

# Annex 1

## Proposed Training Curriculum

### A. BACKGROUND

The Hindu Kush-Himalayan Region is one of the largest mountain areas in the world. The rugged mountain topography is geologically young, subject to frequent erosion, abundant and intense monsoon rainfall and frequent earth tremors which contribute to severe landslide problems. Landslides particularly cause a heavy toll and economic losses through the destruction of houses, roads, bridges, farmlands, and public buildings. On the other hand, large-scale deforestation, unplanned urban growth, and badly-engineered mountain roads accelerate the landslide process in the region. It seems that this region is one of the most landslide disaster-prone areas in the world. There is, therefore, an urgent need to develop human resources for the management and control of landslide disasters in the region.

### B. OBJECTIVE

Many individual factors can contribute to landslides or to slope instability. Acting in combination, these factors provide a wide variety of controlling processes and landslide types. There is, therefore, no single method for managing landslides or unstable terrain; a variety of techniques are needed.

The objective of this training course is to assist middle-level professionals concerned with planning and implementation of landslide hazard mitigation activities. This will be provided through practical information supported by examples from a wide variety of landslide situations and advanced techniques in landslide monitoring and landslide mapping. However, the landslide hazards in each country are unique and it is impossible to provide a step-by-step solution which could be applied in any specific case.

### C. OUTLINE OF THE TRAINING COURSE

#### Chapter 1. Introduction

Physical setting of the Hindu Kush-Himalayan Region:

- Geology
- Geomorphology
- Climate
- Hydrology
- Earthquake activity

#### Chapter 2. Basic Principles of Landslides

##### 2.1 Landslide types and movement processes

###### 2.1.1 Definition

###### 2.1.2 Classification

- Falls
- Topples
- Slides
  - Rotational slides
  - Translational slides
- Spreads
- Flows : debris flow, mud flow, earth flow
- Complex movement

## 2.2 The general dynamics of landslide movement

### 2.2.1 Mechanics of landslide movement

### 2.2.2 Factors affecting slope stability

- Factors contributing to an increase in slope stability
- Factors contributing to a reduction of slope stability

## Chapter 3. Landslide Inventory and Mapping

### 3.1 Landslide identification

### 3.2 The types of landslide maps

### 3.3 Techniques of landslide mapping

#### 3.3.1 Landslide inventory

#### 3.3.2 Landslide aerial photo interpretation

#### 3.3.3 GIS techniques for landslide mapping

#### 3.3.4 Geographic Positioning Systems (GPS) techniques for landslide mapping

## Chapter 4. Landslide Hazard Assessment

### 4.1 Office evaluation of existing landslide data

#### 4.1.1 Maps and reports

#### 4.1.2 Aerial photograph analysis

#### 4.1.3 Sources of support research

#### 4.1.4 Office assessment of landslide hazard

### 4.2 Field evaluation

#### 4.2.1 Landform

#### 4.2.2 Overburden

#### 4.2.3 Bedrock lithology and structure

#### 4.2.4 Geological processes on the slope

#### 4.2.5 Hydrology and Geohydrology

#### 4.2.6 Vegetation

### 4.3 Final landslide hazard assessment

## Chapter 5. Site Survey of Complex Landslide (detailed landslide investigation)

### 5.1 Aerial-photo interpretation and mapping

### 5.2 Underground temperature survey

### 5.3 Seismic prospecting

### 5.4 Surface measurement by extension meter and tiltmeter

### 5.5 Survey earth displacement and slip surface or failure zone by drilling, pipe strain gauges, inclinometer, movement meter.

### 5.6 Groundwater survey, including surveying groundwater pressure (water level) acting on the slip surface, groundwater prospecting, groundwater tracing, groundwater simulation, pumping test.

### 5.7 Water quality analysis.

5.8 Soil test : Laboratory test and *in situ* test.

5.9 Meteorological and hydrological surveys : rainfall observation, snow cover survey, thaw survey.

## **Chapter 6. Stability Analysis of Landslides and Unstable Slopes**

### **6.1 Basic concepts**

- Objectives of slope stability analysis
- Slope failure

### **6.2 Slope stability analysis methods**

6.2.1 Common assumptions for analysis

6.2.2 Circular sliding surface-slice method

6.2.3 Circular sliding surface-simplified slice method (Swedish or Fellenius method)

6.2.4 Circular sliding surface-Bishop's generalised slide method

### **6.3 Practical application of slope stability analysis**

6.3.1 Practical application

6.3.2 Application problems of slope stability analysis

- shear strength
- porewater pressure
- sliding surface

## **Chapter 7. Measures for Management and Control of Landslide Hazards**

### **7.1 Avoidance works**

7.1.1 Avoiding existing landslides and unstable slopes

7.1.2 Avoiding landslides caused by construction

- landslides caused by road construction
- landslides caused by irrigation canal construction
- landslides caused by dam construction

7.1.3 Scheduling building activities

### **7.2 Prevention works**

7.2.1 Construction techniques

7.2.2 Controlling blasting

7.2.3 Use of cuts and fills

7.2.4 Benching techniques

7.2.5 Drainage construction and ditches

7.2.6 Culvert management

7.2.7 Gully management

7.2.8 Riprap revetment

### **7.3 Stabilisation measures**

7.3.1 General concepts

- method selection criteria
- preconditions for stabilisation measures
- method selection consideration

7.3.2 Surface water drainage

- infiltration prevention
- channelling
- catchment channel
- drainage channel
- collecting boxes
- maintenance and management
- 7.3.3 Groundwater drainage
  - shallow groundwater drainage
  - deep groundwater drainage
    - ° long lateral boring
    - ° drainage well and bore hole
- 7.3.4 Retaining structures
- 7.3.5 Piles
- 7.3.6 Anchors
  - anchor investigation
  - selection of anchor material
  - angle of anchor inclination
- 7.3.7 Slope reformation
  - soil mass removal
  - cut surface treatment
  - embankment
- 7.3.8 Area approaches in watershed
  - consolidation dams
  - creek channel linings
- 7.3.9 Bio-engineering measures
  - revegetation
  - seeding
  - planting
  - simple terracing
  - reforestation
  - revegetation management

## 7.4 Protection works

- 7.4.1 Channelised debris flows
- 7.4.2 Rock slope treatment

## Chapter 8. Landslide Forecasting

- 8.1 Predicting where landslides will occur
  - primary evaluation of dangerous slopes
  - secondary evaluation of slope danger degree
- 8.2 Monitoring and warning system
  - 8.2.1 Monitoring system for landslides
  - 8.2.2 Warning system for debris flows
- 8.3 Forecasting landslide timing
  - 8.3.1 Forecasting by micro-movement of soil mass
  - 8.3.2 Forecasting with a tiltmeter
  - 8.3.3 Forecasting by direct causes
    - forecasting with rainfall
    - forecasting with groundwater
- 8.4 Prediction of landslide moving extent

## 8.5 Forecasting debris flow

### 8.5.1 Basis and foundation

### 8.5.2 Prediction method of rainfall-induced debris flow

## Chapter 9. Assessment and Mitigation Measures of Landslide Dam Failure Disasters

### 9.1 Formation and classification of landslide dams

### 9.2 Assessment of floods from landslide dam failure

### 9.3 Physical measures to improve the stability of landslide dams

## Chapter 10. Institution

### 10.1 Role of government agencies and research institutions

### 10.2 Role of central, provincial, and local government

### 10.4 Role of NGOs and scientific societies

### 10.5 Development of regional and international network

### 10.6 Professional development

## Chapter 11. Participation of Local People in Landslide Hazard Mitigation

### 11.1 Guidelines to inhabitants of landslide affected area

### 11.2 Participation of local people in landslide hazard mitigation.

## D. A FRAMEWORK FOR THE TRAINING COURSE

### 1. Number of Trainees

Considering the equipment/computers etc to be used for the training course, 15-20 trainees of the middle-level professional category from the HKH Region should be the limit.

The trainees will be recruited from line agencies and concerned institutions. Their academic backgrounds may be varied (geologists/geomorphologists, hydrologists/meteorologists, foresters, civil engineers, rural engineers). However, all of them should have been involved in Landslide Hazard Management and Control in their country.

### 2. Duration of the Training Course

3-4 weeks' training course is primarily designed to integrate theoretical training with field work or experience:

- 2-3 weeks through theoretical training in the classroom and
- 1 week of field work in the surrounding area. This should also include study in the field at sites of landslide monitoring and control.

### 3. Resource Persons Required for Training

The approach to management and control of landslide hazards is multidisciplinary. The following resource persons are needed to achieve a multidisciplinary approach.

- One geologist/geomorphologist with practical experience in landslide classification and mapping
- One geotechnical engineer with practical experience in detailed site investigation and landslide prediction
- One civil engineer with practical experience in landslide control
- One biological engineer familiar with landslide and soil erosion control by means of small-scale biological engineering methods
- One geologist/geomorphologist familiar with landslide dam studies
- One hydrologist/meteorologist familiar with landslide and soil erosion

#### 4. Training Site

The ICIMOD complex, Kathmandu, Nepal, can be arranged as the site for theoretical classroom training.

According to the "Technical Proposal for Landslide Control and Management of the Hindu Kush-Himalayan Region" prepared by the Japanese experts, Professor Ito Takeshi et al. (1993) for ICIMOD, the following landslides surrounding Kathmandu can be used for landslide field trips.

- 1) The rock landslide located near Barabise along the Kodari Highway
- 2) The Bungamati landslide composed of lake sediments, located in Lalitpur District, 13 km south of Kathmandu.
- 3) The Champi landslide located on the terrace of the Nakhu Khola River, 12km south of Kathmandu.
- 4) The Nagarkot landslide composed of completely weathered phyllite, located in the famous tourist hilly resort, 27km east of Kathmandu.
- 5) The colluvial landslide (a landslide model site), located at Okarpauwa in Nuwakot District, 19.5km along the Kathmandu-Trisuli Road.

#### E. TRAINING MATERIALS

The training materials should be prepared before starting the training course. These will include all materials directly linked to the training course. A compilation of relevant manuals and publications is, therefore, necessary. Among the several publications, the following are recommended and presently available at ICIMOD.

Mountain Risk Engineering Handbook, ICIMOD, 1991, Kathmandu, Nepal.

Watershed Management Field Manual-Landslide Prevention Measures, 1988. FAO Conservation Guide 13/4, Rome, Italy.

Review Paper on Landslide Hazard Management and Control from the regional countries, ICIMOD (in revision).

The Ministry of Water Resources/His Majesty's Government of Nepal, Water Induced Disaster Prevention Technical Centre and Japan International Cooperation Agency, 1994, A Manual on Landslides, Kathmandu, Nepal.

Megh Raj Dhital; Narendra Khanal; Khadga B Thapa, 1993. The Role of Extreme Weather Events, Mass Movements and Land Use Changes in Increasing Natural Hazards. Kathmandu, Nepal: ICIMOD.

Brian Carson, 1985. Erosion and Sedimentation Processes in the Nepalese Himalayas. Kathmandu, Nepal: ICIMOD.

Jack D. Ives, 1986. Glacial Outburst Floods and Risk Engineering in the Himalayas, Kathmandu, Nepal: ICIMOD.

Urs Schuffner, 1987. Road Construction in the Nepal Himalaya: The Experience from the Lamosangu - Jiri Project. Kathmandu, Nepal: ICIMOD.

Li Tianchi, 1990. Landslide Management in the Mountain Areas of China. Kathmandu, Nepal: ICIMOD.

Birendra B. Deoja, 1992. Sustainable Approaches to the Construction of Roads and Other Infrastructure in the Hindu Kush-Himalayas. Kathmandu, Nepal: ICIMOD.

Water and Energy Commission Secretariat, His Majesty's Government of Nepal, 1987. Erosion and Sedimentation in the Nepal Himalaya. Kathmandu, Nepal: WECS and ICIMOD.

The following materials need to be prepared in detail.

- Landslide types and movement processes
- Landslide mapping
- Landslide hazard assessment and landslide forecasting
- Landslide dam: formation, processes, and mitigation of landslide dam hazards
- Detailed landslide investigation
- Measures for management and control of landslide hazards
- Participation of local people in landslide hazard mitigation

E. Summary and Timetable for the training course, ICIMOD

## References

Ito Takeshi, Yatabe Ryuichi and Takashi Jiro, 1993. Technical Proposal for Landslide Control and Management in the Hindu Kush-Himalayan Region (draft project document) for ICIMOD, Kathmandu, Nepal.

Ministry of Water Resources, HMG, Nepal. Water Induced Disaster Prevention Technical Centre, 1994. Final Report on the Master Plan for the Landslide at 19km along the Kathmandu-Trisuli Road, Kathmandu, Nepal.

### E. Proposed Timetable for the Training Course, ICIMOD

#### Week 1

Date	9.00-9.50	9.50-10.40	11.00-12.00	13.00-13.50	13.50-14.40	15.00-16.00/ 17.00
Monday	Registration		Opening: Introduction of Participants	Introduction to the Training Course	Chapter 1 Introduction to the HKH: Geology	Chapter 1 Introduction to the HKH: Geology
Tuesday	Chapter 1 Introduction to the HKH: Geomorphology	Chapter 1 Introduction to the HKH: Geomorphology	Chapter 1 Introduction to the HKH: Climate and Hydrology	Chapter 1 Introduction to the HKH: Climate and Hydrology	Chapter 1 Introduction to the HKH: Earthquakes	Chapter 1 Introduction to the HKH: Earthquakes
Wednesday	Chapter 2 Basic principles of landslides: landslide types and processes	Chapter 2 Basic principles of landslides: landslide types and processes	Chapter 2 The dynamics of landslide movement	Chapter 2 The dynamics of landslide movement	Chapter 3 Introduction to landslide inventory and mapping	Chapter 3 Techniques of landslide mapping: landslide inventory
Thursday	Chapter 3 Techniques of landslide mapping: Aerial photo interpretation		Chapter 3 Techniques of landslide mapping: basic GIS techniques		Laboratory exercise on aerial photo interpretation	
Friday	Chapter 3 Techniques of landslide mapping GIS techniques		Chapter 3 Techniques of landslide mapping: GPS techniques		Chapter 3 Exercise on the preparation of a landslide hazard map based on aerial photos	
Saturday	Field trip to landslide area					
Sunday	Advanced reading					
Coffee:	10:40 to 11:00 and 14:40 to 15:00					
Lunch:	12:00 to 13:00					

### E. Proposed Timetable for the Training Course, ICIMOD

#### Week 2

Date	9.00-9.50	9.50-10.40	11.00-12.00	13.00-13.50	13.50-14.40	15.00-16.00/ 17.00
Monday	Chapter 4 Landslide hazard assessment: office evaluation	Chapter 4 Landslide hazard assessment: field evaluation	Chapter 4 Landslide hazard assessment: final assessment	Laboratory exercise on the preparation of a landslide hazard map by GIS techniques		
Tuesday	Chapter 5 Detailed landslide investigation			Laboratory exercise on the preparation of a landslide hazard map by GIS techniques		
Wednesday	Chapter 5 Detailed landslide investigation			Chapter 6 Stability analysis: Analysis methods		
Thursday	Chapter 6 Stability analysis: Practical application of slope stability analysis			Laboratory exercise on stability analysis		
Friday	Chapter 7 Measures for management and control of landslide hazards: avoidance work			Chapter 7 Measures for management and control of landslide hazard: stabilisation measures		
Saturday	Field trip to landslide area					
Sunday	Advanced reading					

## F. Summary of the Training Curriculum

### Week 3

Date	9.00-9.50	9.50-10.40	11.00-12.00	13.00-13.50	13.50-14.40	15.00-16.00/ 17.00
Monday	Chapter 7 Measures for management and control of landslide hazards: stabilisation measures			Chapter 7 Measures for management and control of landslide hazards: stabilisation measures and protection works		
Tuesday	Chapter 8 Landslide forecasting, predicting where the landslide will occur, monitoring and warning system			Chapter 8 Landslide forecasting: forecasting landslide timing and predicting the extent of rapid landslide motion		
Wednesday	Chapter 8 Landslide forecasting: Forecasting : Rainfall-induced debris flow			Chapter 8 Landslide dam failure disasters and their mitigation		
Thursday	Chapter 10, 11 Institution and guidelines to inhabitants of landslide affected areas			Chapter 11 Participation of local people in landslide hazard mitigation		
Friday	Landslide database	Guest lecture : GIS at ICIMOD		Project briefing and grouping the trainees		
Saturday	Advanced reading					
Sunday	Preparation for field study					

## F. Summary of the Training Curriculum

### Week 4

Date	9:00-9:50	9:50-10:40	11:00-12:00	13:00-13:50	13:50-14:40	15:00- 16:00/17:00
Monday	Project work on causes and types of landslides at selected field sites					
Tuesday	Project work on management and control of landslides at selected sites					
Wednesday	Project work on management and control of landslides at selected sites					
Thursday	Report preparation of project work					
Friday	Report preparation and submission of project report					
Saturday	Closing ceremony and certificate distribution					
Sunday	Departure to home country					

## Annex 2 Workshop Schedule

Kathmandu, 12 - 14 July, 1995: *Venue - ICIMOD Conference Hall*

### First Day - 12 JULY, 1995 (WEDNESDAY)

09:00 - 09:30

**REGISTRATION**

09:30 - 13:15

**Session One : Country Review Papers/Country Reports**  
 Chairperson : M. Banskota, Deputy Director General,  
 ICIMOD  
 Rapporteurs : N. Khanal/P. B. Shah

- Introduction to the Workshop -- S. R. Chalise
- Landslide Hazard Mapping, Control and Forecasting in China -  
 - Li Tianchi
- Landslide Management and Control in India -- V. C. Thakur

11:00 - 11:15

*Tea/Coffee Break*

Session 1 (contd..)

- Landslide Management and Control in Pakistan -- M. H. Malik/S. Farooq
- Landslide Studies and Management in the Nepal Himalayas -- B. N. Upreti/M. Dhital

12:35 - 13:15

Country Reports

- Landslide Hazard Management and Control in the HKH in Bangladesh Perspective -- M. A. Rahim
- Country Report from Myanmar -- Than Sein Tun

13:00 - 14:30

*Lunch Break*

14:30 - 15:15

**Session Two : Inaugural Session**

Rapporteur : S. Karki

- Welcome Address by Mr. Egbert Pelinck, Director General, ICIMOD
- Address by Mr. M. Ishikawa, Minister, Embassy of Japan
- Inaugural Address by Chief Guest Mr. S.N. Upadhyay, Secretary, HMG/N, Ministry of Water Resources

15:15 - 15:45

*Tea/Coffee Break*

15:45 - 17:00

**Session Three : Invited Papers**

Chairperson : S. R. Chalise  
Rapporteurs : N. Khanal/P. B. Shah

- Landslides in the Snowy Regions of Japan -- T. Ito
- Risk Mapping for Landslide Hazard Management in the Sukhidang Area, Kumaon Himalayas, India -- R. Anbalagan
- Status of Landslide Hazard Management in Nepal -- A. Dixit

**Second Day - 13 JULY, 1995, (THURSDAY)**

9:00 - 10:30

**Session Four : Priorities for a Regional Collaborative Training Programme**

Chairperson : V. C. Thakur  
Rapporteurs : M. R. Dhital/B. Tiwari

- Guidelines and Priorities for a Regional Training Course on Landslides Hazard Management and Control in the Hindu Kush-Himalayan Region - Li Tianchi
- Landslide Monitoring by the DPTC in Nepal -- I. Kitahara/B. Tiwari

10:30 - 11:00

*Tea/Coffee Break*

11:00 - 11:15

Introduction to the field visit -- B Tiwari, DPTC

11:15

Departure for a Field Visit to Landslide Monitoring and Control Sites along the Trishuli Road (DPTC site)  
(Packed lunch. Return to hotel by 15:00hrs.)

19:00

*Reception/Dinner*

**JULY 14, 1995 (FRIDAY)**

09:00 - 10:30

**Session Five : Issues and Priorities for Training**

Chairperson : T. Ito  
Rapporteurs : P.B. Shah/ S. Karki

- Presentations :
- N. Rengers: Landslide Hazard Mapping For Sustainable Development
  - H. Yagi: Landslide Hazard Mapping : Scale and Objectives
  - Lou Xiangdong: Evaluation of Landslides under the Effect of Stochastic Factors

10:30 - 10:45

*Tea/Coffee Break*

10:45 - 13:00

**Session Six : Group Discussions and Recommendations on Priorities for a Regional Collaborative Training Programme**

**Group I : Inventory Database (including Socioeconomic Aspects and Institutional Collaboration [National/Regional/International])**

*Venue : Conference Hall*

Chairperson : M. Qasim Jan  
Rapporteurs : B. N. Upreti/S. Karki

R. Anbalagan, T. Ito, P. Pradhan, M. A. Rahim, P. B. Shah, P. Sharma, M. L. Shrestha, B. Tiwari

**Group II : Processes, Tools and Techniques (both diagnostic/ remedial; and conventional/modern)**

*Venue : MFS Meeting Room*

Chairperson : N. Rengers  
Rapporteurs : P. Mool/N. Khanal

I. Kitahara, A. Koirala, M. H. Malik, K. P. Pandey, Pei Shengji, V.C. Thakur, Lou Xiangdong, J. Zimmermann

**Group III : Curricula and Training Materials (Professional/Technician levels)**

*Venue : MEI Meeting Room*

Chairperson : Li Tianchi  
Rapporteurs : H. Yagi/A. Dixit

N. Awan, M. Banskota, S. R. Chalise, M. R. Dhital, A. Herrmann, G. S. Pokhrel, T. S. Tun, B. D. Shrestha

13.00 - 14.00

*Lunch*

14:00 - 15:00

**Session Seven : Plenary Session**

Presentation and Discussion of Group Recommendations

Chairperson : A. Herrmann  
Rapporteurs : P. B. Shah/B. Tiwari

- o Presentation of Group Recommendations by the Chairpersons from each group

15:00 - 15:45

**Session Eight : Concluding Session**

Chairperson : E. Pelinck, Director General, ICIMOD  
Rapporteurs : H. Yagi/S. Karki

- o Presentation of final recommendations
- o Remarks on behalf of participants
- o Concluding remarks by the chairperson

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## Annex 4

### List of Papers Presented at the Workshop

- o Landslide Hazard Mapping, Control, and Forecasting in China\*\*  
- Li Tianchi
- o Landslide Management and Control in India \*\*  
- V. C. Thakur
- o Landslide Management and Control in Pakistan\*\*  
- M. H. Malik/S. Farooq
- o Landslide Studies and Management in the Nepal Himalayas\*\*  
- B. N. Upreti/M. Dhital
- o Landslide Hazard Management and Control in the HKH: Bangladesh Perspective  
- M. A. Rahim
- o Country Report from Myanmar  
- Than Sein Tun
- o Landslides in the Snowy Regions of Japan  
- T. Ito
- o Risk Mapping for Landslide Hazard Management in Sukhidang Area Kumaon Himalayas, India\*\*  
- R. Anbalagan
- o Status of Landslide Hazard Management in Nepal  
- A. Dixit
- o Guidelines and Priorities for a Regional Training Course on Landslide Hazard Management and Control in the Hindu Kush-Himalayan Region  
- Li Tianchi
- o Landslide Monitoring by the DPTC in Nepal  
- I. Kitahara/B. Tiwari
- o Landslide Hazard Mapping for Sustainable Development - N. Rengers
- o Landslide Hazard Mapping : Scale and Objectives - H. Yagi
- o Evaluation of Landslides under the Effect of Stochastic Factors - Lou Xiangdong
- o Field Excursion Guide to the Landslide at 19km along Kathmandu-Trishuli Road - B. Tiwari

\*\* forthcoming publications as MNR Discussion papers

**PRESS RELEASE**  
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**Experts Meet to Identify Critical Issues and Problems in  
Landslide Hazard Management and Control in the HKH**

Steep slopes, unstable geology, and intense monsoon rains combine to make the Hindu Kush-Himalayas (HKH) one of the most hazard-prone areas in the world. During the monsoons, floods and landslides of varying magnitude are the most common natural events affecting this region every year. These events will continue to occur in the future because of the nature of these environments. The present level of systematic understanding and analysis of these natural events is very poor. The database is limited. Monitoring activities are not regular even when such monitoring can be of direct benefit to projects.

Appropriate land-use and construction activities, increasing awareness of potential dangers in hazard-prone areas, more comprehensive assessment of watershed conditions and their implications for development activities, and incorporation of these considerations into development projects and different economic activities will assist in better preparedness against increasing natural hazards.

ICIMOD, since its inception, has been promoting efforts to develop a better understanding of landslide hazards and a number of activities has been completed so far. These include several training programmes dealing with mountain risk engineering, improving road construction on unstable mountain slopes, review of landslide hazard management activities in China, and field assessment of landslides and flood events in south central Nepal, following the extreme climatic events of July 1993.

With support from the **Government of Japan**, ICIMOD commenced further activities in the field. Four state-of-the-art reviews on landslide management have been completed for China, India, Pakistan, and Nepal. A Climatic Atlas for Nepal is being prepared, and a Regional Training Programme on Slope Instability Mapping using Remote Sensing and GIS was organised in 1994.

From 12-14 July, 1995, ICIMOD's Landslide Hazard Management and Control Project under the Mountain Natural Resources' Programme is hosting a Regional Workshop on Landslide Hazard Management and Control in the Hindu Kush-Himalayas. About 30 participants from the countries of Bangladesh, Bhutan, China, India, Japan, Myanmar, Nepal, The Netherlands, and Pakistan are expected to attend the Workshop.

A major concern of this workshop is to identify specific priorities for a regional collaborative Landslide Hazard Management Training Programme which ICIMOD is going to implement. The main objectives are:

- to review the current status of programmes and activities on Landslide Hazard Management and Control in the countries of the Hindu Kush-Himalayas;
- to review the existing facilities and curricula for training in the field of Landslide Hazard Management and Control in the Hindu Kush-Himalayan countries; and
- to develop a regional training programme in this field in accordance with regional priorities.

By sharing experiences among experts from both within and outside the HKH region and identifying key areas for training in accordance with the needs and priorities of the regional countries of the HKH, ICIMOD is attempting to further strengthen national capacities for Landslide Hazard Management and Control.