

Quadrant II – Notes

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Paper Title: Introduction to Disaster Management and Disaster Mitigation

Unit: 1 Introduction to Disaster Management and Disaster Mitigation

Module Name: Introduction to Disaster Management & Mitigation

Module No: 1

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Case Studies and Additional Examples/Illustrations

High Powered Committee (HPC) was constituted in August 1999 under the chairmanship of J. C. Pant. The mandate of the HPC was to prepare comprehensive model plans for disaster management at the national, state and district levels. This was the first attempt in India towards a systematic comprehensive and holistic look at all disasters. Thirty odd disasters have been identified by the HPC, which were grouped into the following five categories, based on generic considerations:

1) Water and Climate

- Floods
- Cyclones
- Tornadoes and hurricanes (cyclones)
- Hailstorms
- Cloudburst
- Heat wave and cold wave
- Snow avalanches
- Droughts
- Sea erosion
- Thunder/ lightning

2) Geological

- Landslides and mudflows

- Earthquakes
- Large fires
- Dam failures and dam bursts
- Mine fires

3) Biological

- Epidemics
- Pest attacks
- Cattle epidemics
- Food poisoning

4) Chemical, industrial and nuclear

- Chemical and Industrial disasters
- Nuclear

5) Accidental

- Forest fires
- Urban fires
- Mine flooding
- Oil spill
- Major building collapse
- Serial bomb blasts
- Festival related disasters
- Electrical disasters and fires
- Air, road, and rail accidents
- Boat capsizing
- Village fire

CONCEPTS OF DISASTER MITIGATION AND PREPAREDNESS

Disaster mitigation embraces actions taken in advance of a disaster to reduce its effects on a community. When used in this sense, mitigation includes those actions, which are often categorised as being preparedness measures, which means, preparedness is a part of mitigation. However, a distinction is often made between mitigation and preparedness whereby:

Mitigation refers to long-term risk reduction measures, which are intended to minimize the effects of a hazard; for example, dam construction is considered an activity that mitigates the effects of droughts. Hence, "Mitigation involves not only saving lives and injury and reducing property losses, but also reducing the adverse consequences of natural hazards to economic activities and social institutions."

Preparedness is concerned with measures taken immediately before and after a hazard event, for example, relating to evacuation plans, health and safety, search and rescue etc.

Hence the crucial issue would be logistics for which advanced preparations are necessary. Preparedness assumes that certain groups of people or property will remain vulnerable and that preparedness would be necessary to address the consequences of a hazardous event's occurrence.

This distinction between the two terms provides a useful division of actions because it helps to highlight mitigation as a long-term process, aimed at addressing the explanatory factors, which convert hazards to disasters. In comparison, preparedness does not aim to correct the causes of vulnerability, which place communities at risk in the first place, rather to tackle them through speedy and effective response; hence the emphasis on readiness in this regard.

According to Coburn Spence, Pomonis (1994 in the DMTP, UNDP), however, not

much should be read into the distinction. Mitigation is defined as "a collective term used to encompass all activities undertaken in anticipation of the occurrence of a potentially disastrous event, including long term preparedness and risk reduction measures.... It has occasionally been defined to include post-disaster response, which makes it equivalent to disaster management."

Significance of Mitigation

Effective measures for mitigation involve understanding of hazards and the likely damages in the event of a disaster. For example, in earthquakes most fatalities (almost 75 per cent) are caused due to building collapses, hence prevention would demand earthquake proofing of structures and retrofitting (engineering modifications) of existing ones. In floods, most deaths reportedly occur due to drowning in turbulent currents; hence, prevention strategy would require keeping people out of the track of potential water flows or by preventing the flows from occurring.

- Mitigation saves the economy from losses. Industry and agriculture suffer heavily from earthquakes (damaged infrastructure) and droughts, respectively. Besides, these are interdependent sectors, which means agro-based industries suffer if agricultural produce goes down and industries in general, if communications, power, labour supply et al get affected (Sharma, 1998).

- Mitigation is usually not given the same level of priority as preparedness or recovery. This is because there is a tendency on the part of both economists and politicians to view

Once decisions have been made concerning priorities the resources to be allocated to mitigation measures to protect vulnerable populations and infrastructure can be identified. Depending on their purpose mitigation measures can be categorised as being either “structural” or “non-structural” in nature.

Non-Structural Mitigation

Non-structural mitigation measures relate to those activities and decision-making systems, which provide the context within which disaster management and planning operates and is organised. They include measures such as:

- Training and education
- Public education
- Evacuation planning
- Institution building
- Warning systems
- Structural Mitigation

However, efficient non-structural mitigation measures may be, they need to be complemented by structural measures for risk reduction to both engineered and non-engineered structures.

These include, constructing or retrofitting buildings and infrastructure to suitable safety levels, using suitable materials and the incorporation of proper workmanship under correct supervision. Non-engineered structures are those built by their owners or by builders lacking formal training.

A typical structural measure is an earthquake resistant building whilst a typical non-structural element is a seismic building code, training and education, building safety codes, physical measures, land use planning, public awareness programmes, etc.

Both structural and non-structural mitigation measures may be termed either “Passive” or “Active”. “Active” measures are those, which rely on providing incentives for disaster reduction. They are often more effective than “Passive” measures based in restrictive laws and controls. For example, while codes and land use planning may provide a legal context for mitigation these tend to be ineffective unless rigorously enforced. Instead, measures which provide incentives such as government grants or subsidies, a lessening of insurance

The following principles are widely recognised as providing a valuable guide to Disaster Mitigation:

Initiation

- 1) Disasters offer unique opportunities to introduce mitigation measures.
- 2) Mitigation can be introduced within the three diverse contexts of reconstruction, new investment and the existing environment. Each presents different opportunities to introduce safety measures.

Management

- 3) Mitigation measures are complex and interdependent, and they involve widespread responsibility. Therefore, effective leadership and coordination are essential to provide a focal point.
- 4) Mitigation will be most effective if safety measures are spread through a wide diversity of integrated activities.
- 5) 'Active' mitigation measures that rely on incentives are more effective than 'Passive' measures based on restrictive laws and controls.
- 6) Mitigation must not be isolated from related elements of disaster planning such as preparedness, relief and reconstruction.

Prioritisation

- 7) Where resources are limited, priority should be given to the protection of key special groups, critical services and vital economic structures.

Monitoring and Evaluation

- 8) Mitigation measures need to be continuously monitored and evaluated so as to respond to changing patterns of hazards, vulnerability and resources

Institutionalisation

- 9) Mitigation measures should be sustainable so as to resist public apathy during the long periods between major disasters.
- 10) Political commitment is vital to the initiation and maintenance of mitigation.

Sustainability

Mitigation measures should be sustainable so as to resist apathy during the often-long periods between major disasters. To affect this there needs to be strong level of political commitment. Measures taken also have to be explained to the public and standards set for planning etc. need to reflect the reality of normal public behaviour, perception and prioritisation. Mitigation and its

associated costs will only be supported and incurred if the purpose is understood and it is a reasonable response to the scale of the threat posed.

Should a gap exist between the actual risk faced and a society's perception of it, awareness generation based on the reality of the situation will be required.

Ways to maintain mitigation include:

- An active public awareness programme
- Well documented success stories of risks that were reduced in a past disaster
- Institutionalising mitigation into normal government practice
- Updating of risk assessment and cost benefit analysis
- Maintaining commitment

Sustained commitment on the part of governments would result in a new culture in disaster management standing firmly, in the words of Anil Sinha (2002) on the four pillars of:

- Culture of Preparedness
- Culture of Quick Response
- Culture of Strategic Thinking; and
- Culture of Prevention

- ✓ United Nations Disaster Relief Organisation (UNDRO) promotes study of Risks and their reduction as well as information dissemination to promote disaster management and planning. It is entitled to utilise up to 50,000 \$, following request of assistance from the government and approval of the same by the UNDRO coordinator.
- ✓ United Nations Development Programme (UNDP) promotes incorporation of disaster mitigation in development planning and funds technical assistance for all aspects of development planning. \$50,000 per occurrence is sanctioned for immediate relief and up to \$1.1 million for long- term rehabilitation and reconstruction programmes.
- ✓ FAO (Food and Agriculture Organisation) focuses on agriculture, livestock, fisheries, and local food production. It monitors availability and possible shortages in the future. It is authorised to utilise up to \$20,000 for a project.
- ✓ World Food Programme (WFP) provides targeted food aid for humanitarian relief and supports rehabilitation, reconstruction, and risk reduction development programmes. Fund allocations are to the tune of \$45 million per annum and allocations are made from the International Emergency Food Reserve and WFP general resources.

- ✓ World Health Organisation (WHO) provides assistance and advice in all aspects of preventive and curative health care including the preparedness of health services for rapid disaster response.
- ✓ United Nations High Commissioner for Refugees (UNHCR) seeks durable solutions for problem of refugees and seeks to assist them in the country of asylum. United Nations Educational, Scientific and Cultural Organisation (UNESCO) contribute to the duty of geological and hydro-meteorological agencies in particular besides assessing and mitigating risks from natural hazards in general.
- ✓ United Nations Center for Human Habitation (UNHCS) promotes incorporation of natural disaster mitigation concepts in urban planning and management. It attempts to develop innovative methodologies for hazard and vulnerability analysis.
- ✓ United Nations International Children's Emergency Fund (UNICEF) assists in child health and nutrition especially in disaster prone areas.
- ✓ Other UN agencies, specifically engaged in /for South East Asia are: The Asian Disaster Reduction Center (ADRC), established in Kobe, Japan, collates information regarding disasters from different countries within the region and carries out research and dissemination work.
- ✓ Asian Disaster Preparedness Center (ADPC) in Bangkok is a focal point in Asia and Pacific for promoting disaster awareness and developing local capabilities. It is a regional resource center for promoting best practices in disaster management. It is the regional focal point for the United Nations International Decade for Natural Disaster Reduction (UN-IDNDR) UN-ISDR for Asia and the Pacific.
- ✓ Asia-Pacific Disaster Management Center, Manila, Philippines is a non-governmental agency actively involved in disaster management plans in India.