



India, with its vast population and unique geo-physical characteristics, is one of the world's most "Disaster-Prone" countries. Natural hazards such as cyclones, earthquakes, drought, floods or landslides occur in different parts of India in varying intensities. The East and the South-Eastern parts of India are frequently affected by cyclones. In the interior of the plateau in the Himalayas, earthquakes are common and in the Ganga-Brahmaputra plain, floods are more common. Rajasthan and Rayalaseema often experience severe droughts, as do other areas in South India. This means that we are all 'vulnerable' in different degrees to these hazards. People living in an area may be vulnerable to more than one hazard. For instance, people residing in coastal area may face floods and cyclones frequently, while being located in an earthquake zone. Such an area is called a Multi Hazard Zone.

The damage caused due to a hazard increases when people are not adequately prepared to face the "disaster". For instance, a flood is a hazard when it occurs, and if people are not prepared to face it, it may wash away persons, homes, cattle and valuables. Then, the flood becomes a disaster.

Types of Disasters

Disasters can be categorised into different types based on the speed and origin/cause.

1. Based on speed, a disaster can be termed as slow or rapid.

i) **Slow onset disaster:** A disaster that prevails for many days, months or even years like drought, environmental degradation, pest infection, famine are some examples of a slow onset disaster.

ii) **Rapid onset disaster:** A disaster that is triggered by an instance causes shock. The impact of this disaster may be short lived or long-term. Earthquake, cyclone, flash floods, volcanic eruptions are some examples of rapid onset disasters.

2. Based on the cause, disaster can be natural or human induced.

i) **Natural disaster:** A natural disaster is an event that is caused by nature and leads to human, material, economic and environmental losses. The types of natural disasters:

- a. Earthquakes
- b. Cyclones
- c. Floods
- d. Droughts
- e. Tsunamis
- f. Land slides
- g. Volcanoes

In Class VII, you studied about cyclones and floods and their mitigation. In the Class VIII Science text book, you will know about the earthquakes and their impact.

ii) **Human induced disasters:** A serious disruption to normal life triggered

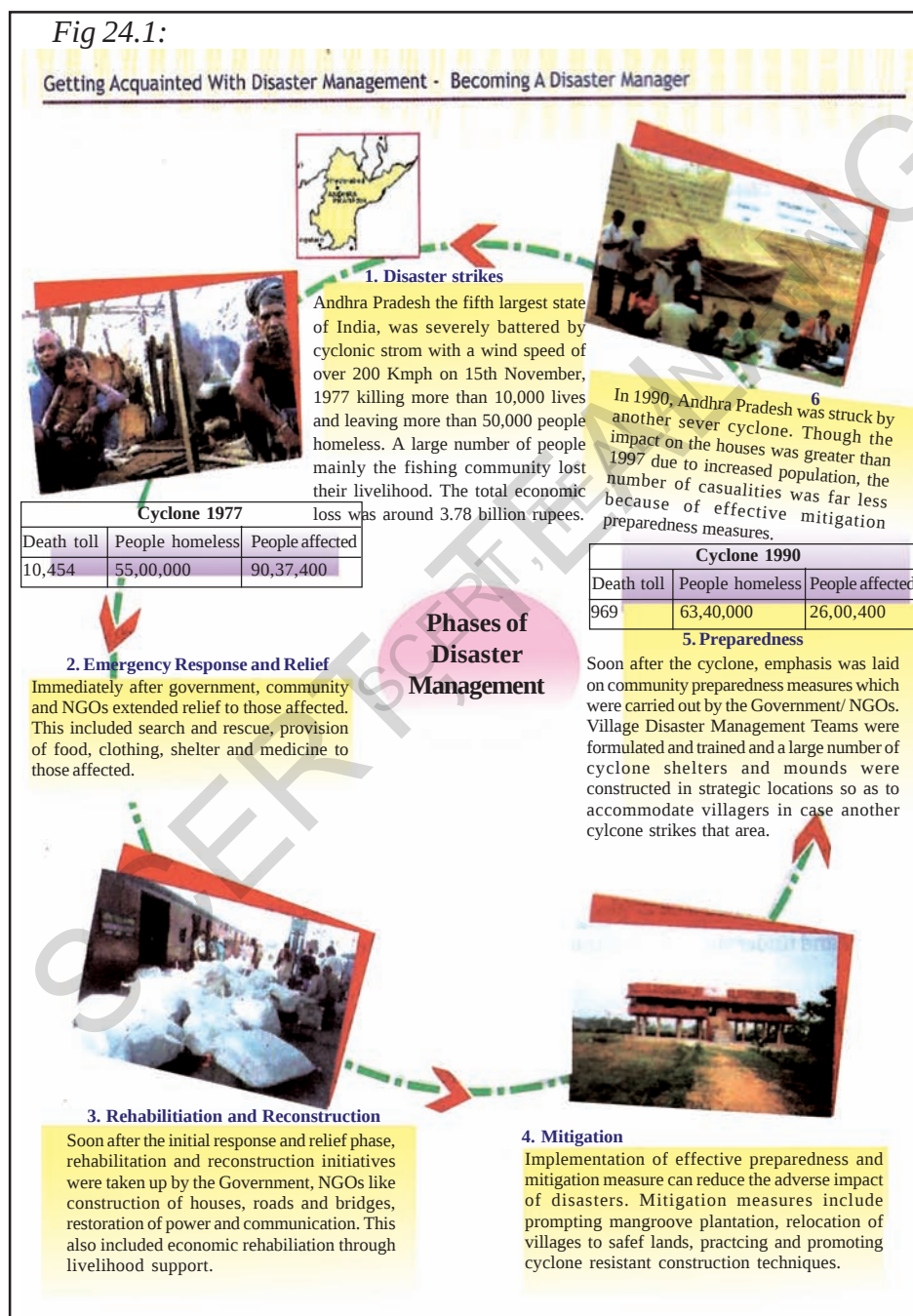
by human-induced hazard causing human, material, economic and environmental losses, which exceed the ability of those affected to cope. Some examples are the 1984 Bhopal Gas tragedy, the 1997 Uphaar Cinema fire in Delhi, Rajdhani Express train derailment in 2002, Kumbakonam school fire tragedy in 2003, Jaipur serial blasts in 2008 etc.

What is disaster management?

Disaster management covers the range of activities designed to maintain control over disasters/ emergency situations and to provide a framework for helping people to avoid, reduce the effects of, or recover from the impact of a disaster. These activities may be related to preparedness,

mitigation, emergency response, relief and recovery (reconstruction and rehabilitation) and may be conducted before, during or after a disaster.

The Teachers and students are an integral part of the community and have an important role to play in being prepared for disasters. Students are effective carrier of messages to educate their parents and their community. Teachers have an important responsibility to guide the students in this regard.



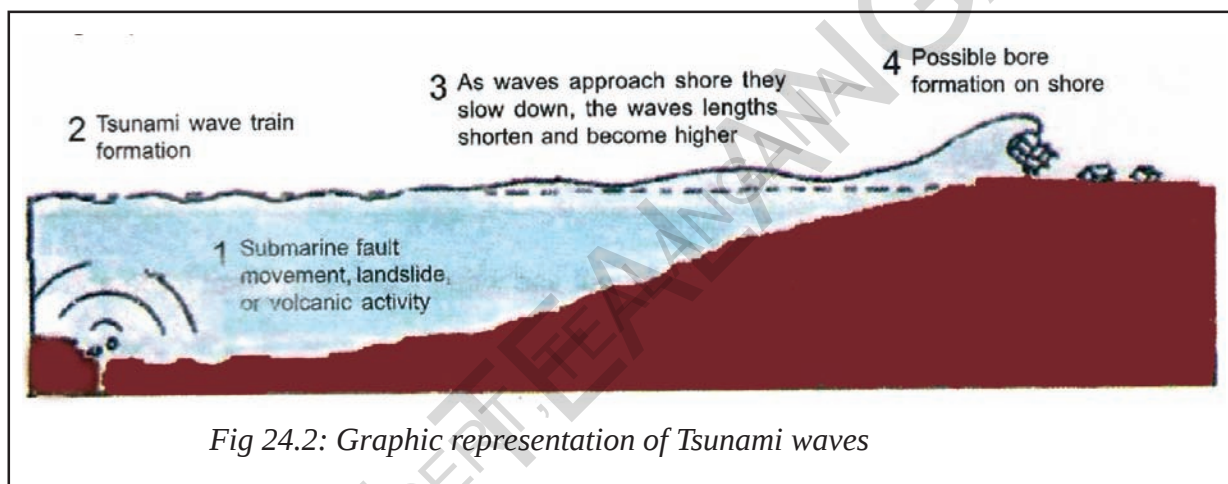
TSUNAMI

- Do you know what tsunamis are? How they are formed? How they can be predicted and how you can save yourself if you are residing in any of the coastal districts.

The term “Tsunami” has been coined from Japanese words ‘tsu’ meaning harbour and ‘name’ meaning waves. Tsunamis are huge waves generated by earthquakes, volcanic eruptions, or under water

landslides which devastate the coastal communities. Tsunamis caused by nearby earthquakes may reach the coast within minutes. When the waves enter shallow water, they may rise to several feet or, in rare cases, tens of feet, striking the coast with a devastating force. The tsunami danger period can continue for many hours after a major earthquake.

- Collect more information and pictures on tsunami. Discuss it and display the pictures on the notice board.



Did you know?

- A. A tsunami consists of a series of waves and the first wave may not be the largest. The danger from subsequent tsunami waves can last for several hours after the arrival of the first wave.
- B. Tsunami can move at 50 km per hour on coastal plain, faster than a person can run.
- C. Tsunamis can occur at any time of the day or night.

What to do BEFORE Tsunami?

- ▶ Find out if your home, school, work place, or other frequently visited locations are in tsunami hazard prone areas.
- ▶ Plan evacuation routes from your home, school, work place or any other place you could be in where tsunamis present a risk.
- ▶ Practice your evacuation routes.
- ▶ Have disaster supplies ready at hand.
- ▶ Discuss tsunamis with your family.

Detecting Tsunamis

With the use of satellite technology, it is possible to provide nearly immediate warning of potentially tsunamigenic earthquakes. Warning time depends upon the distance of the epicenter from the coast line. The warning includes predicting the time at which the selected coastal communities where the tsunami could travel and reach in a few hours.

Coastal tidal gauges can stop tsunamis close to the shore, but they are useless in deep oceans. Tsunami detectors, linked to land by submarine cables, are deployed 50 odd kms out at sea. 'Tsunameters' transmit warnings of buoys on the sea surface, which relay it to satellites.

What to do DURING a Tsunami?

- ▶ If you are at home and hear a tsunami warning, you should make sure your entire family is aware of the warning. Your family should evacuate the house if you live in a tsunami prone area. Evacuate to a safe elevated area and move in an orderly, calm manner to the evacuation site.
- ▶ Take your Disaster Supplies Kit. Having supplies will make you more comfortable during the evacuation.
- ▶ If you evacuate, take your animals with you.
- ▶ If you are at the beach or near the ocean and you feel the earth shake,

move immediately to higher ground, do not wait for tsunami warning. Stay away from rivers and streams that lead to the oceans.

- ▶ High multi-storey, reinforced concrete buildings (like hotels etc.) are located in many low-lying coastal areas. The upper floors of these buildings can provide a safe place.
- ▶ Offshore reefs and shallow areas may help break the forces of tsunami waves, but large and dangerous waves can still be a threat to coastal residents in these areas. Staying away from low-lying coastal areas is the safest advice when there is a tsunami warning.
- ▶ Update yourself on emergency information or warning announced on radio and television from time to time.

What to do AFTER Tsunami?

- ▶ Continue using a radio or television for updated emergency information. The tsunami may have damaged roads, bridges, or other places that may be unsafe.
- ▶ Check yourself for injuries and get first aid if necessary before helping injured or trapped persons. If someone needs to be rescued, call professionals with the right equipment to help. Many people might get killed or injured while trying to rescue others in flooded areas.

- ▶ Help people who require special assistance - infants, elderly people, those without transportation, large families who may need additional help in an emergency situation, people with disabilities.
- ▶ Avoid disaster areas. Your presence might hamper rescue and other emergency operations and put you at further risk from the residual effects of floods, such as contaminated water, crumbled roads, landslides, mudflows and other hazards.
- ▶ Use the telephone only for emergency calls. Telephone lines are frequently overwhelmed in disaster situations. They need to be cleared for emergency calls to get through.
- ▶ Stay out of a building if water remains around it. Tsunami water, like floodwater, can undermine foundations, causing buildings to sink, floors to crack, or walls to collapse.
- ▶ When re-entering building or homes, be very careful! Tsunami-driven floodwater may have damaged buildings where you least expect it. Carefully watch every step you take.
- ▶ Wear long pants, a long-sleeved shirt and sturdy shoes. The most common injury following a disaster is cut feet.
- ▶ Use battery-powered lanterns or flashlights when examining buildings. Battery powered lighting is the safest and easiest to use and it does not present a fire hazard for the user, occupants or building. Do not use candles.
- ▶ Examine walls, floors, doors, staircases and windows to make sure that the building is not in danger of collapsing.
- ▶ Inspect foundations for cracks or other damages. Cracks and damage, to a foundation can render a building uninhabitable.



Fig 24.3: Tsunami battered boats

▶ Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Flammable or explosive materials may have come from upstream. Fire is the most frequent hazard following floods.

▶ Watch out for wild animals, especially poisonous snakes that may have come into

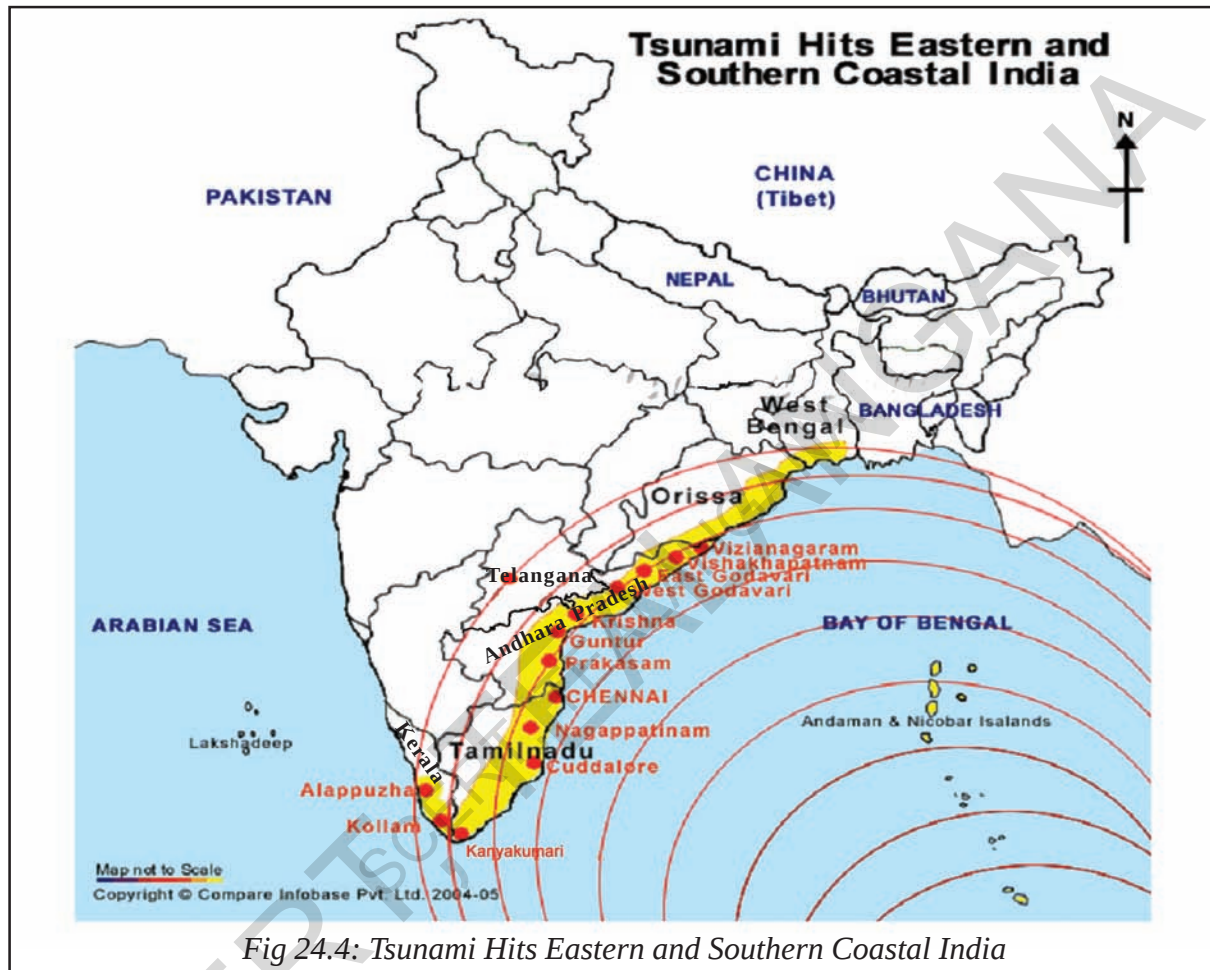
buildings with the water. Use a stick to poke through debris. Tsunami floodwater flushes snakes and animals out of their homes.

► Watch for loose plaster, drywall, and

ceilings that could fall.

► Open the windows and doors to help dry the building.

► Shovel out mud before it solidifies.



DROUGHT

Drought is basically a disaster situation caused by lack of rainfall. The deficiency in rainfall is defined as meteorological drought. While in a year, there may be normal rainfall, there might be a wide gap separating two consecutive spells of rain, resulting in crop failure which is termed as agricultural drought. Thus, the quantum as well as the distribution of rainfall are important.

Excess or deficient rainfall is determined by the percent variation from the average rainfall (of 70-100 years) as follows:

Excess	+20 percent or more of the average rainfall
Normal	+19 percent to -19 percent of the average rainfall
Deficient	-20 percent to -59 percent of the average rainfall

Scanty -60 percent or less of the average rainfall

Certain regions due to their geographical location are more likely to receive less rainfall. These are called 'drought prone areas'. For example, in Rayalaseema region of Andhra Pradesh and some areas in Telengana state, the probability of drought occurrence is twice in every five years.

Impact of Drought

There is a sequential impact of drought:

- ▶ Scarcity of drinking water; fall in water-table.
- ▶ Decline in crop acreage.
- ▶ Fall in employment in the agricultural sector due to slowing down of agricultural activity.
- ▶ Fall in purchasing power of those engaged in agriculture.
- ▶ Scarcity of food grains.
- ▶ Scarcity of fodder.
- ▶ Loss of cattle life.
- ▶ Malnutrition, especially among children.
- ▶ Ill health and spread of diseases like diarrhoea, dysentery or cholera and ophthalmia caused by starvation.
- ▶ Distress sale and mortgage of land, jewellery and personal property.
- ▶ Migration of people in search of employment.

How to cope with Drought?

Unlike sudden disasters, drought being a slow onset disaster, gives us ample time

for preparedness, response and mitigation. Monitoring and early warning enables timely action by decision makers at all levels. In areas that are normally affected by drought, Government, Non-Governmental Organizations (NGOs), local officials and other key players have taken the initiative to bring in awareness on water conservation strategies etc.

Rainwater harvesting

In urban areas, all the rainwater should be harvested as it falls over roofs of houses. The easiest thing is to divert it into soak pits for recharging of groundwater. The rainwater may also be stored in sumps/ tanks which are built for this purpose. In certain places, with simple filtering, rain water can be the best source of drinking water.

Watershed Development

The government is implementing Integrated Watershed Management Programme (IWMP) in drought prone areas to reduce the impact of droughts. The main objective is to strengthen the community and enable them to plan for proper utilisation of natural resources. Land use based on its capability helps in optimum use of land and water and can prevent misuse. The main activities include harvesting rain water in the fields, afforestation, promotion of crops/ trees that require less water and alternative livelihoods.

Are you a water saver or spender?

Find out whether you are a water saver or spender with the help of the following questionnaire. Check how much water you can save and whether you are a water hero or villain!

Activity	User 1 (Litres)	User 2 (Litres)	Your Use (Litres)
Brushing Teeth	Running tap water (19)	Wet brush, Turn water off, rinse (2)	
Cleaning vegetables	Running tap water (11)	Fill pan to clean vegetables (2)	
Dish washing	Running tap water (114)	Wash & rinse in dishpan or sink (19)	
Flushing	Depends on tank size (20)	Displacement bottles in the tank (15)	
Shaving	Running tap water (18)	Shaving mug (0.5)	
Showering	Water running (95)	Wet down, soap down (15)	
Washing car/ bike/ cycle	Running hose (400/50/20)	Bucket (40/20/10)	
Washing clothes (with machine)	Full cycle, top water level (227)	Short cycle, minimal water level (102)	
Washing Floor	Running hose for 5 min (200)	Buckets (40)	
Washing Hands and face	Running tap water (8)	Plug and fill basin (4)	
Total	-	-	

Total the water you use and check your ranking:

- Eco Hero: <200 lt.,
- Water saver: 201 – 400 lt.,
- Water spender: 400 – 600 lt.,
- Water villain: >601 lt.

Keywords

1. Multi Hazard Zone
2. Human Induced Hazard
3. Famine
4. Pest Infection
5. Environmental Degradation
6. Drought

Improve your learning

1. Describe any disaster that occurred in your area or that you watched on T.V.? What measures could have been taken to reduce its impact.
2. How could the disaster be prevented/managed?
3. Discuss experiences of your elders with regard to the disasters and the management and write a note.
4. Suggest the precautions to be taken by the people to face the disasters.
5. Mention the effects of drought.
6. Mention the occasions where the water is wasted and suggest the preventive measures.
7. Make an album with the pictures of natural disasters.



WORLD HEALTH ORGANIZATION
BMI CHART for age 14 and 15 – BOYS AND GIRLS

Years	Months	Malnourished (Underweight) Less than		Normal		Malnourished (Obesity) More than	
		GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS
14	0	15.4	15.5	15.4 - 27.3	15.5 - 25.9	27.3	25.9
14	1	15.5	15.5	15.5 - 27.4	15.5 - 26.0	27.4	26.0
14	2	15.5	15.6	15.5 - 27.5	15.6 - 26.1	27.5	26.1
14	3	15.6	15.6	15.6 - 27.6	15.6 - 26.2	27.6	26.2
14	4	15.6	15.7	15.6 - 27.7	15.7 - 26.3	26.3	26.3
14	5	15.6	15.7	15.6 - 27.7	15.7 - 26.4	27.7	26.4
14	6	15.7	15.7	15.7 - 27.8	15.7 - 26.5	27.8	26.5
14	7	15.7	15.8	15.7 - 27.9	15.8 - 26.5	27.9	26.5
14	8	15.7	15.8	15.7 - 28.0	15.8 - 26.6	28.0	26.6
14	9	15.8	15.9	15.8 - 28.0	15.9 - 26.7	28.0	26.7
14	10	15.8	15.9	15.8 - 28.1	15.9 - 26.8	28.1	26.8
14	11	15.8	16.0	15.8 - 28.2	16.0 - 26.9	28.2	26.9
15	0	15.9	16.0	15.9 - 28.2	16.0 - 27.0	28.2	27.0
15	1	15.9	16.1	15.9 - 28.3	16.1 - 27.1	28.3	27.1
15	2	15.9	16.1	15.9 - 28.4	16.1 - 27.1	28.4	27.1
15	3	16.0	16.1	16.0 - 28.4	16.1 - 27.2	28.4	27.2
15	4	16.0	16.2	16.0 - 28.5	16.2 - 27.3	28.5	27.3
15	5	16.0	16.2	16.0 - 28.6	16.2 - 27.4	28.5	27.4
15	6	16.0	16.3	16.0 - 28.6	16.3 - 27.4	28.6	27.4
15	7	16.1	16.3	16.1 - 28.7	16.3 - 27.5	28.6	27.5
15	8	16.1	16.3	16.1 - 28.7	16.3 - 27.6	28.7	27.6
15	9	16.1	16.4	16.1 - 28.7	16.4 - 27.7	28.7	27.7
15	10	16.1	16.4	16.1 - 28.8	16.4 - 27.7	28.8	27.7
15	11	16.2	16.5	16.2 - 28.8	16.5 - 27.8	28.8	27.8