

Disaster Management · GS - III

The Intergovernmental Panel on Climate Change (IPCC) has predicted a global sea level rise of about one metre by AD 2100. What would be its impact in India and the other countries in the Indian Ocean region?

EXAM YEAR

2023

PAPER

GS - III

SUBJECT

Disaster Management

MARKS

15

WORD LIMIT

~250 words

Answer Hint

Sea-level rise threatens low-lying coasts through inundation, erosion, salinisation and extreme flooding; densely populated deltas and small island states in the Indian Ocean are especially vulnerable, requiring adaptation alongside mitigation.

Model Answer

Introduction

Sea-level rise results mainly from thermal expansion of seawater and melting of glaciers and ice sheets. A substantial rise by 2100 would create severe ecological, economic and humanitarian consequences across the Indian Ocean region.

Body

Impacts on India

Coastal inundation: Low-lying coastal areas and islands face permanent or periodic flooding.

Delta vulnerability: The Ganga-Brahmaputra-Meghna and other deltas are particularly exposed.

Coastal erosion: Rising sea levels intensify shoreline retreat and threaten settlements and infrastructure.

Salinisation: Seawater intrusion can contaminate freshwater aquifers and agricultural land.

Cyclone impacts: Higher sea levels increase storm-surge reach during tropical cyclones.

Livelihood losses: Fisheries, agriculture, tourism and coastal industries may be affected.

Urban risk: Coastal cities such as Mumbai, Kolkata and Chennai face increased flooding and infrastructure stress.

Indian Ocean Region

Small Island Developing States: Maldives, Seychelles and Mauritius face existential threats because of low elevation.

Bangladesh: High population density in low-lying deltaic areas creates severe displacement risks.

Sri Lanka: Coastal ecosystems, settlements, tourism and fisheries may face increasing vulnerability.

East African coast: Mozambique, Tanzania and other coastal regions may experience flooding, erosion and livelihood losses.

Broader Consequences

Climate-induced migration, food insecurity, ecosystem loss, freshwater stress and economic disruption may intensify regional instability.

Way Forward

India and other countries require coastal-zone planning, mangrove restoration, resilient infrastructure, early-warning systems, climate-resilient agriculture and international climate finance.

Conclusion

Sea-level rise is not merely an environmental challenge but a **developmental, economic and humanitarian threat**. Adaptation and mitigation must therefore proceed together through regional cooperation across the Indian Ocean.