

## Environment

**Q8. What is oil pollution? What are its impacts on the marine ecosystem? In what way is oil pollution particularly harmful for a country like India?**

### Introduction

- Start with what is oil pollution.

### Body

- Write Impacts of oil pollution on the marine ecosystem.
- Highlight Its particular harm for India.

### Conclusion

- Conclude with it is imperative to implement proactive measures and robust response strategies.

### Introduction

Oil pollution refers to the release of petroleum-based hydrocarbons, such as crude oil or refined petroleum products, into the environment, typically water bodies like oceans, seas, or rivers. This pollution can occur due to various sources, including oil spills from ships or offshore drilling platforms, illegal dumping of oil waste, or natural seepage from the Earth's crust.

### Impacts of oil pollution on the marine ecosystem:

- **Physical Coating:** Oil spills create a physical barrier on the water's surface, limiting the exchange of oxygen between the atmosphere and the water.
- **Toxicity:** Oil contains harmful chemicals that are toxic to marine life. Exposure to oil can damage the gills and other respiratory organs aquatic creatures.
- **Smothering:** Oil can sink and smother benthic organisms that live on the ocean floor, disrupting the food chain and ecosystem dynamics.
- **Reduced Light Penetration:** Oil slicks reduce light penetration into the water, affecting photosynthetic organisms like phytoplankton.
- **Economic Impact:** Fisheries and tourism industries can suffer severe economic losses due to oil pollution, affecting livelihoods and local economies.

### Particular Harm for India:

- **Biodiversity:** India's coastal areas are rich in biodiversity, hosting diverse marine species, including endangered ones like the Olive Ridley sea turtle.
- **Fishing Industry:** Oil pollution can lead to reduced fish populations and contaminated seafood, impacting food security and livelihoods.
- **Tourism:** India's coastal regions, such as Goa and Kerala, heavily rely on tourism. Oil pollution can deter tourists, affecting the local economy.
- **Vulnerability to Natural Disasters:** India is prone to natural disasters like cyclones. Oil pollution can exacerbate the environmental damage caused by these events.
- **Lack of Resources:** India may face challenges in responding to and mitigating oil spills due to limited resources and infrastructure.

#### What can be done to prevent oil pollution?

- **Stricter regulations for oil shipping and transportation:** Oil tankers and other vessels carrying oil should be subject to strict regulations.
- **Improved oil spill prevention and response plans:** Oil companies and other organizations involved in oil shipping and transportation should have comprehensive oil spill prevention and response plans in place.
- **Increased public awareness and education:** The public should be aware of the dangers of oil pollution and what they can do to prevent it.

#### What can be done to clean up oil pollution?

- **Mechanical cleanup:** This involves using booms, skimmers, and other equipment to contain and remove oil from the water.
- **Chemical cleanup:** This involves using chemicals to break down oil so that it can be dispersed or removed.
- **Bioremediation:** This involves using microorganisms to break down oil.

#### Conclusion

Oil pollution poses substantial threats to the marine ecosystem, and its detrimental effects are accentuated in a country like India, characterized by an extensive coastline, diverse marine life, and industries reliant on marine resources. It is imperative to implement proactive measures and robust response strategies to mitigate these impacts effectively.

**Q17. Comment on the National Wetland Conservation Programme initiated by the Government of India and name a few India's wetlands of international importance included in the Ramsar Sites.**

### Introduction

- Introduce with giving background on NWCP.

### Body

- Write role of NWCP.
- Write examples of Ramsar sites.

### Conclusion

- The National Wetland Conservation Programme and Ramsar are vital initiative that underscores India's commitment to environmental stewardship.

### Answer:

The National Wetlands Conservation Programme (NWCP) operates as a **Centrally Sponsored Scheme (CSS)** under the auspices of the **Ministry of Environment, Forests & Climate Change**.

#### It has a dual mandate:

1. To halt the degradation of the nation's wetlands
2. To facilitate their sustainable utilization

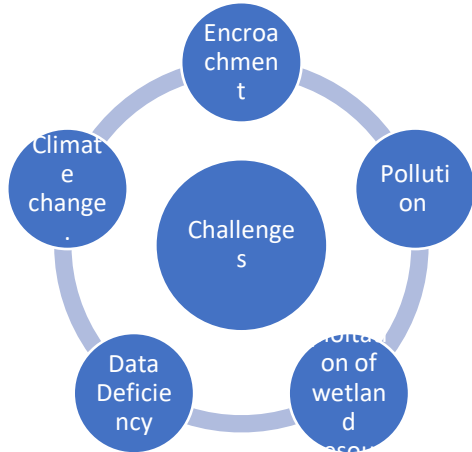
Thereby benefiting local communities and safeguarding biodiversity. The extent of central assistance within this program hinges upon the submission of proposals by state governments, adherence to stipulated standards, and the availability of budgetary resources.

#### What is wetland?

Wetlands are defined as: "**lands transitional between terrestrial and aquatic ecosystems** where the water table is usually at or near the surface or the land is covered by shallow water".

#### NWCP

- The National Wetlands Conservation Program has the primary objective of **safeguarding wetlands across India** initiated during year **1985-86**.
- The management of wetlands falls **under the purview of state governments** and Union Territory administrations, as these areas are part of their land resources.
- The Ministry overseeing the NWCP has identified and designated **115 wetlands located in 24 different states and 2 Union Territories for conservation and effective management**.
- The criteria for recognizing wetlands of national importance under the NWCP align with those set forth by the Ramsar Convention on Wetlands.
- The central government holds the overarching responsibility for coordinating and overseeing wetland conservation programs across the country.



**Chilika Lake:** Located in Odisha, Chilika Lake is the largest coastal lagoon in India and the second largest in the world. It serves as a crucial habitat for migratory birds and supports a rich biodiversity.

1. **Sundarbans:** This unique mangrove ecosystem, straddling West Bengal and Bangladesh, is home to the Bengal tiger and numerous other species. It plays a vital role in protecting coastal areas from erosion and serves as a breeding ground for many aquatic species.
2. **Keoladeo National Park:** Situated in Rajasthan, this wetland is a UNESCO World Heritage Site and provides a haven for a diverse range of birds, including migratory species. It showcases the harmonious coexistence of wetland and terrestrial ecosystems.
3. **Vembanad-Kol Wetland:** Located in Kerala, this wetland complex is renowned for its ecological diversity, supporting various aquatic life forms and avian species. It is vital for the livelihoods of local communities.
4. **Harike Lake:** Situated in Punjab, Harike Lake is a Ramsar Site formed by the confluence of the Beas and Sutlej rivers. It serves as a critical stopover for migratory birds and supports diverse flora and fauna.
5. **Sambhar Lake:** Rajasthan's largest inland saltwater lake, Sambhar Lake, is known for its unique saline wetland ecosystem. It hosts a wide variety of bird species and plays a significant role in salt production.

While National Wetland Conservation Programme and Ramsar are vital initiative that underscores India's commitment to environmental stewardship, it is imperative to emphasize the importance of ongoing monitoring, active community engagement, and adaptable strategies. Collaborative endeavors remain essential in guaranteeing the sustainable preservation and effective management of India's priceless wetlands.

**Q18. The Intergovernmental Panel on Climate Change (IPCC) has predicted a global sea level rise of about one meter by AD 2100. What would be its impact in India and the other countries in the Indian Ocean region?**

### Introduction

- Write the main factors behind sea level rise along with the impact of IPCC's prediction.

### Body

- Highlight Significant and wide-ranging impacts of sea level rise on India and other countries in the Indian Ocean region.

### Conclusion

- It is time of calls for proactive measures in adaptation, mitigation, and international cooperation to mitigate the impacts of climate change and sea-level rise.

### Answer:

The Intergovernmental Panel on Climate Change (IPCC) has predicted a global sea level rise of about one meter by AD 2100. This is a serious threat to India and the other countries in the Indian Ocean region, which are home to densely populated coastal cities and have a long coastline.

Sea level rise is caused by two main factors: **the melting of glaciers and ice sheets, and the expansion of seawater as it warms.** The IPCC's prediction is based on the assumption that greenhouse gas emissions continue to rise at current rates.

### Significant and wide-ranging impacts of sea level rise on India and other countries in the Indian Ocean region.

#### Environmental Impacts:

- **Coastal Erosion and Habitat Loss:** Rising sea levels would accelerate coastal erosion, leading to the loss of valuable habitats such as mangroves and wetlands.
- **Saltwater Intrusion:** Increased salinity in freshwater sources due to higher sea levels would harm aquatic ecosystems and affect biodiversity.
- **Loss of Coral Reefs:** Coral reefs in the Indian Ocean, essential for marine life, would be threatened, potentially resulting in the loss of biodiversity.
- **Erosion of Coastal Ecosystems:** Coastal ecosystems like estuaries, seagrass beds, and tidal flats would face degradation, impacting fisheries and coastal protection.

#### Social Impacts:

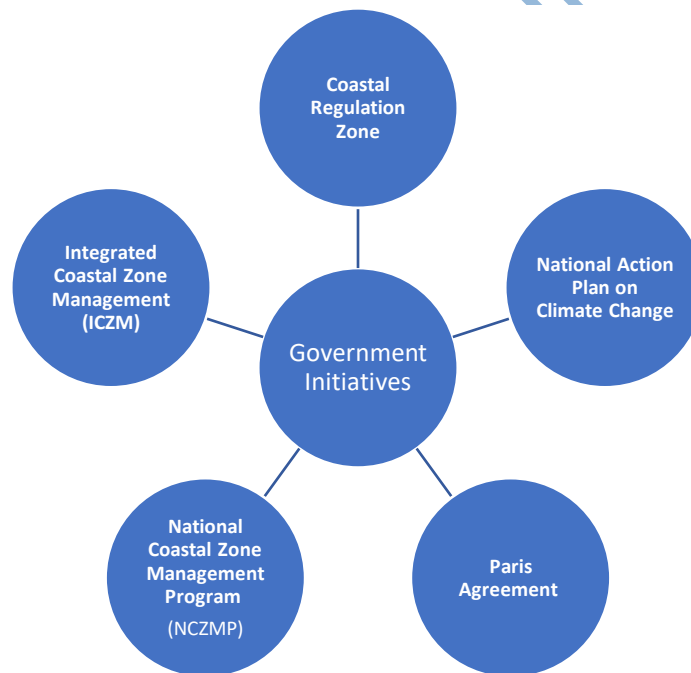
- **Community Displacement:** Coastal communities would face the risk of displacement, leading to social disruptions and potentially creating climate refugees.
- **Increased Flooding:** Low-lying urban areas would experience more frequent and severe flooding, impacting residents, infrastructure, and public health.
- **Water Scarcity:** Saline intrusion into freshwater sources would affect drinking water supplies and agriculture, jeopardizing livelihoods.
- **Food Security:** Fisheries, a vital source of food and income, would be compromised due to changes in marine ecosystems.

### Economic Impacts:

- **Infrastructure Vulnerability:** Critical infrastructure in coastal areas, including ports and power plants, would be at risk of inundation, disrupting supply chains and energy production.
- **Tourism Decline:** Coastal tourism, a significant contributor to the economy, could suffer due to the loss of pristine beaches and infrastructure damage.
- **Agricultural Losses:** Saline intrusion and increased flooding could lead to reduced agricultural productivity, affecting livelihoods and food security.
- **Loss of Productive Land:** Coastal land loss would impact property values and lead to economic losses for homeowners and businesses.

### Political Impacts:

- **Resource Conflicts:** Competition for diminishing coastal resources and freshwater could escalate, leading to potential conflicts.
- **International Cooperation:** Countries in the Indian Ocean region would need to cooperate on climate change adaptation and mitigation strategies to address shared challenges.




A one-meter sea-level rise by 2100, as projected by the IPCC, would have profound consequences for India and other countries in the Indian Ocean region. It calls for proactive measures in adaptation, mitigation, and international cooperation to mitigate the impacts of climate change and sea-level rise.



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