



## 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 26<sup>th</sup> 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)**

**Source: IE**

PDF Reference URL: <https://www.drishtiias.com/printpdf/mangrove-alliance-for-climate>