



Mangrove Alliance for Climate

For Prelims: Mangrove Alliance for Climate, Mangrove, global warming, Sundarbans

For Mains: Significance of Mangroves ecosystem

Why in News?

During the **COP27 climate summit** in Sharm El Sheikh, Egypt, **the UAE and Indonesia announced the "Mangrove Alliance for Climate."**

What is the Mangrove Alliance for Climate (MAC)?

- It includes **UAE, Indonesia, India, Sri Lanka, Australia, Japan, and Spain.**
- It seeks to **educate and spread awareness worldwide on the role of mangroves in curbing [global warming](#)** and its potential as a solution for climate change.
- However, the **intergovernmental alliance works on a voluntary basis** which means that there are no real checks and balances to hold members accountable.
- Instead, the parties will decide their own commitments and deadlines regarding planting and restoring mangroves.
- The members will also share expertise and support each other in researching, managing and protecting coastal areas.

What are Mangroves?

- **About:**
 - 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 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.
- 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.
- **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.**

What are the 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.**
- **Shrimp Farms:**
 - The emergence of shrimp farms have **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.
- **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.

What are the Related Initiatives?

- **UNESCO Designated Sites:** The inclusion of mangroves in [Biosphere Reserves](#), World Heritage sites and [UNESCO Global Geoparks](#) contributes to improving the knowledge, management and conservation of mangrove ecosystems throughout the world.
- **International Society for Mangrove Ecosystem (ISME):** The ISME is a non-governmental organization established in 1990 to promote the study of mangroves with the purpose of enhancing their conservation, rational management and sustainable utilization.
- **Blue Carbon Initiative:** It is focused on mitigating climate change through the conservation and restoration of coastal and marine ecosystems.
 - It is coordinated by Conservation International (CI), [IUCN](#), and the [Intergovernmental Oceanographic Commission-UNESCO](#) (IOC-UNESCO).
- **International Day for the Conservation of the Mangrove Ecosystem:** UNESCO celebrates this day on 26th July with the aim of raising awareness about mangrove ecosystems and to promote their sustainable management and conservation.

Way Forward

- **Conservation of mangroves needs to be linked with a broader perspective with active community involvement**, environmental security, and reducing any risks from natural calamities.
 - Such measures need to be adopted more holistically in view of anticipatory adaptation measures which hold the clue for successful and effective management.
- The **integration of mangroves into the national programmes for reducing emissions** from deforestation and forest degradation is the need of the hour.
- Creating a new carbon sink from mangrove afforestation and reducing emissions from mangrove deforestation are two possible ways for countries to meet their NDC targets and achieve carbon neutrality.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Which one of the following regions of India has a combination of mangrove forest, evergreen forest and deciduous forest? (2015)

- (a) North Coastal Andhra Pradesh
- (b) South-West Bengal
- (c) Southern Saurashtra
- (d) Andaman and Nicobar Islands

Ans: (d)

Mains

Q. Discuss the causes of depletion of mangroves and explain their importance in maintaining coastal ecology. (2019)

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