

Concept Note

International Conference

The Eastern Himalaya: Climate Change, Livelihoods, Growth and Poverty

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Introduction

The UNDP's Human Development Report of 2007-08 described climate change as the "defining human development issue of our generation". A global phenomenon, its impact is also local and is dependent on geography and area such as weather patterns, livelihood systems and adaptation cum mitigation mechanisms. It can adversely impact agricultural production and food security, create water stress and water insecurity, transform ecosystems and expose growing numbers of people to disease. Major Asian cities such as Kolkata, Dhaka, Bangkok and Jakarta are threatened by rising sea levels. Some 262 million people were affected by climate disasters annually from 2000 to 2004, over 98% of them in the developing world. In the OECD countries, one in 1500 people was affected by climatic disasters; however the figure for developing countries is 1 in 19- a risk differential of 79.¹

Climate Change is likely to impact the living conditions of a majority of the poor especially by the way it affects agriculture, on which depend the livelihoods of the vulnerable. Specialists say that extreme weather events such as floods and droughts will become more frequent, adding to the burdens of poverty, weak governance, conflict and poor market access. Moreover, land clearing for agricultural purposes, deforestation and changing land use as well as burning of fossil fuels are significantly increasing Green House Emissions (GHGs), thus leading to continuous global warming. Changes in temperature and precipitation are affecting agricultural systems across the world and impacting food security. Food insecurity often forces the poor to sell their assets leading to reduced expenditure on education and health, which affects overall growth and development. Extreme weather events can also damage infrastructure (highways, bridges, railways and warehouses) with a negative impact on food storage and distribution.

¹ *Human Development Report (2007/2008)*, UNDP, New York, p.3.

The Commission on Sustainable Agriculture and Climate Change observes that “ access to land and marine resources for food production is affected further by insecure property rights, changes in sea level and river flows, increases in large scale land acquisition, pressure on common property resources and emerging land uses such as urbanization and bio fuel production”.² Thus, climate change combined with weak institutional mechanisms for the marginalised sections are regarded as creating major future risks. Fruitful dialogue and coordinated action is required among the three connected streams of climate change, food security and sustainable agriculture. Climate resilient agricultural production system is a critical need for it is directly linked to growth and livelihoods.

Climate security is in the public good and thus climate change needs to be factored into national planning processes and development assistance. Its impact on economy, natural resources and ecological systems, infrastructure etc needs to be assessed and accordingly programmes and policies need to be chalked out. Gender bias too is under reported but, when disasters and tragedy strike, women often bear the brunt as caregivers and as household heads. Gender sensitive and women-centric policies are essential too, as climate change is not gender neutral. New tools and information systems need to be developed to make the effects of climate change which are better known at the local level and also encourage adaptation by the farmers to these changes. Another area of discussion is in exploring the challenges and opportunities facing a country level coalition and a regional level partnership.

Climate Change in the Eastern Himalayas

Our knowledge about the impact of climate change on mountain ecosystems is very limited. There is a link between climate change and mountain vulnerability. Various studies have stated that warming in the Himalayas has been much greater and high altitude systems are at a greater risk. The Eastern Himalayas encompass Bhutan, the North Eastern states and north Bengal hills in India, southeast Tibet and parts of Yunnan in China and northern Myanmar- a total of nearly 525,000 square kilometres. They cover five countries including Nepal and have very different geopolitical and socio-economic systems. Several approaches to conservation and protection have evolved in this region but recent times have witnessed a paradigm shift from “people exclusive” to more participatory approach at the landscape and ecosystem level such as the IFAD-led strategy in three

² “Achieving food security in the face of climate change”, *Final Report from the Commission on Sustainable Agriculture and Climate Change* (2012), CGIAR Research Program on Climate Change, Agriculture and Food Security, Denmark, March, p. 15.

states of the North-east, reaching hill communities.³ This region is more vulnerable as it is ecologically fragile and economically marginalised. Poverty, subsistence agricultural systems, underdeveloped and inadequate infrastructure etc make it even more susceptible.

In South Asia, the dependence of the people on perennial rivers like the Indus, the Ganges, the Brahmaputra etc is constant and these rivers are all fed by the water reservoir formed by the 16,000 Himalayan glaciers. The current trends of the glacier melt will result in increased summer flows in some river systems for some years followed by lower flows which will be substantially reduced as a consequence of climate change. It is going to have adverse impact on food production and economic growth. In the Eastern Himalayas, the glacier melt is leading to the formation of high altitude lakes which are very dangerous as they cause glacier lake outburst floods (GLOFs) with great damage to life, property, forests, farms and infrastructure. Some further argue that the frequency of GLOF events has increased in recent decades. Climate change is not only increasing the complexity and variability of the river flow generation but also hydropower generation systems set up on many rivers will be at risk if landslides and flash floods increase.⁴ The fast thawing of permafrost and decrease in the depth of frozen soil has been threatening many human settlements downstream, with frequent landslides and the degeneration of ecosystems.

Local water governance, integrated water management efforts of the community, engaging the farmers to participate, reviving traditional means of conservation, propagating equitable distribution etc are important methods / strategies which will be relevant in the future.⁵

India's North East is also witnessing the construction of huge dams with little concern for the environment, livelihoods or respect for human rights. People are not involved in the decision making process, in implementation or in the monitoring and evaluation of projects. A holistic impact assessment which would involve the participation of all communities affected by mega projects is very much needed.⁶ The proponents of large dams on the other hand point out the economic benefits, flood control and cheap but plentiful power supply etc. Modifying topography and massive construction by removing forest cover and changing the course of rivers need to take care of the fact that the eastern Himalayas fall in a highly seismic zone and thus any major earthquake could lead to disastrous impact. The calculation of sedimentation rates in the Brahmaputra system which is needed for making an estimate on the life of dams is another challenge. Poorly planned projects leading to loss of lands, homes & livelihoods along with poor rehabilitation and resettlement of

³ Climate Change Impacts and Vulnerability in the Eastern Himalayas (2009), MacArthur Foundation, Retrieved from http://indigenouspeoplesissues.com/attachments/article/3858/3858_ClimateChange_Himalayas.pdf

⁴ The Changing Himalayas-Impact of climate change on water resources and livelihoods in the Greater Himalayas, Perspectives on Water and Climate Change Adaptation, Retrieved from http://www.worldwatercouncil.org/fileadmin/wwc/library/Publications_and_reports/Climate_Change/PersPa_p_01_The_Changing_Himalayas.pdf

⁵ Hukil, Roomana , Water Conflicts in South Asia: Lessons from the Alwar River Parliament, Retrieved from www.ipcs.org/article/india/water-conflicts-in-south-asia-lessons-from-the-alwar-river-3792.html

⁶ Yumnam, Jiten (2012), An Assessment of Dams in India's North East Seeking Carbon Credits from Clean Development Mechanism of the United Nations Framework Convention on Climate Change, February, Retrieved from http://www.internationalrivers.org/files/attached-files/damsandcdm_ne_india_april_2012.pdf

people affected by projects add to the problems.⁷ An environmental impact assessment along with a social impact assessment should be a must.

Moreover, any construction of dams affects the upstream communities, most of whom are tribals – rich in resources but poor in terms of incomes. The benefits are appropriated by the downstream communities with higher incomes but lesser resources, thus creating inequity within the region/area itself which further leads to conflicts between tribals/non tribals and hill versus valley. Thus, equity impact assessment is equally important.⁸

Annual mean temperature is increasing in the region at the rate of 0.01degree Celsius per year or higher. Annual precipitation is projected to increase by 18% by the middle of the century and by 13% to 34% by the end of the century. The hydrological systems are also sensitive to climate change. Global warming is melting the glaciers, resulting in increase in melt water in the short term – as has been observed in significant flood surges in the Assam Valley, for example, in recent years -- but in the long term, it could mean reduction especially potential reduction in the dry months. This could have adverse impact on the population who are dependent on the rivers fed by melt water of the glaciers. Also downstream wetlands (wetlands are a source and sink of greenhouse gases) will be more affected. It is going to seriously affect regional food security, with net cereal production projected to decline by at least 4% to 10% by the end of the century. The region is rich in endemic species that are also at risk like the snow leopard, red panda, wild water buffalo, Asian elephant and one horned rhinoceros which are all found in scattered habitats all over Eastern Himalayas. These could face extinction as climatic changes would play havoc with ecosystems. Finally, the region will witness a range of health issues ranging from increase in diarrheal diseases (due to poor and declining water quality) to alarming proportions of disease such as dengue and malaria etc which are sensitive to climate.⁹

Three bio geographical realms meet in the region namely the Indo-Malayan, Palaeartic and the Sino-Japanese. It comprises of 39% of the Himalayan biodiversity hotspot, 8% of the Indo-Burma and 13% of the Mountains of Southwest China. This region is also home to at least 7500 flowering plants, 700 orchids, 58 bamboo species, 64 citrus species etc. The farming systems support a wide range of agro biodiversity which in turn is a source of economic well being. The changes in temperature and precipitation are affecting shifting cultivation areas, cereal based hill farming systems etc but the most vulnerable zone is the specialised pastoralist system in the high altitude areas of Eastern Nepal, Bhutan, Arunachal Pradesh etc. Numerous factors including climate change

⁷ Menon, Manju, Vaghlikar, Neeraj, Kohli, Kanchi and Fernandes, Ashish (2003), Large dams in the Northeast- a bright future?, *The Ecologist Asia*, January-March, Vol 11, No 1, pp.4-5.

⁸ Singh, Shekhar (2003), Social and Environmental Impacts of Large Dams in India, *The Ecologist Asia*, January-March, Vol 11, No 1, p.63.

⁹ *Ibid.*

is contributing to the loss of crop and livestock biodiversity which in turn would have implications for agro-biodiversity and food security.¹⁰

People's perception and awareness about the impact of climate change has varied in this region, although people do talk about weather changes, variations in the growing season of certain crops, reduced or lack of snowfall etc. Often we tend to ignore the adaptations already initiated at the local level by the simple villagers which many a times can open a window of new opportunities and possibilities. It is therefore important to look at the impact of climatic changes in the Eastern Himalayas and examine the policy initiatives and adaptation mechanisms which have been developed, especially with regard to better documentation and dissemination.

The countries of the Eastern Himalayas face the multiple challenges of scarce resources, fragile ecosystems, increasing population, poor economic growth and socio-political conflicts. Since the region is also witnessing migration from rural areas to cities, a phenomenon that is having extensive but, for the main, undocumented or unmapped social impacts; the workload on women is likely to worsen. Climate change will not only add to existing burdens but will also be responsible in the future for aggravating social and political conflicts between areas within India as well as between regions.

The International two-day Conference 'The Eastern Himalaya: Climate Change, Livelihoods, Growth and Poverty' will explore some of these issues as part of an effort to evolve better strategies for capacity building and sustainable growth.

¹⁰ Biodiversity in the Eastern Himalayas: Status, Trends and Vulnerability to Climate Change (2010), MacArthur Foundation, Retrieved from bim.aseanbiodiversity.org/elib/reference/download.php?refNO=07663&fielded=7663