

# Disaster Risk Reduction

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## Abstract

Disaster has always been a result of human interaction with nature, technology and other living entities. Sometimes unpredictable and sudden, sometimes slow and lingering, various types of disasters continually affect the way in which we live our daily lives. Human beings as innovative creatures have sought new ways in which to curb the devastating effects of disasters. However, for year's human conduct regarding disasters has been reactive in nature. Communities, sometimes aware of the risk that they face, would wait in anticipation of a disastrous event and then activate plans and procedures. Human social and economic development has further contributed to creating vulnerability and thus weakening the ability of humans to cope with disasters and their effects. Disasters, including those resulting from and exacerbated by the effects of climate change and overexploitation of natural resources, affect countries around the world. According to a report by the Internal Displacement Monitoring Centre, 22 million people were displaced in 2013 by disasters brought on by natural hazard events. Asia is the worst affected region, with 19 million people or 87 percent of the global total displaced during 2013. The report states that although both wealthy and poorer countries are affected, 'developing countries' bear the brunt, accounting for more than 85 percent of the displacement.

Disasters impede human development. Gains in development are inextricably linked to the level of exposure to disaster risk within any given community. In the same light, the level of disaster risk prevalent in a community is linked to the developmental choices exerted by that community (UNDP, 2004). The fact that the disasters impact on development (e.g. a school being washed away in flood) and development increases or decreases the risk of disasters (e.g. introducing earthquake- resistant building techniques) is widely accepted.

This paper will introduce you to the field of disaster risk reduction. The first part of the paper will focus on defining the basic, but most important, terms in relation to disaster studies. The different types of hazards, vulnerability domains and risks will also be discussed and the last part of the paper deals with disaster risk governance

### **Defining the Concepts:**

Various terms linked to the activities which we have come to understand as disaster risk reduction, have evolved and been refined over the past 50 years. An over-emphasis on disaster and humanitarian relief has made way for the contemporary terms such as disaster reduction and disaster risk management. However a common understanding of the various terms underlying disaster risk reduction is crucial if one aims to ensure a standardized approach by all stakeholders. The definition of these terms has been universally accepted to be valid and is a compilation of the definitions according to the published terminology of the United Nations International Strategy for Disaster Reduction (UNISDR, 2009). UNISDR is the secretariat of the International Strategy for Disaster Reduction (ISDR). It was created in December 1999 and is part of the UN Secretariat with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction.

### **Disaster:**

Although the focus of disaster reduction is not on any actual disaster event itself, disaster remains the main focus. Thus our efforts must be geared towards the reduction of the risk of a disaster occurring. Before one can therefore focus on the more technical and complex terms of disaster risk reduction and disaster risk management, one must have a clear understanding of what in actual fact a "disaster" entails. Probably one of the most debated terms in disaster reduction remains the basic definition of a disaster. Many scholars (Quarantelli, 1998b; Quarantelli & Perry, 2005) have expressed diverse views on what exactly constitutes a disaster. Some link the existence of disaster to a specific amount of losses sustained ( e.g. number of people killed in injuries), others judge an event to be a disaster if a certain predefined threshold is breached ( e.g. a trigger to a certain contingency measure is reached), some judge disasters on their geographical extent and

significance with regard to 'normal' conditions, while some express a disaster in terms of its monetary value in losses. However, since the International Decade of Natural Disaster Reduction (IDNDR) the various scientific understandings of disaster have culminated in a globally accepted definition.

The UNISDR (2009) defines a disaster as: "A serious disruption of the functioning of a community or a society involving widespread human, material, or environmental losses and impacts which exceeds the ability of the affected community to cope using only its own resources". Some aspects of this definition need to be highlighted. Firstly the emphasis of the definition is on "a serious disruption". One can therefore expect a disaster event to be something which significantly changes the 'normal'. It is an event which the majority of the affected community will perceive as removing them from the 'normal'. Second the most important is the distinction which the definition places on abnormal events and an event which we can classify as being a disaster. If the event "exceeds the ability" of the affected community to handle the consequences by making use of all their resources, then the event can be classified as a "disaster". Lastly, note should be taken of the concept "community". Various disciplines define "community" quite differently. A community is a collection of people sharing common interests and values. Despite being culturally diverse, mobile or instable, members of a community communicate with or on behalf of each other in order to achieve a mutually beneficial outcome- they are bound together by a common goal, their sense of belonging and a sense of place. One should therefore appreciate the fact that in order for a government to adequately manage disasters, the definition of "community" must be very clear. To this end, it has become common practice for governments to use their administrative units to define the affected "community". Thus if an event exceeds the coping ability of a village, or local municipality, or district, or state/ province or even the nation, then a specific type of disaster can be declared.

The UNISDR goes on to indicate: " Disaster is often described as a result of the combination of the exposure to **hazards**; the conditions of **vulnerability** that are present; and the **insufficient capacity** or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together

with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation".

### **Risk and Disaster risk:**

Risk has various connotations within different disciplines. In general risk is defined as "the combination of the probability of an event and its negative consequences" (UNISDR, 2009). The term risk is thus multidisciplinary and is used in a variety of contexts. Risk is usually associated with the degree to which humans cannot cope (lack capacity) with a particular situation. The term disaster risk therefore refers to the potential (not actual and realized) disaster losses, in lives, health status, livelihoods, assets and services, which could occur in a particular community or society over some specified future time period. Disaster risk is the product of the possible damage caused by a hazard (of a particular magnitude) would affect communities differently (Von Kotze, 1999:35). This is true because of the level of the coping mechanisms within that particular community. Poorer communities are therefore more at risk than communities that do have the capacity to cope.

Risks exist or are created within social systems. The social context in which risk occurs is an important consideration. It should also be noted that people therefore do not share the same perceptions of risk and their underlying causes due to their social circumstances. To determine disaster risk three aspects need to be present: a hazard, vulnerability to the hazard and some form of coping capacity.

### **Hazard:**

A hazard is defined as " a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage" ( UNISDR, 2009). Hazard can be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity, probability and likely frequency. Typical examples of hazards can be the absence of rain (leading to drought) or the abundance thereof (leading to flooding). Chemical manufacturing plants near settlements can also be regarded as hazardous; similarly, incorrect agricultural techniques will in the long run lead to possible

disasters. Hazards can either be a creation of humans or the environment. Although the former can more easily be planned for than the latter, in both cases the management of the hazard will remain the same. Our development efforts and attention should therefore be focused on the presence of various hazards and this must inform our planning.

**Vulnerability:**

Vulnerability is defined as the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Vulnerability is a set of prevailing or consequential conditions arising from various physical, social, economic and environmental factors which increase the susceptibility of a community to the impact of hazards (UNISDR, 2002: 24). It can also comprise physical, socio-economic and/ or political factors that adversely affect the ability of communities to respond to events (Jegillos, 1999). Blaikie et al. (1994) are of the opinion that vulnerability is constituted by the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a hazard. Vulnerability can be expressed as the degree of loss resulting from potentially damaging phenomenon or hazard. It is therefore the extent to which a community will degrade when subjected to a specified set of hazardous conditions.

Vulnerability has some distinct underlying causes. The magnitude of each disaster, measured in deaths, damage, or costs (for a given developing county) increases with the increased marginalization of the population. This can be caused by a high birth rate, problems of land tenure and economic opportunity, and the misallocation of resources to meet the basic human needs of an expanding population. As the population increases, the best land in both rural and urban areas is taken up, and those seeking and for arming or housing are forced to accept inadequate land. This offers less productivity and a smaller measure of physical or economic safety, thus rendering the community vulnerable.

**Coping Capacity:**

Coping capacity for disaster risk reduction refers to the ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions such as hazards, emergencies or

disasters. Coping capacities contribute to the reduction of disaster risks (UNISDR, 2009). The focus here should therefore not only be on the individual or the community but also the capacity of the supporting mechanisms to the individual and the community at large. Coping capacity is therefore just as much about what a community internally possesses, as the external structures on which they depend.

### **Interaction of Hazards, Vulnerability and Disaster Risk:**

The interaction between hazards and vulnerability translate into disaster risk. In the process the identification of political, economic, physical, social and ecological factors that interact to increase the susceptibility of individual, households and communities to the impact of hazards. The identification of these factors provides the basis for the prioritisation of initiatives which will contribute to reducing vulnerability and thus to eliminating and/ or reducing disaster risk. The initiatives so prioritized should then be integrated by the various spheres of government into sustainable development and disaster risk reduction planning. Disaster risk reduction is only valuable once one understands the contexts, in which people live, the changing environment in which they find themselves, the impact of the environment on their ability to sustain their livelihoods and the presence of a number of natural forces.

Hazards in themselves do not constitute disasters. The magnitude of a disaster is usually described in terms of the adverse effects which a hazard has had on lives, property and infrastructure; environmental damage; and the costs attached to post-disaster recovery and rehabilitation. In other words there is a direct link between the capacities of those affected to withstand, cope and recover from the adverse effects of a hazard using only their own resources, and what constitute disaster risk.

### **Understanding Vulnerability:**

There is a common consensus among disaster risk scholars on the factors which compound or alleviate vulnerability. They are discussed below;

1. **Political Factors:** The level of vulnerability in any community can be directly linked to the political will and commitment to developmental concerns. Vulnerability is as much about the exposure to a

given hazard as the decision-making linked to development which will address conditions of vulnerability. A set of deep-rooted socio-economic elements which include aspects such as denial of human rights, denial of access to power structures, access to quality education, employment opportunities, land tenure, availability of and access to resources, access to infrastructure, basic services and information, together have the ability to create and maintain extreme levels of vulnerability.

- Economic Factors:** Whilst a wide range of factors combine to contribute to levels of vulnerability to the impact of hazards in developing countries, poverty probably has the single most important influence. The eradication of poverty therefore is crucial to vulnerability reduction. The economic status of the population relates not only to the degree of losses in terms of lives, property and infrastructure but also to the capacity to cope with and recover from adverse effects. Virtually all disaster studies show that the wealthiest of the population (women and men) either survive the impact of a hazard without suffering any adverse effects or are able to recover quickly (due mostly to the presence of insurance, savings, investments or some other financial instrument to fall back on). Poverty and lack of access to land and basic services explains why people in urban areas are forced to live on hills that are prone to landslides, or why people settle near rivers that invariably flood their banks. Poverty explains why droughts claim poor subsistence farmers as victims and rarely the wealthy, and why famine, more often than not, is the result of a lack of purchasing power to buy food rather than the absence of food.

Increasing, poverty also explains why many women and men are forced move from rural areas to the cities in search of job opportunities or to other parts of a country or even across borders to survive. Lack of access to basic services, like water and sanitation, forces people to use unsafe water sources for cooking and drinking and places them at risk of disease and epidemics. People without access to electricity or alternative fuel sources are forced to chop down trees for firewood which in turn leads to environmental degradation and increases the danger of flooding. A rapid increase in population makes it inevitable that more people will be affected by the impact of hazards because more will be forced to live and work in unsafe areas. Increasing numbers of people competing for a limited

amount of resources can lead to conflict. It remains imperative for every sector in each sphere of government to prioritize poverty eradication and the creation of sustainable livelihoods in all disaster risk reduction and development planning.

3. **Physical Factors:** Physical vulnerability refers to the susceptibility of individuals, households and communities to loss due to the physical environment in which they find themselves (UNISDR 2002: 47). It relates to aspects such as access to suitable land, land use planning, housing design, building standards, materials used for building houses, engineering, accessibility to emergency services and other similar aspects. 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 (UNISDR, 2002). Physical vulnerability also relates to remotely located settlements, their location, the design of building structures, and their ability to withstand the elements and hazards, as well as their lack of access to services, infrastructure and information.
4. **Social Factors:** The level of social well-being of individuals, households and communities directly impacts on their level of vulnerability to hazards, Levels of education, literacy and training, safety and security, access to basic human rights, social equity, information and awareness, strong cultural beliefs and traditional values. Morality, good governance and a well-organized cohesive civil society, all contribute to social well-being with physical, mental and psychological health being critical aspects. Vulnerability is not equally distributed. Minority groups, the aged, orphans, nursing mothers and their offspring and the disabled are more vulnerable than others. A lack of awareness and access to information can also result in increased levels of vulnerability. Disasters can happen because people vulnerable to them simply do not know how to heed early warnings and to get out of harm's way or to take protective measures. Such ignorance may not necessarily be a function of poverty, but a lack of awareness of the measures that need to be taken to build safe structures in safe locations, or safe evacuation routes and procedures. Other populations may not know where to turn for assistance in times of acute distress. Nevertheless, this point should not be taken as a justification for ignoring the coping mechanisms of the majority of people affected by disasters.



5. **Environmental Factors:** The discussion of environmental aspects of vulnerability covers a very broad range of issues in the interacting social, economic and ecological aspects of sustainable development relating to disaster risk reduction. The key aspects of environmental vulnerability can be summarized by the following five distinctions:

- The extent of natural resource depletion;
- The state of resource degradation;
- Loss of resilience of the ecological systems;
- Loss of biodiversity; and
- Exposure to toxic and hazardous pollutants (UNISDR 2002:47)

Many disasters are either caused or exacerbated by environmental degradation. Deforestation leads to rapid rain run-off, which contributes to flooding. The creation of drought conditions and the relative severity and length of time the drought lasts are mainly natural phenomena. Drought conditions may be exacerbated by:

- Poor cropping patterns;
- Overgrazing;
- the stripping of topsoil;
- poor conservation techniques;
- depletion of both the surface and subsurface water supply;
- unchecked urbanization (UN 1992:9)

### **Disaster Risk Governance**

Each country has the sovereign responsibility to protect its people, infrastructure and economic and social assets from disasters. The state has the responsibility to ensure the safety and welfare of its citizens, their livelihoods and natural resource endowments. The goal of disaster risk reduction programmes is to reduce

disaster risks by building capacity and increasing the resilience of communities at risk, thus enhancing their security and wellbeing. This can be done through increase government commitment to implementing disaster reduction policies and programmes. This implies a central responsibility and commitment by the state in providing a proper and effective institutional framework and capacities for disaster risk management and disaster risk reduction.

Key governance issue in disaster risk reduction include role in policy formulation, operational capabilities and capacities and varied forms of relationships among actors. In general, disaster risk governance needs to be guided by the following general principles and objectives;

- elevating disaster risk management as a policy priority;
- generating political commitment which translates into promoting disaster risk management as a multi-sectoral responsibility;
- assigning accountability for disaster losses and impacts;
- allocating necessary resources for disaster risk reduction;
- enforcing the implementation of disaster risk management and reduction; and
- Multi-stakeholder involvement, increasing gender sensitivity, and facilitating participation by civil society and the private sector.

A core function of disaster risk reduction governance is ensuring that the necessary support exists within government to drive the disaster risk reduction agenda. There is wide international consensus that government as the administrative entity must ensure that disaster risk reduction becomes a priority. This can be done by the following measures;

- Develop and implement disaster risk reduction policies, laws, regulations, directives and standards;
- establish adequate structures to govern disaster risk reduction such as;
  - national ( and sub-national) disaster risk management centers/ offices
  - national multi- sectoral coordinating mechanisms ( also called National Platforms),
  - political decision-making structures ( on all keels of government),

- civil society structures for disaster risk reduction, and
- engagement with the private sector
- Conduct nationwide disaster risk assessments;
- Integrate disaster risk reduction measures into development planning;
- Encourage research, training, education and public awareness of disaster risk issues;
- Ensure adequate emergency and contingency measures are in place for possible disasters; and
- Provide adequate funding to sustain disaster risk reduction efforts.

The most important emphasis in good governance for disaster risk reduction is the realization cross-cutting issues, beside the development agenda, which are important.

### **Conclusion:**

This particular article is aimed to provide a broader understanding of disaster risk management and emphasis was placed on the various domains of vulnerability and the role of the state. Disaster risk is a societal commonality. It affects everyone and all the systems on which we depend. Solving these intricate problems requires a transdisciplinary approach and focus. It is important that we adjust our "lens" of reality to include issues of disaster risk. The linkage with development provides us with an ideal opportunity to address and solve many of the issues associated with disasters and their impact.

### **References:**

1. Anderson, M.B. 1985. A Reconceptualization of the linkages between disasters and development. *Disasters*, 9 (Issue Supplement 1): 46-51, Dec.
2. Blaikie, P., Cannon, T., Davis, I. & Wisner, B 1994. *At risk: natural hazards, people's vulnerability, and disasters*. London: Routledge. 284 p.
3. Jegillos, S.1999. *Fundamentals of Disaster risk management: How are southeast Asian Countries addressing this?*, Cape Town: Periperi publications.
4. Quarantelli, E.L. 1954. The nature and conditions of panic. *American Journal of Sociology*, 60 (3): 267-275, Nov.

5. Quarantelli, E.L.1998 a. Introduction: the basic question, its importance, and how it is addressed in this volume. (In Quarantelli, E.L, ed. What is a disaster? Perspectives on the question. London: Routledge. pp.1-8)
6. Quarantelli, E.L, ed 1998b. What is a disaster?; perspectives on the question. London: Routledge. 312 p
7. UNDP (United Nations Development Programme). 1992. An overview of disaster management. Geneva: UNDP-DMTP. 125p.
8. UNDP (United Nations Development Programme). 2004. Reducing disaster risk: a challenge for development. New York, NY: UNDP-BCPR.146 p.
9. UNISDR (United Nations International Strategy for Disaster Reduction). 2002. ISDR background paper for WSSD. Geneva: UN
10. UNISDR (United Nations International Strategy for Disaster Reduction). 2004. Living with risk: a global review of disaster reduction initiatives. Geneva: ISDR Secretariat. <http://www.unisdr.org/we/inform/publications/657>.
11. UNISDR (United Nations International Strategy for Disaster Reduction) 2009. UNISDR terminology on disaster risk reduction. Geneva: UNISDR. 30 P.
12. Von Kotze, A. 1999. A new concept of risk. Cape Town: Periperi publications.