

**Global Change Impact Assessment for Himalayan Mountain  
Region for Environmental Management and Sustainable  
Development (APN 2002-03)**

**Project Leader:**

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## **APN funding**

US\$ 60,000

## **Participating countries**

India, Nepal, and Pakistan

The Guelph University of Canada funded the travel of one of the keynote speakers, Ms. Archana Shrestha, at the year-end meeting in Kathmandu, Nepal in January 2003.

## **Brief introduction and background**

The Himalayan Mountains are highly susceptible to global change because of their young and fragile nature coupled with sharp gradients. In 2002, APN supported the organization of a scoping workshop (APN 2001-17) in Kathmandu for developing a project proposal on Global Change Impact Assessment for Himalayan Mountain Regions. This two-year project, the follow-up of the workshop, focuses on the following activities related to the Himalayan Mountain regions:

- Identification and understanding of key ecological and socio-economic parameters, including their sensitivities and vulnerabilities under global changes and cumulative changes due to ongoing human interventions;
- Assessment of the vulnerability to and impacts of global change on food security and water resources including transfer of resources between uplands and lowlands;
- Assessment of the vulnerability of its mountain people to global change and to investigate the factors that promote resilience of these groups in the face of multiple and interacting environmental stresses; and
- Informing, from a scientific basis, the policymaking processes at local to regional scales regarding global change impacts on food security and water as well as response strategies for coping with and adapting to the changes.

## **Outline of activities conducted**

During the first year (2002/2003) of the project, analysis of recent experience in climate variations and extreme events in the Himalayan regions together with initial assessments of vulnerability and impact of water resources and agro-ecosystems and the mountain people were conducted. These focussed on three watersheds, one in each participating country. The project activities included:

- Country reviews of recent climate variability and extreme events; water availability and agricultural practices and assessment of their sensitivities to climate change and variability;
- Assessment of socio-economic vulnerabilities of past climate variability and recent globalization processes;
- Synthesis and aggregation of country studies highlighting the regional sensitivity and vulnerability to global change; and

- Developing common approaches and the sharing of research results and experiences within the involved group of researchers from the participating countries.

### **Outcomes and products**

- Generation of an integrated regional database on science and society in the Himalayan regions relevant to global change impact assessment studies;
- Creation of a common web site for the project;
- Training in 2002 of one research team member at the AIACC Trieste workshop and initial capacity building by involving post-graduate students in research activities;
- An intensive 3-day inception workshop was held in Kathmandu, Nepal in June 2002. At this workshop, country teams made background presentations, prepared detailed work plans and timelines for year one activities, and finalized an outline for the country studies and data formats;
- The participating countries each produced country studies on recent climate variability and their impacts on water and agriculture in their respective sections of the Himalayas and selected watersheds. These studies also collated and analysed pertinent data from various sources to identify global change associated socio-economic impacts with adaptive responses (spontaneous and planned); and
- A regional background paper and a draft synthesis report were prepared.

An intensive 3-day, year-end workshop was held (back-to-back with APN 2002-12) in January 2003 in Kathmandu, Nepal where keynote background papers and results of country level studies and the draft synthesis report were presented and discussed. Detailed work plans and timelines for year two activities were also prepared and an outline for the country studies and data formats were finalized.

### **Future directions and follow-up work**

In the *second year/final phase (2003/2004)*, the project work will be directed to global change related vulnerability analysis and integrated impact assessment with respect to food security and water resources including highland-lowland transfer of resources in the Himalayan Mountain regions. Attention will be on providing information needed to reduce the vulnerability of Himalayan water resources, agricultural systems and mountain peoples' livelihoods, to global change. The activities will include:

- The database generated in the first year will be developed further and made more quantitative through various measures including some field studies and interviews with key players;
- Selected GCM-based RCMs, as well as economy-ecology models, will be used to develop vulnerability and impact assessment scenarios;
- Country level workshops will be organized in the participating countries with mountain stakeholders and policy makers;
- Villages and groups within and between watersheds will be identified that have greater water and food security; and qualitative analysis of institutional and other strengths that provide resilience will also be carried out;
- Workshop/Seminar will be held in Kathmandu in December 2003 for finalization and dissemination of the research findings among researchers, stakeholders and policy makers; and
- Final report will be published and disseminated through web site as well. Papers based on the research will be submitted for publication in peer-reviewed Journals.