UNIT- III

CAPACITY BUILDING

Capacity building is an ongoing process that equips officials, stakeholders and the community to perform their functions in a better manner during a crisis/disaster. In the process of capacity building, we must include elements of human resource development, i.e., individual training, organizational development such as improving the functioning of groups and organizations and institutional development. At the national level, The National Institute of Disaster Management (NIDM) is the capacity building arm and the States have disaster management cells in the State Administrative Training Institutes performs the function of capacity building for effective and efficient disaster management.

STRUCTURAL MEASURES

Structural mitigation measures are those that involve or dictate a necessity for some kind of construction, engineering, or other mechanical changes or improvements aimed at reducing hazard risk likelihood or consequence. They often are considered at "man controlling nature" when applied to natural disasters. Structural measures are generally expensive and include a full range of regulation, compliance, enforcement, inspection, maintenance, and renewal issues.

The general structural mitigation groups to be described are:

- Resistance construction
- Building codes and regulatory measures
- Relocation
- Structural modification
- Construction of community shelters
- Construction of barrier, deflection, or retention systems

- Detection systems
- Physical modification
- Treatment systems
- Redundancy in life safety infrastructure

Resistance Construction

Clearly the best way to maximize a chance that a structure is able to resist the forces inflicted by various hazards is to ensure that it is designed in such a way prior to construction to do just that. Through awareness and education, individual, corporate, and government entities can be informed of the hazards that exist and the measures that can be taken to mitigate the risks of those hazards, allowing resistant construction to be considered

Building Codes and Resistance measures

Hazard resistant construction is clearly an effective way to reduce vulnerability to select hazards. However, the builder of the house must apply these resistant construction measures for there to be actual reduction in the population's overall vulnerability. One way that governments can ensure members of the population apply hazard-resistant construction is by creating building codes to guide construction and passing legislation that requires those codes be followed.

Relocation

Occasionally, the most sensible way to protect a structure or a people from a hazard is to relocate it or them away from the hazard. Homes and other structures may be disassemble or transported intact.

Structural Modification

Scientific progress and ongoing research continually provide new information about hazards. This new information can reveal that structures in indentified risk zones are not designed to resist the forces of the likely hazard. There are three treatment options for these structures. First is to do nothing. Second the structure may be demolished and rebuilt to accommodate the new hazard information. Third, often the most appropriate action is to modify the structure such that it resists the anticipated external forces. This action is often referred to as retrofitting.

How the retrofit effects the structure depends on the hazard risk that is being dealt with. Some Examples of hazards and their retrofits are:

- **Cyclonic Storms**: Wind resistant shingles; shutters; waterproofing; stronger frm connections and joints; structural elevation.
- **Earthquakes:** Sheer Walls; removal of cripple walls; foundation anchor bolts; frame anchor connections; floor framing; chimney reinforcement; base isolation system etc.
- **Wildfire:** Replacement of external materials including decks, gutters, downspouts, paneling doors, window frames and roof shingles, with those that are fire resistant.
- **Hail:** Increase roof slope; strengthen roof materials; strengthen load carrying capacity of flat and shallow angle roofs.

Construction of Community Shelters

The lives of community residents can be protected from a disaster's consequences through the construction of shelters designed to withstand a certain type or range of hazard consequences.

Construction of Barrier, Deflection, or Retention Systems The forces that many hazards exert upon man and the built environment can be controlled through specially engineered structures. These structures fall under three main categories: barriers, deflection system, and retention systems.

Barriers

Barriers are designed to stop a physical force dead and its tracks .Their job is to absorb the impact of whatever force is being exerted. Examples of barriers and the hazards they are designed to protect against include:

- Seawalls (cyclonic storm surges, tsunamis, high waves rough seas, and coastal erosion) l Floodwalls (Floods, flash floods)
- Natural or synthetic wind and particle movement barriers (strong seasonal winds, sand drift, dune movement, beach erosion, snow drift)
- Defensible spaces (wildfires, forest fires)
- Mass movement protection walls (landslides, mudslides, rockslides, avalanches).
- Security fences, checkpoints (terrorism, civil disturbances)

Deflection systems

Deflection systems are designed to divert the physical forces of a hazard, allowing it to change course so that a structure situated in its original path escapes harm. Like barriers, deflection systems may be constructed from a full range of materials, both natural and manmade. Examples of deflection systems and the hazards they are designed to protect against include:

- Avalanche bridge (snow avalanches)
- Chutes (landslides, mudflows, lahars, rockslides)
- Lava flow channels (volcanic lava)
- Diversion trenches, Channels, canals, and spillway (floods)

Retention systems are designed to contain a hazard, thereby preventing its destructive forces from ever being released. These structures generally seek to increase the threshold to which hazards are physically maintained. Examples include:

- Dams (drought, floods)

- Levees and Flood walls (Floods)
- Slit dams (sedimentation, floods)
- Landslide walls (masonry, concrete, rock cage, crib walls, bin walls, and buttress walls)
- Slope stabilization covers (concrete, netting, wire mesh, vegetation

Detection systems are designed to recognize a hazard that might not otherwise be perceptible to humans. They have applications for natural, technological, and international hazards

Examples of detection systems are:

- Imaging satellites (Wildfires, hurricanes, volcanoes, landslides, avalanches, floods, fire risk, terrorism, virtually all hazards)
- Chemical/biological/radiological/explosive detection systems (technological hazards (chemical leaks, pipeline failures), terrorism)
- Ground movement monitoring system (seismicity, volcanic activity, dam failure, expansive soils, land subsidence, rail infrastructure failure)
- Flood gauges (hydrologic hazards) l Weather stations (severe weather, tornadoes)
- Undersea and buoy oceanic movement detection (tsunamis)
- Information systems (epidemics, WMD terrorism)

Redundancy in life safety infrastructure is one last structural mitigation measure. As humans hand evolved beyond substance living, they have become more dependent upon each other and societal infrastructure.

Example of life systems into which redundancy may be built include:

- Electricity infrastructure
- Public Health Infrastructure
- Emergency management infrastructure

- Water storage, treatment, conveyance, and delivery systems
- Transportation infrastructure
- Irrigation systems l Food delivery

NON-STRUCTURAL MEASURES

Non-structural Mitigation, as defined previously, generally involves a reduction in the likelihood or consequence of risk through modifications in human behavior or natural processes, without requiring the use of engineered structures. Non-structural mitigation techniques are often considered mechanisms where man adapts to nature." They tend to be less costly and fairly easy for communities with few financial or technological resources to implement.

The following section describes several of the various categories into which nonstructural mitigation measures may be grouped, and provides several examples of each:

- Regulatory measures
- Community awareness and education programs
- Nonstructural physical modification
- Environmental control
- Behavioral modification

Regulatory Measure

Regulatory measures limit hazard risk by legally dictating human actions. Regulations can be applied to several facets of societal and individual life, and are when it is determined that such action is required for the common good of the society.

Community Awareness and Education Programs:

The public is most able to protect themselves from the effects of a hazard if they are first informed that the hazard exists, and then educated about what they can do to limit their risk.

Public education programs are considered both mitigation and preparedness measures. An informed public that applied appropriate measures to reduce their risk before a disaster occurs has performed mitigation. However, a public that has been trained in response activities has participated in a preparedness activity. Often termed "risk communication," projects designed to educate the public may include one or more of the following:

i) Awareness of the hazard risk

ii) Behavior

iii) Pre-disaster risk reduction behavior

iv) Pre-disaster preparedness behavior

v) Post-disaster response behavior

vi) Post-disaster recovery behavior

Non-structural Physical Modifications

Several different mitigation option, while not structure in nature, involve a physical modification to a structure or to property that result in reduced risk

Examples include

- Security of furniture, pictures, and appliances, and installing latches on cupboards
- Removal or securing of projectiles

Environmental Control

Structural mitigation involves engineered structures that control hazards. It is also possible to control or influence hazards through non-engineered structural means. These non-structural mechanisms tend to be highly hazard specific, and include:

- Explosive detonation to relieve seismic pressure (earthquakes)
- Launched or placed explosive to release stored snow cover (avalanches)
- Cloud seeding (hail, hurricanes, drought, and snow)
- Controlled burns (wildfires)
- Bombing of Volcano flows
- Dune and beach restoration or preservation (storm surges, erosion)
- Forest and vegetation management (landslide mudflow, flooding, erosion)
- Riverine and reservoir sediment and erosion control (flooding)
- Replacement of soils (expansive soils)

Behavior Modification

Through collective action, a community can alter the behavior of individuals; resulting in some common risk reduction benefit. Voluntary behavior modification measures are more difficult to implement than the regulatory measures listed above. Because they usually involve some form of sacrifice. Behavior modification includes:

- Rationing: Rationing is often performed prior to and during periods of drought. Because it can be very difficult for governments to limit vital services such as water to citizens, it is up to citizenships to limit their individual usage.
- Environmental conservation: Many practices to both urban and rural areas are very destructive to the environment.
- Tax incentives, subsidies, and other financial rewards for safe practices: Individuals and businesses can be coaxed into safer practices that reduce overall risk through financial incentive.

- Strengthening of social ties: When a community strengthens its social ties, it is more likely to withstand a hazard's stresses

CAPACITY

It is important to emphasize people's capacity to anticipate, cope with, resist and recover from disasters, rather than simply focusing on the vulnerability that limits them. Like vulnerability, capacity depends on social, economic, political, psychological, environmental and physical assets and the wider governance regimes

CAPACITY ASSESSMENT

Capacity assessment is the process by which the capacity of a group is reviewed against desired goals, where existing capacities are identified for maintenance or strengthening and capacity gaps are identified for further action. Capacity resides at three related levels: in individuals, in organizations and in the overall working environment within which individuals and organizations operate - 'the enabling environment which strongly relates to the concept of resilience. Each of these can be an entry point for capacity assessment:

Enabling environment

Sometimes referred to as the 'societal' or 'institutional' level, capacities at the level of the enabling environment relate to the broader system within which individuals and organizations function

The Organizational Level

This level is a common entry point for capacity assessment. This level relates to the internal structure, policies, systems and procedures that determine an organization's effectiveness and ability to deliver on its mandate and allow individuals to work together.

Organizational level capacities help develop and apply internal policies, arrangements, procedures and frameworks, which are necessary to deliver the organization's mandate

The Individual Level

This level relates to the skills, experience and knowledge of people that allow them to perform. Capacity assessment at this level is commonly implemented by researchers and non-governmental organizations working at the local level, as well as by some local level governments. However, individual capacity has to be under

Four key issues common to most capacity assessments are institutional arrangements, leadership, knowledge and accountability

Strengthening capacity of reducing risk

To finance strengthening of the disaster management systems in the region by augmenting the capacity of stakeholders and institutions the activities will include:

i. capacity building of the state disaster management authority by strengthening its institutional and organizational structure, staffing, and resources and funding of training programs and regular drills for the emergency operations center staff and Disaster Management Officers at various levels;

ii. Strengthening the Disaster Response Force;

iii. Setting up a Decision Support System (DSS) and Emergency Operation Centers to integrate and analyze information from multiple sources in an integrated geo-spatial system.

Technical support for risk reduction and response preparedness

To finance activities such as:

i. Preparation of a Hydro-meteorological Resilience Action Plan focusing on extreme weather events to develop resilience solutions/recommendations and a robust, fail-safe EWS in the region including optimum use of strengthened networks and facilities;

ii. River Morphology Study for some key rivers impacted by the disaster and to analyze and identify critical protective infrastructure works needed for river bank strengthening;
iii. Urban vulnerability assessment study with specific focus on seismic risk mitigation to undertake detailed urban vulnerability analysis and model various risks for effective mitigation planning and disaster response preparedness;
iv) Upgrading design guidelines and material specification for construction in seismic zones in order to carry out an update of current construction design standards and material specifications to align them with national and international best practices;
v) Disaster Risk Financing and Insurance (DRFI) to work out options to increase the resilience of the PIE's financial response capacity to secure cost-effective access to adequate funding for emergency response, reconstruction, and recovery.

Counter disaster management

Trying to prevent disasters by being aware of the risks to collections and acting to minimize them

Being prepared for the possibility of a disaster by maintaining:

- current contact numbers and addresses for emergency services;
- lists of people you can call on in an emergency;
- supplies of materials and equipment; and
- lists of suppliers for equipment and materials.

Counter-disaster plan might include:

- a list of hazards;
- an initial response procedures;
- disaster kits—list of contents and locations;
- the location and description of smoke detection and fire-fighting equipment;

- day and night emergency contacts for staff and specialists;
- the names and addresses of suppliers of emergency equipment and materials, including day and night telephone numbers;
- the emergency funding procedures;
- insurance details;
- the emergency contact for computer problems;
- the contact numbers for the disaster response team, together with notes on their roles and responsibilities;
- an assessment checklist;
- a list of known leaks and problem areas;
- recovery procedures for types of damage— wet/burnt and different formats;
- procedures for dealing with mould

COUNTER DISASTER RESOURCES AND THEIR UTILITIES

Disaster kits should contain the equipment and materials you are likely to need to cope with minor disasters. Disaster kits can be mobile or static. Institutions around Australia have developed a range of models, adapting wheelie bins, ordinary bins, metal trunks and cupboards to suit their needs. Some organizations also have disaster stores.

When putting together a disaster kit, you should ask:

- What is the kit needed?
- What is the best kind of kit for the organisation?
- What size should it be?
- What should go in it?
- How many are required? and,
- Where should they be located?

Disaster Source

An in-house store—centrally located or at a location known to staff and the disaster response team is useful. The locations of the keys to the store and of the contact people should be recorded.

It is also helpful to liaise with other local institutions and local government bodies, to find out whether they have equipment and supplies which could be useful and, if so, to record after- hours contact numbers.

Counter-disaster networks can be set up where individual resources are minimal. By setting up regular meetings, the group can pool resources and information.

Contents of the disaster store

Protection

- plastic sheeting;
- Stanley knife;
- adhesive waterproof tape;
- pins;
- staple gun;
- scissors;
- ties (gardening twine); and
- Sandbags.

Removal

- cardboard boxes;
- milk and bread crates;
- trolleys;
- bins;

- blotting paper;
- plastic, Mylar; and
- Plastic bags
- 2 colors.

Recovery

- clothes lines;
- safe storage;
- trestle tables;
- clean newsprint, blotter;
- paper towels—perforated, non-coloured;
- spray bottles/misters;
- distilled water; and
- Nylon net for shaping three-dimensional objects such as garments and costumes during drying.

Humidity control equipment

- thermo hygrographs or other monitoring equipment;
- dehumidifiers; and
- fans

Communications

- radio;
- mobile telephones;
- whistles;
- chalk;
- loud hailers;
- large sheets of paper;

- walkie-talkies; and
- thick waterproof pens. Plant and safety equipment
- torches, batteries, globes;
- first aid kits;
- emergency lighting;
- pumps; and
- Generators. Protective clothing
- rubber boots

Disaster response teams

The role of the disaster response team is to:

- respond when a disaster is reported;
- assess the situation; and
- Plan the recovery phase.

The recovery procedures are then implemented by the recovery team(s).

While a number of tasks need to be assigned to people on the disaster response team, the critical points are:

- there should be an overall Team Leader, responsible for coordinating the recovery operation;
- someone needs to be assigned responsibility for maintaining records of damaged materials and what happens to them, for example, whether they have been sent off-site for freezing, discarded, or set aside for further treatment; and
- You need someone to assemble supplies and equipment and obtain food and drinks for work breaks.

Record who is to be assigned the following responsibilities:

- ensuring that administrative procedures are followed;
- allocation of funds;
- public relations, for example, media releases and handling reporters;
- damage assessment;
- training and supervision of recovery teams; and
- Photographing the extent of the damage.

In a small organization, the disaster response team and the recovery team may be one and the same.

The recovery plan sets out exactly what you are going to do, and in what order.

It starts with an assessment of the extent of damage, which covers the quantity of material affected and the categories of damage. For example, some items may be very wet, some damp, and others dry.

Start with wet organic material such as paper, wood and textiles—these will be more prone to mould growth than inorganic material such as metal, glass or ceramic.

CAUTION

Dried botanic specimens may germinate, so they should be placed high on the recovery priority list.

Use the priority lists from your counter-disaster plan to document which items need immediate attention, and which can wait.

Using this information, decide how many people will be needed to assist in the recovery phase, where the recovery will be undertaken, and what resources are needed.

You may also need to decide which method to use in order to recover damaged materials, or whether to get a recovery specialist to assist. The choice of recovery method will depend on the nature of the materials themselves, and what resources are available.

Consider the:

- rarity of material
- value of material
- use of material
- significance
- Condition of the material.

The options for recovery after a disaster may include:

- discarding replaceable damaged items—for instance, a publication in print;
- copying damaged items;
- restoration; and
- Accepting items in their damaged state, and providing them with physical protection.

A major decision is whether to freeze water- damaged materials. Remember that freezing only buys time. Frozen materials must be dried out later. Regardless of the drying technique chosen, this will be a time-consuming and costly process.

LEGISLATIVE SUPPORT AT STATE AND NATIONAL LEVEL

On behalf of the Central Government, DM Division in the Ministry of Home Affairs co-ordinates with disaster affected State Government(s), concerned line ministries/departments, National Disaster Management Authority (NDMA), National Disaster Response Force (NDRF), National Institute of Disaster Management (NIDM) and the Directorate General of Fire Services, Home Guards and Civil Defense, and

Armed Forces for effective disaster risk reduction. The Division is responsible for legislation, policy, capacity building, prevention, mitigation, response and long term rehabilitation. Major responsibilities of the Disaster Management Division, MHA are as follows:

- Resource mobilization for relief and response to natural disasters except drought, hail storms, cold and frost waves and pest attack
- Operation of control room and situation reports
- Multi-hazard Early Warning Systems
- Matters related to State Disaster Response Fund and National Disaster Response Fund
- All matters related to disaster response, preparedness, prevention, mitigation and capacity building
- International cooperation in disaster management
- Post-disaster/long term rehabilitation and reconstruction
- All administrative and budget matters related to NDMA, NDRF and NIDM
- Strengthening of fire and emergency services
- All matters related to Fire Services, Civil Defense and Home Guards including Director General of (Fire Services, Civil Defense & Home Guards), National Civil Defense College (NCDC) and National Fire Service College (NFSC)
- Administration of the Disaster Management Act, 2005
- Provides secretarial support to NEC, HLC and NPDRR.