SYBBA (SEMESTER : IV)

Subject: Disaster management

Unit:2

Disaster Mitigation and Disaster Preparedness

Meaning

Disaster Mitigation is the cornerstone of emergency management. It's the ongoing effort to lessen the impact disasters have on people and property. Mitigation involves keeping homes away from floodplains, engineering bridges to withstand earthquakes, creating and enforcing effective building codes to protect property from hurricanes, and more. ***Mitigation is defined as "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects." It describes the ongoing effort at the federal, state, local and individual levels to lessen the impact of disasters upon our families, homes, communities and economy.***

In practice, mitigation can take many forms. It can involve actions such as:

- Promoting sound land use planning based on known hazards
- Buying flood insurance to protect your belongings
- Relocating or elevating structures out of the floodplains
- Securing shelves and water heaters to nearby walls.
- Having hurricane straps installed to more securely attach a structure's roof to its walls and foundation.
- Developing, adopting, and enforcing effective building codes and standards
- Engineering roads and bridges to withstand earthquakes
- Using fire-retardant materials in new construction

Mitigation and improvement strategies

The development of mitigation strategies should flow from the risk management process with clear links to functional lead agencies, as identified in the SDMP, to ensure each risk and strategy is coordinated and managed by the responsible agency.

Prevention and mitigation strategies should be based on the risk assessment and can be considered in relation to:

- land use planning and building codes
- essential infrastructure
- structural works
- landscape and environment.

Examples of mitigation strategies include:

- hazard specific control activities such as flood levees or bushfire mitigation strategies
- design improvements to infrastructure or services
- land use planning and design decisions that avoid developments and community infrastructure in areas prone to hazards
- community awareness campaigns to increase knowledge of how to prepare for disaster events

- community education programs to build knowledge of the appropriate actions to prepare for and respond to a disaster event
- capital works such as levee bank construction to reduce the impacts of flooding
- resilience activities including partnership building and engagement between sectors
- annual programs (e.g. vegetation management around essential services and essential infrastructure such as power lines).

The concept of betterment, often considered predominantly within post-disaster recovery and reconstruction, should also form a key consideration pre-disaster through proactive mitigation strategies which aim to enhance and harden infrastructure to a more disaster resilient standard.

1. Land use planning and building codes

Land use planning can be an effective method to reduce the impact of natural hazards and, where possible, avoid risk to life, property and environmental systems from natural hazards.

The State Planning Policy (SPP) is a key component of Queensland's planning system. The SPP expresses the state's interests in land use planning and development, including the avoidance or mitigation of the risks associated with natural hazards. Promoting this avoidance or mitigation through plan making and development decisions of state and local government can significantly reduce the likelihood and severity of impacts of certain natural hazards including flood, bushfire, landslide, storm tide inundation and coastal erosion.

Regulatory frameworks for buildings (e.g. Acts, Regulations, Codes) ensure buildings and infrastructure are designed and constructed to standards that minimise the likelihood of injury during a disaster event.

Most levels of government implement requirements that control land use planning and building design and construction and reduce risks from natural hazards.

2. Essential Infrastructure

A community's social and economic wellbeing relies upon the continuity of essential services provided by critical infrastructure. This critical infrastructure supports the most basic needs: safe drinking water, food, reliable transport, accessible public health services, energy for homes and industry, access to banking, finance and government services, and communications networks to connect us socially and in business.

Critical infrastructure includes those physical facilities, supply chains, systems, assets, information technologies and communication networks which, if destroyed, degraded or rendered unavailable for an extended period, would significantly affect the social or economic wellbeing of the community.

3.Structural Works

Structural disaster mitigation strategies involve the application of engineered solutions as disaster mitigation strategies including physical structures which are constructed or modified to reduce or eliminate disaster impacts.

Structural works to mitigate natural hazards can include but are not limited to levees, rock walls, drainage works, improved road infrastructure and flood mitigation dams. Where structural mitigation strategies are implemented, asset owners need to consider funding to support ongoing operation and maintenance. The community should also be educated on the limits of structural mitigation works and the appropriate action required should breaches occur.

4. Landscape and environment

The appropriate management and protection of landscapes and the environment is important. All organisations, including governments at all levels, must consider the effects of development relative to the landscape and environment.

Climate change predictions should be considered when planning for mitigation of natural hazards. Climate change is predicted to influence the magnitude, frequency and severity of natural disaster events including increasing sea levels, intensity of cyclones and storms and other changes to weather patterns. In Queensland, low lying coastal areas and associated coastal environments and landscapes will be most vulnerable to the impacts of these hazards.

Disaster Preparedness and Precautionary measures

Disaster preparedness consists of a set of measures undertaken in advance by governments, organisations, communities, or individuals to better respond and cope with the immediate aftermath of a disaster, whether it be human-induced or caused by natural hazards. The objective is to reduce the loss of life and livelihoods.

Simple initiatives can go a long way, for instance in training for search and rescue, establishing early warning systems, developing contingency plans, or stockpiling equipment and supplies.

Disaster preparedness plays an important role in building the resilience of communities.

Steps to Preparedness for Business:

1. Assess risk – both internally and externally.
2. Assess critical business functions.
3. Prepare supply chain.
4. Back-up business data.
5. Create an emergency management plan.
6. Create a crisis communications plan.
7. Assemble emergency supplies.

8. Plan for an alternate location.
9. Review your insurance coverage.
10. Test plan.

During the preparedness phase, governments, organizations, and individuals develop plans to save lives, minimize disaster damage, and enhance disaster response operations. Preparedness measures include preparedness plans; emergency exercises/training;

warning systems;

emergency communications systems;

evacuations plans and training;

resource inventories;

emergency personnel/contact lists;

mutual aid agreements;

and public information/education.

As with mitigations efforts, preparedness actions depend on the incorporation of appropriate measures in national and regional development plans. In addition, their effectiveness depends on the availability of information on hazards, emergency risks and the countermeasures to be taken, and on the degree to which government agencies, non-governmental organizations and the general public are able to make use of this information.

SEARCH AND RESCUE

Search and rescue is a technical activity rendered by a group of specially trained personnel, who rescue and attend to the casualties under adverse conditions, where life is at threat. Search and rescue is organized in close cooperation with the community and in a team approach.

The search and rescue activities are undertaken in two ways;

1. Community Local Rescuers: With adequate safety measures, rescue immediately after any natural calamities such as cyclone , flood, earthquake and fire in a community.

2. Outside Community Resources: Circumstances where the situation is grave and the local rescuers do not have required efficiency and equipments, then specialist assistance from outside the community is required.

Duties of the Rescuer

ASSESSMENT:

Proper assessment saves time and improves better performance. Collect information on the extent of; the damage, approach to the damaged area, particulars of the damage, and if any further damage is likely to occur. The assessment can be done in two methods.

INFORMATION:

Information provided by the local leaders or the group leader or from the Disaster Preparedness Committee is important.

OBSERVATION:

Follow the 3 key principles during the survey or assessment

I. **LOOK**: See physically the incidents and make a thorough visual inspection.

II. **LISTEN**: Listen to all sources of information from the community, from the people, Government records etc. Assess the community data regarding people in danger.

III. **FEEL**: Feel convinced regarding the facts, the gravity of the dangers and your own capacity to respond.

Plan

Rescue is a team effort that needs coordination and planning amongst the members for an optimum response operation. After the assessment, the Rescue team would be in a position to adequately plan the Rescue Operation based on the following details and specifications;

I. Manpower

II. Equipment

III. Methods

Disaster risk reduction

Disaster risk reduction (also referred to as just disaster reduction) is defined as the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse effects. Disaster reduction strategies include, primarily, vulnerability and risk assessment, as well as a number of institutional capacities and operational abilities. The assessment of the vulnerability of critical facilities, social and economic infrastructure, the use of effective early warning systems, and the application of many different types of scientific, technical, and other skilled abilities are essential features of disaster risk reduction.

Climate change, urban pressure and lack of disaster preparedness, are increasingly transforming natural hazards, such as earthquakes, volcanic eruptions or tsunamis into disastrous events causing life and economic losses. The risk of disasters caused by natural hazards is rising.

Disaster risk reduction strategies and policies define goals and objectives across different timescales and with concrete targets, indicators and time frames.

DRR is a part of sustainable development, so it must involve every part of society, government, non-governmental organizations and the professional and private sector. It therefore requires a people-centred

and multi-sector approach, building resilience to multiple, cascading and interacting hazards and creating a culture of prevention and resilience. Consequently DRM includes strategies designed to:

- **avoid the construction of new risks**
- **address pre-existing risks**
- **share and spread risk to prevent disaster losses being absorbed by other development outcomes and creating additional poverty**

How do we reduce risk?

Figure 2.10. "Innovation curve" – from destructive to regenerative approaches

(Source: UNDRR 2019)

Disaster risk management involves activities related to:

Prevention
Activities and measures to avoid existing and new disaster risks (often less costly than disaster relief and response). For instance, relocating exposed people and assets away from a hazard area. See a related story: **Managed retreat of settlements remains a tough call even as homes flood and coasts erode**.
Mitigation
The lessening or limitation of the adverse impacts of hazards and related disasters. For instance, constructing flood defences, planting trees to stabilize slopes and implementing strict land use and building construction codes. See a related story: **Mitigation saves: A resilient runway at Portland International Airport could save up to $50 for every mitigation dollar invested**.
Transfer
The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party. For instance, insurance. See a related story: **Developing disaster risk finance in Morocco: Leveraging private markets for sovereign risk transfer**.

Preparedness
The knowledge and capacities of governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions. For instance, installing early warning systems, identifying evacuation routes and preparing emergency supplies. See a related story: **New Minecraft world from NRMA Insurance teaches Aussie kids the importance of bushfire preparedness**.

The Emergency Operation Plan

The emergency operations plan (EOP) details what the facility or agency will DO during a disaster (incident command implementation, command center location and activities, specific plans by department, etc.). This plan should be developed as an all-hazards plan, and must integrate with local EOPs and coalition plans for information sharing and resource requests. Individual plans may also include specialty annexes for incidents such as burn, chemical, paediatric, or infectious disease.

Steps of emergency management:

Prevention

Actions taken to avoid an incident. Stopping an incident from occurring. Deterrence operations and surveillance.

Mitigation

Refers to measures that prevent an emergency, reduce the chance of an emergency happening, or reduce the

damaging effects of unavoidable emergencies. Typical mitigation measures include establishing building codes and zoning requirements, installing shutters, and constructing barriers such as levees.

Preparedness

Activities increase a community's ability to respond when a disaster occurs. Typical preparedness measures include developing mutual aid agreements and memorandums of understanding, training for both response personnel and concerned citizens, conducting disaster exercises to reinforce training and test capabilities, and presenting all-hazards education campaigns.

Response

Actions carried out immediately before, during, and immediately after a hazard impact, which are aimed at saving lives, reducing economic losses, and alleviating suffering.
Response actions may include activating the emergency operations center, evacuating threatened populations, opening shelters and providing mass care, emergency rescue and medical care, fire fighting, and urban search and rescue.

Recovery

Actions taken to return a community to normal or near-normal conditions, including the restoration of basic services and the repair of physical, social and economic damages. Typical recovery actions include debris cleanup, financial assistance to individuals and governments, rebuilding of roads and bridges and key facilities, and sustained mass care for displaced human and animal populations.