

# Regional Workshop on Hydrology of the Hindu Kush-Himalayan Region

The Regional Workshop on Hydrology of the Hindu Kush-Himalayan (HKH) Region, jointly organised by UNESCO and ICIMOD, in collaboration with the Department of Hydrology and Meteorology (DHM) of the Ministry of Water Resources of His Majesty's Government of Nepal (HMG/N) and the German International Hydrological Programme (IHP/OHP) Committee, was held from 23-24 March, 1996, at the ICIMOD Conference Hall, Kathmandu. It was attended by 26 participants from seven countries of the HKH region. A list of participants, the agenda, and the programme, as well as a draft proposal for a Flow Regimes from International Experimental and Network Data (FRIEND)-type project in the HKH are given in Annexes 1, 2, and 3 respectively.

## Inaugural Session

Mr. Egbert Pelinck, Director General of ICIMOD, highlighted the complexity of the climate and hydrology of the HKH region in his welcome address and emphasised the need to understand these complexities in order to manage water resources and meet the growing needs for human and animal consumption. He added that large variations in rainfall patterns led to extremes in seasonal river flows and pointed out that inaccessibility, an inadequate number of hydrometeorological stations, and the costs incurred in observing and monitoring hydrometeorological parameters had added to the difficulties of developing a long-term, reliable hydro-meteorological database and, consequently, had added to the problem of understanding these complexities of climate and hydrology in the region. He emphasised the need for regional cooperation for the sustainable management of water resources, given the transboundary nature of all the major river systems in the region.

Mr. Pelinck stated that ICIMOD had joined hands with UNESCO under its International Hydrological Programme (IHP) and the DHM-HMG/Nepal in December 1989 to organise a Regional Workshop on Mountain Hydrology which resulted in the establishment of a project on Mountain Hydrology under UNESCO's International Hydrological Programme (IHP) during its IVth phase. The 1989 Regional Workshop also led to the establishment of the Regional Working Group (RWG) on Mountain Hydrology in the Hindu Kush-Himalayas. Apart from the regional participating countries, the Regional Working Group included UNESCO/IHP, ICIMOD, and the World Meteorological Office (WMO) and, more recently, had been supported by IDRC and the German IHP/OHP Committee. He said that the agenda of the present meeting included the finalisation of a FRIEND-type project for the HKH. He also welcomed the interest of Dr. Alan Gustard of the Institute of Hydrology, U.K., and the FRIEND Steering Committee and Dr. Wolfgang Grabs, Director/Head of the Global Runoff Data Centre (GRDC), Koblenz, Germany, in supporting and establishing the proposed FRIEND-type project. Mr. Pelinck also expressed gratitude on behalf of ICIMOD to the Ministry of Water Resources of His Majesty's Government of Nepal for their continued support in establishing a regional research programme on mountain hydrology.

**Mr. Kiran Shankar Yogacharya**, Director-General, Department of Hydrology and Meteorology (DHM), briefly described the background and objectives of the Regional Workshop. He pointed out that realising the need to understand the complex hydrological systems of mountain environments, UNESCO and ICIMOD, together with HMG/N, had organised a Regional Workshop on the Hydrology of Mountainous Areas in 1989. This workshop had recognised the urgent need for systematic study of hydrological processes in order to use and develop natural resources on a regular basis with minimal detrimental effects, and it had recommended the establishment of a Regional Working Group and finalisation of a detailed project on the hydrology of mountainous areas for submission to the Ninth Session of the Intergovernmental Council of the IHP of UNESCO. As per the recommendation of this Workshop, Project: H-5.6 was instituted into IHP-IV of UNESCO.

Mr. Yogacharya also added that the Regional Working Group (RWG) had already met four times, twice in Kathmandu and twice in New Delhi. Under the joint sponsorship of UNESCO, ICIMOD, and the German IHP/OHP National Committee, the fourth meeting of the RWG had been held in New Delhi in 1995 to explore the possibilities of launching a FRIEND-Type project for the HKH region. This meeting was attended by five of the eight HKH countries and representatives of UNESCO and the German IHP/OHP National Committee. An Interim Working Committee had been formed to prepare a preliminary proposal. Mr. Yogacharya, citing one of the ancient epics of the *Mahabharat* in Sanskrit, stated, *Andham balam jalam cha ahuh, pranetavyam vichakshanae*, meaning that water is a blind force that has to be properly guided and channelised by scientists or engineers for optimum human welfare and national/regional development. He added that water not harnessed properly would be lost forever. Delay in the development of water resources would mean loss of its potential wealth.

**Mr. L.A. Mandalia**, UNESCO Representative, conveying greetings from the Director General of UNESCO, Professor Frederico Mayor, stated that UNESCO was committed to launching a FRIEND-type project in the HKH region. The FRIEND project, with four groups in Europe and South Africa working under the International Hydrological Programme (IHP), was one of the most active and successful UNESCO projects. Pleased with the presence of six of the eight regional member countries (RMCs), including DHM, HMG/N, along with collaborating institutions, viz, ICIMOD, WMO, the German IHP/OHP Committee, and other cooperating agencies such as the Institute of Hydrology, U.K., GRDC, IHP-Slovakia, he recalled the long-term collaboration between UNESCO and ICIMOD and urged the unique gathering to move forward to produce concrete results.

**Dr. Z.W. Kundzewicz**, WMO Representative, thanking the organisers on behalf of Professor G.O.P. Obasi, Secretary-General of WMO, noted that, in keeping with the WMO mandate, the organisation was keenly interested in the hydrology of mountain regions. Acknowledging the fact that the lack of data on mountain water resources can be due to inaccessibility, the harsh environment, hydrological aberrations, and sometimes problems with neighbouring countries, he emphasised the need to overcome these drawbacks with a denser network of stations using a consistent data collection system. He also added that WMO promotes cooperation on

global and regional levels and mentioned that the GRDC and the World Hydrological Cycle Observing Systems (WHYCOS) had established a global network on the major rivers for monitoring flow and water quality and then transmitting these data through satellite to data centres. In conclusion, he hoped that plans formulated at the workshop would come to fruition.

**Professor A. Herrmann**, representative of the German IHP/OHP Committee and of the FRIEND Steering Committee, noted that both the Regional Workshop on Hydrology and the International Conference on Ecohydrology were being co-funded by the German IHP/OHP under the auspices of UNESCO. At the outset, on behalf of the National Committee of the Federal Republic of Germany for the International Hydrological Programme (IHP) of UNESCO and the Operational Hydrological Programme (OHP) of WMO and on behalf of the steering committee of the Western and Northern European FRIEND, he expressed gratitude for being given the opportunity to assist in launching a FRIEND-type project for the Hindu Kush-Himalayan region. He also said that Germany could be considered to be one of the most conscientious sponsors of HKH countries, in terms of their long-standing interest in regional hydrology in the HKH on a small catchment scale under the auspices of UNESCO. Work on small catchments had been recommended by the First Consultative Meeting of the Regional Working Group, jointly organised by UNESCO and ICIMOD in Kathmandu in October 1990. He said that direct interactions between delegates and scientists from several high mountain regions of the world, over the next few days, during the Ecohydrology Conference, would also contribute towards the establishment of a competent, institutionalised regional counterpart in the near future for a better understanding of regional hydrology in the HKH region. He added that the German IHP/OHP committee strongly supported both the Workshop and the Conference in the establishment of a FRIEND Group with a systematic organisational structure and action plan. He hoped that many suggestions would come forth during the deliberations and that the work of the IHP would not be limited to a specific region.

**Dr. D.N. Dhungel**, Secretary, Ministry of Water Resources, in his inaugural address, highlighted the importance of water resources and noted that previous meetings of the Regional Working Group on Hydrology had paved the way for the launching of a FRIEND-type project in the HKH. He added that transboundary characteristics and the diverse nature of rivers stimulated scientists to open new dimensions in the field of hydrology. This was as true of other regions as it was for the HKH. He gave assurances that His Majesty's Government of Nepal would extend all possible support to the collaborative regional project.

**Professor S.R. Chalise**, Water Resources' Specialist, ICIMOD, recalled the close collaboration that had taken place between UNESCO, ICIMOD, and the Department of Hydrology and Meteorology of HMG/N since 1989 to develop a FRIEND-type project in the HKH and the excellent support received from the regional member countries and other institutions such as WMO, GRDC, the German IHO/OHP Committee, the Institute of Hydrology, U.K., and the Slovak IHP Committee. He concluded the inaugural session with a vote of thanks.