

Disaster Management and its process

Definition

Disaster -

Any occurrence that causes
damage, ecological disruption,
loss of human life,
deterioration of health and health services
on a scale, sufficient to warrant an extraordinary
response from outside the affected community or
area.(WHO)

A disaster can be defined as an occurrence
either nature or man made that causes human
suffering and creates human needs that victim
cannot alleviate without assistance.

(American Red Cross)

Definition

Hazard -

Any phenomenon that has the potential to cause disruption or damage to people and their environment.

“A hazard is natural event while the disaster is its consequence. A hazard is perceived natural event which threatens both life and property.....

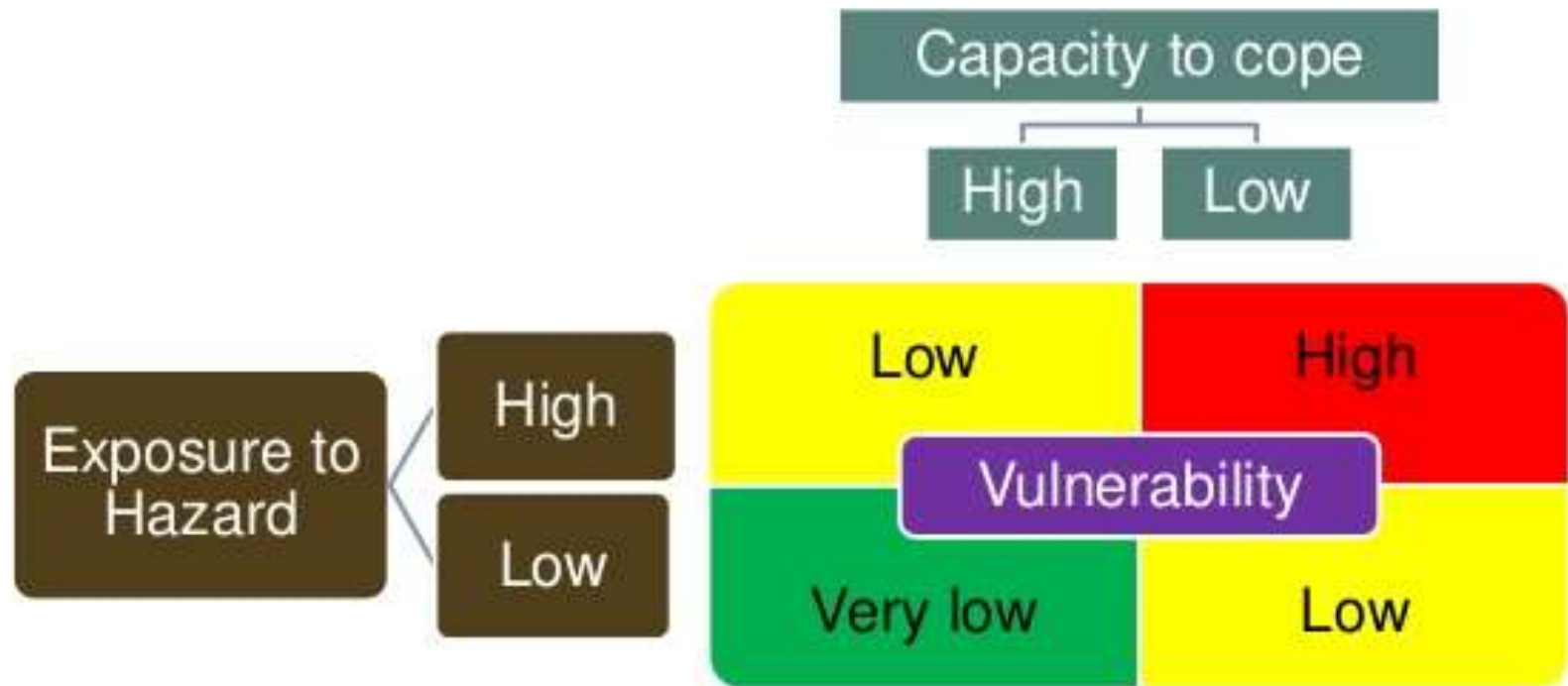
A disaster is a realization of this hazard.”

-John Whittow

- When hazard involves elements of risks, vulnerabilities and capacities, they can turn into disasters.
- Hazards may be inevitable but disasters can be prevented.

Vulnerability

The propensity of things to be damaged by a hazard.



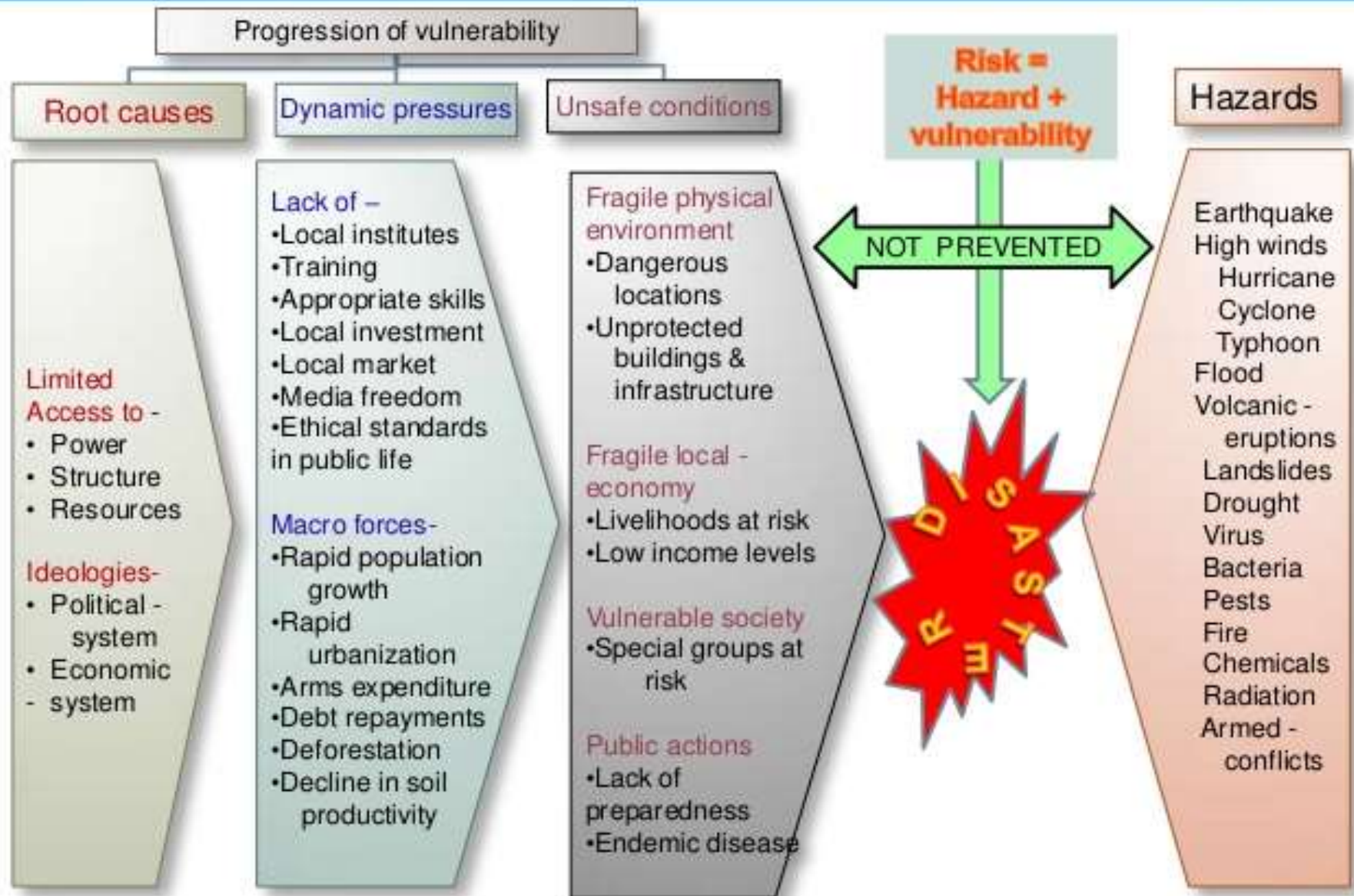
Components of Disaster Mitigation

- Hazard identification and mapping –
 - Assessment – Estimating probability of a damaging phenomenon of given magnitude in a given area.

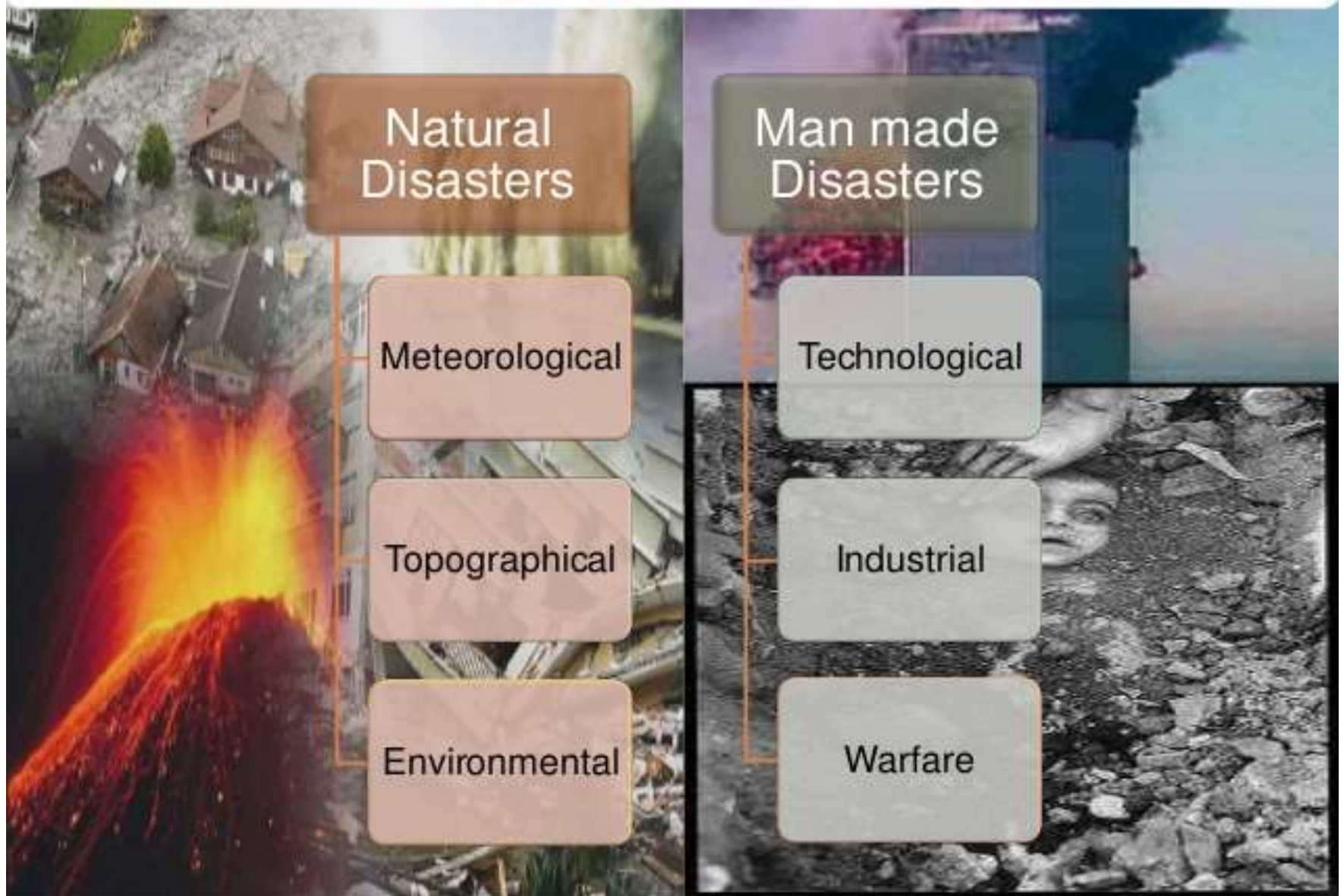
Considerations

- History
 - Probability of various intensities
 - Maximum threat
 - Possible secondary hazards
-
- Vulnerability analysis –
 - A process which results in an understanding of the types and levels of exposure of persons, property, and the environment to the effects of identified hazards at a particular time.

Disaster occurs when hazards meet vulnerability



Classification of Disasters



Natural Disasters

Meteorological Disasters

- Floods
- Tsunami
- Cyclone
- Hurricane
- Typhoon
- Snow storm
- Blizzard
- Hail storm

Topographical Disasters

- Earthquake
- Volcanic Eruptions
- Landslides and Avalanches
- Asteroids
- Limnic eruptions

Environmental Disasters

- Global warming
- El Niño-Southern Oscillation
- Ozone depletion-UVB Radiation
- Solar flare

Man made Disasters

Technological

- Transport failure
- Public place failure
- Fire

Industrial

- Chemical spills
- Radioactive spills

Warfare

- War
- Terrorism
- Internal conflicts
- Civil unrest
- CBRNE

Disaster Management

The body of policy and administrative decisions and operational activities that pertain to various stages of a disaster at all levels.

An applied science which seeks, by systemic observation and analysis of disasters, to improve measures relating to prevention, emergency response, recovery and mitigation.

Encompasses all aspects of planning for, and responding to disasters, including both pre and post disaster activities.

Disaster Management

A continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for-

- Prevention of danger or threat of any disaster.
- Reduction of risk of any disaster or its severity or consequences.
- Capacity-building.
- Preparedness to deal with any disaster.
- Prompt response to any threatening disaster situation or disaster.
- Assessing the severity or magnitude of effects of any disaster.
- Evacuation, rescue and relief.
- Rehabilitation and reconstruction.

Activities that reduce effects of disasters

- Building codes & zoning
- Vulnerability analyses
- Public education

Activities prior to a disaster.

- Preparedness plans
- Emergency exercises
- Training,
- Warning systems

Preparedness

Mitigation

Integrated Disaster Management

Response

Activities following a disaster.

- Temporary housing
- Claims processing
- Grants
- Medical care

Recovery

Activities during a disaster.

- Public warning systems
- Emergency operations
- Search & rescue

Disaster management continuum

PROACTIVE STRATEGY



PHASES OF DISASTER MANAGEMENT

Disaster Preparedness

Disaster Impact

Disaster Response

Disaster Recovery

Disaster Mitigation

Disaster Preparedness

Disaster preparedness - is ongoing multisectoral activity.

Integral part of the national system responsible for developing plans and programmes for

disaster management,

prevention,

mitigation,

response,

rehabilitation and

reconstruction.

Disaster Preparedness

Co-ordination of a variety of sectors to carry out-

- Evaluation of the risk.
- Adopt standards and regulations.
- Organize communication and response mechanism.
- Ensure all resources- ready and easily mobilized.
- Develop public education programmes.
- Coordinate information with news media.
- Disaster simulation exercises.

Medical Preparedness & Mass Casualty Management

- Developing and capacity building of medical team for Trauma & psycho-social care, Mass casualty management and Triage.
- Determine casualty handling capacity of all hospitals.
- Formulate appropriate treatment procedures.
- Involvement of private hospitals.
- Mark would be care centers that can function as a medical units.
- Identify structural integrity and approach routes.

Disaster Response

Immediate reaction to disaster as the disaster is anticipated, or soon after it begins in order to assess the needs, reduce the suffering, limit the spread and consequences of the disaster, open up the way to rehabilitation.

By-

- **Mass evacuation**
- Search and rescue
- Emergency medical services
- Securing food and water
- Maintenance of Law & Order



Disaster Impact & Response



Medical and Public Health response

- Pre-hospital emergency services -
 - Linkage to govt. incident command system.
 - External medical services and extrication workers.
 - Search and Rescue teams.
- Assessment of immediate health needs.
- Identification of medical & health resources.
- Temporary field treatment
Prompt and proper treatment to save lives.

Medical and Public Health response

- Food safety and Water Safety
- Animal control- Carcasses can foul water,
Zoonotic diseases.
- Vector control- Mosquito and Rodents
- Communicable disease control:
Measles, diarrheal diseases, ARI, and malaria
Breakdown in environmental safeguards.
Crowding of persons in camps, Malnutrition.
- Waste management
 - Temporary latrines
 - Chemical toileting
 - Sewage disposal damage.

Medical and Public Health response

- Management of hazardous agent exposure
 - Particular matter
 - Also Infectious agents if hospital or scientific laboratories damaged
- Mental health
 - Specialized psychological triage and treatment significant in terrorism.
- Information
 - Behavioral Contagion handling
 - Risk communication

Consequences of Disaster

- Health -

 - Physical – Entanglement, Injuries, Disabilities, Coma ,Death.

 - Psychological- Cognitive, Behavioral, Social.

- Structural Damage – to variable extent.

- Ecological- Changes in eco system.

- Economical-Financial losses.

Symptoms after disaster

Physiological Symptoms

- Fatigue
- Shock symptoms
- Profuse sweating
- Fine motor tremors
- Chills
- Teeth grinding
- Muscle aches
- Dizziness

Cognitive Symptoms

- Memory loss
- Distractibility
- Reduced attention span
- Decision making difficulties
- Calculation difficulties
- Confusing trivial with major issues

Emotional Symptoms

- Anxiety
- Feeling overwhelmed
- Grief
- Identification with victims
- Depression
- Anticipation of harm to self or others
- Irritability

Behavioral Symptoms

- Insomnia
- Substance abuse
- Gallows humor
- Gait change
- Ritualistic behavior
- Hyper vigilance
- Unwillingness to leave scene

Factors which may affect reactions

Disaster Related Factors

- Lack of warning
- Scope of the event
- Abrupt contrast of scene
- Personal loss or injury
- Type of disaster
- Traumatic stimuli
- Nature of the destructive agent
- Human error
- Time of occurrence
- Lack of opportunity for effective action
- Environment (temperature, humidity, pollution...)

Host Related Factors

- **Health**
 - Disabled, Invalid
 - Medical problems
- **Social**
 - Lack of support network- Divorced, Widowed
 - Cultural: language barriers
- **Demographic**
 - Age: younger and older have more difficulties
 - Sex: more stress in women, but more resilient
- **Past History**
 - Traumatic events
 - Mental illness or emotional problems

Communicable Diseases after Disasters

Pre existing Diseases in the Population :

dysentery, cholera, measles, tuberculosis, malaria, intestinal parasites, scabies, skin infections.

Ecological Changes :

- Altered ecology- vector borne and water borne diseases
- Living conditions - plague, louse borne typhus and relapsing fever.
- Stray animals and wild animal displacement- rabies.

Damage to public Utilities :

Water supplies & sewage disposal disrupted.

Other Public Health Impacts of Disasters

- **Sexual violence**

Rape, Exploitation & Sexual violence

- Causes: Separation of women from family
- Weakened social structures
- Increased aggressive behavior

- **Human right violations**

- Torture of civilian
- Physical and psychological harms
- Sex trafficking
- Child labour
- Denial of basic needs

Mental Health Impact of Disasters

- **Post traumatic stress disorder**
 - Stage one- Adrenergic surge.
 - Stage two- Helplessness and a loss of self-control.
 - Stage three - Despondency and demoralization.
- **Children** -Developmental age is more important
- **Preschoolers**- Increased arousal, fear.
- **School-age children**- reckless ,psychosomatic signs.
- **Adolescents**- some partake in rescue and recovery, regression & withdrawal possible.
- **Elderly** - increased risk for physical injury, than mental.

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Components of Disaster Mitigation

- Risk analysis –

Determining nature and scale of losses which can be anticipated in a particular area.

Involves analysis of

- Probability of a hazard of a particular magnitude.
- Elements susceptible to potential loss/damage.
- Nature of vulnerability.
- Specified future time period.

- Prevention –

- Activities taken to prevent a natural phenomenon or potential hazard from having harmful effects on either people or economic assets.

Disaster Mitigation Measures

Active measures

- **Promotion of desired actions by -**
 - Planning control.
 - Training & education.
 - Economic assistance.
 - Subsidies.
 - Facilities-refugee points, storage.
 - Public information.

Passive measures

- **Prevent undesired actions by -**
 - Requirement to conform with design codes.
 - Checking compliance of controls on site.
 - Court proceedings
 - Fines, Closure orders
 - Control land use.
 - Denial of utilities in areas development undesired.

VULNERABILITY PROFILE OF INDIA



58%

16%



12%



8%



3%

Major Disasters in India (last 40 years)

S. N	Event	Year	State & Area	Effects
1	Drought	1972	Large part of country	200 million affected
2	Cyclone	1977	Andhra Pradesh	10,000 people & 40,000 cattle died
3	Drought	1987	15 states	300 million affected
4	Cyclone	1990	Andhra Pradesh	967 died. 435,000 acres land affected
5	Earthquake	1993	Latur, Maharashtra	7,928 people died.30,000 injured
6	Cyclone	1996	Andhra Pradesh	1000 people died.5,80,000 houses destroyed
7	Super cyclone	1999	Orissa	Over 10,000 deaths
8	Earthquake	2001	Bhuj,Gujrat	13,805 deaths,6.3 millions affected

Major Disasters in India (last 40 years)

S. N	Event	Year	State & Area	Effects
9	Tsunami	2004	Coastline TN, Kerala, AP, A&N islands & Puducherry	10,749 deaths.5,640 missing,2.79 Millions
10	Floods	July 2005	Maharashtra	1094 deaths 167 injured, 54 missing
11	Earthquake	2008	Kashmir	1400 deaths
12	Kosi floods	2008	North Bihar	527 deaths,19,323 cattle died
13	Cyclone	2008	Tamilnadu	204 deaths
14	Krishna floods	2009	Andhrapradesh & Karnataka	300 died
15	Flash flood	June 2013	Uttarakhand	5,700 deaths, 70,000 affected
16	Phailin Cyclone	Oct 2013	Coastline of Orissa, Jharkhand	27 died, 10,00,000 evacuations

A few disasters in INDIA

Earthquake, Oct, 2005

Avalanche Feb 2005

Bhuj, Earthquake, 26 January, 2001

Floods, Mumbai, 26 July 2005

Earthquake, Latur, 30 Sept 1993

Tsunami 26 Dec 2004



Flood, Uttarakhand 2013

Earthquake Uttarkashi, 20 Oct 1991

Flood, Assam & Bihar 2004

Bhopal Gas Tragedy, Dec 1982

Alia Cyclone 2009

Cyclone 29 Oct 1999

PHAILIN Cyclone 2013

Tsunami 26 Dec 2004

Developments in Disaster Management

High Powered Committee set up in August 1999.

Until 2001 – Responsibility with Agriculture Ministry.

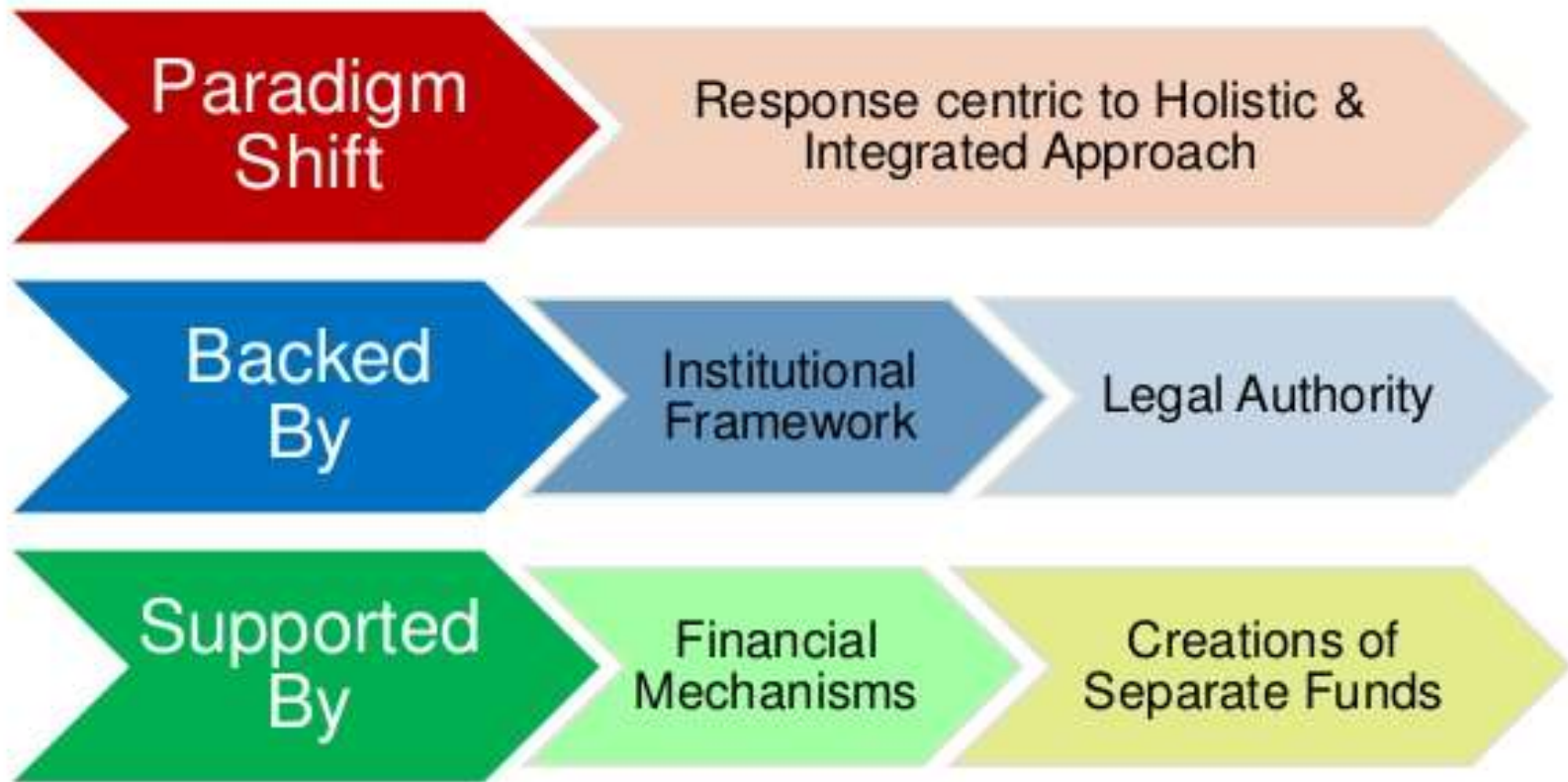
Transferred to Ministry of Home Affairs in June 2002.

National Disaster Management Authority established 28th September 2005.

Inclusion of Disaster Management in the Seventh Schedule of the Constitution.

On 23 December, 2005, Disaster Management Act .

Changes in Disaster Management in India



Institutional Framework

Disaster Management Structure

NDMA Apex Body with Prime Minister as Chairperson.
National Executive Committee - Secretaries of 14 Ministries
and Chief of Integrated Defence Staff.

Centre Level

Central Ministries; National Disaster Management Authority,
National Institute of Disaster Management
National Disaster Response Force (NDRF).

State Level

SDMA headed by Chief Minister.
State Executive Committee (SEC).

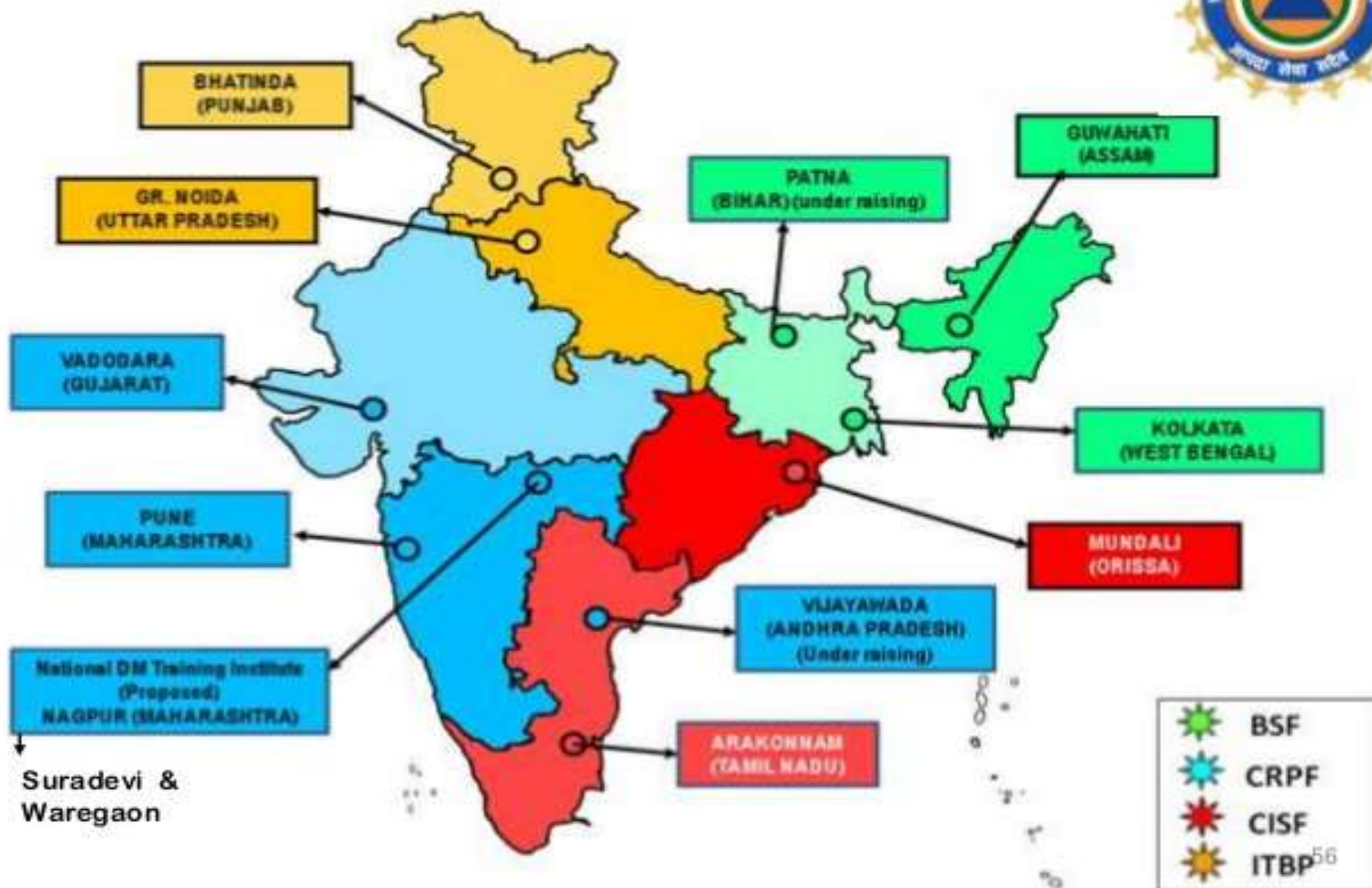
District Level

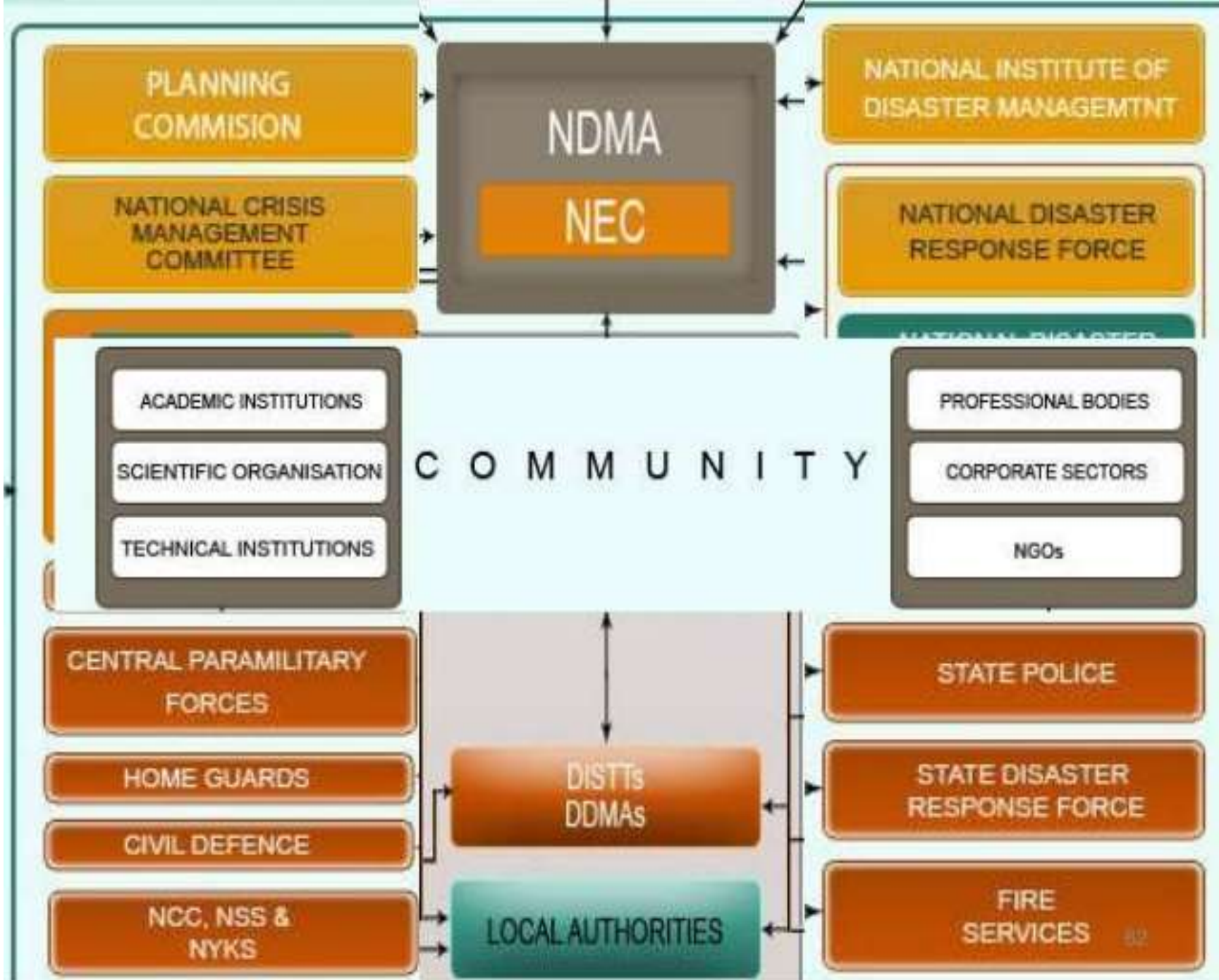
DDMA headed by District Magistrate.
Interface between Govt. and Public.

Nodal Ministries related with Disasters

Type of Disaster	Nodal Ministry
Natural- Flood, Tsunami, Cyclone, Earthquake Manmade-Civil strife	Home Affairs
Drought	Agriculture
Biological, Epidemics	Health & Family Welfare
Chemical, Forest related	Environment & Forest
Nuclear	Atomic Energy
Air Accidents	Civil Aviation
Railway Accidents	Railway
Industrial Accidents	Labour

NDRF Battalions in India





PLANNING COMMISSION

NDMA

NATIONAL INSTITUTE OF DISASTER MANAGEMENT

NATIONAL CRISIS MANAGEMENT COMMITTEE

NEC

NATIONAL DISASTER RESPONSE FORCE

ACADEMIC INSTITUTIONS

PROFESSIONAL BODIES

SCIENTIFIC ORGANISATION

COMMUNITY

CORPORATE SECTORS

TECHNICAL INSTITUTIONS

NGOs

CENTRAL PARAMILITARY FORCES

STATE POLICE

HOME GUARDS

DISTTs
DDMAs

STATE DISASTER RESPONSE FORCE

CIVIL DEFENCE

LOCAL AUTHORITIES

FIRE SERVICES

NCC, NSS & NYKS

Future Directions

- Encourage and consolidate knowledge networks.
- Mobilize and train disaster volunteers for more effective preparedness, mitigation and response (NSS, NCC, Scouts and Guides, NYK, Civil Defence, Home guards).
- Increased capacity building leads to faster vulnerability reduction.
- Learn from best practices in disaster preparedness, mitigation and disaster response

Future Directions

- Mobilizing stakeholder participation of Self Help Groups, Women's Groups, Youth Groups, Panchayati Raj Institutions.
- Anticipatory Governance: Simulation exercises, Mock drills and Scenario Analysis.
- Indigenous knowledge systems and coping practices
- Living with Risk: Community Based Disaster Risk Management.
- Inclusive, participatory, gender sensitive, child friendly, eco-friendly and disabled friendly disaster management
- Technology driven but people owned.
- Knowledge Management: Documentation and dissemination of good practices.



- FOR INFORMATION ON DISASTERS
DIAL TOLL FREE No. 1070
- **Contact**
NDMA Control Room
26701728,730;Fax-26701729
9868891801,9868101885
controlroom@ndma.gov.in; ndmacontrolroom@gmail.com

WEBSITE

- Republic of India-[http:// ndma.gov.in](http://ndma.gov.in)

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Thank You!