APPROACHES TO MITIGATION OF DISASTER RISK AND NEED FOR INFORMATION ON LOSS ESTIMATION

N.M.S.I. LARAMBEPOLA
PROGRAM MANAGER
ASIAN URBAN DISASTER MITIGATION PROGRAM

Discussion objectives:

• Explain the concept of mitigation
• List urban facilities that need protection
• Describe structural measures to withstand
• Explain non structural interventions
• Give an account of generic mitigation approaches
• Discuss implementation of mitigation measures
MITIGATION

Strong buildings & structures, strict building codes compliance, land use planning, capacity building, awareness creation, etc.

- Long term risk reduction measures taken prior to the impact of a disaster to minimize its effects (sometimes referred to as structural and non-structural measures).

Mitigation

- Actions taken PRIOR to disasters
- Structural and non-structural measures
- Integrates disaster risk reduction with sustainable development
Mitigation Benefits

- Decreased vulnerability to natural hazards
- Increased resiliency, quicker recovery
- Disasters less likely
- Contributes to community’s sustainability

ROLE OF LANDUSE PLANNERS

- Planning new facilities and managing existing facilities in towns are a vital part of the protection of the community from disaster.
- Facilities provided and managed by local authorities may include hospitals, schools, public housing, government buildings, museums and many other publicly-owned elements of the building design stock.
ROLE OF LANDUSE PLANNERS

• Other policies likely to be developed at city level include the conservation of historical buildings, and policies to maintain the cultural heritage of valuable building stock, or to preserve the overall townscape qualities of historic districts.

• In addition, urban planners are likely to be involved in the siting decisions for many privately owned large-scale facilities, like major industrial plants, shopping malls, office complexes and the major private developments.

• The location and design of public services and utilities, transportation networks, terminals and many other facilities are all a part of urban planning in its broadest sense.

• These community facilities are important-some are critical-elements in the continued functioning of the urban society.

• Protecting them against failure due to hazardous events prevent breakdown of urban society and the economic damage caused by loss of urban services.

• Therefore loss estimation becomes an integral management process.
Structural mitigation activities fall into several categories

- Building Codes (design standards, materials standards, building permit process, inspections, licenses) and Building bylaws, Settlement Planning Bylaws) for enhancing safety of new engineered constructions to acceptable risks with operational implementation strategies.
- Retrofit Measures (design process, guidelines) for enhancing seismic performances of existing buildings
- Special Standards (design ordinances for critical facilities (e.g. hospitals, electricity system telephony, water supply system) and emergency response systems, Government (Central or State) facilities and government-assisted undertaking;
- Design and construction guidelines for non-engineered structures, rural constructions

Structural mitigation activities fall into several categories

- Design and construction guidelines for enhancing safety performances of non-structural items (computers/data storage system, emergency facilities, furniture etc.)
- Design and construction standards for infrastructure (hydro technical facilities, flood protection structures, roads & bridges, Fuel storage etc.)
- Guidelines for enhancing safety performances of non-structural items (computers/data storage system, emergency facilities, furniture etc.)
- Design and construction of shelter breaks to reduce wind effects,
Promoting Safer Building Construction

Stronger houses will reduce disaster impacts

Traditional techniques from Hanoi, Vietnam

Training of craftsmen in Bengkulu, Indonesia and Ratnapura, Sri Lanka

Re-construction and retrofitting of schools, Nepal with seismic reinforcements

Application, Appreciation, Awareness creation

Structural Measures

Asian Disaster Preparedness Center
Living with Disasters

- A concept to provide people with the security and motivation necessary to make and sustain improvements in their economic and social welfare in an environment even if disasters occur frequently.

- Concept of living with disasters and initiatives taken through it are not a replacement for land use control or engineering interventions. It reduces substantially post-disaster rehabilitation operations and the recovery period.

ADPC
Asian Disaster Preparedness Center
Non structural measures

- Legislative. Land Use and Risk Management Measures
  National/State Legislation
  National Action Plan for Risk and Disaster Management
  Land Use Plans
  Specific Programs for Hazard Reduction
    Coastal Development Management,
    Floodplain Management,
    Acquisition of Property,
  Landslide Planning: Landslide losses through hazard mapping,
  Land-use management, and building and grading controls;
  Agricultural Mitigation Plan.

- Economic Measures
  - Insurance
  - Subsidies
    Incentives
    » Loans
    Tax Policies

- Educations, Training and Technology Transfer
  » Education and Awareness: Information-sharing strategies, public agencies at all levels provide information on the nature of natural hazards and the actions that can be taken to minimize their effects.
  » Training and Technology Transfer

- Institution Building, Institutional Strengthening

- Early Warning
  » Establishment of early warning systems for various hazards
Non-Structural Measures

Land use decisions taken in consideration of hazard impacts

Having in place Policy, Legal and Institutional Arrangements

Bangladesh: Establishment of MDMCs - Standing orders for flood risk management

Indonesia: Strengthening institutional capacity of BAKORNAS PBP

Sri Lanka: Integration of natural disaster mitigation in National Physical Planning Policy and National Land Use Policy

Thailand: establishment of a NEW Department of Disaster Mitigation and Prevention
Public Awareness

Booklets, Brochures, Competitions, Drills, Exhibitions, Plays, Posters, Radio, Rallies, Soap Operas, Songs, Television, T-shirts

Capacity Building

A mix of informal hands-on demonstration, education and formal training courses at regional, national and local levels using training of trainers approach
Community-Based Disaster Mitigation

CBDM - vulnerability reduction solutions which are more in tune with what people want and need

Sample of community based interventions

Initiatives for Safer Construction in Indonesia, Nepal, Sri Lanka, Vietnam

Public Awareness, Education, Training and Technology Transfer

Landslide mitigation through CBDM approach in Sri Lanka

Improving infrastructure in Bangladesh and Cambodia

Structural and Non-structural Measures
Generic Mitigation Measures and examples

• Preventative measures, which aim to minimize the physical damage created by hazard events
• Spreading the risk, which aims to reduce the effects of physical damage by ensuring a range of alternative facilities
• Spreading the responsibility, which aims to provide an incentive for different agents to implement mitigation measures
• Covering or minimizing the impact, which aims to manage potential effects
• Planning disaster management, which aims at long-term resilience

Spread the risk

Avoid dependence on single facilities and transport routes.

Introduce redundancy or reinforcement into the distribution system for re-routing operations (advisable to safeguard supply during major repairs).

Provide alternative sources of electricity supply
Spread responsibility

• Widen ownership of the system, particularly for maintenance and operation, under regulatory control.
• Help informal communities to install and manage local systems, subject to regulations on minimum standards for security and quality of supply.
• Encourage user participation by promoting public & private partnership in community-based projects utilizing forms of concession such as BOT (build/operate/transfer) or BOOT (build/own/operate/transfer).

• Provide insurance for physical losses, particularly for mechanical and electrical plant, to facilitate rapid re-commissioning of the system.
• Encourage strategic users to install and regularly test standby power-generation equipment and ensure that there is adequate fuel for, for example, 30 days continuous operation.
• Hold spares to replace critical items.
• Establish procedures for system failure and minimizing the effect of pollution.
Plan
Disaster Risk Management

• Plan to minimize the time taken to return to normalcy.
• Arrange regular workshops and training programs for the continuing education of staff in hazard preparedness and mitigation.
• Promote hazard awareness and the planning of facilities away from vulnerable areas

Opportunities for Introducing Mitigation Efforts

• Mitigation measures are more likely to be implemented as part of development projects than as stand-alone mitigation proposals for which generally no funds are available.
• The cost of mitigation measures is less when the measure is a feature of the original project formulation than when it is incorporated later.
• The planning community can help set the science and engineering research agenda to focus more on the generation of data suitable for immediate use in hazard mitigation.
• Building mitigation measures into development projects benefits the poorest segments of the society.
• It sets precedence for future projects to follow. This is very important for a developing country.
Responsibility for Disaster Management

- In every society, responsibility for disaster risk management is diffuse, demanding effort from every organization and each individual.
- It is not possible for any one agency, or even the government as a whole, to manage all aspects of risk.

Rationale for Mitigation Planning

Mitigation is the only component of comprehensive risk management process that has the potential to break the cycle of damage and reconstruction when a community is subjected to repeated natural hazards. To be effective, a mitigation strategy must be in place and ready for immediate implementation when the appropriate window of opportunity opens. This can only be done through advance preparation; i.e., planning.
Mitigation plans

• First and foremost, a hazard mitigation plan can be an effective vehicle for establishing commitment to mitigation goals, objectives, policies and programs.
• By articulating what the government hopes to achieve, and what community’s expectations are, the plan can serve to establish an important connection between the public interest and mitigation measures to be employed.