STUDY IQ PUBLICATIONS

1st Edition

DISASTER MANAGEMENT

FOR UPSC CSE & STATE PCS EXAMS

From the Editor's Desk

Dear Aspirants,

We are incredibly grateful for the wonderful response we received for our Polity, History, Economy, and Geography books. Inspired by this positive feedback, we are thrilled to announce the release of the first edition of our book titled "Disaster Management in India".

The General Studies Paper III of the UPSC Mains examination demands a comprehensive understanding of disaster management, covering areas such as disaster preparedness, mitigation, response, recovery, and policy frameworks. However, there is a dearth of consolidated and updated material and students have to rely on multiple sources making their preparation more difficult. This book serves as a one-stop solution, offering a structured approach to the subject.

Special Features of This Book

This book aims to make your preparation focused and relevant based on UPSC's current trend and pattern, it is revision-friendly, and up-to-date.

- The book delves into the various types of disasters, their causes, impacts, and management strategies.
- Real-life case studies from national and international contexts have been included to provide aspirants with practical insights into disaster management.
- We have taken great care to ensure that the content is written in a simple and lucid manner to ensure that students can easily learn and recall the concepts to their advantage.
- Wherever necessary, we've incorporated diagrams and infographics on various disaster management topics to make learning interactive and easy.
- We have incorporated the relevant previous year's questions so that the students can test their knowledge and understand the pattern of the examination.

With all sincerity and humility, the Study IQ team wishes you the best in your preparation, and we hope this book will help you in your journey.

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SAMPLE PAGES

As per the **Disaster Management Act 2005**, a disaster is defined as "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made cause, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area"

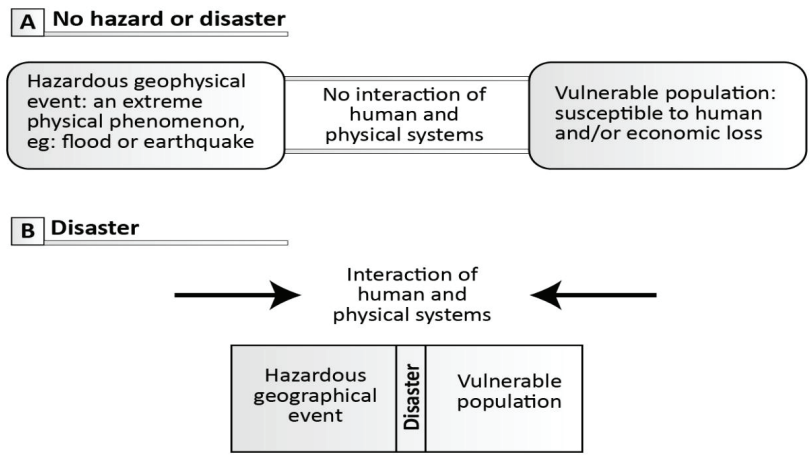
Factors making Each Disaster Unique

- **Influence of local socio-economic factors:** These include factors such as poverty, high population density, or inadequate societal preparedness. For example, the impact of high-intensity earthquakes in Japan is relatively lower compared to medium-intensity earthquakes in India.
- **Social response it generates**: The response from society to each disaster varies based on the community's capacity, cultural practices, and level of community participation.
- **Manner in which social groups negotiate:** The vulnerability to disasters is reduced in societies that promote equity and inclusivity. However, when marginalized sections lack representation or a voice in the negotiation process, the outcomes of disasters can be further exacerbated.
- **Scale of damage:** The extent of damage caused by disasters varies from one location to another and is influenced by the specific hazard and the capacity of the affected area to handle it.

How disasters originate from hazards?

A hazard, in its essence, becomes a disaster when its destructive potential is actualized, leading to harm to human lives and property. A disaster occurs when a hazard, such as an earthquake, flood, or a storm coincides with a vulnerable situation within a community, city, or any human habitation.

For example, an earthquake alone does not constitute a disaster until it affects an area with vulnerable infrastructure, inadequate preparedness, and high population density. A seismic event in a remote, uninhabited region would remain only a hazard due to the absence of harm to human life and property. However, if the same earthquake strikes a densely populated city with poorly building infrastructure and inadequate emergency response mechanisms, it would result in a disaster.



How Disaster arises from Hazards

Example of Measures in Each Disaster Risk Management Phase

Disaster Phase	Earthquake	Flood	Storm (cyclone, typhoon, hurricane)	Landslide
Prevention/ mitigation	• Seismic design • Retrofitting of vulnerable buildings • Installation of seismic isolation/ seismic response control systems	• Construction of Dike • Building of dam • Forestation • Construction of flood control basins/ reservoirs	• Construction of tide wall • Establishment of forests to protect against storms	• Construction of erosion control dams • Construction of retaining walls
Preparedness	Construction and operation of earthquake observation systems	Construction and operation of meteorological observation systems	Construction of shelter Construction and operation of meteorological observation systems	Construction and operation of meteorological observation system
	- preparation of hazard maps - food & material stockpiling - emergency drills - construction of early warning systems - preparation of emergency kits			
Response	- rescue efforts - first aid treatment - fire fighting - monitoring of secondary disaster - construction of temporary housing - establishment of tent villages			
Rehabilitation/ Reconstruction	- disaster resistant reconstruction - appropriate land use planning - livelihood support - industrial rehabilitation planning			

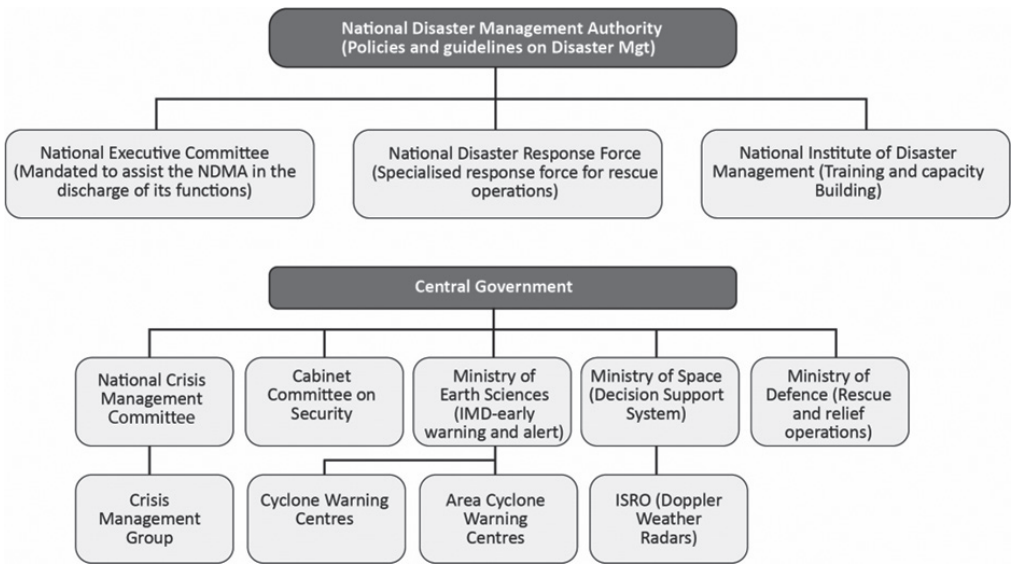
Importance of Communication in Disaster Management Cycle

Communication before, during, and after the disaster, is one of the most important elements of disaster management.

- **Connecting Affected People and First Responders:** Effective communication helps in connecting affected people, families, and communities with first responders, support systems, and other family members.
- **Increased Resilience:** Reliable and accessible communication and information systems are key to a community's resilience.
- **Pre-Disaster Information Dissemination:** Before disasters strike, telecommunications can be used as a conduit for disseminating information about the disaster.

- **Flood Management** – As the cyclonic storms lead to heavy rainfall that further leads to flooding in various areas; importance should be given to the flood management. The drainage systems should be well-designed to mitigate flooding.
- **Vegetation Cover Improvement** – To increase the water infiltration capacity, improving vegetation cover is of high importance.
- Mangrove Plantation – The ecologically-efficient mangroves should be planted more.
- **Saline Embankment** – Along the coast, saline embankments help protect habitation, agricultural crops, and other important installations.
- **Levee**s – They act as an obstruction to the wind forces and also provide a shelter during floods.
- **Artificial Hill**s – These act as the refuge during flooding, and should be taken up in the right areas.
- **Public Awareness:** The governments at all levels should initiate programs bringing awareness about the natural calamities and making provisions for higher local participation in the mitigation process.

Indian Initiatives for Cyclone Mitigation



Flood Response Mechanism at National Level

- **National Cyclone Risk Mitigation Project (NCRMP):** The project is implemented by the National Disaster Management Authority (NDMA) along with coordination from the respective state governments and the National Institute for Disaster Management (NIDM). It aims to **reduce vulnerability of coastal communities** to cyclone and other hydro meteorological hazards through:
  - Improved early warning dissemination systems
  - Enhanced capacity of local communities to respond to disasters
  - Improved access to emergency shelter, evacuation, and protection against wind storms, flooding and storm surge in high areas
  - Strengthening DRM capacity at central, state and local levels in order to enable mainstreaming of risk mitigation measures into the overall development agenda

Previous Year Questions

1. Explain the mechanism and occurrence of cloudburst in the context of the Indian subcontinent. Discuss two recent examples. **(2022)**
2. Discuss about the vulnerability of India to earthquake related hazards. Give examples including the salient features of major disasters caused by earthquakes in different parts of India during the last three decades. **(2021)**
3. Describe the various causes and the effects of landslides. Mention the important components of the National Landslide Risk Management Strategy. **(2021)**
4. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. **(2020)**
5. Disaster preparedness is the first step in any disaster management process. Explain how hazard zonation mapping will help in disaster mitigation in the case of landslides. **(2019)**
6. Vulnerability is an essential element for defining disaster impacts and its threat to people. How and in what ways can vulnerability to disasters be characterized? Discuss different types of vulnerability with reference to disasters. **(2019)**
7. Describe various measures taken in India for Disaster Risk Reduction (DRR) before and after signing 'Sendai Framework for DRR (2015-2030)'. How is this framework different from 'Hyogo Framework for Action, 2005? **(2018)**
8. On December 2004, tsunami brought havoc on 14 countries including India. Discuss the factors responsible for occurrence of Tsunami and its effects on life and economy. In the light of guidelines of NDMA (2010) describe the mechanisms for preparedness to reduce the risk during such events. **(2017)**
9. The frequency of urban floods due to high intensity rainfall is increasing over the years. Discussing the reasons for urban floods. highlight the mechanisms for preparedness to reduce the risk during such events. **(2016)**
10. With reference to National Disaster Management Authority (NDMA) guidelines, discuss the measures to be adopted to mitigate the impact of the recent incidents of cloudbursts in many places of Uttarakhand. **(2016)**
11. The frequency of earthquakes appears to have increased in the Indian subcontinent. However, India's preparedness for mitigating their impact has significant gaps. Discuss various aspects. **(2015)**
12. Drought has been recognized as a disaster in view of its party expense, temporal duration, slow onset and lasting effect on various vulnerable sections. With a focus on the September 2010 guidelines from the National disaster management authority, discuss the mechanism for preparedness to deal with the El Nino and La Nina fallouts in India. **(2014)**
13. How important are vulnerability and risk assessment for pre-disaster management? As an administrator, what are key areas that you would focus in a disaster management **(2013)**