

Assessment of the outcomes of the HighNoon project: Adaptation to changing water resources availability in Northern India with respect to Himalayan glacier retreat and changing monsoon patterns.

The EU funded HighNoon project has been a three year project with the aims of developing new scenarios for snow and ice melt, monsoon patterns and water resources based on improved regional climate simulations and linking these to realistic regional socio-economic scenarios to assess the changing water resources and providing new methods for the prioritization of adaptation measures to be used for the selection of adaptation options. A key aspect of the project has been the participative development of specific multi-sector adaptation measures in consultation with stakeholders.

The project has produced an impressive range of outputs including:

- new assessments of regional climate change for the 21st C,
- a new assessment of the importance and likely fate of the Himalayan glaciers,
- an integrated, spatially explicit analysis of water availability for future agriculture,
- an assessment of possible future impacts on non-agricultural sectors, such as hydropower, domestic water etc.
- an analysis of the potential hazards of glacier lake outbursts
- a comprehensive survey of the perception of vulnerability and priorities for adaptation.

In addition there is a good range of inventories, datasets, models and tools which should provide a valuable resource for future studies and planning.

One of the major challenges for this area of research is its trans-disciplinary nature and the necessary associated collaborations of researchers across the social and physical sciences. The issues surrounding this underlined many of the recommendations of the mid-term Advisory board report in 2010. In particular it was perceived that there needed to be better communication between the leaders (and researchers) of the individual Work Packages. As a result the project management put in place a number of actions – including detailed GANT charts on data availability, two-monthly telecons and the exchange of a co-researcher between TERI and MPI.

A particular issue concerning the communication of uncertainty in regional climate simulations (recommendation 5) was discussed in detail in a specific technical report¹ and summarised in the HighNoon Policy Brief². One area left unresolved, possibly due to the limited length of the HighNoon RCM runs, is the possible changes of extremes (precipitation, runoff and temperature); the HighNoon Policy Brief does identify this as an important topic for future research.

Further the Advisory group urged HighNoon to good linkages with International and national bodies – this was accomplished and is evidenced by the significant International and governmental representations at the Kathmandu workshop and Open Science Policy Seminar in Dehli in April 2012³.

It is worth recording the Policy Brief³ is an excellent summary of the issues HighNoon has been tackling and their progress towards their resolution.

Finally the Advisory group recommended that data sets, tools and knowledge be made readily accessible to the Indian and International communities (recommendation 11). The data produced and models used are outlined in detail on the HighNoon web site. Long-term access is not entirely clear the possible EU data warehouse could be one of the solutions to ensure accessibility of the data after the lifetime of HighNoon.

In conclusion the achievements of the HighNoon team have been impressive. They have made a clear and understandable analysis of the possible future climate changes and impacts in the Himalayan and Ganges regions. The identified vulnerabilities within the region and explored possible adaptation options and produced a range of outputs relevant to both policy makers and the scientific community.

1. [Delivery Report with analysis of climate uncertainty \(1.4\)](#)  The aim of this report is to make climate model uncertainty relevant to impact modelers and social scientists. This report therefore provides relevant advice to the hydrological modelers on the available climate scenarios, as well as to inform adaptation strategy on the uncertainty in future climate and therefore the uncertainty in adaptation strategy.
Andy Wiltshire, Camilla Mathison, Jeff Ridley, Claire Witham, Carol McSweeney, Pankaj Kumar, Daniela Jacob, Friday 19 November 2010
2. [HighNoon Science and Policy Brief - Adaptation to Climate Change in the Ganges Basin, Northern India](#)  Science and Policy Brief with findings and recommendations for policy makers. 'Moors, E. J. and C. Siderius, 2012. Adaptation to Climate Change in the Ganges Basin, Northern India: A Science and Policy Brief. Alterra, Wageningen UR, Wageningen, the Netherlands, p48'.
HighNoon Secretary, Thursday 31 May 2012
3. [Short report on on Open Science Policy Seminar, April 4, 2012](#) An Open Science and Policy Seminar was organised in conclusion of the HighNoon Project in collaboration with the EU FP7 on the 4th of April at The Silver Oak, IHC. *HighNoon Secretary*

Richard Harding 6 June 2012