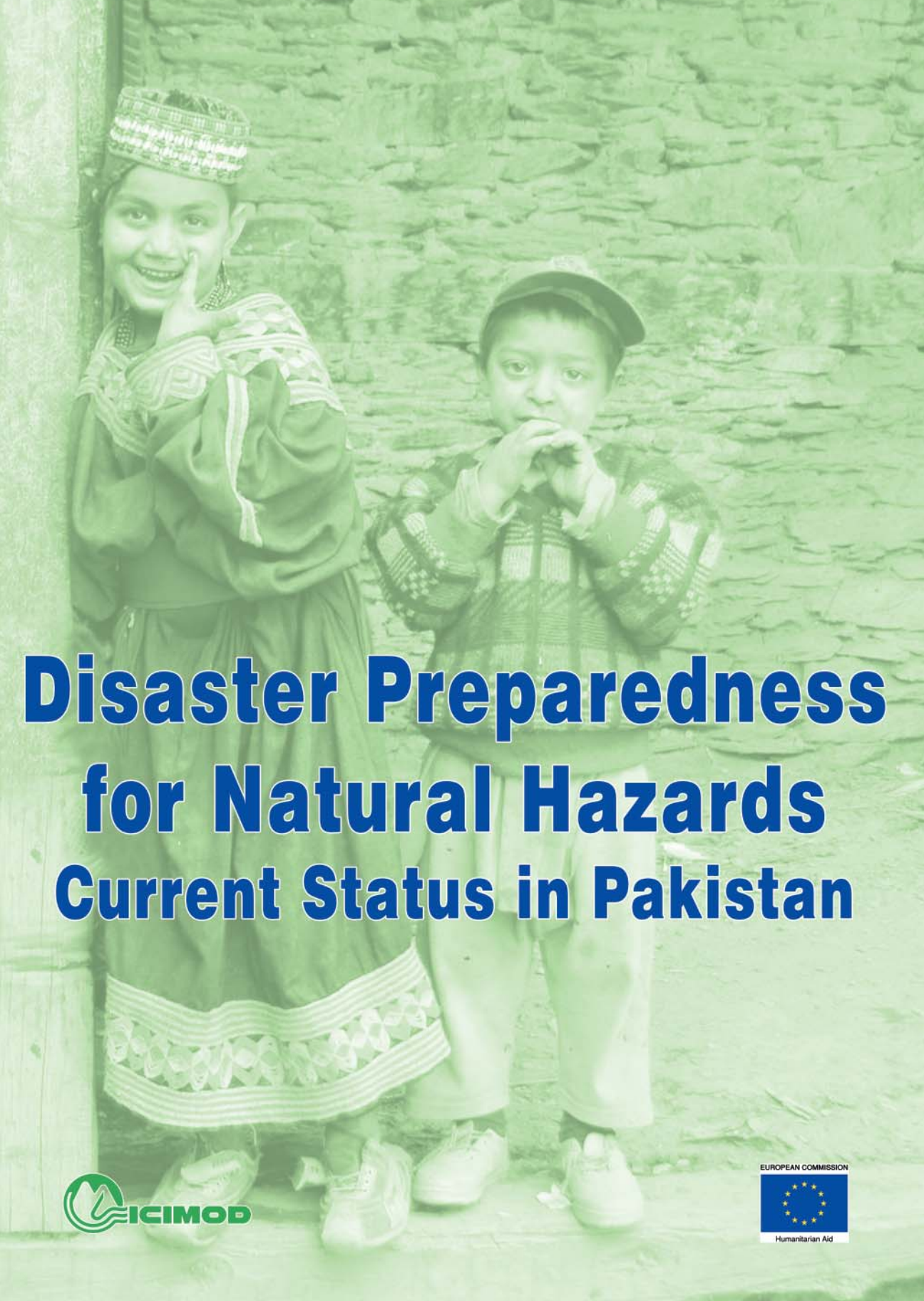

# Disaster Preparedness for Natural Hazards

## Current Status in Pakistan

ICIMOD

EUROPEAN COMMISSION

Humanitarian Aid

# About the Organisations

## International Centre for Integrated Mountain Development

The International Centre for Integrated Mountain Development (ICIMOD) is an independent 'Mountain Learning and Knowledge Centre' serving the eight countries of the Hindu Kush-Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and the global mountain community. Founded in 1983, ICIMOD is based in Kathmandu, Nepal, and brings together a partnership of regional member countries, partner institutions, and donors with a commitment for development action to secure a better future for the people and environment of the extended Himalayan region. ICIMOD's activities are supported by its core programme donors: the governments of Austria, Denmark, Germany, Netherlands, Norway, Switzerland, and its regional member countries, along with over thirty project co–financing donors. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations.

## European Commission Humanitarian Aid (ECHO)

EUROPEAN COMMISSION

Humanitarian Aid

The European Union as a whole (i.e., the Member States and the Commission) is one of the world's largest humanitarian aid donors; the Humanitarian Aid department (ECHO) is the service of the European Commission responsible for this activity. ECHO funds relief operations for victims of natural disasters and conflicts outside the European Union. Aid is channelled impartially, straight to victims, regardless of their race, religion, and political beliefs.

DIPECHO stands for disaster preparedness in ECHO. It supports projects aimed at increasing the resilience of communities at risk of natural disasters by funding training, capacity building, awareness raising, early warning systems, and advocacy activities in the field of disaster risk reduction.

# Disaster Preparedness for Natural Hazards: Current Status in Pakistan

PAKISTAN STATUS REPORT

# Disaster Preparedness for Natural Hazards: Current Status in Pakistan

A consultancy report by
M. Asif Khan

International Centre for Integrated Mountain Development (ICIMOD)
Kathmandu, Nepal
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PAKISTAN STATUS REPORT

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# Contents

# Foreword

Inhabitants in the Himalayan region are exposed to many natural hazards. The mountain ranges are young with an unstable geology, steep slopes, and a climate that is difficult to predict. As a result, the region is highly susceptible to natural hazards such as floods and flash floods, landslides, and earthquakes. In populated areas, these can lead to disaster. Vulnerable groups – the poor, women, and children – are often hit hardest.

Since its establishment in 1983, ICIMOD has dedicated much of its work to examining ways to reduce the risk of disasters from natural hazards, thereby working towards the decreased physical vulnerability of people in the Hindu Kush-Himalayas. This work has encompassed training courses, hazard mapping, landslide mitigation and control, mountain risk engineering, watershed management, vulnerability assessment, and much more. ICIMOD has also fostered regional and transboundary dialogue for improved management of both the resources provided and the risks threatened by the big rivers in the Himalayan region; sharing of hydro-meteorological data and information among the countries in the region is of particular importance for mitigating the risk of riverine and flash floods in the major river basins.

This publication is one of a series produced under the project 'Living with risk – sharing knowledge on disaster preparedness in the Himalayan region', implemented by ICIMOD during a 15-month period in 2006 and 2007. The project was funded by the European Commission through their Humanitarian Aid department (DG ECHO) as part of the Disaster Preparedness ECHO programme (DIPECHO) in South Asia, and by ICIMOD. Through this project, ICIMOD has endeavoured to encourage knowledge sharing and to strengthen capacity among key practitioners in the field of disaster preparedness and management. This has been done through training courses, workshops, knowledge compilation and dissemination, and the establishment of a website (www.disasterpreparedness.icimod.org).

The publications resulting from this project include baseline assessments of the disaster preparedness status in the four target countries (Bangladesh, India, Nepal, and Pakistan); case studies and a framework on local knowledge for disaster preparedness; and gender and vulnerability aspects in disaster risk reduction. The publications, training sessions, and workshops were undertaken in the context of the 'Hyogo Framework for Action 2005-2015' which recommends that regional organisations should promote sharing of information; undertake and publish baseline assessments of disaster risk reduction status; and undertake research, training, education, and capacity building in the field of disaster risk reduction.

The long-term mission to bring the Himalayan region to an acceptable level of disaster risk has only just begun. The countries in the region are among the most disaster prone in the world in terms of number and severity of disasters, casualties, and impact on national economies. Only by strong commitment, hard work, and joint efforts can this situation be improved. It is ICIMOD's hope that our collective endeavours will help improve disaster risk reduction in the mountain region we are committed to serve.

Dr. Andreas Schild
Director General
ICIMOD

# Preface

This report is one of four status reports on disaster preparedness planning covering four countries; viz., Bangladesh, India, Nepal, and Pakistan. The purpose of these reports is to provide an opportunity for the reader to get a quick overview of the current status on documents in place and the institutions governing the implementation of these documents in the respective countries.

The reports are consultancies undertaken as part of the project 'Living with risk – sharing knowledge on disaster preparedness in the Himalayan region', implemented by ICIMOD. It was funded by the European Commission through its Humanitarian Aid Department (DG ECHO) as part of the Disaster Preparedness ECHO Programme (DIPECHO) in South Asia, and by ICIMOD. The project takes off from the Hyogo Framework for Action 2005-2015 (HFA) which provides guidance on the roles regional organisations, such as ICIMOD, can play in long-term work towards reducing the risks of disaster. One recommendation by HFA is to undertake and publish baseline assessments of the status of disaster risk reduction.

As part of this project, a 'regional workshop on disaster preparedness plans' was held in Kathmandu in August 2006. The main objective of this workshop was to discuss the status of disaster preparedness as reflected in policies, strategies, plans, and other relevant documents available, or being developed, in the four countries. Particular interest was given to identifying gaps and shortcomings in the functioning and implementation of these guiding documents. First drafts of these country status reports were prepared for the workshop and formed the basis for the discussion and gap analysis. The reports have since been updated, improved, and extended. The outcome of the workshop was summarised in 15 concluding points, highlighting the status of disaster preparedness (DP), in particular, and disaster management (DM), in general, in the region. These 15 concluding points follow below.

The complete compilation of all documents at all governance levels, covering all types of disaster and providing full descriptions of all implementing institutions is an immense task, and it is beyond the scope of this project. ICIMOD has a mandate to focus primarily on mountain hazards, and therefore the scope of the consultancy has been to cover earthquakes, landslides, and floods, including flash floods (see Annex 1 for Terms of Reference). Furthermore, the study focused on documents and institutions governing disaster preparedness planning at the central, national level, with more limited coverage given to district and community levels. Hence, the reports are not

exhaustive in terms of covering all natural hazards. Nevertheless, the documents and institutions governing disaster preparedness at the national level do, in many cases, take a multi-hazard approach. In conclusion, the present document will give the reader a good, albeit quick, overview of the status of disaster preparedness planning for natural hazards. As such, it is the hope of ICIMOD that it will prove helpful as a source of information and thereby support the joint efforts undertaken by many government and non-government organisations towards a Himalayan region that is better prepared to mitigate the impacts of disasters.

Dr. Mats G. Eriksson
Water, Hazards and
Environmental Management
ICIMOD

# Conclusions from the Regional Workshop on Disaster Preparedness Plans for Natural Hazards (Kathmandu, 7-9 August 2006)

## General Observations

1. Disaster preparedness (DP) has to be approached **holistically** because it is difficult to isolate preparedness from other components of disaster management (DM) such as reduction, response, and recovery.
2. A **paradigm shift** in DM from a relief-driven approach to a more preparedness-driven approach is occurring.
3. **Local communities** should be at the centre of DM plans. They are the first victims of natural hazards and the first respondents.

## Development and Vulnerable Groups

4. DM should be integrated into **national development plans** for improved sustainable livelihoods and poverty reduction.
5. A **multi-hazard approach** is crucial as most communities are exposed to hazards that have interacting and cascading effects.
6. **Vulnerable groups** and marginalised people are insufficiently addressed in DM plans.

## Institutions and Policies

7. The **political will** to direct sufficient resources is essential for the efficient implementation of existing DM plans.
8. Planning for DM is an iterative **process** that should be based on the efficient use of already existing resources.
9. **Roles and responsibilities** for DM of all stakeholders at the national, regional, and local levels need to be clarified. DM should be a priority on the national political agenda.

## Knowledge and capacities

10. **Local knowledge** should be respected and combined with other knowledge to improve the design and implementation of DM activities.
11. **Learning** from past disaster events through research and documentation is important in order to anticipate and respond to future disasters more effectively than is currently the case.
12. **Education and training** in DM is necessary for awareness and capacity building of all stakeholders.

## Communication and Cooperation

13. **Insufficient coordination** prevails among key actor in the field of DM.
14. Functional and **efficient communication** among key actors at local, national, and international levels needs to be improved.
15. **Data and information sharing** at a regional transboundary level needs to be strengthened and requires appropriate capacity and technology.

# Executive Summary

This report reviews the status of disaster management, especially in the context of preparedness, in Pakistan. Whereas Pakistan faces a number of disasters of natural origin, such as floods, earthquakes, landslides, debris flows, avalanches, drought, and, to a lesser extent, tsunamis and tornadoes, the scope of this report is limited to floods, earthquakes, and landslides.

Disasters caused by natural hazards have played a major hindrance in economic development and poverty reduction in South Asia, especially in Pakistan. On the one hand, Pakistan has one of the highest growth rates, resulting in its being the third fastest growing population in the world, and this is resulting in urban as well as rural expansion in hazard-prone areas. On the other hand, Pakistan has a geographic and physiographic location that presents risks for natural disasters of the highest possible order. The great losses of lives and property in the Kashmir earthquake (2005) are sufficient to portray the harsh realities of natural disasters threatening Pakistan.

Earthquakes are not the only threat; over 2,000 people have died in floods in the last 50 years. Every year, hundreds die because of flash floods, debris flows, and landslides, with considerable loss of property, roads, agriculture, and livelihoods. Under these circumstances, one would expect Pakistan to be amongst the leading nations in disaster management. Unfortunately, this is not the case as revealed by the 2005 earthquake disaster.

Disaster management in Pakistan prior to the 2005 earthquake has been unidirectional, focused on river floods. For this disaster, Pakistan has succeeded in developing institutions which not only carry out mitigation measures through engineering structures and early warning systems, but have developed an efficient mechanism for rescue, relief, and short-term recovery also. The principal institutions involved in this disaster management practice include the 1) Pakistan Flood Commission, 2) Flood Forecasting Division, Pakistan Meteorological Department, 3) Federal and Provincial Relief Commissions, 4) District Government, and 5) Pakistan Army. Major shortcomings include 1) lack of documented preparedness plans clearly outlining responsibilities, coordination, and standard operating procedures, 2) minimal community involvement, 3) lack of plans and measures for long-term rehabilitation, and 4) sole dependence on the Pakistan Army, especially for search and rescue. While Pakistan's status for management of disasters from river floods may be rated satisfactory, flash floods continue playing havoc with life and property every year and Pakistan has a long way to go to cope effectively with this disaster.

Disasters caused by earthquakes, landslides, and debris flows are relatively less predictable in time and locale and Pakistan has made little effort to cope with them. On paper, Pakistan has Crisis Management Cells (Ministry of the Interior) at both the federal and provincial levels, which are the levels to take action first in case of an emergency. However, firstly, natural disasters have never been the focus of the Crisis Management Cells; rather these are primarily geared towards emergencies arising from security-related internal and external threats. Secondly, there is no well-defined institution to activate in case of an emergency arising from a natural disaster, apart from the Pakistan Army. Pakistan has a Civil Defence Department meant for disaster response, but over the years this department has remained in a dismal condition in terms of both management as well as funding and is virtually non-existent in terms of effectiveness.

Pakistan's concept of preparedness for natural disasters has remained restricted to relief. Institutions such as the Emergency Relief Cell at federal level and Relief Departments at provincial level have coordinated plans for storage and supply of relief goods (tents, medicine, and blankets) all the way to district level, and these are distributed in the communities affected. However, there is no institution in the country for mitigation, preparedness, response (other than relief – including search, rescue, evacuation, and emergency medical and food services), and rehabilitation. Over the years, these shortcomings have been dealt with by the Pakistan Army, which not only carries out rescue and evacuation activities, but also provides short-term shelter, medical services, and food. Until after the 2005 earthquake, the concept of long-term rehabilitation for communities affected was lacking almost completely.

Preparedness for natural disasters involves tedious scientific activities carried out by dedicated institutions. For instance, for earthquake disasters it is imperative to have sound seismic zonation defining expected ground shaking (in terms of peak ground acceleration [PGA]) which is incorporated in appropriate building codes setting a minimum engineering standard for buildings in each zone. This practice needs reliable data on seismicity, as well as strong motion, throughout the country. Unlike Pakistan Flood Commission, which is a dedicated body dealing with research and development in river flood hazards, there is no institution in Pakistan dedicated to earthquake hazards. In Pakistan, the Meteorological Department deals with earthquakes, and this is not only beyond its capacity in terms of expert manpower and instrumentation, but also is far too much of a burden considering its crucial focus on weather-related issues, climatology, and flood forecasting. The lack of a dedicated institution for earthquake hazards has resulted not only in lack of reliable seismicity, ground motion, and neotectonic data, but also has hindered development of appropriate earthquake-resilient building codes and their implementation. Likewise, data and maps for flash-flood, landslide, and debris-flow vulnerability are lacking, and this hinders mitigation and preparedness for the threats these disasters pose.

Whereas the 2005 Kashmir earthquake has been the biggest tragedy in Pakistan's history in terms of loss of life, property, livelihoods, and overall economics of the country, t served as a severe jolt in terms of the need for preparedness for natural disasters. Pakistan formulated a dedicated institution called the Earthquake Reconstruction and Rehabilitation Authority (ERRA) which took over from the Relief Commission and is now pursuing a concerted programme of rehabilitation and reconstruction. Pakistan has constituted another institution recently called the National Disaster Management Commission (which encompasses Disaster Management authorities from federal, through provincial, to district level). With experience from the 2005 earthquake, satisfactory disaster management against floods, and a national character endowed with sacrifice and volunteerism, Pakistan has an optimistic outlook for the future in terms of disaster preparedness.

# Acronyms and Abbreviations

| | |
|---|---|
| AJ&K | Azad Jammu and Kashmir |
| COSPAS-SARSAT | satellite aided search and rescue programme |
| ERRA | Earthquake Reconstruction and Rehabilitation Authority |
| ERC | (1) Emergency Resource Centre |
| | (2) Emergency Relief Cell |
| FATA | Federally Administered Tribal Areas |
| FFC | Federal Flood Commission of Pakistan |
| FFD | Flood Forecasting Division |
| GRA | Gas Regulatory Authority |
| HID | Human and Institutional Development Programme |
| ISRIP | Innovation and Science Research Investment Programme |
| JCSC | Joint Chiefs of Staff Committee |
| JICA | Japanese Agency for International Development |
| NDMA | National Disaster Management Authority |
| NORAD | North American Aerospace Defence Command |
| NWFP | North West Frontier Province |
| PCMC | Provincial Crisis Management Cells or Centres |
| PEC | Pakistan Engineering Council |
| PGA | peak ground acceleration |
| PMD | Pakistan Meteorological Department |
| SOP | Survey of Pakistan |
| SUPARCO | Pakistan Space and Upper Atmosphere Research Commission |
| WAPDA | Water and Power Development Authority |

# Glossary

| | |
|---|---|
| tehsil | sub district |
| zila | district |
| zila nazim | head of a district |
| nullah | drainage channel, man-made or natural |

In 2007, US$ 1 = 60 Pakistani rupees (approx)

# Some Key Terms

**Capacity** – A combination of all the strengths and resources available within a community, society, or organisation that can reduce the level of risk, or the effects of a disaster.

**Disaster** – A serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

**Disaster risk reduction (disaster reduction)** – The conceptual framework of elements considered with the possibilities to minimise vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

**Hazard** – A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

**Mitigation** – Structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation, and technological hazards.

**Preparedness** – Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations.

**Resilience/resilient** – The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. It is determined by the degree to which the social system is capable of organising itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures.

**Risk** – The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted, or environmental damage) resulting from interactions between natural or human-induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation Risk = Hazards x Vulnerability. Some disciplines also include the concept of exposure to refer particularly to the physical aspects of vulnerability. A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

**Risk assessment or analysis** – A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend.

**Vulnerability** – The conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of a community to the impact of hazards.

Adapted from UN/ISDR (2004)