

Climate Change and IPCC Assessments

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Climate change is one of the most serious environmental issues that we face today. The impacts of climate change could have far-reaching and unpredictable environmental, social, and economic consequences.

The world has taken major strides towards meeting the challenge of climate change - moving on from scientific analysis, to public concern, to developing and implementing an international Convention. There is, however, still a long way to go: first, in achieving a better understanding of the global climate system; second, in taking decisive and early action to reduce greenhouse gas emissions; third in ensuring a broad public support for both mitigation and adaptation efforts.

Human societies have long been subject to disruption by climate change. In the past, most of these variations have reflected natural phenomena, from fluctuations in levels of solar radiation to periodic eruptions of volcanoes. But in future most climate change is likely to result from human actions.

The main increased greenhouse gases (GHG s) are chiefly carbon dioxide, methane and nitrous oxide. Since the beginning of the industrial revolution the atmospheric concentration of carbon dioxide has increased exponentially from about 280 parts per million (ppm) in 1800 to about 380 ppm today and there have been similar increases for methane and nitrous oxide. The Intergovernmental Panel on Climate Change (IPCC) has projected that by 21 00 atmospheric concentrations of carbon dioxide could have reached between 540 ppm and 970 ppm and that, as a result, global surface temperature could rise by between 1.4 ° C and 5.8 ° C.

In 1990 the IPCC issued its First Assessment Report, which confirmed that the threat of climate

change was real. The Second World Climate Conference, later that year, called for the creation of a global treaty. The Intergovernmental Negotiating Committee (INC) first met in 1991 and its government representatives adopted the United Nations Framework Convention on Climate Change (UNCED) 1992. At the Rio de Janeiro United Nations Conference on Environment and Development (UNCED or Earth Summit) of June 1992, the new Convention was opened for signature. It entered into force on 21 March 1994. Ten years later, the Convention had been joined by 188 States and the European Community. In December 1997, representatives of 160 nations met in Kyoto, Japan, in an attempt to produce a new and improved treaty on climate change. Major differences occurred between industrialized and still developing countries. The Kyoto Protocol was adopted at the 3rd session of the Conference of the Parties (COP3) to the UNFCCC held in Kyoto, Japan, in December 1997. The Kyoto Protocol required industrialized nations to reduce their emissions of carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, sulfur dioxides, and per fluorocarbons below 1990 levels by 2012. The requirements would be different for each country and would have to begin by 2008 and be met by 2012. There would be no requirements for the developing nations. Whether or not to sign and ratify the treaty was left up to the discretion of each individual country. The Protocol introduces 3 market mechanisms, namely the Kyoto Mechanisms. Annex I Parties would be able to achieve their emission reduction (or remove by sinks) targets cost-effectively, by using these mechanisms: 1- **Joint Implementation (JI)**; 2- **Clean Development Mechanism (CDM)** and 3- **International Emissions Trading**. In June 2002, the 15 mem-

ber nations of the European Union formally signed the Kyoto Protocol. The ratification by the 15 EU countries was a major step toward making the 1997 treaty effective. Before the EU ratified the protocol, the vast majority of countries that had ratified were developing countries. With the withdrawal of the United States, responsible for 36.1

According to the modified information on date of 13 December 2006, status of ratification for Kyoto Protocol is as follow: from list of 173 countries total of 84 have signature, 169 have ratification, acceptance, accession or approval status which cover 61.6

The organization that provided the research for the Kyoto Protocol was the Intergovernmental Panel on Climate Change (IPCC). Recognizing the problem of potential global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the IPCC in 1988 to: (i) assess available scientific information on climate change, (ii) assess the environmental and socio-economic impacts of climate change, and (iii) formulate response strategies options for adaptation and mitigation. The IPCC does not carry out research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific/technical literature. It is open to all members of the UN and WMO. In 2001 the IPCC released a report, "Climate Change, 2001". Using the latest climatic and atmospheric scientific research available, the report predicted that global mean surface temperatures on earth would increase by 2.5-10.4 ° F (1.5-5.9 ° C) by the year 2100, unless greenhouse gas emissions were reduced well below current levels. The IPCC has three Working Groups and a Task Force: Working Group 1: **The Physical Science Basis**; Working Group 2: **Impacts, Adaptation and Vulnerability**; Working Group 3: **Mitigation of Climate Change**; and The Task Force on National Greenhouse Gas Inventories is responsible for the IPCC National Greenhouse Gas Inventories Programme.

The First IPCC Assessment Report was com-

pleted in 1990. The Second Assessment Report, in 1995, and the Third Assessment Report (TAR), was completed in 2001. At its Eighteenth Session in September 2001 the Panel decided to continue to prepare comprehensive assessment reports. At further sessions the Panel agreed that the Fourth Assessment Report would be completed in 2007. Around 500 lead authors, supported by hundreds of other contributors, are involved in drafting the IPCC 4th Assessment Report. Review is an essential element in the preparation of IPCC Reports to ensure that they represent the latest scientific, technical and socio-economic findings and are as comprehensive as possible. In early April 2006, the second draft of Working Group 1 ' s contributions to AR4 was circulated for review - a process still in progress. Furthermore, governments and experts have received the second drafts of Working Group 2 and Working Group 3, which delivered in May and July 2006 respectively. The Report of Working Group 1 finalized in 2 February 2007. The Working Group 2 Report will be completed in early April 2007, the Working Group 3 Report in early May 2007 and the Synthesis Report by mid-November 2007. In order to ensure a better treatment and coordination of matters that are dealt with in more than one working group called cross cutting themes will be used. The following concept papers and guidance notes on cross cutting themes were prepared: Guidance Notes for Lead Authors of the IPCC Fourth Assessment Report on Addressing Uncertainties; Uncertainty and risk concept paper; Integration of Mitigation and Adaptation in 2 parts; Article 2 of the UN-FCCC and key vulnerabilities; Sustainable Development; Regional Integration; Water and Technology. Outline for the IPCC Working Groups I, II and III Contributions to the Fourth Assessment Report (AR4) " CLIMATE CHANGE 2007 " are presented.

At its 22nd in 2004 the Panel decided to prepare an AR4 Synthesis Report (SYR).

Here, there are a few general comments that could be considered in future work.

1- During our work on preparation of AR4 we faced with very scarce references -base upon publication of research results- in the Central Asia and Middle East. It needs with help of developed countries and international and regional agencies this gap partly or full will fill. Without complete set of data and information from all part of earth it wouldn ' t be possible to have precise and correct climate projection for the world.

2- ICCAP project area very well cover different ecosystem like grassland, forest, cropland or water ecosystem and urban areas. According to its name that is " Impact of Climate Change on Agricultural Production System in the Arid Areas " it can abbreviate ICCAP-SAA and some more complementary information from arid and semi-arid zone could be collected.

3- Information that is available or would be provided in Caspian Zone could give good indication as supplementary information to interpret data gathered in ICCAP project for climate change impact on different ecosystem specially forest and sea or cropland and human being.

4- Synergies and the mainstreaming of the issues of climate change with other programmes dealing with development and environment would considerably enhance the efficiency of planned activities.

5- Climate change has been recognized drought and water deficiency as a major environmental is-

sue that involves several stakeholders. Desertification is a truly global phenomenon with serious economic and social implications.

6- Synergy and link between different UN conventions with common and sharing objectives are essential. Most important issues are biodiversity and drought that can be formulated according to the related conventions UNCCD and UNCBD.

7- Water scarcity is very important and effective issue in worldwide scales, but it is in critical condition in Middle East and Central Asia.

8- Cooperation to propose small-scale CDM projects could provide good tools to support developing countries for emission reduction and increase sink. Afforestation and Reforestation CDM (A/R CDM) project activities could be used as much as possible and feasible. In addition to small-scale A/R CDM projects new CDM projects on water can be define and could be considered in future cooperation.

9- Plant ecophysiological studies to understand climate change effect on different ecosystems namely forest, rangeland, desert and croplands are important.

The recent Stern Review of the Economics of Climate Change, led by former World Bank Chief Economist Sir Nicholas Stern for the UK Department of the Treasury, received a lot of attention. Without any criticizing the summery of conclusions from its review is brought here.