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 mangorve 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 outcompete 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

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