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News: Mangroves

- Recently, a report titled "The State of the World's Mangroves 2024" was released by the Global Mangrove Alliance (GMA).

Mangroves

- Mangroves are defined as assemblages of salt tolerant trees and shrubs that grow in the intertidal regions of the tropical and subtropical coastlines.
- They grow luxuriantly in the places where freshwater mixes with seawater and where sediment is composed of accumulated deposits of mud.

Features

- **Saline Environment**: They can survive under extreme hostile environments such as high salt and low oxygen conditions.
- **Low oxygen**: Underground tissue of any plant needs oxygen for respiration. But in a mangrove environment, the requirement of oxygen in soil is limited or nil.

- For the purpose of breathing, they develop special roots called pneumatophores.
- **Survival in Extreme Conditions**: With their roots submerged in water, mangrove trees thrive in hot, muddy, salty conditions that would quickly kill most plants.
- **Viviparous**: Their seeds germinate while still attached to the parent tree. Once germinated, the seedling grows into a propagule.
- A propagule is a vegetative structure that can become detached from a plant and give rise to a new plant. Examples include a bud, sucker, or spore.

Significance

- Mangroves trap and cycle various organic materials, chemical elements, and important nutrients in the coastal ecosystem.
- They provide one of the basic food chain resources for marine organisms.
- Mangroves support nearly 800 billion young fish, prawns, bivalves, and crabs annually, crucial for global fisheries. They provide non-aquatic food resources like honey, leaves, and fruits, essential for local communities.
- They provide physical habitat and nursery grounds for a wide variety of marine organisms, many of which have important recreational or commercial value.

- Mangroves also serve as storm buffers by reducing wind and wave action in shallow shoreline areas.
- Mangroves hold, on average, a remarkable 394 tonnes of carbon per hectare in their living biomass and in the top meter of soil. Some mangrove areas, like in the Philippines, the average values are over 650 tonnes of carbon per hectare.
- Mangroves are home to a tremendous diversity of species, reflecting their ecotone nature.
- Over 5,700 plant and animal species, across 21 phyla, have been recorded in Indian mangroves alone.
- Mangrove species are widely used in traditional medicine, providing health benefits to local populations.

Area Covered

Global Mangrove Cover

- The total mangrove cover in the world is one 1, 50,000 sq kms.
- Asia has the largest number of mangroves worldwide.
- South Asia comprises 6.8% of the world's mangrove cover.

Indian Mangrove Cover

- India's contribution is 45.8% total mangrove cover in South Asia.

- According to the Indian State Forest Report 2021, Mangrove cover in India is 4992 sq. Km which is 0.15% of the country's total geographical area.
- **Largest Mangrove Forest**: Sundarbans in West Bengal are the largest mangrove forest regions in the world. It is listed as a UNESCO World Heritage Site.
- It is followed by Gujarat and Andaman, and Nicobar Islands.
- Mangrove ecosystems of India have perhaps the highest record of biodiversity of any country, with a total of 5,746 species. Of these, 4,822 species (84%) are animals.

Challenges with Mangrove Conservation

Commercialisation of Coastal Areas

- Aquaculture, coastal development, rice and palm oil farming and industrial activities are rapidly replacing these salt-tolerant trees and the ecosystems they support.
- Critically Endangered and Vulnerable Mangroves: Natural mangrove forests on the southern Indian coast are critically endangered, particularly in the Lakshadweep archipelago and Tamil Nadu, due to rising sea levels from global warming.

Shrimp Farms

- The report identifies shrimp aquaculture as a major driver of mangrove loss, highlighting its expansion in states like Andhra Pradesh, West Bengal, and Gujarat.
- The emergence of shrimp farms has caused at least 35% of the overall loss of mangrove forests.
- The rise of shrimp farming is a response to the increasing appetite for shrimp in the United States, Europe, Japan and China in recent decades.
- Mangroves on the western coast, extending from Gujarat to Kerala, are vulnerable to collapse due to human activities like shrimp aquaculture and natural threats such as tropical storms.

Temperature Related Issues

- A fluctuation of ten degrees in a short period of time is enough stress to damage the plant and freezing temperatures for even a few hours can kill some mangrove species.

Soil Related Issues

- The soil where mangroves are rooted poses a challenge for plants as it is severely lacking in oxygen.

Excessive Human Intervention

- During past changes in sea level, mangroves were able to move further inland, but in many places human development is now a barrier that limits how far a mangrove forest can migrate.
- Mangroves also frequently suffer from oil spills.

News: National Institutional Ranking Framework (NIRF)

National Institutional Ranking Framework (NIRF)

- National Institutional Ranking Framework (NIRF) is launched by Ministry of Education (MoE) in 2015.
- The 2024 edition saw IIT Madras topping the rankings in the overall category followed by IISc Bengaluru and IIT Delhi. It is the sixth consecutive term that IIT Madras is topping.

- Among the universities, IISc Bengaluru retained its position as the best in country for the 9th consecutive term. The IISc was followed by Jawaharlal Nehru University and Jamia Millia Islamia as second and third best universities.
- Miranda House is first among the top colleges in the country. Hindu College, Delhi and Presidency College, Chennai were named the second and third best colleges, respectively.
- All India Institute of Medical Sciences Delhi is the top medical institute in the country. Postgraduate Institute of Medical Education and Research, Chandigarh and Christian Medical College, Vellore were ranked the second and third best medical colleges respectively.
- Indian Institute of Management (IIM) Ahmadabad is the top management institute in the country. The IIMs in Bangalore and Kozhikode secured the second and third positions, respectively.
- National Institute of Pharmaceutical Education and Research, Hyderabad topped the ranking in pharmacy for the first time, pushing Jamia Hamdard to the second slot.
- Saveetha Institute of Medical and Technical Sciences, Chennai got the honour of top dental college.
- The National Law School of India University, Bengaluru was rated the best law college in the country for the sixth consecutive year.

- The IIT Roorkee got the first place in architecture.
- Indian Agricultural Research Institute, New Delhi took the top slot in agriculture and allied sectors.
- The Indian Institute of Technology, Kanpur topped the innovation category.
- The Indian Institute of Technology, Madras also received the honour of best engineering college for the eighth consecutive year.
- The Indian Institute of Science, Bengaluru also stood first in the research institutions category for the third consecutive year.
- The Rankings have been released under various categories, including, Engineering, Pharmacy, Management and Overall, Research.
- The rankings for all colleges and universities across the country given by the Ministry were based on teaching, learning, and resources; research and professional practice, graduation outcome; outreach and inclusivity; and peer perception.

New Additions to the NIRF 2024

- **New Categories:** The 9th edition of NIRF Rankings introduced three new categories State Public Universities, Open Universities, and Skill Universities,

and integrated "Innovation" ranking using the NIRF, expanding the portfolio to 16 categories and subject domains.

- Anna University and Indira Gandhi National Open University (IGNOU) topped the new State Public Universities and Open Universities categories, respectively.
- Symbiosis Skill and Professional University (SSPU), Pune topped the Skill Universities category.
- Looking ahead, the Ministry of Education plans to introduce a new category for Sustainability Rankings in the 2025 edition of the NIRF, evaluating institutions on their commitment to environmental sustainability, energy efficiency, and green campus initiatives.
- **Increased Applications:** The number of unique institutions participating in the rankings increased from 2,426 in 2016 to 6,517 in 2024.