Disaster Management · GS - III

Discuss the importance of a multi-hazard approach in managing extreme coastal storms and their cascading impacts on critical infrastructure.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 27/11/2026	GS - III	Disaster Management

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Coastal vulnerability, storm surge, compound flooding, power infrastructure, early warning systems, resilient infrastructure, disaster preparedness, climate adaptation

Model Answer

Extreme coastal storms can generate multiple interconnected hazards, including heavy rainfall, strong winds, storm surges and coastal inundation. The Thanksgiving-week storm on the US East Coast, which caused widespread flooding and power outages, illustrates how a single weather event can disrupt several essential systems simultaneously.

Why a multi-hazard approach is necessary

1. **Interacting hazards:** Coastal flooding may coincide with river flooding and intense rainfall, increasing inundation beyond the impact of individual hazards.
2. **Infrastructure interdependence:** Damage to electricity networks can interrupt telecommunications, transport, water supply and healthcare services.
3. **Cascading economic effects:** Power outages and transport disruptions affect businesses, supply chains, emergency response and household livelihoods.
4. **Unequal vulnerability:** Low-lying settlements, elderly populations and economically weaker communities often face greater difficulties during evacuation and recovery.

Institutional and technological responses

1. **Risk assessment:** Coastal vulnerability mapping should integrate storm surge modelling, rainfall projections, land-use patterns and infrastructure exposure.
2. **Early warning:** Meteorological agencies must communicate timely, location-specific warnings and evacuation advisories.
3. **Infrastructure resilience:** Power distribution networks require stronger grid protection, underground cabling where feasible, backup systems and rapid restoration arrangements.
4. **Preparedness:** Local authorities should maintain evacuation routes, emergency shelters, medical supplies and community-level response plans.
5. **Climate adaptation:** Coastal ecosystems such as mangroves and wetlands can reduce wave energy and complement engineered protection.

Indian relevance

India's coastal regions face cyclones, storm surges and compound flooding. The National Disaster Management Authority, India Meteorological Department and state disaster management authorities have important roles in preparedness and coordinated response.

Conclusion

Effective coastal disaster management must move beyond event-specific relief towards integrated risk reduction, resilient infrastructure and community preparedness.

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