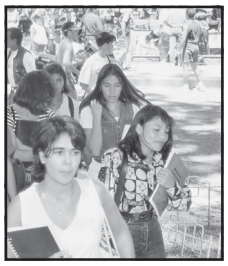


Chapter 4. Building understanding: development of knowledge and information sharing

4.1. Information management and communication of experience

Effective disaster risk management depends upon a series of related actions and the means to engage the informed participation of all stakeholders. Exchange of information and communication practices play key roles in the execution of these activities. Data availability is crucial for ongoing research, for monitoring hazards and assessing risks. Information describes working conditions, provides reference material and access to resources, and shapes many productive relationships. Rapid and widespread developments in modern communications record and disseminate the value of experience, convey professional knowledge, and contribute to decision-making processes. Integrating new developments in information management with established and more traditional methods can help to create a much better understanding about hazards and risk at all levels of responsibility through public awareness programmes, and are instrumental in achieving more comprehensive early warning systems and effective mitigation efforts.

Effective information management and communication on disaster risk reduction is conveyed through the following issues, illustrated in the report by concrete examples:

- An awareness of current issues
- An appreciation of initiatives around the world
- Selected national information programmes
- Technical information, experience about different hazards
- Future challenges and priorities

4.2 Education and Training

The highest priority has to be given to present the various dimensions of disaster risk within a community through structured educational programs and professional training. As people's understanding and the exercise of their professional skills are essential components of any risk reduction strategy, an investment in human resources and capacity building across generations will have more lasting value than any specific investment made in technological systems to reduce risks.

Education and training for disaster risk reduction takes many different forms, discussed in this section, by providing examples:

- basic role of education and training
- disaster risk management training centers
- academic and educational programs
- primary and secondary schooling
- professional trades and skills training
- capacity building
- future challenges and priorities

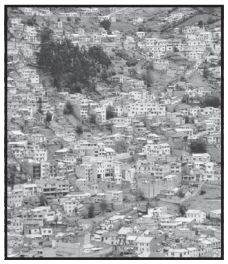
4.3. Public Awareness and Participation

The development of increased public awareness about hazards and the understanding of disaster risks are vital elements in any comprehensive strategy for disaster reduction. Public awareness should be conducted through all possible means, including in schools, in particular through the media and other

official, public, professional and commercial means, at all levels of society. There is a responsibility for government direction and civic commitment to lead and encourage the public awareness of natural hazards and risk on a continuous basis, but the ultimate accomplishment of creating a culture of prevention rests with the popular understanding and public participation in furthering those values.

The importance of public awareness to effective disaster risk reduction cannot be overstated and assumes many different forms. Some of these are presented in the following sections:

- Public awareness as a primary element of risk reduction
- National public awareness initiatives
- Special international events and major activities
- The important role of the media
- Local community experience promotes public awareness
- Local relevance, community experience and traditional knowledge



Chapter 5 A selection of disaster reduction applications

5.1. Environmental management as a tool to reduce disaster risk

A healthy environment enhances the capacity of societies to reduce the impact of natural and human induced disasters, a fact largely underestimated. As disasters undermine both socio-economic development and environmental management efforts, there is a compelling need to explore how environmental mismanagement changes hazard patterns.

The use of environmental management tools as a strategy for reducing vulnerability to risk should be promoted. Environmental actions that reduce vulnerability need to be identified and applied by disaster reduction practitioners. Quantitative measurement of these actions will determine their acceptance and application in political and economics arenas. Platforms for integrating environmental management within existing policy frameworks and international strategies on disaster reduction, sustainable development and poverty reduction will build a safer world. National and regional governing institutions can best increase societies' resilience to disasters as part of a global environmental management effort. Instilling disaster thinking into environmental performance is a win-win proposition.

This chapter begins with a description of some of the links between disaster reduction and environmental management. The following environmental management tools are then described and questions about their relevance and application in disaster risk reduction strategies considered.

- Environmental legislation
- Environmental policies and planning
- Institutional arrangements
- Environmental impact assessments
- Reporting on the state of the environment
- Ecological/environmental economics
- Environmental codes and standards.

Applications of these tools are illustrated through examples pertaining to wetlands, forests, fisheries and agricultural systems, barrier reefs and islands, mangroves, coastal areas, watersheds and river basins, freshwater, mountains, as well as to environmental issues such as biodiversity, climate change, desertification/land degradation.

5.2. Land use planning

There is a fundamental need in disaster risk management to recognise the relationships between population growth, the physical demands of human settlement, short and longer term economic trade-offs and the most appropriate use of available land. While the application of informed and consistent planning practices are crucial to minimise the potential loss of physical assets or environmental capital, a greater principle lies in treating the landscape itself as a valued resource to manage risk. Failure to act on this basis is to invite disaster.

Both the opportunities and the difficulties of employing land use and planning practices for disaster risk reduction are reviewed in the following section:

- The importance and difficulty of land use planning
- A delicate balance and measured benefits
- Principles regarding land use management and urban planning
- Case examples

5.3. The protection of critical facilities: engineering solutions

All societies need to be highly selective in the identification and protection of their key resources and service facilities. These lifeline elements need enhanced protection from hazard impact so they can remain functional at the time of crisis or following a major disaster. Typical critical facilities and infrastructure include:

- Key infrastructure and utilities, such as communications, water, electricity and fuel supplies.
- Primary transportation links, such as main roads, rail links, harbours and airports.
- Public administration facilities, government offices, police, fire and emergency service facilities.
- Medical facilities performing critical public health and life saving functions.
- Schools and buildings with social value, important for public assembly or local identity.
- Key economic assets related to finance, commerce and manufacturing.
- Cultural monuments, museums and historic structures.

The discussion and examples shown in this section focus on:

- The role of engineering and technical abilities in protecting critical facilities
- Protection of urban infrastructure
- Structural means, disaster-resistant construction
- Codes, policies and procedures
- Government examples, public demonstration of best practices
- Development of appropriate methodologies

5.4. Networking and partnerships

Comprehensive disaster risk reduction covers a wide range of disciplines, sectors and institutions, calling for diverse and expanded forms of partnerships. The achievements from networking and resulting partnerships can be far more powerful than the total of individual or specialist contributions, alone. Thanks to Internet and global communications, the emergence of networks between officials from government, the general public, private commercial sectors and professional bodies is technically easy.

However, these loose circles based on common interests, can only be successful if participants share the same willingness, motivation, commitment and desire to openly share information and experiences.

Networks and partnerships, ranging from loose communication exchange networking to full fledged and funded implementation partnerships, have great potential. This section is limited to describing some concrete examples of exiting ones.

- Future challenges and priorities
- Building links to reduce risk - extended partnerships and networking
- Cross-sectoral coordination and collaboration
- Technical and research networks
- Multidisciplinary, networked relationships
- Technical support for community partnerships
- Commercial sector and partnership interests

5.5. Financial and economic tools

In view of the exorbitant economic and social costs of recurring disasters, development assistance and financial tools and instruments for risk-sharing and risk-transfer are important for. the application of measures for disaster risk reduction. The increasing involvement of international development banks and agencies in this area supports the strengthening of national and corporate commitment to engage in risk and vulnerability reduction. Insurance and reinsurance are essential instruments for recovering losses and supporting post-disaster recovery r. Insurance schemes need to be complemented by other low-cost risk sharing mechanisms in poorer communities, such as kinship networks, microfinance and public works programs to increase coping capacities. Additional tools and financial incentives are necessary to promote proactive disaster risk reduction investment. It will also be important that all the development projects include a critical consideration of disaster risks and vulnerability, and the policies and programs meant for reducing disaster risks are included in poverty reduction programs. .

This section shows how some of the international development banks have already adopted policies and instruments to include risk reduction in their normal lending operations. In the subsequent section, a brief overview of specific financial instruments, such as insurance, microfinance and public works program, has been provided.

5.6 Early warning systems

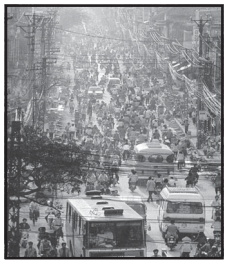
The ultimate goal of hazard forecasting and early warning systems is to protect lives and property. They therefore constitute one of the key elements of any disaster reduction strategy. To serve the people effectively, they need to be integrated instruments designed to link the scientific and technical initiators of warnings and those who identify vulnerabilities, the intermediaries composed of public authorities who issue warnings and emergency instructions, disseminators and processors of sector-specific products, and the ultimate users of the warnings in local communities. Robust, accurate and timely means of reliable and understandable communications are essential. Effective early warning procedures should be part of the national institutional and legislative frameworks for disaster management and have redundancy built into the system. To be fully successful, early warning must be complemented by professional services, training and capacity-building activities and the allocation of resources, to enable timely actions to be taken to avert loss or avoidable damage.

This chapter begins with the current status of early warning thinking. An effective early warning system is built on three requisites:

- Political responsibility to promote early warning strategies;
- Participation and knowledge of the public;
- Support at the international and regional levels;

completed by the following three elements:

- Technical identification and monitoring of hazards;
- Multidisciplinary, multi-agency and intersectoral communications;
- Institutional services to react to warnings;



Chapter 6. Related International Commitments and the Role in Disaster Risk

6.1. Selected international development agendas and commitments

The international community has adopted several significant declarations, agendas and conventions during the last decades, on, among other things, environment, fresh water management, climate change and desertification, social development, habitat and food security, which all contain commitments related to disaster reduction. These are often referred to in the text of this review.

This section provides a short overview of some of the most relevant ones, in particular those related to sustainable development, which is built around three pillars: social and economic development, and environmental protection. These are all relevant elements for disaster risk reduction and need to be linked to the efforts to implement the objectives of the International Strategy for Disaster Reduction. The full implementation of the global visions expressed below are yet to be realized.

The following mainstream agreements or subjects are touched upon in this chapter:

- Millennium development goals
- Sustainable development agenda
- Climate change
- Desertification and drought
- Wetlands
- Freshwater agenda
- Gender agenda
- Habitat agenda
- Public health
- Small island developing states
- Least developed countries

An overview of how the different parts of the UN system relate to risk reduction is described later in this chapter.