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TODAY'S IMPORTANT CURRENT AFFAIRS

UPSC

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Arctic Climate Impact on India's Monsoon Dynamics

Source – The post is based on the article published in “**The Hindu**” on 9th, June 2024.

Syllabus: Mains – GS III (Environment – Climate Change)

In News – New research reveals that less sea ice in the central Arctic leads to lower rain in western and peninsular India but more rain in central and northern India.



About India's Monsoon on Climate Change :

- India's monsoon pattern is undergoing a significant shift, characterized by delayed onset, below-normal rainfall in June, proper commencement only in July, and extended heavy rainfall into September. This year's monsoon exemplifies this trend, arriving late in most regions and progressing slowly.
- While the exact causes are not fully understood, climate change factors such as delayed western disturbances and Arctic Sea ice melting are believed to play a role.

- The new pattern brings erratic rainfall distribution, more dry days, and unusually high night temperatures, posing substantial challenges for agriculture and water management across the country.

Significance of Monsoon for India:

Agricultural Backbone:

The monsoon is essential for India's agricultural economy, which supports around 60% of the country's population. The monsoon provides water for irrigation and replenishes water sources. More than 50% of India's arable land depends on the monsoon for irrigation.

Economy:

The monsoon impacts many sectors of the Indian economy, including industry, services, power generation, transport, manufacturing, and tourism. Agriculture contributes about 16% of India's GDP, so a good monsoon brings economic prosperity.

Social-cultural unity:

The monsoon is central to the agricultural calendar and social-cultural life of the people. Harvest festivals are celebrated to mark a good harvest.

Water storage:

The monsoon provides water for drinking, irrigation, and electricity generation.

The monsoon recharges the country's groundwater levels.

Food production:

The monsoon provides normal rainfall, which is important for maintaining food prices.

Implications of Changing Monsoon Patterns of India:

Agriculture Disruption:

Erratic rainfall patterns can disrupt sowing and harvesting cycles, which can lead to lower crop yields and increased crop failures. For example, in 2023, a delayed monsoon onset led to a 15% decrease in paddy sowing area in Punjab and Haryana.

Water scarcity:

Irregular monsoons can strain both surface and groundwater resources, intensifying water scarcity issues.

Ecosystems Changes:

Changes in rainfall patterns and temperature can disrupt ecosystems, affecting the distribution and behavior of plant and animal species.

Public health concern:

Altered monsoon patterns can change the distribution of vector-borne diseases like malaria and dengue.

Saltwater intrusion:

Changes in precipitation patterns and sea level rise can lead to saltwater intrusion into coastal aquifers, affecting freshwater resources.

Way Forward

Mitigating Climate Change:

- **Transition to renewable energy sources:** Encourage using renewable energy like solar and wind power, reducing dependence on fossil fuels and lowering greenhouse gas emissions.
- **Energy efficiency:** Promote energy-efficient practices in industries, buildings, and transportation to reduce energy demand.
- **Reforestation and afforestation:** Support efforts to plant trees and restore forests, as they absorb carbon dioxide and help mitigate climate change.

International Cooperation:

- **Global climate agreements:** Advocate for international cooperation and adherence to agreements like the Paris Agreement, which aims to limit global temperature rise.
- **Emissions reduction targets:** Encourage countries to set and achieve ambitious emissions reduction targets to mitigate climate change on a global scale

Other important Adaptation:

- **Infrastructure development:** Design infrastructure, such as flood control systems and drainage networks, to better withstand extreme weather events and minimize damage during monsoons.
- **Agricultural adaptation:** Promote climate-smart agricultural practices resilient to changing monsoon patterns, such as crop diversification, water-efficient irrigation methods, and improved soil management.
- **Education and awareness:** Raise awareness about climate change and its impact on monsoons through education campaigns, engaging communities, and empowering individuals to take sustainable actions.