

In the same way, different social groups are more or less vulnerable to certain types of hazards. While disasters of all kinds affect the poor most directly, women and men, people in different age

and ethnic groups, and those with different levels of physical and cognitive ability, experience disasters differently.

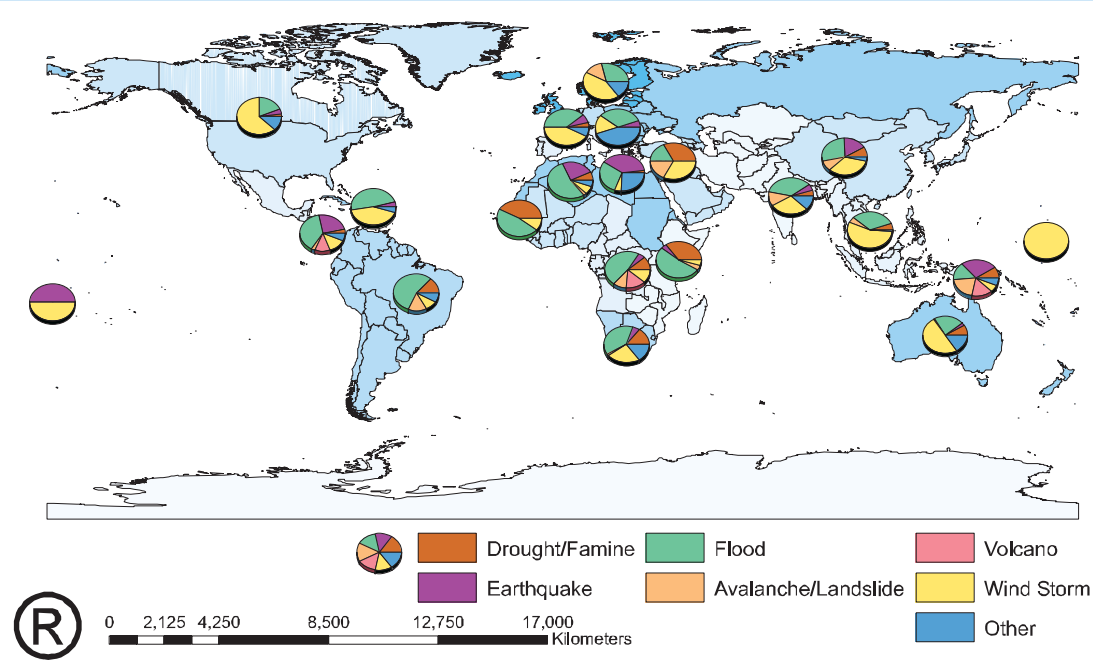
Table 2.1

Hazard classification

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| <p>HAZARD</p> <p>A potentially damaging physical event, phenomenon or human activity, which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.</p> | |
| <p>NATURAL HAZARDS</p> <p>Natural processes or phenomena occurring in the biosphere that may constitute a damaging event. Natural hazards can be classified according to their geological, hydrometeorological or biological origins.</p> | |
| <p>ORIGIN</p> | <p>PHENOMENA / EXAMPLES</p> |
| <p>Hydrometeorological hazards Natural processes or phenomena of atmospheric, hydrological or oceanographic nature.</p> | <ul style="list-style-type: none"> • Floods, debris and mudflows • Tropical cyclones, storm surges, wind, rain and other severe storms, blizzards, lightning • Drought, desertification, wildland fires, temperature extremes, sand or dust storms • Permafrost, snow avalanches |
| <p>Geological hazards Natural earth processes or phenomena that include processes of endogenous origin or tectonic or exogenous origin, such as mass movements.</p> | <ul style="list-style-type: none"> • Earthquakes, tsunamis • Volcanic activity and emissions • Mass movements, landslides, rockslides, liquefaction, sub-marine slides • Surface collapse, geological fault activity |
| <p>Biological hazards Processes of organic origin or those conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances.</p> | <ul style="list-style-type: none"> • Outbreaks of epidemic diseases, plant or animal contagion and extensive infestations |
| <p>TECHNOLOGICAL HAZARDS</p> <p>Danger associated with technological or industrial accidents, infrastructure failures or certain human activities which may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation, sometimes referred to as anthropogenic hazards. Examples include industrial pollution, nuclear release and radioactivity, toxic waste, dam failure, transport, industrial or technological accidents (explosions, fires, spills).</p> | |
| <p>ENVIRONMENTAL DEGRADATION</p> <p>Processes induced by human behaviour and activities (sometimes combined with natural hazards) that damage the natural resource base or adversely alter natural processes or ecosystems. Potential effects are varied and may contribute to an increase in vulnerability and the frequency and intensity of natural hazards. Examples include land degradation, deforestation, desertification, wildland fires, loss of biodiversity, land, water and air pollution, climate change, sea level rise and ozone depletion.</p> | |

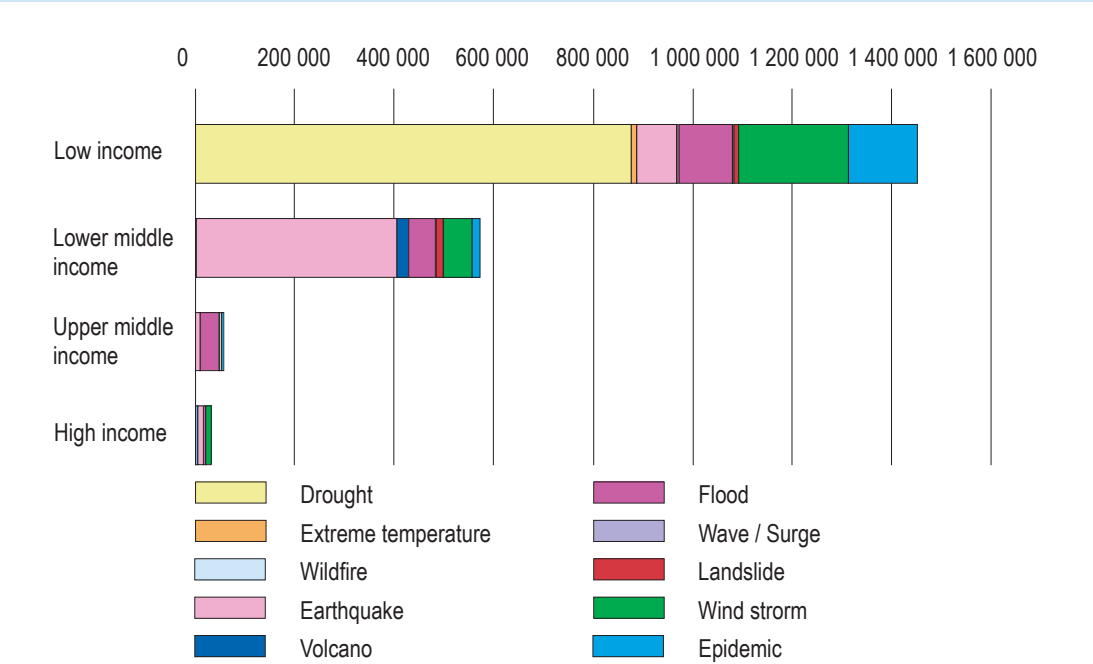


Figure 2.2
Distribution of natural disasters, by country and type of phenomenon 1975-2001



Source: EM-DAT: The OFDA/CRED International Disaster Database - www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium, 2004

Figure 2.3
Number of people killed (income class/disaster type), world summary 1973-2002



Source: EM-DAT: The OFDA/CRED International Disaster Database - www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium, 2004, based on elaboration by ADRC

Understanding the nature of vulnerability and capacity

Risk is rooted in conditions of physical, social, economic and environmental vulnerability that need to be assessed and managed on a continuing basis. The primary objective is to minimize exposure to hazards through the development of individual, institutional and societal capacities that can withstand loss or damage.

Over the past 30 years there has been a significant and important development in the understanding about people's susceptibility to hazards. The concept of vulnerability was initially used by engineers in considering construction designs related to levels of resistance to physical forces exerted by ground motion, wind and water.

During the 1980s and 1990s, there was a growing interest in the linkages between disasters and development. Originally focused on considering the impact of disaster on development, the scope of interest has since been expanded to address the impact of development on the toll of disaster-related damage. This expressed a new range of socio-economic and environmental concerns built around the notion of vulnerability.

The role of community participation and people's general coping capacities are also recognized as key elements in explaining disaster risk. The creative link between the negative conditions with which people live, and the often overlooked positive attributes which they also possess, underline the importance of the socio-economic dimensions of risk.

However, it remains a challenge to encourage the identification of locally available strengths and capacities that can reduce risk to hazards. The importance of revealing capacities hidden in non-disaster times becomes a critical task for disaster risk reduction. Capacities apply to all levels of society and social organizations,

and encompass a broad range of physical, social, economic and ecological considerations.

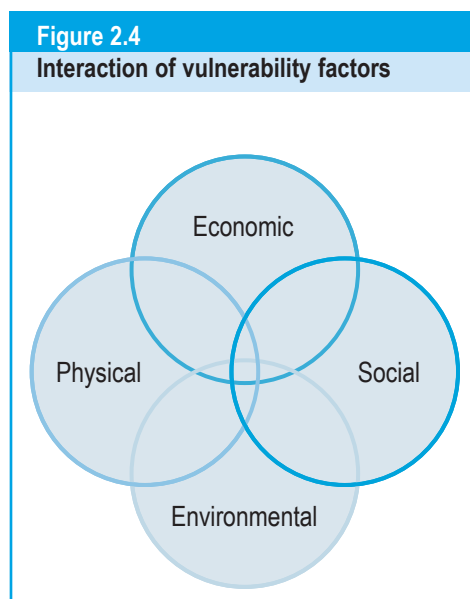
Vulnerability is a reflection of the state of the individual and collective physical, social, economic and environmental conditions at hand. These are shaped continually by attitudinal, behavioural, cultural, socio-economic and political influences on individuals, families, communities and countries.

Governed by human activity, vulnerability cannot be isolated from ongoing development efforts. It therefore plays a critical role in all the aspects of sustainable development.

Figure 2.4 illustrates the four broad areas in which different aspects of vulnerability can be grouped, depicted by intersecting circles to show that all spheres interact with each other.

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.

Coping capacity
The means by which people or organizations use available resources and abilities to face adverse consequences that could lead to a disaster.



Physical factors

This concept is conventionally materially oriented, and comes from the schools of land-use planning, engineering and architecture. Physical aspects of vulnerability, although continually being broadened in scope, still refer mainly to



considerations and susceptibilities of location and the built environment. It may be described as “exposure” or “placed in harm’s way” or “being in the wrong place at the wrong time”. Physical vulnerability may be determined by aspects such as population density levels, remoteness of a settlement, the site, design and materials used for critical infrastructure and for housing.

Social factors

Social vulnerability is linked to the level of well-being of individuals, communities and society. It includes aspects related to levels of literacy and education, the existence of peace and security, access to basic human rights, systems of good governance, social equity, positive traditional values, customs and ideological beliefs and overall collective organizational systems.

Some groups are more vulnerable than others. People less privileged in class or caste structures, ethnic minorities, the very young and very old, and other disadvantaged and marginalized segments of the population are more likely to be exposed to greater risk. Gender issues, particularly the role of women, are also important. In many societies, women have a primary responsibility for domestic life, providing essential shelter and basic needs. Therefore, women are more likely to become more burdened or more vulnerable in times of crisis.

Public health, concerning physical, mental and psychological well-being, is a critical aspect of social vulnerability. The disabled, of whom there are hundreds of millions worldwide, are particularly susceptible, as their evacuation and continued care is severely hampered during disasters. Predisposition to infection, exaggerated exposure to communicable diseases, lack of defensive mechanisms represent individual conditions of vulnerability. Physical features in a community, such as insufficient basic infrastructure, especially water supply and sanitation, as well as inadequate health care facilities and supplies, are also expressions of increased vulnerability.

Traditional knowledge systems, as well as cultural aspects such as indigenous beliefs, traditions and ways of coping are important determinants in risk

perception. Deeply rooted beliefs that are destiny-oriented or which pose a fatalistic vision of disasters can reflect a religious or ideologically inherited sense of vulnerability. Such views may present a great challenge in moving towards the acceptance of a culture of prevention and protection.

Social vulnerability is also linked with other politically-oriented societal factors, such as social power relations. Institutional organizations and governance structures also play an important role in the level of social vulnerability. Social cohesion and regulation improve coping capacities, whereas social insecurity increases vulnerability.

Economic factors

Levels of vulnerability are highly dependent upon the economic status of individuals, communities and nations. The poor, a disproportionately female and elderly group in most regions, are generally far more vulnerable than economically better off segments of society. This relates both to the possibility of higher proportional losses among the poor when a disaster strikes, and to their generally more limited capacity to recover from disasters.

Economic vulnerability also includes levels of individual, community and national economic reserves, levels of debt and the degree of access to credit, loans and insurance. An economy lacking in diversity is generally more vulnerable. Similarly, inadequate access to critical and basic socio-economic infrastructure, including communication networks, utilities and supplies, transportation, water, sewage and health care facilities, increase people’s exposure to risk.

Environmental factors

Key aspects of environmental vulnerability include the extent of natural resource depletion and the state of resource degradation. In the same vein, a lack of resilience within ecological systems and exposure to toxic and hazardous pollutants are important elements that shape environmental vulnerability. A reduced access to clean air, safe water and sanitation and inappropriate forms of waste management, especially in densely populated and urban environments can deepen levels of

socio-economic vulnerability. Increasingly vulnerable environmental conditions such as diminished biodiversity, soil degradation or growing water scarcity can easily threaten food security for people dependent on the products of the land, forests, pastures, and marine environments for their livelihoods. A polluted environment also increases people's exposure to health risks.

As natural resources become more scarce the range of options available to communities becomes more limited, reducing the availability of coping solutions and decreasing local resilience to hazards or recovery following a disaster. Over a period of time environmental factors can increase vulnerability further by creating new and undesirable patterns of social discord, economic destitution and eventually forced migration of entire communities.