

# **Urban Disaster Impacts**

## **(Role of Urban Planning in Risk Mitigation)**

**Dr. Pawan Kumar**  
**Email: [pawan612@gmail.com](mailto:pawan612@gmail.com)**

# Urban Disaster Impacts

- When disasters affect cities or urban areas (non-rural contexts) they are referred to as **urban disasters**.
- Urban disasters and risk are linked to **development processes**.
- **Capacity of City Govt.** is important in distribution of local risk levels.
- **Good Governance** for tackling urban disasters and creating more resilient cities by managing disaster risk and climate change.

# Impacts of Disasters

- Individual Impacts (Families)
- Community Impacts
- City Impacts
- State Impacts
- National Impacts
- Economical Impacts
- Environmental Impacts
- Ecological Impacts
- Social Impacts
- Health/Educational Impacts
- Impacts on Built-environment
- Impacts on Natural environment



# Impacts:

-People

-Structures

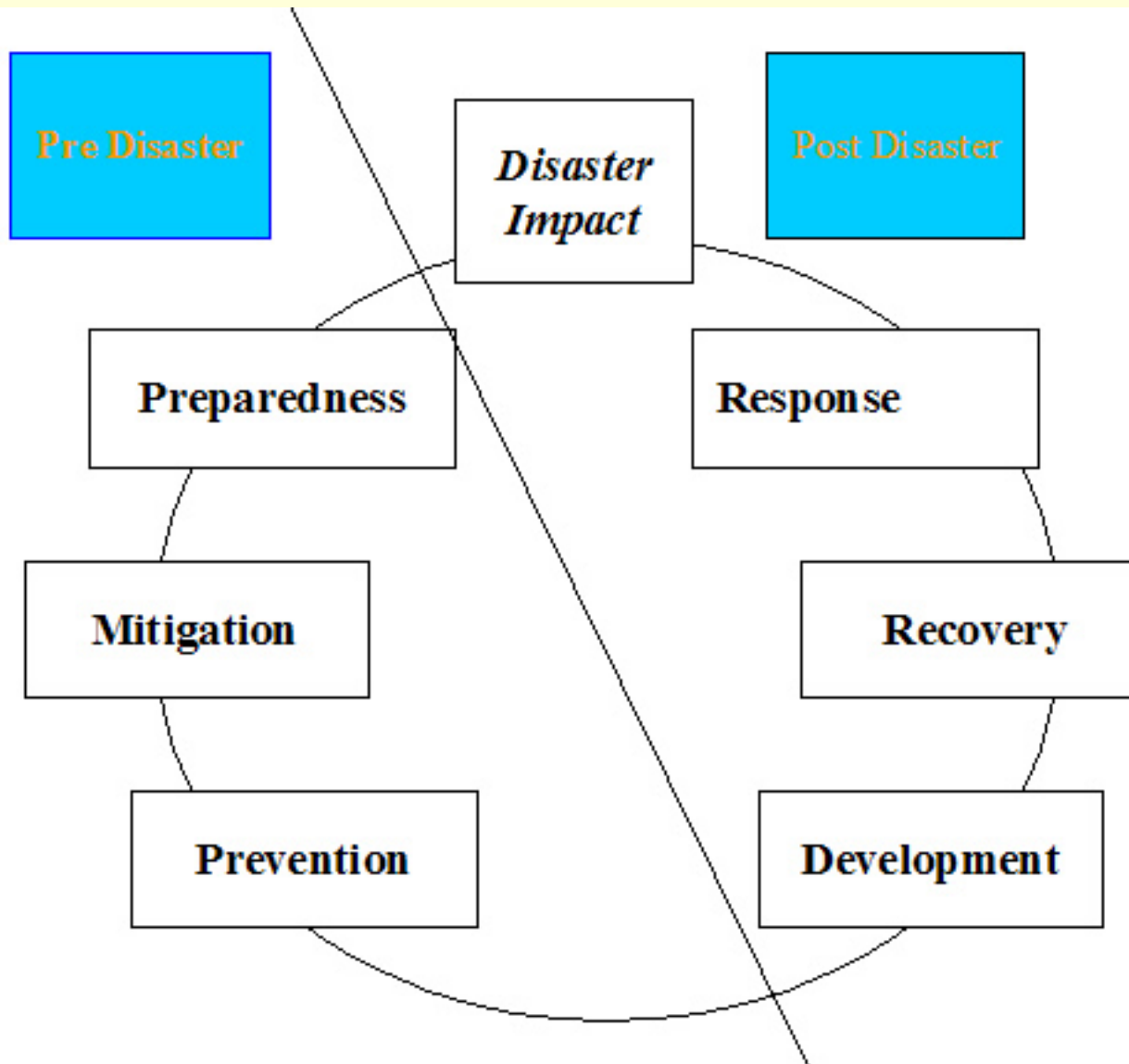
-Economics

Towns/Cities

Urban Planning Required.



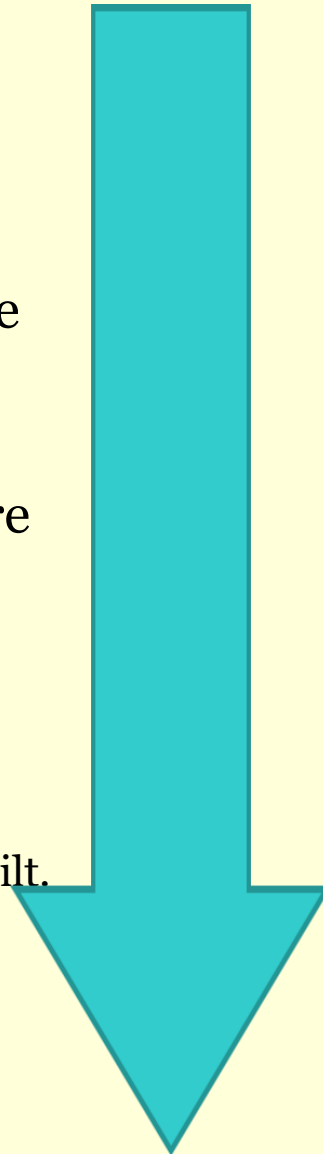
# Disaster Phases as per Impacts



# Urban Planning in Risk Mitigation

Prevention of

- Loss of lives,
- Loss of Properties,
- Social Loss/Disturbance in Social fabric,
- Economic loss due to damage of infrastructure such as
  - housing,
  - roadways,
  - physical and social infrastructure etc. which took many years to be built. etc.



## Relationship between : **Disasters and Development.**

Matter of facts are that disasters can :damage,  
:erode ,  
:destroy  
:hamper the pace of development process,  
:decrease development gains.

**Disaster and Opportunities**  
Limited Recognition.....

# Planning for Disaster Risk Mitigation

- Mitigation means prevention is most absolutely possible and therefore minimizing the effects of disaster.

- **Disaster Risk Mitigation (DRM) :**

Approach to

- identify,
- assess and
- reduce the risks of disaster.

- **Planning Approach**

- Physical Planning and
- Advocacy Planning.



Source of :[www.en.wikipedia.org](http://www.en.wikipedia.org)

- Selected Examples : Building codes ,  
: Zoning regulations,  
: Public education,  
: Early Warning System, etc.

# Stakeholders in Planning Process

working with multiple stakeholders throughout the planning process:

- Identify the risks,
  - Assess the needs
  - Provide potential solutions,
  - Capacity of communities.....
- in contribute to risk reduction.

## In other words:

- Risk assessment and
- vulnerability studies of
  - all urban settlements
  - all urban services.

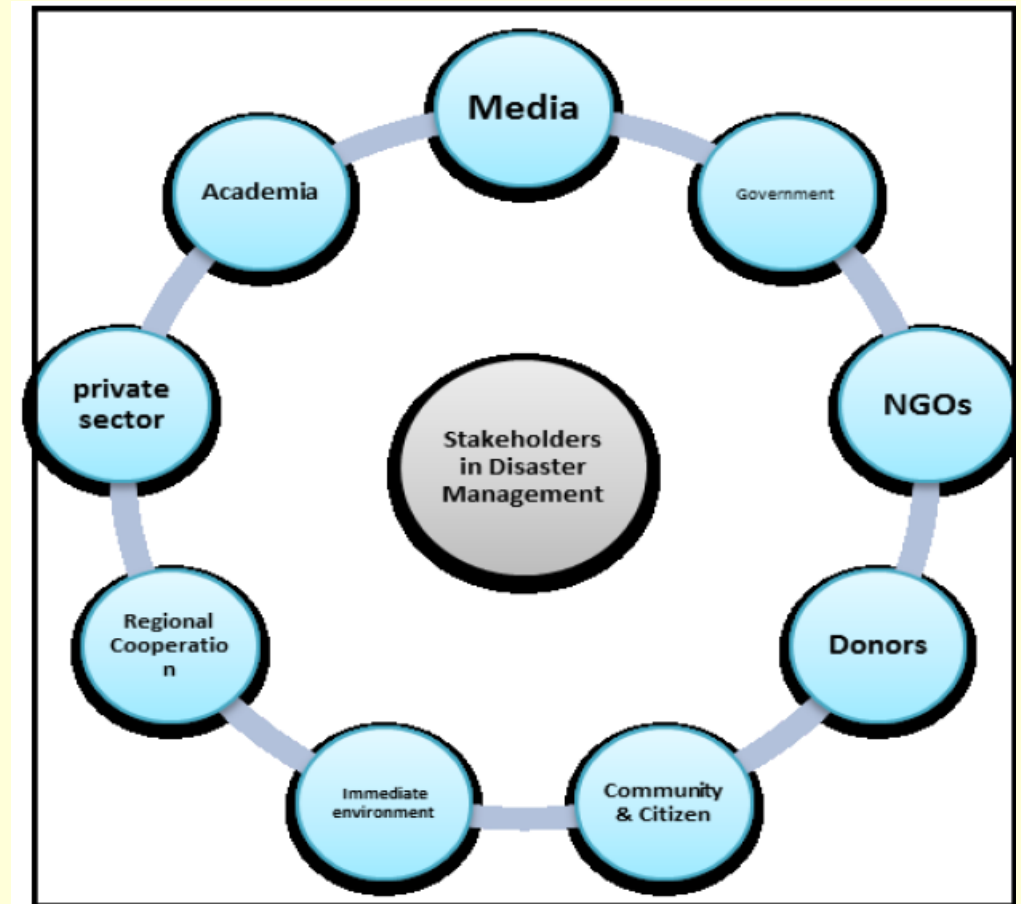


Figure 1. Stakeholders in Disaster Management

# Formulation of Master Plan

- Blue Prints of various Proposals,
- Location and spatial distribution of developments.
- Master plan identifies areas of vulnerability and suggests necessary measures (**Development controls, byelaws, enforcement**)

Home > News > Business > REAL ESTATE

## 65% of 7,933 urban settlements do not have any master plan: Niti Aayog report

*It recommends that every city must aspire to become a Healthy city for all by 2030 and suggests a central sector scheme, 500 Healthy Cities Programme, for a period of five years*

VANDANA RAMNANI |



As many as 65% of the 7,933 urban settlements do not have any master plan. This leads to piecemeal interventions, haphazard constructions, urban sprawl, and environmental pollution, which can further aggravate issues such as traffic congestion, flooding, a report titled Reforms in Urban

Source:

[www.moneycontrol.com/news/business/real-estate](http://www.moneycontrol.com/news/business/real-estate)

Dated:16.09.2021

# DDA to hold online hearing on Delhi's master plan in Oct

**HT Correspondent**

letters@hindustantimes.com

**NEW DELHI:** The Delhi Development Authority (DDA) will start the public consultation process for finalising the Master Plan of Delhi (MPD)-2041 in October, with a senior official noting that the land-owning agency has received around 33,000 comments from the public on the draft plan which was put in the public domain in June this year.

The proposal to constitute a board to conduct the public hearing, which will be held online in view of the Covid-19, was recently approved in a DDA meeting chaired by Delhi lieutenant governor Anil Baijal.

"We are in the process of sorting comments received based on various chapters of the draft master plan. Once finished, we will prepare the plan for public hearing, which will mostly be held in October," said a senior DDA official aware of the matter.

DDA officials said that arrangements will be made for the public to participate in the online hearing.

"We held public consultations online last year when the master plan was being prepared to get people's perspective. This year, we held an online consultation after the MPD-2041 was put in the public domain to clarify people's doubts related to the new plan," said the official.

The land-owning agency plans to notify MPD-2041, the vision document for the city's development in the next two decades, by December end.

The process has already been delayed due to the pandemic, as the land-owning agency had to extend the last date of submission of suggestions/objections by a month following demand from the public. While it received over 12,000 comments on its portal, officials said a large number of people submitted their comments manually.

Explaining the process, a senior official said based on the inputs received during the public hearing, MPD-2041 will be tabled again in the authority meeting and, once approved, it will be sent to the Union housing and urban affairs ministry for notification.

The MPD-2041 focuses on regeneration of old areas (unauthorised colonies, urbanised villages), allowing mixed-use development, providing affordable rental housing and small housing, promoting walkability and non-motorised transport, development of green-blue (green spaces and waterfronts) infrastructure and corridors etc for sustainable development. The land-owning agency has also introduced new concepts and proposals to make Delhi a 24x7 city by promoting night time economy and nightlife.

## FOCUS AREAS OF DRAFT MPD-2041

### ENVIRONMENT

- > More green areas and waterbodies for recreation and leisure
- > Extremely strict codes for tackling air, water and noise pollution
- > Green credits for incentivised development
- > Minimising additional stress on water resources, reusing waste water



### ECONOMY

- > Vertical mixing of uses to have residential, office, commercial spaces in the same building
- > 'Special green economic uses' with low-floor area ratio and larger green areas
- > Incentivising development of new green industry



### SHELTER AND SOCIAL INFRASTRUCTURE

- > Improving social infrastructure in urban villages and unauthorised colonies
- > Simplification of norms related to use of premises and activities, flexibility in FAR use, parking requirements, mixing of uses, etc



### TRANSPORT AND MOBILITY

Transit-oriented development projects to reduce distance between workplaces and homes through mass transit



### HERITAGE, CULTURE AND PUBLIC SPACES

Special provisions for preservation and redevelopment of heritage areas



# Urban Management Strategy

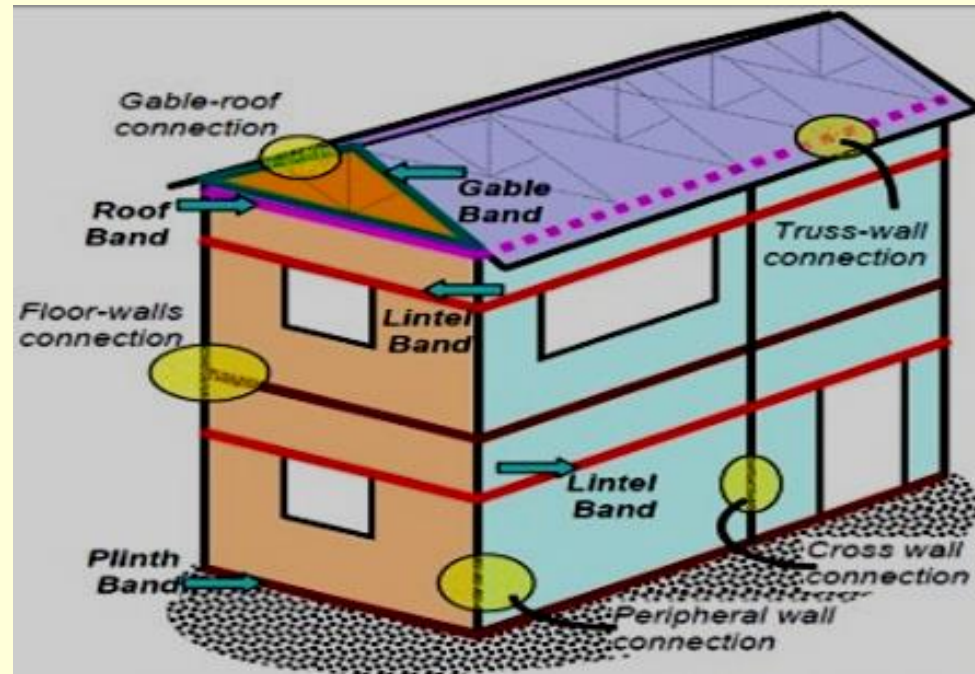
- Use of unsuitable terrain prone to natural hazards, increases vulnerability.
  - Land unsuitable for buildings,
  - Close to industrial areas,
  - Flood prone areas,
  - Contaminated ground, etc.,
- are is available to urban poor which is prone to natural and manmade hazards.
- Unsafe structures on the unsuitable terrain further increase vulnerability.

**Comprehensive urban management strategy is required to be developed ULBs to reduce vulnerability.**



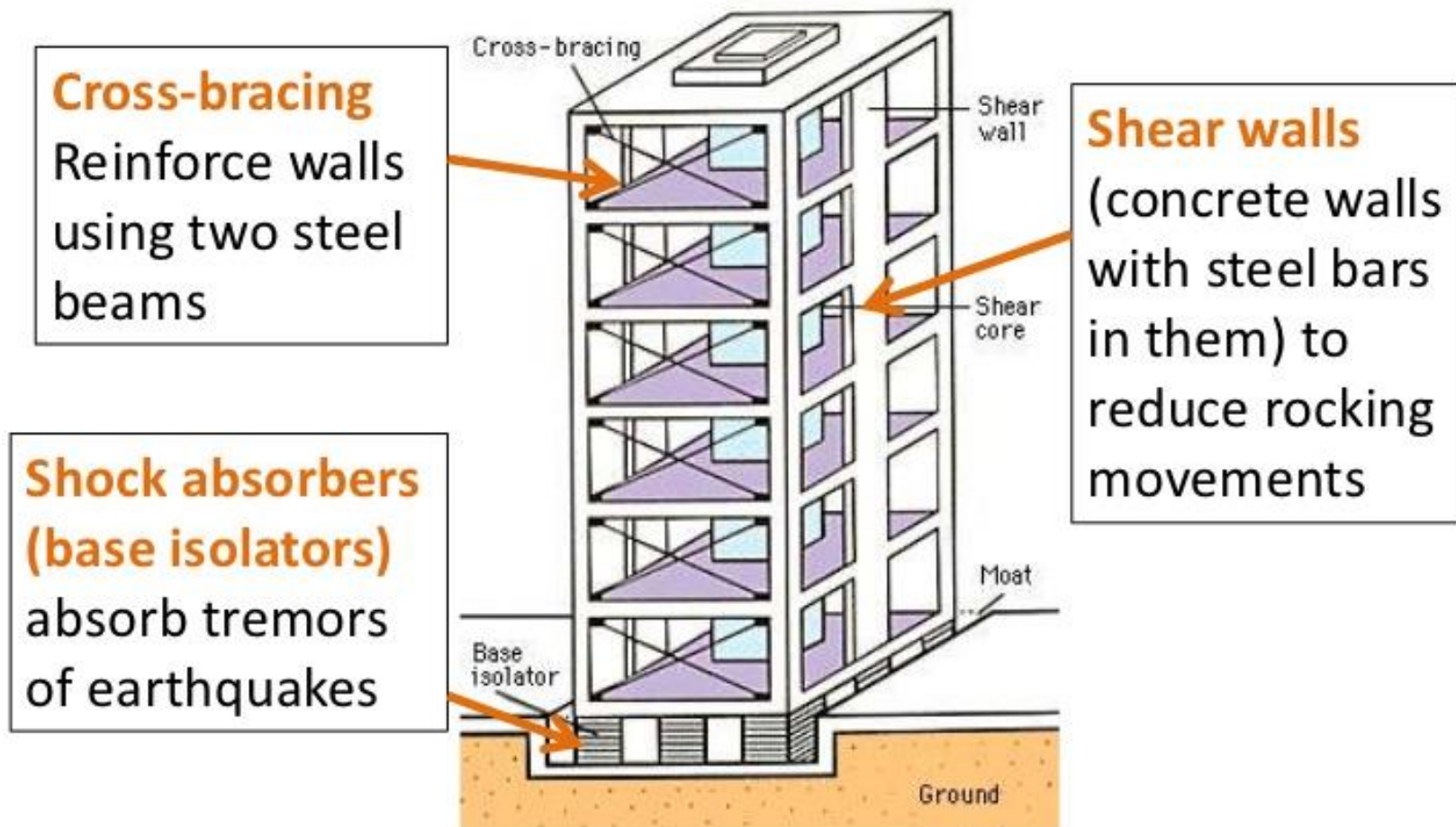
# Initiatives to extend Economical Incentives

- Encourage development away from hazardous areas.
- Allocation of land in safer areas.
- Loan/grants for disaster resistant construction.
- Favorable credit,
- Favorable taxation,
- Technical assistance, etc.

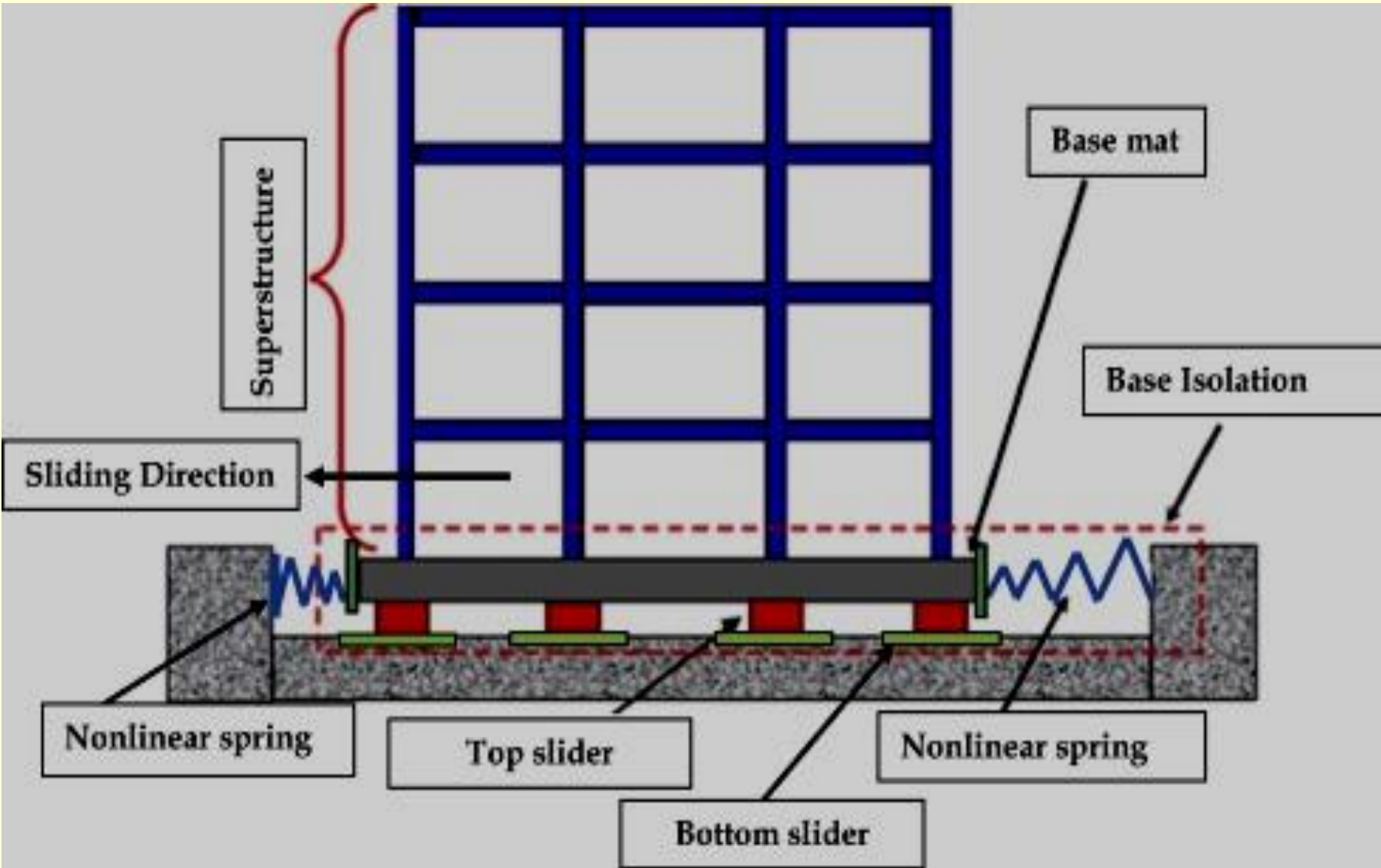


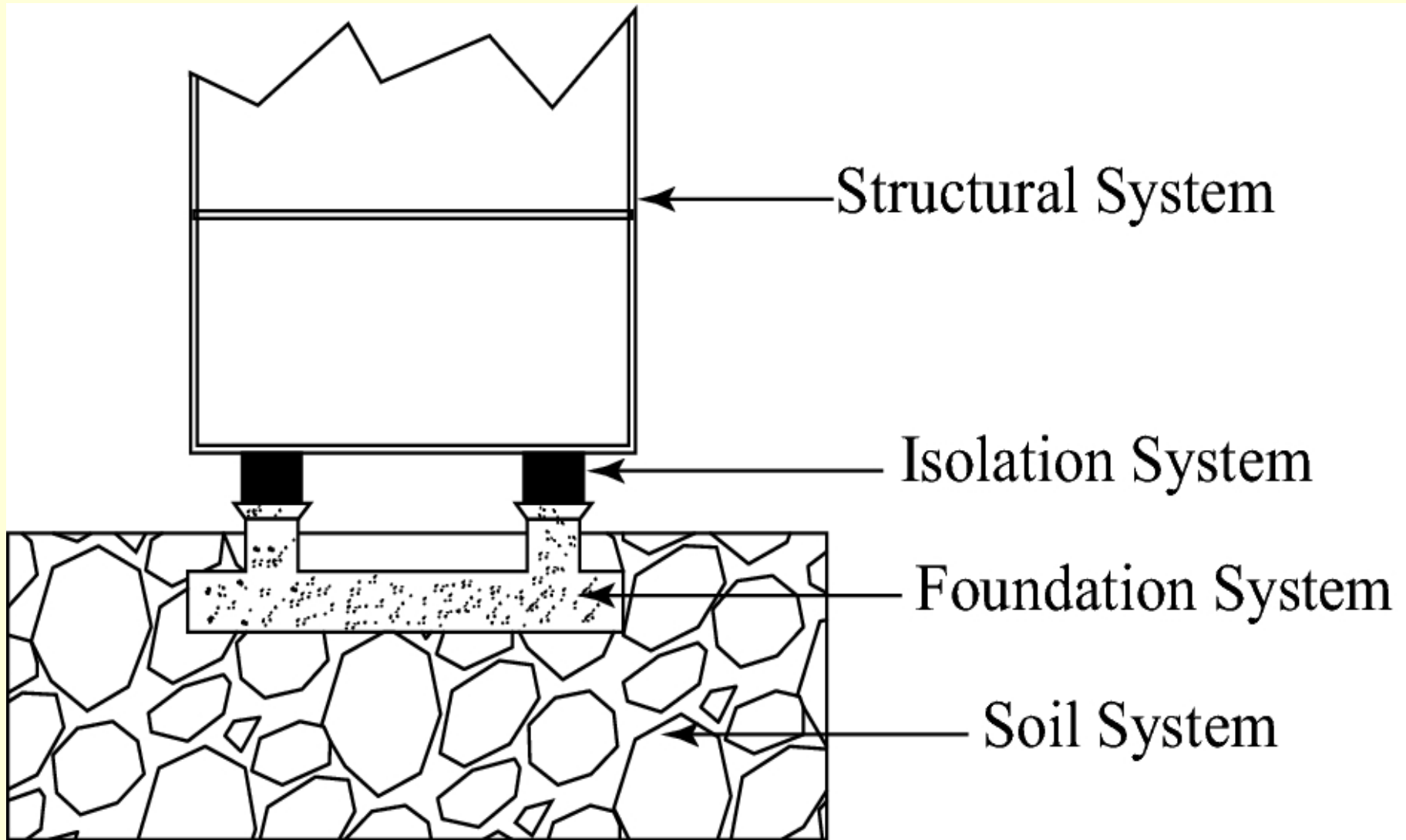
# Disaster Resistance Construction

## Earthquake Resistant Building



**Base Isolation Foundation :** Building is isolated from ground motions so earthquake inputs do not affect its response.





Source: [www.link.springer.com/chapter/10.1007/978-981-13-3176-3\\_14](http://www.link.springer.com/chapter/10.1007/978-981-13-3176-3_14)



**Bhuj Hospital is protected from earthquakes by lead-rubber base isolation system**



*Basement columns  
supporting base isolators*

**Base Isolator**

Basement of Bhuj Hospital after Earthquake

# Economic Diversion thro' Changes in Land uses

- Economic base for Sustainable city.
- Areas prone to
  - cyclone,
  - flood,
  - drought, etc.

should change their economical activities from agriculture to :

- light manufacturing,
- warehouse,
- traditional industries manufacturing items such as
  - coir,
  - handlooms,
  - handicrafts, etc.

# Planning for Open Space

Agriculture lands,  
Parks,  
School play grounds,  
Botanical gardens,  
Private parks,  
Wood land,  
Grassland and  
other forms of open space.

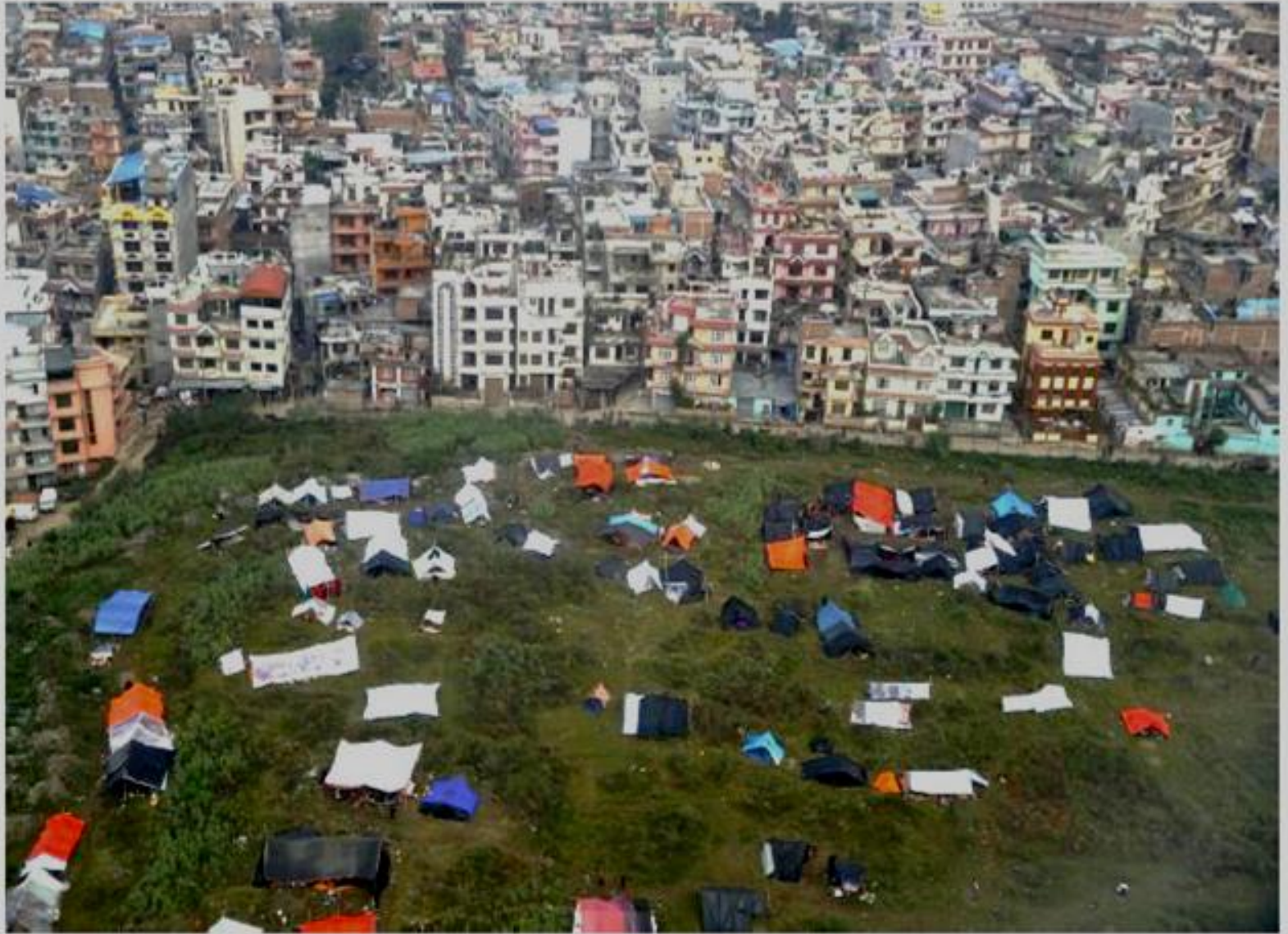
- Safest place to gather and take shelter during disasters.
- Such places can be used as sites for emergency shelters.
- sites may be points from where people can be carried to safer place





**GALLERY**

*In Nepal's mountainous Gorkha district, epicenter of the 2015 earthquake, World Vision delivered aid by helicopter. Some families walked more than four hours to reach the delivery spot to pick up tarpaulins, jerry cans, solar lamps, and hygiene supplies to carry home. "I'm grateful to receive these supplies, especially the blankets because it's been too cold at night in*



Space in Disaster for Relief , Rescue and Temporary Shelters  
Source: [www.researchgate.net](http://www.researchgate.net)

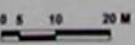
LAYOUT PLAN FOR CHOTA ENAKA, KAMORTA



- Residential
- Commercial
- Public/Semi Public
- Parks/Open Space
- Circulation
- Others

Proposed Dwelling Units : 48 Nos.

- NOTE:
- This Schematic Layout Plan has been prepared based on information / Dirgs. made available by ANI Administration, APWD.
  - All dimensions are in meters.
  - The Layout Plan may be modified as per site conditions & minimising tree felling.
  - All parks/open spaces of more than 500 sqm. area shall have rainwater harvesting pits.
  - All Settlement plans shall be provided adequate green buffer around them.



TCPO

GOVT. OF INDIA, MoUD

# Multi Hazard Safety and Retrofitting

Building Bye-laws should incorporate :

- Multi Hazard Safety and
- Retrofitting.

## Priority Areas :

- Public Buildings (such as hospitals, educational, institutional, power stations, infrastructure, heritage buildings/monuments, etc.), and
- Those structures which attract large congregation  
(should have ability to withstand earthquake of the defined intensity).

Suitable actions should be taken for

**-Retrofitting and  
-Strengthening of structures** identified as per earthquake manuals and National Building Code.

- Techno-legal regime has to be adopted.

# Local R & D , Awareness

- Sensitize people, particularly school children, about the after effects of disasters.
- Make people aware through media campaigns and advertisements about emergency procedures and location of emergency shelters etc.



**Elementary school children crouch under their desks as part of a nationwide earthquake drill at a Tokyo elementary school, 01 Sept. 2006. Nearly one million people across Japan took part in the disaster drills .**

## **Disaster Risk & Mitigation Plan (DRMP)**

- Environmental Impact Assessment (EIA) is mandatory for major projects.
- Social Impact Assessment
- Strategic Environmental Assessment (SEA)
- Disaster Risk and Mitigation Plan (DRMP) may be made mandatory for major infrastructure projects particularly in Hilly Areas.

**thank you  
for  
kind attention**