

Mangrove Ecosystem

Why in news?

The recent global assessment conducted by the IUCN paints a concerning picture for the world's mangrove forests.

Key findings of the study

- **IUCN-** International Union for Conservation of Nature (IUCN) Red List of Ecosystems recently conducted the first global mangrove assessment.
- **Distribution-** Mangrove ecosystems cover approximately 150,000 square kilometers along tropical, subtropical, and warm temperate coastlines, representing about 15% of the world's coastlines.
- **Threats-** The analysis reveals that more than 50% of these vital ecosystems are on the verge of collapse due to a combination of human activities and climate change.
- **Regions at risk-**
- **Critically Endangered-** South India, Sri Lanka, Maldives, North West Atlantic
- **Endangered-** Agulhas, Central Pacific, East Coral Triangle, east central and southeast Australian shelf, Red Sea, Gulf of Aden, South China Sea
- **Ecosystem health-** 50% of the assessed mangrove ecosystems are classified as vulnerable, endangered, or critically endangered, with a high risk of collapse by 2050.
- **Impact of climate change-** About 33% of mangrove systems are threatened by climate change impacts.

What is the significance of mangroves?

- **Carbon sequestration-** It sequester large amounts of carbon dioxide from the atmosphere, storing it in their biomass and soil.
- **Water filtration-** It helps filter pollutants and sediments from the water, improving water quality.
- **Natural barrier-** Their dense root systems stabilize shorelines and reduce the impact of waves and extreme weather events such as tsunamis, storm surges etc., protecting inland areas and communities.
- **Flood mitigation-** By absorbing and slowing down the flow of water, mangroves help mitigate coastal flooding.
- **Support for fisheries-** Mangroves support commercial and subsistence

fisheries by providing critical habitat for fish and shellfish populations.

- **Adapt to climate change-** Healthy mangrove ecosystems can keep pace with sea-level rise by accumulating sediment and organic matter, helping to maintain coastal land elevation and providing resilience against rising sea levels.
- **Cultural value-** For many indigenous and local communities, mangroves hold cultural, spiritual, and historical significance.

To know about the role of mangroves in averting climate change click [here](#)

What are the challenges faced by mangroves?

- **Deforestation-** Coastal development for housing, tourism, and infrastructure leads to the clearing of mangrove forests.
- **Land use change-** Conversion of mangrove areas into rice paddies, palm oil plantations, and shrimp farms results in significant habitat loss.
- **Pollution-** Chemical pollutants from industries, agricultural runoff and waste disposal affects mangrove health.
- **Sea level rise-** Increasing sea levels can submerge mangroves, especially if they are unable to migrate inland due to natural or man-made barriers.
- **Dam construction-** Dams and other water management structures upstream can alter freshwater inflows to mangrove areas, affecting their salinity balance and health.
- **Water extraction-** Excessive withdrawal of groundwater can lead to subsidence and increased salinity in mangrove soils.
- **Invasive species-** It outcompetes native mangrove species, altering ecosystem dynamics and reducing biodiversity.
- **Limited awareness-** Lack of awareness among local communities and policymakers about the importance of mangroves can result in poor conservation practices.

Steps taken by India to promote mangrove ecosystem

- **Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI)**- To promote and conserve mangroves as unique, natural eco-system having very high biological productivity and carbon sequestration potential, besides working as a bio shield.
- **Conservation and Management of Mangroves and Coral Reefs” scheme**- It aims to safeguard and improve mangrove forests in coastal States and Union Territories.
- **Magical mangroves**- It is a awareness campaign that focuses on Maharashtra, Goa, Gujarat, Andhra Pradesh, Tamil Nadu, Kerala, Odisha, West Bengal and Karnataka.
- **Andhra Pradesh**- The State have established *Eco-Development Committees* and *Van Samrakshan Samithi* to implement conservation projects in mangrove areas.
- **Maharashtra**- It has established a *Mangrove Cell* dedicated for mangrove conservation, and the State has also created *Marine Biodiversity Conservation Foundation* is created to enhance mangrove cover.
- **Gujarat**- It has its own "Mangrove Conservation Cell" and afforestation projects in the Gulf of Kutch.

What lies ahead?

- The assessment recommends that countries utilize national or sub-national assessments for more precise conservation efforts.
- Maintaining healthy mangroves is crucial for mitigating the effects of climate change, such as combating sea-level rise and providing protection from extreme weather.
- Protecting and restoring mangroves can enhance their resilience against climate change impacts.

References

1. [Down To Earth- Half of world’s mangroves collapse](#)
2. [IUCN- First global mangrove assessment](#)