Environment & Ecology · GS - III

Coastal sand mining, whether legal or illegal, poses one of the biggest threats to our environment. Analyze the impact of sand mining along the Indians coasts, citing specific examples.

EXAM YEAR	PAPER	SUBJECT
2019	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Coastal erosion; beach degradation; marine biodiversity; groundwater salinity; turtle nesting; storm vulnerability; regulatory enforcement; sustainable alternatives

Model Answer

Introduction

Coastal sand mining extracts sand for construction and industry. Excessive extraction, including poorly regulated legal mining, disrupts natural sediment movement and coastal stability.

Environmental Impacts

- **Coastal erosion:** Removing sand accelerates beach loss and shoreline retreat.
- **Biodiversity damage:** Mining destroys habitats of shorebirds, crabs, turtles and other coastal organisms.
- **Groundwater salinity:** Altered coastal aquifers may become more vulnerable to seawater intrusion.
- **Disaster vulnerability:** Narrower beaches and degraded dunes reduce natural protection against cyclones and storm surges.
- **Livelihood losses:** Fishing, tourism and other coastal livelihoods suffer as habitats and beaches deteriorate.
- **River–coast imbalance:** Sand extraction from coastal rivers can reduce sediment supply to beaches.

Examples

Parts of Kerala’s coastline have experienced severe erosion, while sand-mining pressures along Tamil Nadu’s coast, including areas associated with mineral-sand extraction, have generated environmental and livelihood concerns. Such impacts vary with local geology and extraction intensity.

Measures

Enforce environmental clearances and mining limits, monitor extraction through satellite imagery, restore dunes and mangroves, and promote recycled construction materials.

Conclusion

Coastal sand mining must remain within ecological limits; otherwise, short-term commercial gains can produce lasting environmental and economic losses.

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