India- Risk & Vulnerability Profile

-India is vulnerable, in varying degrees, to a large number of disasters

-More than 58.6 per cent of the landmass is prone to earthquakes of moderate to very high intensity;

-over 40 million hectares (12%) of its land is prone to floods and river erosion;

-close to 5,700 kms, out of the 7,516 kms long coastline is prone to cyclones and tsunamis;

-68% of its cultivable area is vulnerable to droughts; and,

-its hilly areas are at risk from landslides and avalanches.

-Moreover, India is also vulnerable to Chemical, Biological, Radiological and Nuclear (CBRN) emergencies and other man-made disasters.

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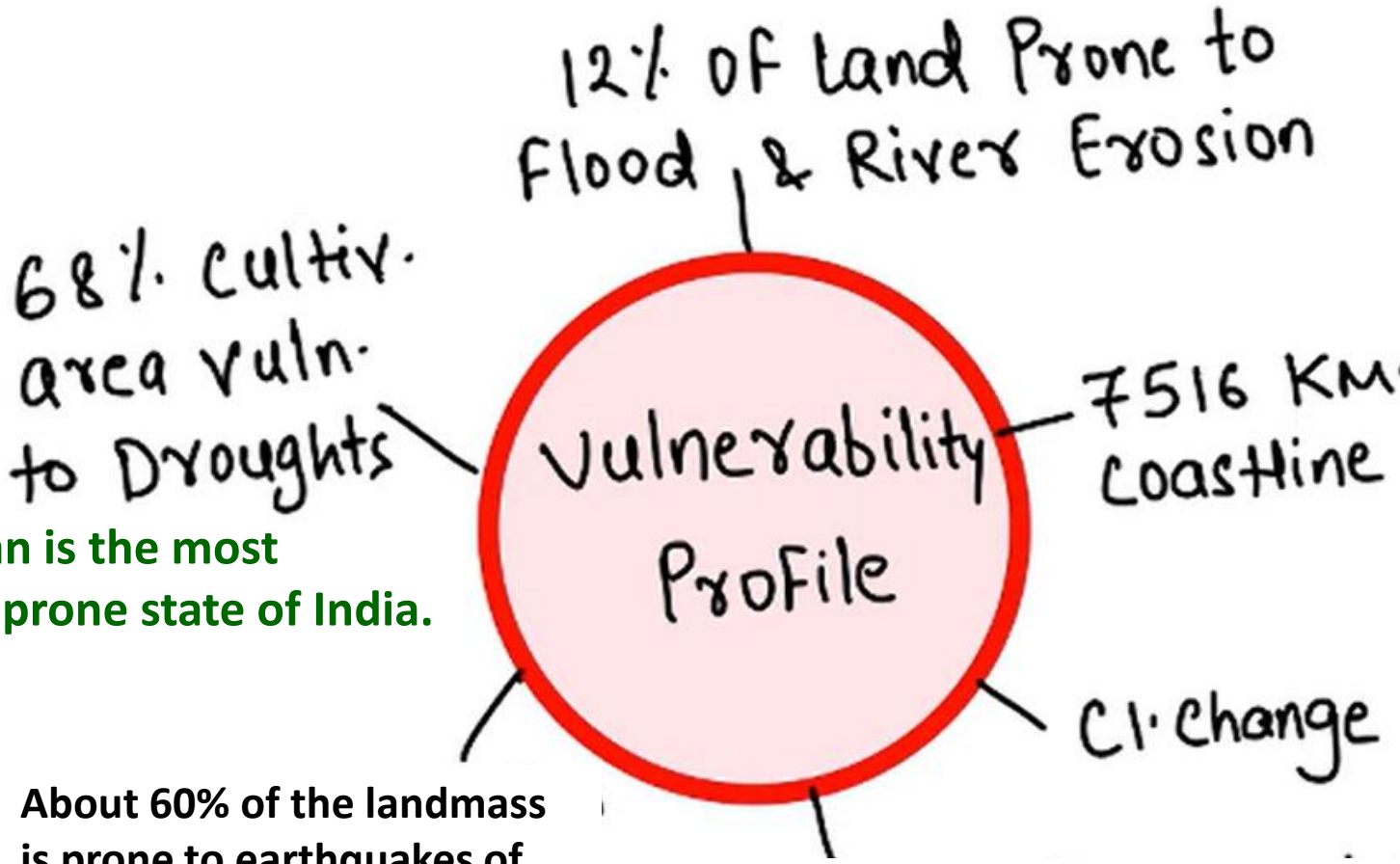

Rajasthan is the most drought prone state of India.

about 8% of the total area is prone to cyclones East Coast.

About 60% of the landmass is prone to earthquakes of various intensities

The Himalayan and sub-Himalayan regions, Kutch and the Andaman and Nicobar Islands are particularly earthquake hazard prone

and 68% of the area is susceptible to drought

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Disaster Statistic

Disasters	*Number of Events*	*Number of people killed*	*Total Affected*	*Damage in (000 US$)*
Drought	14	42, 50, 320	106,18,41,000	24,41,122
Earthquake (seismic activity)	26	78,094	2,79,19,695	51,02,700
Epidemic	68	45,43,874	4,21,473	NA
Extreme temperature	47	13.801	250	5,44,000
Insect infestation	235	60,188	79,86,54,220	3,41,45,188
Storm	154	1,64,179	9,32,94,512	1,10,51,900
Wildfire	2	6	0	2000
Total	***590***	***91,15,269***	***198,59,70,266***	***5,33,41,410***

Table 1: *Source: EM-DAT: The OFDA/CRED International Disaster Database, 2011*

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Almost a decade since Uttarakhand floods : a manmade Kedarnath disaster ?

- Which human interventions were held responsible for floods in 2013 Uttarakhand?
- Uttarakhand has always been a flood-prone area. *Uttarakhand is home to the fragile mountainous region of the Himalayas and has witnessed a series of natural disasters over the last 20 to 30 years.*
- The region has one of the most important pilgrimage circuits in India. The disaster took place during the peak tourist and the pilgrimage season.
- There were many disasters in the year 1893, then 1968 and then 1970 respectively. Yet, it took a Chipko movement, to put sense into people in order to convince them from not cutting the trees.
- Between June 14 and 18 2013, Uttarakhand suffered one of the worst natural disasters when widespread heavy rains resulted in floods across the state, claiming thousands of lives and damage worth billions of rupees.
- Due to heavy ray rain the Mandakini river flooded the entire valley. Not only Uttarakhand but an enormous region of Nepal and also Himachal Pradesh was affected. The heavy rains also caused landslides at several locations.
- According to a report of the National Institute of Disaster Management, the Kedarnath area was the worst affected region, where the heavy rains melted the Chorabari glacier resulting in the release of a large volume of water that caused another flash flood in the Kedarnath town leading to further devastation in downstream areas.

No need to mug up line by line,
but read out the slide thoroughly

History of the Kedarnath floods:

- 1. massive construction projects in ecologically sensitive areas. “Unabated construction of dams was one of the main reasons that amplified the destruction by 2013 floods but the governments are still following same policies which invited the 2013 disaster.
- 2. Plus numerous landslides
- 3. The place is filled with pilgrim tourists. Tourism is definitely one of the main features of the place. Unfortunately, it also costs mother Nature in the form of cutting trees and making spaces for accommodations. Most of the lands are devoid of the trees due to an excess of tourism.
- 4. The increase in mining was also tremendous.
- 5. The network of unplanned and irrelevant roads also worked as a fuel to the fire. The enormous construction going on in the mountains for years took a toll on it.

No need to mug up line by line,
but need to study the fact

Dec 2015 Chennai Flood

- The severe flooding in Chennai again proves that India's cities are unprepared for extreme weather events like rains, droughts and cyclonic storms which are becoming more frequent and intense.
- The only reason for all this was rapid urbanisation. During this time, along with the marshland, all other wetlands of Chennai became sites of waste disposal, housing, commercial and industrial purposes.
- The city's famous automobile manufacturing hubs are located in the catchment area of lakes.
- Many of the city's info-tech facilities are built on marshlands, water-bodies and water courses. Only 15% of Chennai's wetlands are left.
- We must create ponds and lakes which would act as basins during rains.

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2018 Kerala Flood

Environmentalist Dr. Madhav Gadgil says Kerala floods is also a man-made disaster as illegal constructions on river beds and unauthorised stone quarrying contributed to the calamity.
The Kerala floods were a mix of all the parameters mentioned above,

- plus the illegal quarrying, mining,
- illegal repurposing of forests, and
- high-rise building constructions.
- Environmentalist Gadgil says Kerala floods is also a man-made disaster as illegal constructions on river beds and unauthorised stone quarrying contributed to the calamity.
- He had recommended that the Western Ghats should be classified as ecologically sensitive.

No need to mug up line by line,
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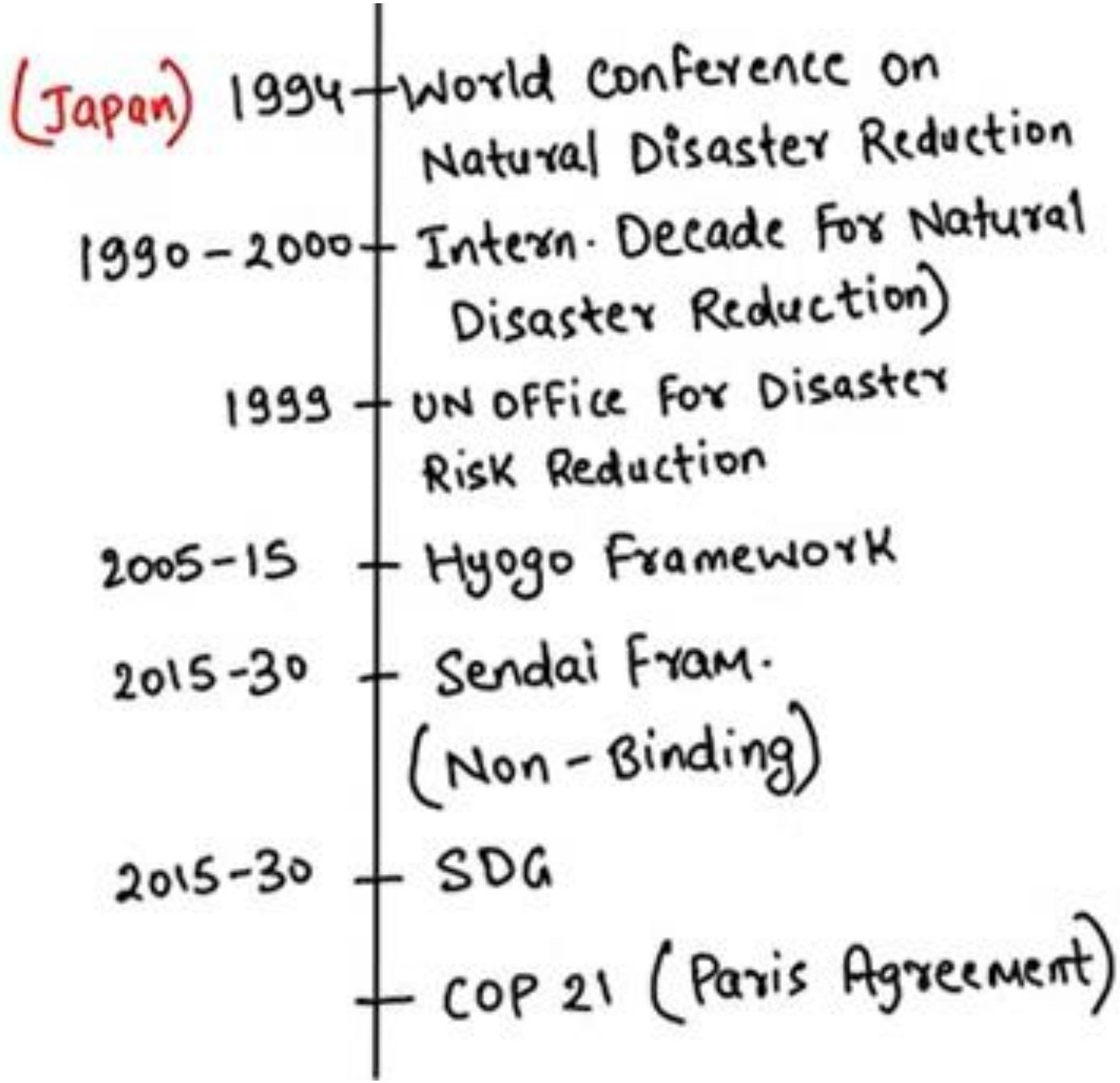
DISASTER RISK REDUCTION

- During 80's people realize that disaster is not only the occurrence of a physical event, it is also related to the inability of the impacted people to deal with the constraints…..
- Traditionally the focus has been on preparedness for response. The traditional focus had been on emergency preparedness and better provision of urban services during contingencies.
- The focus in disaster management has currently shifted from disaster response to mitigation.
- The emphasis is on mainstreaming disaster risk reduction strategies in macro socio economic planning.
- Disaster risk management comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.
- In comparing disaster risk management and disaster risk reduction it therefore clear that disaster risk management is the application of disaster risk reduction.
- Disaster risk management aims to avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness.
- The new approach - development cannot be sustainable unless disaster mitigation is built into the development process. The focus is now more on disaster risk reduction.
- This paradigm shift reinforces that disasters can be managed through adequate planning and preparedness for response.

No need to mug up line by line, but need to understand DRR


(Japan) 1994
World Conference on Natural Disaster Reduction
1990 - 2000
Intern. Decade For Natural Disaster Reduction)
1999
UN Office For Disaster Risk Reduction
2005-15
Hyogo Framework
2015-30
Sendai Fram.
(Non-Binding)
2015-30
SDG
COP 21 (Paris Agreement)

- World Conference on Natural *Disaster Reduction*. *Yokohama*, Japan, held between 23-27 May *1994* to meet the challenge collectively, since environment is an international concern.
- The concept of "Disaster Management Cycle" has entered disaster management efforts over the past few years, especially since the Yokohama Conference (1994). It had changed the entire dynamics of "Relief-centric to responsive and preparedness approach" in disaster management.
- It Provided *g*uidelines for Natural Disaster Prevention, Preparedness and Mitigation -

  a) Early warnings of impending disasters and their effective dissemination are key factors in successful disaster prevention and preparedness.

  b) Vulnerability can be reduced by the application of proper design and patterns of development
- The 3rd UN World Conference on Disaster Risk Reduction is took place from 14 -18 March 2015 in Sendai, Japan and the Sendai Framework was adopted on March 18, 2015. It outlines seven clear to prevent new and reduce existing disaster risks.
- The Sendai Framework for Disaster Risk Reduction aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years (2015-2030).
- It's a non-binding agreement cannot be enforced through the courts (7 points of Sendai Framework already been talked about in the earlier file)

No need to mug up line by line,
only for your understanding

Some common mitigation measures are:

- ❑ Hazard Assessment
- ❑ Vulnerability Analysis
- ❑ Risk Assessment
- ❑ Vulnerability Reduction/mitigation strategies (structural and non- structural)
- ❑ Integration of disaster risk reduction activities in all development activities
- ❑ Disaster-resistant buildings and infrastructure
- ❑ Awareness among the community
- ❑ Preventing habitation in risk zones.

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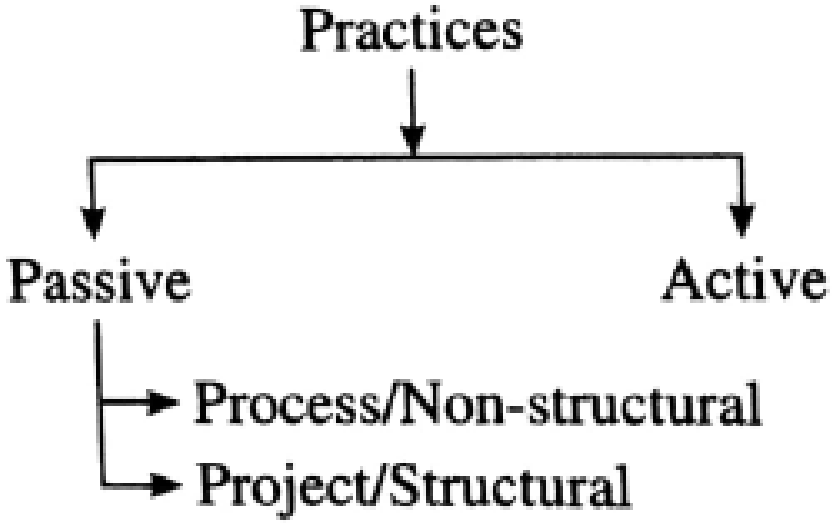
DISASTER MITIGATION STRATEGIES



Mitigation practices.

A few mitigation measures as identified by Carter (2008) are as under:

1. Strengthening buildings to make them resistant to cyclones, floods, earthquakes, and other disasters.

2. All future developmental structures and buildings to be built in such a manner that hazard resistance are incorporated into it.
3. Planting only those types of crops that are less prone to disasters that are likely to strike a particular area.
4. Altering cropping patterns and cycles in such a manner that it is possible to harvest the crops prior to the onset of disasters prone seasons like flood or cyclone.
5. Adopting land-use patterns and controls such that developmental activities are not carried out in high-risk areas.
6. Adoption of economic diversification so that losses in one sector are offset by increased production or output in certain other sectors.

Need to study

7. Education and training of the members of the society and officials dealing with disaster mitigation about the need and modalities of mitigation activities.

Non-structural Approach

- Non-structural approach encompasses those measures that attempt to bring about coordination of efforts between all organisations and persons during all phases of disaster management, training and public awareness, legislation, policy making, preparing of action plans etc.,
- Such approach to mitigation colisists of positive actions through legislation, incentives, educating people, creating community awareness etc.
- Some of the nonstructural mitigation measures are:

Warning System

- A reliable and timely warning of disasters can save a lot of human lives.
- In Andhra Pradesh, where cyclones are more frequent, death toll has been considerably minimized, because of effective warning system and people's response.

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DISASTER MANAGEMENT CYCLE

Main components of DM

1. Reduction in the existing levels of vulnerabilities,
2. Prevention and mitigation,
3. Responses to disasters, and
4. Rehabilitation and reconstruction.

TYPES OF REHABILITATION

- Physical
- social
- economic and
- Pshycological

Let's look upon all of them from next slide onwards

Physical rehabilitation :

- It includes reconstruction of physical infrastructure, such as, houses, buildings, railways, roads, communication network, water supply, electricity etc.
- It involves policies for agricultural rehabilitation, rehabilitation of artisans and small businessmen as well as rehabilitation of animal husbandry.
- HAD THERE BEEN GOOD PLANNING, THERE WOULD NOT HAVE BEEN SUCH DETRIMENTAL IMPACT LIKE ILLEGAL CONSTRUCTION ON FOOTHILLS THAT TRIGGERS FLOOD IN UTTRAKHAND, KERALA, Chennai etc.
- a. ILLEGAL CONSTRUCTION AT FOOTHILL BLOCKS THE ENTIRE DRAINAGE SYATEM, THE WAYS FOR THE WATER TO GET OUT. IF YOU BUILD HOUSES, HOTEL IN THE AREA WHICH HAS BEEN THE PASSAGE FOR THE WATER TO GET OUT, it follows that you left no place for the water to get out.
- SO, YOU SHOULD HAVE PROPER LAND USE PLANNING – LIKE SOME ZONE SHOULD BE MEANT FOR ABSORBIBG THE EXCESS WATER eg – WATER BODIES LIKE POND, LAKES, RESERVOIRS (the area of land that drains or sheds water) plus SOME ZONE DEDICATE FOR WATER TO GET OUT
- b. plus a windbreak should be planted at right angles to the prevailing wind. It can either consist of a single line of trees with a spacing of 1.5-2.0 m, or two lines with a spacing of 4-5 m within the line and 2-4 m between the lines. Eucalyptus is suitable for use by itself as a perimeter and/or internal windbreak and can be planted in single or multiple rows.

c. <u>CHANGE THE CROPPING PATTERN:</u>

Or, in a area with low ground water resource, you are growing sugarcane because the soil is good for it. the consequences are as follows - some years down the line water level drops further down and the whole area faces drought. Meanwhile you might earned some cash, but with no future…….exactly this thing happened in Marathwada in Maharashtra. Indian railways provided 6.3 crore litre water to parched region and sent a bill of Rs. 4 crore to the district collector towards transportation cost.

- Bottomline – physical rehabilitation comprises short-term and long-term strategies towards watershed management, canal irrigation, social forestry, crop stabilisation, and alternative cropping techniques, job creation, employment generation and environmental protection. The short-term and long-term physical rehabilitation measures should take into view: provision for subsidies, farm implements, fertilizers etc., establishment of seed banks, grain

- Also leadership factor : Quick decisions and strong leadership can make or break relief and recovery efforts. It is important to demonstrate strong leadership to build confidence and trust of the people and the media.

Economic rehabilitation : LIVELIHOOD RESTORATION

- One of the consequences of displacement is the loss of livelihood, and this hurts people the most. It is not simply a matter of losing livelihoods.
- Often, displacement forces the affected people to changeover to altogether new ways of making a living.
- The sustainable livelihood is possible by providing skills for economic growth and inclusive development.
- The level of vulnerability is highly dependent upon the economic status of individuals, communities and nations
- The poor are usually more vulnerable to disasters. *Example*: Poorer families may live in squatter settlements because they cannot afford to live in safer (more expensive) areas.
- Economic rehabilitation involves training and providing technical support, development of training methodology and material, and developing management systems for various programs.
- number of leadership development programs at various levels for Community, Government and Civil Society personnel are organized to strengthen their issues based skills and development perspective for appropriate planning, successful implementation of development initiatives.

Psychological rehabilitation

The three goals of the psychiatric rehabilitation

- promotes recovery,
- full community integration, and
- improved quality of life for persons who have been diagnosed with any mental health condition that seriously impairs their ability to lead meaningful lives.

Reconstruction, on the other hand,

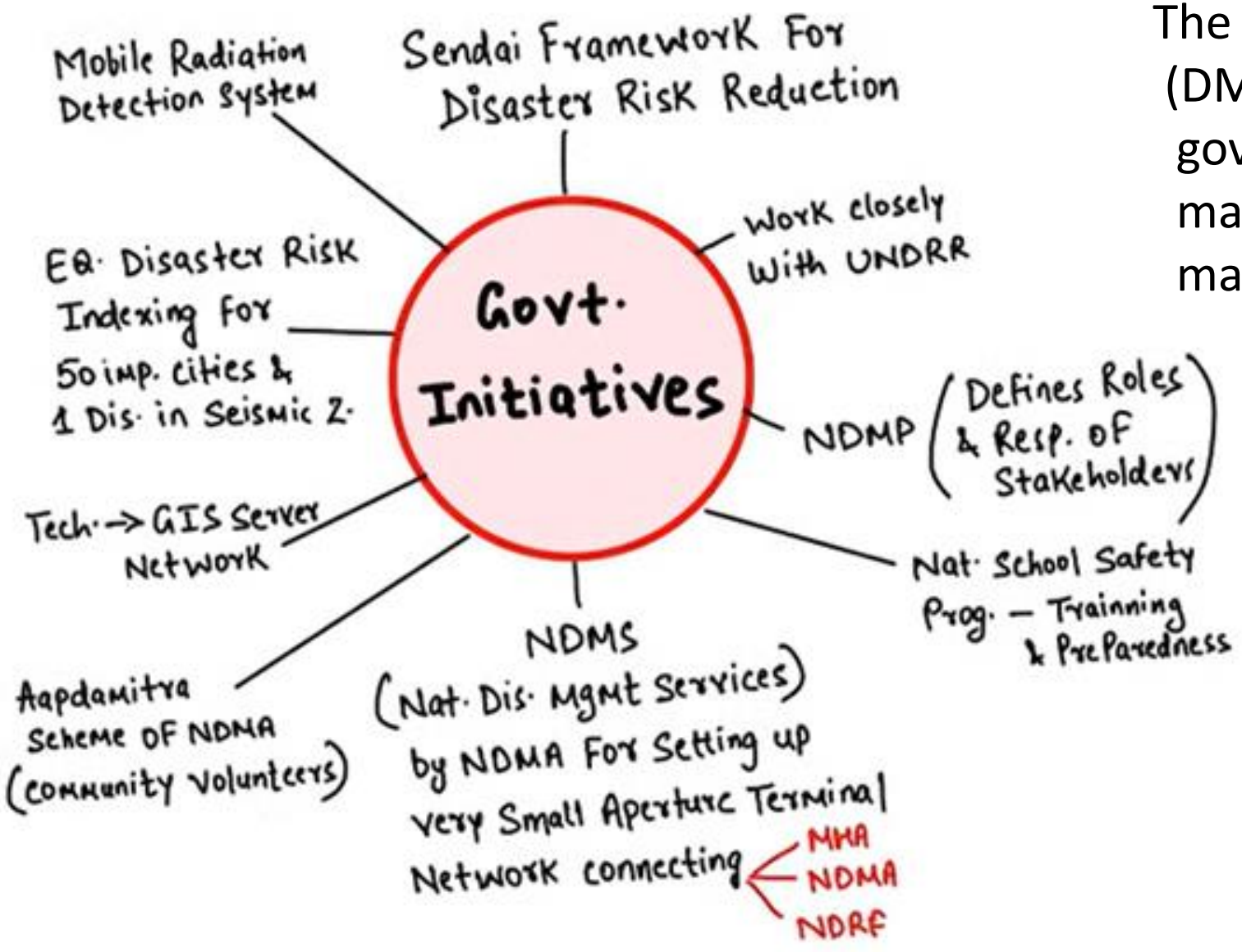
- represents long-term development assistance, which could help people in the affected areas to rebuild their lives and meet their present and future needs.
- It takes into account reduction of future disaster risks. Rehabilitation may not necessarily restore the damaged structures and resources in their previous form or location.

It may include the replacement of temporary arrangements established as part of emergency response or the upgradation of infrastructure and systems from pre-disaster status.

What is the difference between rehabilitation and reconstruction?

It may be considered as a transitional phase between immediate relief and major long-term development. Reconstruction, on the other hand, represents long-term development assistance, which could help people in the affected areas to rebuild their lives and meet their present and future needs.

Initiatives by Govt



- What is National Disaster Management Act 2005?

  The Disaster Management Act of 2005 (DMA 2005) is an act passed by the government of India for the 'efficient management of disasters and other matters connected to it.

Agencies involved in Disaster Management: Legal framwork

- National Disaster Management Authority (NDMA):- The National Disaster Management Authority, or the NDMA, is an apex body for disaster management, headed by the Prime Minister of India. It is responsible for the supervision, direction, and control of the National Disaster Response Force (NDRF).
- National Executive Committee (NEC):- The NEC is composed of high profile ministerial members from the government of India that include the Union Home Secretary as Chairperson, and the Secretaries to the Government of India (GoI)like Ministries/Departments of Agriculture, Atomic Energy, Defence, Drinking Water Supply, Environment and Forests, etc. The NEC prepares the National Plan for Disaster Management as per the National Policy on Disaster Management.
- State Disaster Management Authority (SDMA):- The Chief Minister of the respective state is the head of the SDMA.The State Government has a State Executive Committee (SEC) which assists the State Disaster Management Authority (SDMA) on Disaster Management.
- District Disaster Management Authority (DDMA):- The DDMA is headed by the District Collector, Deputy Commissioner or District Magistrate depending on the situation, with the elected representatives of the local authority as the Co-Chairperson. The DDMA ensures that the guidelines framed by the NDMA and the SDMA are followed by all the departments of the State Government at the District level and the local authorities in the District.
- Local Authorities:- Local authorities would include Panchayati Raj Institutions (PRI), Municipalities, District and Cantonment 11 Institutional and Legal Arrangements Boards, and Town Planning Authorities which control and manage civic services.