, technical and socio-economic input to the WG III AR4. This outreach meeting was to report back the key findings of the AR4 to industry participants and to get feedback on the process to allow input by industry into the AR4 process. The objectives of the outreach meeting were:

- To communicate the key messages from the AR4 to industry.
- To outline the process of allowing industry input throughout the AR4 process and lessons learned and also feedback from industry on how to improve the process.
- To provide information to participants on future outreach meetings in 2007 and in 2008.

The meeting focused on communicating the key messages of the AR4 to an industry audience.

1.2 Organisation

The organisation of the Meeting was undertaken by a Steering Committee, consisting of 6 members with IPCC or industry background (see page 2 of this report) under the chairmanship of Dr. Nick Campbell, Environmental Affairs Manger at Arkema. In addition, General Electric (GE) assisted in logistics and organisation of the Meeting in the USA.

Invitations were sent out in July-August to industry experts, identified via IPCC, the Climate Group, International Chamber of Commerce (ICC), IPIECA and Eurelectric.

1.3 IPCC Expert Meeting venue and participants

The Outreach Meeting took place at the GE Conference facility in Albany, USA on September 25. There were 40 participants from 6 countries (Canada, France, Japan, Netherlands, Sierra Leone and the USA). The industry participants included Toyota, ExxonMobil, Chevron, GE, AREVA, Siemens and EDF.

2. Outreach Meeting

2.1 Opening Plenary Session

The meeting was for one day and consisted of a series of presentations from convening lead authors and the Co Chair Ogunlade Davidson. The day was split into an opening session, on-going and future IPCC activities and the key results from WG III AR4 chapters. At the onset of the meeting Dr. Mark Little, SrVP and Director of GE Research, gave an opening addressed to the group and thanked the IPCC for helping organize the event.

The Outreach Meeting first session was chaired by Michael Bowman, Manager of GE Energy Systems Laboratory. The Co-Chair of Working Group III, Professor Ogunlade Davidson opened the meeting and outlined its purpose and objectives. He outlined the background and rationale for the Meeting and emphasized the important role that industry plays in technology transfer.

John Kessels outlined the IPCC process and outlined the two industry expert meetings that were held in 2004 and 2006.

Dr Brian Flannery from ExxonMobil, also a Lead Author in the AR4 talked about climate change scenarios and the process and discussed the challenge of projecting forward 40-100 years and scenarios that are relevant to the future. He first gave some background to scenarios with historical development, the primary user and research communities and the rationale for doing scenarios. That is scenarios are there to provide a coherent, plausible set of results for future emissions and socio-economic conditions. This involves emissions, land-use input to be able to project climate change. The results are used to project the impacts, vulnerability and potential for adaptation as well as to provide a framework for policy assessment. IPCC scenarios are used to provide possible risks, impacts and options for mitigation.

The current situation for scenarios is that processes and communities have become institutionalized requiring significant funding, coordination and buy in with scenarios sometimes taking years to develop and a year of computing to produce results. An additional challenge is that changes in the science happen so quickly that some scenarios can become inconsistent and obsolete at the end of the process. There has been criticism of the IPCC scenarios and scenario process such as whether to use purchasing power parity vs market exchange rates as well as a possible conflict of interest for the IPCC as a provider of scenarios and also in accessing them. There is a suggestion of a new approach with a reliance on research communities to develop new scenarios with the IPCC to catalyze but not to create new scenarios and making the results available to interested parties. With the first step to develop benchmark concentration pathways for the climate modelling community with an aim to have this completed by the end of 2008. Then over time other phases will include detailed socio-economic scenarios with a likelihood of this taking up to 5-7 years. The BCPs will be four pathways, high not stabilized, 3 stabilized trajectories with a more detailed focus on near term to 2030 as well as a simplified extension 2100 to 2300. There are several challenges in taking into account policy assumptions and probability of likelihood of outcomes.

Rutu Dave then presented future IPCC outreach activities and also scoping meeting for a Special Report on Renewable Energy in January 2008 in Germany. Rutu outlined the remaining 2007 outreach activities and also some proposed activities in 2008.

In the panel discussion there was the point made that participation via the CLA/LA contribution was an excellent way of being involved as well as being selected as an expert in the review process. There was also a question on whether workshops on special topics or specialist reports were an option. A comment was made that it was surprising how few companies were heavily involved in the IPCC process and the value that had in long term strategic benefit and having access to world experts in key areas of mitigation.

2.3 Key Findings of the AR4

The Co-Chair of Working Group III, Professor Ogunlade Davidson went through some of the key results of the AR4 including that between 1970-2004 that greenhouse gas emissions had increased by 70 percent with CO2 the largest contributor and expectations that GHG emissions will continue to increase over the next few decades unless there are changes to current mitigation policies. He then outlined the mitigation potential and different types of technology in the industry, electricity, building and transport sector. Professor Davidson also discussed some of the co-benefits of mitigation including energy security, balance of trade improvement and near-term health effects from reduced air pollution may offset a substantial fraction of mitigation costs. There has also been more progress in scientific consensus on technology and economics compared to the Third Assessment Report with some models now showing GDP gains as well as GDP losses.

In conclusion, the question of whether dangerous anthropogenic climate change be avoided was responded to by WG 1 and that for any stabilisation target that there will be a peak and where that will be depends on the stabilization target. Depending on the target the policy challenges will be implementing low-cost mitigation measures, setting an effective carbon price signal and this will mean a price of US$50-100 tonne of CO2. The issue that public research funding has halved since 1980 is a key one which needs to be addressed by Governments. Professor Davidson also stressed that it was not only climate change policy that was needed but also other policies were being developed that impacted on mitigation.

In the afternoon session Mark Levine opened with a presentation on chapter 6 residential/commercial buildings. He outlined the four ways that this sector could reduce emissions including reduce energy consumption, with low carbon fuels including a higher share of renewable energy, control the emissions of non-CO2 GHGs and lastly reducing energy use of material used for construction. Commercial sector emissions are growing substantially more than the residential sector with China and accounting for the largest increase of emission over the last five years for residential buildings and the USA for commercial buildings.

The chapter updated the TAR assessment and reviewed 56 recent studies from 32 countries spanning five continents. The estimates of potential emissions reduction varied from country to country. Combined global potential based on 11 studies via the B1 scenario could mean a reduction of 23% globally. Readers should bear in mind that there is uncertainty with these studies as the assumptions and analytical methods differ with conflicting views about the meaning of results and the economic potential. There are also a lot of market barriers to realise energy efficiency including fragmented market structure, traditional building design process to imperfect information and power quality and electronics to name a few.

Dr. Lenny Bernstein, coordinating lead author, discussed Chapter 7 Industry which covered the manufacturing and process industries including iron and steel, non-ferrous metals, chemical fertilizers, petroleum refining, minerals, paper and pulp as well a focus on the food industry. Industry is decreasing in the size of its emissions compared to other sectors. Energy intensive industries are already in developing countries for example 78% of cement, 57% of nitrogen fertilizer, 50% of primary aluminium and 43% or iron and steel with all these industries projected to grow in the coming decades. In addition, the most efficient aluminium smelter in the world is in Mozambique and this trend is reflected in many developing countries with some featuring the most up to date technology. However, there are is a lot of inefficient technology in the developing world as there is also in the developed world. Some areas of industry sector mitigation potential included oxy-fuel combustion, CCS where hydrogen was manufactured and the CO2 needed to be separated, hydrogen for metals smelting, use of geo-polymers in cement, inert electrodes for A1 smelting and black liquor gasification for pulp and paper industry. As with the building sector the industry sector also has barriers, for example in most of the world industry will only invest if other factors provide a return. There is a slow rate of capital stock turnover, lack of financial resources and limited ability of many firms to absorb technological information in particular small to medium size enterprises as well as large companies.

Professor William Moomaw a lead author on chapter 4 energy supply presented the key findings of this chapter. It was found that carbon intensity is declining from 78gCO2/MJ in 1973 to 61 gCO2/MJ in 2000. In terms of global trends of CO2 by region Asia is now the leader. While conventional oil and gas will peak and decline in the 21st century it is likely that coal to gas and liquids, oil sands and other unconventional sources will be likely substituted. Coal is expected to be the major fuel for electric power generation then CCS will be required.

Shigeka Kobayashi the Coordinating Lead Author from Chapter 5 presented on the transport and infrastructure chapters major findings. Total emissions from the transport sector is 23.4% in 2004 with vehicle stock likely to double by 2030 and treble by 2050. In regard for road transport there are several mitigation options that include reducing vehicle loads, improve efficiency of the engine, transmission and HV as well as use of alternative fuels as well as non technological measures. Mr Kobayashi then focused on the role that biofuel could play in the transport sector and its potential penetration into the automotive market with a look at the costs of ethanol and biodiesel with the cost differing depending on the technological pathway used to obtain the biofuel. In terms of mitigation potential it was estimated by 2030 only 1.5-2.5 gigatonnes reduction (is this correct)?? (I don't know if this is correct or not)

2.4 Conclusions

There was excellent discussion from the audience and an option to participate in the IPCC process and better understand that if there is to be a fifth assessment on climate change then it would be good to continue to have:

- Ongoing contact with industrial experts for future meetings and expert reviewers

- To examine the option of having more focussed reports on specific topics and use industry experts and information that has been peer reviewed.
- To encourage participation of IPCC experts at technical workshops organized by industry associations

Final list of Participants Industry Meeting
25 September 2007 Albany, USA

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IPCC Outreach Meeting for Business & Industry on WG III Fourth Assessment Report (AR4)

Albany, New York, USA 25 September 2007

Meeting Programme [1]

Co-Sponsored by the Intergovernmental Panel on Climate Change (IPCC)

Venue: GE Global Research Center, One Research Circle, Niskayuna, NY, 12309, USA

08:30 Registration at GE Global Research Center

1. Opening Session

Chair: Mr. Michael Bowman, Manager Energy Systems Laboratory

09:00 Opening Statement by Mr. Mark Little, Senior Vice President, GE Global Research
09:10 Welcome Address by Prof. Ogunlade Davidson, Co-Chair WG III, IPCC
09:20 Overview of process to develop WG III- AR4 & Role of Industry by John Kessels, Scientific Officer, Technical Support Unit, WG III, IPCC
09:45 Discussion on the Evaluation of the industry's role in development of WG III- AR4- Moderated by Mr. Michael Bowman

[1] The programme may be subject to last-minute changes

2. On-Going and Future IPCC Activities

Chair: Ms. Norine Kennedy, Vice President, Environmental Affairs, United States Council for International Business

10:15 Development of New Scenarios by Dr. Brian P. Flannery, Science, Strategy & Programs Manager, Safety, Health & Environment Department Exxon Mobil Corporation
10:30 Scoping Meeting for Renewables and other activities by Rutu Dave, Scientific Officer, Technical Support Unit, WG III, IPCC
11:00 Question and Answer Session on Presentation- Moderated by Ms. Norine Kennedy

11:30 – 11:45 Tea/ Coffee Break

3. Key Results from Working Group III, Fourth Assessment Report Chapters
Format: 20 minutes presentation + 20 minutes Q & A session

Chair: Dr. Jean-Yves Canielle, EDF, France

11:45 Key Findings of the Fourth Assessment Report by Prof. Ogunlade Davidson Co-Chair WG III, IPCC

12:25 Prof. Ogunlade Davidson Co-Chair WG III, IPCC, Chapter 11: Mitigation from a cross-sectoral perspective

13:00 Lunch Break

Chair: Dr. Haroon Kheshgi, Advanced Research Associate, ExxonMobil Research & Engineering Company

14:00 Mark Levine, Coordinating Lead Author, Chapter 6: Residential/ Commercial (Buildings)

14:40 Lenny Bernstein, Coordinating Lead Author, Chapter 7: Industry

15:15 Tea/ Coffee Break

Chair: Dr. Ogunlade Davidson, Co-Chair WG III, IPCC

15:45 William Moomaw, Lead Author, Chapter 4: Energy Supply

16:20 Shigeki Kobayashi, Coordination Lead Author, Chapter 5: Transport & its infrastructure **17:30** Wrap up & Closing of the Meeting

18:00 Dinner Hosted by General Electric

******END OF DOCUMENT******

IPCC Working Group III's Contribution to the Fourth Assessment Report on Climate Change Mitigation

Dissemination Workshop in Kolkata for the South Asian Region

Report

Submitted by

Global Change Programme
(http://www.juglobalchangeprogram.org)
Jadavpur University
Kolkata

Contents

Acknowledgements

We acknowledge with thanks IPCC Working Group III TSU and Co-chairs Bert Metz and Davidson Ogunlade to give us the opportunity to host the Dissemination Workshop in Kolkata for the South Asian Region during October 11-12, 2007. The Workshop has been a great success in achieving the objective of reaching out to the major stakeholders in the region and sharing of advanced research findings, new perspectives and ideas. We would like to express our sincere gratitude to the institutions and the individuals who made the workshop a success through their help, support and active participation. We would like to express sincere thanks to the leadership of Secretary, Department of Environment Mr M.L. Meena and Chairman of West Bengal Pollution Control Board, Prof. A.N. Basu in pooling together the government departments and building up the political will within the state and awareness about IPCC's role in climate change research and preparation of policy options. Their team members have provided excellent support in organizing the workshop. Collaboration of West Bengal Pollution Control Board, Department of Environment, Department of Science and Technology, Government of West Bengal deserve special mention as they had been the integral part of the steering committee. We are thankful to Department of Environment for their partial financial support. South Asian Capacity Building Networks such as SANDEE and LOICZ provided us the extensive support in bringing together the South Asian participants from this region.

We would like to express our sincere thanks to Shri Gopalkrishna Gandhi, Hon'ble Governor of West Bengal who kindly graced the inaugural session with his august presence and delivered the special address. His personal interest in the theme added a new dimension to the workshop. We would like to thank Shri Sailen Sarkar, Hon'ble Minister of Environment, Government of West Bengal without whose whole hearted support and encouragement and commitment we could not have made it possible. His support to coordinate all the departments have in fact set an instance how environmental issues needs to be addressed in practice. We express our sincere thanks to Prof. A N Basu, Chairman West Bengal Pollution Control Board who has been instrumental in raising the awareness about the global warming issue across various Government departments and he could motivate his colleagues in taking up the commitment to address the issue of climate change with concrete steps. We thank Prof. S K Sanyal, Vice Chancellor, Jadavpur University and the Executive Council, the highest decision making body within the university for providing all out infrastructural, manpower, financial support in organization of this programme. We thank Ms Rutu Dave from IPCC –TSU in providing guidance, technical, administrative and partial financial support in organization of this dissemination workshop.

We express our sincere gratitude to Dr. Bert Metz, IPCC Co-Chair, Dr. Jayant Sathaye, Prof. P.R. Shukla , Dr. Jean Bogner - Coordinating Lead Authors, IPCC and Prof. Steve Plotkin, Dr. Anthony Mongameli Mehlwana, Dr. N.H Ravindranath - Lead Authors of IPCC who took the time and effort to make their excellent presentations in the Workshop. We would also like to thank Dr. Dipak Chakraborty, Chief Scientist, West Bengal Pollution Control Board, Prof Subimal Sen, Vice Chairman, West Bengal Council of Higher Education, Chairman, Environmental Impact Assessment Process and Project Management, State level Environment Impact Assessment Authority (SEIAA, West Bengal), Mr. Debal Ray, Member Secretary, WBPCB, Secretary –State Environment Appraisal Committee (SEAC), Shri Bikash Ranjan Bhattacharya, Honorable Mayor of Kolkata , Dr Hemanta Majumdar, Working Chairman, WBSCST and Rutu Dave , Prof. K.J. Nath, Chairman State Environment Appraisal Committee (SEAC), Arsenic Task Force, IPCC TSU for their skillful coordination of the sessions and valuable responses which has enriched the workshop. Without their commitment the quality of workshop could not have been managed. Our sincere thanks to all of them. We also thank Dr. Sayan Banerjee, Reader and Officer-in-Charge, AICRP on Agro-Meteorology, Bidhan Chandra Krishi Viswa Vidyalaya, Dr. Keshav Raj Kanel, Director General, Department of Forestry, Gov't. of Nepal who had been excellent respondent on their areas of expertise. We would also like to specially thank Prof. Debkumar Bose, Chief Advisor, WBSCST, to provide as usual advisory support in organizing the sessions and respondents and has been instrumental in organizing meetings with the Government representatives. We are always grateful to him. Dr. Priya Shyamsundar, Programme Director and Dr Pranab Mukhopadhaya of, SANDEE, and Nalin Wickramanyake need special mention for mobilizing the South Asian Participants with financial and academic support. Industry responses had been excellent. Despite their extremely busy schedule Mr.

Anup Singh, Executive Director, ITC and , Mr. S. B. Prasad, Head, Environment & Occupational Health, TATA Steel, kindly acted as the official respondents to the Chapter presentations. We thank Shri Kanti Ganguly, Hon'ble Minister of Sundarban Development Affairs, Government of West Bengal who showed immense enthusiasm and shared his plans and actions in Sundarban. Mr. S. P. Gon Chowdhury, Director, WBREDA, Dr. T.K. Gupta , Senior Environment Engineer, WBPCB, Sri Sanjoy Chakraborty, Vice President, Generation, CESC and Mr. Charles J Cormier, Representative, World Bank all deserve our gratitude for their active participation in the Panel Discussion. We would like to thank in particular the policymakers, Ministry personnel and all the audience for expressing their interest and active participation throughout the two days of the intensive Workshop Proceedings.

We express our sincere thanks to the students, scholars and WBPCB staff who volunteered to lend their helping hands in organising the Workshop - Ms Kaberi Nandy, Mr Suman Dutta, Mr Sabyasachi Tripathi, Ms Jaba Pal Chatterjee, Ms. Moniporna Syam Roy, Ms. Upali Basu, Ms. Joyeeta Mukherjee, Ms. Manikarnika Kanjilal, Ms. Anupa Ghosh, Mr. Anirban Roy, Mr. Avijit Das, Ms. Chetana Choudhury, Ms. Madhuchanda Ghosh, Ms. Dipanjana Moulik, Ms. Joyoti Mitra, Mr. Rishi Chakravorti, Mr. Pratick Mukherjee and Ms. Amrita Dasgupta. We thank Mr. Ujjwal Mukherjee and Mr. Arup Guchhait of the West Bengal Pollution Control Board for their constant support. We also take the opportunity to thank Mr. Asok Banik, webmaster Mr. Sandip Sarkar and their team who helped in visual documentation and archiving of the Workshop Proceedings through photographs and webcast. We could not name all, so apologise for not mentioning many names here without whose contribution we could hardlyhave made it possible. It was a perfect team work which made it possible at this scale. We all extend our heartfelt thanks to Hyatt Regency Manager who did not spare time to get a cake and brought as gift to IPCC team on the Breaking news of it's sharing the Nobel peace prize of 2007 to make the Nobel Prize declaration and celebration a memorable event. All media persons deserve special thanks for bringing out the detailed report on the workshop proceedings.

I acknowledge with thanks the service of Ms Anupa Ghosh and Ms Manikarnika Kanjilal for their tireless and constant support in preparation of this report.

Joyashree Roy, CLA –IPCC, Dissemination Workshop Coordinator

Date, Location and Organization

During October 11-12, 2007, the Dissemination Workshop of the IPCC Working Group III's contribution to the Fourth Assessment Report was held at Hyatt Regency, Kolkata, India (Appendix 1).

The Global Change Programme (http://www.juglobalchangeprogram.org) of Jadavpur University, organised (Appendix 2) the Workshop in collaboration with the West Bengal Pollution Control Board, Department of Environment and the Department of Science and Technology, Government of West Bengal and South Asian Network for Development and Environmental Economics (SANDEE) and Land Ocean Interactions in the Coastal Zone (LOICZ) regional Node for South Asia.

Aim of the Workshop

The IPCC Working Group III presented its findings in May 2007 at Bangkok. The dissemination workshop aims to reach out with the findings to the researchers and major stakeholders in the South Asia region: Policy Makers, Industry, Agriculturists and other sectoral actors and NGOs. Based on the latest scientific findings, they can then frame appropriate strategies to counteract the adverse impacts of climate change in the region. In South Asia there are two issues that need to be addressed with greater focus – to generate appropriate information and understand the risk and responses at the local level through appropriate research, and also to generate awareness about mainstreaming climate change related issues in investment plan which need appropriate policy support and new policy directions and regional cooperation.

Target Audience

The dissemination workshop aimed at providing information on the Fourth assessment Report to researchers, policy makers, bureaucrats, investors and action groups, ministers and consulates from the South Asian region. Invitations (Appendix. 3) were sent out region wide to major groups like:

i. Ministries of the Government Departments : State as well as Central
ii. Consulates
iii. Municipalities
iv. Industry associations: Large and SME (Small and Medium Enterprises)
v. Association of Builders and Architects
vi. Universities, Colleges, Schools
vii. Research Institutes
viii. Independent Researchers
ix. NGOs
x. Pollution Control Boards: district level
xi. Individual Industries
xii. Individual architects

Workshop Highlights

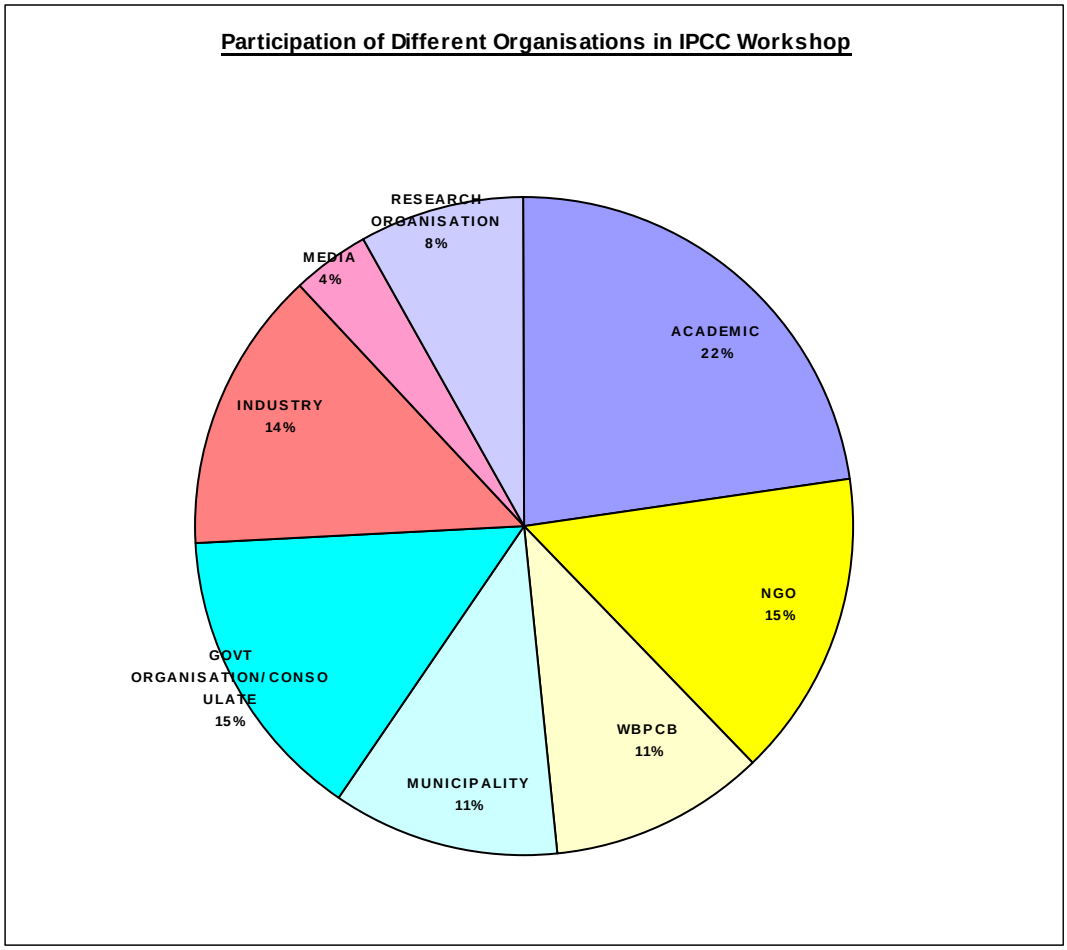
The most prominent aspect of the programme is conscious choice by Government of the of West Bengal to take part in the programme. Besides being part of the organizing committee and cost sharing, West Bengal Pollution Control Board, Department of Environment, Department of Science and Technology of the State Government took direct interest in the programme. Active participation by Government Policy makers in discussion and presentations on past, ongoing and future plans of government actions in response to global warming has added immense value to the programme.

Governor of West Bengal took personal interest to inaugurate the workshop and deliver illuminating address.

Chief Minister of West Bengal, Mr. Buddhadeb Bhattacharya held a special meeting with the IPCC Co-chair Bert Metz and IPCC team members at the Writer's Building in his office to discuss the issues of concern relevant for the state in the context of global warming and sought advice.

It needs mention that Participation was also from Government of Nepal from Forest Department and from Sri Lanka those engaged in Policy decision matters, besides researchers and NGOs. South Asian Network for Development and environment (SANDEE) not only shared the cost but collaborated by adding knowledge on what various research efforts are in progress to supplement the existing knowledge.

There was overwhelming response from the invitees. Approximately, 300 participants attended the workshop. The diagram below shows the composition of the participants.



It was attended by various age groups. While active and intriguing questions and participation from audience by the Best Speaker Award Winner, Atreya Pal (of VIII th standard) of the 2007 State level Competition of School Children on Global Warming, raised sensation in the hall; similarly very veteran remarks from scientists and long time researchers and NGO workers made the workshop very lively, interactive, intellectually stimulating and productive. The workshop could truly bring out the potential and ongoing activities in the South Asian region which can be considered for any future documentation or knowledge network.

The announcement of 2007 Nobel Peace Prize for IPCC as joint winner coincided with a pleasant surprise with the valedictory session (for news paper clippings/webcast/photos please visit http:///www.juglobalchangeprogram.org) Appendix 5.

The speakers in the technical session were IPCC WGIII Co-Chair and authors while respondents were the representatives from Government Policy making machinery. Aim was to generate close interaction and involvement to give a feel of the extent and depth of the problem to trigger action plans.

Workshop Proceedings

The two –day workshop was divided into a number of sessions (Appendix 4).

Inaugural Session: The inaugural session was presided over by Sri Gopal Krishna Gandhi, Governor of West Bengal, Sri Sailen Sarkar, Minister of Environment, Government of West Bengal, Dr Bert Mertz, IPCC Co-Chair, Mr M L Meena, Secretary, Department of Environment, Government of West Bengal, Prof A N Basu, Chairman, West Bengal Pollution Control Board, Dr Rutu Dave, IPCC TSU and Prof Joyashree Roy, Coordinating Lead Author of IPCC and Professor of Economics and Coordinator of Global Change Programme, Jadavpur University, Kolakata.

Prof Joyashree Roy in her welcome address emphasized the objective of the IPCC which goes beyond conducting research on climate change to also objective assessment of the research so that it can be effectively mainstreamed into national and local level development policies. The first day's proceedings were dedicated to Dr A P Mitra. Dr Mitra, Professor of Physics was an internationally renowned climate scientist from India, who passed away in September, 2007. He was a key inspiration behind the Global Change Programme (GCP) of Jadavpur University (JU), whose dream was to see India take the lead in Climate Change research and capacity building in South Asia.

Dr Bert Metz, Co-chair IPCC described the role and functions of IPCC before expanding on the broad findings of the WGIII, FAR. IPCC established in 1988 by WMO and UNEP is a United Nations body. Its key role is to provide a balanced assessment of all relevant scientific and technical information. Best scientists and experts from round the world are involved in writing the report after conducting an extensive review of the existing literature on the topic. The entire report is compiled by three working groups (WG) – WGI works on the scientific findings on the probable climate change, WGII works on the impacts and adaptation issues, while WGIII explores the mitigation possibilities. His presentation was to highlight that Fourth Assessment Report (FAR) points out socio-economic and technological development across different nations have resulted in Green House Gas emission that is the main driver for climate change. Climate change is seriously deterring the development of economies. Climate issues, therefore, needs to be mainstreamed into development policies involving energy security, employment, energy for development, air quality improvement, mobility improvements, etc. Strong policies are required to rapidly reduce global emission rates through the development and adoption of cleaner and better technologies. He highlighted the uncertainty in the result and level of confidence on results. Some areas will become drier while others will be wetter. Between 1970 and 2004 global GHG emissions have increased by 70%. The extent of future development practices round the world will determine the level of future emissions. Given the existing climate change mitigation policies and sustainable development practices, the GHG emissions will increase by 25-90% by 2030 relative to that in 2000. IPCC SRES scenarios predict that more than 66% of the increased CO2 – largest GHG emitted worldwide - will be emitted by developing countries though the average per capita CO2 emissions in these countries will be substantially lower than that in developed countries. Increasing development activities will raise the level of emissions and hence the temperature.

His presentation (all slides and webcast is accessible in http://juglobalchangeprogram.org) showed, the changing climate will adversely impact the earth's water resources, ecosystems, food security, coastal areas and human health. In South Asia, the vulnerability to climate change will be manifest through declining food & fish production, melting of the Himalayan glaciers, water stress in the agriculture and hydropower sectors, extensive and intense coastal and river basin floods, extinction of species and loss of natural habitat and rising health problems. To avoid serious disruption of life on earth, it is therefore, imperative to undertake immediate adaptation strategies that will stabilize GHG levels in the atmosphere. Building up substantial coping capacities that would stabilize the GHG at some preset level is both time consuming and costly. A 2° C rise in temperature relative 1850 temperature levels – the level being advocated by the European Union, requires the GHG to stabilize at 445-490 ppm CO2-eq. However, since the GHG concentration in the atmosphere is already near this level, the challenge facing the global economies in arresting climate change is rather daunting. Even a 2° C temperature increase requires serious adaptation and mitigation strategy formulation and implementation. This calls for international agreements where both developed and developing countries need to decide on a time bound level of stabilization that has to be achieved through GHG emission reduction.

Almost all sectors – energy supply, transport, buildings, industry, agriculture, forestry and waste management – that emit GHG have potentials to contribute to climate change mitigation. This can be done through the commercialization of alternative or low cost technologies. For example, commercialization of renewable sources of energy like wind, solar

and hydropower can substitute the heavily polluting thermal energy supply. Improvements in automobile technology, building sector, introduction of low carbon techniques in air-condition production, etc. can help mitigate GHG emission rates. Mitigation can also be generated through change in lifestyle and behaviour patterns like reduction in car usage, improving public transportation system, changes in consumer's building choice, behaviour of industrial worker, etc. However, there is always a cost attached to mitigation. Mitigation practices will not only reduce the actual GDP but also the GDP growth rate. It is expected that stringent mitigation rules can reduce GDP levels by almost 3% over time. Investments required to generate infrastructure that impacts GHG emission is high – 20 trillion US$ till 2030. Apart from volume large shifts are also necessary in the pattern of investment. It is often cost effective to invest in end-use energy efficient technology than increase the volume of energy supply to meet rising energy demand. Further, the widespread diffusion of non-polluting technology may also take decades.

Definite policies are required to realize mitigation potentials. The policies can either directly deal with climate change or can relate to non-climate change sustainable development policies. The effectiveness of the former depends on national conditions, their designs and implementation. Climate change policies incorporates any one or many of the following – regulations and standards, taxes and charges, tradable permits like the CDM, financial incentives, voluntary agreements, information instruments like early warning systems and, research and development. A non-climate change policy on the other hand attempts to mainstream climate change in development decision of governments. Besides trying to reduce GHG emissions and arrest the degree of climate change mitigation policies also have other co-benefits. Reduction in air pollution improves human health and sustains the regional biodiversity, ensures energy security, improves balance of trade, provides modern energy services to rural areas, generates the sustainable development of agriculture and employment, etc.

Mr Sailen Sarkar, Minister in Charge, Parliamentary Affairs and Environment, Government of West Bengal in his speech acknowledged that global warming is now an established fact. As the climate changes with rise in the earth's temperature the natural resources, human life and biodiversity across the globe change. However, the impact of climate change is not evenly distributed. The poorer developing countries are worse hit than the industrialized ones. Developing countries like India are further at an disadvantage since the are mostly situated in the tropics where the temperature is naturally high. As a result further warming brings these countries high costs and little benefit. Climate sensitive activities like agriculture, fishery and forestry are the main livelihood options in these economies where per capita income is often low and infrastructure is not well developed. This further aggravates the vulnerability of these nations.

West Bengal in India is highly vulnerable to climate change impacts. Agriculture and forestry are extensively practiced in the state. The adverse impacts on water availability due to receding glaciers, decrease in rainfall and increased flooding in some areas have adversely affected the food security and livelihood options in the rural region. Coastal flooding has given rise to environmental refugees from Bangladesh into West Bengal and is hence creating a burden on the economy. Warming is also affecting the forest biodiversity thus endangering rare species like the rhinoceros and the red panda. It is therefore necessary to identify specific adaptation strategy for the state to cope with the impacts of climate change. The Minister recognized the necessity to mainstream climate change issues into development policies. The probable strategies that can decrease the socio-economic vulnerability in the state includes the establishment of early warning systems, setting up of land use planning and performance standards that would encourage public and private investment in infrastructure and developing long term policy foe climate sensitive public goods. The government can also play an important role in natural resource protection, coastal protection and emergency preparedness, and development of financial safety net for the poor – the most vulnerable section of the population. The West Bengal government has already undertaken projects that would reduce

the vulnerability of the coastal areas in the state and build capacity for adaptation to climate change.

The Hon'ble Governor, Shri Gopal Krishna Gandhi, released the report published by Global Change Programme-JU and Prepared by Roy Joyashree, Bikram Chatterjee, Sruti Basak and Kaberi Nandy on the Sustainability Status of Different States in India.

Special address by Shri Gandhi set the tone of the workshop at very high level. His illuminating and thought provoking speech did raise issues which are most pertinent from implementation point of view. His applause but challenge to all current actions under IPCC and similar efforts made the audience ponder. In his special address the Governor lauded the IPCC and the Jadavpur University about the commendable work that had been done by them in organizing the workshop. He emphasized the need for climate change research and integration of climate related issues in development policies before the impact of the change becomes irreversible or difficult to restrict. While commending the huge volume of quality work on climate change that is being currently undertaken by scientists worldwide, he warned that there is a possibility of climate change becoming a science in itself thus distancing itself from those who are actually being affected. It is therefore necessary to analyse, interpret and make available the findings of the research to all stakeholders, particularly the policymakers at all levels. National, state and local level governments, small and medium scale enterprises, etc. all need to understand the reasons for and the impacts of climate change so as to integrate the climate issues in their respective development strategies. He asked for more autonomy and independence for Environmental protection agencies, pollution control boards to implement actions towards e climate change mitigation and adaptation strategies without having to deal with the red tape that is integral to all policy programmes in large number of. He urged scientists to come out of scientific acronyms such as CC to reach out to general masses whose actions can only save the earth. It is also imperative to address the local environmental issues vis-à-vis the larger global impact of climate change. Local level policies taking into account the specific indigenous problems must be undertaken and the issues related to such strategies have to be made public knowledge. Without all stakeholder participation, collaboration and cooperation mitigation and/or adaptation strategies might not be entirely successful. He urged the NGOs, educational institutions and all concerned to come up with easily understandable literature in local and regional languages to motivate people for action.

Session I. Sustainable Development: Dr Jayant A. Sathaye, coordinating lead author of Chapter 12 explained the concept of sustainable development and its connection to climate change. There are social, economic and environmental costs of climate change that perpetrates air pollution, loss of biodiversity, desertification, health problems, livelihood loss, adverse impact on water resources, etc. These negative socio-economic and environmental impacts further accelerate the process of climate change and global warming. Policies are therefore required to mitigate the impacts of climate change and ensure the sustainable development of socio-economic and environmental parameters. These policies can either directly address the issue of climate change or can be non-climate development policies also. Climate change policies target at reducing GHG emissions by various sectors through increasing energy efficiency of the sectors, fuel switching, reducing deforestation, undertaking afforestation projects, land-fill gas capture etc. Non-climate policies can also ensure sustainable development by reducing GHG emissions. This requires mainstreaming climate change in economic and social decision making.

Mainstreaming climate mitigation in national development and economic policies includes power sector deregulation, commercialization of renewable energy sources, improvement in power generation and distribution, forest protection and sustainable management, easy bank lending schemes for the development of clean technology and infrastructure, trade and fiscal regulations that ensure environmental protection, rural energy development that replaces fossil fuel with low carbon energy sources, etc.

Mainstreaming of mitigation strategies in development policies require to be operative at both the national and international levels. International negotiations have to be factored into national policies to promote emission reduction and reduce the vulnerability to climate change impact. National acceptance and applicability of international agreements requires the active participation of all decision making entities – state, markets and civil societies. Stakeholder participation at all levels – national, state and local governments; organized and unorganized sectors, NGOs and the general public- needs to be involved in the mainstreaming process to ensure sustainable development.

Mr Debkumar Bose, Chief Advisor, WBSCST in his response stated that there is a two way relation between national income and emission. According to the Kuznets curve emission initially increases with income, reaches a peak and then declines. Studies reveal that in developed countries the direct relationship between carbon emission and national income. In developing nations China and India are the highest potential emitters. However, if proper development strategies are adopted then economic growth can be guaranteed along with GHG mitigation. This would require the adoption of low polluting technology which is expensive for countries whose priority lies in ensuring basic necessities like food, health, education, etc. for its citizens. Carbon trading can be another possible option for GHG mitigation. Research indicates that though ordinary stakeholders are not averse to environment-friendly policies, the market resists them. Mainstreaming of climate change into development policies would require the industrial sector to invest heavily into modern technology and R&D. Therefore to ensure mitigation it is necessary to design policies aimed exclusively at ensuring private sector participation in emission mitigation.

Dr Priya Shyamsundar, Programme Direstor for SANDEE reiterated the defining mitigation policies in developing nations to arrest climate change. However, there are various obstacles to implementing such policies. The barriers to mitigation strategy stems from the fact that there might be too many regulations to follow to adopt the strategies thus making mitigation a complex process. Information asymmetry among stakeholders, uncertainty regarding adaptation practices and consequences and the high cost of mitigation further impedes the process.To remove these obstacles it is therefore imperative to involve all stakeholders in the policy decision making process.

Session II. Industry: The IPCC WGIII's Industry Sector Report was presented by Joyashree Roy Coordinating lead author of the chapter. Industries account for 12 Gt CO2-eq emission volumes, which is almost 19% of the total GHG emissions in the world. CO2 is the major gas that is emitted by this sector. Industries account for 90% of CO2-eq emission of CO2. The major emitters are energy use of fossil fuel, non energy use of fossil fuel required for chemical processing and metal smelting, non-fossil fuel sources like cement and lime manufacturing. The other gases emitted by this sector are N2O and HFCs from chemical processing, PFCs from aluminium, magnesium and semi conductor production, SF6 from electrical switchgear and CH4 and N2O from food processing. Despite the high emission levels, between 1971-2004 the industrial sectors share in primary energy consumption has declined from 40% to 37%. The major emitters in this sector are the developing countries. Developing economies contribute to 53% of the total industrial emissions followed by developed economies at 35% and transition economies at 11%. 85% of the total industrial sector emissions come from energy intensive industries like iron and steel, non-ferrous metals, chemicals and fertilizers, petroleum refining, minerals, cement and pulp and paper. Globally large industries dominate these sectors. Developing economies produces 78% of global cement production, 58% of fertilizer, 50% of aluminium and 42% of steel. Small and medium enterprises (SMEs) – key economic agents in production and employment generation in such economies, dominate the metals, chemicals, food, paper and pulp industries. However, the SMEs don't have the financial and technical capability to introduce mitigation measures in their operation processes. Some new age clean technology is available in China and India, but a large demand for technology transfer to developing nations still exists.

Besides less polluting technology, mitigation impacts can be achieved by introducing of process specific options and operating procedures in different industrial sectors. This includes fuel switching, enhancing of energy efficiency, power recovery, feedstock change, product change, material efficiency, non-CO2 GHG control, CO2 sequestration, change in management practices and systems, training, energy audits, GHG inventory and reporting systems. Organisations can also use benchmarks to evaluate their systems with those of others or to best practices. The mitigation potential of the industrial sector from these options has been estimated to be in the range 0.6 to 5.1 Gt CO2-eq by 2030. The largest mitigation prospect lies in the steel, cement, and pulp and paper industries and in the control of non-CO2 gases.

However there are a lot of impediments to the widespread acceptance of mitigation options in both industrialized as well as developing nations. Climate change being more a scientific issue is not comprehensible to the industrial sector. Also, apart from mitigation the sector is more concerned with other issues like customer preferences, cost efficiencies, competition and different government regulations. Further, lack of market response to climate change issues and governmental apathy also act as barriers. Appropriate incentives are therefore required to induce the industrial sector to adopt mitigation practices. This can include financial and technical support to the sector, capacity building and access to information, slow capital stock turnover and precise unambiguous government strategy for climate change impact mitigation. Appropriate mainstreaming of climate change issues in development policies can result in the emergence of SMEs as key players in the mitigation process. Sustainable development would then include cleaner production without having to compromise on employment. Studies in India in fact show that extensive employment of electricity efficient technology leads to higher employment and income generation. SMEs today are adopting the sustainable development agenda by participating in research and innovation in sustainable goods and services and also by taking part in coordinated supply chain or industrial park initiatives.

Besides external benefits, mitigation is often necessary for the survival of the industrial sector itself. Industry site selection is vulnerable to weather extremes. It is necessary therefore to climate proof construction, relocate industries, diversify raw material use, influence consumer preferences, and introduce proper government guidelines for industrial locations.

Co-benefits of mitigation by the industrial sector would result in increased production, low maintenance cost and reduction in capital expenditure, improved product quality and work environment, reduction in pollution and hence improvement in human and non-human health, and improved public image of the company and worker morale.

The IPCC report notes that the Kyoto mechanism has generated the successful adoption of CDM and Joint Initiative programme mostly by the energy sector, implementation of the voluntary programmes and agreements by both the government and the private enterprises, designing of financial instruments to reduce emissions like eco- tax, regulation of non-CO2 gases, air quality policies, sustainable development policies, etc. Technology Research, Development, Deployment and Diffusion have shown that the industrial sector still has a lot of potential to reduce emissions – the energy intensity of most industrial processes is at least 50% higher than the theoretical minimum. This requires the active involvement of both the public and the private sectors. Governments are often willing to fund mitigation projects at an early stage. However, private sector's initiative to assume the risk of such investment is still lacking. Research reveals that investment in advanced biological processing in the chemical sector; use of hydrogen for metal smelting, in electricity production and as a fuel; and introduction of nanotechnology could go a long way in stabilizing GHG levels by 2030. There is however widespread uncertainty regarding the rate at which such technological development and diffusion will take place, the cost of such technology, the level of industrial activity by 2030 and the character of climate and non-climate policy drivers that would direct future mitigation policies. There is also little information on the co-benefits of mitigation, sustainable development implications of mitigation options, base case intensity for specific industries in developing and transition economies, etc.

Mr Anup Singh, Executive Director, ITC and Mr S B Prasad, Head, Environment & Occupational Health, Tata Steel expounded on some of the mitigation options that are being practiced. ITC- a leading MNC in India, deals in FMCGs, paper and packaging, information technology, hotels and agro-products. The company directly and indirectly provides livelihood to more than 5 million people in the country and has an annual turnover of about US$ 5 million. Sustainable development is practiced as a philosophy in the company. To ensure sustainable development the company has adopted the 'Triple Bottomline Approach' (TBA). TBA is a business strategy which contributes to the economic, ecological and social capital of the nation thereby creating enduring value for all stakeholders in the company. Based on the TBA approach, the 'choupal project', social farm and forestry project and seven CDMs have been undertaken by the company to recognize its goal of sustainable development. The objectives of these projects are to reduce GHG emissions, develop and adopt low carbon technology, attain energy efficiency, carbon sequestration and generate livelihood options for the socially marginalized communities. Today ITC is a zero solid waste, carbon positive, water positive company.

Mr. S.B. Prasad of Tata steel was another respondent in this session. Steel is a highly polluting industry contributing to about 3.15% of total GHG emissions. Recognising the polluting capability of the industry, international agreements have been formulated to reduce emissions from this sector. In 2006 worldwide 1.24 billion tones of steel were produced 40% of which was produced from recycled steel. Steel industries in North America, Japan and the European Union have reduced their energy consumption by 50% in the last 25 years. The international Iron & Steel Institute have formulated guidelines to reduce emission. The regulations include dissemination of low emission technology, R&D in new technology, optimizing recycling of scrap, adoption of global centric business approach, etc. AP6, an organization of the six large steel producing nations – China, India, USA, Japan, South Korea and Australia- have adopted projects to reduce emissions. Steel contributes to about 4% of total industrial production in India. Large number small and medium enterprises using traditional production technology operate in the sector. Ensuring energy efficiency of these organizations is the major problem facing the country.

Session III. Energy Supply: The IPCC WGIII's report on energy supply was presented by Prof P.R. Shukla from the Indian Institute of Management, Ahmedabad. The energy supply sector is a major emitter of CO2. 1100 Gt CO2 have been emitted by this sector since the mid-19th century. In 2004 the annual CO2 emissions from this sector were 26.1Gt. By 2030 50% increase in emissions is being projected i.e. an emission level of 37-40 Gt CO2. At this level of emission the primary challenge before the sector is to 'provide services that improve the quality of life and increases productivity' and to ensure 'a supply of secure, equitable, affordable and sustainable energy'. Fossil fuel – coal and oil, is the primary energy source in the world. These fuels are the major CO2 emitters. Global trends in CO2 emission from energy indicate that while emission levels in OECD European economies have stabilized in the last three decades that from the North American OECD nations has increased. But the steepest increase has been registered in Asia. Developing nations like India and china have contributed to the sharp increase in the CO2 emission trends in Asia. Though these nations have introduced low polluting technology in power generation, the overall economic growth rate is so buoyant that in absolute terms the CO2 emissions have increased despite the technical improvements.

The price of oil and gas is expected to peak and their supply decline during the 21st century. As a result the demand for non-conventional energy sources like coal to gas and liquids, oil shale and oil sands, will increase. Higher prices can also encourage lower emitting sources. The demand for neutral CO2 biomass liquid fuels and renewable energy resources like wind, solar, geothermal, etc would increase in that case.

Conventional biofuels still constitute more 10% of global energy supply. Most of this is in developing nations. Coal is still a major fuel for electric power generation. To reduce GHG

emission levels, technology is needed for physical and biological carbon dioxide capture and storage. This would increase the cost of coal and hence discourage its use. Technology has currently been developed for the biological capture and removal of CO2 from power plants using algae or bacteria. Biodiesel and bioethanol can also be extracted through the process and consumed at the plant. The technology is 50-100 times more efficient per acre than biofuels and also removes over 80% of NOX. Alternatively, nuclear power also has the potential to generate low carbon electricity. It is also cheaper than coal, which requires CO2 capture and storage facilities to make it a clean fuel. However, economic viability of the nuclear technology, storage options of nuclear waste, its vulnerability to natural disasters and sabotage and its public acceptability is still uncertain. Wind and solar energy are some other alternatives of carbon low energy sources. In recent decades with falling generation costs, use of wind and solar energy sources grown by 20-30% per annum. Energy from renewable resources can be distributed without pipelines and wires. However, the concentration of power from these sources is low vis-à-vis fossil fuels. Further investment is necessary to improve the economic viability of large-scale power generation from renewable sources.

Given the drawbacks that still remain in the commercialization of renewable resources, efficiency gains from conventional fuels can be achieved by reducing the demand for electricity, transportation, space and industrial heat. Improving the efficiency of power generation is the next best cost effective alternative. For best results it is necessary therefore to integrate end use efficiency with efficient low carbon power generation. This can be achieved through using efficient gas turbines and CFLs that reduces emissions by 90% or through biomass generation that can realize more than 95% emission reduction or by using non-fossil fuel like wind, solar, nuclear, etc. On the other hand energy distribution system can be reengineered to enhance efficiency. Large central power plants can be substituted by smaller units that employ natural gas or biomass to produce combined heat, power and cooling. Such distributed systems can achieve 90% emission reduction and eliminates the need for additional transmission and distribution (T&D) lines that constitutes more than 50% of capital investments in T&D. T&D accounts for 54% of the capital investment in the power sector. The depreciating existing grids are incapable of meeting the demands of a modern, resilient, intelligent system. Therefore there is need for an improved networking system that can accommodate multiple intermittent sources and for electric storage facility that would revolutionize power generation and transportation.

Studies show that considerable reduction in emissions from the energy supply sector are technically and economically feasible using both the range of technology solutions currently available and those close to market. Mitigation technologies and practices must aim at improving energy supply and distribution efficiency, and facilitate fuel switching from fossil fuel to gas, nuclear power, and renewable heat and power. Mitigation must ensure investment in carbon capture and storage (CCS) technology for gas, biomass and coal-fired electricity; advanced nuclear power, advanced renewable energy like ocean energy, concentrating solar and solar PV. Policies are therefore required to ensure the adoption of such mitigation practices. The policy makers have the option of either using financial instruments or regulatory instruments to ensure the objectives of energy efficiency, energy source switching, CCS and commercialization of renewable energy. Financial instruments include higher energy taxes and lower energy subsidies, power plant GHG taxes, CDM, fiscal incentives, capital grants etc. Regulatory instruments include fixing minimum efficiency standards for power plants, prescribing bets available technologies, indicating power plant fuel portfolio standards, etc. these policies can be implemented through voluntary agreements, disseminating information and strategic planning and RD&D and deployment. Mitigation policy implementation can also be done through providing incentive to utilities to provide energy saving as a product, and reward innovations that reduce GHG emissions in the industry, transport, building and power generation sectors. Barriers to the adoption and practice of newer technologies need to be removed to achieve efficiency in the energy sector.

Reduction in emission by the energy sector will not only generate co-benefits like improved health and environment but will also ensure the Millennium development targets that would propagate sustainable development.

Prof Subimal Sen, Chairman, Environmental Impact Assessment Process and Project Management, SEIAA, West Bengal asserted that biofuel is extensively employed in West Bengal for energy, transport, irrigation, etc. This aggravates the emission situation and the health and other additional impacts of pollution. Since private sector does not have the incentive to undertake the extensive investment in capital and R&D that is required for mitigation, the government must therefore play a key role in GHG reduction. Commercialization of renewable energy sources like wind, solar, hydro etc is imperative. Water resource conservation and upgradation of existing power stations are also essential if mitigation goals are to be achieved by the state.

Session IV. Transport & Infrastructure: Steven Plotkin, IPCC Lead author presented the IPCC's report on Transport and GHG emissions. 23% of total GHG emission sin the world comes from the transport sector. It is the most rapidly growing sector in the world. In the developed world energy and GHG is currently growing at 1-2% per annum and in the developing world it is 3-5% per annum. In India it is about 5% per annum and in China it is a little higher at 6%. 96% of transport fuel is oil. If current trends continue, by 2030, GHG emissions from the sector will have grown by 80% as compared to 2002 levels.

The current oil crisis can see a shift in transport fuel from oil to unconventional oil, coal and natural gas, which can aggravate GHG emissions. Biofuels can also be an alternative. However, current biofuels are neither cost effective nor exactly environment friendly and often threaten livelihood options and food security.

High development pathways will see to the proliferation of road vehicles in the near future. This would add to emissions and can have negative impacts on various social, economic and environmental parameters. The intensity of the problem can be alleviated through careful planning and development. Reduction in auto dependency by strengthening the public transport systems; urban planning and infrastructure development that encourages walking and biking; introducing fuel and registration taxes; discouraging faster, heavier luxury cars; etc can all mitigate transport emissions. Light duty vehicles (LDV) contribute to about 50% of transport emissions. So focus needs to shift on LDVs. LDV fuel economy can rise by 50-100% by 2030 through technological innovation/ reengineering, proper policies that address fuel economy standards and by stopping 'horsepower wars' that emphasizes power, size and luxury against fuel economy. Light vehicle energy efficiency can be enhanced and GHG emissions reduced by introducing registration and annual fees based on efficiency, power, engine size, etc; fuel taxes to restrain demand and account for externalities; fee-bate systems to reward efficient vehicles and penalize inefficient ones, parking cash backs and taxes/restrictions; road pricing and central city access fees; transport demand management strategies and eco-driving. Extensive investments in R&D are also needed to ensure the commercialization various bio-fuels and hydrogen fuel cells that can help reduce emission.

Emissions from freight transport contribute to 35% of total transport emission. Though road freight currently dominates energy use and GHG emissions, air freight is also growing fast. To improve energy efficiency and emission reduction, technological up gradation, hybridization of urban delivery vehicles, better vehicle models, etc are crucial. Better logistic management and multi-modal deliveries can also improve the emission scenarios from freight.

Session V. Buildings: Monga Mehlwana, Lead Author from Natural resources and the Environment Council for Scientific and Industrial Research, deliberated on the IPCC WGIII's report on the buildings sector. In 2004 the buildings sector accounted for more than 33% of total global CO2 emissions. This share could lie between 35-42% by 2030. As compared to 8 Gt of CO2-eq in 2004, the energy use in this sector is expected to release 11.8 – 15.6 Gt of CO2-eq GHGs.

Between 1971 and 2002, energy use and emissions by the building sector increased at the same rate as other sectors. Within the sector the growth rates were higher for commercial buildings than residential buildings. From 2002 to 2007 the average annual growth rates of CO2 emissions by residential buildings was lower at 0.1% as compared to the 1971-2002 period of 1.4%. The largest emitters are China and India followed by the Middle East, North Africa and North America. For commercial buildings however, the average annual CO2 emission growth rates have increased during 2002-2007 from 2.2% during 1971-2002 to 3%. Rapid economic development in developing nations and expansion of trade and commerce has contributed to the high emission levels and energy use in the sector. SRES scenarios predict an increase in emission levels and average annual CO2 emissions growth rate by 2030.

It is therefore imperative to introduce regulations for residential and commercial buildings in order to reduce emissions. Emission reduction in the sector can be achieved by decreasing energy consumption in buildings, fuel switching, taxing CO2 emissions, controlling non-GHG emissions and reducing energy use of the construction materials.

Mitigation in the sector can be difficult as slow turnover of buildings and large installed equipment may delay energy saving. Further, new uses for energy and large buildings may undermine energy saving. To optimize CO2 saving by 2030, it is necessary to retrofit existing buildings and replace high energy use equipment with low energy alternatives. 50-75% of energy saving in new buildings can be achieved through designing and operating buildings as complete systems. Controlling standby and idle power consumption, and solid state lighting can ensure energy saving. In commercial buildings controls and information technology and reduction of ventilation, cooling and dehumidification, and in residential buildings advanced designing, insulation, etc can all lead to energy efficiency. For mitigation to be successful in developing nations, support from industrialized nations for policy design and implementation is crucial.

Mr Debal Ray, Member Secretary, WBPCB highlighted the policies undertaken by the Indian government to improve the environment efficiency of the building sector in the country. For large construction sites environmental clearance from the government has been made mandatory. Energy saving technology like solar lights, thermal insulation, etc are being encouraged. Landscaping that involves at least 20% tree cover at construction sites have been made compulsory in West Bengal.

Session VI. Waste

The coordinating lead author for IPCC – Jean E Bogner, presented the study on waste – a new sector to be introduced for the first time in the Fourth Assessment Report. The chapter deals with only post-consumer waste and wastewater. Waste contributes to less than 5% of global GHG emissions. Emissions in the sector are dominated by microbially produced non-CO2 gases like landfill methane, wastewater methane and N2O. Carbon dioxide from burnt fossil carbon like plastics, synthetics, etc is a minor source of emission.

The major drivers for waste generation are population and prosperity. As population and GDP increases the volume of waste generated rises – particularly in the affluent urban sectors. Worldwide the overall range of waste generation per capita ranges from less than 0.2 to 1 tonne per capita per year. India's National Communication to the UNFCC in 2004 indicated that only 1.9% of total emissions in the country, i.e. 23 Mt CO2-eq, came from the waste sector in 1994. Out of this 53% was CH4 generated at solid waste disposal sites and the remaining was N2O from human sewage and wastewater CH4. A 5% increase in GHG emission from this sector is expected in India during the decade 1990-2000.

Urban waste and wastewater management is undertaken in order to improve urban health, safety and environmental protection of major resources like water, soil and coastal zones. Since waste is a small contributor to the total GHG emissions worldwide, GHG mitigation emerges as a co-benefit of waste management. The waste sector can contribute positively to GHG mitigation at

low and sometimes negative cost. Energy recovery from waste can provide renewable energy sources and counteract fossil fuel use through landfill methane utilization, incineration and anaerobic digestion. The cheapest way to use landfill gas is to use it directly as a boiler fuel. It can also be converted to synthetic natural gas by removing CO2 and trace components but this is an expensive process. It can also be used for onsite generation of electricity. Most plants using this technology generate 1-15 MW of electricity. Presently more than 1200 plants worldwide are recovering more than 105 Mt CO2-eq of CH4 per year. Currently research is being carried out to reduce landfill methane emissions by biological mechanism that involves oxidation of the cover soil at landfill sites by microorganisms.

Besides mitigating landfill gases, GHG emissions from waste can be reduced by expanding sanitation and wastewater treatment. Composting, incineration and other thermal process, and mechanical and biological treatment can also be used to circumvent GHG generation compared to landfilling. Waste generation can itself also be reduced through recycling, reuse and waste minimization.

In developing countries rapid population growth and urban development is generating increasingly large amount of waste every year. Waste and wastewater management practices therefore needs to be well developed in these regions. Waste management practices needs to be integrated within the urban infrastructure. Local decision makers have to be involved in defining cost effective and sustainable waste management practices. Worldwide waste is managed locally. It is necessary to understand the waste character and classify it according to type so that appropriate waste treatments can be undertaken. Back up landfills are necessary to manage the huge waste that are generated by urban areas. To finance the management practices, disposal fees can be collected from those with the ability to pay and CDM introduced. Recycling of waste, educating children in waste management practices, designing local cost effective solutions for waste management like low technology engineering and microfinance projects, and enforcing waste regulation measures can all help in mitigating GHG emissions from waste.

Prof K J Nath, Chairman, State Environmental Appraisal Committee underlined the barriers faced by developing countries like India to undertake proper waste management. Public health and environmental health concerns are huge issues in developing countries. To ensure health proper waste management is imperative. However, developing countries lack resources and infrastructure for proper waste collection and treatment. Small and medium towns in India have negligible waste disposal systems. The rising urban population is aggravating the situation in the country which still does not have any waste management policy. The mayor of Kolkata, Mr Bikash Ranjan Bhattacharya reiterated the lack of proper waste treatment facilities in the country. There is need for undertaking surveys for promotion of on site waste treatment plants in small and medium towns in India. Dissemination of knowledge on proper waste disposal systems, sanitation, water resource management and recycling, and, personal health and hygiene among the common man is essential if waste management has to succeed in the country.

Session VII. Agriculture & Forestry

Dr N H Ravindranath, lead author IPCC from the Indian Institute for Science in his address noted that agriculture and forest accounts for almost 30% of CO2-eq emissions. In developing countries, which dominates worldwide emissions, the emission from forests and deforestation rates have stabilized. However, those from agriculture continue to rise. The rise in agricultural emission can be attributed to expanding agriculture due to population pressure, income growth, diet change, technological changes, and saturation of sinks due to large-scale deforestation. However, introduction of modern technology that has increased agricultural productivity, conservation of tillage, non-climate development policies and plantation of forests have to some extent mitigated the emission rates. In agriculture CH4 and N2O accounts for about 70% of total emissions. Studies indicate that by 2030 baseline emission rates for agriculture would increase from less than 6 Gt CO2-eq per year in 2005 to more than 8 Gt CO2-eq per year.

There are various mitigation options for agriculture and forest sectors. In forests GHG reduction can be achieved through reducing deforestation while simultaneously maintaining and increasing

the forest cover through afforestation. Other strategies include maintaining or increasing the site-level and landscape level carbon density, increasing off-site carbon stocks in wood products, optimized use of harvested wood products and fuel switching from fossil fuel to biofuels, etc. Estimates indicate that biomass conversion can yield indirest emission reductions of 420 to 4000 Mt CO2-eq per year at US$20/tCO2 by 2030. CDM can also be used as a possible mitigation tool in forestry. However, complex methodologies are involved in applying CDM in this sector. Further there is a high transaction and monitoring costs. There are further limitations on defining land categories, species choice, etc. So far only 1 CDM project has been registered in this sector, which is not very encouraging when compared to 500 projects that have been registered in other sectors.

In the agricultural sector mitigation can also be ensured through the restoration of cultivated organic soils, improved cropland management, water management, grazing land management, restoration of degraded lands, rice production management and livestock management. The success of these strategies would depend on tillage residue management, irrigation and drainage management, erosion control measures, improving grazing pattern and intensity, improving livestock feeding practices, breeding, manure management, etc. It is estimated that in agriculture using biomass for energy may result in indirect emission reductions of 70 to 1260 Mt CO2-eq per year at US$20/tCO2 by 2030.

In both agriculture and forestry, developing countries can contribute the most in assuring mitigation. In agriculture 70% of the mitigation potential lies in the developing countries, while in forestry the figure is 65%. Deforestation and bioenergy are the most dominant mitigation options available to these nations. Mitigation would provide large co-benefits like increased food security, biodiversity conservation, watershed protection, employment and livelihood generation, etc.

Statistics indicate that in India the area under forest and tree cover has been rising since 2003. Afforestation schemes show a rising trend. Starting in 1951, always 35Mha of land in the country has been covered by the afforestation projects by 2005. The country has reduced its deforestation rates and has little potential for reducing it any further. The most important mitigation options now available for the country are CDM in agriculture and forestry, cropland management, bioenergy and afforestation.

Dr Sayan Banerjee, Officer-in-Charge, AICRP on Agro-Meteorology, Bidhan Chandra Krishi Viswa Vidyalaya highlighted the necessity for formulating different types of mitigation processes in India. There are different soil and crop types in the country. Therefore specialized mitigation practices are necessary to appropriately address the emission reduction needs of each soil and crop type. However, these strategies must have to be low cost strategies for extensive and universal acceptance among agriculturists who are mostly small and marginal farmers and hence lack financial resources to adopt mitigation policies.

Dr K R Kanel, Director General, Department of Forest, Government of Nepal, expounded on the importance of forest for biodiversity, watershed conservation, carbon sink, livelihood generation, fuel, raw material source, etc. Therefore for environmental protection and economic development it is necessary to conserve forest resources. Following IPCC it is hence essential to undertake sustainable forest management projects by all countries. Institutions are needed to tackle the issue of sustainable forest management at local level by involving local stakeholders in formulating and implementing management practices. Climate change and conservation policies need to be aligned with actual practices to mitigate GHG emissions. Dissemination of knowledge concerning the costs and benefits of deforestation, afforestation, bioenergy, etc is necessary for the success of such policies.

Session VIII. Way Forward: Research

This session was meant for showcasing various research efforts by South Asian capacity building networks. Some of these reflected how gaps in IPCC literature can be filled in future from the ongoing efforts. The IPCC report is based on researches that are being carried out by individual researchers and institutions throughout the world. SANDEE – The South Asian Network for

Development and Environmental Economics and LOICZ – Land Ocean Interaction in the Coastal Zone. SANDEE supports research in poverty and natural resource management, pollution and health, coastal degradation and natural disaster management and climate change economics. It also help facilitate dialogue among researchers, practitioners, and policy makers on economic concerns related to the environment. LOICZ synthesizes existing knowledge and generate new knowledge to assist the sustainable management of changing coasts and, help develop global syntheses and downscale them to identify local impacts. Such researches carry forward the knowledge on climate change and help identify mitigation and adaptation strategies that can be adopted to reduce climate change vulnerability and increase the coping capacity of affected stakeholders particularly in developing economies.

Session IX. Way Forward- Mitigation & Adaptation in the context of West Bengal: The panelists in this session were exclusively the govt. sector representatives, Financial sector and private sector actors to focus on their actions in the West Bengal state.

Mr M L Meena, Secretary, Department of Environment, highlighted the importance of workshop for both the government as well as the corporate sectors. The proceedings would aid the policymakers to understand and incorporate the climate change issues in their policies thus increasing the coping capacity of all the stakeholders. He underlined the necessity for better waste management, lifestyle changes, water resource management, coastal zone management, agriculture and forest development, etc while keeping in view the climate change issues. In its endeavour to adopt mitigation strategies in its urban and rural development policies, the West Bengal government has undertaken initiatives to segregate biodegradable waste from other wastes, popularize rainwater harvesting, limit the use of groundwater, reduce water subsidy in rural areas, introduce short-term weather forecasting in vulnerable areas like Sundarban, etc. Experts are being consulted to develop suitable agronomic practices that would reduce agricultural emissions, identify animal corridors in the forests of north Bengal to protect biodiversity, design coastal zone management projects, etc. A Cell tackling the issues of climate change has been established by the Department of Environment, Government of West Bengal to enquire into different adaptation strategies that can reduce the vulnerability of the stakeholders in the state.

Mr. Charles Joseph from the World Bank described the mitigation and adaptation projects adopted by the World Bank in India. Though India is among the largest emitter of GHGs in the world, it is a strong performer in energy intensity - bottom third of 70 countries on CO2 emissions per unit of GDP and is one of the lowest on per capita emissions. Energy access in the country is very low. Almost 400 million people still have no access to any form of electricity.

The bank has undertaken state level project analysis and investments programme in the country to improve energy efficiency in India. The bank has undertaken low carbon growth study to define cost effective strategies to lower the carbon intensity of the economy. To mitigate emissions, hydro-projects, cleaner coal based electricity generation projects, renewable energy projects, projects linking clean energy to demand centres are being evaluated and undertaken by the Bank. Transportation, buildings, agriculture, irrigation, coastal zone management, capacity building for industrial pollution management, etc are some of the national and state level projects that have been taken up by the World Bank.

In 2006 India's global share of project based emissions reduction was 12% of the Total volume – which is considerably less when compared to China's 61%. The country has a huge potential in the CDM market. Despite low PSU participation rate, it has the largest portfolio of CDM projects in the world. But the size of the portfolio is considerably lower than the world average reflecting the presence of a large number of SMEs and a definite lack of intermediation.

In the future, the bank proposes to adopt a mutli-sectoral approach to climate change, encompassing energy, transport, agriculture, forests, and urban development. It plans to step-up program in policy research and knowledge sharing in both adaptation and low carbon growth; and play an enhanced role in the acceleration of new technology. The World Bank further intends to be more involved in climate risk management and adaptation, address the resource gap through

further expansion of existing concessional finance and development of new financial instruments and strengthen the collaboration through a joint framework for action on low-carbon and climate-resilient growth.

Mr T K Gupta, Senior Environment Engineer, WBPCB focused on the role of the Small and Medium Enterprises (SMEs) in mitigation. Since SMEs have a major role in the state economy, the government has initiated steps to involve them in technology up gradation, fuel switching and CDM projects. There is need to disseminate information amongst SMEs about the need to adopt clean technology and reduce emissions.

Mr S P Gon Chowdhury, Director, WBREDA emphasized the need for adopting renewable energy source as an alternative to fossil fuel in India. Currently thermal power accounts for 66% of the total power generated in the country. Hydropower contributes to 26% of the supply while renewable energy resources like wind and solar energy only accounts for 5% of the share. At the present rates, it is expected that the total demand in the country will exceed 700,000MW by 2030. To reduce emission, India needs to increase the share of renewable energy to 20%. To achieve this therefore, the government needs to formulate suitable renewable energy policies and provide incentives for emission free power generation. It is necessary to mainstream climate change in the National Energy Plan and create a National Renewable Energy Fund. Legal bindings are necessary to compel the industrial sector to purchase Green & renewable power to meet at least a part of its energy demand. To mitigate emissions, the government can also promote biodiesel and provide incentives for pollution free and low pollution vehicle use in the country.

In this context Mr Sanjoy Chakraborty, Vice-President, CESC highlighted the CDM projects that have been undertaken by the Calcutta Electric Supply Corporation to help meet emission targets of the energy sector in the country.

Mr Kanti Ganguly, Minister of Sundarban Development Affairs, West Bengal deliberated on the strategies being adopted by the government to protect the Sundarban mangroves and enhance the coping capacity of the indigenous population. There is need for disseminating the information being generated in seminars on climate change amongst the people of Sundarban. This would encourage more people participation that is necessary to save the area. Every year 21st August is observed as the Sundarban Day when initiatives are taken to safeguard the interests of the area. This year the theme is to save the Sundarbans from the impacts of Global Warming. School children are encouraged to actively to participate in the projects that involves saving the mangrove and afforestation or plantation of indigenous trees. Peoples' participation has till date helped protect almost 90% of the forest resources of the Sundarbans. To save the area from seawater encroachment and other natural calamities, the state government has undertaken initiatives to build high embankments in the area. School buildings have been requisitioned as flood shelters and school children are being trained to provide relief and first-aid during calamities. Plans are on for rainwater harvesting and construction of fresh water tanks on high embankments as water source during extreme events. The embankments besides protecting the coastal areas from destruction can also serve as shelter for the livestock during floods. The Minister recognizes the harmful impacts of extensive prawn cultivation that is currently taking place in the area in lieu of traditional crops and the adverse effects of developing the area fro tourism. However, socio-economic drivers are also imperative for the overall development of the region. Steps are therefore necessary to regulate these developments so as not to harm the environment while achieving developmental goals. Stringent measures are also being adopted to stop poaching in the Sunderban forests that boasts of various endangered species in the world.

Session Chair and Chairman Pollution Control Board Prof. A N Basu, as the summing up comments, started with highlighting some of the decisions and discussions held during the Workshop. He expressed his thanks to Shri Gopalkrishna Gandhi, Hon'ble Governor of West Bengal for his stress on empowering the appropriate authority for different aspects of environment and Climate Change that have been highlighted. He also thanked the Shri Buddhdeb Bhattacharjee, Chief Minister, Government of West Bengal who met with Dr. Bert Metz, IPCC Cochair, IPCC Authors, Chairman, WBPCB, Minister of Environment, Secretary, Department of environment and Prof Joyashree Roy CLA-IPCC and Coordinator Global Change Programme JU

to discuss his concern and express his openness to get guidance and cooperation from the IPCC to address the Climate Change (CC) issues. Prof Basu then went on to summarise the points put forward by the dignitaries as well as the responses from the audience. He ended with the resolutions that

- The Dissemination Workshop can be thought of only as a beginning and not only it should build the general awareness but also should entail a follow up action with a target.
- There is need to prepare some easily understandable CC literature keeping in mind the various sections of people and make it available to the public domain. The process needs to be continuous.
- In expansion of different activities and particularly for wetlands, valuation system should be there
- A list of solutions to CC problems suitable to the local scenario and capability should be prepared and critically evaluated for each sector taking IPCC report as a reference point
- There is need to identify areas where new technological support is required and come up with policy outline which can be implemented
- Understand how to implement new policies and find innovative solutions to address CC and how to come up with a alternative development pathway
- As the local experts understand the local realities better, the local knowledge pool should be developed and it should be reviewed by the external experts. The validation of knowledge will make the work more acceptable globally.
- Enforcement of environmental regulations can be met through demand management and autonomy of the regulating agency
- Academic and empirical research should be encouraged , monitored and regulated to create more knowledge
- Climate change is a global affair and there is need to understand the politics of climate change in order to find the solutions to the Climate change problems. People's perception is going be crucial in addressing the issues along with the technology and knowledge base.

Q&A Sessions:

Interactions between the audience and the panel at the end of each session brought out pertinent questions regarding the technicalities, larger social, political and sometimes ethical issues of climate change which are the real barrier for any action towards mitigation. The following set of questions came up during various sessions.

1. Will the adoption of the mitigation options for climate change affect the basic model of business and development globally?
2. Is there a globally standard definition of the SMEs mentioned in the IPCC reports?
3. Has the relationship between the sustainability, development and affordability of the mitigation options been considered for the SMEs which find it difficult to invest in GHG emission mitigation unlike the large Corporate sector which find it easier to mitigate emission through structured system like the ISO standards?
4. Is there a need to consider the societal problem of consumerism in order to address the problem of climate change and the global ecological crisis rather than concentrating on the technological solution to climate change only?
5. Regarding the potential for energy efficiency of the SMEs, is it a part of the social responsibility of the big corporate houses?
6. Can agencies like the World Bank consider their role in helping the SMEs improve their energy efficiency?
7. How much emission is taking place through human consumption of tobacco and what is the effect on human health?
8. In Sundarban Ecosystem conversion of agricultural land to aquaculture is reducing the fertility of land which may have irreversible adverse effect on Sundarban's economy in the longer run. Is there is policy for stopping land use pattern
9. Construction o f traditional development agenda like bridges, motorized roads will increase CO2 emission and local pollutants which may be harmful for the eco system. Current Policy for development of Tourism in Sundarban has been questioned.

10. What are the policies for conservation of keystone species in sundarbans given the threats of sea level rise and warming effect.
11. How can developing countries be ecofriendly and prosper to world level at the same time? How should the responsibility of cleaning up be shared by the developed and developing countries?
12. Will there be a global environmental facility or a global fund created as an initiative taken by the Developed countries for rapid development of cleaner technology or some shift towards non-carbon technology which requires huge investment and is more readily available to the developed countries?
13. Apart from the Euro standards are there any other norms to control CO2 emission and local pollution?
14. As a mitigating measure, can differential taxes in cars with different grades of facilities be effective to control emission? e.g. taxing Airconditioned cars 20 to 30 times more than non-airconditioned cars.
15. What are the potential alternative energy types to petrol for running vehicles? Is solar energy a possible alternative?
16. How is the emission from the building sector measured or estimated?
17. In India, are the emission reduction standards regulated by any authority?
18. Is there some research being conducted to understand the relationship between solar radiation, heating effect and climate change?
19. Is there any work being done to develop eco-friendly or cost-efficient buildings for the poorer section of the societies?
20. What is the definition of income levels used in the Chapter 10 of IPCC report?
21. Out of the large number of large or medium sized cities in India, only 63 cities have definite policies towards solid waste and waste water management. How are the rest of the cities managing their waste and what are the challenges?
22. Is it possible to combat waste generation through a change in lifestyle?
23. During summer, forests in Latin America become the net source of carbon rather than sink. Does the same hold good for India?
24. How organic farming and global warming are correlated?
25. In India, due to deforestation, forest cover is at a very low level compared to the total land area of the country. What is the base data for saying that India has reduced deforestation and there is no further scope of reducing deforestation?
26. Do we need to go for organic farming over chemical fertilizer?
27. What are the possible options to sustain productivity if the use of chemical fertilizer is reduced?
28. Carbon density of Indian forests is approximately half that of the forests in Europe and North America. Has the carbon density gone down due to degradation? What are the causes behind the low carbon density in Indian forests?
29. Is there any specific policy by which we can raise the carbon credit in the rural areas in relation to the sustainable development and mitigation programme?
30. Does the cultivation of Blue-green algae increase pollution?
31. How to apply blue-green algae in conjunction with the chemical fertilizer?
32. Is the depreciation of natural capital taken into consideration taken into while doing the environmental accounting?
33. What type of forest cover is increasing in India and does it have the same capacity of carbon sequestration?
34. Issues were raised regarding the role that developed and developing nations have played in contributing to emissions and hence the equitable share that each should bear in mitigation and adaptation. Developing countries lack the financial resources, technology, infrastructure, manpower training, etc to cope with the impacts of climate change. They are further weighed down by other development priorities like poverty reduction, employment generation, social capital development, etc. Thus the challenge confronting developing economies is how best to integrate climate change issues in the broader domain of economic and social development to optimize the overall social welfare. Successful mainstreaming of climate change issues in development policies so as to attain the Millennium Development Goals require strong political will and stakeholder participation at all stages of decision making.

Audience Feedback:

The 2 day workshop was intended for disseminating Climate Change information as reported by the IPCC-WGIII in the fourth Assessment Report of the IPCC. A feedback form (Appendix 6) was distributed at the beginning of the workshop. It is necessary to take this information to action groups who can use this information to conduct further research on various aspects of climate issues, construct development policies that incorporates adaptation and mitigation strategies, and spreads the concept of climate change and its impacts among students, district and village level administrators and vulnerable stakeholders. The workshop was well represented by bureaucrats, policymakers, researchers, educationists, NGO workers, investors & action groups, municipality officers and officials from ministries and consulates.

Almost 90% of the participants responded positively to the usefulness of the workshop. Almost majority of the audience found the sessions useful. There was demand for stand alone sessions or more discussion on:

- Impact of climate change on Health,
- CDM
- Impact on water resources
- Impact of population on climate
- Impact of urbanization on environmental degradation
- Socio-economic impacts of Climate change particularly on marginalized groups
- Mitigation effects of Alternative Energy Sources like nuclear and atomic energy
- Industrial Estate Management, Spatial Planning, Effect of War Economics & Politics on Climate
- Environmental Accounting Methodologies
- Solid waste management in municipal areas
- Institutional barriers to climate change policy implementation
- Incorporation of Climate Change issues in development plans of SMEs
- West Bengal specific issues relating to environmental degradation, government policies and their implementation
- Role of NGOs in mitigation strategies
- More detailed information of the function and scope of IPCC
- The role of Grass-root level people, role of NGOs, CBOs and action oriented topics, good practices in local level should be discussed
- Future prediction of different Meteorological parameters and their impact of community people.
- Regarding nuclear explosion on our third world what measure have been taken and regarding effects on the climate and environment in future.
- Topic on about Marginalized People.
- Discussion regarding agriculture and industry in the context of West Bengal.

The workshop was well appreciated. A large percentage of the audience felt the need for regularly organizing similar seminars not only for academicians, policymakers, investor groups and bureaucrats, but also for school children, district and village level social workers, government officials and other vulnerable stakeholders. It was also felt that the proceedings of the workshop should be made available to all attending institutions. A large section of the participants also felt the need for longer question answer sessions that would help them to interact with subject experts on various issues of climate change.

Appendices

Appendix. 1 Twenty News dailies (English, Bengali, Hindi) carried this advertisement on 10.10.2007

SPECIAL WORKSHOP ON GLOBAL WARMING IN KOLKATA

"IPCC- Working Group III's contribution
to the Fourth Assessment Report on Climate Change Mitigation"

Dissemination Workshop in Kolkata for the South Asian Region

to be held on
11th and 12th October, 2007 at Hyatt Regency, Kolkata

Honourable Governor of West Bengal Shri Gopalkrishna Gandhi, will inaugurate
on October 11, 2007 at 10.30 am.
Honourable Minister of Environment Sri Sailen Sarkar will preside over the inauguration.

Organized by
Global Change Programme, Jadavpur University

in collaboration with

West Bengal Pollution Control Board, Department of Environment , Department of Science and Technology -Government of West Bengal and South Asian Capacity Building Networks

Participation by Invitation ***Registrar-Jadavpur University***

http://www.juglobalchangeprogram.org

Appendix 2.

WMO

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
IPCC Working Group III — Mitigation

UNEP

Prof. Joyashree Roy
Coordinator: Global Change Programme
Professor of Economics
Jadavpur University
188, Raja S.C. Mallik Road
Kolkata- 700 032
India

Date : July 19, 2007
Our Ref. : 384/07 IPCC/OD BM /tvdb
Subject : Special Climate Change event in Kolkata, India

Dear Prof. Joyahsree Roy,

It is our great pleasure that 11 and 12 October 2007 shall see a special climate change event taking place in Kolkata, India. We shall be pleased if you can coordinate this event with your contacts in South Asia in order to ensure a regional approach to this event. Having Jadadvpur University to act as the main host for this event, we are sure shall attract not only academics to the event but broaden the scope to industry and policymakers in the area of climate change in the region. We look forward to a positive affirmation in this regard.

As you know the Intergovernmental Panel on Climate Change (IPCC), which is established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environmental Programme (UNEP), with the purpose to assess the scientific, technical and socioeconomic information relevant to understanding climate change. Working Group III of the IPCC in particular addresses options for limiting greenhouse gas emissions and otherwise mitigating climate change.

In May 2007, the results of the Working Group Three's contribution to the IPCC's Fourth Assessment Report be approved and we look forward to presenting the results of this report during the climate change event in Kolkata.

We are looking forward to working with you in future. Again, please accept our gratitude for your generous support of IPCC.
Yours sincerely,

Prof. Ogunlade Davidson
Co-chairs IPCC Working Group III

Dr. Bert Metz

Netherlands Environmental Assessment Agency

Steering Committee

Workshop Coordinator
Joyashree Roy,
(IPCC –AR4-WGIII Co- Coordinating Lead Author, Chapter 7-Industry)
Professor of Economics and
Coordinator, Global Change Programme, Jadavpur University

Workshop Steering Committee:
1. Core Committee of the Global Change Programme, Jadavpur University

Vice Chancellor: Prof S.K. Sanyal
Pro-Vice Chancellor: Prof S.Datta
Registrar: R Bandyopadhyay
Finance Officer: G.K. Pattanayak
Prof. A.N Basu
Prof. Asis Majumdar
Prof. Biswajit Gosh
Prof. Niladri Chakraborty
Prof. Joyashree Roy
Prof. Sugata Hazra

2. Representatives from Govt. of West Bengal
Secretary, Department of Environment: Mr. M.L. Meena
Chairman, West Bengal Pollution Control Board: Prof. A.N. Basu
Member Secretary, West Bengal Pollution Control Board: Mr. Debal Ray
Secretary, Department of Science and Technology, Mr . Pawan Agarwal

3. IPCC-TSU
Rutu Dave, Scientific Programme Officer

Appendix 3

IPCC Workshop on Climate Change

"IPCC- Working Group III's contribution to the Fourth Assessment Report on Climate Change Mitigation"

Dissemination Workshop in Kolkata for the South Asian Region

11-12 October 2007

Organized by

Global Change Programme
Jadavpur University
Kolkata 700032
in collaboration with
West Bengal Pollution Control Board
Department of Environment
Department of Science and Technology
Government of West Bengal

Kolkata

IPCC – Working Group III's Contribution to the Fourth Assessment Report on Climate Change Mitigation

Dissemination Workshop in Kolkata for the South Asian Region

October 11 – 12, 2007, Hyatt Regency Hotel , Kolkata

Background

Jadavpur University is organizing in collaboration with the Department of Environment and Department of science and Technology, Government of West Bengal and West Bengal Pollution Control Board is organizing the "Special Climate Change Event" during 11 and 12 October 2007. The event is going to be regional in nature and we have also got South Asian Networks on Board. To broaden the scope, the event is intended to attract not only academics but is also targeted to involve industry, investors and policy makers in the area of climate change in the region.

Aim

The major aim of the IPCC Dissemination Workshop in Kolkata is to reach out with latest information to the researchers and major stakeholders in South Asian Region who can follow up on building appropriate strategies for addressing climate change related issues in years to come. In this region, stake is of two kinds: First, to generate appropriate information and understand the risk and responses at the local level through appropriate research and secondly, to generate awareness about mainstreaming climate change related issues in investment plan which need appropriate policy support and new policy directions and regional cooperation.

The event being of South Asian Regional dimension and keeping in mind the research gap and nature of development pathway, it is felt that workshop focus needs to be on dissemination of information contained in various chapters of Fourth Assessment report especially: Mitigation chapters on Buildings, Energy supply, Industry, Transport and Infrastructure, Waste, from impacts – Agriculture, Forestry and Coastal Zone. Among cross cutting themes Sustainable Development and Policy, instruments and Cooperation will be of interest.

Target Audience

The target audience is Researchers, Policy makers, Bureaucrats, Investors and Action groups. Ministers and Consulates. The participants will be from The South Asian Region, Eastern Region and rest of India. We expect at least 300 people to be directly participating and interacting. Media and NGOs will also be participating. Media coverage is going to be very wide. From South Asian region we are planning to get all SAARC country participants.

Contact Us

For more information about the event, please visit http://www.juglobalchangeprogram.org or alternately contact us at:

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Professor of Economics and
Coordinator Global Change Programme,
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Appendix 4

"IPCC- Working Group III's Contribution
to the Fourth Assessment Report on Climate Change Mitigation"
Dissemination Workshop in Kolkata for the South Asian Region

Organised by

Global Change Programme, Jadavpur University

in collaboration with

West Bengal Pollution Control Board

Department of Environment

Department of Science and Technology

Government of West Bengal
and
South Asian Capacity Building Networks

11-12 October 2007

Programme Schedule
Hyatt Regency, Kolkata

We dedicate the day in Memory of Prof A.P Mitra

Day 1: October 11, 2007

9.15-10.15	**Registration and Tea**
All participants to be seated by 10.15 am for security reasons	
	Inaugural Session
10.30-10.33	**Welcome and Introduction** : Workshop Coordinator, ***Prof. Joyashree Roy***, Coordinating Lead Author IPCC and Professor of Economics and Coordinator Global Change Programme, Jadavpur University , India
10.33-11.05	**Presentation by IPCC Co-Chair** on WG III findings and links with WG II : IPCC Co – Chair ***Dr. Bert Metz***
11.05-11:10	**Voluntary Actions from the Department of Environment**: Hon'ble Minister of Environment. Govt. of West Bengal, ***Sri Sailen Sarkar***
	Special Address Hon'ble Governor of West Bengal, **Sri Gopal Krishna Gandhi**
	Release of a report on Sustainability brought out by Global Change Programme Jadavpur University
	Vote of Thanks: ***Rutu Dave***, IPCC TSU

Sectoral Presentations by IPCC Lead Authors	
	Session I
	Session to be Coordinated by Prof. A. N. Basu, Chairman, West Bengal Pollution Control Board
11:40 – 11:55	**Sustainable Development**: IPCC CLA: ***Dr. Jayant Sathaye*** , Lawrence Berkeley National Laboratory, USA
11:55 – 12:15	• **Response** by ***Prof. Debkumar Bose***, Chief Advisor, WBSCST. • **Response** by **Dr Priya Shyam Sundar,** SANDEE Programme Director
12:15 – 12:40	• **Q &A from floor**

12:40 – 14:00	**Break for Lunch at Hyatt: all participants are cordially invited**
	Session II
	Session to be Coordinated by Dr. Dipak Chakraborty, Chief Scientist, West Bengal Pollution Control Board
14:00 – 14:15	**Industry**: ***Prof. Joyashree Roy***, Coordinating Lead Author IPCC, Professor of Economics and Coordinator Global Change Programme, Jadavpur University, India
14:15– 14:35	• **Response** by Mr. **Anup Singh**, Executive Director, ITC • **Response by Mr S B Prasad,** Head, Environment & Occupational Health
14:35-15:00	• **Q &A from floor**
15:00 – 15:30	**Tea**
	Session III
	Session to be Coordinated by *Prof Subimal Sen*, Chairman, Environmental Impact Assessment Process and Project Management, State level Environment Impact Assessment Authority (SEIAA, West Bengal).
15:30 – 15:45	**Energy Supply**: ***Prof. P.R. Shukla,*** Coordinating Lead Author IPCC and Professor of Public Systems Group, Indian Institute of Management- Ahmedabad (IIM-A)
15:45 – 16:00	• **Response** by ***Prof Subimal Sen***, Chairman, Environmental Impact Assessment Process and Project Management, State level Environment Impact Assessment Authority (SEIAA, West Bengal).
16:00– 16:30	• **Q &A from floor**
	Session IV
	Session to be Coordinated by Mr Sumantra Chowdhury , Chairman, IAS Principal Secretary, Department of Transport, Govt of West Bengal
16:30 – 16:45	**Transport and Infrastructure** : ***Prof. Steve Plotkin***, Lead Author IPCC and Scientist at the Argonne National Laboratory, USA
16:45 – 17:00	• **Response by** : Mr Sumantra Chowdhury , IAS Principal Secretary, Department of Transport, Govt of West Bengal
17:00 – 17:30	• **Q &A from floor**
	Session V
	Session to be Coordinated by Mr *Mr. Debal Ray*, Member Secretary, WBPCB, Secretary –State Environment Appraisal Committee (SEAC)
17:30 – 17:45	**Buildings**: ***Dr. Anthony Mongamelli Mehlwana***, Lead Author IPCC and Manager at Council for Scientific and Industrial Research, South Africa
17:45– 18:00	• **Response by** : ***Mr. Debal Ray***, Member Secretary, WBPCB, Secretary –State Environment Appraisal Committee (SEAC)
18:00 – 18:30	• **Q &A from floor**
18.45	**Dinner at Hyatt: all participants are invited**

Programme Schedule
***Day 2* - October 12, 2007**

9:30 - 10:00	**Tea**
	Session VI
	Special Guest **Honorable Mayor of Kolkata, Sri Bikas Ranjan Bhattacharya**
	Session will be chaired by Dr Bert Metz
10.00-10:15	**Waste**: ***Dr. Jean Bogner***, Coordinating Lead Author IPCC , USA
10.15-10.30	• **Response** by : **Prof. K.J. Nath**, Chairman State Environment Appraisal Committee (SEAC), Arsenic Task Force

10:30 – 11.00	• **Q &A from floor**
	Session VII
	Session to be Coordinated by *Dr Hemanta Majumdar*, Working Chairman, WBSCST.
11:05 – 11:20	**Agriculture and Forestry**: ***Dr. N.H Ravindranath***, Lead Author, IPCC and Chairman for Center for Sustainable Technologies (CST) and Centre for Ecological Sciences (CES) at Indian Institute for Science, Bangalore, India
11:20 – 11:35	• **Response** by: Prof. Sayan Banrjee, from Bidhan Chandra Krishi Viswa Vidyalaya • **Response** by : **Dr. Keshav Raj Kanel**, Director Genreral, Community Forestry, Nepal
11:35 - 12:05	• **Q &A from floor**
	Session VIII
12.05-13.00	**Way Forward: Research** **Presentations and Discussions - Coordinated by IPCC (TSU: Technical support Unit) Scientific Officer: Rutu Dave** ***Speakers representing Research Networks in the South Asian Region:*** • **SANDEE** led Priya Shyamsundar • **LOICZ** by Nalin Wicramanayake • **Jadavpur University**, Vice Chancellor : Prof. S.K. Sanyal
13.00-14.15	**Break for Lunch at Hyatt: all participants are invited**
	A Movie on Sundarban Will be on Screen
	Session IX
	Special Guest **Honourable Minister of Sundarban Development Affairs: Sri Kanti Ganguly .**
	Session to be Chaired by Prof A.N. Basu
14:15-15.45	**Mitigation and Adaptation in the context of West Bengal** **Members in the Panel** • Secretary Department of Environment, ***Mr M. L. Meena***, IAS • Director, WBREDA, , ***Mr S. P Gon Chowdhury*** • Senior Environment Engineer, WBPCB, ***Dr T.K Gupta*** , • Vice President , Generation, CESC, ***Sri Sanjoy Chakraborty***, • Representative from the World Bank, ***Mr. Charkes Josef***
15:45–16:30	**<u>High Tea</u>**

Appendix 5. Press Report and News paper clippings

Press Report: Premier English language and vernacular dailies from Kolkata covered the two day IPCC workshop. Times of India – an English language daily - reported the concerns expressed by Mr Gopal Krishna Gandhi, the Governor of West Bengal, about wetland conservation in and around Kolkata. The sentiments expressed by the Governor were also echoed in the Bengali daily Ananda Bazar Patrika's report. The reports extensively wrote about Mr Bert Metz's – IPCC Co-Chair Working Group III, suggestion to all developing nations to integrate climate change issues in their development policies. Metz called for legislation to introduce best practices in energy savings in sectors like transport and buildings etc. The onus should lie on India and China – two of the fastest growing

economies in Asia – to shift from adaptation strategies to mitigation policies in order to increase the coping capacity of the vulnerable stakeholders in the developing economies. The press reports extensively reported the Nobel Peace prize that has been awarded to the IPCC. The speakers generally observed that the award would strengthen the movement against climate change and give the impetus to individual governments to frame mitigation and adaptation policies that can alleviate the climate change impacts.

News Paper clippings

Appendix 6. Feedback form

"IPCC - Working Group III's Contribution to the Fourth assessment Report on Climate Change Mitigation"

Dissemination Workshop in Kolkata for the South Asian Region, October 11-12, 2007

(Organised by: Global Change Programme, Jadavpur University
In collaboration with: West Bengal Pollution Control Board,
Department of Environment, Department of Science & Technology, Government of West Bengal
South Asian Capacity Building Networks)

Workshop Evaluation: Participant Feedback

1. Did you find the Dissemination Workshop useful? Yes / No

2. How useful were the sessions with respect to your field of activity? (Please tick 1, 2 or 3 beside each session. 1 = not useful, 2 = somewhat useful, 3 = very useful)

Sustainable Development 1 2 3	Industry 1 2 3	Energy Supply 1 2 3
Transport & Infrastructure 1 2 3	Buildings 1 2 3	Waste 1 2 3
Agriculture & Forestry 1 2 3	Way Forward : Research 1 2 3	Mitigation & Adaptation 1 2 3

3. What other topics do you feel could have been discussed at the workshop?
   _____
   _____
   _____

4. Any other comments / suggestions?
   _____
   _____
   _____

Name (optional) _____
Name of Organisation _____

Your field of activity at your organisation (Please tick)

Researcher Bureaucrat Policy Maker Investors & Action Groups

Ministers & Consulates Others (please specify)

*******END OF DOCUMENT******

Proceedings of the IPCC Outreach Event on AR4 Working Group III on "Climate Change 2007: Mitigation" held on Tuesday, 9th October, 2007 at the Hotel Grand Hyatt, Mumbai, India:

This event was organized by the Observer Research Foundation on behalf of the IPCC to provide business and industry participants opportunities to :

- *be briefed by members of the Working Group on the content of the WG III's contribution to the IPCC's Fourth Assessment Report (AR4)*
- *provide feedback on the IPCC process and how business & industry might be engaged in future IPCC activities*

Structure of the Report

1. Introduction: The Organizers
2. Inaugural Speech by Mr. G.N. Varade
3. Overview of WG-III Process & Role of Industry by Ms. Rutu Dave
4. Technical Session – I :

   i) Key findings of WG-III Report – A Presentation by Dr. Bert Metz, Co-Chairman of the IPCC WG-III & Gist of panel discussions.
   ii) Sustainable development and climate change policies by Dr. Jayant Sathaye, Coordinating lead author, International Energy Studies, Lawrence Berkeley Laboratories, California, USA.
   iii) Opportunities in Agriculture/Forestry sector – A Presentation by Prof. N.H. Ravindernath, Chairman of Centre for Sustainable Technologies, Indian Institute of Science, Bangalore – followed by panel discussions.
   iv) Issues related to long-term mitigation context – A Presentation by Dr. Ashish Rana – Reliance Industries Limited – followed by panel discussions.

5. Technical Session – II:

   i) Energy Supply – A Presentation by Prof. P.R. Shukla, Indian Institute of Management, Ahmedabad – followed by panel discussions.
   ii) Transportation and its infrastructure – A Presentation by Dr. Steven Plotkin, Argonne National Laboratory, USA – followed by panel discussions.
   iii) Residential/commercial buildings – A Presentation by Dr. Anthony Mehlwana, CSIR, South Africa – followed by panel discussions.
   iv) Industry – A Presentation by Prof. (Ms.) Joyashree Roy, Head Department of Economics, Jadavpur University.

6. Wrap-up Session
7. Conclusion of the Outreach Meet
8. List of Participants

About the Organisers

Observer Research Foundation:

BUILDING PARTNERSHIPS FOR A GLOBAL INDIA

India, in the next 25 years, will join the ranks of the world's great economic powers and transform significantly the quality of life of its one billion people.
Observer Research Foundation (ORF) was started in the early nineties during the troubled period of India's transition from a protected economy to a new engagement with the international economic order. At that time, a need was felt for an independent forum that would examine the critical problems facing the country and help develop coherent policy responses in a rapidly changing global environment. ORF was thus founded and subsequently supported by many of India's leading intellectuals, academics, public figures, social activists, business leaders and institutions of higher learning.

The Foundation brought together, for the first time, leading Indian economists and policymakers to present An Agenda for Economic Reforms in India. The idea was to help develop a consensus in favour of economic reforms. Since then ORF scholars have made significant contributions toward improving government policies. ORF research projects have resulted in immediate and tangible impact on economic and strategic policies of the country.

ORF aims to

Aid and impact formulation of policies and evolve policy alternatives.

Create a climate conducive to effective implementation of these policies.

Strengthen India's democratic institutions to enable coherent, reasoned and consistent policy-making.

Provide reasoned and consensual inputs representing a broad section of opinion to improve governance, accelerate economic development, and ensure a better quality of life for all Indians.

Monitor strategic environment.

Work towards achieving international peace, harmony, and co-operation.
Give direction to India's long-range foreign policy objectives.

IPCC

The Intergovernmental Panel on Climate Change was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP). The IPCC does not conduct new research. Instead, its mandate is to make policy-relevant assessments of the existing world-side literature on the scientific, technical and socio-economic aspects of climate change. Most of this expert literature has appeared in peer-reviewed publications.

The IPCC has produced a series of assessment reports, special reports, technical papers and methodologies that have become standard works of reference for climate change policymakers, experts, and students. The Panel is organized into three Working Groups: Working Group I focuses on the science of the climate system; Working Group II on impacts, vulnerability and adaptation; and Working Group III on mitigation, a term used to describe human interventions to reduce greenhouse gas emissions and to enhance "sinks" (forests, oceans and other natural systems that can absorb carbon dioxide from the atmosphere and store it).

The IPCC's First Assessment Report was completed in 1990 and helped to inspire the intergovernmental talks that led to the 1992 United Nations framework Convention on Climate Change. Its Second Assessment Report was published in 1996 and played a role in the Kyoto Protocol

negotiations. The 2001 Third Assessment Report concentrated on new findings since 1995 and paid special attention to what is known about climate change at the regional level.

Proceedings of the Outreach Meet:

Mr. Sunjoy Joshi, Sr. Research Fellow, ORF, outlined the purpose of the discussions and welcomed the IPCC members and participants.

Mr. Vikram Sood, Advisor to the Chairman, ORF welcomed all participants to the Outreach Meet. He expressed that in the years to come two things that will determine the future of mankind were water and air. He expressed concern that some of the largest cities in the World such as Beijing, Mexico, Buenos Aires and even Delhi were drawing more and more water from underground sources. He said that this could lead to local and international water conflicts in future. He exhorted that the basic issues concerning human survival need to be discussed and perhaps solution found for sustainability and well being of humanity. He wished the Outreach Meet a great success.

Mr. G.N. Varade, Director, Ministry of Environment, Government of Maharashtra, listed climate change as easily the of the leading problems facing mankind today. It had already figured in discussions at the UN Security Council in recent times. Even the World Economic Council rated climate change as a leading challenge to everybody. It was also evident that the discussion no longer remained confined to the domain of scientific and technical seminars. Even common people had started to notice the shifting weather patterns, severe summers, severe winters, shorter monsoons and so on. The citizens of Mumbai experienced this year a hot summer followed by heavy precipitation. The mass media is also playing catalyst in increasing awareness about climate change. It had been established by research that the awareness of and the need for achieving higher order goals such as protection of environment increases with increasing affluence. In the case of India, however, we could say that the increased awareness has preceded the increase of affluence. However, measures to tackle climate change could impact economic growth negatively. The government of India holds the view that no actions and measures that might hamper development goals could hold good for the country. At the same time it was committed to the tenets of common but differentiated responsibility of the UN Convention on Climate Change. India was a signatory to the Kyoto Protocol and has been participating very actively under clean development mechanism. Outside the UN Scheme India is also officially part of the international agreement The Asia-Pacific Partnership on Clean Development and Climate.

Being an energy importing developing country, energy security is a prominent issue for India. Talking about energy security it is held that renewables and alternative energy sources are also good for energy security diversification and risk mitigation.

Overview of WGIII Process and Role of Industry

Ms Rutu Dave, Scientific Officer, TSU, IPCC WGIII: It is important to stress that no new research is undertaken by the IPCC itself but it draws upon existing peer reviewed literature which comes from research which was conducted and it gives policy options to governments. The IPCC also supports the UNFCCC and support the framework by giving them the scientific knowledge needed for negotiations.

We have at least 250 authors. These authors write specific chapters of the report, which are reviewed by thousands of people across the world who are expert and government reviewers followed by lead author meetings across the world which make sure that the government and expert review comments are taken into account in a proper manner by the authors of the report and for that we have review editors to oversee this process. Working Group-II which deals in climate change adaptation, Working Group-III which deals in climate change mitigation and then we have a separate body or unit that looks at greenhouse gas inventories. All of these three working groups and the inventory body report to the IPCC Plenary which consists of more than 150 country representation.

One of the first reports that came out from the IPCC, the first assessment report came out in 1990 in 1995 was IPCC second assessment report, in 2000 it took out a special report on emission scenario and

a special report on technology transfer. This was followed closely by the third assessment report. In 2005 more special reports came out on carbon capture and storage which is proving to be a very hot topic within the energy companies and another report on ozone and climate change. In 2007 in November the fourth assessment report will be ready for publication by Cambridge University Press.

There is a close connection between IPCC reports and the process that goes on in Kyoto. We have several types of reports, we have assessment reports, we have synthesis reports which link up all three assessment reports, special reports, then we have special issues like carbon capture and storage, we have technical papers and supporting material that also gets published by the IPCC. There is a conscious effort on behalf of the IPCC to provide a well-balanced assessment of all relevant scientific and technical information.

The IPCC reports are definitely policy relevant but surely not policy prescriptive. It is an assessment, not an opinion it is balanced and certainly not biased because we take into account so many differing views from across the world.

There is a line-by-line approval of the summary by all governments, which accept the reports. This diagram gives you an overview of the different stages that take place in writing an IPCC report over the last three years.

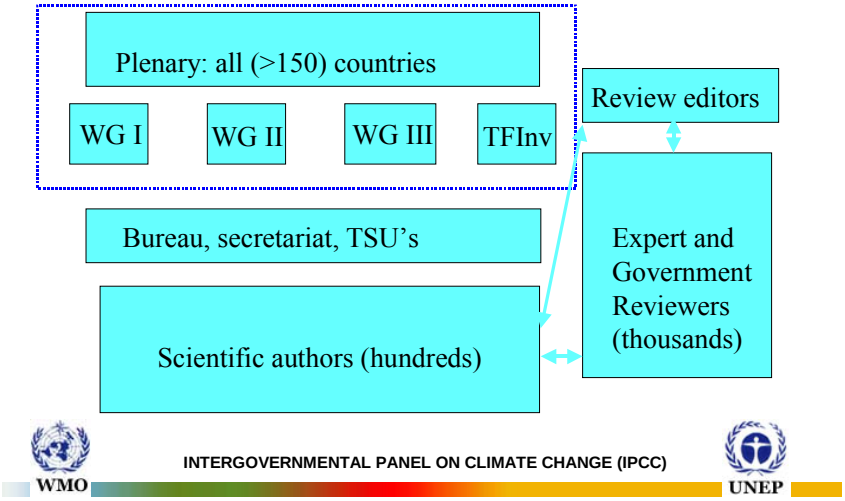
Because of the nature of climate change mitigation there had been felt a strong need for the industry to be involved but this was the first time that active measures were taken. The first meeting took place in September 2004 in Tokyo, Japan. This was attended by 86 experts from 21countries and the industries represented covered electricity, aluminium, nuclear, fertiliser, steel, cement and gas. Working Group III which is dealing with climate change mitigation ensured that early in the process inputs from industry experts entered the drafting of the AR4 and therefore this meeting was held.

To have industry views well represented gives the benefit of the latest thinking on what is happening in the practical world to the worldwide academic community. The objective of the meeting in Tokyo was to identify the key drivers of industrial technology development that should be addressed in the fourth assessment report, in order to contribute to the building of the conceptual framework of the assessment and to have a better understanding of the role of technology in greenhouse gas mitigation, to gain access to industrial information networks. This helped to improve the IPCC-Industry relationship by involving industry experts as contributing authors, expert reviewers and participants in. The sectors that were specifically involved in the meeting were the energy intensive sectors, the energy intensive consumer goods and the electricity production and energy carriers.

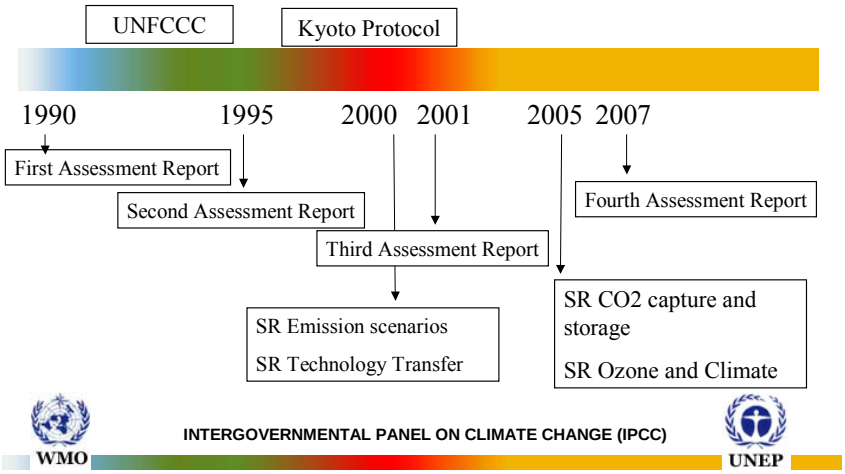
I would also like to say that we would appreciate now and also in the future your feedback and questions if you might have any on how to continue the involvement of the industry into future IPCC assessments.

Ms. Rutu Dave

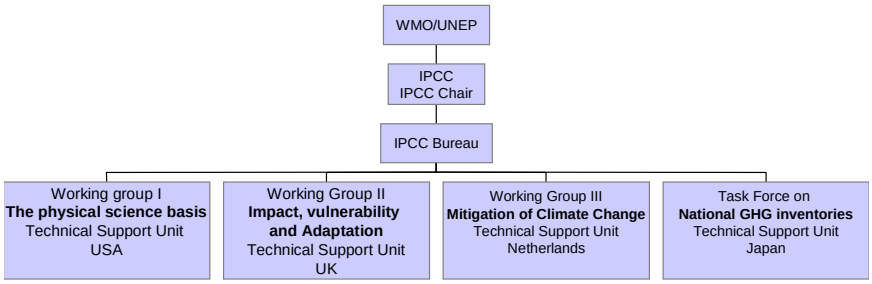
Structure and operation of IPCC



Previous Assessment Reports



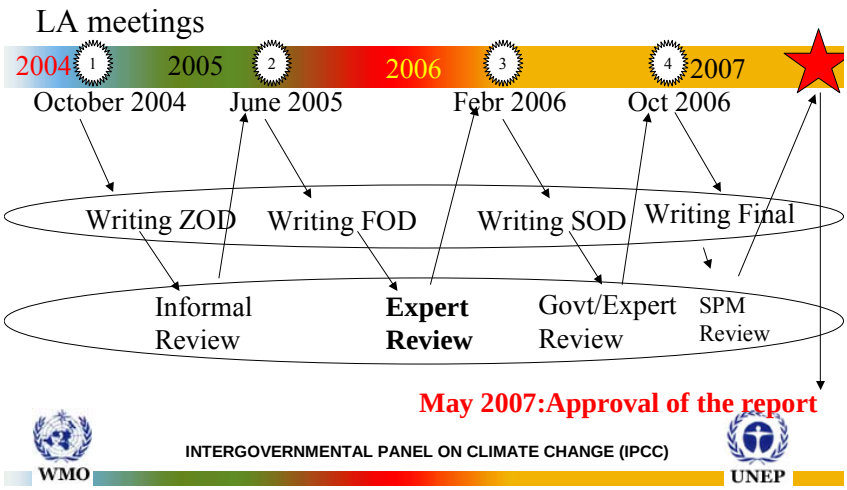
IPCC Management



IPCC activities leading up to the AR4

- Fourth Assessment Report
  - Outlines for all Working Groups approved at IPCC Plenary in 2003
  - Lead author teams selected, first meeting WG III October 2004, Germany
  - To be finished 2007
- Special Report on Carbon Dioxide Capture and Storage (September 2005)
- Special Report on Safeguarding the Ozone layer and the global climate system: issues related to HFCs and PFCs (April 2005)

Writing Process of AR4 WG3



Outline WG3 AR4

Introduction and framing Issues (1,2)
Issues related to mitigation in the long-term context (3)
Specific mitigation options in the short and medium term (4-10) Energy Supply Transportation Residential Industry Agricultural Forestry Waste management
Cross sectoral national and international dimensions (11-13) Mitigation from a cross-sectoral perspective Sustainable development and mitigation Policies, instruments and co-operative arrangements

Rationale for the Meeting

- The Third Assessment Report (TAR) had limited inputs by industry
- Research, development, transfer, and diffusion of Technology will play a key role in both short and long term GHG mitigation
- In drafting AR4, IPCC wants more focus on the research, development, transfer diffusion of Technology than it was treated in the TAR
- Therefore Working Group III that is responsible for mitigation of climate change needs early and ongoing inputs from Industry Experts on the various aspects of Technology in drafting AR4
- Hence, this meeting being the start

Why Should Industry Participate?

- IPCC scientific assessments written for policy makers and used as a basis for policy development that will impact on industry
- IPCC assessment reports receive worldwide coverage and influence customers of industrial products and services
- Therefore, industry view needs to be represented
- Participation will give access to latest thinking of world-wide academic community

Main conclusions from the meeting

- Identified many expert reviewers and potential contributing authors from Industry
- Many industry representatives wish to continue person-to-person interaction with the IPCC WG III authors (for example workshops, forums)
- International Industry Associations willing to act as clearing house for supply of literature and sectoral expert review contact
- 25 papers from several different industrial sectors presented and discussed

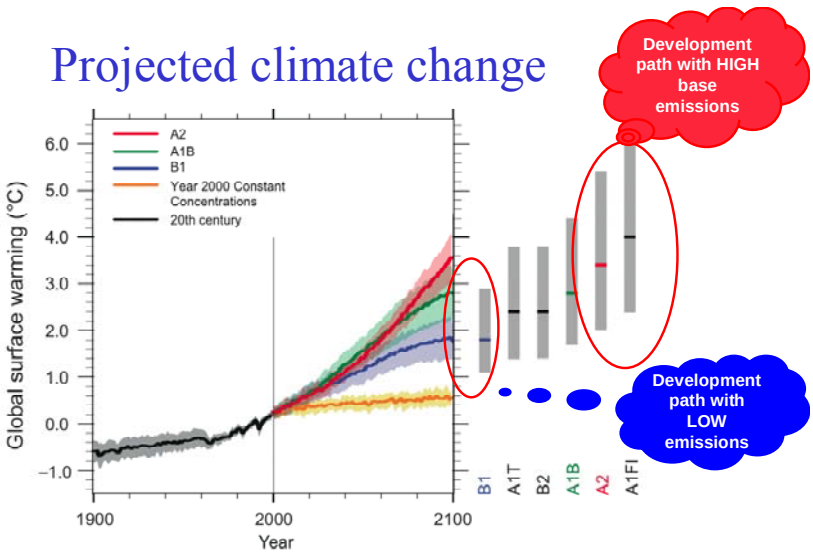
WMO INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) UNEP

Dr. Bert Metz

Climate change is (i) a development issue, and (ii) it can be solved. Socio-economic and technological development in countries around the world are the drivers for greenhouse gas emissions. Climate change as a result of that can undermine development and lead to serious disruption of society. Fortunately technologies are available for limiting climate change. It cannot be completely prevented but we can limit it to what is probably a tolerable level and the costs are not extremely high.

There is definite warming, the globe has warmed already by 0.7 degrees Celsius compared to what it was before the industrial revolution began and the human factor is the dominant cause of the global warming. The sun is only contributing a very small amount and the volcanic eruption is something that erupts the climate but is gone within a couple of years.

This box gives the temperature range for different scenarios for socio economic development.



IPCC

Climate change will lead to change in precipitation, patterns of rainfall and probably it is already being experienced. Generally speaking the areas that are already dry get drier and the wet ones get wetter with implications of droughts and flooding. Climate change is already threatening corals and other eco systems would be threatened when temperatures rise by 3-4 degree Celsius.

Food production is a vital aspect of development and human survival, especially in low altitudes like India. Any temperature increase will affect productivity of cereals and will affect food security. Temperature increase will also lead to rise in sea levels affecting coastal population. It would also impact health in some part of the Globe in terms of heat waves and spread of diseases.

In the last 35 years, Green House Gases (GHG) emissions have increased over 70%. Carbon dioxide is the biggest contributor to GHG emissions. In the next 25 years, emissions may increase from 25 to 90% depending on socio-economic development across the Globe, particularly in developing economies. Two third to three fourth of the GHG increase would come from developing countries. However, there are good reasons for this as developing countries would require improving the living conditions of the people that would require more energy. With current mix of energy dominated by fossil fuels this would result in more emissions. However, per capita emissions in developing countries would still remain lower as compared to the developed economies.

Reducing GHG emissions will involve substantial costs to the country and may reduce GDP growth somewhat but surely it will not ruin the economy of the countries Climate change and development had to be seen together to effectively tackle the issue.

Each country has to evolve climate change mitigation policies taking into account local conditions and aspirations. Therefore policies have to target incentives and disincentives for promoting efficiencies in energy use, clean development mechanism and domestic and international tradable carbon permits.

The energy infrastructure needs to be upgraded, expanded in the coming 25 years and as per the Internal Energy Agency (IEA) assessment, an investment of the order of about US$ 20 trillion would be required. Energy efficiencies, conservation of energy shifting to renewables will play a major role in improving the GHG emissions. Since the change would be slow, action needs to be taken now.

The side benefits include health benefits from reduced air pollutions, reduction in heath costs, increasing energy security, improving balance of trade by shifting from imported fuels to domestic resources.

Panel Discussions (Session – I) : Mr. Raghuraman, Principal Advisor (Energy) Confederation of Indian Industry (CII) brought the perspective of Indian industry as well as the Government of India on the issue of mitigation measures proposed in WG III Report of IPCC. He mentioned that 55% population in India still does not have access to commercial electricity and even have problem in getting fuel for cooking. The Government of India says that it was already spending 2% of the GDP in adaptation to tackle various problems such as coastal erosions, flood preventions measures etc. He further mentioned that w.r.t. policy measures involving taxation, subsidies etc. to encourage clean energy sources, India has its own problems, where fuel and energy prices are administered and the problem is how to move to market determined pricing to provide the right kind of incentives. He emphasized that India is a growing economy and it will be adding new assets and investment compared to the developed countries. Citizens of this country, especially poor have legitimate right to improve the living conditions. This would surely require increased level of energy consumption and use of fossil fuels as a major source of energy in years to come. The Integrated Energy Policy (IEP) prepared by Planning Commission, Government of India also indicate that fossil fuels are going to be the main source of primary commercial energy till 2030.

Mr. Raghuraman pointed out about the commercial application and available technologies for Carbon Capture and Storage (CCS), are yet to be established.

He concluded that we have to have a common and differentiated approach involving a multilateral process under UNFCC convention to mitigate climate change; however, it cannot be at the cost of

development. The millennium development goals of providing people literacy, clean water and sanitation are some of things which are non-negotiable. Climate change is a global phenomenon and therefore if the developed world is indeed serious about the Impact of Climate Change it is important that technology transfer had to be seamless and not hindered by IPR and other kinds of rules.

Dr. Jayant Sathaye (Sustainable development and climate change policies): Climate change cannot be seen in isolation without development of the economy and society. Climate change needs to be seen in a holistic manner from the perspective of overall sustainable development. The fourth assessment report would be about sustainable development.

The initial reports of the IPCC focused primarily on science and were driven by atmospheric science. However, successively it was recognized that this was too narrow a perspective to examine climate change science. The report now focuses on mitigation, adaptation and sustainable development as critical area. We tend to think that climate change and sustainable development as two elements that have a two way relationship. If we manage to shift say from coal to gas, it will reduce sulphur emissions, reduce the ash disposal problems and will have ancillary benefits. The benefits of mitigation could be improved air quality, improved soil quality, food and quality water. One thing needs to be kept in mind that whatever decisions are taken by nations on energy security, rural energy development etc. will have a bearing on CO2 emissions over a period of time. This is where a balance between climate change and development needs to be maintained.

There could be policies, which may have benefits as well as trade offs. For e.g. pursuing energy efficiency programmes will certainly improve air quality and will improve energy security, provide additional employment and reduce costs to energy users. However, some policies may have negative impact such as switching from gasoline to diesel engines, it may be more energy efficient but it will increase particulate emissions and the quality of air will actually deteriorate.

Development goals can be pursued with high as well as low GHG emissions. The idea is to develop while lowering GHG emissions. This would require countries, regions, local areas, urban areas and the World itself to pursue a different type of development than it has done so far. One needs to think about ways how the climate mitigation policies can be integrated with non-climate policies.

He mentioned that development activities having low impact on GHG emissions could be preferred and the focus should be on areas where there is large scope to reduce GHG. He gave an example of converting rural energy sources to biomass or electricity rather than using more kerosene or propane gas. The research carried out has shown that if all households in the World were converted from biomass to propane/LPG, it would increase GHG emissions by about 2%. This was not significant and hence in this case development activities for switching the energy source were to be preferred and the focus to reduce emissions needs to be elsewhere.

He concluded that we need to move from international negotiations, where Governments participates and negotiate to broader levels involving civil society and markets. He cited the example of ITC in India, which has been successful in implementing e-chaupals and also wants to become a carbon credit holder and water positive corporation.

Mr. Raghuraman informed the participants that CII has the Sustainable Development Centre (SDC) promoted by ITC. This centre looks at a carbon disclosure project. Corporates are being encouraged to associate on a voluntary basis. He further mentioned that many such efforts have been undertaken by CII towards sustainable development.

He mentioned that India has to grow in a carbon constrained World, which the developed countries did not have to as they grew in an unconstrained carbon World. India has to convert the challenges of growing in a carbon constrained into opportunities by adopting the best practices and leapfrogging. An example was the proposed fuel efficient small car of Tata.

Dr. Jyoti Parikh: She mentioned that India does think and want to send strong signals that climate change is not in the long term interest of India and more should be done by the developed

countries. The Prime Minister himself is chairing the Climate Change Council (CCC) and has instructed that the 11th Five Year Plan should be responsive to the climate change and the non-climate policies are very relevant for India.

She said that the presentations have mentioned about water, air, food and coastal zones but India has a serious challenge in the Himalayan ecosystem. Several major rivers in India originate in Himalayas and in fact in other South Asian countries also. This issue needs to be addressed by stake holders to save Himalayan ecosystem and consequently our rivers, which are the major sources of water for large population.

India is adding capital stocks rapidly and is growing @ 8-9%. The capital stock will double in about 9 years and this would require to be addressed in climate change. She requested Mr. Jayant Sathaye to send India specific recommendations to consider some of the issues specially non-climate development policies. She concluded that India must look the options available for sustainable development and integrate its economic development with climate change.

Mr Anil Kulkarni: Since I work on Himalayan [inaudible] particularly includes the snow and glacier studies some of our observations are well documented in numerous scientific papers and in national and international journals but it will be very relevant here since this question has been raised here. We already know that Himalayas are substantially changing, particularly the melting of seasonal snow has started to happen in the middle of winter and satellite images are clearly demonstrating that and we also have change in the winter stream runoff in the Himalayas. As far as glaciers are concerned by and large we are now aware that almost all Himalayan glaciers are retreating and from the middle of last century we have lost almost 22% of the glaciers. In addition to that now we have a snowline at the end of summer at such an altitude that large number of glaciers now stopped making a new glacial ice. So all such glaciers are now threatened and they are in stages of terminal retreat. However, some of catastrophes like floods may not come as there are more dam lakes or ponds. However they themselves can cause such outburst. Government of India is thinking of having its own glaciological centre to look into these.

Dr. Jyoti Parikh: We should have a wider approach where ecosystems of all types in Himalayas are considered. Especially as to how the population living in Himalaya will adapt itself to ecosystem changes and how they will affect our people and our economy.

Dr. Bert Metz: He mentioned that as evident by the receding glaciers, if we do not address climate change, it can have a negative impact on the economy. In such a situation developing countries are more vulnerable than developed countries. On CDM market, Dr. Bert Metz opined that it was useful as it generates and provides money to do the right thing in more sustainable direction but it was not going to be the solution.

Dr. Jayant Sathaye: He mentioned the example of Water Management in California where rain takes place between November-March/April and water has to be stored for next 6 months. The biggest reservoir is not a water reservoir but a snow pack. This snow pack is reducing as temperature is rising and precipitation is switching from snow to water. These changes are now being integrated in hydrological planning and are being adapted to meet the water requirement under climate change. A water efficiency programme is being implemented and it has a potential of easily saving 20-30% water. He opined that similar measures can also be taken in India taking into account the local conditions.

Prof N.H. Ravindranath – Opportunities in the agriculture/forestry sector: Emissions from forest and agriculture sectors are increasing and together account for almost 30% of the global GHG emissions, which is very significant. Emissions from agriculture and forest sectors, when seen separately, over the next 30 years, the forest sectors would stabilize more or less but emissions from the agriculture sectors are projected to increase. Agriculture emissions from segregates into soils, fertilizer applications, methane emissions from live stock and manure management are important for India. Tropical America and tropical Asia dominate the CO2 emissions from forest sectors, whereas South Asia contributes very little.

If one looks at mitigation opportunities in the forest sector, there are four or five major categories. Firstly, maintaining and increasing the forest area, and reducing deforestation, these are two critical mitigation opportunities. In India, reducing deforestation is not a major issue because India has reasonably stabilized the forest area and reduced deforestation rights. But India has large potential for afforestation. The second is maintaining and increasing the carbon density in forest and this is very important for the European countries, Canada and so on, not so much for India. Next is increase in off site carbon stocks in wood products that is used in construction and in housing. The last one, which is very important for India, is fossil fuel substitution through bio-energy and bio-fuels.

In agriculture sector, there are large mitigation opportunities and include improving grassland management (not so important for India) and restoration of degraded land. India has vast waste lands, which have a large potential to carbon sequestration and also produce more biomass. India has large area under rice crop and has the largest live stock population in the World. Efficient rice production with less water and less methane emission as well as live stock management has potential to reduce the emissions.

The mitigation opportunities are largest in developing countries or non-EIT countries. In agriculture, South Asia which is mainly India, China South East Asia and to some extent South America has a large potential for mitigation, as they would provide increase in food, dairy and meat production.

In the developing countries, where emissions are more both in the agriculture sector though not much in forest sector, these are likely to increase in countries like India, China and Indonesia, where rice & meat production will increase emissions. Two-third mitigation potential exists in such countries. In developed countries Europe and North America, forests act as a sink and there is large potential to increase the stock of carbon in the existing forests.

There are significant CDM opportunities in agriculture and forestry sectors, however, methodologies are complex and involve high transaction costs. Reducing deforestation is globally the most dominant option, particularly Latin America or South America, South East Asia, Africa they provide the largest mitigation opportunities. Luckily in India we have reasonably conserved the forests, thanks to many policies and programmes of the government. Currently, reducing deforestation is not included in the Kyoto mechanism. Of course there are efforts at the global level where it is a hot contentious issue in global negotiations and it is becoming more contentious because of the methodological issues involved in addressing deforestation and the data related issues and in the complexities of modalities and procedures.

In India 60-70% of the population depends on agriculture and forestry so it is important to improve livelihoods and income by including CDM opportunities. India is implementing one of the largest afforestation programmes in the World and in last 25 years forest coverage has increased. India has a large opportunity for mitigation because it has large tracks of wastelands, marginal croplands, degraded croplands, where it can bring in afforestation and reforestation. There is large bio-energy mitigation potential. Again, there is a need to promote forestry.

Dr. Ashish Rana: Issues related to long-term mitigation context

He made a presentation on the baseline and stabilization scenarios since the publication of IPCC's Special Reports on Emission Scenarios (SRES) in 2000 and IPCC's third assessment report in 2001. It was highlighted that the ranges of the main driving forces and emissions have not changed very much. The most noticeable changes are lower projections for non-CO2 gases mainly SOx & NOx, CH4 and fluorinated compounds i.e. SF6 and PFC. The literature now is populated with the scenario of multi-gas mitigation and stabilization. The emissions are reported in CO2 equivalent terms. All the stabilization scenarios require the emissions to eventually fall to very low levels. Their timing depends on how stringent is the target, the lower the target the earlier the peak of emissions would be. All stabilization scenarios also highlight importance of technological change, learning by doing and induce technological changes both for achieving stabilization targets as well as cost reduction.

Stabilization costs depend (i) on the baseline, (ii) on the rate of technological change. Assumed, (iii) stabilization targets and (iv) the whole portfolio of technologies considered in the model. The GHG stabilization scenarios are:

GHG Stabilization Scenarios

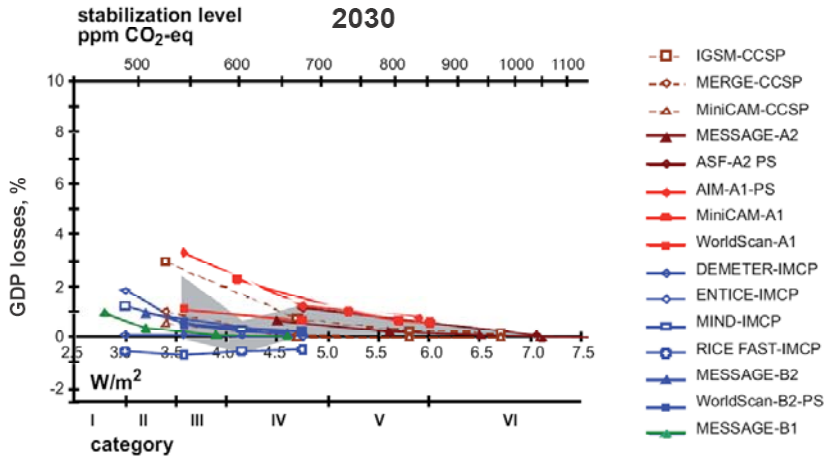
Category	Additional radiative forcing	CO_2 concentration	CO_2-eq concentration	Peaking year for CO_2 emissions[a]	Change in global emissions in 2050 (% of 2000 emissions)[1]	No. of scenarios
	W/m^2	ppm	ppm	year	%	
I	2.5-3.0	350-400	445-490	2000-2015	-85 to -50	6
II	3.0-3.5	400-440	490-535	2000-2020	-60 to -30	18
III	3.5-4.0	440-485	535-590	2010-2030	-30 to +5	21
IV	4.0-5.0	485-570	590-710	2020-2060	+10 to +60	118
V	5.0-6.0	570-660	710-855	2050-2080	+25 to +85	9
VI	6.0-7.5	660-790	855-1130	2060-2090	+90 to +140	5
Total						177

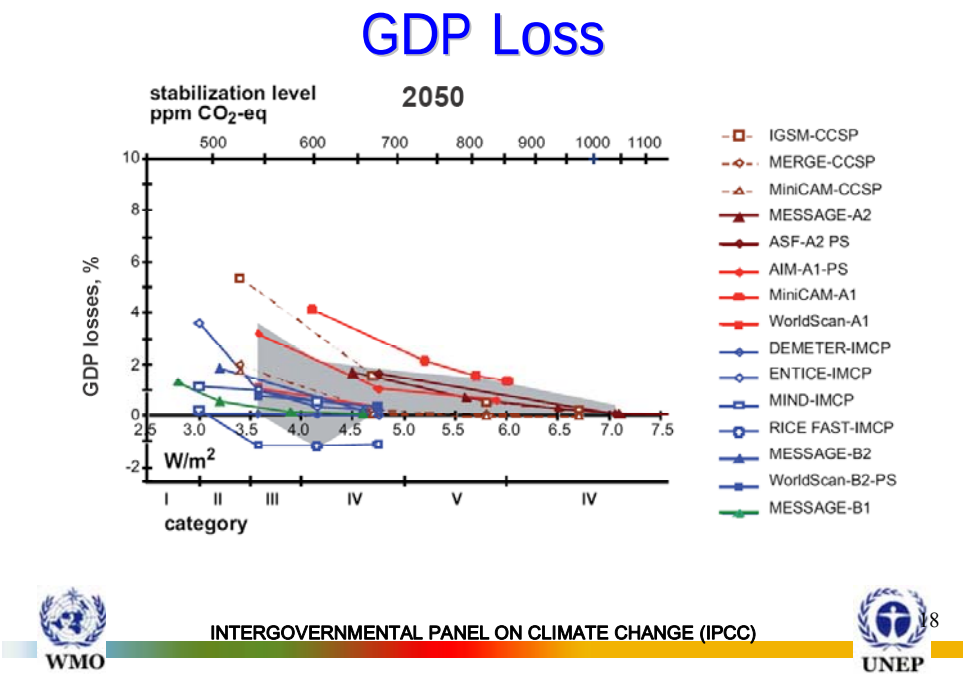
Note: [a] Ranges correspond to the 15th to 85th percentile of the Post-TAR scenario distribution.
Note that the classification needs to be used with care. Each category includes a range of studies going from the upper to the lower boundary. The classification of studies was done on the basis of the reported targets (thus including modeling uncertainties). In addition, also the relationship, which was used to relate different stabilization metrics, is subject to uncertainty (see Figure 3.16).

For mid-range target of 590-750 PPM CO2 equivalent concentration, the cost range from (-) 1 to 2% of GDP by 2050 and with slightly more stringent target they range from slightly negative to about 4.5%. He mentioned that more stringent the scenario earlier will be the peak reached. The key for stabilization and reduction would be to use a portfolio of reduction technologies with many measures – energy conservation, renewable, biomass, CO2 capture, nuclear energy etc.

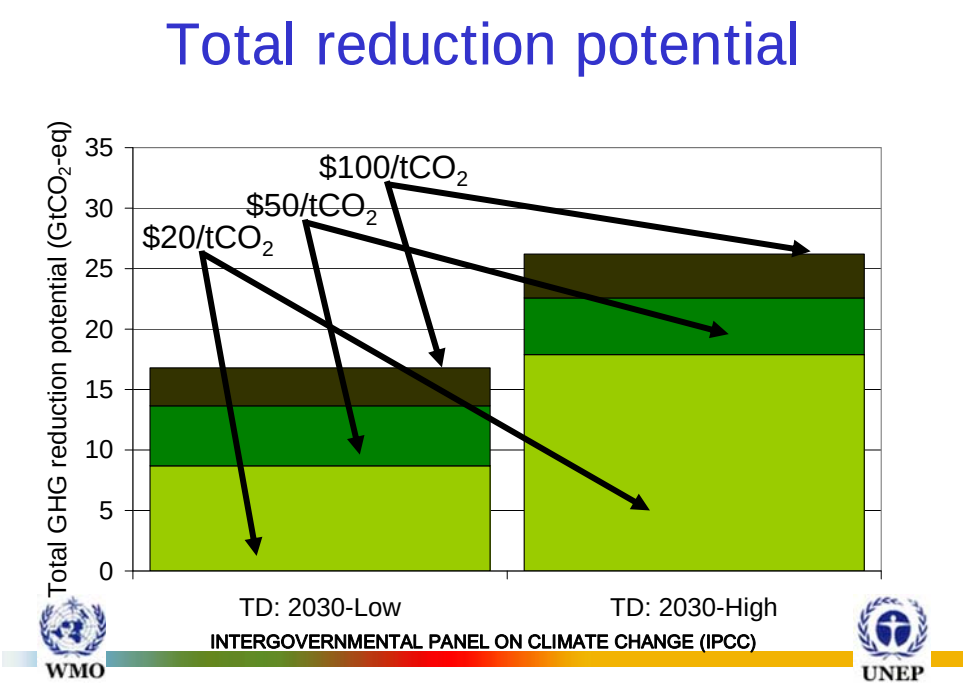
The costs for mitigation in vast majority of studies are generally targeted below 1% of GDP by 2030. The estimated GDP loss under various scenarios by 2030 and 2050 are shown below:

GDP Loss





The reduction potential of GHG at various carbon price level have been estimated as below :



In conclusion, Dr. Rana pointed out that there was a significant mitigation potential by 2030 and beyond at the cost less than US$100 per tonne. Technological change was essential for reducing the mitigation costs and also increasing the reduction potential. High emission baselines have higher mitigation costs and higher stabilization levels. There has to be upfront investment to reduce long-term mitigation costs and also investment in research, development, deployment and diffusion for reducing the mitigation cost.

Comments by Dr. E. Bharucha, Director, Bhartiya Vidhyapeeth, Pune:
Dr. Bharucha voiced concern about what would happen with global warming to bio-diversity, eco-system, land-use, to species, protected areas in Himalayas and adaptation by species. He mentioned

that there was lack of awareness on global warming in general and issues should be addressed at school/college level and contribution of the society and the people towards reducing carbon emissions should be made as mass public awareness programme.

Dr. Bharucha informed that the University Grant Commission at the behest of Supreme Court of India has now instituted a core module course on environment for every undergraduate student. However, the quality of teaching staff on environment including issues like global climate change needs to be augmented. We need to take initiatives at school level and bring the issue of climate change into the mind of school students.

The impact of climate change in places like Himalayas needs to be addressed through strong public opinion and support including media campaign as well as support judiciary, NGOs etc.

Comments by Mr. Ravi Capoor, Executive Director, Petroleum Conservation Research Association (PCRA): He informed that his agency was engaged in energy conservation measures and improve efficiencies. He drew attention of the audience to a recent report of McKinsey that the global energy demand is likely to grow @ 2.2% as against World Energy Outlook forecast of 1.8% upto 2020. It also says that energy efficiencies take care of 1% of the growth, which means if efficiencies are not built in the system, growth would be 3.2%. Further, it says that a global initiative and a concerted effort on pure energy efficiencies can bring this global demand to less than 1%. This means efficiencies can reduce the demand by more than half resulting in cost saving and reduction in GHG. He said that there are three main sectors which are contributing to the CO2 emissions – the transport sector, the industrial sector and the domestic/commercial sector. PCRA has taken a whole project on fuel efficiencies in the transport sector. We need a fundamental change in our attitudes. There are pioneering research going on at the Rocky Mountain Institute where talk of fuel efficiencies of cars going beyond 200 km a litre. 50% of the global fossil fuel is burnt under transport sector. By 2020, it is estimated that 60% of the global energy will be consumed in the transport sector.

He emphasized that the primary focus should be on energy efficiencies, especially in countries like India where we are starting from a very low base, the scope is phenomenal. Quoting another report, he said that energy efficiencies and renewable together can account for 75% of the global energy requirement by 2050.

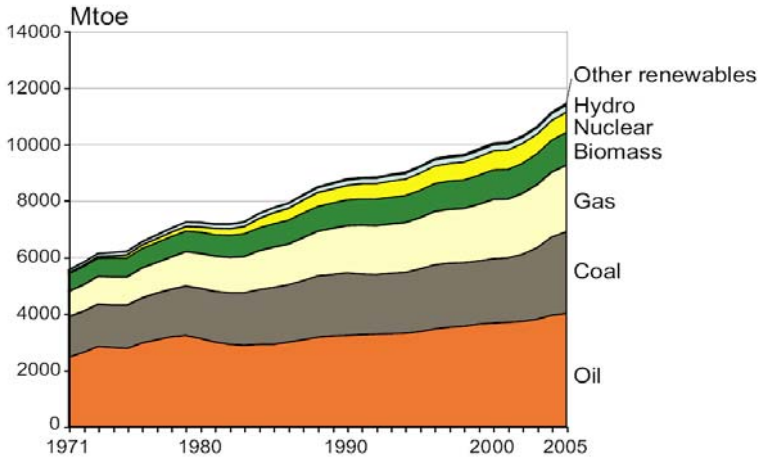
Mr. Capoor mentioned that in India the emphasis is more on demand side management i.e. how to increase supply of energy compare to conservation/efficiency measures. We need to balance them and focus increasingly on energy savings and efficient technologies. Incentives should be given to the energy efficiency technologies and measures and not only to augment supply of energy.

Mr. Capoor also brought out that there are fiscal incentives for exploration activities, extracting fuels but not much incentive is available for energy conservation/efficiency or renewable. This anomaly should be addressed to mitigate both cost of energy and environmental impact.

Prof. P.R. Shukla – Energy Supply

Prof Shukla presented IPCC Chapter – IV Report on Energy Supplies. He mentioned that main goal of all energy is to provide energy services i.e. to improve quality of life and increase productivity. World primary energy consumption in last 35 years have been as under:

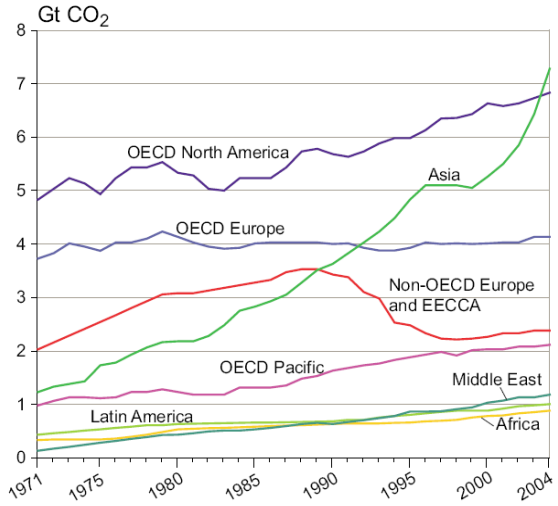
World Primary Energy Consumption by Fuel Type



IPCC

The carbon-dioxide emissions from energy supplies for last 35 years are given below :

Global Trends of CO2 from Energy



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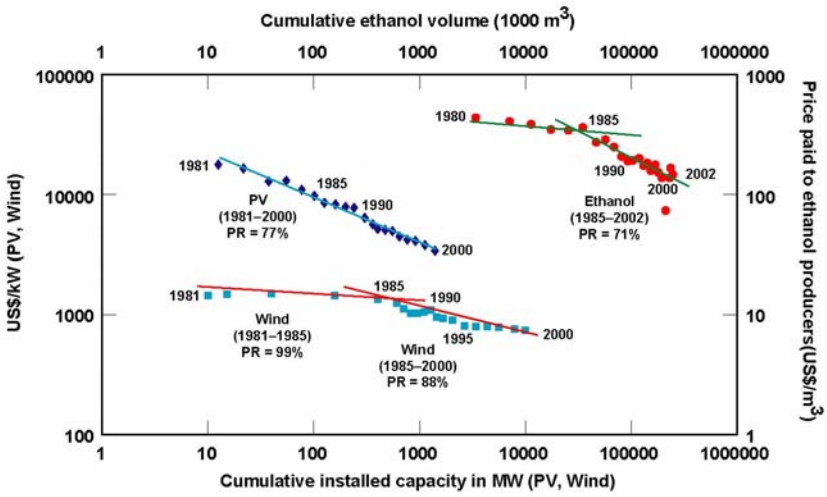
About 1100 gigatonnes of CO2 have been released into atmosphere since mid 19th century and energy sector is expected to increase CO2 emissions to 37-40 Gt in 2030 – an increase of about 50% over 2004 level. The life of carbon-dioxide is somewhat beyond 100 years and so most of the carbon-dioxide is hanging in the atmosphere. Although carbon intensity in China and US is declining but total emissions continue to rise. The majority of emissions are from fossil fuels. The emissions from Asia are rising fast.

The de-coupling of carbon intensity of India is between 3 & 3.5% & therefore carbon intensity is lower than the GDP growth. The Chinese carbon intensity in increasing by about 7% and it will double the Chinese emissions in next 20 years unless these are de-coupled very strongly. Global emissions continue to rise from the energy and other non conventional resources and could add to the emissions are tar-sand oil, oil shale and possibly gas hydrates. Renewable and biomass fuels, Carbon Capture

and Storage (CCS) could mitigate CO2 emissions and just de-couple the economic growth from carbon emissions. However, Coal, which is a major fuel for power generation is expected to add CO2 emissions in China and India.

There is a potential for nuclear power to make a contribution to low carbon electric power generation. However, issues such as cost, nuclear waste storage, proliferation, vulnerability to natural disaster and sabotage and public acceptance in promoting nuclear power need to be addressed. Renewables like wind and solar are growing fast and have the advantage of providing distributed energy without need for pipelines or wires. However, costs remain the major issue. The investment costs and penetration rates of renewable are shown in the following slide:

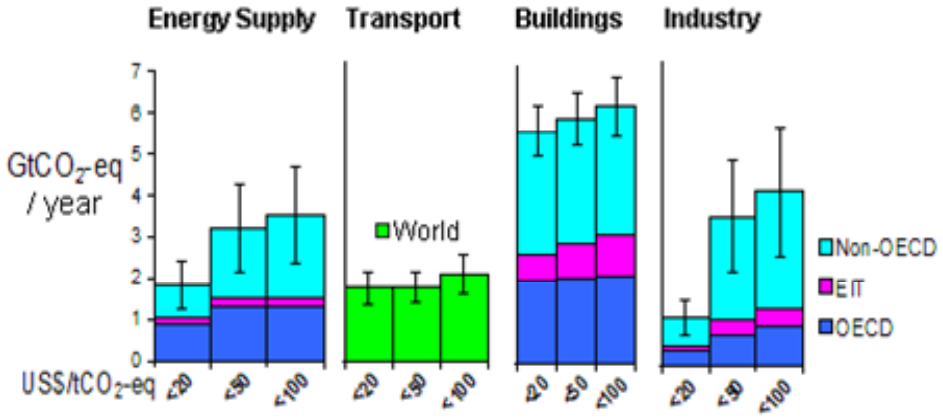
Investment costs and penetration rates of renewables



Efficiency gains are the lowest cost solution to mitigate emissions. Reducing energy demand for electricity, transportation, space and industrial heat is the lowest cost option and the next most cost effective option is to improve efficiency of power generation. This includes using efficient gas turbines. Similarly, transmission and distribution constitute 54% of capital investment in power sector. Improved T&D network can reduce electricity demand.

The potential for reducing CO2 equivalent emission as a function of carbon prices by 2030 are depicted below:

Sectoral economic potentials above the baseline by 2030 as a function of carbon prices of US$20, 50 and 100 / t CO2 -eq.



Notes: Emissions from electricity use are counted in the end-use sectors. Transport not split into regions because of international aviation fuel.

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Policy measures to reduce GHG emissions from energy supply sector suggested in the chapter-IV are given below :

Policy measures to reduce GHG emissions from Energy Supply Sector

Policy options / Policy objectives	Economic instruments	Regulatory instruments	Policy processes: Voluntary agreements	Policy processes: Dissemination of information and strategic planning	Policy processes: Technological RD&D and deployment
Energy efficiency	• Higher energy taxes • Lower energy subsidies • Power plant GHG taxes • Fiscal incentives • Tradable emissions permits	• Power plant minimum efficient standards • Best available technologies prescriptions	• Voluntary commitments to improve power plant efficiency	• Information and education campaigns.	• Cleaner power generation from fossil fuels
Energy source switching	• GHG taxes • Tradable emissions permits • Fiscal incentives	• Power plant fuel portfolio standards	• Voluntary commitments to fuel portfolio changes	• Information and education campaigns.	• Increased power generation from renewable, nuclear, and hydrogen as an energy carrier
Renewable energy	• Capital grants • Feed-in tariffs • Quota obligation and permit trading • GHG taxes • radable emissions permits	• Targets • Supportive transmission tariffs and transmission access	• Voluntary agreements to install renewable energy capacity	• Information and education campaigns • Green electricity validation	• Increased power generation from renewable energy sources
Carbon capture and storage	• GHG taxes • Tradable emissions permits	• Emissions restrictions for major point source emitters	• Voluntary agreements to develop and deploy CCS	• Information campaigns	• Chemical and biological sequestration • Sequestration in underground geological formations

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Chapter-IV suggests options for reducing GHG emissions from energy supply. These include distributed efficiencies, fuel switching say from coal to gas, nuclear power, renewable, Combined Heat and Power (CHP), CCS and biomass. Equity and shared responsibility are vital to align energy supply and sustainable development goals else economic reforms may enhance in equality and ill-impact development goals. Sustained investments in energy technologies for achieving sustainable development goals are important. We need to shift from policies that favour existing technologies and discriminate against newer technologies and practices. We need to provide incentives to induce utilities to provide energy savings. We also need to reward innovations that reduce heat trapping green house gas emissions from industrial processes, power generators, buildings and vehicles. There is no

single economic technical solution to reduce GHG emissions from the energy sector but there is good mitigation potential available.

Prof. (Ms.) Joyashree Roy – Industry (Chapter-7)

Prof. Roy presented key findings from Chapter-7 on Industry. CO2 emission accounts for more than 90% of CO2 equivalent emissions from industrial sector mainly from manufacturing and process industries. The major sources of emissions are use of fossil fuels for energy and non-energy use of fossil fuel for chemical processing and metals melting and non-fossil fuel sources such as cement and lime manufacture. Industrial processes also emit GHG gases other than CO2. Large industries globally dominate this sector, however, SMEs are important in developing countries in metals, chemicals, food, paper and pulp. Share of industrial GHGs in developed and developing nations are given below :

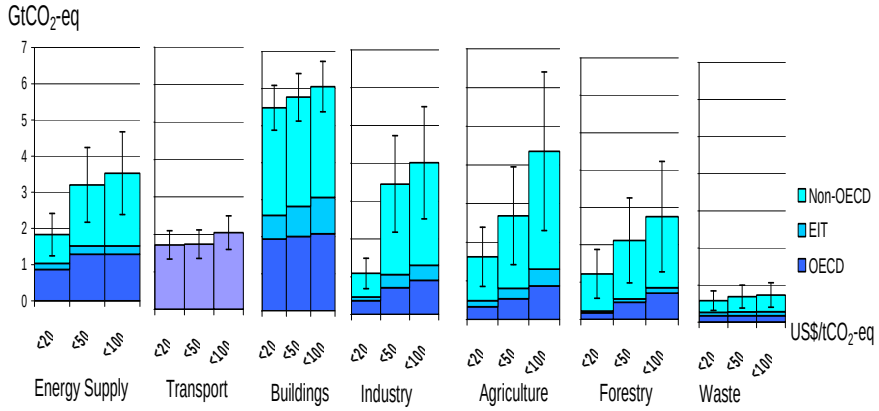
Share of Industrial GHGs

- Industry CO_2 emission from energy use is 37% of total
  - 53% developed nations
  - 47% developing nations
- Developing nations now produce
  - 78% of world's cement
  - 58% of world's fertilizer
  - 42% of world' steel
  - 50% of aluminum
- Developing nation share is expected to grow

Large industries respond to sound environmental technologies rather easily given their capabilities, however, SMEs are not always able to cope economically and technically. Therefore the real challenge is how to address this issue in developing countries. The share of developing nations in GHG is expected to increase in the years to come.

It has been seen that energy intensity in most of industrial processes is at least 50% higher than the theoretical minimum and there was scope to reduce the same. In process specific options the use of bio energy content in food, pulp and paper industry waste, turbines to recover the energy contained in pressurize blast furnish gas etc. can mitigate non-CO2 GHG emissions. Some mitigation options like management practices can be changed and training improving operational activities towards mitigation, energy audits, management systems and GHG inventory reporting can lead to better results and benchmarking to compare operations and follow best in industry practices. Mitigation potential in various industry sector are given below:

Mitigation Potential



The largest mitigation potential have been found to exist in the steel, cement and pulp and paper industries and in the control of non-CO2 GHG emissions. There are several barriers to mitigation. There is not much demand in the market or even at the Government or stake holder level because of lack of appropriate compensation or incentives. Competing demands for financial and technical resources within the company also divert funds away from mitigation. For SMEs high cost mitigation measures act as a barrier. GHG mitigation is not the only driver for making industry decisions rather consumer preferences, cost of products competitiveness, Government regulations etc. are important.

Experience has shown that the progress of CDM policies and joint implementation programmes are rather slow. Striking regional differences, lack of awareness in sub-Saharan Africa, low market value of carbon credits, natural prioritization of CDM project developers are some of the reasons for slow mitigation and adaptation measures. It is no single policy which can do wonders but a whole portfolio of policies requires consideration for mitigation of GHG. Some voluntary programmes, agreements and financial instruments may have desired impact in mitigation efforts. These are given below:

Voluntary programmes and agreements

- Govt Initiated as well as company initiated
- Govt. initiated: energy efficiency improvement programmes: information dissemination, management capacity building, loans, standards, target setting

- From literature voluntary agreements covering process emissions in Australia, Bahrain, Brazil, Canada, France, Germany, Japan, the Netherlands, New Zealand, Norway, the UK and the US have been mentioned

- Experience:
  - mixed
  - may have long term impact
  - legally binding vs inducement based

Financial instruments

Limited experience with taxing industrial GHG emissions.

France instituted an eco-tax on a range of activities, including N2O emission from the production of nitric, adipic and glyoxalic acids.

The UK Climate Change Levy applies to industry only and is levied on all non-household use of coal , gas, electricity and non-transport LPG

Germany introduced an eco-tax on the consumption of electricity, gasoline, fuel oil and natural gas

Tax reductions are frequently used to stimulate energy savings in industry.

Some of the co-benefits of GHG reduction would be health, reduction of dust, reduced use of primary material, improved product quality, working environment, low maintenance cost, decreased liability, improved public image, worker morale and delaying of reducing capital expenditures.

With respect to technology Research, Development, Transfer and Diffusion (RDTD), Governments need to identify the barriers and identify champions for technology development and anchor energy and climate as an important continuous driver for technology development, solutions to improve performance, cost, safety and customer acceptability. Private sector needs to capture the rewards of commercializing the technology.

However, there are still some key uncertainties and gaps in knowledge which need to be filled. The uncertainties in the projection of mitigation potential and costs in 2030 are the rate of technology development and diffusion. This is a hard question to answer with certainty. Similarly, future energy

prices, industrial activity level, prediction of policy driver, different countries adopting different measures both on climate and climate policies are some of the gaps and uncertainties. This is even more uncertain in transition economies and developing economies.

Comments by Mr. Sudhir Singhal, former Director, Indian Institute of Petroleum

Demand of energy is more critical for the transport sector. Norms for transport fuels for the automobiles today are much more demanding than for any other sector and a number of regulations/standards have come up World over including India specifying emission norms. India has an auto fuel policy. Energy need for India's economic growth is critical and 7 years back it has come out with a Hydrocarbon Vision document 2025. Off course demand projections made in the document needs to be reviewed periodically in view of several parameters impacting demand. India has one of the lowest car densities in the World and with rising living standard and aspiration for better quality of life, this density is bound to increase over the time. He opined that number pertaining to India projected in the presentation, perhaps needs to be looked into. In the medium and long-term horizon we should be looking for hydrogen fuel or electrically driven vehicles where electricity will come from eco-friendly sources of power. We should look at fuel options such as bio-fuels to mitigate impact of GHG. In India, one of the concerns has been the conflict between food security and fuel from the given mass of land. The Indian Planning Commission 4-5 years back initiated a unique model for bio-diesel production. The model will make use of only waste land on which nothing grows at the moment or nothing is expected to grow in the near future. This model will not have any conflict with food security at the same time major benefit would be the greening of the environment and other benefits that will follow.

The technologies & economics for CO2 capture and storage need to be looked into to determine the technology directions.

Comments by Mr. Raghuraman, Principal Advisor (Energy), Confederation of Indian Industry (CII)

He mentioned that India has already significantly de-coupled energy intensity and GDP growth. He referred to the example of X Five Year Plan where the target was to add 41,000 MW of electricity generation capacity, however, only 21,000 MW could be added, however, economy grew faster than what was planned. India's oil consumption has not increased significantly inline with GDP growth in fact the import of crude oil has also increased or export of petroleum products. Other issue he brought out that there was a fallacy in GDP growth and energy intensity. Let us say the Indian Rupee has appreciated vis-à-vis US$ by 15%, which means GDP & energy intensity should fall, which is not the case. One also needs to look at purchase power parity while determining GDP & Energy intensity across the countries.

As per Integrated Energy Policy (IEP), India needs 800,000 MW electricity by 2030 as against 135,000 MW today. Significant amount of fossil fuels is projected to be met from imports and we need a mix of energy options. Energy efficiency is expected to account for about 25% saving by 2030.

SMEs in India are having industries with maximum number of CDM projects and energy efficiency is improving. However, we need a policy to move to market oriented energy prices, energy efficient automobiles, renewable such as wind.

Comments by Mr. S.C. Tripathi, former Secretary (Petroleum & Natural Gas), Government of India

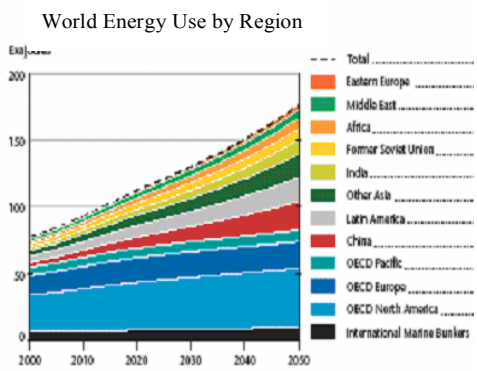
Developing countries can assume a role to use taxation and subsidies to bring efficiency. Subsidized energy provides no incentive for conservation or even upgrading technologies of utilities to minimize emissions, instead new technologies should be incentivised to benefit the industry, consumers and lowering the emission. This will be in the benefit of the country as well as humanity.

Mr. Steven Plotkin, Argonne National Laboratory - (Reducing Greenhouse Gas Emissions from Transport; IPCC's Fourth Assessment Report)

The transport sector causes about ¼ of GHG emissions related to World energy consumption and is growing faster than the other end use sectors. Hence, transport sector must form a critical part of mitigation strategy. Transport related emission is slowing in developed World but rapid increase in automobile sector in developing nations is driving emissions upward and expected to rise by 80% from 2002 to 2030. This is given below:

Transport energy and GHG emissions will grow rapidly, especially in the developing world.

- **Energy and GHG emissions growth: 1-2%/yr in developed world, 3-5%/yr in developing world….India at nearly 5%/yr, China 6%**
- **96% of transport energy comes from oil**
- **Road vehicles = three quarters of total**



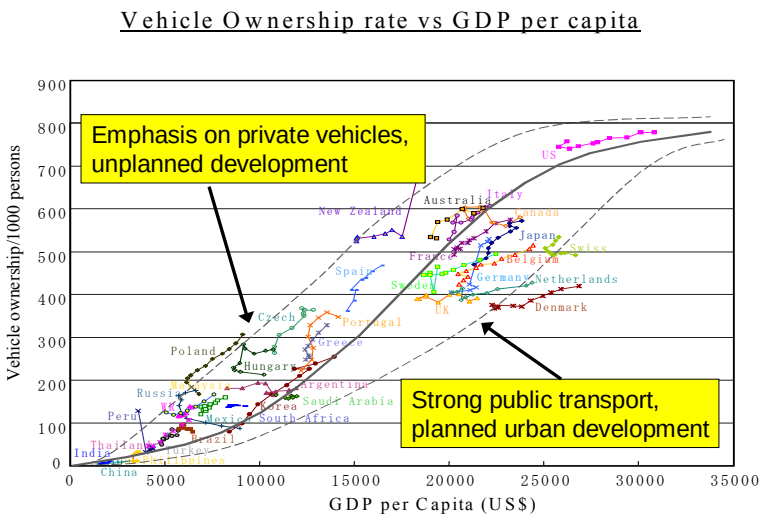
By 2030, transport GHG emissions will grow by *80%* compared to 2002 if current trends continue.

3

75% of emissions come from road vehicles, so it is important to focus on it. If conventional oil become scarce, the unconventional sources of oil is likely to be oil sands, heavy oil, shale oil, oil from coal etc. which are likely to add more emission. Bio fuels can play a major role and will have positive impact in mitigating GHG emissions, but all efforts should be made to avoid negative impact i.e. food supplies. Also, some of the bio fuels are not cost effective and are not that climate friendly. Ethanol from corn is a good example.

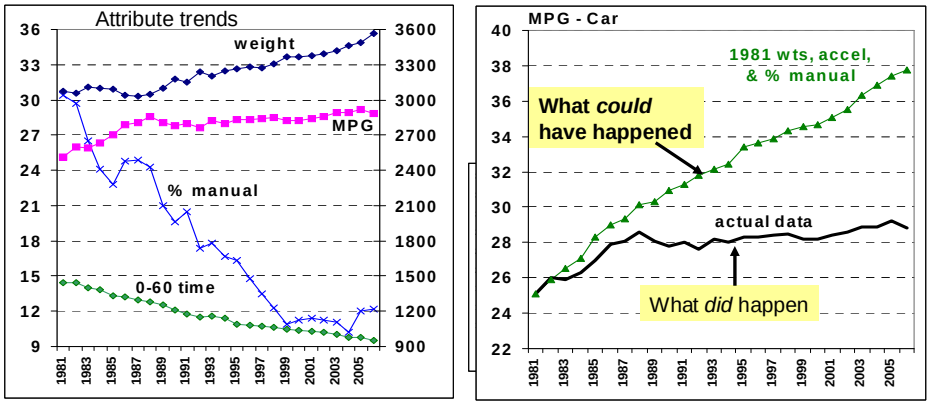
In the road transport sector emphasis has been on private vehicles and no planned development. The automobile density in some of the countries are given below:

Development and rising income *will* bring motorization, but alternative development pathways can yield radically different outcomes.



In order to get lower emissions, the nations have to move to a very efficient public transport systems and real incentives for biking and walking. Urban planning and public transport system will be key to GHG emissions from transport sector. It is reasonable to expect that new vehicles could be 50-100% more efficient by late 2020s. Key condition will be to resist trends to faster, heavier and fuel guzzling luxurious cars. The impact is shown in the following slide:

A key condition will be resisting trends to faster, heavier, more luxurious cars…..



In the U.S., fuel economy improvement potential has been lost to more power, luxury, and size…and the same thing is happening in Europe and elsewhere.

8

Advance technology in automobiles is a must to improve efficiency of vehicles in terms of low load vehicle, very efficient aerodynamics and very good tyres. The low load vehicles are not only good for conventional vehicles but also crucial for advance vehicles using electricity or hydrogen. None of this is going to work unless fuel economy is directly traded off against vehicle power, vehicle size and vehicle luxury.

Some of the measures could be adopted to mitigate GHG from transport is shown in the following slides:

Multiple additional policies to restrain light vehicle energy use and GHG emissions

- **Registration and annual fees based on efficiency, power, engine size, etc.**
- **Fuel taxes to restrain demand, account for externalities**
- **Feebate systems to reward efficient vehicles, penalize inefficient ones**
- **Parking "cash back" and taxes/restrictions**
- **Road pricing and central city access fees**
- **Other Transport Demand Management strategies**
- **Ecodriving**

9

Longer-term, hydrogen fuel cells, plug-in hybrids and advanced biofuels are promising but all require major advances, esp. in reducing costs.

- **Benefits depend on details of the full fuel cycle – how the hydrogen is produced, how the electricity is generated.**
- **With current biofuels, ethanol from sugar cane has strongest emission reduction; ethanol from corn has modest reductions, potential for food/fuel conflicts**
- **Biofuels from cellulosic materials appear most promising, but require substantial R&D progress**
- **Strong R&D support is crucial for hydrogen fuel cells and batteries for plug-in hybrids**

10

It is recognized that reducing GHG emissions may take a secondary place to other issues such as relieving congestion, providing transport services to the poor, reducing air pollution etc. but carefully planned solutions can address both issues. The solution lies in careful choices as to how to shape cities and provide transport services to all their citizens while making sincere efforts to reduce GHG. This would require a complex and multiple strategies by the nations.

Comments by Mr. Ravi Capoor, ED, PCRA

He mentioned that India has not yet started on the S-Curve path, where vehicle demand is a function of per-capita income. An exponential growth in the transport sector can be expected in India with

increase in the income level. This brings to the focus to shift from private transport to public transport. This is an issue of public policy. A study conducted by IIT Kanpur indicates that an average Indian will be traveling three times more kms. Between now and 2030 and proportion of public transport will come down from 70%-40%. This would make the task even more difficult. PCRA has taken lead to set up the efficiency standards for the vehicles. He pointed out the example of Japan, which will not use additional fuel till 2020, although number of vehicles would increase and economy will grow. We need to replicate this kind of efficiency and technologies in our transport sector also. He expected that in 10-15 years from now extreme end technology in the transport sector may emerge.

Comments by Mr. Steven Plotkin

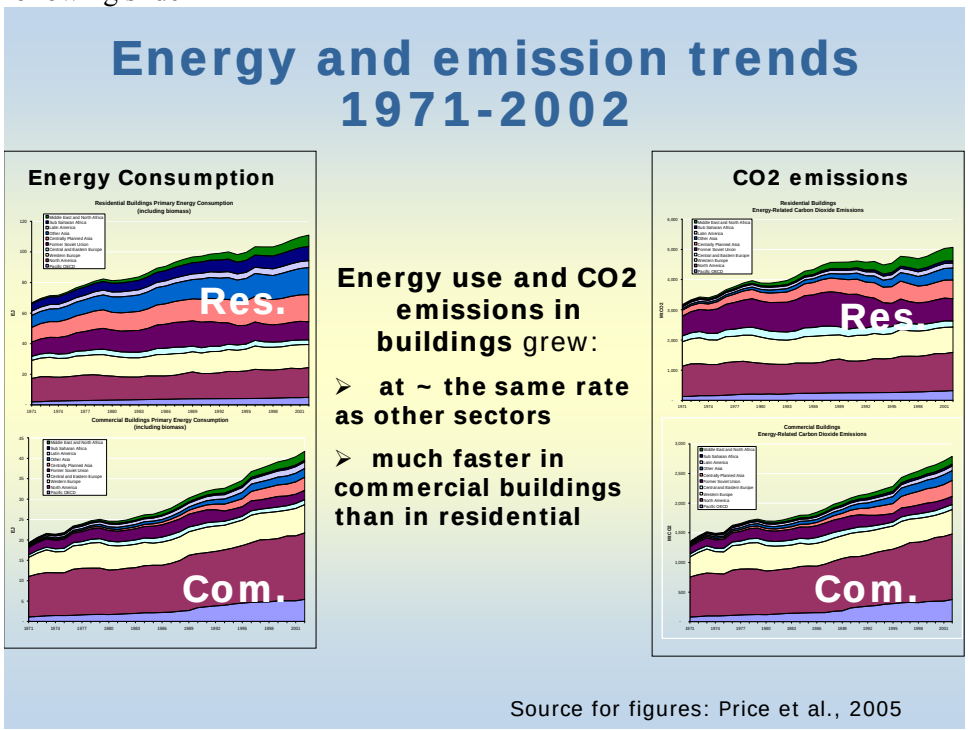
Mr. Plotkin while commenting on the issue of technology adopted by Japan for their vehicles clarified that the technologies in US & Japan are primarily same, however, due to heavier vehicles and higher engine capacity used in US, the consumption in US is higher.

In Europe car models using the base engine are much smaller than a base engine in US.

Mr. Mehta opined that increasing e-business may reduce the burden on transport over a period of next 25 years.

Dr. Monga Mehlwana (LA) Natural Resources and the EnvironmentCouncil for Scientific & Industrial Research Republic of South Africa – Mitigation options in buildings (Chapter-VI)

Energy consumption in buildings both commercial and residential is one of the fastest growing after transport sector. Energy use in the buildings was responsible for 1/3 of total global CO2 emissions in 2004. This share could grow to 35-42% by 2030. This will be up from 8 Gt in 2004 to 11.8-15.6 Gt CO2 equivalent in 2030. A comparison of CO2 emission pattern in buildings are given in the following slide

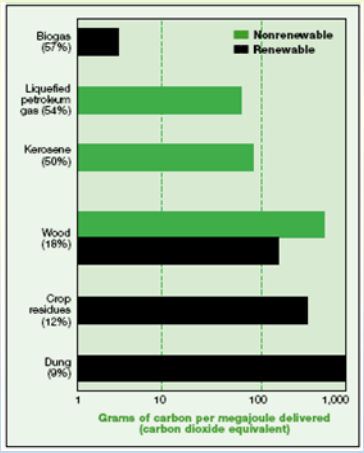


The largest driver in energy consumption in residential buildings is advances in economic well-being in developing countries and thus expanding their building stock. In commercial buildings most significant driver for increased energy demand is due to expanding commerce and related activities. Some of the fast developing countries like China, India, Brazil & South Africa, the energy intensity will continue to grow with economic growth.

There are four ways, one can mitigate against emissions from buildings. One is to reduce energy consumption in buildings. This can apply across all countries whether developed, developing or under-developed. Second is to switch to low-carbon fuels including a higher share of renewable energy including de-carbonising electricity generation. Third is to control the emissions of non-CO2 GHGs. Fourth is to reduce energy use of the materials used for building construction. Some of the energy efficiency measures for heating and cooling are given in the following slide:

E.E. measures: heating systems

- Passive solar heating
  - **Envelope measures + passive solar heating have achieved heating energy reductions by factors of 5-30**



- **Coal and biomass burning stoves in rural areas of developing countries**
  - **3 billion people use biomass and coal in household stoves to meet cooking, water & space heating needs**
  - **Most stoves are of inefficient and highly polluting designs**
  - **In the long term, stoves that use biogas or biomass-derived liquid fuels offer the greatest potential**

Sources: Krapmeier and Drössler, 2001; Gauzin-Müller, 2002; Kostengünstige Passivhäuser als europäische Standards, 2005.

E.E. measures: cooling

- Reduce cooling loads
  - **Orient a building to minimize the east and west-facing walls**
  - **Cluster buildings to provide self shading**
  - **Use high-reflectivity building materials**
  - **Provide fixed or adjustable shading**
  - **Use windows with a low solar heat gain**
  - **Utilize thermal mass to minimize daytime interior temperature peaks**
  - **Increase roof albedo**
- Use passive techniques to meet some or all of the load
  - **Natural ventilation**
  - **Night-time ventilation**
  - **Evaporative cooling**
  - **Underground earth-pipe cooling**
- Improve the efficiency of cooling equipment and thermal distribution systems
  - **High efficiency air conditioners and vapor-compression chillers**
  - **Absorption chillers and cogeneration**

Source: Rosenfeld et al., 1998

E.E. measures: lighting and daylighting

- **Lighting energy use can be reduced by 50-90 % through:**
  - **Use of daylighting with sensors and controls**
  - **Use of the most efficient lighting devices available**
  - **Use of ambient / task lighting**
- **Daylighting techniques include:**
  - **Light shelves**
  - **Prismatic panels, light-directing louvers, and laser-cut panels**
  - **Anidolic ceilings, which collect light under overcast conditions and redirect it into the room over a narrower angular range**

Source: Banwell et al, 2004, Rubinshtein and Johnson, 1998; jennings et al, 2000, Bodart and Herde, 2002, Reinhart, 2002, Atif and galasiu, 2003, Li and Lam 2003

Energy efficiency in buildings:
What are emerging areas for E-saving?

- **Commercial buildings:**
  - **Controls and information technology to continuously monitor, diagnose, and communicate faults in commercial buildings**
  - **Systems approaches to reduce the need for ventilation, cooling, and dehumidification**
- **Residential buildings:**
  - **Advanced windows, passive solar design, techniques for eliminating leaks in buildings and ducts, and very energy efficient appliances**
- **Both residential and commercial sectors:**
  - **Controlling standby and idle power consumption, solid-state lighting**
- **+ALSO!:**
  - **Increasing climate change literacy and consumer access to useful information to improve occupant behavior as a major determinant of energy use and CO2 emissions**

The GHG mitigation measures have co-benefits in form of reduction in regional air pollution, energy security, improved quality of life and comfort, improved productivity and economic competitiveness, employment and business opportunities and improved social welfare.

There could be several market barriers to energy efficiency such as traditional building design process, fragmented market structure, high transaction costs to find efficient products, misplaced incentives and administrative hurdles, energy subsidies, non-payments and thefts, small project size, imperfect information, high power quality standards for energy efficient appliances, limited availability of energy efficient equipments, limited access of low income households and small business to capital markets, in-adequate level of energy services etc.

Some of the worldwide experience with policies on buildings are given in the following slides:

Experience with Policies Worldwide

1. **Policies and programs aimed at construction, retrofit, and installed equipment and systems**
   - Buildings codes
   - Building certification and labeling systems
   - Education and trainings
   - Energy audit programs
   - Financial incentives
   - Policies aimed at the energy improvement of existing buildings
2. **Policies and programs aimed at appliances, lighting, and office/consumer plug loads**
   - Standards and labeling
   - Voluntary agreements
3. **Policies affecting fuel switching – renewable and nuclear electricity supply**
4. **Policies affecting technology transfer to developing countries including CDM and JI**

Experience with Policies Worldwide

5. **Cross-cutting policies and programs that support energy efficiency and/or CO2 mitigation in buildings**
   - Energy prices, subsidies and taxes
   - Investment schemes and fiscal measures
   - Energy efficiency obligations and tradable certificates
   - Research and development
   - Public sector leadership programs including public buildings and government procurements
   - Promotion of ESCOs and energy performance contracting
6. **Electric and Gas Utility Demand-Side Management**
   - For example, California now has $2B DSM program over three years
7. **Policies affecting non-CO2 gases**
   - Stationary refrigeration, air conditioning, and heat pumps
   - Insulating foams

In conclusion, it was emphasized that achieving a lower carbon future will require very significant efforts to enhance programmes and policies for energy efficiency in buildings and low-carbon electricity sources.

Comments by Mr. Raghuraman, Principal Advisor (Energy), CII

CII has taken voluntary measures to put up green business centre at Hyderabad. It is the first platinum rated building outside US with lead energy efficiency design. This building has 54% lower electricity consumption and 55% lesser water consumption. About 100 commercial energy efficient buildings are expected to come up by 2010. Bureau of Energy Efficiency, India has come up with energy

conservation building code and this code covers residential and commercial buildings. In Special Economic Zones, energy efficiency measures such as having common cooling centres, common facilities etc. He said that in future buildings, energy efficiency and GHG reduction should be integrated in building designs and urban planning. The industry in India is also monitoring global progresses in energy efficient building designs such as zero emission buildings (mainly solar based) and see exactly how it can be applied in India. In some part of India Solar water heaters are mandatory in commercial buildings.

Closing Session

Mr. S.C. Tripathi, former Secretary (Petroleum & Natural Gas), Government of India chaired the Session and the wrap up session was concluded via panel discussion. The panel discussed the way forward to mitigate GHGs emissions and measures/policies should be adopted to achieve the goals. At the same time economic development interests to fulfill aspirations of the developing countries especially poor people needs to be balanced vis-à-vis climate change challenges.

Dr. Bert Metz mentioned five points with particular relevance to India for translating IPCC information into real action. One is the impacty of climate change on the economy of India which is a significant issue and mitigation cost could be very expensive and detrimental to certain parts of the country and certain sectors. This issue needs to be publicly debated and highlighted to decide way-forward. There could be trade-off between reducing emissions and economic growth and the fact that a realization need to go that avoiding reduction in GHGs may have bigger costs than doing nothing. Second development of the country and dealing with the climate change can go hand in hand. India has taken lead in several sectors such as in steel making, wind power and the whole debate that the technology is developed in India and is exported it will be a win-win preposition rather than see this as a burden and seeking technology from outside. Third is to increase energy efficiency and competitiveness particularly in transport sector by adopting more efficient vehicles which would reduce oil imports and reduce air pollution. Similarly, energy efficiencies in buildings will have to be adopted as standards. Fourth is the power supply sector, where bulk of supply is coal based, which is logical given the abundant coal resources in the country. On the other hand, coal is not a sustainable source for long-term so India could do to really encourage renewable powers. India has one of the biggest programmes such as in wind energy. It will reduce oil import dependence and reduce emissions. Bio-fuels are other area to aggressively pursue to increase energy security and reduce GHG emissions.

Mr. Sudhir Singhal, former Director, Indian Institute of Petroleum opined that IPCC could encourage Governments to encourage energy policies with defining goals to adopt mitigation measures to reduce GHGs. That will go a long way in implementing measures to stabilize & reduce GHG and also can be monitored. Second point is to develop technologies, which provide advantages in achieving mitigation should be focused. The Governments and industries should be encouraged to pursue research and achieve definable goals.

Dr. (Mrs.) Jyoti Parikh, Chairperson IRADe pointed out that India has already formulated and integrated energy policy which provide us direction towards 2030 and if we analyse India's carbon intensity is falling and expected to fall if the energy efficiency recommendations are implemented by promoting renewable energy, nuclear energy, hydro energy. Per-capita CO2 emissions is expected to fall the new technologies is also expected to help India in lowering GHG emissions. In steel and cement sectors, India is already using best technologies in the World and would continue to look improvement in technologies. However, energy efficient technologies are required to be used at large scale. She mentioned that carbon capture and storage, its technology and costs is yet to be proved and some people do advocate for it some are against it.

She mentioned that India is already discussing how best it can integrate climate change without compromising its economic growth. When it comes to mitigation, the burden needs to be shared by all countries and more by developed countries as they have already achieved higher economic growth when climate change was not in focus. There are poor people who still don't have electricity. The

principle of polluters pay should be applied. She mentioned that USA is adding 5 India China adding 4.5 and EU another 4 in terms of CO2 emissions.

Mr. Raghuraman, Principal Advisor (Energy), CII emphasized the need for an informed debate covering economic development, equity vis-à-vis climate change. A Committee of the Government of India under the chairmanship of Prime Minister is looking at the issue of climate change and in fact India has increased its forest coverage. Second big programme is on CFL to reduce electricity consumption. The third programme is with respect to renewable. India already has 31% renewable. Another important issue is that there should be free flow of technologies across the countries to address the issue of climate change and there should not be any restriction. This could be addressed through a global forum like WTO. In India, the impact of climate change is mostly borne by poor people and we have to look at various mitigation and adaptation measures to cater the need of poor sections. He mentioned that issues need to be discussed at the Bali Meet in December 2007.

A speaker mentioned that energy efficiency measures across the India vary significantly from State to State and region to region and he suggested that there should be a nodal agency which can create standards and benchmark so that energy efficiency is maximized in the country as a whole by adopting best practices.

Dr. (Mrs.) Jyoti Parikh mentioned that XI Five Year Plan was under finalization. The issue is how to re-design urban development policies, fuel policies to accommodate what could happen in terms of mitigation and adaptation is taking place in the Government.

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Regional workshop for the dissemination of the Fourth Assessment Report findings to African researchers

Marrakech, Morocco

29 - 30 April, 2008

Introduction

The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4, 2007) establishes that Africa remains the most vulnerable region to climate change. Africa's vulnerability is attributed to the fact that development is strongly linked to climate, thus climate change and variability jeopardise livelihoods with significant impacts on rural and national economies. One of the challenges in addressing these setbacks has been Africa's inadequate capacity in climate science. The individuals and institutions at different levels lack or have limited knowledge and information on climate, and where the knowledge exists, it is hardly accessible due to lack of coordination, networking and integration. It is in this context that the Sahara and Sahel Observatory (OSS), Climate Change Adaptation in Africa (CCAA)/IDRC and the IPCC Technical Support Unit joined forces to organise a regional outreach workshop aimed at African researchers and research coordinators which was held on 29-30 April 2008 in Marrakech, Morocco.

The objective of the workshop was to disseminate the AR4 findings with a view to enhancing and broadening the knowledge base of African scientists on climate science and its related aspects. About 90 participants (Annex 1) drawn from a wide range of disciplines and nationalities attended the workshop.

The workshop's two-day programme (Annex 1) included four technical sessions which focussed on three key themes: climate science, vulnerability, impacts and adaptation, and mitigation. Each session was conducted by a group of IPCC experts who were specialists in the themes being addressed. Presentations on the key IPCC findings served as a preamble to discussions moderated by each session's chair.

Panellists

The workshop's panel consisted of the following IPCC members:

- Dr. Abdallah MOKSSIT, Meteorological Department, Morocco
- Dr. Abdoulaye Sarr, Meteorological Service of Senegal
- Dr. Anthony M. Mehlwana, Manager at Council for Scientific and Industrial Research, South Africa
- Prof. Anthony O. Adegbulugbe, Special Advisor, Nigeria
- Prof. Antony Nyong, IDRC, Kenya
- Dr. Fatima Denton, CCAA/IDRC, Senegal
- Dr. Francis D. Yamba, School of Engineering, Zambia
- Dr. Mahmoud Medany, CLAC, Egypt
- Prof. Mohamed Senouci, ARCE, Algeria
- Mr. Peter R. Bosch, TSU – IPCC Working Group III, The Netherlands

The panellists' presentations are available for download from the OSS website at the following address: www.oss-online.org/marrakech

Opening session

Speaking on behalf of the Secretary of State in charge of Water and the Environment in Morocco, the Director General of the Moroccan Meteorological Department (DMN), Mr. Mustapha Geanah, talked about the burden that climate change puts on vulnerable communities in Africa. As natural resources stretch thin to cope with mounting pressure under changing climatic conditions, economies will suffer substantial losses. Hence the need to preserve natural resources—particularly land and water. Mr.Geanah highlighted his country's commitment to unlocking the potential of renewable energy as part of a comprehensive sustainable development approach. He also commended the IPCC and OSS for aiming, through the workshop, to contribute to bolstering African scientific capacity through a greater assimilation of the Fourth Assessment Report (AR4) findings. Mr. Geanah also expressed his hope to see a greater participation of African scientists in the Fifth Assessment Report's elaboration process. He finally called on the international community to support and underpin Africa's efforts in the face of climate change.

Dr. Youba Sokona, the Executive Secretary of the Sahara and Sahel Observatory (OSS), said he was concerned over the fact that Africa, one of the most vulnerable continents to climate alteration, reports a feeble capacity to adapt. Following a brief overview of OSS achievements in enhancing natural resource management and underpinning sustainable development efforts in circum-Saharan Africa—the OSS zone of action—, Dr. Sokona, underscored the importance of effective environmental observation as a prerequisite for sound climate change adaptation strategies. He singled out environmental surveillance which has been and remains a key theme in OSS work with its member countries. According to the OSS Executive Secretary, no effective adaptation strategy could be envisaged without reliable observational systems encompassing the key climatic, biophysical and socio-economic dimension. Dr. Sokona also spoke about the importance of effective communication in bridging the chasm between science and policymaking, and reiterated his belief that Africa's best interest lies in devising and coordinating adaptation strategies at the regional level.

On behalf of Prof. Ogunlade Davidson, Co-chair of the IPCC working group III, the representative of the Technical Support Unit (TSU, Working Group III), Mr. Peter Bosch, welcomed the participants and stressed his organisation's commitment to ensuring greater involvement and participation of the African scientific community in the elaboration of the forthcoming IPCC assessment reports. Mr. Bosch pointed out that locating and tapping into African research remained a considerable challenge facing the IPCC. There is a dearth of peer-reviewed African scientific literature that could be integrated into the assessment reports. Mr. Bosch went on to call for more attention to be devoted to mitigation, which is, despite a common misconception, a genuinely relevant issue to Africa. He also reiterated the IPCC's willingness to benefiting from and underpinning African science. Finally, Mr. Bosch urged the participants to devote the required attention to the many unanswered questions in the field of climate change impacts and adaptation in Africa. He concluded his address by expressing the wish that the workshop would help stimulate the debate, and provide pointers for a swift move in the right direction.

Brief Summary

This is a summary of the salient points raised by the panel and the participants during the workshop.

The IPCC is not a science maker

- The IPCC conducts a review of scientific literature with a view to presenting, in a synthesised manner, state of the art science. The IPCC does not produce scientific knowledge, and is not policy-prescriptive.
- The IPCC aims to capture the essence of the world's best climate-change related science to give global research the impetus it needs to make faster progress towards tackling persistent knowledge gaps.

The Fifth Assessment Report (AR5)

- Greater participation from the African scientific community will be sought in the process leading to the AR5 publication. The socio-economic aspects will feature prominently in AR5, which will see the IPCC authors zoom in on the regional and local levels.

- The Fifth Assessment Report (AR5) is expected to address what is considered as the AR4's Achilles' heel, namely the lack of an acceptably accurate estimate of the costs of climate change impacts and adaptation. The AR5 will also probably elaborate on climate change and sustainable development

The need for greater inclusion and participation of African science

- African scientists and researchers are especially encouraged to publish their work, including grey literature. Peer-reviewed publications are in great demand. African economists, in particular,—who have the best understanding of Africa's idiosyncrasies— are invited to feed into the forthcoming IPCC assessment report which will shed light on the socio-economic aspects pertaining to climate change.

Wide knowledge gaps exist at all levels

- Numerous research gaps persist. For instance, Africa is the only continent divided by the equator, and its climate remains poorly understood. The continent has several specificities that need to be considered.
- More research is needed on the impacts that climate change will have on the continent. While it has been established that substantial impacts will affect various sectors such as public health, agriculture and tourism, their cost and extent are often too speculative.
- Groundwater, a strategic resource in the wide arid parts of Africa, is totally absent in the climate science literature. There is an urgent need to better apprehend and "quantify" possible impacts on these crucial resources.
- There is a need to devote more attention to the socio-economic aspects, especially how climate change will affect the ecosystems, the services they provide, and the communities which depend on them.

Africa in the driving seat

- Climate change will not have the same impacts everywhere on the globe. For example, a 1°C rise in global mean temperature would have little impacts on Europe but would cause Africa to go through a turbulence zone. It is therefore clear that when it comes to climate change, Africa and the rest of the world are not in the same boat.
- Africans cannot afford to rely solely on others "to do the science" for them. The continent should be strongly involved in the making of a science which considers its idiosyncrasies and specific requirements. The continent's scientific community must address the myriad unanswered questions on important aspects such as the impacts of climate change on groundwater, water quality, mountain ecosystems, fish stocks, and the links between climate variability and climate change.
- Africa needs to play a leading role in the next "green revolution". More insights into how climate change and biofuels— whose large-scale introduction was mainly spurred by climate change—will affect food security in Africa are needed. African agriculture should also be a top priority for research.

- Genetic research and selection are long term processes. In order for African agriculture to adapt, research in new climate-proof, disease-resistant species must be accelerated.

Science and policymaking in Africa

- Research is not being used— or in some cases not as much as it should be— to inform sustainable development policies in Africa. This is partly due to the dearth of reliable data on the basis of which useful knowledge and decision-support tools can be produced.
- The cost of acquiring data is usually prohibitive. Suggestions to address the lack of data included setting up a cluster of regional computing centres '*centres de calcul'*. A participant remarked that existing infrastructure is falling short of meeting the African researchers' expectations. An improvement in the African institutions' governance was also deemed crucial in enhancing their performance.
- There was a wide consensus on the need to bridge the chasm between scientists and policymakers. Effective science communication is needed if policymakers are to use climate science as a strategic decision support-tool.

The importance of African scientific "solidarity"

- The need for stronger links and cooperation between African researchers was highlighted. Vigorous networking can help to tackle the current lack, if not absence, of coordination between the continent's research institutions.

Renewable energy

- Africa could benefit from the huge potential of renewable energy (solar, wind, geothermal), provided that an effective technology transfer makes renewables accessible and, most importantly affordable. Renewables' competiveness is particularly problematic in some African oil-rich countries (Algeria's case was cited by a participant) where they are 5 or 6 times more expensive than fossil fuel.

The Adaptation-Mitigation- Development triangle

- There is a need for a comprehensive assessment of Africa's options in terms of mitigation, including the Clean Development Mechanisms.
- There is a strong case for mitigation, not least because its cost is minimal: the impact averaged for the whole world would not exceed 3 percent of the World Gross Domestic Product (GDP) -- i.e. the world would be equally well off just one year later if mitigation measures would be introduced at anyone time.
- The economics of mitigation: market mechanisms can be used to achieve energy efficiency— an important short-tem mitigation measure. The energy price can alter the consumer's behaviour and bring about the much needed cuts in unnecessary energy consumption. Other regulatory measures, such as taxation, could produce the desired effect.
- Climate change adaptation is a complex process. Communities and markets usually respond better and faster to stimuli of an economic nature— In the case of food crises, for instance, farmers backed by governments work to increase production and market mechanism kick in to lower prices. In the face of severe climate change impacts, expect the response to be slower. Hence the need to bolster adaptation capacity now.
- Adaptation and mitigation are complementary. Mitigation, on a global scale, is crucial if the world is to avoid disastrous impacts of climate change, and efforts over the next two decades will determine the final outcome.
- A number of overlaps between mitigation and sustainable development exist and could generate useful synergies. More insights are needed into the linkages and interactions between adaptation, mitigation and sustainable development in Africa.
- Agriculture and forestry in Africa have a significant role to play in mitigation, particularly through carbon sequestration.

Food for thought

The presentations and the ensuing discussions have provoked some inquisitive thinking on the part of the participants. Apart from the questions put to the panel, a number of themes, which need further research or analysis, have been identified. These include the following:

- Could Africa be leapfrogging the energy ladder or has progress so far been too sluggish?

- How can policy trigger desirable market reactions with a view to achieving mitigation and adaptation?
- In what ways and to what extent can mitigation contribute to furthering sustainable development in the continent?
- Does achieving REDD –Reduced Emissions from Deforestation and Degradation— require more vigorous poverty reduction policies? It appears that the forest often constitutes the rural poor's last resort when land degradation makes farming and or cattle breeding no longer an option.

Recommendations

Recommendations have been made with a view to providing pointers for action on the key issues, gaps and shortcomings identified and discussed during the workshop.

→Put the African scientific community on the map

- Institutions in African countries should position themselves on the various issues pertaining to climate change, and contribute their views and thinking to the AR5. This would allow a better consideration of the national specificities, and ultimately of Africa's idiosyncrasies.
- There is a need to mobilise additional resources so as to secure a greater participation of African scientists in the IPCC process. In the meantime, African scientists could contribute to the IPCC reports by integrating the systems in place in their own countries. The UNFCCC* national communications are part of the literature reviewed by the IPCC. Ensuring that the national communication is based on the country's best scientific capacity would constitute a considerable boost to the IPCC work. African scientists should therefore do their best to contribute to enhancing the accuracy and quality of the national communications, especially in the Least Developed Countries.
- Academics and experts could "sponsor" African researchers who otherwise would find it impossible—at best difficult— to publish their work in the leading and the prominent scientific reviews.

→ Prioritise research

- The regional institutions should conduct comprehensive studies aiming to identify knowledge gaps and define high priority themes for research. This would make it easier for the African scientific community to turn their (usually limited) resources to what is urgently and actually needed. The optimised research resulting from this process would, in turn, feed into the forthcoming IPCC assessment reports.
- Research should focus on clearly defined priorities and direct its main thrust to informing policymakers on the issues which require a scientific edge.
- Agriculture should be a top priority for research.

→ Bridge the chasm between science and policymaking

- Policies and decisions on complex themes such as biofuels, groundwater and agrarian reform, in the context of climate change should be backed by reliable scientific guidance. The soundness of African policies will therefore depend, to a large extent, on the African scientific community's ability to provide a solid backing which considers the continent's diversities and specificities.
- Effective science communication will be critical to open the required channels between science and policymaking in Africa.

→ Meet the communication challenge

- Science communication in Africa must improve. This would entail training and recruiting skilled communicators who can address a variety of target audience groups (scientists, policy-makers, and the general public) and pitch messages accordingly so as to achieve maximum impact. Policymakers, a highly important target group for science communication in Africa, are typically "turned off" by bulky, complicated, jargon-filled documents. In this case, effective communication would require, inter alia, concise policy briefs containing facts and pithy messages. More broadly,

* Parties to the United Nations Framework Convention on Climate Change (UNFCCC) must submit reports— known as national communications— on the implementation of the convention to the Conference of the Parties (COP).

science communication should be jargon free and straightforward without sacrificing scientific content. In the field of adaptation, communicators should be able to engage the communities— especially local authorities who play a considerable role in managing natural resources at local level— so that they can benefit from science applications to protect and improve their livelihoods.

- African research is in need of a marketing boost. Scientists should take active steps to publicise their work through both traditional and innovative channels (weblogs, websites, wikis, etc.).
- African researchers and scientists should publish more. National and regional institutions should seek ways of facilitating the much needed proliferation of peer-reviewed scientific publications.

→ Build networks and share knowledge

- Move towards faster regional integration. This would help mobilise the required resources for research in Africa. Networking will be essential if the African scientific community is to gather the momentum it needs to make progress.

- Regional research hubs could be established (under a hub-and-spoke model). Virtual networking could also be performed through videoconferencing technologies. Virtual conferences, moderated by recognised experts, could be organised to establish scientific exchanges on specific themes. Thematic networks could also be envisaged. In any case, the African researchers' willingness to share knowledge and engage in collaborations will be critical to the success of any integration endeavour.
- OSS and the IDRC's CCAA program, but also other regional programmes and institutions, can and should play an important role in facilitating partnerships and collaboration across the African scientific community. OSS—which is by definition a North-South-South platform—provides a forum for useful exchanges between African and non-African scientists and research institutions.
- Experiences and success stories must be shared and valorised.

→ In-depth analysis of vulnerability and more research on adaptation

- The IPCC should devote more attention to the analysis of vulnerability beyond the geophysical and biophysical aspects. The socioeconomic dimension should feature prominently in the forthcoming AR5.
- The IPCC should consider the possibility of developing vulnerability indicators encompassing all aspects covered in the scientific literature reviewed.
- Climate change adaptation in Africa suffers numerous knowledge gaps. Due attention should urgently be devoted to uncharted research areas such as the linkages between adaptation and development.
- As climate change unfolds, research into disease-resistant crop species will be critical to food security in Africa. More efforts are needed to boost research in the field of climate-proofing Africa's agriculture.

→ Integrate mitigation into sustainable development policies

- In the short term

African countries' efforts aimed at making the best possible use of affordable and available mitigation technologies should be underpinned by reserach.

- In the medium and long term

Conduct extensive research on the overlaps between mitigation and development. Incentives must be put in place to ensure the full participation of the private sector in the large scale deployment of low-emission technologies. Mitigation should be integrated into the African countries' sustainable development policies.

→ Capacity building

- Most African institutions are lagging behind in terms of their capacity to plan ahead and devise adequate strategies. They should be strengthened so that they can take the lead in coordinating Africa's response to climate change.
- Securing a bright future for African climate research entails more investment into training home-grown scientists. Incentives should be put in place to encourage African youth to pursue scientific careers. The continent has never had a greater need for bright, inquisitive minds to meet the

challenge of climate change. Only African researchers can devote the required time and attention to addressing the continent's specificities.

- Scholarship schemes and research grants can help African researchers to hone their skills and unlock their potential. The continent's scientific and technical institutions should join forces with universities to create "hybrid" academic programmes in which researchers would focus on specific, "practical" themes.

→ Enhance Africa's observational systems

- Achievements in the field of observation, including remote sensing, should be harnessed to supply reliable data and give a new impetus to research.
- Build long-term forecasting capacity for effective planning. Reliable and multidimensional observational systems will be crucial to devising effective adaptation strategies in Africa.

In conclusion, there was a general consensus among the participants that a collective effort was needed from African researchers in the field of climate change, in order to ensure that their views and findings be taken into account in the IPCC 5th assessment report (AR5), which will be issued in 2014. In this respect, research programmes on the numerous issues and topics raised in this workshop must begin now, if their results are to be published on time.

Annex 1: Workshop programme

Day 1: 29 April

9:00 Registration	
10:00-11:00 Opening Session 9:30–9:35 9:35-9:50 9:50 – 10:00	**Opening Session** (Chair: Prof. Peter Bosch, IPCC) **Welcoming remarks** by Dr. Youba SOKONA (OSS, Tunis) **Introduction to the intentions and programme of the meeting** by Prof. Peter Bosch, IPCC working group III. **Welcome Address** by Mr. Abdelkébir ZAHOUD Secretaire d'Etat in charge of Water and the Environment (Morroco)
10:00 - 10:30	Coffee-break
10:30 -12:30 Technical Session 1	**Climate science** (Chair: Dr. Abdallah MOKSSIT, Morocco , Lead Author IPCC) **The main conclusions of the IPCC report on Climate change 2007, the physical science basis** by Dr Abdoulaye SARR, Lead Author IPCC and Meterological Service of Senegal **Discussion on research needs for Africa**
12:30 – 14:00 Lunch	
14:00- 15:30 Technical Session 2	**Vulnerability, impacts and adaptation** (Chair: Dr. Fatima DENTON (IDRC, Senegal, Lead Author IPCC) **The main conclusions of the IPCC report on impacts of climate change for Africa** by Prof. Anthony NYONG (IDRC, Kenya, Lead Author IPCC)

	Discussion on research needs for Africa a) Current knowledge on impacts b) Knowledge needs regarding future impacts a. Regional b. Sector c) Addressing Africa's research needs
15:00-15:30	Coffee-break
15:30-16:50 Technical Session 3	**Vulnerability, impacts and adaptation** Chair: Prof. Mohamed SNOUCI (Algeria, Review Editor IPCC) **The main conclusions of the IPCC report on adaptation to climate change for Africa** by Dr. Mahoud MEDANY (Lead Author IPCC). **Discussion on research needs for Africa** a) Current knowledge on adaptation b) Knowledge needs on adaptation (and sustainable development) c) Knowledge needs on adaptation policies, measures and instruments d) Addressing Africa's research needs
17:00	Wrap-up and closing

Day 2, 30 April

9:00 – 10:00 Technical Session 4 9:00–9:30 9:30 – 10:00	**Mitigation of Climate change** (Chair: Dr. Youba SOKONA) **The main conclusions of the IPCC report on mitigation of climate change in Africa** by Prof.Ogunlade DAVIDSON **Discussion on research needs for Africa** a) Current knowledge on mitigation b) Knowledge needs with regard to mitigation measures (and sustainable development) c) Knowledge needs with regard policies and instruments d) Addressing Africa's research needs
10:00-10:30	Coffee-break
10:30-12:30 Breakout groups	Breakout groups/ In-depth discussion on Climate Change Mitigation and its research needs in Africa a) Emission Trends Introduction and moderated by: Prof. Francis YAMBA (Zambia, Lead Author IPCC) b) Mitigation in the Energy supply sector Introduction c) Mitigation in Buildings Introduction and moderated by: Dr. Anthony Mongamelli MEHLWANA, (Lead Author IPCC and Manager at Council for Scientific and Industrial Research, South Africa) d) Mitigation in Agriculture/Forestry

	Introduction and moderated by: Prof. Daniel GWARY, Lead Author IPCC, Purdue University, Department of Botany and Plant Pathology, USA
12:30 – 14:00	**Lunch**
14:00- 15:45 Concluding discussion	Chair: Prof. Peter Bosch Concluding discussion on: a) Priority questions for research in Africa b) Scientific networks c) Follow-up.
15:45-16:00 **Closing**	Closing comments and conclusions: Dr. Youba SOKONA.

Annex 2: List of participants

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58	BAUBION	Charles	Tunisia	charles.baubion@oss.org.tn	OSS
59	BEN KHATRA	Nabil	Tunisia	nabil.benkhatra@oss.org.tn	OSS
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70	GWARY	Daniel	Nigeria		
71	BOSCH	Peter R.	Netherlands	peter.bosch@mnp.nl	Netherlands Environmental Assessme
72	MUIR	Magdalena A. K.	Canada	***etw62554@yahoo.com***	Arctic Institute of North America, Ad Climate
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_____***END OF DOCUMENT*****_____**

FINAL REPORTon the IPCC Outreach Activity on WG III Fourth Assessment Report
Moscow, Russian Federation
11th March 2008

The IPCC TSU WGIII approached CENEf with a request to host, on behalf of the IPCC, an Outreach Meeting in Moscow to discuss the findings of the Fourth Assessment Report (AR 4) "Climate Change 2007: Mitigation of Climate Change" with the officials, businesses and representatives of environmental NGOs from Russia and other Russian-speaking countries. The idea was also to discuss the relevance of the IPCC findings in the context of the region with the Russian-speaking community. Emphasis was to be placed on presenting the results in relation to application of the technologies and the costs for various industries dealing with climate change. For this event CENEf volunteered to obtain support of Moscow Carnegie Centre under its environmental program.

The Outreach Meeting took place at the premises of Moscow Carnegie Centre (16 Tverskaya, Moscow, Russia) on March 11. The IPCC provided speakers on "The main conclusions of the Fourth Assessment Report (AR 4) "Climate Change 2007: Mitigation of Climate Change"; "Mitigation in the energy sector / industry / transport / buildings / forestry"; "Mitigation policies, instruments and measures"; and "Climate change mitigation, sustainable development and governance" and the funding for the event.

CENEf was responsible for the logistics, including development and sending out the invitation and the program to Russian-speaking participants; arranging the travel & DSA for 6 participants from Russian-speaking countries other than the Russian Federation; visa support, hotel reservation, and airport pickup for the IPCC speakers; translation of the IPCC presentations; etc. The Carnegie Centre provided the conference room to seat nearly 60 attendees, lunches and coffee-breaks for the participants, and simultaneous interpretation.

The Outreach event was attended by 59 participants representing Federal Ministries and Agencies of the Russian Federation, research institutions, environmental NGOs and businesses from Russia and other Russian-speaking countries (see Attachment B for a list of participants). The agenda included 11 presentations by the IPCC and Russian speakers (see Attachment A for the agenda in English) and discussions (36 questions were asked from the audience). The presentations covered the topics which are in the focus of attention of the Russian audience. However, follow-up discussions revealed considerable interest of the audience in some topics which were not part of this Outreach event (for example, agricultural sector).

From the Russian side, a presentation was made by Vladimir Maksimov of the RF Ministry of economic development and trade, and another by Alexei Kokorin of WWF Russia. Dr. Maksimov called this Outreach activity "a very timely event" and elaborated on the major achievements of the Russian government in promoting emission reduction regulation. He highlighted that the federal government encourages regions to develop their own regulations and pointed out that now funding is available for mitigation and Joint Implementation project. This provoked a long series of questions regarding Joint Implementation, including the regulatory aspect and emission quotation by sectors. Dr. Maksimov made an official announcement of the new, "single window" procedure of submitting JI applications to the RF Ministry of economic development and trade, which aims at making it easier for the applicants to learn about the required documents and algorithms.

CENEf arranged for the timely translation of all IPCC presentations which were sent in before the Conference (4 in all) and for the translation of the late one (1) thereafter.

So as to enable the IPCC speakers from other countries obtain Russian visas CENEf undertook a research on how citizens of various countries are invited to visit Russia. Because the rules and procedures considerably differ between countries, a decision was made that all speakers would be applying for tourist visas – for the unification purposes. CENEf issued letters of invitation and provided the necessary visa support.

CENEf arranged for the reimbursement of travel, accommodation, and DSA for six participants from Russian-speaking countries other than the Russian Federation, namely: Zuhra Abaikhanova and Alexey Cherednichenko (Kyrgyzstan), Oksana Butrim (Ukraine), Kanat Baigarin and Lyubov Inyutina (Kazakhstan), and Gulmali Suleimanov (Azerbaidzhan). For a complete list, including contact information see Attachment C. All of these people also received visa support, and hotel reservation assistance was provided to those who asked for it.

CENEf made hotel reservations for all IPCC speakers at the Danilovsky Hotel (except Alexandra Novikova, who did not provide her flight information until too late; for her, a reservation was made at a better, yet more expensive, hotel, but she chose a cheaper and a more distant option).

CENEf arranged for airport pickup of all IPCC speakers from outside Moscow. A pickup schedule was developed for the CENEf driver, who picked up some of them and arranged for a taxi pickup for others. After the Outreach event, a similar schedule for the IPCC speakers was developed and corresponding arrangements were made to take them to the airport in time for their respective flights home.

The next week after the IPCC Outreach Meeting all Russian-language presentations were placed on CENEf's website at www.cenef.ru.

Shortly before the Outreach Meeting the IPCC TSU WGIII arranged for the delivery of handouts through the UNDP office in Moscow to avoid customs clearance formalities. CENEf undertook pickup of those materials from the UNDP office and dissemination of them during the Meeting. The undistributed materials are being disseminated both by CENEf at its other conferences and through the WWF (Moscow) and RAO EES Rossii known for their strong environmental and outreach activities.

On March 12, 2008, i.e. the next day after the Outreach Meeting, CENEf arranged for a pressconference at Russian Information Agency "Novosti" (RIA Novosti), one of the largest in Russia. On the IPCC side, the press-conference was attended by four speakers: Peter Bosch, Kirsten Halsnaes, Alexandra Novikova, and Igor Bashmakov. On the mass media side, there were 15 media sources, including TV channels, radio stations, information agencies, scientific and environmental magazines, and independent journalists (for a complete list of attendees see Attachment D). The press-conference took 1.5 hours: from 11:00 through 12:30. The IPCC speakers were asked quite a few questions regarding specific impacts of climate change (global and regional); the terms and ratification of the Kyoto Protocol and Joint Implementation. CENEf arranged for the simultaneous interpretation during the press-conference.

Immediately after the press-conference, Igor Bashmakov was asked for an interview by a TV channel "Vremya-24", which he gave that same day. For 10 days now, this press-conference has been a widely cited event both in regular and electronic mass media. Here are just a few links to corresponding publications:

http://www.prime-tass.ru/news/show.asp?id=2394&ct=articles
http://www.inauka.ru/news/article81453
http://www.narodinfo.ru/articles/45563.html
http://www.allmedia.ru/newsitem.asp?id=817418
http://www.point.ru/forecasts/2008/03/12/14737

Attachment A

IPCC Outreach Event on AR4 Working Group III
Carnegie Moscow Centre March 11, 2008

9:00 Registration	
9:30-10:30	Opening Session (Chair: Dr Igor Bashmakov (CENEf))
9:30–9:35	Welcoming remarks by Rose Gettemueller, Director of Carnegie Centre
9:35-9:50	Ogunlade Davidson (Co-Chair IPCC working group III), presented by Peter Bosch: The main conclusions of the IPCC report on mitigation of
9:50 – 10:10	climate change Discussion / Questions & Answers
10:30-10:50	Coffee-break
10:50-13:00 Technical Session 1	Climate change mitigation measures by sectors (Chair: Alexey Kokorin, WWF)
10:50 – 11:10	Dr. Igor Bashmakov, (CENEf): Mitigation in the energy sector
11:10 – 11:30	Peter Bosch (IPCC): Mitigation in the industry sector
11:30 – 11:50	Aleksandra Novikova (Central European University, Hungary): Mitigation in the buildings sector
11:50 – 12:10	Dr. Ron Wit (Nature and Environment, the Netherlands): Mitigation in the transport sector
12:10-12:30	Dr. Olga Krankina (Oregon State University, USA): Mitigation in the forestry sector
12:30-13:00	Discussion / Questions & Answers
13:00 – 14:00 Lunch	
14:00-15:30 Technical Session 2	Climate change mitigation policies (Chair: Peter Bosch, IPCC working group III) Dr. Vladimir Maximov (RF Ministry of
14:00-14:20	economic development and trade): Russia's policy to reduce GHG emissions Dr. Dennis Tirpak: Mitigation policies,
14:20-14:40	instruments and measures Discussion / Questions & Answers
14:40-15:00	
15:00-15:30	Coffee-break
15:30-16:50 Technical Session 3	Climate change and sustainable development (Chair: Dennis Tirpak) Alexei Kokorin (WWF Russia): Russia and
15:30 – 15:50	Central Asia: environmental, economic, and social impacts of climate change Dr. Kirsten Halsnaes, Risoe, Denmark): Climate
15:50-16:20	change mitigation, sustainable development and governance Discussion / Question & Answers
16:20-16:50	
17:00	Wrap-up and closing

Attachment B

List of participants

No.	Name	Affiliation
1.	Abashina, Anna	OOO Stroydecor
2.	Anikiev, Vladimir	Russian environmental independent expertise
3.	Bashmakov, Igor	CENEf
4.	Bessonova, Anna	Moscow Carnegie Centre
5.	Bondar, Vadim	National institute for competitiveness
6.	Botsokha, Polina	ICF International
7.	Bobylev, Sergei	Moscow State University
8.	Bolgova, Lyudmila	Non-Commercial Partnership "Russian Heat Supply"
9.	Ginzburg, Alexander	Institute for the physics of atmosphere, Russian Academy of Science
10.	Gorbatenko, Yana	International Finance Corporation
11.	Gorelik, Alexander	U.N. Information Centre
12.	Daiman, Sergei	Ernst&Young (CIS)
13.	Dmitrieva, Nadezhda	"Bioenergy" Magazine
14.	Drebentsov, Vladimir	British Petroleum
15.	Kozhukhovsky, Igor	Agency for electricity balances projections, RAO EES Rossii
16.	Kokorin, Alexei	WWF Moscow
17.	Korznikova, Mariya	RF Ministry of Industry and Energy
18.	Korobova, Olga	
19.	Krichevsky, Sergei	Russian Academy of Public Service of the RF President
20.	Kumani, Anna	Moscow State Institute for International Relations of the RF Ministry of Foreign Affairs
21.	Lopatin, Vladimir	Russian Academy of Public Service of the RF President
22.	Maksimov, Vladimir	RF Ministry of economic development and trade
23.	Mikushevich, Eduard	Energy Carbon Fund
24.	Mokhov, Igor	Institute for the physics of atmosphere, Russian Academy of Science
25.	Muravykh, Anatoly	Russian Academy of Public Service of the RF President
26.	Nigmatulin, Bulat	Institute for the problems of natural monopolies (NGO)
27.	Nikitina, Elena	Institute for International Economics and International Relations
28.	Novoselova, Olga	Agency for electricity balances projections, RAO EES Rossii
29.	Pavlova, Vera	Research Institute for Agricultural Meteorology
30.	Pertsovsky, Oleg	RAO EES Rossii
31.	Pogrebnyak, Evgeny	Vnesheconombank
32.	Podgorny, Igor	Energy efficiency program of Greenpeace, Russia
33.	Popova, Lydia	International Social and Ecological Union
34.	Pusenkova, Nina	Moscow Carnegie Centre
35.	Rozmirovich, Stanislav	Innovation Bureau "Expert"
36.	Romanenkov, Vladimir	Research Institute for Agricultural Chemistry
37.	Saakyan, Yuri	Institute for the problems of natural
		monopolies (NGO)

38.	Sirotenko, Oleg	Research Institute for Agricultural Meteorology
39.	Solodovnikov, Sergei	International Finance Corporation
40.	Subbotina, Elena	World Energy Magazine
41.	Tribrat, Tatiana	AQUA Centre for environmental education
42.	Khalturina, Natalia	National fund for bioenergy
43.	Churkina, Natalia	Institute for Comprehensive Strategic Research
44.	Chasnavichus, Yulus	Russian environmental independent expertise
45.	Bosch, Peter	IPCC
46.	Tirpak, Dennis	IPCC
47.	Halsnaes, Kirsten	IPCC
48.	Wit, Ron	IPCC
49.	Krankina, Olga	IPCC
50.	Novikova, Alexandra	IPCC
51.	Abaikhanova, Zuhra	UNO Secretariat, Kyrgyzstan
52.	Baigazina, Viktoria	UNDP, Kazakhstan
53.	Butrim, Oksana	Foundation for target environmental (green) investment, Ukraine
54.	Baigarin, Kanat	Coordination Centre for Climate Change, Kazakhstan
55.	Inyutina, Lyubov	UNDP, Kazakhstan
56.	Suleimanov, Gulmali	Azerbaidzhani Ministry of Environment and Natural Resources, Center for Climate Change
57.	Cherednichenko, Alexei	Kazakhstani Research Institute for Environment and Climate, Ministry of Environmental Protection; Centre for climate change and ozone layer protection UNDP group for climate change mitigation
58.	Ganzyuk, Oksana	CENEf
59.	Shishkina, Tatiana	CENEf

Attachment C

List of participants reimbursed through the CENEF contract

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Attachment D

List of media sources at the press-conference at RIA Novosti on March 12, 2008

1. Rosbusinessconsulting
2. Russakaya Sluzhba Nostei
3. ITAR-TASS
4. Naordnoye Radio
5. Journal de Noticiash
6. Edinaya Rossia
7. Ekologia I Zhizn'
8. Nauka I Zhizn'
9. Tsin Tsi Zhibao
10. Agentstvo Sotsialnoi Informatsii
11. Interfax
12. RIA Novosti
13. TVT Sentr
14. RTR Vesti
15. Promyshlenny Vestnik
16. Ogneva, independent journalist

******END OF DOCUMENT*******

IPCC WG III AR4 Dissemination Workshop Cape Town, South Africa for the Southern African Region
CO- HOSTED BY

THE ENERGY RESEARCH CENTRE AND THE IPCC WG III TSU

November 2007

Table of Contents

List of Participants

Programme

"IPCC- Working Group III's Contribution
to the Fourth Assessment Report on Climate Change Mitigation"
Dissemination Workshop in Cape Town South Africa for the Southern African Region
Organised by
Energy Research Center, University of Cape Town, South Africa
31 October- 1 November 2007
Venue: *LT3, Kramer Building, Middle Campus, Rondebosch, Cape Town*

***Day 1:* October 31, 2007**

9.00-9.30	**Registration and Tea**
All participants to be seated by 9.30	
	Session I – chaired by Mr Pierre Mukheibir
9.45-10.00	**Welcome and Introduction** : Workshop Coordinator, **Assoc. Prof. Harald Winkler** Lead Author IPCC and Energy Research Centre, University of Cape Town
10.00-11.25	**Presentation** on WG III findings and links with WG II **by Rutu Dave** Scientific Officier, Working Group III, Technical Support Unit, IPCC ***Q & A Session***
11.25-11.45	**TEA**
	Session II – chaired by Assoc.Prof Harald Winkler
	Costs of Action and Inaction Presentation by IPCC Lead Authors **Mitigation in Developing Country Presentations by IPCC Lead Authors**
11.45-12.15	**Ch 3 Issues related to mitigation in the long-term context: Dr. Ashish Rana** Lead Author IPCC and Manager at Reliance Industries, Mumbai, India
12.15-12.30	**Response** by Ms Judy Beaumont (DEAT-South Africa)
12.30-13.00	**Discussion**
13.00-14.25	**LUNCH: all are cordially invited**
	Session III – chaired by Prof. Joyashree Roy
	Mitigation in Developing Country Presentations by IPCC Lead Authors
14.25-14.45	**Ch 4 Energy Supply: Dr. Anthony Adegbulugbe,** Lead Author IPCC and Advisor to the Energy Minister of Nigeria, Lagos, Nigeria
14.45-15.05	**Ch 4 Energy Supply (Southern African focus)**: **Dr. Clive Turner,** Lead Author IPCC and Corporate Consultant ESKOM Resources & Strategy Division, Johannesburg, South Africa
15.05-15.15	**Response** by : Mr Peter Lukey (DEAT-South Africa)
15.15-15.30	**Discussion**
15.30-15.50	**Ch 5 Transport and Infrastructure (Southern African focus)**: **Dr. Peter Zhou**, Lead Author IPCC and EECG Consultants, Gaborone, Botswana
15.50-16.00	**Response** by : Mr Peet du Plooy (WWF SA)
16..00-16.10	**Discussion**
16.10-16.25	**TEA**
	Session IV - chaired by Dr Clive Turner
	Mitigation in Developing Country Presentations by IPCC Lead Authors
16.25-16.40	**Ch 7 Industry**: **Prof. Joyashree Roy**, Coordinating Lead Author IPCC, Professor of Economics and Coordinator Global Change Programme, Jadavpur University, India
16.40-16.55	**Ch 7 Industry (Southern African focus): Prof. Francis Yamba**, Lead Author IPCC, Professor at Centre for Energy, Environment & Engineering Zambia (CEEEZ), Lusaka, Zambia
16.55-17.05	**Response** by : Mr Stanford Mwakasonda (ERC, UCT)
17.05-17.25	**Discussion**
17.25-19.30	**RECEPTION: all participants are invited**

***Day 2* – 1 November 2007**

	Session V – chaired by Dr. Anthony Adegbulugbe
	Mitigation in Developing Country Presentations by IPCC Lead Authors
9.00-9.20	**Ch 6 Buildings: Dr. Diana Urge Vortsatz**, Coordinating Lead Author IPCC and Professor at the Central University of Hungary, Budapest, Hungary
9.20-9.40	**Ch 6 Buildings (Southern African focus): Dr. Anthony Mongamelli Mehlwana**, Lead Author IPCC and Manager at Council for Scientific and Industrial Research, South Africa
9.40-9.50	**Response** by : Peter Lukey (DEAT-South Africa)
9.50-10.10	**Discussion**
	Mitigation & Sustainable Development Presentations by IPCC Lead Authors
10.10-10.30	**Ch 8+9 Agriculture & Forestry**: **Ms. Rutu Dave**, Scientific Officier, Working Group III, Technical Support Unit, IPCC
10.30-10.40	**Response** by: Mr Matiga Motsepe (NDA-South Africa)
10.40-11.00	**Discussion**
11.00-11.20	**TEA**
	Session VI – chaired by Dr. Diana Urge Vortsatz
	Mitigation & Sustainable Development Presentations by IPCC Lead Authors
11.20-11.40	**Ch 12 Sustainable Development: Assoc. Prof. Harald Winkler** Lead Author IPCC and Associate Professor at the Energy Research Centre, University of Cape Town, South Africa
11.40-11.50	**Response** by : Ms Shirene Rosenberg (City of Cape Town)
11.50-12.10	**Discussion**
	Session VII – chaired by Dr. Anthony Mongamelli Mehlwana
	Climate Change – The Physical Science Basis
12.10-12.30	**WG I Speaker: Bruce Hewitson** Coordinating Lead Author IPCC and Professor at the Climate Systems Analysis Group, the University of Cape Town
12.30-12.40	**Response** by *:* Dr. Guy Midgley (SANBI)
12.40-13.00	**Discussion**
13.00-14.00	**LUNCH : all participants are invited**
	Session VIII - Prof. Francis Yamba
	Consequences of inaction – Climate Change ADAPTATION
14.00-14.20	**Ch 9 Africa: Prof. Coleen Vogel** Coordinating Lead Author IPCC and University of Witwatersrand, Johannesburg, South Africa
14.20-14.30	**Response** by : Mr Washington Zhakata (MET-Zimbabwe)
14.30-14.50	**Discussion**
14.50-15.10	**Ch 4 Ecosystems, their properties, goods and services: Dr. Guy Midgley** Coordinating Lead Author IPCC and Head of Global Change Research Group, South African Biodiversity National Institute, South Africa
15.10-15.20	**Response** by : Mr Dlamini Dumisani (MPWT-Swaziland)
15.20-15.40	**Discussion**
15.40-16.00	**TEA**
	Session IX – chaired by Ms. Rutu Dave
16.00-17.20	**Round Table Discussions - Led and coordinated by IPCC WG III- TSU** **Mitigation and Adaptation in the context of Southern Africa**
17.20-17.30	**Closing Remarks**

SUMMARY REPORT

The IPCC WG III outreach event for the Southern African region was held in Cape Town from 31 October - 1 November. 80 participants attended over the two day meeting from all over Southern Africa, representing academics, civil society, industry and government. On the first day delegates heard from lead authors on various aspects of mitigation including: long term mitigation and secotral mitigation in energy supply, transport and infrastructure, and industry. Each presentation was followed by a response from another participant involved in that sector and followed by a question and answer session. On the second day presentations on sectoral mitigation in: building; agriculture and forestry; mitigation and sustainable development were given as well as an overview of WG I findings; WG II findings related to Africa and ecosystems; and an interactive discussion on mitigation in the context of Southern Africa.

I. WELCOME AND INTRODUCTION

The Workshop Coordinator, ***Assoc. Prof. Harald Winkler*** (Energy Research Centre, University of Cape Town, South Africa) welcomed the delegates to the University of Cape Town. He said he was delighted to have this outreach event in Cape Town and grateful for the financial support provided by the IPCC to SADC delegates. He highlighted that Southern Africa is a place where there is particular vulnerability to climate change and that the region is committed to some unavoidable impacts to which adaptation will be necessary. He also stressed that mitigation is crucial as adaptation cannot work alone and of the links these actions have to sustainable development.

Ms. Rutu Dave (IPCC WG III TSU) gave a presentation on behalf of Prof. Ogunlade Davidson (IPCC Co-Chair) on WG III findings for the Fourth Assessment Report (AR4). One of the key messages from the report is that climate change is a development issue that can be solved. There are technologies currently available to limit climate change to 2°C above pre-industrial levels at relatively low costs. Strong policies are needed to realise rapid global emission reductions and these should align with other non-climate policies in trade, energy security, air quality, poverty reduction and fiscal policy (to encourage new technologies). She also showed figures from different parts of the report including: map of security risks associated with climate change, growth in greenhouse gas emissions, stabilisation scenarios, sectoral mitigation potential, examples of mitigation policies by sectors and discussed lifestyle changes.

In the following question and answer session, Marba Visagie (SA Dept Trade and Industry) identified the need for investment figures in order to engage industry that it makes "financial sense" to get involved in mitigation. Ms Dave replied that although there were no figures or trajectories in the report, fruitful talks with industry members (such as General Electric, Toyota and Exxon Mobil) indicated that they are moving away from a "business as usual" approach due to increasing costs in many sectors including building, energy supply, waste, transport, and especially with the increasing expense of oil. Internal competition to provide greener technologies in line with consumer preferences was also identified. Dudley Baylis (Cool Earth Energy Solutions) asked for information on entrepreneurial enterprises role in shifting to greener solutions. Ms Dave replied that this had not been incorporated into the report as there was not sufficient literature on this. Joyashree Roy (Jadavpur University) said there were some examples of small and medium sized entrepreneurs in India that the national pollution control board invested in for new research and development.

John Seager (HSRC – Cape Town) observed that the life style choices were not incorporated into the sectoral studies of mitigation potential. Ms Dave responded that the models did not incorporate lifestyle changes but that due to its importance these issues were incorporated into discussions on policies and sustainable development.

Dumisani Dlamini (Swaziland) asked about the 2/3 increase in emissions from developing countries and asked about the regional distribution of that increase and queried why developed countries would still have higher emissions. Ms Dave replied that the 2/3 referred to the increase in emissions as opposed to 2/3 of absolute numbers and that developed countries per capita emissions were likely to remain higher. The sector emissions graph was scrutinised regarding the transport sector and agricultural emission reductions. Ms Dave replied that the agricultural sector reductions came from tillage practice and crop changes and regarding transport that there is a global reduction potential but this had not been broken down between developed, developing and economies in transition. Peter Zhou (EECG Consultants) cited a lack of literature on

reduction potentials in this area. Washington Zhaketa asked what targets were important: total emissions or emission increases.

Discussion on political influence in the IPCC process raised concerns that the report is "too meek and mild". Ms Dave responded that the reports are under the ownership of the numerous authors of the report and only the condensed Summary for Policymakers (SPM) is negotiated by governments. In fact during the WG III session the policymakers had strengthened the report in her view. She also elaborated on the IPCC process has to have full representation amongst regions to represent diverse interests. She added that the main strengths of the report are the wide pool of resources available to different authors which ensure adequate representation of right type of literature. Reviews are done by governments and experts, and each comment must be responded to by the authors, so that if literature is missed there is an opportunity to bring it in.

Washington Zaketha (Zimbabwe), asked about a recent news article claiming that the IPCC had tampered and exaggerated certain results. Ms Dave said that these comments were directed specifically at WG I and seemed to be a reflection of the articles authors' dissatisfaction with lack of citation of their work. Hilton Trollip asked about the methodology of the review process and specifically the problem of gaps in the literature. Ms Dave responded that there are always gaps and that only by conducting a review, such as the IPCC does for the assessment report, is it possible for these to be identified and hopefully addressed in future reports when the literature is available.

II. Working Group III: MITIGATION OF CLIMATE CHANGE

Ch 3 Issues related to mitigation in the long-term context: ***Dr. Ashish Rana*** (Lead Author IPCC and Manager at Reliance Industries, Mumbai, India) presented the main findings from the comparison of driving forces in SRES and new scenarios in the literature, showing population growth lower is in new projections, regional economic projections for some developing countries are lower than the highest Third Assessment Report (TAR) scenario, and that the projections of Sulphuros oxides and Nitrous oxides are noticeably lower. In the multigas stabilisation scenarios there is a strong correlation between CO_2 equivalent and CO_2 only concentrations by 2100; that all stabilisation targets require emissions to fall to very low levels, with lower scenarios requiring earlier peak; the importance of technological change and learning by doing; that costs depend on baseline, technology change rates, stabilisation target and the portfolio of technologies considered; and that multigas emission stabilisation scenarios meet stabilisation targets at substantially lower costs than were projected in TAR. In closing he said that there was significant mitigation potential by 2030 at costs below \$100/t CO_2; technological change is essential for reducing mitigation costs; higher emission baselines have higher costs and result in higher stabilisation; upfront investment reduces long term mitigation costs and increase potentials and investment in research and development and diffusion reduces mitigation costs.

In her response, ***Judy Beaumont*** (DEAT) said the AR4 had broad influence and in the international negotiators context it had: raised the profile of climate change; given emphasis to the urgency of the issue (especially with the greater clarity on potential global impacts); addressed uncertainty; and given more clarity on costs. She then outlined why negotiations are deadlocked and the progress that has been made in recent years. She spoke about the recent push for a high level political mandate in multiple forums and highlighted the Vienna talks on future commitments. She then turned to the findings of chapter 3, which show there is limited manoeuvring room, and said that the developing country position is that developed countries emission reductions must make space for developing countries to achieve their development goals and that the multigas emission scenarios reach these targets at relatively low cost. At the IPCC Synthesis meeting, South Africa hoped to include information on social and economic consequences of observed and predicted trends that had not been included in the SPM. She also identified important shift since TAR to include the interaction of mitigation and adaptation, and the differences in perspective between developed countries that see climate change in risk management framework and developing countries context that it is primarily about economic growth, development, poverty eradication and sustainable development. She closed by outlining the national framework for sustainable development under which climate change is incorporated.

In the ensuing discussion Marba Visagie (SA Dept of Trade and Industry) asked for specifics on the affordable technologies available to peak emissions that would encourage companies to take action. Dr Rana said all the detailed information is contained in under each sectoral chapter but that the scenarios in his chapter were more or less consistent with this information.

Peter Lukey (DEAT) brought up the issue of language in the reports with statements such as "virtually certain" seeming meaningless to him. He lamented attacks on more simplified explanations (such as Al Gore's "An Inconvenient Truth") by scientists, asking for more absolute statements such as "we're all going to die" or "its all fine". Dr Rana responded that most negotiators asked questions requiring complex responses and that the iterative process of learning on both sides has helped to develop an understanding. Ms Dave said the WG III report did not consider uncertainty and this terminology was to be found mostly in WG I report as a way to express probabilities in the science. She further explained differences between statements on agreement and confidence, the later being dependant on number of literary references to back the statement.

Diana Vortsatz said there was more uncertainty in many other economic policy decisions than those posed by climate change. She said the precautionary principle should be employed and to focus first on win-win opportunities. Peter Wills (Cambridge programme for industry) expressed concern at "dumbing down" the science and said uncertainty must be recognised as part of the reality we are dealing with and that we should not think in absolutes. He further asked what advances had been made since the last assessment in terms of long term mitigation. Dr Rana said more modelling groups had used multigas models and regional modelling for the long term.

Dudley Baylis (Cool Earth Energy Solutions) asked whether consideration of different categories of mitigation did not encourage those caught in the "addiction to emitting" to chose less ambitious options and why not focus all energy on mitigation category one (most stringent measures). Dr Rana responded that everything is put on the table to allow different strategies to be employed by different countries dependant on national circumstances and what development pathway each country is on.

Albert Ijzerman (SA Faith Communities Env. Institute) asked about the possibility of a North-South divide in replication of the Cold War in which the North insulates itself from the problem and leaves the South to suffer. Ms Beaumont responded that the SA government works very hard in international forums to have multilateral responses to these issues. Marba Visagie (SA Dept Trade and Industry) supported this saying that there is a dedicated effort by a small number of countries from the South.

Guy Midgley (SANBI) asked about the emission scenarios consideration of ecosystem sinks. Dr Rana responded that the scenarios used are from the Special Report on Emissions Scenarios (SRES), saying that he was unsure how ecosystem sinks were represented but thought that some modelling teams would have considered this. He also said that these scenarios may change which would effect baseline emissions.

Dlamini Dumisani (Swaziland) asked about global financial institutes such as the Global Environmental Facility (GEF) and World Bank that are saying that South Africa can help other surrounding countries for capacity building funding. He also mentioned the inter-dependency of the region regarding sustainable development. Ms Beaumont said that South Africa did put emphasis on sustainable development in its development framework and places it in broader context of the SADC region through trade and environment agreements towards integration and by building on existing sub-regional policies, plans and agreements. As to the GEF, they have regional projects in which South Africa would be willing to participate in, if not necessarily lead.

Ch 4 Energy Supply: ***Dr. Anthony Adegbulugbe*** (Lead Author IPCC and Advisor to the Energy Minister of Nigeria, Lagos, Nigeria) said energy supply is ultimately tied to development. Emissions from the energy supply sector have been growing and energy demand is expected to increase by 65% above 2004 level in 2030 with a transition from oil towards coal to liquids. The investments needed in this sector are huge and energy infrastructure investment decisions will have long term impacts on greenhouse gas emissions. Widespread diffusion of low carbon technologies may take decades and it is often more cost effective to invest in end-use energy efficiency. He outlined key mitigation technologies and practices currently available including: improved supply and distribution efficiency, fuel switching from coal to gas, nuclear power and renewable energy. In the coming decades this would extend to: carbon capture and storage (CCS) for gas, biomass and coal fired electricity, advanced nuclear and advanced renewables including ocean energy, concentrated solar and solar PV. He then outlined policies and instruments to achieve energy efficiency, energy source switching, renewable energy and CCS.

Ch 4 Energy Supply (Southern Africa focus): ***Dr. Clive Turner*** (Lead Author IPCC and Corporate Consultant ESKOM Resources & Strategy Division, Johannesburg, South Africa) spoke about the complex interactions between primary energy sources and the energy carriers to meet societal needs for energy services for transport, buildings and industry. He showed graphics of global energy use and distribution, highlighting low use in Africa. He spoke about CCS, concentrated solar power, wave power potentials and new more efficient nuclear schemes, showing investment costs of the various energy options. In Africa he identified potential new hydro power resources (currently undermined by political instability). He then identified mitigation potential of: economic instruments including subsidies, taxes, tea exemptions and tax credit; regulatory instruments; performance standards; policy processes including strategic planning, voluntary agreements and information dissemination; air quality policies; equity and governance; vulnerability and adaptation; sustainable development and access to modern energy services. He also showed current high levels of indoor particulates from wood fuel combustion in developing countries and falling research and development (R&D) investment into energy sector.

Peter Lukey (DEAT) gave a response, in which he hoped Southern Africa balance development needs with climate friendly lifestyle in Africa. He challenged the assumption that we should wait for developed countries to make a transition to a low carbon economy and warned that doing so would tie us to developing country status due to our constant reliance on technology transfer that is unlikely to ever be on par with developed countries. He challenged the importance ESKOM placed on nuclear energy and stressed that renewables had much larger potential. He also questioned whether low electricity pricing was related to low energy efficiency rates in South Africa and identified the need to incorporate the community in translation of science to policy.

Dudley Baylis (Cool Earth Energy Solutions) asked about research on energy pricing as a mitigation tool. Pierre Du Ploy (WWF) asked about electrical energy storage for solar. Dr. Turner replied that bump storage schemes are possible but are dependent on geological formations available to store it. Richard Wyle was pleased to see that industry members were involved in the IPCC process as authors, but questioned whether ESKOM is likely to listen to IPCC findings. Dr. Tuner said ESKOM has strategies for climate change including solar and wind renewable energy and assured that they were doing more than lip service on this issue. Diana Vortsatz said her presentation will consider energy pricing vs mitigation.

A participant cited a study from Germany that projects nuclear energy peaking at 2016 and questioned its relevance in the ESKOM portfolio. Dr Turner responded that the AR4 supports nuclear energy and that studies showed that the life of uranium can be extended by orders of magnitude. As South Africa has uranium reserves, it makes sense for the country to invest in it.

Ch 5 Transport and Infrastructure: ***Dr. Peter Zhou*** (Lead Author IPCC and EECG Consultants, Gaborone, Botswana) said transport accounted for 23% of global energy related greenhouse gases; oil constitutes 95% of transport fuels and 74% of total transport CO_2 emissions from road travel. Growth in emissions in this sector are expected to be 3-5% in developing countries, which is double the growth projected in developed countries. He highlighted emission reduction potentials including biofuels, modal shifts and public transport, fuel efficiency in aviation and rail efficiency. He gave the costs of different mitigation for different types of transport and said changes in lifestyle and behaviour patterns were also very important. He then gave an overview of policies and measures available in this sector and highlighted barriers in most developing countries, including: finance, institutional reform, price rationalisation, access to data, availability of advanced technologies and training and capacity building.

Response by ***Peet du Plooy*** (WWF SA) emphasised the shortage of information transport emissions and mitigation options and identified this sector as having the most non-climate drivers affecting it, notably oil price. Other reasons to address this issue include traffic congestion and localization of economies. He further said that the transformation of infrastructure for the transport sector is just as costly as for energy. He also mentioned electric cars, taxation policy and regulations.

In the following discussion hydrogen fuel cell car cost were queried and Dr Zhou responded that commercialisation was due in 2030 but that the technology currently remained unaffordable in terms of competitiveness.

Anton Moldan (SAPIA) asked whether in the list of commercially available energy efficiency, whether servicing and maintenance could be pulled out of the results and whether the secondary costs of biofuel

implementation such as tax payers support and for distribution and uptake were included in results. Dr Zhou replied that only the engines energy efficiency had been considered but that in developing countries this figure could improve through maintenance. Regarding biofuels – the projections did not consider subsidies but he admitted that this was important in start up costs of projects, but that there were also secondary benefits such as employment.

Another delegate questioned whether imported cars were considered in the analysis. Dr Zhou said it is a significant component in Africa but that they were unable to isolate their impact in emission due to a lack of disaggregated data from the IEA.

A question from a SADC delegate on the choice between biofuel and food security was raised, to which Dr Zhou said that these mitigation policies should be the individual government's decision to weigh up the benefits for their circumstance. Regarding the predominance of high engine capacity SUVs, Dr Zhou said the conflict between consumer choice for status, comfort and safety was difficult to overcome, but that the motor industry is starting to take new directions but need regulations to encourage it.

Peter Wills (Cambridge programme for industry) asked if the IPCC scenarios depict steady economic growth as recessions could have dramatic implications. Dr Zhou said that the global data would mask most of these trends in any case and Joyashree Roy added that the four scenarios give a range of uncertainty that should sufficiently cover that.

Another delegate from urban planning asked if the IPCC is doing anything to address the lack of information on transport and infrastructure as the current sources of data from the energy and transport sectors were incomplete. Ms Dave said there were some comparative studies for Bogota and Shanghai public transport systems but that there was no urban planning section. Dr Roy said this is beyond the IPCC mandate as they can only assess and identify gaps and cannot commission these studies.

Ch 6 Buildings: ***Dr. Diana Urge Vortsatz*** (Coordinating Lead Author IPCC and Professor at the Central University of Hungary, Budapest, Hungary) showed that globally Africa is projected to have large growth in the building sector and highlighted that in the sort to mid term, improved building efficiency is the most cost effective instrument as the potentials in this sector are larger than all others and there are lots of low or no cost potentials. She said improved energy efficiency technologies were widely known and available and that new buildings can achieve the largest savings in emissions, often at no extra cost. Co-benefits include reduced morbidity and mortality, poverty alleviation, employment creation, new business opportunities, reduced energy costs increasing competitiveness of businesses etc. She stressed the need for early investment as the lifespan of buildings is very long. She then gave examples of policies to increase energy efficiency, highlighting African examples, in appliance standards, building codes, procurement regulations, energy efficiency obligations and quotas, mandatory labelling and audit programmes and utility demand side management, energy performance contracting, cooperative technology procurement, energy efficiency certificate schemes, Kyoto protocol, taxation and more.

Ch 6 Buildings: ***Dr. Anthony Mongamelli Mehlwana*** (Lead Author IPCC and Manager at Council for Scientific and Industrial Research, South Africa) gave a regional perspective. He pointed out that the availability and reliability of data in developing countries had to led to uneven treatment, as shown by the small number of studies cited and said that different developing countries were at different development stages, especially when considering difference in urban and rural communities. The rapid urbanisation in developing countries to address the need for houses provides mitigation options in the building sector that should also address development and welfare issues. He elaborated on co-benefits for building sector mitigation, including: reduction of air pollution; improved health and quality of life; improved productivity; employment and business opportunities; improved social welfare and energy security.

In his response, ***Peter Lukey*** (DEAT), said that even if not considering climate change, building efficiency is a "no brainer". He showed how inefficient the meeting venue is as it is completely reliant on electric lights and has no natural light source. He then showed delegates what the South African government is considering in terms of Long Term Mitigation Scenarios that were recently developed. The two scenarios depict growth without constraints and scenario required by science. He showed that current policies would not do much to reduce net emissions and outlined strategic options to reach the scenario "required by science" which are: to start now, scale up and use markets. He identified energy efficiency in industry as a big wedge for reductions at net negative cost. He reiterated that it makes sense to do something right now and that the South African

government's focus of providing low cost housing needs to make sure it considers that poor buildings have large health problems associated with them.

In the following question and answer session, a delegate asked if given the inertia of governments to make changes, if there are examples to follow. Dr Vortsatz said that the UNEP report on buildings had many examples of case studies and best practices and said that they are developing an assessment tool to identify instruments and how to implement them. Mr Lukey said there would be a workshop in January 2008 between the departments of health, minerals and energy housing and environmental affairs and tourism, to address air pollution in low income settlement as there had not been coordination in these efforts.

Denis van Es (Energy Reasearch Centre) mentioned the recently established green building council which will be running training courses to increase capacity in this sector. The initative has been driven by the private sector, showing that they are not waiting for government to lead process.

Liziwe McDavid (Green Connection) asked how the South African government plans to address the costs borne by low income house dwellers in maintaining the energy inefficient houses they are given. Mr Lukey said the government is already paying in terms of the health costs of poorly designed homes that are estimated at 1 billion ZAR per annum. He said that appealing to the health implications provided a way of engaging the other departments in climate friendly practices that have large benefits for other sectors. Dr Mehloana said government is picking up the tab for these externalities and that these impacts are borne by formal dwellers too, where developers make inefficient buildings that occupant then pays for. Dr Vortsatz said that in many other developing countries governments subsides energy and therefore investment in this sector would forestall this expenditure in the future.

Phillip Tshikalange (Dept of Mineral and Energy) suggested that the department of public works be involved in the January workshop as they are involved with retrofitting operations. Mr Lukey welcomed the suggestion.

Ch 7 Industry: ***Prof. Joyashree Roy*** (Coordinating Lead Author IPCC, Professor of Economics and Coordinator Global Change Programme, Jadavpur University, India) said her chapter focused on assessing past, ongoing, short and medium term actions to mitigate greenhouse gas emissions from manufacturing and process industries. One of the key findings was that primary energy consumption in the industrial sector have been declining slightly since 1970 as compared to non industrial sectors that have all been increasing. 85% of the emissions come from energy intensive industries such as iron and steel, non-ferrous metals, chemicals and fertilisers, refining petroleum, minerals (cement, lime, glass and ceramics), pulp and paper. Much of the production comes from developing countries and is expected to grow as low costs in these countries allow for cheap production. Mitigation options include energy efficiency, fuel switching, power recovery, renewables, feedstock change, product change, material efficiency, non-CO_2 greenhouse gas control and CO_2 sequestration. The mitigation potentials in this sector are highest in developing countries especially in steel, cement and pulp and paper industries and in the control of non-CO_2 greenhouse gases. Barriers to mitigation include: lack of appropriate incentives; competing demands for financial and technical resources within a company; capacity building and information access; and slow capital stock turnover. She then gave examples of mitigation options using policies (such as Kyoto's Clean Development Mechanism (CDM) and Joint Implementation), financial instruments, link with sustainable development and enhancing co-benefits. She said technology research, development, deployment and diffusion held lots of potential for both public and private sector. She concluded by picking out key uncertainties and knowledge gaps.

Ch 7 Industry: ***Prof. Francis Yamba*** (Lead Author IPCC, Professor at Centre for Energy, Environment & Engineering Zambia (CEEEZ), Lusaka, Zambia) spoke about actions to be taken in short and medium term in southern Africa. He identified major industries in the SADC region and some of the mitigation measures that can be employed in these. He gave options for energy efficiency, fuel switching, heat and power recovery, recycling, CCS and specific measures for: iron and steel; non-ferrous metals; chemicals and fertilizers; paper and pulp; and food and beverages. He then outlined some barriers such as technology access and utilisation, lack of competition for resources within companies, and lack of cost effective tariffs in SADC which discourage investment in renewable energy based mitigation options.

Stanford Mwakasonda (ERC, UCT) gave a response in which he identified two areas for mitigation: use of energy and energy efficiency of the process itself. He also stressed the issue of non-carbon emissions, many of which have much higher global warming potential such as HFCs and the need to have mitigation

strategies for these substances. He also mentioned the need for simultaneous technology development and transfer, proposing additionalities similar to those in CDM projects to give incentives to import relevant technologies.

Discussions raised the issue of industry movement to the developing countries where production cost is cheapest there is "loose" regulation and cheap electricity. Prof Roy said that the quantity of emissions due to industry movement could not be determined from the literature but that emission from developing countries are higher in these sectors and this is likely an indicator of this movement. She said it is a research question that needs to be addressed.

Jimmy Khanyile (DEAT) said industry only listens when it affects their pockets and suggested a similar idea to the skills training programme where a baseline audit of a company identifies areas to improve and the company is given a rebate for the improvements made after a second assessment. Prof Roy said this concept is called benchmarking and had proved to be very successful in many countries and that there are several examples in the chapter.

Dumisani Dlamini (Swaziland) noted the general growth in industry in developing countries but wondered if there were regional projections, as growth is skewed to certain regions and it is not appropriate in Africa. Prof Roy agreed and said the original intention was to show regional breakdown but due to lack of information they had to drop it. She said that in the region there will be highly skewed distribution as evidenced by the lack of capacity in Africa to realise CDM potential.

Dumisani Dlamini (Swaziland) also asked about the costs of sugar industry turbines and whether there was CDM potential there. Prof Yama said that their was potential in Swaziland for this but said it was not cost effective for industry backing, but that governments should encourage these initiatives. He gave a further example in the aluminium industry in which an alloy captures all the carbon dioxide in the process and said that more research on these types of activities is needed.

Ch 8+9 Agriculture & Forestry: ***Ms Rutu Dave*** (IPCC Working Group III, Technical Support Unit) said the two sectors of agriculture and forestry account for nearly 30% of CO_2 equivalent emissions and that developing countries had the highest emissions. She identified a number of low cost mitigation opportunities in forestry such as: reducing deforestation, afforestation and bio-energy and in agriculture: carbon sequestration in soils, methane emission reduction from rice production, water and livestock management, and N2O from soils. She stressed that developing countries have a dominant share of mitigation potential and these would provide large co-benefits. She also discussed bioenergy options.

In the response by ***Matiga Motsepe*** (National Department of Agriculture) stressed the regional importance of drought and outlined initiatives by the South African Department of Agriculture including various collaborations with: universities, Agricultural Research Council and the transport sector. He also mentioned partnerships with Australia, who are tackling similar issues such as drought, and the UK, who are collaborating on expertise development and exchange programmes. He also discussed the early warning unit. He added that they had found it difficult to engage farmers in crop and grazing land management advocated by the IPCC and highlighted the need for more resources in agricultural adaptation and developing country cooperation.

In the discussion one delegate questioned whether there was financial support schemes to encourage not deforesting areas. Ms Dave said it was not in the IPCC mandate to give opinions but that there had been positive comments at the Brazil outreach event, where there was a realisation that they need to save their forests and cited a mining company which is afforesting old sites. Sarshen Marais said there is a possibility of incentives to stop deforestation and that this was being discussed ahead of the UNFCCC meeting in Bali. She also asked whether there were statistics on degradation as opposed to deforestation being presented in the studies. Ms Dave replied that there is no distinction in the modelling studies in terms of policies but perhaps this would come in future work.

Two delegates asked about the transition of crop land to urban development and the move towards multi cropping instead of mono crops. Ms Dave said the models projection at 2030 do take into account increases in urban areas but envisage more intensive agricultural practices in all developing regions to balance this. The rise in greenhouse gases from agriculture will be steep as forests are taken down for agricultural land. In response to another question on subsistence versus commercial differentiation in the study, Ms Dave said the

chapter did go into those details but that she had provided just an overview in her presentation. Mr Motsepe said the Dept. of agriculture differentiated between the types of farmers particularly emphasising the previously disadvantaged.

A delegate representing WWF asked why soil carbon sequestration had not been well received by farmers and asked how they had been engaged and what barriers there were. Mr Motsepe replied that the ARC had conducted this investigation; and therefore he was unable to comment.

Ch 12 Sustainable Development: ***Assoc. Prof. Harald Winkler*** (Lead Author IPCC and Professor of Energy and Environmental Economics, Energy Research Centre, University of Cape Town, South Africa) discussed the two way relationship between mitigation and sustainable development. He gave examples of side effects of climate mitigations for energy, forestry and waste, highlighting tradeoffs. Some co-benefits of climate action include reduced air pollution, better housing, greater energy security, energy access, trade benefits and biodiversity benefits. He also said new energy infrastructure investments in developing countries, upgrades of energy infrastructure in industrialized countries, and policies that promote energy security can create opportunities to achieve greenhouse gas emission reductions compared to baseline scenarios. Looking at how non-climate policies affect emissions, he highlighted that mitigation is not just an environmental problem but is also important in economics, energy, forestry, housing, water and that decisions made about macroeconomic policy, multilateral development bank lending, insurance practices, electricity market reform, energy security and forest conservation, for example, which may seem unrelated to climate policy, can significantly reduce emissions. This effort requires multiple actors in government and private sector at multiple scales. He then spoke about development pathways and showed that GDP per capita and population were the main drivers of growth in emissions, and he said that declining energy intensity is not sufficient to bring down emissions and that developing countries will need to decarbonise. He gave a list of non-climate policies in different sectors including macro-economics, forestry, electricity, oil-imports, insurance, buildings and infrastructure, bank lending and rural electricity. He concluded by saying that mainstreaming climate mitigation in development decisions with climate consequences is essential for a low-emissions path to emerge and that state, market and civil society enities at all levels need to participate.

The response by ***Shirene Rosenberg*** (City of Cape Town) highlighted the City of Cape Town's efforts to translate global action into local strategies. She highlighted barriers such as: limited powers to regulate and legislate appropriate strategies; an inability to translate the cross-cutting response required into existing institutions and structures; a lack of coherence across different policy imperatives; a lack of directed subsidies and fiscal incentives; general lack of human and institutional capacity and understanding; lack of intergovernmental co-ordination and national guidance in terms of: integration and coherence of policies and measures related to socio-economic development, energy, resource conservation, biodiversity management, urban growth management, transport planning, as well as supporting fiscal measures. She said a strong guiding vision was needed to address these gaps.

Hilton Trollip (Independent analyst) asked what role the city has in building standards regulations, given that there were such large mitigation potentials and co-benefits in this sector. Ms Rosenberg replied that the city is preparing guidelines for building standards but lamented that they have no legislative and little regulatory power, depending on national level to give permission for bylaws. Marba Visagie (SA Dept Trade and Industry) said that she could help connect the city to the right people in order to change the codes, and given a solid proposal that "makes sense" there should be no barrier to acceptance.

Liziwe McDavid (Green Connection) asked how to get action on climate change and asked if a new body was needed. Ms Rosenberg said she would hesitate to have a new organisation and suggested an audit of existing capacity to see how these activities can be complemented and enhanced. Assoc Prof Winkler said response capacity was critical to this issue. Mary Haw said the Cape Town City Partnership was looking to address this issue. Geoff Davies (SA faith Communities) said he was alarmed by the limitations of the city and hoped that the example of certain US cities would be taken where there is action being taken without government legislation.

Peter Lukey (DEAT) asked whether the climate change policy development process that the South African government will embark on next year was the right way to go or whether they will then marginalise themselves from the sustainable development process. Assoc Prof Winkler agreed that the current sustainable development implementation had been limited and said this could be an opportunity to

reinvigorate it and to engage a whole range of sectors and actors. He still supported the climate change initiative but warned against thinking of it in isolation.

Washington Zhaketa (Zimbabwe) asked where the starting point was, Assoc Prof Winkler replied that as sustainable development was so broad it was hard to answer but that each country should consider what sectors are producing the most emissions in their economy and look at the policy options in those sectors. Judy Beamont (DEAT) agreed with the sectoral approach but highlighted that cross sectoral solutions are the real challenge and should be the point of departure.

Langley Simpson said all these policies refer to what is required in an integrated approach but that it must be recognised that it falls into the economic development cluster and to consider the broader implications of sectoral solutions.

Albert Ijzerman (SA Faith Communities Env. Institute) asked how to create a positive feeling amongst all groups given the politics in city of Cape Town, saying "we cannot move if we don't move together" and asked if there were good practice examples to follow. Ms Rosenberg responded that strong leadership was necessary not just from the government but from society too and cited example in Denmark where an energy crisis resulted in integrated policies for alternative energy and were successful due to the buy in by civil society. Assoc Prof Winkler said a vision of where we need to go must be formulated and people must not be scared of how difficult it looks.

III. Working Group I: CLIMATE CHANGE – THE PHYSICAL SCIENCE BASIS

WG I Overview: ***Prof. Bruce Hewitson*** (Coordinating Lead Author IPCC and Professor at the Climate Systems Analysis Group, the University of Cape Town) gave an analogy for climate change of driving down Sir Lowry's Pass with no breaks and said that even though its scary, the road is wide and if you plan carefully and use you gears you should be able to come out the other end. He said most nations were happy with the core science presented by WG I and achieved unanimous approval with little difficulty and that they had managed to keep scientific rigour without overstating results. He showed that the chemistry of the atmosphere has been changed to a level not see in 650 000 years and that this change could robustly be attributed to anthropogenic emissions and can be broken down between the greenhouse gas emissions. He said that now regional scale analysis was needed to make effective response strategy. He showed results for changing rainfall intensity, drought, and water vapour, emphasising regional results. He concluded by saying that communicating the complex science of climate change was a key challenge, as is the limited number of academics in the field who are under strain to keep up with the increasing societal demands for communication.

In the response by ***Dr. Guy Midgley*** (SANBI), he spoke about why climate change projections are so contentious, outlining both deep uncertainties associated with prediction and cascading uncertainties related to climate impacts and response. He also pointed to cases of government officials "bullying" scientists to protect vested interests. From the paleoclimate section, he pointed out that CO_2 doubling studies average temperature rise is 2.5°C but that there is still a 10% probability of 4-5°C rise. He also pointed to the large unknowns in the system such as feedbacks from land use change, methane stocks in soils and permafrost, changing albedo and ocean acidification. He also showed where scientist's models have under estimated sea ice extent loss.

In the discussion session, one participant asked if IPCC was too conservative, to which Prof Hewitson replied that he felt they had got the balance right, balancing a need to maintain credibility and necessary cautiousness. He added that as an individual one can speculate but as an organisation a conservative approach is required.

Liziwe McDavid (Green Connection) was happy to see a presentation discussing "is it this bad? or worse?" as opposed to a discussion about whether climate change is really happening. She asked how communication with stakeholders should be done and how to stop sceptics getting so much air time. Dr Midgley cited Al Gore as example of the right kind of stakeholder engagement but pointed out that he also received flack from the sceptics. Prof Hewitson said that communication was a big challenge: who does the communication, how to sustain it and where to direct people for information. He cited the UK dissemination project and said such a project in South Africa, employing grad students with media training to engage with stakeholders would be very effective for a small financial investment.

Another delegate from coastal management said that there is an understanding that the ocean plays a big role in climate change but that those in marine and coastal management were not engaged and questioned whether there was room for involvement. Prof Hewitson said it is a critical component, but as the oceans evolve more slowly than the atmosphere, and the atmospheric response is so rapid that there had been more focus on the atmospheric component. This can be seen in the models, where the ocean models are less sophisticated. He encouraged them to get involved and said that the oceans role as a buffer in the future may change.

Dumisani Dlamini (Swaziland) asked how to get society to respond if they do not have the privilege to do as science suggests. Prof Hewitson responded that this was a difficult question and was dependant on your worldview but said that the right triggers for different communities needed to be found.

Brenda Martin (Project 90X2030) said she found much disagreement in the literature and found that there was a lot of unnecessary confusion and complex language and asked what regional information we had for Africa. Dr Midgley said given that climate change information is in so many places he could hear her frustration and advised her to consult the IPCC reports as it draws the information together in a comprehensive manner. He also recommended the website realclimate.org. Prof Hewitson said just because the science disagreed on numbers did not mean they disagreed on the overall pattern of change. As to the language, he said its not just the words used but the conceptual basis of these words that often causes confusion and that the nuances were important but often perceived as disagreement when in fact that is not the case.

IV. Working Group II: CONSEQUENCES OF INACTION – CLIMATE CHANGE ADAPTATION

Ch 9 Africa: ***Prof. Coleen Vogel*** (Coordinating Lead Author IPCC and University of Witwatersrand, Johannesburg, South Africa) said sub Saharan Africa is very vulnerable to climate change and has been identified as a hot spot, resulting in huge financial investment especially from the UK. She reflected that the negotiations for the WG II Summary for Policymakers were very difficult as there are value judgements involved. Key impacts for Africa are: 72-250 million people will experience greater water stress, rain-fed agricultural yields could be reduced by up to 50% by 2020 in some countries, 10-30% reduction in river runoff and water availability by 2050, drought affected areas will increase in extent, increased flood risk in high rainfall areas, changes in ecosystem structure and loss of biodiversity if temperature increase above 1.5-2.5 °C and human health implications in terms of changes to malaria transmission patterns. She said adaptation is an emerging science where they look at multiple stressors and see how they might be pushed to limits.

In the response by ***Washington Zhaketa*** (Zimbabwe), he said policymakers were starting to appreciate the complexity of prediction and said they need to be convinced "that it's no joke". He said that developed countries were responsible for the climate change we are experiencing but that in UNFCCC and Kyoto arena they just seem to see the dollar signs. He said developing countries should see what they can do and then ask for assistance. As developing countries will suffer the most and are already suffering, developed countries must do as much as possible under the Convention. He also spoke about funding coming in piecemeal and the difficulty of harmonising efforts. He said policymakers need to have accurate downscaled information that is clearer. He also said adaptation without poverty alleviation is not meaningful and that there is a need for capacity building but it is not clear where capacity is needed.

Stanford Mwakasonda (ERC) started the discussions, asking if the adaptive capacity that was identified in Africa chapter refers to traditional capacity or recent capacity given the popularity of climate change projects and further asked if this capacity was urban or rural. Prof Vogel said that it did not refer to technological capacity but to the growth in the science in the last four years. She clarified that she was not saying "we are in best position" but that adaptation was happening and that they did not want to send the message that there is no capacity in Africa.

Harald Winkler (ERC) said the presentation highlighted how many millions of people are at risk and reminded them "why we are here in the first place" (discussing climate change). He asked her what adaptation activities are really all about. Prof Vogel responded that it is a fuzzy science but that the key thing to understand is that adaptation looks at what is inherently there and reminded that "one size won't fit all" and that each adaptation option depends on context you are in. She advised adaptation to be clipped onto

current studies in other disciplines. Mr Zhaketa spoke about an adaptation initiative in the Zambezi river basin with flood prone communities. The project used a digital elevation model to identify "safe havens" of high lying topography and together with water management agency, send communications of early warning to allow evacuation ahead of floods.

Peter Lukey (DEAT) came back to a previous point made by Prof Vogel alluding to some developing countries holding off on adaptation as a way to leverage foreign financial assistance. He said adaptation is "what we do to survive" and must be shifted into a higher gear and said waiting for leverage was immoral. That said it didn't mean other countiries were not doing this (often as they cannot finance any adaptation) and that this is an impression from the international negotiations. However, South Africa was in a position to respond and would not "let the people be held ransom". He gave examples of some cities in South Africa that are reviewing the 100 year flood line, to inform town planning, and the national disaster management centre which had successfully dealt with recent drought.

Pierre Mukheibir (ERC) asked if building on existing climate variability coping mechanisms to address climate change would be adequate. Prof Vogel said one of the messages from the report was that we may fall short if we just think in terms of climate variability adaptation and need to expand the view. Another delegate asked why only some of the cities are changing their flood lines. Prof Vogel replied that Cape Town is commendable for the work they are doing but perhaps they were more often at risk and consequently more active. She suggested an information hub on climate change to ensure faster mobilisation.

Ch 4 Ecosystems, their properties, goods and services: *Dr. Guy Midgley* (Coordinating Lead Author IPCC and Head of Global Change Research Group, South African Biodiversity National Institute, South Africa) explained how the ecosystem has been regulating anthropogenic emissions of greenhouse gases, which in economic terms is considered a free service but in fact about 50% of emissions are absorbed by natural sinks which is a huge buffer to the impacts of climate change. He highlighted a figure of natural carbon stocks that shows that there is a very large amount of carbon stored in forest soils and methane and carbon in permafrost and loess soils. He pointed to: species extinctions driven by climate change, including the already extinct golden toad and some harlequin frogs; ocean acidification from the rising CO_2 concentrations that is lowering pH and will start hindering carbonate shell formation; temperature rise causing natural sinks to weaken and eventually reverse and become net emitters; and that global climate models do not include the methane feedback cycle that could be triggered with the release of methane stores from permafrost, therefore underestimating emissions and possible impacts.

In the response, ***Dumisani Dlamuni*** (Swaziland) spoke about his views on the term ecosystem, consisting of land, ocean and biological life, being connected by water and the balance needed between each system to avoid the extinction of species. He said that one species was missing from the ecosystem picture, humans, and spoke about the pressure we are putting on the other species we live with.

Discussions followed, starting with Liziwe McDavid (Green Connection), who commented that "seeing this presentation made you want to go to another planet" and asked what priority action we should take in light of the severe results and how to avoid becoming despondent. Harald Winkler (ERC) said to remember that the EU target of 2°C is above pre-industrial levels not current levels so that the impacts at that level were less severe than 2°C above current as shown in one figure. He also asked what can be done about the Loess soils feedback. Dr Midgley responded that although he "hated to be bearer of bad news, we need to be honest about what is going to happen" and that there was a high risk of these things happening at some point in the future. He said science has been there for 20 years and we should have done more when we had the time but this means we must now work fast, get tougher and tell off the sceptics. He said mitigation must be first priority and that we can adapt to a certain degree. Mr Dlamuni agreed that it was important to act immediately as pressure of human beings will be relieved by nature in some form.

Judy Beaumont (DEAT) said the outlook was quiet gloomy but asked if it was possible to identify what ecosystems are most at risk and which are more resilient so as to identify those to focus on and prioritise work. Dr Midgley said that the high risk ecosystems are the rare ones "that make the world interesting" and the resilient "winners" are ones that are mostly invasive species and also reminded that the fewer species in the ecosystem the more unstable it is.

A participant identified human population and consumerism as a key challenge. He then gave an example of how the area at the top of the cable car at Table mountain in the 1970s was much more degraded than today,

showing how changing human behaviour (by putting in a system of paths) accommodated far more tourists and visitors without having a damaging effect on the ecosystem. He said we need to switch from our current energy intensive lifestyle. Dr Midgley gave another analogy saying that if each person on the planet were to use only one square meter starting in Cape Town – the extent of the earths population would reach 60 km to Paarl – illustrating that the size of the earth was not the issue but rather what we are consuming.

Peter Lukey (DEAT) said that in all the presentations human behaviour had not been considered. As an example he said we should look to how humans reacted to the science on smoking. Sceptics fought the science on cancer and smoking for years but finally the message was conveyed to the point where every box of cigarettes has a health warning on them. Yet still people choose to smoke even given "the gruesome facts about the nasty deaths" associated with smoking.

Geoff Davies (SA Faith communities) remarked on the book "The Revenge of Gaia" by Lovelock, saying the planet is reacting to the imbalances. He reflected on the Nairobi Conference of the Parties to the UNFCCC in 2006, where interventions from youth, women and indigenous communities had urged for action. He said it was time to get serious at the Bali meeting and start cooperating on world level to face this future and that we need to have a common standard to produce renewable energy. Dr Midgley said governments have not been given a mandate to make commitments and the same negotiators have been in game for years and mandates don't change, resulting in little action. Mr Dlamuni hoped that at the IPCC synthesis meeting in Valencia they would consider including in the next review societal behaviour.

V. Open Discussion: MITIGATION AND ADAPTATION IN THE CONTEXT OF SOUTHERN AFRICA

An open Discussion was led and coordinated by ***Ms. Rutu Dave*** (IPCC WGIII- TSU) at the close the workshop. She highlighted communication as on of the central issues coming out of the workshop and announced a new UNEP publication that will be available in Bali – a 20 page simplified summary to climate change mitigation – as well as the WG III Summary for Policymakers.

Diana Vortsatz said the workshop had achieved outreach in both directions – from the IPCC and from the participants. She said that it is difficult for authors to fully appreciate different perspectives and that this workshop had helped her identify with some of the regions differences from her own.

David Parry-Davies (Enviropedia) said the effects we are seeing are symptoms of our behavior and that we need to go back and look at our value systems. Looking at why apartheid was turned around and said it was accomplished by group or mass participation and changing of value system. Ms Dave asked if an institution was needed to change value systems. Clive Turner (ESKOM) said that mass action is a facet of the power of leadership and identified the need for strong leadership. Another participant said South Africa has the institutions to accomplish it but that resources needed to be balanced, citing the skew to research on nuclear energy as an example. He said leadership should come from democratic and informed structures and said study should be redirected to things we don't yet understand.

Another participant asked if dissemination of this information is scaring people asked if they need to know that information or should it be packaged more softly to effect responsible action instead of apathy. Ms Dave said there is cause for alarm bells that is why the IPCC won the Noble peace prize not science prize. Guy Midgley (SANBI) said he was in two minds about this and had played it both ways in the past but said he thinks we need to be honest and to be grown up enough to face the risks. He said this news can't be broken gently and that we need a reality check and wake up call. All the information is out there already, the information is not alarmist. He also said the issue needs better public relations to communicate it. Harald Winkler (ERC) agreed that we should not soft pedal the truth and that this is a crisis, but not enough people realise it. He said we need to make sure we don't move from denial to despair and that we are long past stage of making the choice of this or that strategy, need to "do it all".

A delegate asked whether this type of event was done for governments. Ms Dave said the IPCC does not have access to president's office levels but that governments are informed of the results and then it is for the national institutions to conduct further communication. WG III is making an effort to have regional events in developing countries and had already hosted them in India and Brazil and there was an upcoming workshop in North and West Africa, piggybacking on a ministerial conference. She stressed the importance of having the right people at these meetings and the need to have informed decision makers.

Diana Vortsatz said in her country people fall into despair and brought up Peter's paradigm of people wanting extremes of "its all gonna be fine" and "we're all gonna die" but that the reality is its not a black and white issue, and the shades of grey are quiet large.

Geoff Davies (SA faith Communities) spoke about the hand over of power in South Africa which he said rich and powerful countries should learn from and encourage them to share resources. He also mentioned the Earth Charter that puts forward values for today's society and suggested this be promoted as it is a very helpful document.

Another participant asked if the phrase sustainable development was debated and what it encompassed in the IPCC chapter. Harald Winkler (ERC) said they didn't define the term as it is a difficult concept but rather referred to unsustainable development which is easier to recognise. Another phrase that is used in the chapter is "making development more sustainable" as that implies the process.

Dumisani Dlamini (Swaziland) said there needs to be a link between science and society and that science uses fact but society is not always receptive to this. He suggested the message be spread through the use of public places such as shops and filling stations to mobilize people by providing them with more information. Washington Zhakata (Zimbabwe) agreed that there is a need to go to grassroots level and make it more people centred to win this battle. He also mentioned early warning system as a communication structure in which we need to do more and talk to each other.

Dennis Laidler (WC DEADP) said South Africa is a microcosm of world as we have a huge disparity in wealth and stressed the importance of communicating the message to different parts of society in different ways and said we need to target politicians but also different communities.

Peter Lukey (DEAT) said the message is going beyond public servants and going to ministerial level. He recounted a recent inter-ministerial meeting on climate change which led to the Long Term Mitigation Scenarios and said the President is making statements on climate change. He said they send strong delegations to all international meetings and at the upcoming IPCC synthesis report meeting they will defend the science as "we don't see any advantage to lie about reality". In a recent debate he was asked if government is doing enough about climate change. The answer of course is government isn't doing enough but are individuals doing enough? He said that the fire for action comes from the people and that no mater how progressive officials are, politicians take heed of the people.

Washington Zhaketa (Zimbabwe) said this outreach workshop was very useful and hoped it stretched to other Working Groups. He said we think of mitigation as top-bottom issue but should think global and act local by adapting first in Africa. He identified a centre of excellence in the region for technology and said we need to push governments on issues of climate change. He suggested in next international agreement for a mandate for each country to come up with a climate change policy as this would start a large awareness campaign in governments. He said it was important to disseminate to politicians, even if they think in 5 year election cycle, and to have projects funded by GEF and DCM etc to lure them into participation. Ms Dave said it was great that SADC has a good knowledge centre and looks forward for a mandate from governments for next report. She said there were many ways to reach politicians but that the IPCC resources don't stretch that far.

Albert Ijzerman (SA Faith Communities Env. Institute) said science created the problem and is now solving it. He said science has liberated society from "mythical language" in which science gives less meaning to the idea of species loss than saying polar bears dying. He concluded that we needed to strengthen the mythical traditional world view.

The last question asked about the role of institutions of higher learning teaching climate change in curriculum at university level and asked if this can be extended to high school or even primary level. Ms Dave said that in Netherlands it is part of high school social studies.

CLOSING

Assoc. Prof. Harald Winkler thanked participants for taking part in the discussion and the sharing of interesting ideas. He also thanked the IPCC WG III TSU for organising this event, making available resources and bringing in SADC participants. What struck him as different about this meeting was the high

quality of information from developing countries and economy in transition and said the IPCC really is successful at bringing together scientists across wide range of disciplines.

Ms. Rutu Dave said that each and everyone at the meeting represented a part of society and or an institution and that this was a good place to start making a change. She then gave a vote of thanks to Harald and Pierre and all the participants whose input had made the meeting worthwhile and given some ideas of how to go forward. She also thanked all the SADC participants and the authors who travelled to the meeting.

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List of Participants Comments:

- **We are pretty sure that Harald Winkler is not from Hungary!! Therefore please ensure the list is correct, this mistake we can spot but there might be others that are not obvious to us**
- **Please expand on the abbreviations such as ASJP, it is not clear to the readers in different corners of the world, what this means. Therefore expand on every abbreviation found in this table.**

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