

Paper name: Environmental Geography and Disaster Management

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Topic: Overview of Natural Disasters in India

India's Key Vulnerabilities as articulated in the Tenth Plan, (2002-07) are as follows:

- Coastal States, particularly on the East Coast and Gujarat are vulnerable to cyclones.
- 4 crore hectare landmass is vulnerable to floods
- 68 per cent of net sown area is vulnerable to droughts
- 55 per cent of total area is in seismic zones III- V, hence vulnerable to earthquakes
- Sub- Himalayan sector and Western Ghats are vulnerable to landslides.

The succeeding text analyses in brief vulnerabilities to specific natural hazards in India (Menon and Kalmadi).

A) Floods

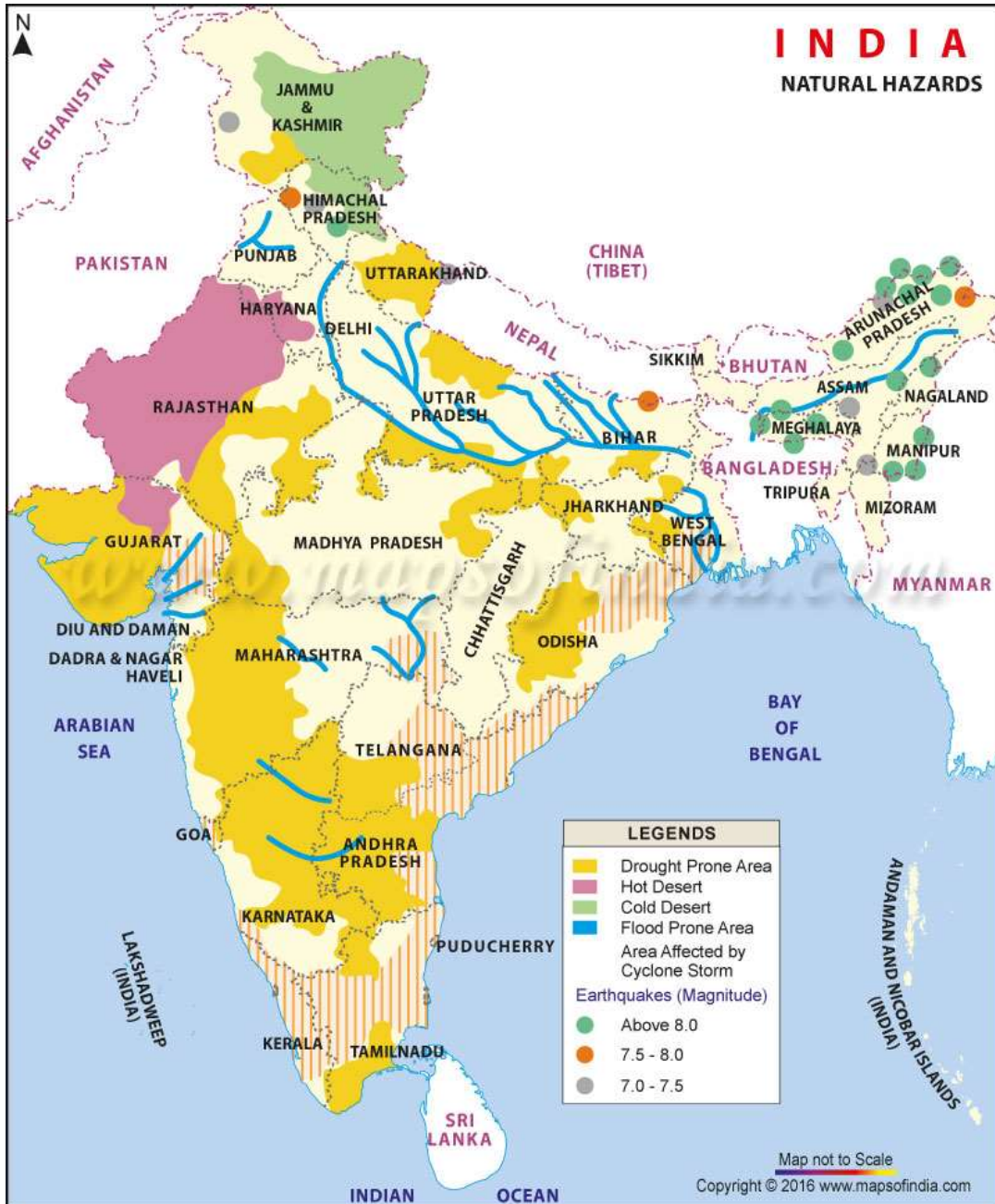
Seventy five per cent of rainfall is concentrated over four months of monsoon (June - September) as a result of which almost all the rivers carry heavy discharge during this period. The problems of sediment deposition, drainage congestion and synchronization of river floods compound the flood hazard with sea tides in the coastal plains. Brahmaputra and the Gangetic Basin are the most flood-prone areas. The other flood-prone areas are the northwest region of the west flowing rivers like Narmada and Tapi, Central India and the Deccan region with major east flowing rivers like Mahanadi, Krishna and Cauvery. While the area liable to floods is 40 million hectares, the average area affected by floods annually is about 8 million hectares.

B) Droughts

India has a largely monsoon dependent irrigation network. An erratic pattern, both low (less than 750 mm) and medium (750 - 1125 mm) makes 68 per cent of the total area vulnerable to periodic droughts. A 100-year analysis reveals that the frequency of occurrence of below normal rainfall in arid, semi-arid, and sub-humid areas is 54-57 per cent. Severe and rare droughts occur in arid and semi-arid zones every 8-9 years. The semi-arid and arid climatic zones are subject to

about 50 per cent of severe droughts that cover generally 76 percent of the area. In this region, rare droughts of most severe intensity occurred on an average once in 32 years and almost every third year was a drought year.

The following map gives the multi- hazard vulnerability of the Indian landmass.



Source: <https://www.mapsofindia.com/maps/india/natural-hazard.htm>

C) Cyclones

India has a long coastline. There are two distinct cyclone seasons: pre-monsoon (May-June) and post-monsoon (October-November). The impact of these cyclones is confined to the coastal districts, the maximum destruction being within 100 Km. from the centre of the cyclones and on either side of the storm track. Most casualties are caused by coastal inundation by tidal waves, storm surges and torrential rains.

D) Earthquakes

The Himalayan mountain ranges are considered to be the world's youngest fold mountain ranges. The subterranean Himalayas are geologically very active. In a span of 53 years, four earthquakes exceeding magnitude 8 on the Richter scale have occurred in this region. The peninsular part of India comprises stable continental crust. Although these regions were considered seismically least active, an earthquake that occurred in Latur in Maharashtra on September 30, 1993 of magnitude 6.4 on the Richter scale caused substantial loss of life and damage to infrastructure.

E) Landslides and Avalanches

The Himalayan, the northeast hill ranges and the Western Ghats experience considerable landslide activity of varying intensities. River erosions, seismic movements and heavy rainfalls cause considerable activity. Heavy monsoon rainfall often in association with cyclonic disturbances results in considerable landslide activity on the slopes of the Western Ghats.

Avalanches constitute a major hazard in the higher reaches of the Himalayas. Parts of the Himalayas receive snowfall round the year and adventure sports are in abundance in such locations. Severe snow avalanches occur in Jammu & Kashmir, Himachal Pradesh and the Hills of Western Uttar Pradesh. The population of about 20,000 in Nubra and Shyok valleys and mountaineers and trekkers face avalanche hazard on account of steep fall.
