

## Background

Freshwater is a finite and vulnerable resource needed by multiple stakeholders for a range of purposes: domestic water supply, irrigation, hydropower, and industrial production. The Hindu Kush-Himalayan (HKH) region is one of the largest storehouses of freshwater in the world, and its mountains are the source of major river systems that serve some 500 million people in South Asia. These rivers not only provide water, they are also a major focus of religious and cultural life. However, access to clean water remains one of the major challenges for the region, despite theoretical water availability being high. It was estimated that in 2000 about 15% of the population in South Asia did not have sustainable access to improved water sources and 45% had no access to sanitation facilities (UNDP 2004). In Bangladesh alone more than 20 million people drink water exceeding the national standard for arsenic levels (UNEP 2001). This poor level of access to freshwater and sanitation is partly because of the seasonal nature of the water supply. Overall, inland surface water quality in the monsoon season is within tolerable limits with respect to the standards set by the countries concerned. However, water quality becomes worse in the dry seasons. The surface water in the region remains unprotected from raw industrial and municipal wastewater, runoff pollution from chemical fertilisers and pesticides, and oil and lube oil spillages from the operation of sea and river ports in coastal areas. In particular, population growth, urbanisation, unplanned development, land degradation, and lack of infrastructure for waste disposal are common reasons for the rapid deterioration in water quality in the majority of the rivers, streams, and lakes in South Asia. Deteriorating water quality poses a threat both to the environment and to the health of the people in the region.

To be able to formulate effective policies and to plan for the future it is necessary to have reliable data on the status and trends of a range of environmental indicators from the whole of a river basin. Since most of the large rivers in South Asia pass through more than one country, this means sharing information among and between countries. The severe shortage of reliable data on environmental indicators, and especially on water quality, is hindering attempts to address water issues in the region. A mechanism is needed for assessing river water quality and sharing this data and information across national boundaries. This could help identify potential problems before they lead to serious environmental and health effects, and could also contribute significantly to achieving the Millennium Development Goal, "to reduce by

half the proportion of the population without sustainable access to safe drinking water by 2015".

Regional experts in water resources and policy from India, Nepal, and Bangladesh discussed the issue of water quality in transboundary rivers during a meeting at the Cooperative Monitoring Center (CMC) of Sandia National Laboratories (SNL), Albuquerque, New Mexico, in 1998. The meeting led to the setting up of the CMC project 'South Asia Transboundary Water Quality Monitoring' (SATWQM), formally initiated at a workshop held in Kathmandu in September 1999. SATWQM was set up to share regional water quality information as a means of building trust and confidence and promoting regional cooperation. After a further workshop in February 2002, project partners from Bangladesh, India, Nepal, and Pakistan started water quality monitoring at 18 stations in the Ganges and Indus rivers and their major tributaries (Rajen et al. 2003). Basic water quality parameters such as pH, temperature, conductivity, salinity, dissolved oxygen, nitrates, iron, hardness, bacteria, and benthic organisms were included in the monitoring. Figure 1 shows the major river basins of the region and the approximate geographical locations of the monitoring stations. In some places, several sampling sites are located in close proximity to each other, for example upstream and downstream of a city or other point of interest.

In April 2004, CMC started collaboration with ICIMOD to broaden the scope of the cooperation in the HKH region and extend the partnership of the project to government-level institutions. This new development was based on the recognition of ICIMOD's ongoing activities in promoting regional cooperation and of the extensive water-related network already developed under initiatives like the Regional Flood project and the Hindu Kush-Himalayan Flow Regimes from International Experimental and Network Data (HKH-FRIEND). The SATWQM project was renamed the 'South Asia Water Analysis Network' (SAWAN).

As part of the collaboration, a Regional Integrated Workshop on Water Quality was held in Kathmandu from 29 June to 2 July 2004 by ICIMOD and CMC with support from the US Department of Energy, Sandia National Laboratories; and the US Department of State, Regional Environment Office for South Asia, to build better understanding on water quality issues in the region. This publication summarises the major findings, discussions, and conclusions of the workshop.

## Workshop Objectives

The objective of the workshop was to broaden the partnership and to build better understanding of water quality issues among the institutions involved in water quality in the region.

The specific objectives of the workshop were:

- to discuss the activities and progress made on transboundary water quality monitoring;
- to discuss country-specific issues on water quality;
- to plan and receive guidance and input from SAWAN partners on the future development of the project; and
- to extend the partnership of the project.



Figure 1: Major river basins in South Asia and water quality monitoring stations under SAWAN

## Participants

Representatives of the project partners, key government organisations associated with water quality, international organisations, donor agencies, academic establishments, and NGOs attended the workshop. The list of participants is provided in Annex 2.

## Workshop Process and Structure

The workshop was organised in two parts. The first part (three days) consisted of presentations on supporting technologies and programmes, country-specific water quality issues, and the status of transboundary water quality monitoring conducted by partners of SAWAN. In this first part, discussions were held on the needs and priorities in the region on water quality, and on the sustainability of the SAWAN project. The second part of the workshop included a technical meeting and training on data transmission and retrieval, which was held at the ICIMOD training centre, mainly for the SAWAN partners collecting water quality data. An optional field trip to ICIMOD's Demonstration and Training Centre site in Godavari was also organised during the second part of the workshop.

## The Report

This report has been prepared to provide a review of the activities and a summary of the presentations and discussions held during the regional workshop. The full text of the papers will be published in a separate volume. The report is divided into four chapters. Chapter One introduces the project and the objectives of the workshop; Chapter Two describes the opening and technical sessions of the workshop with a brief summary of the presentations; Chapter Three includes reports of the training and the field visit; and Chapter Four summarises the key achievements of the workshop. Annex 1 provides the programme agenda and Annex 2 the list of participants.



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**Foam from a paper mill in the Narayani river at Gaidakot – untreated industrial effluent is a major source of river pollution in the region**