

The Inaugural Session*

Mr. S. N. Upadhyaya, Secretary, HMG/N, Ministry of Water Resources, was the chief guest at the inaugural session. Other invitees were Mr. M. Ishikawa, Minister, Embassy of Japan and other guests.

Welcome Address by Mr. Egbert Pelinck, Director General, ICIMOD

Welcoming the participants on the occasion of the inauguration of the 'Regional Workshop on Landslide Hazard Management and Control in the Hindu Kush-Himalayas'. **Mr. Egbert Pelinck**, the Director General of ICIMOD, stated that the regional workshop was one of the activities undertaken by ICIMOD under the project on Landslide Hazard Management and Control. The project was introduced in 1994 with the financial support of the Government of Japan. For this he expressed grateful thanks to the Government of Japan, and added that the support had enabled ICIMOD to introduce systematic activities on various aspects of landslide hazard management and control.

Mr. Pelinck reiterated that the degradation of mountain environments in the HKH, whether due to natural or man-made processes, was of vital concern to ICIMOD. Hence, since its very inception, ICIMOD had undertaken studies and activities that contributed to the understanding of this degradation and of ways to halt it. He informed the audience that some of ICIMOD's first publications dealt with the problems of erosion, sedimentation, floods, glacial lake outburst floods (GLOFs), and landslides.

Mr. Pelinck further added that landslides are not only the most frequent disasters but also the ones that recur annually during the monsoon, causing widespread loss of life, property, and infrastructure (the two latter being built at great cost in the hills and mountains). The HKH mountains probably had to face the worst combination of a very fragile and young geology, very steep slopes, and intensely high monsoon rainfalls confined to a few summer months. Hence, the mountain environments of the HKH are inherently unstable and prone to disasters such as landslides.

Talking of the rapid economic transformation, he stated that, apart from the natural factors and processes that cause disaster, the HKH region was receiving major infrastructural constructions, such as roads, dams, and reservoirs, and these could continue to increase in the following decades. Experience across the HKH countries had shown that landslide incidence, as a result of badly planned infrastructural development occurred throughout the region and was a matter of great concern, because expensive investments were wasted without achieving the desired objectives. Landslides also added to the high cost of maintenance of such infrastructures when located in the wrong place or designed without adequately taking into account the requirements and limitations of the physical environment. He further stated that once landslides had occurred, the cost of stabilisation was very high. For example, for China's mountain railways, the cost of stabilising one large landslide was found to be as high as USD 1.7 million.

Local factors contributed as much, he stated, and increasingly, it was also poverty that was the cause of landslides. Poor farmers were forced to cultivate on steep and unstable slopes, thereby contributing to mass wasting and landslides.

The combined effect of these three causes of landslides was human misery, economic loss, and environmental degradation. And these were the very reasons why ICIMOD was involved in landslide hazard mitigation and management. It was a mountain specific issue addressing the dual problems of poverty alleviation and environmental conservation -- the two reasons for which ICIMOD was established.

* The Inaugural Session was actually the second session of the Workshop. The sequence of reporting has been altered in the document to ensure continuity of the topic.

It is in this context that ICIMOD had introduced its activities on Landslide Hazard Management and Control. Four state-of-the-art reviews on landslide management had been completed for China, India, Pakistan, and Nepal. A Climatic Atlas for Nepal was being prepared. ICIMOD had also organised a Regional Training Programme on Slope Instability Mapping Using Remote Sensing and GIS in 1994.

Mr. Pelinck stated *"In addition to providing a unique update to our knowledge about landslide hazards in the Hindu Kush-Himalayas, this Regional Workshop is also the first step towards developing a Regional Collaborative Training Programme on Landslide Hazard Management and Control in the HKH. With your joint experiences, we have a unique forum for sharing knowledge from both within and outside the HKH region and for identifying key areas for training in accordance with the needs and priorities of the regional countries of the HKH. ICIMOD is also keen to help develop collaboration among national institutions from the HKH countries, as well as among institutions from the HKH and the developed world, so that state-of-the-art methods and technologies can be used to solve the problems of the HKH within such a collaborative and cooperative programme."*

He once again expressed gratitude that, in response to the invitation, leading experts from six regional member countries of ICIMOD and from Japan, the Netherlands, Germany, and Switzerland were present. He hoped that the deliberations and recommendations would help to develop a truly useful and practical training programme on landslide management and control and wished the participants a very fruitful stay.

He also expressed grateful thanks to Mr. S.N. Upadhyay, Secretary, Ministry of Water Resources of HMG/N for the keen interest and strong support of the Ministry and to the Government of Japan for their financial support to carry out the project.

Address by Mr. M. Ishikawa, Minister, Embassy of Japan

Expressing his happiness in speaking to this unique forum of experts from different disciplines, Mr. M. Ishikawa, Minister, Embassy of Japan, said that, while the participants from the HKH region and outside the region share knowledge on a common concern of landslide hazard management and control, the result would not only benefit Nepal but the whole of the HKH region. Noting that the countries in the region had been experiencing landslides mainly due to heavy rainfall and the presence of fragile mountain slopes, he said it was sad to note that each year about 400 people died in the Himalayan region due to landslides, and this represented 30 per cent of the total deaths worldwide, annually due to landslides. The economic losses caused by landslides had been increasing every year, and thus was a global concern, he emphasised. Landslides can set back the economic development processes of the regional countries. Giving the example of Japan where damage to public facilities caused by landslide have been in the range of 0.3 per cent to 1.5 per cent of the GNP in the past decade, he stated that it had become increasingly common to seek counter measures to reduce such losses in all countries.

Noting the contribution of ICIMOD, since its inception in 1983, on sustainable management of fragile mountain areas in the HKH region, he said that, in the last three years of his stay in Nepal, he had had the pleasure of interacting with ICIMOD and discussing possible ways to improve awareness on landslide management and control measures. Mr. Ishikawa said that he was happy to recommend ICIMOD to his government for assistance. The present assistance to ICIMOD was the first time the Government of Japan had assisted an NGO in this region.

Hoping that ICIMOD would continue to play an important role in translating output from research activities into practical implementation in its regional countries, through various collaborating national agencies for landslide hazard management and control, he said that although it was a challenge, ICIMOD would be successful because of its integrated approach. The first step towards landslide hazard mitigation was to understand the nature of landslide phenomena and the current status of programmes and activities on landslide hazard management and control in the HKH.

Mr. Ishikawa concluded by saying that while continued and extensive dialogue between the participating experts from various countries were expected to help formulate guidelines for landslide hazard management and control in the HKH region, the Government of Japan, apart from funding the project,

had also supported ICIMOD's activities by providing Japanese expert on the subject since last year. He stated that the Government of Japan was considering increasing its support to ICIMOD.

Inaugural Address by the Chief Guest, Mr. S.N. Upadhyay, Secretary, HMG/N, Ministry of Water Resources

Welcoming the experts, **Mr. S.N. Upadhyay**, Secretary, Water Resources said that the workshop was very appropriate, topical, and timely.

Thanking the delegates from outside the region, he expressed appreciation for the genuine concerns demonstrated by ICIMOD and friendly nations abroad in preserving the unique but fragile ecosystems of the Hindu Kush-Himalayas and the wellbeing of its hardy inhabitants.

Landslides and debris flow, released by torrential rain or seismic activity impacting unstable slope material, had been a common feature and cause for apprehension from the perspectives of human security, livelihood, and infrastructural development for most of the Hindu Kush-Himalayan region. Mr. Upadhyay stated that landslides were a major problem in Nepal where an average of more than one landslide per sq.km. has been recorded in the Middle Mountains, Mahabharat *Lekh*, and the Siwaliks, i.e., the most densely-populated areas. Excessive rainfall in the monsoons, snowmelt, and earthquakes form the most common triggers for dam-forming landslides in a wide range of physiographic settings, resulting in phenomena such as temporal glacial lakes and ephemeral ponding of rivers, sometimes with catastrophic consequences. The combination of elevation, tectonics, rock types, and climate had rendered such hazards, to a large extent, to be "natural" in origin, but destabilising factors, such as deforestation, road and canal alignments, were also aggravated.

The steep, mountainous, and unstable terrain, often combined with dense settlement and intensive farmland, was exposed to the ravages of landslides. At the same time, low-lying lands were vulnerable to floods and shifting river courses owing to excessive erosion and siltation.

The economic and social survival of many communities in the region often depended on a fragile balance of geologic processes. He urged that reliable forecasting methods be established so that timely evacuation or protection of populations could be effected before disaster strikes.

Mr. Upadhyay wished the regional workshop and deliberations every success and hoped that it would provide concrete proposals. He also hoped that the discussions would focus on preparing databases on geo-technical, socioeconomic, and institutional aspects through national/international collaboration.

He expressed appreciation for the efforts carried out by ICIMOD to establish a better understanding of the fragile mountain ecology and also for the collaborative efforts of the Water Induced Disaster Prevention Technical Centre of His Majesty's Government of Nepal for initiating the process of landslide monitoring and instrumentation on certain controlled sites in Nepal.