

UNIT 52 – UPSC - Disaster Management

Disaster is a catastrophic situation in which normal pattern of life and or ecosystem has been disrupted and extraordinary emergency interventions are required to save and preserve lives and or environment. India is one of the most prone disaster zones in the world due to its geographical characteristics. Also the social conditions that govern the way in which communities live also affect the extent to which people are affected by hazards.



Vulnerability Atlas Of India

- About 60% area is vulnerable to Earthquakes
- 8% - Cyclones
- 12% - Floods
- 68% of land under cultivation is prone to Drought.

Natural hazard causes injury or loss of life, damage to property, social or economic disruption and environmental degradation. For India, the major hazards are Earth quakes, Landslides, Drought, Cyclones, Floods, Forest fires and other Fire accidents. According to World Bank report, India's direct loss due to disaster is around 2% of its GDP. Also according to the United Nations International Strategy for Disaster Reduction (UNISDR) in 2010, India ranked second after China for natural disasters.

The vulnerability atlas prepared by Building Materials and Technology Promotion Centre (BMTPC) shows that there are many areas which are prone to multiple hazards. Rapid increase of population and urbanization along prone areas and other developments have increased the level of exposure to hazards.

Being Prepared - A Vital Part Of Disaster Management

The activities to mitigate effects of disasters and emergency situations, to provide a framework for helping people at risk, to avoid or recover from the impacts of the disaster is called disaster management. It includes steps to be taken prior to, during and after disaster and involves preparedness, mitigation, response and recovery. Disaster preparedness means the steps or activities and precautions taken collectively before a disaster to reduce the impact and to cope with it effectively. Community being the first responder (immediately affected and can give help before others, must be made aware and trained to cope with the disaster.

Manmade disasters are preventable. Natural disasters can only be mitigated. Without that, we may be taken backwards in development and progress. Economic developments must be in accordance with protection of the environment. Environmental degradation is an important factor of disaster. Development must be planned in a judicious manner and in tune with sustaining and protecting the environment. To face disasters, we must be very well aware of its causes and effects to form a disaster resilient society.

October 29 – National Day for Disaster Reduction.

Earth Quakes

Faults are planes that act as source of earth quake. Movement of plates with respect to each other releasing energy causes it. Magnitude and Intensity of earth quakes are determined by Richter scale and modified Mercalli scale. Earth quakes are unpredictable and unpreventable. 95% of the people die due to falling of buildings. So it is most dangerous when occur at night. Earth quakes may cause floods, fires, landslides and huge ocean waves called Tsunamis. Poor people living in the prone areas whose houses are mostly unable to resist the quake are more affected.

Based on the risk, we have divided India into various zones.

Zone 1 – Not affected; Zone 2 – Low risk; Zone 3 – Moderate risk; Zone 4 – High risk; Zone 5 – Very high risk.

Sub-Terranian areas of Himalayas are geologically active and is more prone to earth quakes.

Based on the effects seen, it is also classified in to 12 classes.

Class 1 -3: Felt by few people; Class 4-6: Pendulum clock stops, felt by everyone, objects fall; Class 7-10: Destruction; Class 11-12: Devastation.

Preparing to face the hazard is the major step in disaster management. Train ourselves in basic rescue and first aid functions and also help the survivors quickly, Retrofit the existing buildings, Use appropriate technology in building material and also adhere to norms in new constructions and train ourselves to respond to the situation are some of the steps to prepare for the earth quake.

Cyclones

Indian sub-continent is one of the six major cyclone prone areas in the world. Cyclones occur due to warm ocean temperature, high relative humidity and atmospheric instability. During cyclones, strong winds uproot trees, destroy power and telecommunication, terrestrial rain causes flood, high tidal waves hit the coastal areas.

How to prepare?

1. Knowing the prone areas (usually 50-200 North and South of equator). In India, our east coast is the most prone area.
2. Giving awareness and knowledge.
3. Forest along coasts acts as wind barriers. But deforestation and encroachment of coastal shelter-belt is a threat. By destroying the mangrove forests, we are ourselves increasing the risk.

Indian Meteorological Department (IMD) does forecasting and warning. They track cyclones. It is done by INSAT satellite and cyclone detection radars. The Disaster Warning System (DWS) helps in dissemination of warning at isolated places in local languages. In cyclonic seasons, listen to TV/RADIO updates, Identify safe shelters Keep an emergency kit, Check the perimeter for safety, Store adequate food, Keep a list of emergency numbers, Conduct mock drills.

There is a no wind period in between the cyclone. It is the eye of the cyclone. The winds are on the walls of the eye.

Floods

Preparedness is the key to survive. The major causes are: Blocking of river channel, Excessive rain, Narrowness of river/ change in its course, Insufficient engineering, Sea tides, Tsunamis etc. Most flood prone areas are banks of Ganga and Brahmaputra. Eastern coastal deltaic region also cause flood. Economically and socially backward communities are the most affected and they took long for coming back to normal life. During floods, the availability of drinking water is the major problem faced by people. Overflow of contaminated water from various sources with the useful water in wells, tanks etc. make them not available for drinking and cooking purposes. It should also be made sure during floods that enough food, water and medicines are easily available. People should be immediately transported to shelter places. People doing cattle rearing for livelihood are also worsely affected. So measures are needed to make sure that these animals are also be moved to safer places.

Drought

Drought causes lack of food, fodder, water and employment. Women are more affected and there will be distressed migrations. Lack of nutrition, education and proper health, increased school dropouts and child labour may also be seen. Based on the information given by IMD, we can make planned efforts to conserve resources and to prevent misuse of land and water. Farmers and tribal groups are mostly affected. Less availability of water for drinking, cooking, agriculture etc. cause decrease in production and thereby creates unemployment.

Steps To Mitigate Effects Of Drought

- Rain harvesting
- Increase vegetative cover

- Promote watershed programs
- Adopt drought resilient varieties
- Use alternative crops
- Capacity building of communities
- Encourage crop and seed insurance scheme
- Awareness generation

Setting up of efficient irrigation systems also helps saving water. Conserve natural aquifers.

Man Made Disasters

Use of weapons of mass destruction is a serious threat to the social, economic and political stability. Bhopal gas tragedy in 1984 due to the outbreak of poisonous Methyl Iso cyanate killed many people and so many were living with the harmful side effects. The after effects of radiations were also harmful. In nuclear, chemical and biological warfare, the destructions take a much longer time to get restored and in some cases cannot be gone back to normal.

Radioactivity does not penetrate solid structures even though fire causes damage. So it is better to stay indoors. In chemical exposure, don't be panic; remain indoors. Close all doors and windows. Put wet cloth on face and breathe through it. Lying down may help as these gases are light and tends to rise upwards. Accidental disasters cause much loss.

Disaster Management

Government of India had brought a shift from its relief centric approach to the one with greater emphasis is on preparedness, prevention and mitigation. Without disaster management, sustainable development is not possible. And also disaster management became part of the policy framework as poor and under privileged are more affected.

Disaster management is a multi disciplinary area which includes forecasting, warning, search and rescue, relief, reconstruction and rehabilitation. It is also a multi sectoral task as it involves administrators, scientists, planners, volunteers and communities. CRITICAL NEED IS THE CO-ORDINATION OF ALL THE ACTIVITIES BETWEEN THEM. For developing countries, disaster management is a major concern as it directly influences the economy, agriculture, food and sanitation, water, environment and health. Disasters also have social, economic and psychological dimensions. So appropriate strategies are necessarily been developed.

Managing Disasters In India

According to World Bank report- 'Natural Hazards, Unnatural Disasters', floods and storms are the most widespread while droughts are prevalent. These disaster areas are the home for most hungry in the world. The changing climatic pattern worsens the situation. So we have to recognize the hazards and vulnerabilities in a comprehensive manner and should take effective steps for prevention, mitigation and management.

The Hyogo Framework of Action (HFA) of 2015 by UNISDR to which India is a signatory advocates mainstreaming disaster risk reduction into socio-economic development planning and activities by adopting five priorities for action through a five-fold process.

- A. **Political process:** It includes countries to develop policies, legislative and institutional frameworks and also allocate resources for its prevention.
- B. **Technical process:** It includes science and technology for assessing, monitoring, identifying disasters and develops early warning systems.
- C. **Socio-educational process:** It includes awareness and skill development; also safety and resilience in all levels.
- D. **Development process:** It includes integration of disaster risk in all sectors of development planning and programs.
- E. **Humanitarian process:** It includes factoring disaster risk reduction in disaster response and recovery.

India started to work on these ideas in 1999 by constituting a High Powered Committee (HPC) on Disaster Management under Shri. J.C.Pant (Former Secretary of Agriculture to the Govt. of India), along with experts. After December 26, 2004 Tsunami incident, India decided to enact a law on Disaster Management (DM) to provide a requisite institutional mechanism for drawing up and monitoring the implementation of DM plans.

The Disaster Management Act, 2015 lays down institutional, legal, financial and co-ordination mechanisms at central, state, district and local levels. This setup ensures the paradigm shift from the relief centric approach to the one which greater emphasis is on preparedness, prevention and mitigation. By enacting the law, National Disaster Management Authority was established under the chairmanship of PM. State and District DM authorities are also established. So now the country has a legal backing of DM architecture with clear delineation of rules and responsibility. There is also provision for budget allocation for the disaster risk reduction. It is up to state and central govt. to use it wisely.

The poor are more affected. Unless the disaster risk reduction is not met properly, our efforts to achieve 'inclusive growth' may not become successful. The steps to achieve this are;

- a. Mainstreaming Disaster Risk Reduction (DRR) into development.
- b. Strengthening early warning systems.
- c. Increasing awareness and preparedness.
- d. Strengthening relief and rescue mechanisms.
- e. Better rehabilitation and reconstruction.

Govt. of India administers a number of programs in key sectors like agriculture, rural development, urban development, food security, water, rural roads, health and education, to improve the quality of life of its people. But they lack the intervention of DRR. So the attempt is to introduce DRR as a specific component of these schemes.

1. The Rastriya Krishi Vikas Yojana (RKVY) provides adequate flexibility to include DRR to take care of extreme weather conditions.
2. Pradhan Mantri Gram Sadhak Yojana (PMGSY) provides rural connectivity to habitations.

3. Indira Awas Yojana (IAY) provides house for the poor.
4. Jawaharlal Nehru National Urban Renewal Mission (JNNURM) provides infrastructure to selected great cities. But attention to vulnerability and strategy for disaster management is lacking.
5. Rajiv Gandhi National Drinking Water Mission (RGNDWM) aims to provide safe drinking water to all. In case of disaster, food and water needs the immediate attention. The mission provides emergency tube wells during disaster (care must be taken to protect them from being flooded).
6. National Rural Health Mission (NHRM) provides the required medical attention.

It is also necessary to create a national platform for sharing, using and disseminating the data. Eg. Data on heavy rainfall, data on river flow, satellite imagery etc. Qualified professionals are required in the areas of Disaster Risk Reduction. DRR must be added as a part of curriculum for students. Population is increasing. So much attention is needed to give for planning and implementation of the projects. Co-ordination of the various departments and organizations like IMD, Survey of India (SOI), Geological Survey of India (GSOI), National Remote Sensing Centre (NRSC), Indian Council of Agricultural Research (ICAR), Indian Council of Medical Research (ICMR), Central Water Commission (CWC), Indian National Centre for Ocean Information Services (INCOIS) etc.

With proper planning, preparedness and mitigation Co-ordination of the various departments and organizations are necessary for our people in the near future. Campaigns must also be undertaken for the same purpose.

Challenges In Disaster Management

According to the Global Assessment Report of the UNISDR, India is a highly vulnerable region due to its population and geographical features. These disasters may wipe out the hard earned gains (development) of those areas. The main challenges facing the disaster management are;

1. **Fragile Institutions:** The National Policy on Disaster Management, prepared by the National Disaster Management Authority (NDMA), approved in 2009 was formulated with a vision to build a safe and disaster resilient India. Central, state and district level authorities are established. Also Disaster Response Fund and Disaster Mitigation Fund were set up. But all these are not active and well operated. Good governance and effective administration are the dynamic processes of effective interface with communities at risk. The process must have transparency and accountability. We must explore ways to ensure the efficiency and effectiveness of delivery of services, minimizing inordinate delays, red tape, pressure for excluding real victims and accommodating false claimants. The instrument of good governance like Right to information and legal options like Public interest litigation can be used to ensure justice wherever necessary.
2. **Weak compliance of policies:** The follow up actions expected from nodal agencies in preparing plans and corrective actions to address the critical gaps in the existing policies are not initiated. Community based organizations and NGO's can play an important role in creating a level playing field for victims affected by disasters.

3. **Systemic inefficiencies influencing process:** The random audits of proposals on affected areas and fixing the accountability for financial losses on erring officials is the reason.
4. **Need to adopt innovative systems, techniques and technologies:** Some of them are Geographical Information System (GIS), Global Positioning System (GPS), Global Pocket Radio Service (GPRS), Remote Sensing, and Voice over Internet Protocol (VOIP), Radio over Internet Protocol (ROIP), Scenario Analysis & Modeling, Digital Elevation Models and Bathymetry for tsunami, Early warning systems, Doppler radar etc. Information in the local dialects will be more helpful. A judicious mix of traditional knowledge with technology is required.

Post Disaster Impact Assessment And Funding Mechanism

Hazards are natural but disasters are unnatural. It depends on the resilience of the society towards it. Geo-climatic and socio-economic vulnerabilities and bad development practices makes India prone to disasters. These disasters have a huge impact on our economy. We amounted around \$30 billion for the past 35 years. The trend is increasing year after year.

Soon after a disaster, we make a situational report so that relief and response could be made effective. After that, a detailed assessment report is made based on direct losses with replacement value on current price basis. Direct and Indirect assessments are to be made. Currently, loss of infrastructure is calculated but the effect of revenue loss on economy remains unassessed. It affects the economy. This does not give any alternative to the decision makers for prioritizing long term recovery investment.

A damage and loss assessment report must be advantageously used to determine the post disaster needs including economic recovery planning and reconstruction program design. The major losses are decline in output, lower revenues, and high operational cost of services. Even after so many disasters we don't have an assessment done which can give an understanding of the disaster and its impact on development. The new dimension of disaster loss in an economy is that the loss in economy affects other due to the globalization trend. Companies may suffer from supply chain shags. There will be need to analyze the financial requirement needed for recovery to move along the growth path. Major needs include restoration of infrastructure, income and other services.

Financing the post disaster for immediate and long term recovery is a main problem. Usually central govt. provides the necessary financial aid to states. But these expenses largely affect the budget expectations. So now we have a National Disaster Relief Fund (NDRF), for the immediate temporary recovery. But there is no provision for the long term recovery (no dedicated fund). Our aim must be in preventing the impact of a disaster and not on the ways to increase the funds. Vulnerability of the state must be the main criteria for allocation of funds.

Direct damages induce indirect losses. If long term recovery is unaddressed, the ultimate result will be the huge pressure on economy and development process. So we need to introduce a long term recovery fund, both at national and state levels.

Disaster Mitigation Funding Requires

1. Making qualified assessment reports.
2. Risk zonation
3. Quantified maximum risk is known
4. Work out management modules
5. Planning for mitigation investments

Conclusion

Disaster is a development issues. It needs to be addressed with much importance. It has a sudden and long term impact on economy. So policy shift is needed to ensure the stability of economy. There must be plans for long term recovery. Assessing the available financial tools and innovating new funding mechanisms are required. Funds must be designed and planned on risk assessment and risk exposure assessment. Risk reduction and sustainable development must be seen in an integrated format. Therefore, new funding options are to be developed.

The 73rd and 74th amendments paved the way for constitutional status for the urban local bodies and Panchayat institutions to play a greater role in matters of immediate concern. They can give awareness and ensure participation of the common people in mitigating the effects.

The central relief commissioner (CRC) receives information from IMD and other sources. He is the one responsible for action plans. Contingency action plan must be periodically updated. State relief manuals are published which contains information regarding roles of each officers.

Crisis management group, control room for emergency, funding mechanisms, etc. plays important role in the disaster management. According to the National disaster management act (2015), central, state and district level authorities are formed. The act also provides for Disaster Response fund and Disaster Mitigation Fund at all the three levels. There will be penalty for false claims, obstruction, misappropriation etc. Also in the states, there will be no discrimination on grounds of sex, caste, community, descent or religion in providing compensation and relief.

Community Contingency Plan

It is a serious of assessments and evaluations followed by the development of a plan of action in anticipation of a disaster. It includes:

1. Identification of potential threat
2. Identification of impacts of the disaster
3. Identification of methods of mitigation. For example, shelter belt plantations on coast to break the intensity of a cyclone.
4. Anticipating and developing optimum response threats
5. Identifying existing resources; to provide shelter, food, water, medicine, transportation, communication etc.
6. Conducting periodic 'mock drills'; to assess and improve the effectiveness of disaster preparedness plan.

