

## Compendium on Water and Climate Change: Vulnerability and Adaptation

Climate change is the key environmental challenge facing humanity, globally. It would interrupt sustainable development for most developing countries in South Asia, as it compounds the pressure on natural resources and the environment associated with rapid urbanization, industrialization and economic development<sup>1</sup>. The impact of climate change on the water resources is considered to be severe. The burgeoning statistics highlight this fact. The variability in the occurrence of rainfall, its duration and level has become uncertain. These trends are growing at an alarming rate. The variations in availability and distribution of water for both domestic and commercial purposes are also a by-product of growing urbanization and over-exploitation and inefficient use of resources. This is further coupled with improper management of water resources. Dr. Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC), during a press conference in New Delhi stated that close to 60 million coastal people in the low-lying areas of South Asia could be displaced by global warming by the end of the 21st century<sup>2</sup>. Bangladesh in the South Asian region has been identified as one amongst 27 countries, which are most vulnerable to the impacts of global warming induced accelerated sea level rise. India is also likely to be among the first major economies to be affected. India's oft-quoted economic growth could be affected and it could be one of the major losers from climate change<sup>3</sup>.

The horrendous cumulative impacts of global warming that the world will face in the coming years have been reiterated in numerous documents. The ongoing contentious debates, meetings and summits on the issue of climate change shed light on this fact. The increased industrial activity has resulted in increased level of carbon dioxide and other greenhouse gases in the atmosphere. A relentless effort is being made to arrive at a level that deserves an enthusiastic welcome from all quarters, on the issue of reduction in the emission of carbon. However, "whatever happens to future greenhouse gas emissions, we have already started to witness inevitable changes to climate patterns. Adaptation to climate change is thus no longer a secondary and long-term response option only to be used as a last resort"<sup>5</sup>. The existing disaster management policies of South Asian governments focus mainly on relief and rehabilitation rather than empowering and equipping communities to wage their own battle. The strategy seems to be curative than preventive.

Realizing the seriousness of the issue, the Crossing Boundaries(CB) Project proposed a course on Water and Climate Change to be included in the curriculum of Partner Institutions (PIs). A training programme was conducted on Water and Climate Change: Vulnerability and Adaptation to enable the faculties to develop this course. A brief on the training has been provided in the subsequent chapter. The majority of the literature provided in this compendium is drawn from this staff training. The collection of readings focuses mainly on the Climate Change as a phenomenon, its manifestations and impacts on ecosystems, and implications on water resources management in South Asia. It also deals with the vulnerabilities to livelihoods and the strategies for adaptation in the context of Integrated Water Resources Management(IWRM). A reference is also made to the impact of climate change on vulnerable groups especially the indigenous group. Brief descriptions of the readings along-with references are provided in Chapter III "Resource Material in a Nutshell".

The readings in this compendium are organized into six broad categories for the convenience of the reader. The categorisation of the modules are as follows: (1) Climate Change and Water Linkages (2) Climate Change and Water Linkages (3) Impacts of Climate Change on Society (4) Measuring Vulnerability and Risk to Climate Change (5) Adaptation and Mitigation to Climate Change (6) Responses to Climate Change.

1. IPCC. 2007: Summary for Policymakers, in M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, pp 7-22. Cambridge: Cambridge University Press. Available online at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf> (accessed in November 2011).

2. Samath, Feizal. 2007. 'Climate Change Worse than Civil War - UN Expert', *IPS: The Story Underneath: 23 November 2011*. Available online at <http://ipsnews.net/news.asp?idnews=37463> (accessed in November 2011).

3. Grammaticas, Damian. 2007. Climate Change 'Threat to Asia', *British Broadcasting Corporation (BBC) News: 6 April 2007*. Available online at [http://news.bbc.co.uk/2/hi/south\\_asia/6532127.stm](http://news.bbc.co.uk/2/hi/south_asia/6532127.stm) (accessed in November 2011).

4. IISD (International Institute for Sustainable Development), IUCN (International Union for Conservation of Nature and Natural Resources) and SEI (Stockholm Environment Institute). 2003. 'Livelihoods and Climate Change'. A Conceptual Framework Paper prepared by the Task Force on Climate Change, Vulnerable Communities and Adaptation. Winnipeg: IISD. Available online at [http://www.iisd.org/pdf/2003/natres\\_livelihoods\\_cc.pdf](http://www.iisd.org/pdf/2003/natres_livelihoods_cc.pdf) (accessed in November 2011).

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