conclusions and key achievements

As in other regions, the surface water in South Asia is poorly protected from untreated industrial and municipal wastewater, runoff pollution from chemical fertilisers and pesticides used in agriculture, and oil and lube oil spillages from the operation of sea and river ports in the coastal areas. This poses a threat both to the environment and to the health of the people in the region. Reliable data is needed on the status and trends of a range of environmental indicators from an entire river basin in order to formulate effective policies for integrated water management and plan for the future. The assessment of river water quality can help to identify potential problems before they cause serious adverse health effects.

The SAWAN project, originally called SATWQM, was initiated in 1999 with the aim of establishing a regional network for sharing water quality information, and as a means of building trust and confidence and fostering regional cooperation. Since 2002, SAWAN partners from Bangladesh, India, Nepal, and Pakistan have been carrying out monthly monitoring of basic physical, chemical, and biological water quality parameters from 18 stations in the transboundary sections of the Ganges and Indus rivers and their major tributaries.

The limited monitoring that is being conducted under the project is a first step towards initiating a full-scale well-coordinated regional monitoring programme. It is expected that the project will bring significant benefits to each of the countries involved with regards to understanding the sources of possible contamination and establishing appropriate monitoring programmes. The transboundary nature of the SAWAN project allows the assessment of river water quality in entire river basins, rather than simply of an area limited by a country's political boundaries. The SAWAN project database is unique because of its transboundary and regional focus, and is likely to become an important part of other current or future South Asian water resources studies.

The Regional Integrated Workshop on Water Quality brought together key institutions and professionals working in water quality issues from the region. The participants noted that significant attempts have been made by the governments of Bangladesh, India, Nepal, and Pakistan to formulate environmental legislation and effluent standards in order to address country-specific water quality issues; however, they are far behind in terms of implementation. The participants expressed their continued interest in and commitment to fostering regional cooperation through water quality

monitoring and data sharing. They made the following comments and recommendations based on the discussions held during the workshop.

- There is a need for a 'regional level' protocol for water quality monitoring and data sharing among participating countries through nodal agencies, which has approval from the respective governments.
- To ensure the reliability and authenticity of data, it is necessary to introduce data validation and a detailed analysis of data for error detection and removal (flagging) of outliers.
- There is a need for a methodology for the classification of water bodies based on their existing quality and the desired water quality.
- The laboratories/institutions selected and involved in the water quality monitoring projects should be accredited.
- To avoid duplication, the SAWAN project should be linked to other similar regional and global initiatives.
- There is a need to relate the socioeconomic dependence of stakeholders to river systems.
- There is a need to work on improved river basin management with other partners.
- Both headwater areas/sources and downstream locations need to be monitored to enable correlation of data and for better understanding.
- It was suggested that an inventory be prepared of the biodiversity resources related to rivers being studied along a particular stretch.
- Education programmes should be initiated to increase awareness at different levels including schools and universities.
- It was suggested that a directory of NGOs and community-based organisations (CBOs) working in river water quality-related areas be prepared for all participating countries as a basis for establishing better government/civil society partnerships.

The workshop also expanded the network by including government organisations and other academic and research organisations. The data collection partners have been trained and their data sharing capabilities improved, particularly the uploading of data and information onto the website.

The workshop identified priority areas in water quality in South Asia, in particular four specific areas important for the sustainability of the SAWAN project: continuation and next steps of transboundary water quality monitoring; assessment of river water quality monitoring using bioindicators; modelling of water quality of transboundary rivers in the region; and development of protocols for water quality standards for the region. Concept notes have been prepared for each topic. Funding for the continuation of SAWAN will be sought from donors.

The project web site has been completely transferred to the ICIMOD server from CMC. The SAWAN web site and the database system are being upgraded to improve the user interface. The geographic information system (GIS) and other decision

support tools will be incorporated into the current web site and database system to demonstrate the use and value of sharing water quality data and information at the a basin level. The GIS integration could lead to an improved understanding of water quality issues by enabling correlation of data and demonstration of water quality trends along the various geographic stretches of the rivers concerned.

As envisaged from its inception, the SAWAN project is expected to enhance the technological capabilities of each country's national river water quality monitoring programmes by increasing the sophistication of the technology used, improving the quality and comparability of the data collected, and building trust and confidence between and among countries.

CED

Water for all

WWF-Pakistan

Untreated sewerage and industrial effluents discharged directly into a river

WWF-Pakistan

Waste water is being used as a reliable source of irrigation in Pakistan