DAILY CURRENT AFFAIRS 10-09-2024

GS-1

1. **How changes in the level of Arctic Sea ice can change monsoon patterns in India**

GS-2

2. **PM SHRI (PM Schools for Rising India)**

GS-3

3. **India Becomes Net Importer of Maize**
4. **Use of AI in warfare**
5. **Rajaji national park**

How changes in the level of Arctic Sea ice can change monsoon patterns in India

Syllabus: GS-1: Geography – Climatology.

Context:

1. *Levels of far-flung Arctic sea ice can change monsoon patterns: study.*

Incessant Rainfall and its Impact in India

- **Regions Affected:**
  - *Southeast India severely impacted by incessant rainfall.*
  - *Andhra Pradesh: 17 deaths, thousands homeless.*
  - *Telangana: Widespread floods.*
  - *Indian Meteorological Department warnings of heavy rains in Gujarat, Himachal Pradesh, and Delhi.*
- **Changing Nature of Indian Monsoon:**
  - *Erratic and unpredictable rainfall becoming more common.*
  - *Monsoon, once a sign of relief, now frequently causes both droughts and floods.*
  - **Climate Change***: Major factor influencing the shift in rainfall patterns.*

Indian Summer Monsoon Rainfall (ISMR)

- **Overview:**
  - *Occurs from* **July to September***, peaking in* **July and August***.*
  - *One of the most prominent monsoon systems globally.*
- **Mechanism:**
  - **Land-Ocean Temperature Differential***: Indian landmass heats up faster than surrounding oceans, creating a low-pressure system at the* **Tropic of Cancer***.*
  - **Intertropical Convergence Zone (ITCZ)***: Created by the low-pressure band.*
  - **Trade Winds & Coriolis Force***: Southeast trade winds deflected towards the Indian landmass, pick up moisture over the Arabian Sea, and deposit rain.*
- **Southwest Monsoon Arms:**

- **Arabian Sea Arm***: Brings rain to India's west coast.*
- **Bay of Bengal Arm***: Brings rain to India's eastern and northeastern regions.*
- *Both arms converge over* **Punjab** *and* **Himachal Pradesh***.*

Climate Factors Influencing ISMR

- **Ocean Surface Temperatures***:*
  - *Indian, Atlantic, and Pacific Oceans affect ISMR.*
- **Circum-Global Teleconnection (CGT)***:*
  - *A large-scale atmospheric wave at mid-latitudes influences the monsoon.*

Arctic Sea Ice Influence on the Indian Monsoon

- **New Findings:**
  - *A study by* **National Centre for Polar and Ocean Research (NCPOR)** *and* **Korea Polar Research Institute** *examined Arctic sea ice influence on ISMR.*
  - **Key Insights***:*
    - *Declining* **Arctic sea ice** *alters atmospheric circulations affecting monsoon patterns.*
- **Distinct Patterns Observed***:*
  - **Less Sea Ice in Central Arctic***: Leads to lower rainfall in western and peninsular India, but more rain in central and northern India.*
  - **Low Sea Ice in Barents-Kara Sea***: Delays monsoon onset, increasing unpredictability.*
- **Atmospheric Systems***:*
  - **Increased Central Arctic Ice***:*
    - *Heat transfer from ocean triggers* **cyclonic circulation** *in North Atlantic.*
    - *Enhances* **Rossby Waves** *leading to high pressure over northwest India.*
    - *Strengthens* **Asian Jet Stream***, disrupting atmospheric stability and increasing rainfall over western and peninsular India.*
  - **Low Barents-Kara Sea Ice***:*

- *Creates high pressure over southwest China.*
- *Correlates with a* **positive Arctic Oscillation**, *weakening the* **CGT** *and disturbing weather patterns over India.*

Climate Change and Monsoon Variability

- **Role of Climate Change***:*
  - *Accelerates Arctic sea ice reduction, exacerbating the variability of ISMR.*
  - **Consequences***:*
    - *Increased frequency of droughts in some regions.*
    - *Excessive rainfall and flooding in others.*
- **Urgency for Research***:*
  - *Need for expanded research on climate dynamics.*
  - *Scientists must develop more accurate* **monsoon forecasts** *to mitigate the adverse impacts of climate change.*

Practice Qs:

Q. Discuss how the decline in Arctic Sea ice influences the variability of the Indian Summer Monsoon Rainfall (ISMR) and its implications for India's climate resilience. (15 marks, 250 words)

PM SHRI (PM Schools for Rising India)

Syllabus: GS-2; Government policies and Interventions

Context

1) *After Punjab, the AAP government in Delhi has also relented under financial pressure and agreed to sign a Memorandum of Understanding (MoU) with the Centre to implement the Pradhan Mantri Schools for Rising India (PM-SHRI) scheme in the Capital.*
2) *Tamil Nadu had initially agreed to the Centre's Prime Minister's Schools for Rising India (PM-SHRI) scheme, but eventually refused to sign the memorandum of*

understanding (MoU) and has remained ambiguous over the issue, said Tamil Nadu Governor R.N. Ravi.

About

Objective

- *PM SHRI aims to* **develop around 14,500 schools** *from across India as exemplary schools.*
- *The scheme focuses on providing quality education by integrating National Education Policy (NEP) 2020 recommendations.*
- *These schools are intended to serve as "model schools", showcasing the implementation of NEP with features like* **innovative teaching methods, holistic learning environments, and the use of modern technology**.

Key Features

- **Pedagogy:** *Emphasis on experiential learning and project-based learning.*
- **Curriculum:** *Incorporates multilingualism, digital literacy, and a focus on critical thinking.*
- **Inclusivity:** *Focus on gender equality, ensuring access for disadvantaged groups including differently-abled students.*
- **Vocational Training:** *Skill development and vocational education will be embedded from school-level, encouraging entrepreneurship.*
- **Infrastructure:** *Schools will be eco-friendly with energy-efficient designs, smart classrooms, and upgraded libraries and labs.*
- **Digitalization:** *Adoption of smart classrooms and digital teaching aids for better learning outcomes.*

Implementation

- *The scheme will be implemented in* **collaboration with state governments**.
- *Selected schools will receive funding and support from the center and states.*
- *Monitoring of schools will be carried out to ensure high-quality learning outcomes.*
- *Schools will be chosen from existing Kendriya Vidyalayas, Jawahar Navodaya Vidyalayas, and schools run by State/UT Governments and local bodies.*

Overall Outcome

- *PM SHRI schools will set the* **standard for education quality, inclusivity, and sustainability,** *becoming exemplars of how the NEP 2020 can be successfully implemented nationwide.*

- *It will help India advance towards equitable, high-quality, skill-based education, contributing to the creation of a more skilled, educated, and environmentally conscious youth, crucial for India's socio-economic development.*
- It demonstrates India's **commitment to SDG 4** (Quality Education) and provides insights into **policy implementation** at the grassroots level.

India Becomes Net Importer of Maize

Syllabus: GS-3: Indian Energy sector.

Context:

- *Recently, India's push towards increasing ethanol production,* **particularly Corn (Maize) -based ethanol,** *has transformed the country from Asia's top maize exporter to a net importer.*

Reasons for India Becoming a Net Maize Importer

- **Ethanol Blending Goals***:*
    - *India aims to achieve a 20% ethanol blend in gasoline by 2025-26. This ambitious goal has significantly increased the demand for maize-based ethanol, as maize is a key feedstock for ethanol production.*
- **National Policy on Biofuels (NPB) 2018***:*
    - *This policy supports the use of maize and other grains for ethanol production. It has encouraged the expansion of ethanol production facilities to meet rising demand.*
- **Shift from Sugarcane to Maize***:*
    - *Due to a drought impacting sugarcane production, the government has redirected ethanol distilleries towards maize as an alternative source for ethanol.*
- **Domestic Production vs. Demand***:*
    - *Despite India producing 34.6 million tonnes (mt) of maize in 2023-24, the demand for ethanol has led to a shortfall in maize supply for other industries, resulting in maize imports for the first time in decades.*

Impact on Local Industries

- **Competition for Maize***:*
    - *Maize traditionally fed poultry and starch industries. However, with the new demand from ethanol producers, these industries now face increased competition for maize supplies.*
- **Soaring Maize Prices***:*
    - *The rising demand has led to local maize prices exceeding global benchmarks. This increase affects poultry producers, as maize is a primary feed component.*
- **Poultry Industry Struggles***:*
    - *Poultry production costs, heavily influenced by maize prices, are rising. This has put financial strain on poultry growers. The All India Poultry Breeders Association has called for policy adjustments, including the removal of import duties and approval of Genetically Modified (GM) maize.*
- **Incentives for Maize Cultivation***:*
    - *High maize prices have led to a 7% increase in maize acreage. Farmers benefit from the current high prices, but poultry farmers are forced to adjust their operations.*

Global Implications

- **Shift in Trade Dynamics***:*
    - *India's shift from maize exporter to importer affects global maize prices. Countries like Myanmar and Ukraine, now primary suppliers to India, have seen price increases.*
- **Increased Prices in Exporting Countries***:*
    - *Indian demand has caused a rise in maize prices in exporting countries, which affects global trade patterns and may encourage more maize cultivation in these regions.*
- **Supply Chain Adjustments***:*
    - *Traditional buyers of Indian maize, such as Vietnam and Bangladesh, are seeking alternatives from South America and the United States due to higher prices from India.*

- **Permanent Importer Status***:*
    - *With the ethanol blending targets and expected demand, India is likely to remain a significant importer of maize in the future.*

Steps to Enhance Maize Production in India

- **Technological Adoption***:*
    - *Adopting advanced technologies, such as biotech traits resistant to pests and high-yielding hybrids, can boost maize productivity. Despite having significant acreage under maize, India's yields are lower compared to global standards.*
- **Diversification and Intensification***:*
    - *Transitioning to maize in regions like Punjab and Haryana, where rice cultivation depletes water resources, can conserve water and increase maize production. Maize requires less power and water than rice, making it a sustainable alternative.*
- **Government Support***:*
    - *To meet the E20 blending target, India needs to significantly increase maize production. Support measures like reasonable MSP, procurement assurances, and transportation concessions can incentivize farmers to grow more maize.*
- **Poultry and Animal Feed***:*
    - *Utilizing maize for feed and ethanol production can contribute to sustainable food, feed, and fuel security. Distiller's dried grains with soluble (DDGS), a byproduct of ethanol production, offer high-protein feed for livestock.*

Key facts about maize (Zea mays L.):

Overview

- **Versatility***: Known as the "queen of cereals" due to its high genetic yield potential.*
- **Global Contribution***: Significant to global grain production. The USA is the largest producer and has the highest productivity.*
- **Importance in India***: The third most important food crop, contributing about 9% to the national food basket and adding over Rs. 100 billion to the agricultural GDP.*
- **Uses***: Employed in food, animal feed, and industrial products.*

Growing Conditions

- **Soil***: Thrives in various soils, from loamy sand to clay loam. Optimal conditions are well-drained soils with high organic matter and neutral pH.*
- **Drainage***: Avoid poor drainage and high salinity for maintaining productivity.*

Rainfall

- **Requirement***: 50-100 cm of rainfall.*

Seasonal Cultivation in India

- **Kharif Season***: Lower productivity due to rainfed conditions and biotic/abiotic stresses.*
- **Rabi and Spring Seasons***: Generally yield better results.*

Global Standing

- **Production***: India is the 5th largest producer (as of December 2023).*
- **Export***: India is the 14th largest exporter (2022).*

Strategic Advantages

- **Production***: Year-round production capabilities.*
- **Seed Network***: Robust.*
- **Seaports***: Accessible.*
- **Export Limitations***: High domestic demand restricts current export significance.*

Major Producing States in India

- *Karnataka*
- *Madhya Pradesh*
- *Bihar*
- *Tamil Nadu*
- *Telangana*
- *Maharashtra*
- *Andhra Pradesh*

Key Initiatives

- **National Food Security Mission (NFSM)**
- **Waxy Maize Hybrid**
- **All India Coordinated Maize Improvement Project (AICMIP)**
- **India Maize Summit 2022**

Use of AI in warfare

Syllabus: GS-3: Science and Technology – IT & Internal Security

Context:

- *The second summit on Responsible Use of Artificial Intelligence in the Military Domain (REAIM) begins in Seoul on Monday.*

Growth of AI in Military Use

- *AI is increasingly being integrated into military operations globally.*
- *Ongoing conflicts in Ukraine and Gaza serve as "AI labs" for testing new military technologies.*
- *Alongside this, diplomatic efforts are being made to establish norms to regulate AI use in warfare to mitigate risks.*

India's Stance

- *India has been proactive in addressing AI in the civilian domain but remains passive in the military AI debate.*
- *As global frameworks for AI arms control emerge, India must engage to influence the process rather than staying aloof.*

REAIM: Responsible Use of AI in the Military Domain

What is REAIM?

- **REAIM Summit***: The "Responsible Use of Artificial Intelligence in the Military Domain" summit.*
- **2024 Summit***: Held in Seoul, South Korea, co-hosted by Kenya, Netherlands, Singapore, and the United Kingdom.*

- **Participants**: *Governments, international organizations, tech companies, academia, and civil society.*

First REAIM Summit (2023)

- *Held in The Hague, Netherlands.*
- *No major outcomes but expanded global debate on military AI.*
- *Focused on controlling lethal autonomous weapon systems (LAWS) or 'killer robots.'*

AI and Autonomous Weapons

Focus on Lethal Autonomous Weapon Systems (LAWS)

- *Discussions on LAWS have taken place within the UN since 2019.*
- *In 2023, the UN General Assembly initiated steps to address ethical and operational challenges posed by autonomous weapons.*
- *Secretary-General's report on the issue expected at the 2024 UNGA session.*

Beyond LAWS: Expanding Scope

- *The REAIM process is widening the debate to include broader applications of AI in warfare.*
- *AI is used for inventory management, battlefield intelligence, surveillance, reconnaissance, and decision-making support systems (AI-DSS).*
- *AI's ability to process large data sets improves situational awareness, decision-making, precision in targeting, and pace of warfare.*

The Shift in Approach: Focus on Responsible Use

Responsible AI Use in Military Affairs

- *The REAIM process now emphasizes* **responsible use** *over banning AI in military affairs.*
- *REAIM aims to:*
    - *Understand AI's implications for global peace and security.*
    - *Establish norms for AI use in military operations.*
    - *Develop long-term governance frameworks for military AI.*

Global Initiatives

- **US Efforts***:*
  - *Issued political declarations on responsible military AI use.*
  - *NATO's 2021 strategy established six principles for responsible AI use in military forces.*
- **China's Role***:*
  - *Active in shaping military AI norms and issued a White Paper on the regulation of AI in warfare in 2021.*

India's Position on Global AI Norms

India's Current Stand

- *India has not yet actively engaged in shaping global norms for military AI use.*
- *India did not endorse the "call to action" from The Hague summit.*
- *India's hesitance is contrasted by China's proactive involvement.*

Lessons from Nuclear Arms Control

- *India's experience with nuclear arms control, where delayed involvement led to unfavorable outcomes, serves as a cautionary example.*
- *India must not remain a passive bystander but participate in shaping the AI arms control framework during its formative stage.*

Conclusion

- *The proliferation of AI in warfare is inevitable, but efforts are underway to ensure its responsible use.*
- *India's future security and strategic interests require a proactive role in shaping global norms on military AI, learning from past experiences in nuclear arms control.*

Practice Qs:

Q. Discuss the implications of artificial intelligence in modern warfare and analyze India's position on global efforts to regulate military use of AI. (10 marks, 150 words)

Rajaji national park

Syllabus: GS-3; Biodiversity

Context

- *The Supreme Court expressed displeasure at the decision of the Uttarakhand Chief Minister to appoint Indian Forest Service (IFS) officer Rahul as Director of Rajaji Tiger Reserve overlooking the pending disciplinary proceedings and the adverse reports against him.*

About

Location and Area

- *Rajaji National Park is located in the northern Indian state of* **Uttarakhand,** *spanning across three districts: Haridwar, Dehradun, and Pauri Garhwal.*
- *The park covers an area of approximately 820 square kilometers and forms part of the larger Shivalik Hills.*
- *It is situated at the confluence of the* **Western Himalayas** *and the* **Indo-Gangetic Plains**, *making it a biodiversity hotspot.*

History and Establishment

- *The park was named after* **C. Rajagopalachari**, *popularly known as Rajaji, who was the* **last Governor-General of India and a freedom fighter**.
- *Established in 1983, Rajaji National Park was formed by amalgamating three wildlife sanctuaries: Rajaji Sanctuary, Motichur Sanctuary, and Chilla Sanctuary.*

Biodiversity

- *Rajaji National Park is renowned for its rich biodiversity, particularly its wildlife and flora.*
- **Flora**
  - *The park's vegetation varies from tropical and subtropical broadleaf forests to riverine areas, grasslands, and scrublands. It includes:*
    - *Sal forests*
    - *Teak plantations*
    - *Bamboo groves*
    - *Shisham (Dalbergia sissoo)*
    - *Acacia catechu and other dry deciduous species.*
- **Fauna**
  - *Elephants: Rajaji National Park is known for having one of the largest populations of Asian elephants in northern India.*
  - *Tigers: Although the tiger population is not large, it is a crucial habitat for Royal Bengal tigers.*
- *Other significant wildlife species include:*
  - *Leopards*
  - *Himalayan black bears*
  - *Sloth bears*
  - *Goral (mountain goat)*
  - *Sambar deer*
  - *Spotted deer (chital)*
  - *Wild boars*
  - *Rhesus macaques and langurs.*
- *Birds: The park is also a paradise for birdwatchers with over 300 bird species, including migratory species like:*
  - *Peafowl*
  - *Great hornbill*
  - *Pied kingfisher*
  - *Himalayan pied woodpecker.*

Ecological Significance

- *Rajaji National Park serves as a crucial corridor for wildlife migration, especially for elephants, between the western and eastern forests of Uttarakhand.*
- *It is part of the larger Shivalik Elephant Reserve and acts as a buffer zone, linking Corbett Tiger Reserve with other protected areas.*
- *The park is vital for the conservation of elephants under* **Project Elephant and tigers under Project Tiger.**

Legal Status and Governance

- *Rajaji National Park was upgraded to a tiger reserve in 2015, under the National Tiger Conservation Authority (NTCA), highlighting its importance for tiger conservation.*
- *The park is managed by the Uttarakhand Forest Department, with multiple efforts underway to improve habitat management, reduce human interference, and enhance eco-tourism.*