Disaster Management · GS - III

On December 2004, tsumani 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.

EXAM YEAR	PAPER	SUBJECT
2017	GS - III	Disaster Management

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Undersea earthquakes; tectonic plate movement; coastal inundation; human and economic losses; tsunami warning systems; evacuation planning; NDMA guidelines

Model Answer

Introduction

The December 2004 Indian Ocean tsunami was triggered by a powerful undersea earthquake near Sumatra and caused extensive loss of life and property across several countries, including India. It exposed the need for stronger coastal disaster preparedness.

Factors Responsible for Tsunamis

- **Undersea earthquakes:** Sudden vertical displacement of the seabed can move large volumes of water.
- **Tectonic activity:** Subduction zones are major sources of tsunami-generating earthquakes.
- **Other triggers:** Underwater landslides and volcanic eruptions can also generate tsunamis.

- **Rapid propagation:** Tsunami waves can travel across ocean basins and become highly destructive in shallow coastal waters.

Effects on Life and Economy

- **Human losses:** Deaths, injuries, missing persons and displacement of coastal communities.
- **Livelihood disruption:** Fishing, tourism and coastal agriculture suffered severe damage.
- **Infrastructure damage:** Houses, roads, ports, power systems and communication networks were affected.
- **Environmental harm:** Saltwater intrusion damaged farmland and freshwater sources; coastal ecosystems were disturbed.
- **Economic costs:** Reconstruction and rehabilitation placed heavy burdens on governments and households.

Preparedness Measures in Line with NDMA Guidelines

- **Early warning:** Strengthen seismic monitoring, sea-level observation and rapid warning dissemination.
- **Risk mapping:** Identify vulnerable coastlines, evacuation routes and safe shelters.
- **Community awareness:** Conduct public education, school programmes and regular evacuation drills.
- **Infrastructure planning:** Enforce suitable coastal land-use planning and resilient construction standards.
- **Emergency response:** Coordinate local authorities, police, health services and disaster-response teams.
- **Post-disaster recovery:** Prepare relief, medical care, rehabilitation and livelihood restoration plans.

Conclusion

Tsunami risk cannot be eliminated, but early warning, public awareness, resilient infrastructure and coordinated response can greatly reduce casualties and economic damage.

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