



**Strategic Framework of Disaster Risk Reduction: A Theoretical Review**

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**Abstract**

Disaster management has shifted its focus from disaster response to mitigation. The emphasis is on mainstreaming disaster risk reduction strategies in macro socio economic planning. Accordingly, disaster management is being approached not as a contingent measure but as an integral aspect of developmental planning. Disaster management has not been accorded requisite priority as an issue in development planning; consequently, resource allocation has been inadequate. With the shift in emphasis, it is hoped, disaster management would be appreciated better as an integral aspect of governance. To that end, analysis of vulnerability factors contributing to ‘risk’ with a view to framing suitable risk reduction strategies would be required to impart requisite ‘rationality’ (purpose and end-orientation) to administrative decisions. The emergence of disaster reduction as a concept that integrates development-oriented strategies and recent innovative approaches in disaster management such as vulnerability and risk reduction has presented a new perspective in planning as also opportunities to address the important areas of concern that have up till now been less considered. The concept has also been applied in policy development, usually in the context of sustainable development and long-term socio-economic development strategies. Risk reduction is gaining more and more emphasis in today’s dynamic environment. This paper is therefore an attempt to highlight the importance of disaster risk reduction. This paper has also focused on various strategies that help to combat disaster risk.

## **Introduction**

Burton, Kates and White (1978) suggest that man can purposely adjust to the risk of environmental extremes by changing habitation or resource use, community action, restorative activity or redistribution of loss. Other adjustments are incidental but contribute to reducing loss. Hence, man may make changes, which are innocently adaptive with respect to the risk of environmental extremes. To quote from the United Nations seminal document, 'living with Risk: A Global Review of Disaster Reduction Initiatives', "a disaster is a function of the risk process. It results from a combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk... disaster reduction strategies include, first and foremost, vulnerability and risk assessment, as well as a number of institutional capacities and operational abilities. Essential features of disaster reduction strategy include the assessment of the vulnerability of facilities crucial to the social and economic infrastructure, the use of effective early warning systems, and the application of many different types' of scientific, technical educational and other skilled abilities."

As per the document, the subject of disaster risk reduction in the modern era draws its relevance largely from earlier contributions and previous practices in the field of civil defence and later disaster management. The traditional focus had been on emergency preparedness and better provision of urban services during contingencies. The approach had consequently been predominantly short-term. Since disasters, of late, have threatened to disrupt development altogether and increase poverty and vulnerability of people, particularly in low-income countries, there has been a realisation of the need for protective strategies on a sustained basis to preserve the civilisation, which has been built assiduously over ages. Such paradigm shift is already discernible in Central American countries following repeated devastating disasters in the year 1998. European countries too have been forced to reassess their priorities as per their 'exposure' to different hazards. In Asian countries such as China, India, Japan, Thailand, and Vietnam, more emphasis is being placed on risk identification and management of risks as part of development planning. Such emphasis is evident from the sources of finance for risk reduction, which are now 'mainstream sources' rather than emergency contingency funds. The rationale behind such a shift is the common realisation that the risk of disasters is fundamentally linked to environmental problems and unresolved issues essential for sustainable development.

Accordingly, there are two major objectives of disaster reduction policies: (1) to enable societies to be resilient to natural hazards and (2) to ensure that development efforts do not

increase vulnerability to those hazards'. Small dams disasters, for example, eliminate the risk of small floods, but could escalate the impact of a massive flood catastrophe by leading to human occupation of areas beneath. Other adjustments, for instance, warning systems etc., may lack the necessary components to be effective (Mileti, 1975). Adoption of policies to enhance adjustment and actual subsequent adjustments may not always be correlated; hence, not guaranteeing effective risk mitigation to the satisfactory extent.

An important aspect in understanding human adjustment to environmental extremes is the link or connection between adjustment activities. Isolated adjustments are less effective. Hazard adjustment linkages are best viewed in terms of how adoption of one adjustment would affect the adoption of others (White and Haas, 1975). Sorenson (1975) has provided an inventory of possible linkages. Firstly, one type of adjustment may cause the adoption of a second, for example, communities with engineering works typically became dependent on federal relief programmes (in the US). Secondly, an independent factor may cause the adoption of one or several adjustments, for example, the National Flood Insurance Program enhances adoption of both insurance and land use controls (Hutton and Mileti, 1979; Kunreuther, 1978). Finally, other scholars propose that adjustments can interact randomly. There is a concomitant shift in the theoretical understanding of disaster risk reduction in that the orientation is now an attempt through planned policy interventions over time to reduce risks through continuous research and development activities involving a network of agencies across social economic governmental and professional sectors instead of a specialised service limited to only security, emergency services and engineering experts.

Accordingly, the disaster risk reduction framework is composed of the following fields of action, as described in ISDR's publication in 2002; 'Living with Risk: A Global Review of Disaster Reduction Initiatives.' Risk awareness and assessment including hazard analysis and vulnerability and capacity analysis;

- Knowledge development including education, training, research and information;
- Public commitment and institutional frameworks, including organisational, policy, legislation and community action;
- Application of measures including environmental management, land-use and urban planning, protection of critical facilities, application of science and technology, partnership and networking, and, financial instruments;
- Early warning systems including forecasting, dissemination of warnings, preparedness measures and reaction capacities.

## **Objectives of the Study**

This paper is descriptive in nature. This study has been undertaken in order to achieve the following objectives:

- To understand the essentials of Disaster Risk reduction,
- To discuss and understand risk reduction through specific strategies.

## **Methodology**

This paper is descriptive in nature. Available secondary data and the literature from various sources have been used to develop this paper.

## **Targets for Risk Reduction**

The concept of elements at risk was discussed in the second Unit. Specific identification of elements at risk is important for devising cost effective and appropriate disaster mitigation strategies. Opportunities for natural hazard mitigation can be found anywhere where population, infrastructure or economic activities are at risk from disruption/ destruction from extreme natural events. Which vulnerability reduction actions to consider, will depend on what is to be protected, on the priorities set by those affected, and, on the resources made available for their implementation. Risk information is procured from risk analysis involving hazard assessment, vulnerability assessment for proposed project considering 'elements' at risk. Mitigation measures are accordingly devised to protect identified elements at risk. Information procured is incorporated in mitigation planning and preparedness planning to meet or prevent contingencies effectively. The following are the emerging agendas in integrating risk reduction with development planning: (Hosseini, 2005)

- Appropriate governance
- Factoring risk into disaster recovery and reconstruction
- Managing the multifaceted nature of risk

As per Hossieni, bringing disaster risk reduction and development concerns closer together requires the following steps:

- The collection of basic data on disaster risk and the development of planning tools to track the relationship between development policy and disaster risk
- The collection and dissemination of best practice in development planning and policy that reduce disaster risk.
- The galvanising of political will to reorient both the development and disaster management sectors.
- Compensatory Risk management
- Addressing gaps in knowledge for disaster risk assessment.

The greatest factor(s) in mainstreaming disaster risk into development planning is political will and considerations of geographic equity or ‘balanced regional development. Development policies have to be both generic and disaster specific in that vulnerable communities face multiple threats owing to socio-economic deprivations, which can be rectified through generic development strategies with the new perspective of disaster risk reduction. As per Hosseini, governance for disaster risk reduction has economic, political and administrative aspects/elements. Economic governance implies ‘rationality’ of policy in terms of resource allocation decisions and its distributional impacts. Political governance requires inclusiveness and comprehensiveness of policy involving all concerned stakeholders in the deliberative process, while administrative governance implies effective implementation through interagency coordination, community participation official accountability, periodic review and updating. Specific activities involved would be enforcement of building codes, land use planning, factoring ‘environmental risk’ into policy and human vulnerability monitoring and required safety standards. Gradual integration of disaster risk analysis into developmental plans is a must to affect the paradigm shift from emergency management to disaster management involving prevention, preparedness, and mitigation components. Concomitant attitude change is also imperative in that communities should not be looked upon as mere victims but as “resource since they possess enormous knowledge and capabilities for coping with and managing risk” (Sahni & Ariyabandu, 2003). Disquietingly though, orientation continues to be disaster relief than disaster mitigation in any significant way.

### **Strategies for Risk Reduction**

#### **Disaster Planning for Risk Reduction**

Disaster planning implies securing administrative arrangements, involving unity of command, span of control, line and staff coordination, delegation, etc. precisely, principles of organisation theory to provide the administrative arrangements to prevent small scale, frequently occurring disasters, which keep disrupting growth and set back development by a number of years. Planning follows risk identification to secure a facility/area from likely risks. A disaster plan is the result of a wide range of preliminary activities (Lindblom, 1999). Disaster planning is conducted both at the micro (at the level of an institution, involving instituting fire protection systems, fire protection systems, electrical systems, plumbing, and protection against environmental hazards etc.) and the macro levels, the objectives of which are outlined as follows by Anil Sinha (2002):

- Forecasting, forewarning of disaster threat and providing the institutional and organisational setup and logistics, personnel, inventory, finances, etc., to achieve desired level of preparedness,
- Mobilisation of resources from internal and external sources
- Taking organisational and administrative steps, including disaster action plans, regular and periodic updating of plans and projects securing institutional wherewithal to implement it, providing for a horizontal and vertical coordination through a network of official and non-official agencies involved viz. government departments, civil defence military and paramilitary organisations running through the central, state and field levels,
- Placing on ground, well- equipped modern forecasting and warning system and reliable fast communication system
- Generating capabilities for prompt and rapid rescue, relief and rehabilitation work,
- Proper planning for medical assistance and health cover would be a critical requirement,
- Providing for other miscellaneous needs like stocking and distribution, food, medicines, shelter, clothing, evacuation, transportation and long term resettlement and rehabilitation of affected communities
- Securing water management practices sine provision of clean water is often problem and a necessity post disasters
- Government initiatives implying long term measures identified by the central government, instituting intensive Training programmes, building data based on documentation of disasters and lessons to be learnt there from, and, dissemination of information
- Integration of disaster management with overall development planning
- Improving public awareness
- Investment in R&D, use of modern technology, particularly information and remote sensing technologies

### **Disaster Risk Reduction by Information, Education, and Public Awareness**

Much emphasis has been put on community based proactive approaches towards risk reduction. The aim is to improve the ability of vulnerable communities to cope with disasters through developing their coping capacity by building on existing practices, skills and local structures such as panchayats and community based voluntary action groups. According to a policy statement of Red Cross 2001, adopting a community-based approach is the best guarantee that disaster preparedness will be implemented and sustained. Therefore people



must participate in planning and preparing for disasters. All activities and programmes should be sensitive to issues of gender and the special needs of vulnerable groups such as the disabled and backwards sections. Such projects are being undertaken successfully in the Caribbean, South and South East Asia (Jigyasu, 2002).

Considerable research is being attempted following recent examples of community resilience based on traditional social support bases such as families and local coping measures such as resilient construction technologies that minimise harm from disaster impact. Traditional buildings were found to perform well in the Armenia Earthquake in 1988, the Turkey Earthquakes in 1999 and 2000. Such buildings are often constructed of masonry and timber rubble, mud and lightweight pieces of wood. These types of constructions are found in seismically active belts that extend from Africa and Europe across Asia and also in Central America. Hence, the emphasis is on articulation of local risk factors and local strategies for combating the threats involved to incorporating the same, wherever found feasible, in modern science and developmental strategies.

### **Risk Reduction through Livelihood Concerns**

Poor developing countries are largely primary producing economies that are mainly dependent on agriculture and related support activities for sustenance. Agriculture includes farming and also animal husbandry, pastoral activities, fishing and harvesting the forest (Bhatti, 2003). The best way to inculcate resilience in disaster prone communities is by ensuring livelihood opportunities, which help affected people cope better in the aftermath of a disaster. It has been observed that loss of livelihood causes people to migrate to other places particularly adjoining metropolises in search of employment options which create problems of urban congestion and possibilities of conflict. To endorse the point with relevant examples, the saltpan workers in Kandla did not have any livelihood option after the Gujarat earthquake. In Kot Murad, a flood prone village in Pakistan, where farming is the main livelihood, 87% of the total households remain landless, since the system is feudal and power and resources are arrogated in the hands of the rich landowners. This social and economic vulnerable state has been compounded by annual incidents of floods. Reducing vulnerability of these communities would involve providing road and rail connectivity to market places and administrative and institutional arrangements to encourage marketing of their produce to reduce the threat to their livelihood besides structural mitigation measures such as construction of eco-friendly small dams in upper catchments of rivers protective embankments along rivers and other such water harvesting measures. This would require replacement of the isolated departmental approach with an integrated flood preparedness

approach based in a networking of knowledge. Attention needs to be paid to this significant dimension of disaster response and preparedness (Bhatti, 2003).

### **Stakeholders Participation in Disaster Risk Reduction**

According to E. Vayunanadan (2003), all concerned parties in disaster policy and implementation should put in concerted effort towards disaster preparedness. This implies continuous/consistent participation and deliberation on the part of all concerned stakeholders with regard to new and emergent issues in town planning, administrative upgradation, employment and livelihood in urban and rural areas, mobilisation of non-government effort.

It is equally significant, that the 'balance of power' in such discussions is not allowed to tilt unfairly in favour of /against any stakeholder in deliberation and planning preceding policy formation, since that is likely to have adverse effect on implementation, in the sense of making it lop sided. The 'at risk' population is an equally significant stakeholder. In view of it there has to be equal 'voice' imparted to, and interest articulation for affected 'publics'. To activate such community participation, it is imperative, that right to information be championed effectively and isolated effort on the part of people organised and institutionalised through 'gram sabhas' and community action groups. Community empowerment in 'peace times' would determine its resilience in facing contingencies.

### **Risk Sharing and Transfer**

Disasters divert important funds from development to disaster relief and rehabilitation. Tools need to be developed that help the poor to manage risks more effectively with alternative sources of finance such as insurance. According to Anselm Smolka (2003), beyond financing future losses, more efforts need to be made towards a more proactive strategy to reduce and prevent losses. To that end there is need for a more proactive collaboration between financial institutions, the state, and industry and insured parties to actively promote risk reduction measures.

### **Risk Reduction through Disaster Prevention**

Disaster prevention involves activities to provide outright avoidance of the adverse impacts of hazards and means to minimise environmental, technological and biological disasters. An example of prevention measure is an early warning system instituted to predict the onset of a hazard like a cyclone, storm surge or tsunami.

### **Conclusion**

Disaster Risk Reduction gives 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 (ISDR). Because disasters are seen as a humanitarian concern, development professionals are rarely exposed to disaster risk reduction issues with the result that the role of risk reduction in pro poor development is largely overlooked. Disasters do not just happen; to a large extent they result from failures of development which increase vulnerability to hazard events. Hence risk reduction is an essential development concern, not a contingent measure (DFID, 2004). Risk reduction is an ongoing effort, not piecemeal or ad hoc like disaster response, and needs sustained commitment on the part of governments for integration in development planning. A shift of emphasis has been discernable lately, in disaster mitigation strategy from disaster response to disaster risk reduction with active participation of people. There are economic imperatives behind the shift, in that prevention is a cost effective option as also more ethical as the government's primary duty is to ensure sustenance and survival of its populace. Such sustenance cannot be ensured in the wake of the looming threat of disasters. Disasters have led to terrible loss of life and property due to lack of effective planning for their prevention and mitigation. Disaster Planning is an integral aspect of developmental planning which requires preemptive policy and coordinated effort on the part of all concerned agencies, public, private and non-government apart from active community participation for risk articulation. In the new globalised set up, integration of such efforts at the supra- state level that is at the level of the United Nations and international regional groupings such as the SAARC is needed for better formulation and implementation of risk reduction strategies on a regional level.

To conclude, disaster risk reduction is a primary responsibility of governments since welfare state has the responsibility to safeguard the health and property of its subjects. Government is the instrumentality of the state and hence has the legal and moral obligation to do all in its power to protect the life and property of its inhabitants.

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