

Weekly Current Affairs To The Point by Dhananjay Gautam

20 to 26 April 2025











GS Paper 3 – Agriculture and Economic Development

15th BRICS Agriculture Ministers' Meeting: A Milestone for Sustainable and Inclusive Farming

Context: At the 15th meeting of BRICS Agriculture Ministers, member countries - Brazil, Russia, India, China, and South Africa - came together to strengthen collaboration in transforming the global agricultural landscape. India played a pivotal role by reiterating its commitment to inclusive, equitable, and sustainable agriculture.



Kev Outcome: BRICS Land Restoration Partnership:

A major highlight of the meeting was the launch of the BRICS Land **Restoration Partnership**, an initiative aimed at:

- Combating land degradation
- Tackling **desertification** •
- Restoring **soil fertility** •

This partnership aligns with the UN's Decade on Ecosystem Restoration (2021–2030) and promotes landbased solutions to global food insecurity and climate change.

Joint Declaration: Vision for a Sustainable Agri-Food System:

The ministers signed a **Joint Declaration** committing to the creation of a **fair**, **innovative**, **inclusive**, and **resilient** agri-food system. The declaration emphasizes:

- Investment in climate-resilient farming
- Strengthening global agricultural trade
- Enhancing technology transfer between member countries •

India's Stand: Empowering the Backbone of Agriculture:

India emphasized the need to empower small and marginal farmers, particularly women, who are often the most vulnerable to:

- Climate change
- Price volatility
- **Resource scarcity**

Fact Check: Globally, over 510 million smallholder farmers produce more than one-third of the world's food supply.

India stressed that empowering these farmers socially, economically, and politically is essential for ensuring **food security** and **rural development**.

Freedom UPSC with Dhananjay Gautam

Understanding Sustainable Agriculture:

Definition:

Sustainable agriculture refers to farming practices that:

- Meet current food needs
- Conserve natural resources
- Protect the environment
- Ensure economic viability and social equity Download Our Application ____









Key Practices:

- Efficient water management
- Use of **bio-fertilizers** and **organic inputs**
- Reduction of chemical dependency
- Adoption of agroecological methods

Why Sustainable Agriculture Is the Need of the Hour:

• **Over-Dependence on Monsoons:** Around **60% of India's farmland** is rain-fed, making it highly vulnerable to **climate variability**.

20 to 26 April

- **Price Fluctuations:** Farmers often sell crops at a loss due to **market volatility** and **lack of storage infrastructure**.
- Low Mechanization & Processing: Post-harvest losses and lack of value addition reduce farmer income.
- Limited Access to Credit: Smallholders face barriers in accessing institutional finance.

India's Initiatives for Agricultural Sustainability:

Farmer Producer Organizations (FPOs):

FPOs help **aggregate produce**, improve **market access**, and provide **shared infrastructure**.

Warehouse Receipt Financing:

Enables farmers to store their produce and **delay sales** until they get **better prices**.

National Mission for Sustainable Agriculture (NMSA):

Focuses on:

- Climate-resilient crops
- Soil health management
 Soil health management
- Efficient irrigation practices like drip and sprinkler systems

National Innovations on Climate Resilient Agriculture (NICRA):

• Supports climate-based research, technology demonstration, and farmer capacity building.

Promotion of Bio-fertilizers:

• Reduces **chemical inputs** and enhances **soil microbial health**, supporting long-term productivity.

Conclusion: Toward a Just and Resilient Global Food System

The 15th BRICS Agriculture Ministers' Meeting marked a significant step toward redefining the future of agriculture—placing **farmers first**, prioritizing **sustainability**, and driving **innovation** across borders.

For India, this summit reinforced a long-term vision of **agriculture-led inclusive growth**, placing **smallholder farmers**, **climate resilience**, and **global cooperation** at the center of policy planning.

<u> Freedom UPSC with Dhananjay Gautam</u>













Paper 3 – Science and Technology

Artificial General Intelligence (AGI): The Future of Human-Like Machines

Context: According to DeepMind, Google's AI research lab, it is "plausible that powerful AI systems will be developed by 2030." This prediction reflects increasing confidence in the rapid advancement toward Artificial General Intelligence (AGI) a form of AI that could revolutionize the world as we know it.

What is Artificial General Intelligence (AGI)?

AGI refers to a **hypothetical form of intelligence** in machines that can perform **any intellectual task** a human can. Unlike current AI systems that excel at specific tasks, AGI aims to

mimic the full range of human cognitive abilities, including reasoning, learning, problem-solving, and even emotional understanding.

Levels of AGI (As Identified by DeepMind, 2023):

- 1. **Emerging** Comparable to an unskilled human.
- 2. **Competent** Matches at least **50th percentile** of skilled adults.
- 3. Expert Equals or exceeds the 90th percentile.
- 4. **Virtuoso** Reaches the **99th percentile** of skilled adults.
- 5. Superhuman Outperforms all human beings.

AI vs AGI· Ke<mark>v Differ</mark>ences

in vs Adi. Rey Differ chees					
Aspect	Artificial Intelligence (AI)	Artificial General Intelligence (AGI)			
Focus	Solves specific tasks with human- like performance	Replicates human-level cognition across domains			
Learning Capability	Requires extensive training within a single domain	Self-learns and adapts without prior task-specific training			
Scope	Works within narrow, predefined areas	Operates across multiple domains without limitations			
Alternate Name	Known as Weak AI or Narrow AI Also called Strong AI				
Cognitive Abilities	Lacks general reasoning and emotional intelligence	Exhibits independent reasoning and emotional understanding			
Current Status	Actively developed and used today	Still theoretical and under research			

Core Technologies Powering AGI Research:

- **Deep Learning**: Enables machines to learn complex patterns across large datasets.
- Generative AI: Powers the creation of original content (text, image, audio).
- **Natural Language Processing (NLP)**: Helps machines **understand and generate human language**. •
- **Computer Vision**: Allows machines to **see**, **interpret**, **and respond** to visual stimuli.
- Robotics: Provides machines with physical interaction abilities, crucial for AGI's sensory and motor functions.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u>











Potential Applications of AGI:

- Advanced Problem Solving: Tackles global challenges like climate change and scientific breakthroughs.
- **Productivity Boost**: Automates complex tasks, drastically **increasing efficiency** across industries.
- Creative Empowerment: Allows humans to focus on strategic, artistic, and emotionally rich roles.
- Healthcare Revolution: Enhances diagnosis, treatment planning, and drug discovery.
- **Personalized Education**: Delivers **adaptive learning** experiences for all learners.
- **Transportation Safety**: Powers **safe, autonomous vehicles**, reducing human error and accidents.
- **24/7 Assistance**: Enables **intelligent virtual assistants** for round-the-clock support.
- Accelerated Innovation: Drives technological advancement and creative discovery.

Challenges in AGI Development:

- Cross-Domain Learning: AGI must make abstract, transferable connections across diverse fields.
- **Emotional Intelligence**: Replicating **human emotions and creativity** remains a major hurdle.

• **Sensory Perception**: Machines still struggle to process and integrate **multisensory data** effectively.

Concerns Abou<mark>t AGI:</mark>

- Loss of Control: AGI may act independently or unpredictably.
- **Job Displacement**: Could lead to **widespread unemployment** in cognitive sectors.
- Security Threats: Risk of misuse in cyberwarfare, surveillance, or autonomous weapons.
- Ethical Dilemmas: Raises questions about machine rights, autonomy, and consciousness.
- Lack of Regulation: Absence of global laws and ethical standards to govern AGI.
- Existential Risk: If misaligned with human goals, AGI could threaten human survival.

The Way Forward:

To ensure safe and beneficial AGI development, the global community must:

- Establish international laws and ethical guidelines for AGI research and deployment.
- Prioritize **safety**, **value alignment**, and **responsible decision-making** in system design.
- Implement **real-time monitoring and auditing tools** to detect and prevent misuse.
- Develop AGI **step-by-step**, ensuring **safety checks** at every milestone.

Artificial General Intelligence holds the promise of transforming our world—but with that power comes immense responsibility. A collaborative, ethical, and cautious approach will be essential as we move toward a future shaped by AGI.

Freedom UPSC with Dhananjay Gautam



Google Plav









GS Paper 2 – Health

Making Primary Health Care Visible, Accessible, and Affordable

Context: India is undergoing a transformation in the **primary healthcare sector**, with a focus on making health services more **visible**, **accessible**, and **affordable**. Through innovative policies and national programs, the government aims to bridge the healthcare divide and strengthen its grassroots infrastructure.

Understanding Primary Health Care (PHC):

As defined by the **World Health Organization (WHO)**, **Primary Health Care (PHC)** is a **whole-of-society approach** to organizing and strengthening health systems by bringing essential services closer to communities.

Core Principles of PHC:

- Accessibility: Healthcare available to all.
- Affordability: Services without financial burden.
- Comprehensiveness: Including preventive, promotive, curative, rehabilitative, and palliative care.
- Rooted in the Alma-Ata Declaration of 1978, which called for universal health care through scientifically sound and socially acceptable methods.

Key Challenges in India's Primary Healthcare System:

1. Urban vs. Rural Divide:

- Urban Slums: Proximity to healthcare centers but face overcrowding and affordability issues.
- Rural India: Home to 65% of the population, yet faces shortages of PHCs, trained staff, and poor connectivity.

2. Human Resource Shortages (2023-24):

- 77% shortage of surgeons, 69% obstetricians, and 70% physicians at Community Health Centres.
- 10-25% nurse vacancies in several states.

3. Burden of Non-Communicable Diseases (NCDs) and Mental Health:

• PHCs now address **lifestyle diseases and mental health**, but **limited training** and **infrastructure** hinder effective care.

Government Initiatives Strengthening Primary Health Care:

National Health Mission (NHM):

• A vast network of **1.6 lakh Sub-Centres**, **26,636 PHCs**, and **6,155 CHCs** acting as the **first point of contact** for health services.

Ayushman Bharat Program (2018):

- Focuses on Health and Wellness Centres (HWCs) to provide services related to:
 - NCDs, maternal and child health, mental health, and elderly care.

Comprehensive Primary Health Care (CPHC):













- Part of the National Health Policy 2017.
- Emphasizes Universal Health Coverage (UHC).
- Integrates AYUSH systems (Ayurveda, Yoga, Unani, Siddha, Homeopathy) with modern medicine.

20 to 26 April 2095

Targeting Underserved Areas:

• Aspirational Districts and Blocks Programs focus on health equity in underdeveloped regions.

Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM):

• Aims to strengthen public health infrastructure with an investment of **64,180 crore**.

Women-Led Health Empowerment:

• Self Help Groups (SHGs): Over 1.9 crore women spread awareness and promote utilization of PHC services.

Global Support and Initiatives:

Universal Health Coverage (UHC):

- Ensures quality healthcare access without financial hardship.
- Scaling PHC in low- and middle-income countries could:
 - Save 60 million lives
 - Increase life expectancy by 3.7 years by 2030

Key Global Pr<mark>ograms:</mark>

- **The Global Fund**: Supports integrated health responses for **HIV**, **TB**, and **Malaria**.
- Gavi, the Vaccine Alliance: Strengthens immunization and health systems in developing countries.

Way Forward: Building a Resilient Primary Healthcare System:

Strengthening Infrastructure:

- Expand **HWCs**, especially in rural and remote areas.
- Promote **telemedicine** to bridge urban-rural healthcare gaps.

Enhancing Awareness:

• Conduct **health education campaigns** and **community outreach** to promote service visibility and utilization.

Ensuring Affordability:

- Minimize **out-of-pocket expenses** through schemes like **PM-JAY**.
- Provide **financial protection** for vulnerable populations.

Conclusion:

A robust primary healthcare system is the cornerstone of a healthy nation. By enhancing **visibility**, **accessibility**, and **affordability**. India can ensure **equitable healthcare for all**, particularly for those most in need. With sustained effort, policy innovation, and community engagement, primary healthcare can become truly **universal and inclusive**.

Freedom UPSC with Dhananjay Gautam











GS Paper 1 – Indian Heritage and Culture, History

20 to 26 April

Mahadev Koli Tribe: Guardians of Tradition and Nature

Context: A **recent study** has shed light on the **Mahadev Koli tribe's** deeprooted **ecological and medicinal wisdom**, emphasizing its potential to **enhance global climate resilience**. Their intimate connection with nature, passed down through generations, could play a key role in shaping sustainable environmental practices worldwide.



Who are the Mahadev Koli?

The **Mahadev Koli** (also spelled **Mahadeo Koli**) are a **sub-group of the Koli community**, predominantly residing in the **Maharashtra** and **Goa** states of **India**.

- The tribe derives its name from Lord Mahadev (Shiva), their revered deity.
- They primarily inhabit the **Mahadev hills** and are found in districts such as **Pune**, **Nashik**, and **Ahmednagar**.
- Officially recognized as a **Scheduled Tribe (ST)** under the Indian Constitution, they are entitled to various social and economic benefits.

Language & Culture:

- The Mahadev Kolis speak Marathi, using the Devanagari script for reading and writing.
- The community is structured into **24 exogamous clans**, each using the **clan name as a surname**.
- Their cultural identity is deeply rooted in **Hindu traditions**, and each clan worships its **own deity**.
- Major community celebrations include Shivratri, Gudi Padwa, and local harvest festivals.

Lifestyle & Occupation:

Traditional Diet:

Their staple foods include:

TOGETHER WE SCALE HEIGHTS

• Rice, Nagli (Ragi), Varai (Barnyard millet), and Wheat – all rich in nutrition and suited to their agrarian lifestyle.

Occupational Practices:

- Primarily engaged in **agriculture**.
- Supplemented by **cattle rearing**, **dairy and poultry farming**, and **wage labor**.
- Many have adapted to **modern livelihoods** while maintaining their connection to the land.

Medicinal and Ecological Expertise:

One of the **unique strengths** of the Mahadev Koli tribe lies in their **traditional medicinal knowledge**:

- They utilize over 50 native tree species for healing practices.
- Their understanding of **local flora and fauna** is not just cultural but **scientifically valuable**, especially in **biodiversity conservation** and **climate resilience efforts**.
- Practices like **soil preservation**, **water conservation**, and **organic farming** are ingrained in their lifestyle.

Freedom UPSC with Dhananjay Gautam

Historical Legacy: The Braveheart of Sinhagad

Download<u>Our Application</u> ____







The **legendary warrior Tanaji Malusare**, a **trusted general of Chhatrapati Shivaji Maharaj**, hailed from the Mahadev Koli community.

- His heroic role in the **Battle of Sinhagad (1670)** is a symbol of **valor and sacrifice**, immortalized in folklore and modern cinema.
- He remains a **cultural icon** for the community and Maharashtra at large.

Additional Facts & Insights:

- The Mahadev Kolis are considered **ecological stewards**, often participating in **forest protection committees** in Maharashtra.
- The **Government of Maharashtra** runs welfare schemes and educational programs targeted at the **upliftment** of ST communities like the Mahadev Koli.
- They play an active role in **local governance**, especially through **Gram Sabhas** in tribal areas.
- Folk arts, such as Lezim and Koli dances, reflect their rich oral tradition and storytelling.

The Road Ahead:

To preserve and promote the **Mahadev Koli heritage**, it's important to:

- Document their traditional knowledge and integrate it with modern science.
- Ensure **better access to education, healthcare, and employment opportunities**.
- Involve tribal communities in climate action plans and biodiversity conservation policies.

The Mahadev Koli tribe stands as a vibrant example of how tradition, culture, and ecological harmony can coexist. Empowering such communities not only honors India's rich tribal heritage but also contributes to a more sustainable and inclusive future.

OGETHER WE SCALE HEIGHTS

Download Our Application GET IT ON











GS Paper 1 – UNESCO Cultural Heritage

Bhagavad Gita & Natyashastra Join UNESCO's Memory of the World Register

Context: In a proud moment for India, the **manuscripts of the Bhagavad Gita and Bharata's Natyashastra** have been officially included in **UNESCO's Memory of the World Register**, among **74 new entries**. **Prime Minister Narendra Modi** celebrated the recognition, emphasizing how these ancient texts have **deeply shaped civilizations** and continue to **inspire humanity across the globe**.



UNESCO's Memory of the World Programme: Safeguarding Humanity's Collective Memory

Launched in **1992**, the **Memory of the World (MoW) Programme** is UNESCO's global initiative to **preserve and promote documentary heritage** of international significance.

Objective & Vision:

- Prevent the loss of invaluable records and collective amnesia.
- Ensure long-term access to documents that represent the cultural identity, memory, and history of peoples worldwide.
- Promote global accessibility and preservation of rare manuscripts, oral traditions, and archival collections.

About the Register:

- A **biennially updated list** featuring **documents**, **manuscripts**, **audio-visual records**, and more.
- Includ<mark>es globa</mark>lly significant entries such as:
 - **Mahavamsa** (Sri Lanka's ancient chronicle)
 - **Auschwitz Trial Recordings** (Germany)
 - Sheikh Mujibur Rahman's Historic Speech (Bangladesh)

India's Glorious Contributions to the MoW Register:

India has made **13 submissions**, including **two joint entries**, reflecting its **rich intellectual and spiritual legacy**.

Notable Indian Entries:

- Rig Veda (2005)
- Shaiva Philosopher Abhinavagupta's Works (2023)
- Archives of the Non-Aligned Movement (NAM) Summit (2023, joint entry)
- Dutch East India Company Records (2003, joint entry)

2024 Additions:

• **Bhagavad Gita** and **Natyashastra** — preserved at the **Bhandarkar Oriental Research Institute**, Pune — recognized for their **universal value and literary brilliance**.

Natyashastra: Blueprint of Indian Performing Arts

Authorship & Era:

• Attributed to Sage Bharata.









• Estimated to have been compiled between **500 BCE to 500 CE**; UNESCO suggests **2nd century BCE** as most plausible.

Scope & Structure:

- A monumental treatise with **36,000 verses**, covering:
 - Drama (Natya)
 - Performance (Abhinaya)
 - Music (Sangita)
 - Emotions (Bhava)
 - Aesthetic experience (Rasa)

Core Concept: Rasa Theory

- **Rasa** means "essence" or "flavor"—the emotional impact of art on the audience.
- Bharata famously stated: "No meaning can blossom without rasa."
- Scholar Wallace Dace notes: Actors may imitate emotions, but the audience actually experiences them.
- According to Susan L. Schwartz, this immersive process allows viewers to enter a "parallel reality", enriching their spiritual and moral understanding.

Global Impact:

 Recognized as one of the earliest aesthetic theories in the world, influencing not only Indian but also Asian and global performance traditions.

Bhagavad Gita: A Timeless Dialogue of Dharma and Devotion

Philosophical Depth:

- A 700-verse Sanskrit scripture, part of the Mahabharata's Bhishma Parva.
- Traditionally ascribed to Sage Vyasa.
- Described by UNESCO as a cornerstone of India's philosophical thought, blending ideas from:
 - Vedic traditions
 - Buddhism
 - Jainism
 - Charvaka (materialist) philosophy

Dating and Origins:

- Believed to be composed between the **1st-2nd century BCE**.
- Possibly transcribed much later from **oral traditions**.

The Sacred Conversation:

• Set on the **battlefield of Kurukshetra**, it captures a **spiritual dialogue** between **Prince Arjuna** and **Lord Krishna**, his charioteer and divine guide.

Freedom UPSC with Dhananjay Gautam

- Arjuna's moral crisis triggers Krishna's teachings on:
 - Dharma (duty)
 - Karma (action)

O Bhakti (devotion)





Freedom UPSC





- Moksha (liberation)
- Self-realization and detachment

Universal Relevance:

- The Gita has inspired **philosophers**, leaders, and reformers including Mahatma Gandhi, Aldous Huxley, and Carl Jung.
- Its message continues to serve as a **spiritual compass** for people around the world.













GS Paper 3 – Environmental Pollution & Degradation

Balancing Ethanol Production with Sustainability in India

Context: India's **ethanol production** is seeing a major uptick, with **35 lakh tonnes of sugar** expected to be diverted toward ethanol manufacturing in **2024-25**, a significant increase from **21.5 lakh tonnes** in **2023-24**. This reflects India's continued focus on **biofuel adoption** and **energy diversification**.

What is Ethanol?

Ethanol (C_2H_5OH) is a **renewable biofuel** derived primarily from agricultural feedstocks, such as **sugarcane**, **maize**, **rice**, **wheat**, and other forms of **biomass**. In India, **molasses**, a byproduct of sugar production, is a key feedstock for ethanol.

Properties of Ethanol:

- Appearance: Clear, colorless liquid.
- Boiling Point: 78.5°C
- Melting Point: -114°C
- **Octane Rating:** Higher than petrol, preventing engine knocking.
- **Flammability:** Highly flammable, 99.9% pure alcohol.

Common Eth<mark>anol Ble</mark>nds:

- **E10**: 10% ethanol, 90% gasoline (most widely used).
- **E85**: Up to 83% ethanol (used for flexible fuel vehicles).

Health & Environmental Impact:

- Exposure Risks: Skin irritation, nausea, or more severe effects at high concentrations.
- Environmental Decomposition: Ethanol breaks down into CO₂ and water, but may contribute to photochemical smog and methane formation in oxygen-deprived environments.

India's Ethanol Blending Journey:

India's **Ethanol Blending Programme (EBP)** started in **2003**, and over time, blending targets have expanded:

<u>Freedom UPSC with Dhananjay Gautam</u> 13

- **5% ethanol blending** in 2003.
- Target for **20% ethanol blending by 2024-25**.
- **30% ethanol blending** targeted by **2030**.

Ethanol Production and Economic Impact:

- **Production Capacity:** 1,600 crore liters by **2024**.
- Foreign Exchange Savings: Rs. 1.06 lakh crore by reducing crude oil imports.
- **CO₂ Emissions Cut:** 544 lakh metric tons.
- Crude Oil Substitution: 181 lakh metric tons.

Concerns Regarding Ethanol Production in India:

Download <u>Our Application</u> —





PCC



While ethanol production offers environmental benefits, there are significant challenges:

Food Security Risks:

- Increased demand for maize, rice, and broken rice for ethanol may divert food crops from consumption, leading to higher food prices.
- **Retail rice prices** rose by **14.51%** in 2023, affecting food affordability.

Land Use Pressure:

- Meeting the **E20 target** requires **7.1 million hectares** of land, which may lead to increased pressure on land. water. and fertilizers.
- Inefficiency of Maize: It takes 187 hectares of maize to produce the same energy as one hectare of solar energy, raising concerns about land use efficiency.

Water Scarcity:

Ethanol production uses 8-12 liters of water per liter of ethanol, leading to depletion of groundwater, especially in water-stressed regions.

Limited Emission Reductions:

- While ethanol helps reduce CO₂ emissions, it may only offer modest reductions, which may not ٠ significantly contribute to India's Net Zero 2070 goals.
- Ethanol plants, categorized as "red industries", contribute to pollution (acetaldehyde, formaldehyde) in air, water, and soil.

Technological and Infrastructure Gaps:

- India's ethanol production is largely reliant on first-generation ethanol, which is less efficient • than advanced technologies like cellulosic ethanol.
- **Underdeveloped infrastructure** for fuel blending, especially in rural areas, hampers scalability.

How Can India Balance Ethanol Production with Sustainable Resource Management?

India can adopt several strategies to **balance ethanol production** with sustainability:

Promote 3G Ethanol Production:

Scaling up microalgae-based (3G) ethanol production under schemes like Pradhan Mantri JI-VAN **Yojana** offers an alternative to first-generation and second-generation ethanol. It requires fewer land and water resources.

Strengthen Environmental Regulations:

- Implement Life Cycle Assessments (LCA) to evaluate the full environmental impact of ethanol • production.
- Promote carbon capture and storage (CCS) technologies at ethanol plants to offset emissions and align with Net Zero goals.
- **Carbon credits** should be integrated into the supply chain to incentivize low-emission feedstock usage.

Enhance Water Management:

Encourage drip irrigation and rainwater harvesting for biofuel crops, as seen in Maharashtra, where water use was reduced by **40%** using drip irrigation.

Download <u>Our Application</u> _____ **Freedom UPSC with Dhananjay Gautam**

Google Play

GET IT ON



• Mandate **Zero-Liquid Discharge (ZLD)** systems to recycle water in ethanol plants, similar to the model adopted by **Balrampur Chini Mills**.

Agroforestry and Land Efficiency:

• Promote **agroforestry** where biofuel crops are grown alongside forestry to optimize land-use and boost productivity without additional land use.

Circular Economy in Ethanol Production:

• Under the **National Bio-Energy Programme**, adopt circular economy models by repurposing ethanol byproducts for **animal feed**, **fertilizers**, or **biogas**. Reusing treated wastewater for **irrigation** and **cooling** in industries can also improve efficiency.

Conclusion:

India's ethanol blending initiative is a key step towards reducing **fossil fuel dependency**, curbing **emissions**, and fostering **rural economic growth**. As the country targets **30% ethanol blending by 2030**, adopting **sustainable practices** and advanced technologies will ensure that this ambitious program does not compromise food security, water resources, or long-term environmental goals.

Freedom UPSC





TOGETHER WE SCALE HEIGHTS









GS Paper 2 – Governance, Constitution, Polity, Social Justice

Criminalisation of Civil Disputes: Supreme Court's Concern, Causes, and Solutions

Context: Chief Justice of India Sanjiv Khanna recently raised serious concerns about the increasing tendency to convert civil disputes into criminal cases, particularly in Uttar Pradesh. His observations came during a case where two individuals facing a cheque bounce charge were also booked under severe criminal provisions, including breach of trust, intimidation, and criminal conspiracy.



The Chief Justice emphasized that such misuse of criminal law undermines the legal process and threatens the rule of law.

CJI's Remarks on Criminalising Civil Disputes:

CJI Khanna condemned the growing practice of giving civil disputes a criminal flavor to harass or intimidate the other party. He stressed that this misuse risks eroding public trust in the legal system and could cause **breakdowns** in the rule of law.

Modus Operandi: How Civil Cases Are Converted to Criminal Cases:

The common method involves alleging dishonest intent from the beginning of a civil transaction. For example:

- If **Person A lends money** to **Person B** and the money isn't returned, it should ideally be a civil dispute.
- However, **Person A** might allege that **Person B** never intended to repay and filed a **criminal** complaint under Section 420 IPC (now Section 318 of the Bharatiya Nyaya Sanhita), accusing cheating or fraud.

This **misrepresentation** of intent turns a civil issue into a criminal case, adding pressure on the accused to settle quickly.

Why Are People Choosing Criminal Law Over Civil Law?

- 1. Perceived Inefficiency of Civil Law:
 - Civil litigation is often **slow**, **expensive**, and **tedious**.
 - Especially in **family disputes**, prolonged legal battles cause emotional and financial stress.
- 2. Criminal Law as a Pressure Tactic: Criminal charges bring quicker hearings, fear of arrest, and **reputational damage**, making them a tool to coerce or force a settlement.
- 3. Influence and Incentivization: In some cases, influential individuals or corrupt practices result in **FIRs being filed** even when the matter is clearly civil in nature.

Backlog of Cases in Indian Courts:

According to the **National Judicial Data Grid (NJDG)**:

- Over **1.08 crore civil cases** are pending in **district courts**.
- 68% of these have been pending for over a year.
- Out of 4.52 crore total pending cases, 76% (3.44 crore) are criminal cases.







This backlog **fuels the shift** from civil to criminal cases, as criminal proceedings are seen as a faster route to resolution.

Courts' Consistent Stand Against Misuse:

The **Supreme Court of India** has consistently warned against using criminal law to settle civil scores.

Key Judgments:

- **G. Sagar Suri vs. State of U.P. (2000)**: The Court warned against using criminal proceedings as **shortcuts** for civil remedies.
- **C. Subbiah @ Kadambur Jayaraj vs. Superintendent of Police (2024)**: The Court noted that a purely civil dispute had been given a **criminal color** alleging fraud and breach of trust.

These judgments reinforce that **criminal charges should not be used to settle private disputes** rooted in civil law.

Way Forward: Court's Recommendations to Prevent Abuse

Hold Frivolous Complainants Accountable:

In Indian Oil Corporation vs. NEPC India Ltd. (2006), the Court stated that:

- People using criminal law despite **knowing the matter is civil** must face consequences.
- **Baseless criminal proceedings** should be **dismissed**, and civil remedies pursued instead.

Use of Section 250 CrPC and BNSS Section 395

The Court recommended the **frequent use of Section 250 CrPC**, which allows compensation to be awarded to falsely accused individuals. In the **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023**, this is covered under **Section 395**.

- This **acts as a deterrent** for filing malicious or frivolous criminal complaints.
- Encourages the **judiciary to penalize misuse** of criminal law more often.

Frequently Asked Questions (FAQs):

Download <u>Our Application</u> -

Google Play

- **1. What is criminalisation of civil disputes:** It refers to the **misuse of criminal law** to address issues that are fundamentally **civil in nature**, such as contractual breaches, money recovery, or property disputes.
- **2.** Why is it a problem: It clogs criminal courts, harasses individuals, and undermines the legal process by bypassing civil procedures and protections.
- **3.** Can civil cases be legally converted into criminal cases: Only if criminal intent is present from the start. Otherwise, such conversions are misuse of law and courts may penalize them.
- **4.** What is Section 250 CrPC: This section allows courts to order compensation to be paid to wrongfully accused individuals, discouraging frivolous criminal proceedings.

Conclusion: The **criminalisation of civil disputes** is a growing concern in India's justice system. While the **pressure and speed** of criminal cases may tempt parties to misuse them, such actions **erode trust**, **clog courts**, and **violate legal rights**. The **Supreme Court's repeated warnings**, combined with **systemic reforms and strict enforcement of penalties**, are vital to restoring the sanctity of both **civil** and **criminal legal processes**.

Freedom UPSC with Dhananjay Gautam







GS Paper 3 – Science and Technology

K2-18b: Tracing the Possibility of Life Beyond Earth

Context: On **April 17**, an international team of scientists published a groundbreaking paper suggesting that the distant exoplanet **K2-18b** may exhibit conditions suitable for life.

Introduction:

In a remarkable development in the field of space science, researchers analyzing data from the **James Webb Space Telescope (JWST)** have reported signs of potential **habitability** on the exoplanet **K2-18b**, located about **124 light-years** from



Understanding K2-18b and Its Discovery:

Discovered in **2015** by NASA's **Kepler Space Telescope**, **K2-18b** is a **super-Earth**—about **5.2 times wider** and **nine times more massive** than our planet. It orbits a **red dwarf star** (K2-18) within the **habitable zone**, receiving a level of stellar radiation similar to Earth.

Key Milestones:

- **2019 (Hubble)**: Water vapor detected in its atmosphere.
- 2023–2024 (JWST): Stronger evidence for methane, carbon dioxide, and other organic molecules essential to life.

Hycean World Hypothesis and Atmospheric Composition:

Scientists speculate that K2-18b could be a **Hycean world**—a planet with a **hydrogen-rich atmosphere** and possibly a **liquid water ocean** beneath it. These planets may support life despite extreme environments, thanks to potentially **moderate temperatures** and **protective atmospheric layers** like a stratosphere.

Key atmospheric findings include:

- **Carbon-based molecules**: Carbon dioxide and methane.
- Possible detection of Dimethyl Sulphide (DMS) or Dimethyl Disulphide (DMDS).

The Significance of Dimethyl Sulphide (DMS):

The potential detection of **DMS** is a highlight of the K2-18b analysis.

- On **Earth**, DMS is **almost entirely biological** in origin, produced by **marine phytoplankton** and **bacteria**.
- On K2-18b, **DMS-like signals** were reportedly **up to 1,000 times stronger** than on Earth, suggesting an **active production source**.

However:

- Spectral overlap between DMS and DMDS complicates analysis.
- Abiotic sources such as volcanic activity or cometary chemistry cannot be ruled out.

Caution Against Premature Conclusions:

Despite the excitement, researchers stress the need for **scientific caution**:

Download <u>Our Application</u> ____

Google Play









- **JWST limitations**: Data interpretation depends on computer models that may not fully capture unknown atmospheric conditions.
- Past false positives: In 2024, DMS was discovered on comet 67P, generated through non-biological processes.
- Alternative hypotheses:
 - A U.S. study suggests K2-18b might be a **mini-Neptune** with a thick gas envelope, not requiring life to explain its chemical makeup.
 - A **2025 reanalysis** challenges earlier findings, claiming **no statistically significant evidence** of DMS or carbon dioxide.

Challenges in Confirming Life on Exoplanets:

Detecting extraterrestrial life is one of science's most complex endeavors due to:

- Indirect methods: Reliance on molecular signatures, temperature estimates, and radiation modeling.
- **Technological limitations**: Even advanced tools like JWST cannot **directly observe life**—only indicators or conditions that might support it.

Thus, while promising, any claims of life on K2-18b must be **treated as preliminary**.

Conclusion:

K2-18b remains one of the most intriguing exoplanets studied so far. Its **hydrogen-rich atmosphere**, potential **water vapor**, and traces of **organic molecules** present a compelling case for further exploration. The possible detection of **DMS** adds a tantalizing layer of mystery, but **conflicting data** and **technical challenges** mean that conclusions must await more rigorous confirmation.

While we may not yet know if **K2-18b hosts life**, its study is **expanding the frontier of planetary science**, guiding future missions in the search for life beyond Earth.

'OGETHER WE SCALE HEIGHTS

Download <u>Our Application</u> GET IT ON

Google Play



Freedom UPSC









GS Paper 3 – Economic Development & Infrastructure

Ride-Hailing in India: BluSmart Exit, Subscription Models, and Legal Challenges Reshape Market

Context: India's **\$1-billion ride-hailing market** is undergoing major disruption.

- **BluSmart**, a leading **electric vehicle (EV)** cab operator, has **paused services** amid financial distress and regulatory probes.
- In parallel, **subscription-based pricing models** by startups like **Rapido** and **Namma Yatri** are challenging traditional commission-heavy models from Uber and Ola.
- Adding to the volatility, the **Karnataka High Court** has ordered a **ban on bike taxis**, impacting gig workers and raising broader questions about regulation.

BluSmart's Uncertain Future: Key Developments

Service Suspension:

BluSmart has halted operations in **Delhi-NCR, Bengaluru, and Mumbai**. Refunds for users' in-app wallet balances may take **up to 90 days**, worrying customers and regulators alike.

Liquidity Crisis Deepens:

- ICRA has flagged delays in debt servicing and highlighted BluSmart's loss-making status.
- The service suspension further worsens its **cash crunch**.

Vehicle Financing in Trouble:

- Gensol Engineering, BluSmart's associate, is in default on loans from IREDA and PFC used to finance EVs.
- These vehicles were pledged as collateral and may now be **repossessed and auctioned**.

Ownership Tangles:

• While some EVs are under BluSmart's **"Assured" leasing program**, most are leased from **Gensol**, complicating potential takeovers or partnerships (e.g., with Uber).

Failed Exit Deal;

- A proposed deal to sell **3,000 EVs to Refex Green Mobility** has collapsed.
- Meanwhile, **SEBI is probing Gensol** for financial misconduct, further clouding future asset deals.

Bottom Line: BluSmart's exit appears more permanent than temporary, with **deep financial, legal, and operational hurdles** blocking a revival.

Who Gains from BluSmart's Fall?

- **Uber and Ola May Regain Share:** BluSmart's absence could drive users back to **Uber** and **Ola**, but the landscape is no longer theirs alone.
- **Rise of New Players:** Startups like **Shoffr** in Delhi are gaining traction—especially for **airport transfers**—with better reliability and service.

Subscription Models on the Rise:

Rapido and Namma Yatri now offer driver-friendly daily/weekly subscription fees, instead of steep commissions.
 Download Our Application ______

<u>Freedom UPSC with Dhananjay Gautan</u>











• These models are increasingly popular among **auto** and **cab drivers**.

Pressure on Incumbents:

Uber and Ola have **adopted subscriptions for autos** and may soon extend them to cabs. However, moving away from commission models challenges their existing revenue structures.

Legal Hurdles Facing India's Ride-Hailing Sector

GST Confusion Over Subscription Models:

Subscription platforms avoid collecting **5% GST from passengers**, since payments go directly to drivers. But legality is unclear:

- Nov 2024 (Karnataka AAR): Held that Uber must collect GST under the subscription model.
- Sep 2023 Ruling: Exempted Namma Yatri, saying it only connects drivers and passengers.

The industry is now seeking **clear policy guidance** from the **GST Council** and tax authorities.

Crackdown on Bike Taxis:

- Karnataka High Court ordered a shutdown of bike taxi services by mid-May, citing lack of regulation.
- This affects **thousands of drivers**, including **many women riders**.

Drivers have petitioned for:

- Temporary permits
- A regulatory framework
- Stakeholder consultations

Call for Reform:

The **Internet and Mobile Association of India (IAMAI)** has urged the formation of a **joint government-industry committee** to frame comprehensive **bike taxi regulations**.

Growth Potential Amid Legal Uncertainty:

Despite ongoing disruption, India's ride-hailing market is **poised for rapid expansion**:

- Valued at \$951 million in FY 2023-24
- Expected to reach \$3.9-4 billion by FY 2031-32
- Implies a CAGR of over 18%

However, **policy clarity**—on **subscription pricing**, **GST**, **and bike taxis**—will be critical to sustaining this momentum.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u>













GS Paper 3 – Environment and Ecology

Earth Day 2025: "Our Power, Our Planet"

Context: Earth Day is celebrated **every year on April 22**, marking one of the **largest environmental protest movements** in the world. It's a global reminder of our **shared responsibility** to protect and preserve our planet for future generations.

Theme of Earth Day 2025:

This year's official theme is:

"OUR POWER, OUR PLANET"

The message is clear: we must act now. Earth Day 2025 emphasizes the urgent need to **transition to renewable energy** sources. It calls on **individuals**, **corporations**, **and governments** to take bold action by **tripling clean energy production by 2030**. The campaign is a powerful rallying cry for a **just and sustainable energy future**.

A Brief History of Earth Day:

- First observed on April 22, 1970, Earth Day began as a national teach-in on environmental issues in the United States.
- It was initiated by **U.S. Senator Gaylord Nelson**, bringing together **over 20 million Americans**—about **10% of the U.S. population**—to demand cleaner air, water, and land.
- By **1990**, Earth Day had gone **global**, with more than **200 million people in 141 countries** participating.
- Since then, it has evolved into a worldwide movement, inspiring action on climate change, biodiversity loss, plastic pollution, and more.

Why Earth Day Still Matters:

- **Climate change** continues to threaten ecosystems and communities worldwide.
- Environmental issues such as **deforestation**, **ocean acidification**, and **species extinction** are intensifying.
- Earth Day is a moment to **reflect**, **educate**, **and act**—pushing for **policies**, **innovations**, **and behaviors** that lead to a greener world.

Did You Know?

- **Over 1 billion people** now participate in Earth Day activities annually.
- Earth Day inspired the creation of the **U.S. Environmental Protection Agency (EPA)** and landmark laws such as the **Clean Air Act, Clean Water Act**, and **Endangered Species Act**.
- The **Paris Agreement**, a global treaty to fight climate change, is often promoted through Earth Day advocacy.

What You Can Do:

- **Reduce your carbon footprint** by using public transport or cycling.
- Switch to renewable energy or support clean energy policies.
- **Plant trees**, reduce plastic use, and conserve water.
- Educate others and participate in **local clean-up events**.

Our Future is in Our Hands:

As we honor **Earth Day 2025**, let's remember: **we are not powerless**. Together, **our power can protect our planet**. Join the movement. Be part of the change.

Download <u>Our Application</u> ____











GS Paper 1, 3 – Geography, Disaster Management

Cloudburst, Landslide, and Flash Floods: Nature's Sudden Furv

Context: Torrential rains in **Ramban tehsil**, Jammu and Kashmir, have led casualties, massive infrastructure damage, and emergency to evacuations. Authorities report that cloudbursts, landslides, and flash **floods** are the primary causes of the widespread destruction.

What is a Cloudburst?

Definition:

A cloudburst is a sudden, extremely intense rainstorm, delivering more than 10 cm of rain in under an hour over a small area (around 10 km²).

It is often accompanied by thunder, lightning, and sometimes hail.

Common in:

- Mountainous regions, especially the Himalayas
- Hard to predict due to their **localized** nature ٠

Causes:

- **Orographic Lifting**: Moist air ascends mountain slopes, cools, and condenses, causing rainfall.
- **Upward Air Currents**: These can hold raindrops longer, causing them to grow. Once the currents weaken, a **sudden downpour** occurs.
- Monsoon Dynamics: Monsoon clouds moving from the Bay of Bengal or Arabian Sea collide with the **Himalayas**, triggering intense rain.

Examples:

- Himachal Pradesh (2024) Cloudburst led to deadly floods •
- **Uttarakhand (2021)** Massive rainfall, landslides, and infrastructure collapse •

What is a Landslide?

Definition:

A landslide is the downward movement of rock, soil, or debris on a slope under the influence of gravity. It is a form of **mass wasting**.

Causes:

- Natural Triggers: Heavy rainfall, earthquakes, and water seepage •
- **Human Activities**: Deforestation, unregulated construction, and mining •
- Geological Factors: Weak soil layers, steep terrain, and poor vegetation cover

Landslide-Prone Areas in India:

- North East & North West Himalayas ٠
- Western Ghats, Konkan Hills, Eastern Ghats

Total Area Prone: 0.42 million sq. km (**12.6%** of India's land)

Examples:

Wayanad, Kerala (2024) – Significant landslide events

Download Our Application **Freedom UPSC with Dhananjay Gautam**











- Kedarnath, Uttarakhand (2013) Over 5,700 deaths due to massive landslide and floods
- Chamoli (2021) Triggered by glacier burst and heavy rainfall

What is a Flash Flood?

Definition:

A **flash flood** is a **sudden and intense flooding** event, occurring within **6 hours of heavy rainfall**. These floods are **short-lived**, but **extremely destructive**.

Causes:

- Heavy Rainfall that exceeds soil absorption and overwhelms drainage
- Rapid Snowmelt or glacial lake outbursts
- Dam or Levee Breaks
- Urbanization: Impervious surfaces like concrete increase runoff

Examples:

- Himachal Pradesh (2023) Intense rainfall caused sudden floods
- Uttarakhand (2013) Cloudbursts triggered flash floods and landslides
- Mumbai (2005) Over 944 mm of rain in a day caused major urban flooding

Did You Know?

- India sees an average of **30–40 cloudburst events** annually, especially during the **monsoon**.
- Flash floods account for more than 40% of flood-related deaths globally.
- Landslides cost India millions in damages each year and displace thousands of people.

Final Thoughts:

Understanding **natural disasters** like cloudbursts, landslides, and flash floods is crucial for **disaster preparedness and climate resilience**. As extreme weather events become more frequent due to **climate change**, both **governments and citizens** must work together to minimize the risks through **early warning systems**, **eco-sensitive planning**, and **community awareness**.

Download <u>Our Application</u>

Google Plav











GS Paper 1 – Geography

Syria's First Wheat Shipment Marks a Step Toward Recovery

Context: In a pivotal moment for **Syria's food security**, the **port of Latakia** has received its **first wheat shipment** since the **departure of former President Bashar al-Assad** in **December 2024**. This development reflects Syria's ongoing efforts toward **economic stabilization and agricultural recovery** amidst a challenging post-conflict environment.

Understanding Syria: Land of Heritage and Resilience:

Geographic Location:

- Situated in **Southwest Asia**, Syria lies along the **eastern coast of the Mediterranean Sea**.
- Capital City: Damascus, one of the oldest continuously inhabited cities in the world.

Bordering Nations:

Syria shares its borders with:

- Turkey to the north
- Iraq to the east
- Jordan to the south
- Israel and Lebanon to the southwest

This strategic location has made Syria a **crossroads of civilizations**, but also a hotspot for **regional geopolitics**.

Geological and Natural Features:

Mountain Ranges:

- Al-Anşariyyah Mountains: Running parallel to the coast, these peaks reach heights of ~1,562 meters, forming a natural barrier between the coastal plain and the interior plateau.
- Other notable ranges include:
 - Mount Al-Durūz (in the south)
 - o Abū Rujmayn and Bishrī Mountains (in the east-central region)

Rivers and Water Bodies:

- **Euphrates River**: Originating in **Turkey**, this is Syria's **primary water artery**, vital for agriculture and hydroelectric power. The **Euphrates Dam** forms **Lake Al-Asad**, a major **reservoir**.
- **Orontes River**: Flows **northward**, defying typical river paths, through the **Ghāb Depression** before emptying into the Mediterranean.
- Yarmouk River: A key tributary that forms part of the Syria–Jordan border.

Plains and Deserts:

Syrian Desert (Al-Bādiyah): A vast expanse of rocky and gravelly terrain, it covers much of southeastern Syria. Despite its arid nature, it has served as a corridor for ancient trade and pastoral nomadism.
 Download Our Application

Freedom UPSC with Dhananjay Gautam 2











Lakes:

- Al-Jabbūl Lake: Syria's largest seasonal salt lake, important for migratory birds and salt extraction.
- Other significant lakes:
 - Lake Qattinah (man-made)
 - Lake Muzayrīb
 - Lake Khātūniyyah near the northeast

Did You Know?

- Syria is home to **ancient cities** like **Palmyra**, a UNESCO World Heritage Site.
- The **Orontes River** is one of the few rivers in the Middle East that **flows north** instead of south.
- Agriculture once accounted for more than 25% of Syria's GDP before the civil conflict.

The Road Ahead:

The arrival of wheat at **Latakia Port** is more than a shipment—it's a **symbol of hope and revival**. As Syria aims to **rebuild its economy**, ensuring **food sovereignty**, restoring **agricultural infrastructure**, and **revitalizing rural livelihoods** will be central to its recovery.

Freedom UPS'C











GS Paper 3 - Economy

ISRO Satellites Forecast Wheat Production

Context: In a remarkable blend of space science and agriculture, ISRO has forecasted India's wheat production for the 2024-25 Rabi season at an estimated 122.724 million tonnes. This estimate comes from eight major wheatgrowing states, showcasing how space-based tools are revolutionizing farm monitoring.

About the Study:

ISRO utilized the Comprehensive Remote Sensing Observation on Crop **Progress (CROP)** framework for this assessment. Key technologies included:

- **Optical & Synthetic Aperture Radar (SAR)** datasets from satellites:
 - **EOS-04** \circ
 - **EOS-06** 0
 - **Resourcesat-2A** \cap
- **Near real-time monitoring** of wheat sowing and crop conditions

What is CROP?

- A semi-automated, scalable framework developed by NRSC/ISRO
- Tracks **crop sowing**, **harvesting**, and **growth stages** in real-time •
- As of March 31, 2025, wheat was sown over 330.8 lakh hectares, aligning closely with the Ministry of Agriculture's data

Freedom UPSC with Dhananjay Gautam

Why Space Technology in Agriculture Matters:

Challenges in Indian Agriculture:

- keedom UPSC Heavy reliance on **natural resources**
- **Rising population** pressure
- Need for **sustainable** and **data-driven** agriculture •

How Space Tech Helps:

- Enables smart planning and resource optimization •
- Provides real-time insights to farmers, scientists, and policymakers •
- Improves yields, reduces input waste, and supports climate resilience

Key Applications of Space Technology in Agriculture:

1. Precision Agriculture:

- Uses GNSS (Global Navigation Satellite Systems) for accurate field mapping
- Facilitates:
 - Precision irrigation 0
 - Nutrient optimization 0
 - **Targeted crop planning**
- Results in higher yields and better resource efficiency

2. Enhanced Connectivity: Satellite-based networks provide farmers with:

- Weather forecasts \circ
- **Market prices** 0

Download <u>Our Application</u> --











• Expert agronomic advice

3. Remote Sensing & Satellite Imaging:

- Monitors:
 - Crop health
 - Vegetation indices
 - Land use patterns
- Detects disease and stress early, reducing pesticide use

4. Hyperspectral Imaging:

- Tracks **subtle physiological changes** in plants
- More precise than traditional sensors for:
 - Plant health monitoring
 - Nutrient deficiency detection

5. Water & Soil Management:

- Tracks:
 - Soil moisture
 - o Groundwater levels
 - Irrigation efficiency
- Aids in:
 - Combating erosion
 - **Conserving resources**
 - Sustainable land management

Government Initiatives Supporting Agri-Space Integration:

- Since the 1980s, India has harnessed satellite data for agricultural planning.
- Mahalanobis National Crop Forecast Centre (MNCFC) established in 2012 to operationalize crop forecasting using ISRO data.
- Soil and Land Use Survey of India (SLUSI) employs satellite mapping for soil resources.
- Krishi-DSS: A groundbreaking geospatial digital platform offering:
 - Satellite imagery
 - Weather and soil data
 - Reservoir storage and groundwater levels

Accessible anytime, anywhere, Krishi-DSS empowers data-driven decisions.

Conclusion & The Road Ahead:

Space technology is fast becoming a cornerstone of **smart agriculture** in India. By leveraging **satellite data** and **geospatial intelligence**, the sector can achieve:

- Enhanced productivity
- Improved sustainability
- Strengthened food security

As **climate change**, **population growth**, and **resource scarcity** continue to challenge traditional agriculture, integrating **space-based solutions** will be vital for ensuring **resilient and informed farming systems**.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u> -

Google Plav







GS Paper 3 – Environment and Ecology

Kerala's IPR Policy to Be Revamped After 17 Years

Context: After a gap of **17 years**, **Kerala** is set to comprehensively revise its **Intellectual Property Rights (IPR) Policy**, aligning with the evolving national and global IP ecosystem.

About the Initiative:

- The revision is spearheaded by the Kerala State Council for Science, Technology and Environment (KSCSTE).
- A six-member committee, led by the Chairman of the Kerala State Biodiversity Board, is drafting the new policy.



• The existing policy was first introduced in **2008** and will now be modernized in line with the **National IPR Policy 2016** and **2024 directives** from the **Department of Science and Technology**.

Key Highlights of the Draft Policy:

- Mandatory IPR education in school and university curricula.
- Establishment of:
 - Kerala IPR Academy
 - o Kerala Traditional Knowledge Authority
 - Traditional Knowledge Docketing System
 - **'Mission IPR'** for centralized IP governance
- Aimed at promoting innovation, protecting traditional knowledge, and strengthening IP infrastructure in the state.

Understanding Intellectual Property Rights (IPRs):

What is Intellectual Property?:

Intellectual Property (IP) refers to creations of the mind in fields such as science, art, industry, and literature.

What are IPRs?

Intellectual Property Rights are **legal rights** granted to creators and innovators to protect their work and benefit from its use.

Forms of IPR:

- Patents
- Copyrights
- Trademarks
- Industrial Designs
- Geographical Indications (GIs)
- Plant Varieties & Farmers' Rights
- Layout Designs of Integrated Circuits

Download <u>Our Application</u> ___











• Trade Secrets

Global vs. National IPRs:

Patent Cooperation Treaty (PCT):

- Offers an international filing system (not a global patent).
- Allows inventors to seek protection in **multiple countries** with a single application.
- India joined the PCT in 1998.
- Managed by the World Intellectual Property Organization (WIPO).

About WIPO (World Intellectual Property Organization):

- A **UN agency** promoting global IP protection.
- Established in **1967** under the **WIPO Convention**.
- Has **193 member countries**, including **India** (joined in **1975**).
- Headquarters: Geneva, Switzerland.

Challenges in India's IP Regime:

- 1. **Patent Backlog:** Slow patent examination and approvals.
- 2. **IP Infringement**: Weak enforcement leading to counterfeiting and piracy.
- 3. Low Commercialization: Poor industry-academia collaboration.
- 4. **Global Innovation Lag**: Foreign firms dominate filings due to low domestic R&D.

India's IP Ecosystem: Reforms and Initiatives:

National IPR Policy 2016:

- Unifies all IPRs under one vision document.
- Emphasizes IP awareness, protection, enforcement, and commercialization.
- Cell for IPR Promotion and Management (CIPAM): Coordinates the implementation of the National IPR Policy.
- National Intellectual Property Awareness Mission (NIPAM): Aims to create IP awareness in schools
 and colleges across India.
- Startup-Focused Initiatives: SIPP Scheme: Supports startups in protecting their IP assets.

Atal Innovation Mission (AIM) by NITI Aayog:

Encourages a culture of innovation through:

- Atal Tinkering Labs
- Atal Incubation Centers
- Atal New India Challenges
- Mentor India Network

Conclusion: A Vision for an Innovation-Led Economy

India's dynamic progress in the IP domain reflects its **growing intellectual capital** and **global ambition**. The revision of Kerala's IPR policy adds momentum to India's broader mission to build an **innovation-driven**, **economically resilient**, and **IP-empowered future**.

Download <u>Our Application</u> —











GS Paper 2 – Governance, Constitution, Polity, Social Justice

Judiciary and Constitutional Boundaries: Vice-President's Remarks Ignite National Discourse

Context: In a thought-provoking address, **Vice-President Jagdeep Dhankhar** questioned certain facets of India's judiciary, reigniting long-standing debates on **judicial powers**, **accountability**, and **constitutional interpretation**.

His remarks touched upon sensitive issues, including:

- Judicial review
- Use of Article 142
- Judicial directives to constitutional authorities
- Bench composition
- Transparency in internal judicial affairs

India's Judiciary: A Constitutional Pillar:

The **Supreme Court of India** serves as the **guardian of the Constitution** and protector of **fundamental rights**. Through tools like:

- Judicial review
- Article **142** ...it ensures checks and balances on the executive and legislative branches.

However, the **scope** and **transparency** of these powers often lead to sharp scrutiny.

Vice-President Dhankhar's Remarks: Key Concerns

At a recent public event, **Vice-President Dhankhar** spotlighted five contentious areas:

- 1. Lack of Transparency in Judicial Inquiries Criticized opaque mechanisms in handling judicial misconduct, referencing a high-profile **Delhi High Court incident** involving cash recovery.
- 2. Judicial Directives to High Offices Raised concerns over a Supreme Court judgment that prescribed action timelines to the President and Governors, stating this may intrude upon constitutional boundaries.
- 3. **Judiciary's Accountability Deficit** Unlike the executive or legislature, the judiciary lacks **direct public accountability mechanisms**, he argued.
- 4. **Size of Constitution Benches** Cited **Article 145(3)**, suggesting that requiring five judges for constitutional matters may be outdated with today's **34-member Supreme Court**.
- 5. **Use of Article 142** Warned that the judiciary's **extraordinary powers** under Article 142 sometimes override **representative democracy** principles.

Freedom UPSC with Dhananjay Gautam 3

A Nation Divided: Supporters vs. Critics

Dhankhar's remarks have drawn a **mixed reaction**:

Supporters say:

- The judiciary **must evolve** with public expectations.
- Calls for **transparency** are necessary for public trust.
- Accountability mechanisms could balance unchecked powers.













Critics argue:

- Remarks from a high office may be seen as **infringement** on **judicial independence**.
- Judicial review and Article 142 are **constitutionally mandated tools** that ensure justice when other institutions fail.

Judicial Activism: Overreach or Necessary Intervention?

Historically, **Article 142** has enabled bold, justice-oriented decisions:

- Bhopal gas tragedy compensation (1989)
- Vishaka guidelines on workplace harassment (1997)
- Cancellation of illegal coal block allocations (2014)
- Permanent Commission for Women Officers in Armed Forces (2024)
- Guidelines on Unlawful Demolitions (2024)

These rulings reflect the judiciary's **activist role** in plugging administrative gaps.

Timeline Mandates & Judicial Review:

The **power of judicial review** is considered a **basic feature** of the Constitution. Legal experts have upheld the Supreme Court's recent timeline ruling, noting:

- It was consistent with **past precedents**.
- It aligned with a 2016 Ministry of Home Affairs Office Memorandum, which advised prompt action by constitutional authorities.

Bench Strength & Article 145(3):

- Article 145(3) mandates at least five judges to decide constitutional matters.
- With the SC now expanded to **34 judges**, some believe this threshold could be reconsidered for better efficiency, while others argue that:

"More isn't always faster — logistics and deliberation matter."

Judicial Independence & Constitutional Sovereignty:

India's model blends:

- British-style Parliamentary Sovereignty
- American-style Judicial Supremacy

This hybrid system allows:

- Judicial scrutiny of laws and executive actions.
- Retention of **constitutional supremacy**.

Any attempt to **reform judicial appointments** (e.g., reintroducing the NJAC) must safeguard **judicial independence**, not dilute it.













GS Paper 3 – Science and Technology

SpaDeX Mission: ISRO's Leap into Space Docking Technology

Context: In a groundbreaking achievement, the **Indian Space Research Organisation (ISRO)** has successfully completed the **second docking** of its two satellites — **SDX01 (Chaser)** and **SDX02 (Target)** — as part of the **SpaDeX (Space Docking Experiment)** mission. This marks a significant milestone in India's space technology capabilities.



About the SpaDeX Mission:

The SpaDeX Mission is a technology demonstration initiative by

ISRO, aimed at validating the **capability of docking and undocking** two small satellites in **low-Earth orbit (LEO)**. The mission's success represents a critical step towards advancing India's space exploration and inorbit operations.

Key Mission Details:

- Satellites Involved:
 - **SDX01 (Chaser)**: The active satellite that performs docking operations.
 - **SDX02 (Target)**: The satellite to be docked.
- Weight: Both satellites weigh approximately **220** kg each.
- Launch Vehicle: The satellites were launched by the PSLV-C60 rocket.
- **Orbit Details**: They were placed in a **460 km circular orbit**, with an inclination of **45 degrees**.

Objectives of the SpaDeX Mission:

Primary Objective:

To develop and demonstrate the ability to **rendezvous, dock, and undock** spacecraft while in **orbit** — a crucial technology for future space missions.

Secondary Objectives:

- 1. **Electric Power Transfer**: The mission aims to showcase the transfer of **electric power** between docked spacecraft, a key capability for future **in-space operations**.
- 2. **Spacecraft Control Systems**: Developing and validating **composite spacecraft control systems** for precise maneuvering in orbit.
- 3. **Payload Operations**: Testing the **payload operations** post-undocking critical for the success of **deep-space missions**.

India Joins Elite Space Powers:

With this successful docking mission, **India** becomes the **fourth country** after the **United States**, **Russia**, and **China** to conduct successful **satellite docking operations**. This accomplishment positions ISRO as a growing force in **space exploration** and paves the way for more **complex missions** in the future.

Conclusion: A Step Towards Future Deep-Space Missions

The **SpaDeX Mission** marks a remarkable achievement for India's space program, demonstrating ISRO's evolving capabilities in **spacecraft rendezvous**, **docking technology**, and **in-orbit operations**. These advancements are vital for **future deep-space missions**, **crew transfer systems**, and more sophisticated space activities.

Download <u>Our Application</u> —











GS Paper 1 – Geography

Brazil Hosts the 15th BRICS Agriculture Ministers' Meeting

Context: A Hub for Agriculture and Global Cooperation

- **Brazil** is not only the **largest country in South America** but also the **fifth largest nation** in the world, holding a strategic position in global affairs.
- Capital City: Brasília
 - A planned city known for its modernist architecture and futuristic layout.
- Geographical Position:
 - Brazil spans both the **Equator** and the **Tropic of Capricorn**, resulting in a diverse climate, ranging from **humid tropical** to **subtropical** zones.
 - The country is bordered by every South American country except **Chile** and **Ecuador**, making it a central player on the continent.
- The Amazon:
 - Home to the world's largest river system and the largest remaining virgin rainforest, the Amazon River and its basin are crucial for global biodiversity and carbon regulation.
 - The Amazon rainforest is often called the **"lungs of the Earth"** for its vital role in absorbing carbon dioxide and producing oxygen.
- Economic Power:
 - Brazil is the world's leading producer of niobium, a rare metal essential for high-tech industries, and the second-largest producer of iron ore, manganese, tantalite, and bauxite.
 - These resources are pivotal for the global supply chain, particularly in technology and construction.
- Climate Diversity:
 - Despite its predominantly tropical and subtropical climate, Brazil has a **drier region** in the **Northeast**, making the country a case study in climatic variation.
- Agriculture Focus:
 - The **BRICS Agriculture Ministers' Meeting** (hosted in Brazil) serves as a key event for discussing global food security, sustainable farming practices, and international agricultural collaboration.

Brazil: A Land of Abundance and Influence

- As a powerhouse in both **natural resources** and **agriculture**, Brazil plays a crucial role in shaping global markets and environmental policies.
- The **BRICS nations** (Brazil, Russia, India, China, South Africa) continuously engage in fostering mutual growth and addressing challenges like climate change, agricultural productivity, and food security.

Brazil's remarkable geographic and economic advantages make it an essential player on the world stage, and meetings like the BRICS Agriculture Ministers' event highlight its importance in shaping the future of global agriculture and sustainability.

Download Our Application Set IT ON Google Play Freedom UPSC with Dhananjay Gautam









GS Paper 1 – Geography

UNESCO Expands Global Geoparks Network with 16 New Sites

Context: In a milestone celebration of the **10th Anniversary of UNESCO Global Geoparks (UGGPs), 16 new sites** across **11 countries** have been designated as part of the **Global Geoparks Network (GGN)**, a non-profit international association founded under **UNESCO**. These newly added sites hold immense geological significance and demonstrate a commitment to sustainable development, education, and preservation of Earth's natural heritage.



20 to 26 April

Key Features of UNESCO Global Geoparks:

- **Global Geoparks Network (GGN)**: GGN is an international network that establishes ethical standards for **Global Geoparks**, which must be followed to maintain membership.
- UGGPs (UNESCO Global Geoparks): UGGPs are geographical areas of international geological significance. These parks are managed holistically to integrate protection, education, and sustainable development.
 - **Management**: Each park is managed by an entity with **legal recognition** under national laws.
 - **Reassessment**: The **UGGP status** is not permanent, and parks are reassessed every **four years** to ensure they meet the required standards.
 - **Membership**: **Networking** within the GGN is mandatory for all UNESCO Global Geoparks.
- **Current Statistics**: As of now, there are **229 UNESCO Global Geoparks** across **50 countries**. Interestingly, **India** does not currently have any UNESCO Global Geoparks.

Prominent New Geoparks Added:

- 1. Kanbula (China): Situated on the edge of the Qinghai-Tibet Plateau, Kanbula is home to the ancient Maixiu volcanoes and the Yellow River, showcasing well-preserved geological formations.
- 2. **Mt Paektu (North Korea)**: Famous for its role in the **Millennium Eruption** around **1000 CE**, this area is a significant volcanic site with both historical and geological importance.
- 3. North Riyadh (Saudi Arabia): The Obaitharan Valley (Wadi Obaitharan), nestled at the base of the Tuwaiq Mountain, is a lush region critical to the local water supply and home to ancient coral reef systems.

The Vision Behind UNESCO Global Geoparks:

The **UNESCO Global Geoparks** initiative was introduced in **2015** as part of the **International Geosciences and Geoparks Programme (IGGP)**. Its primary goal is to promote **geological conservation**, enhance **community engagement**, and stimulate **sustainable tourism**.

These new additions strengthen the network's global presence, underscoring the importance of preserving the Earth's geological heritage for future generations.

Download <u>Our Application</u> Get IT ON Google Play *Freedom UPSC with Dhananjay Gautam* 35









GS Paper 3 – Environment and Ecology

Hindu Kush Himalaya Snow Update 2025: Alarming Decline in Snow Persistence

Context: According to a recent report by the International Centre for Integrated Mountain Development (ICIMOD), the Hindu Kush Himalaya (HKH) region has recorded its third consecutive below**normal snow year** in 2025. This trend raises serious concerns for water security and ecosystem health across the region.

Key Findings of the Report:

- Snow Persistence Time Series: Data was analyzed over a 23-year period (2003-2025), focusing on snow persistence from November to March.
- **Drastic Reductions in Major River Basins:**
 - Ganga Basin: 24.1% below normal lowest snow persistence in 23 years. 0
 - Indus Basin: 24.5% below normal, a sharp drop from +19.5% above normal in 2020. 0
 - Brahmaputra Basin: Also showed significant decline in snow cover. 0
- HKH Region-wide Snow Persistence: Reached a two-decade low of 23.6%.
- Wider Impact in Southeast Asia:
 - Mekong Basin: 51.9% decline 0
 - Salween Basin: 48.3% decline \cap
 - **Tibetan** Plateau: 29.1% decline 0

Implications of Snow Deficit:

- **Reduced Meltwater**: Snowmelt is a **primary water source** for rivers in the HKH, contributing up to 23% of annual runoff. Persistent snow deficit leads to lower river flows and early-summer water stress, especially downstream.
- Threat to Water Security: Almost one-fourth of the world's population relies on HKH-fed river systems.

About the Hindu Kush Himalaya (HKH):

- Geographic Spread: Stretches 3,500 km across 8 countries: Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan.
- "Water Towers of Asia": Birthplace of 10 major river systems: Amu Darya, Indus, Ganga, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtze, Yellow River, and Tarim.

About ICIMOD:

- Established: 1983
- Headquarters: Kathmandu, Nepal
- Type: Intergovernmental knowledge and learning centre •
- **Coverage**: Works for 8 regional member countries in the HKH
- **Role**: Conducts **research**, pilots solutions, supports **policy**, and **advocates** on global platforms.

Way Ahead: Recommendations

Policy and Infrastructure: Download Our Application -













- Improved water infrastructure
- Stronger drought preparedness •
- Investment in water storage systems

Technology and Forecasting:

- Advanced early warning systems •
- Better seasonal forecasting models ٠

Environmental Measures:

- **Reforestation with native species**
- **Snowfall zone protection policies** •

Community and Cooperation:

- Local involvement in decision-making ٠
- Stronger regional cooperation
- Integrated water management strategies

Conclusion:

The declining trend in snow persistence across the Hindu Kush Himalaya is a wake-up call for the region. It calls for science-led, community-driven, and cooperative strategies to secure water resources, protect ecosystems, and ensure **climate resilience** for future generations.

Freedom UPS'C



Google Play







GS Paper 3 – Economic Development

Cruise Tourism in India: Setting Sail Towards a Global Horizon

Context: India is capitalizing on its **extensive coastline** and **vast inland waterways** to harness the economic, cultural, and recreational potential of **cruise tourism**. With visionary government initiatives and infrastructural development, the country is poised to emerge as a major **cruise tourism hub**.

What is Cruise Tourism?:

Cruise Tourism involves leisure travel on **cruise ships**, where **both the journey and the destination** create a unique, enriching experience.

- Includes **onboard activities** (entertainment, dining, wellness, etc.)
- Offers offboard excursions to explore local attractions and cultures
- Blends luxury travel with experiential tourism

Segments under Cruise Tourism:

- 1. Ocean Cruise Tourism Coastal and sea-based leisure voyages
- 2. River Cruise Tourism Travel through inland waterways and rivers
- 3. Expedition Cruises Remote and adventure-based voyages
- 4. Luxury & Theme Cruises Special interest cruises focused on wellness, cuisine, heritage, etc.

India's Potential in Cruise Tourism;

India's natural and infrastructural advantages place it in a strong position:

- 12 Major and 200 Minor Ports
- Over **20,000 km of navigable waterways** connecting ~400 rivers
- 1300+ Islands and several coastal & riverine states and UTs
- Rich cultural heritage, historic ports, and diverse ecosystems

River Cruise Tourism in India:

River cruise tourism is gaining momentum due to its **cultural depth** and **regional connectivity**.

Key Features:

- Short-distance travel and calm waters
- Access to interior villages, towns, and heritage sites
- Offers local cultural immersion festivals, cuisine, architecture

Notable Examples:

GET IT ON

Google Play

- MV Ganga Vilas (2023):
 - ► World's longest river cruise
 - Covered 3,200 km across 5 Indian states and Bangladesh
 - Navigated through 27 river systems

Kerala Houseboats: Popular in Alappuzha backwaters, offering unique regional experiences
 Download <u>Our Application</u>

Freedom UPSC with Dhananjay Gautam







Steps Taken by the Indian Government:

Cruise Bharat Mission (2024):

- Launched from Mumbai Port
- Aims to double cruise passenger traffic by 2029
- 4.71 lakh cruise passengers recorded in FY 2023-24

Maritime India Vision 2030:

- Blueprint to make India a **global cruise tourism player**
- Emphasis on ocean and river cruise development

River Cruise Tourism Roadmap 2047:

- Released during IWDC (Inland Waterways Development Council)
- Focus on **4 strategic pillars**:
 - 1. Infrastructure
 - 2. Integration
 - 3. Accessibility
 - 4. Policy Reforms

Concluding Remarks:

India's cruise tourism industry is navigating new wa<mark>ters wit</mark>h **strategic planning**, **rich natural assets**, and **strong policy backing**.

With a blend of **modern maritime vision** and **age-old cultural richness**, India is all set to anchor itself as a **vibrant global cruise destination** — both along its **coasts** and **rivers**.

OGETHER WE SCALE HEIGHTS

Freedom UPSC with Dhananjay Gautam 39

Download <u>Our Application</u> GET IT ON

Google Play









GS Paper 3 – Science and Technology

India's First Fast-Breeder Nuclear Reactor Set for Commissioning by 2026

Context: India is set to mark a significant milestone in its nuclear journey with the upcoming commissioning of its **first Prototype Fast Breeder Reactor (PFBR)** at **Kalpakkam, Tamil Nadu**, expected by **2025–26**.

What is a Fast Breeder Reactor?

A **Fast Breeder Reactor (FBR)** is a type of nuclear reactor that:

• Generates more fuel than it consumes, using plutonium-239 (Pu-239) and uranium-238 (U-238).



- Aims to maximize energy extraction and fuel efficiency.
- Uses liquid sodium as a coolant and plutonium-based Mixed Oxide (MOX) fuel.

Prototype Fast Breeder Reactor (PFBR) – Key Highlights:

Feature			Details	
Developed by			Bharatiya Nabhikiya <mark>Vidyut</mark> Nigam Ltd. (BHAVINI)	
Location			Kalpakkam, Tamil Nadu	
Capacity			500 MW	0
Commission <mark>ing Time</mark> line		eline	2025-26-600 P	$\left(\right)$
Fuel Used			Plutonium-based MOX fuel	
Coolant			Liquid sodium	
Nuclear Program Stage		ige	Second stage of India's 3-stage nuclear strategy	

Functions and Purpose:

- Recycles spent fuel from Pressurized Heavy Water Reactors (PHWRs).
- Reduces radioactive waste and enables a closed nuclear fuel cycle.
- Prepares ground for thorium-based reactors in the third stage.
- Enhances fuel efficiency and promotes self-reliance in energy.

Why It Matters - Significance of the PFBR:

- Supports India's long-term goal of a thorium-based nuclear program.
- Enables **efficient fuel use** by generating more fuel than consumed.
- Essential for **energy security**, especially amid rising power demands.
- Aids in achieving **clean energy targets** by expanding nuclear power output.

India's Nuclear Power Ambitions:

Download <u>Our Application</u> -











Metric	Data	
Current Installed Capacity	8.18 GW	
Under Construction	7.30 GW	
Target by 2031–32	22.48 GW	
Contribution from BHAVINI (FBRs)	3.80 GW	
Additional Plans	-15.40 GW from indigenous PHWRs	
	- 17.60 GW from Light Water Reactors (with foreign cooperation)	
	- Small Modular Reactors and Bharat Small Reactors in partnership with the private sector	

Did You Know?

- India has the world's largest reserves of thorium, making the 3-stage nuclear program uniquely suited to its resources.
- The closed fuel cycle targeted by PFBRs helps reuse spent fuel, minimizing waste and improving sustainability.

Conclusion & Way Forward

Despite earlier delays, the **Prototype Fast Breeder Reactor** is a **cornerstone of India's nuclear strategy**. It will:

- Propel India towards a thorium-based, self-reliant energy future.
- Establish a sustainable nuclear cycle with minimal waste.
- Reinforce India's role as a **global leader in innovative nuclear technology**.











GS Paper 2 – International Relations

India-Saudi Arabia Bilateral Relations

Context: During **Prime Minister Narendra Modi's April 2025 visit** to **Jeddah**, India and Saudi Arabia **signed six major MoUs**, deepening cooperation in energy, investment, digital infrastructure, and culture.

Introduction:

India and Saudi Arabia enjoy a **multifaceted partnership**, grounded in centuries of historical ties, vibrant economic relations, and growing strategic cooperation. Amidst global shifts, **PM Modi's 2025 visit** has reaffirmed their **mutual commitment** to elevating the relationship to new heights.



Historical Background:

- Ties date back centuries, based on trade and people-to-people interactions.
- Diplomatic relations formally established in **1947**.
- Key milestones:
 - King Abdullah's visit (2006)
 - PM Modi's visits (2016, 2019, and 2025)
- The 2019 visit led to the formation of a **Strategic Partnership Council**.

Political Relations:

- Upgraded to **Strategic Partnership** status.
- Collaborate in multilateral forums: G20, UN, OIC.
- Support for a multipolar world order and regional peace initiatives.

Economic and Trade Relations:

- India: 2nd largest trading partner of Saudi Arabia.
- Saudi Arabia: 5th largest partner of India.
- Trade volume (FY 2023-24): USD 42.98 billion
 - Indian exports: USD 11.56 billion
 - Imports (mostly oil): USD 31.42 billion
- India imports ~18% of its crude oil from Saudi Arabia.
- Key Indian exports: rice, machinery, textiles, chemicals, IT services.

Defence and Security Cooperation:

- Growing ties through:
 - o Joint naval drills (Al-Mohed Al-Hindi)
 - Counter-terrorism cooperation
 - Intelligence sharing
- Common interests in West Asian peace and Indian Ocean security.

Indian Diaspora in Saudi Arabia:



Google Play









- **Over 2.4 million Indians** reside in Saudi Arabia *the largest expatriate group*.
- Vital contributors to sectors like healthcare, construction, and services.
- Hajj ties: Over 1.75 lakh pilgrims annually.

Cultural and Tourism Linkages:

- Boost from Saudi Vision 2030: encouraging cultural openness and tourism.
- Active film, education, and tourism exchanges.
- Emphasis on **people-to-people** and **youth-oriented collaborations**.

Key Outcomes of PM Modi's April 2025 Visit:

1. Six MoUs Signed:

- Energy: Joint ventures in oil, gas, green hydrogen, and renewables.
- **Digital Infrastructure**: Build **Digital Public Infrastructure (DPI)** and promote **tech innovation**.
- Investment: Saudi Sovereign Wealth Fund to invest in India's logistics, infrastructure, and energy corridors.
- Pharmaceuticals: Better market access for Indian drugs in Saudi Arabia.
- Fintech & Banking: Simplified banking for NRIs and collaborative fintech ecosystems.
- Culture & Tourism: New frameworks under Vision 2030 in film, education, and heritage tourism.

2. Strategic Talks on Hajj & Labour Welfare:

- Raised demand for higher Hajj quota.
- **MoUs for labour protection**, dispute redressal, and improved working conditions for Indian workers.

3. Expansion of Strategic Partnership Council:

- New working groups formed on:
 - Defence technology
 - Space exploration
 - Semiconductor manufacturing

Conclusion:

India–Saudi Arabia ties are evolving into a **strategic, economic, and cultural powerhouse partnership**. PM Modi's 2025 visit is a key step forward, building bridges of cooperation that support the shared vision of **peace, prosperity, and progress** in a multipolar world.

Freedom UPSC with Dhananjay Gautam





Freedom UPSC







GS Paper 3 – Internal Security

Tragedy in Paradise: Terror Strikes Pahalgam's Baisaran Valley

Context: In a **devastating terror strike**, **28 tourists** lost their lives in **Baisaran Valley**, a breathtaking destination near **Pahalgam**, in the **Anantnag district** of **Jammu and Kashmir**.

This **high-altitude area**, accessible only by **foot or horseback**, proved difficult for emergency response teams to reach promptly. The **Resistance Front (TRF)**, an **ISI-backed proxy group of Lashkar-e-Taiba (LeT)**, has **claimed responsibility** for the deadly assault—making it the **worst attack on civilians since the abrogation of Article 370** in 2019.



Discovering Pahalgam: A Jewel in Kashmir's Crown:

Located around **90 km from Srinagar International Airport**, **Pahalgam** is a beloved hill station nestled in the southern Kashmir Valley.

Known as the 'Valley of Shepherds', this region offers a serene retreat with:

- Amarnath Cave Temple A sacred Hindu pilgrimage site
- Aru Wildlife Sanctuary Home to rare species like the Himalayan brown bear and musk deer
- Betaab Valley Named after the Bollywood classic Betaab
- Tulian Lake A pristine alpine lake adored by trekking enthusiasts
- Baisaran Valley Often called 'Mini Switzerland' for its scenic beauty

Baisaran Valley: Kashmir's Hidden Treasure:

The Mini Switzerland of India:

- Just 5 km from Pahalgam, Baisaran is known for its lush green meadows, dense pine forests, and snow-capped mountain backdrops.
- This breathtaking location, accessible **only via ponies or trekking**, became the tragic site of the recent **terrorist attack**.

A Trekker's Dream Destination:

Baisaran serves as a key **camping point for trekkers** en route to **Tulian Lake**. Its **year-round appeal** draws nature lovers, adventurers, and families seeking peace in the valley.

Inside The Resistance Front (TRF):

Origins and Affiliations;

- Formed shortly after the **abrogation of Article 370**, the **Resistance Front (TRF)** is widely recognized as a **proxy of Lashkar-e-Taiba (LeT)**.
- The group has **consolidated militants from various organizations**, becoming a prominent **terror outfit** in the region.

Declared a Terror Group:

- In January 2023, India's Ministry of Home Affairs designated TRF as a terrorist organization under the Unlawful Activities (Prevention) Act (UAPA).
- Authorities cited its use of **online psychological warfare** to **radicalize youth** and incite violence against the Indian state.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u> —







Targets and Tactics:

TRF has launched attacks aimed at **tourists**, **Kashmiri Pandits**, and **migrant laborers**, destabilizing the image of peace in the Kashmir Valley.

Analysis: What the Pahalgam Attack Reveals

A Security Wake-Up Call:

This **gruesome attack** is the **deadliest civilian tragedy** since the **2008 Mumbai attacks (26/11)**. It exposes not just internal security gaps but also **external provocations**—bringing global attention back to Kashmir.

Tourism as a Target:

Post-2019, increased tourism was seen as a **symbol of stability** in Jammu & Kashmir. This attack **shatters that image**, evoking the region's **painful legacy of violence** and threatening its **economic recovery** through tourism.

Timing with Global Implications:

The attack occurred during high-profile international engagements:

- US Vice-President JD Vance was on a visit to India
- PM Modi was engaged in diplomacy with Saudi Arabia

Such timing **mirrors past tactics** by terrorists aiming for maximum **global exposure**, including:

- March 2000: Massacre of 36 Sikhs in Anantnag before President Bill Clinton's India visit
- May 2002: Kaluchak Massacre, killing 23 civilians, during US envoy Christina Rocca's visit

Provocative Rhetoric from Across the Border:

The attack came shortly after **Pakistan's Army Chief, Gen. Asim Munir**, described **Kashmir** as Pakistan's **"jugular vein"**, echoing long-standing, inflammatory rhetoric.

FOGETHER WE SCALE HEIGHTS

Download <u>Our Application</u> -

Google Play









GS Paper 2 – International Relations

Tightening Student Visa Norms: A Growing Concern for Indian Aspirants

Context: A **sharp decline in student visa approvals** and a **rise in visa revocations** are affecting thousands of **Indian students** in the **United States** and **Australia**. These developments are disrupting educational pathways and **derailing career aspirations** for many.

Key Concerns About Indian Student Visas:

1. Steep Drop in Visa Issuance: In February 2025, the US issued only 411 F-1 student visas to Indian nationals—



down 30% from **590** the previous year. This is notably higher than the **global average drop of 4.75%**, and greater than declines observed for countries like:

- **China** 5.2%
- **Japan** 9.6%
- Vietnam 7.4%

Indian students also face **longer wait times**, averaging **58 days in Delhi**, compared to just **2–15 days** in **East Asian capitals**.

- 2. Increase in Visa Revocations: According to the American Immigration Lawyers Association (AILA), 50% of all student visa revocations in early 2025 involved Indian nationals. These were largely triggered by the US State Department's AI-powered "Catch and Revoke" program, which uses social media and law enforcement databases—raising serious concerns over fairness and transparency.
- **3. Legal and Financial Burdens:** Students affected by revocations must navigate **complex legal pathways** to regain their **SEVIS status**.

This process often involves:

- Expensive legal fees
- Loss of scholarships or jobs
- Missed academic semesters
- 4. Regional Profiling in Australia: Australia has reportedly increased visa scrutiny for students from five Indian states: Punjab, Haryana, Gujarat, Uttar Pradesh, and Bihar—sparking concerns over profiling and discriminatory practices.

Broader Implications for India:

- 1. Weakening Soft Power: India, being one of the largest exporters of international students, is seeing a decline in its global academic influence, particularly in crucial domains like AI, biotechnology, and climate science.
- 2. Threat to Demographic Dividend: With 65% of India's population under 35, access to global education is key for skill development. Restrictive visa regimes threaten to stifle productivity, innovation, and youth potential.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u>







- **3.** Risk to Remittances: In 2024, India received a record \$129.1 billion in remittances—a figure partially driven by students abroad. Visa curbs could reduce student migration, thereby impacting this economic lifeline.
- 4. SEVIS Status Removals: Unlike visa revocations, SEVIS removals lead to immediate consequences:
 - Loss of work authorization
 - Impact on dependent family members
 - Legal uncertainties that especially affect middle-class students relying on loans or savings
- 5. Shift in Talent Flow: Indian students are now exploring alternate destinations like the Nordic countries and South Korea. This shift alters traditional diaspora-building patterns, particularly in STEM fields and strategic industries.
- 6. Pressure on Indian Higher Education: As overseas options shrink, there's an expected surge in demand for Indian institutions. This will put pressure on Tier-I institutes (IITs, IIMs, AIIMS) and drive urgency for reforms under NEP 2020 to expand quality education capacity.

What Can Be Done?

- Leverage Diplomatic Channels: India should invoke the Vienna Convention on Consular Relations (1963) more actively to protect students' rights abroad.
- 2. Reform the Emigration Act, 1983: Bring student visa consultancies under legal purview to enforce registration, accountability, and penalties for fraudulent practices.
- **3. Establish an Emergency Support Fund:** Create an **Overseas Education Protection Fund (OEPF)** under the **Ministry of External Affairs** to aid students facing:
 - Visa r<mark>evocatio</mark>ns
 - Tuition loss
 - Forced deportation

FOGETHER WE SCALE HEIGHTS

- 4. Strengthen Domestic Education Ecosystem:
 - Promote foreign universities to set up campuses in India (e.g., GIFT City)
 - Support joint-degree programs, MERUs, and international faculty exchange under NEP 2020
- **5.** Launch a Digital Student Registry: Introduce a voluntary digital database for Indian students abroad to enable:
 - Real-time visa status tracking
 - Proactive embassy intervention
 - AI-based risk alerts, mirroring the US model
- 6. Regulate Education Consultants: Strictly audit and license consultancies to prevent misinformation. Launch government-backed awareness campaigns listing verified consultants to protect students from scams.

Download <u>Our Application</u> _____

Google Plav





Freedom UPSC









GS Paper 3 – Science & Technology

Genetically Modified (GM) Edible Oils: A Path to Self-Sufficiency for India

Context: A member of NITI Aayog recently emphasized the need for India to adopt genetically modified (GM) edible oils to boost self-sufficiency, citing the success of GM crops in improving yields in countries like the United States and China.

Why Are Edible Oils Critical to India's Economy?

- India is among the **largest producers of oilseeds globally**, with key oils including mustard, groundnut, soybean, sunflower, safflower, and coconut oil.
- The country contributes about **5–6%** of **global oilseed production**.
- Major oilseed-producing states include Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, and ٠ Andhra Pradesh.

Domestic Consumption vs Production:

- India's total edible oil consumption stands at approximately **25.5 million tonnes**.
- The gap between **domestic production** and **consumption** is bridged through **large-scale imports**.

Breakdown of Consumption (Approximate):

- Palm oil: 37% •
- Soybean oil: 20% ٠
- Mustard oil: 14%
- Sunflower oil: 13%

Did You Know?

India's per capita annual edible oil consumption is about 24 kg, which doubles the limits recommended by:

Freedom UPS

- Indian Council of Medical Research (ICMR): 12 kg
- World Health Organization (WHO): 13 kg
- This marks a massive rise from just 2.9 kg in the 1950s-60s, driven by urbanization, rising incomes, and changing food preferences.

India's Heavy Dependence on Imports:

Currently, India imports **55–60%** of its edible oil requirements from countries like:

- **Indonesia and Malaysia** (Palm oil)
- Argentina and Brazil (Soybean oil) ٠
- Ukraine and Russia (Sunflower oil) •

In the **2023–24 oil marketing year**, India imported around **15.96 million tonnes** of edible oil.

Government Measures to Strengthen Self-Reliance:

1. National Mission on Edible Oils - Oil Palm (NMEO-OP):

- Goal: Expand oil palm cultivation from **3.7 lakh ha to 10 lakh ha** by **2025–26**
- Support: Financial aid for planting materials, irrigation, and inputs









2. National Mission on Edible Oils - Oilseeds:

• Target: Raise domestic oilseed production to **70 million tonnes** by **2030–31**

3. Price Stabilization Fund:

- Objective: Protect consumers from volatile international prices
- Mechanism: Support state agencies in procuring and distributing oils at **subsidized prices**

4. Import Duty Adjustments:

- Strategy: Adjust import tariffs to control retail inflation
- 5. Promotion of Oilseed Cultivation (NFSM-Oilseeds):
 - Offers high-yielding seed varieties, technical support, and training to farmers

6. Public Distribution System (PDS):

• Ensures **subsidized edible oils** reach **low-income households**, especially during inflationary periods

Why GM Edible Oils Could Be a Game-Changer:

1. Boosting Agricultural Productivity:

- India's soybean yields have plateaued, whereas GM adoption has led to yield increases of 70–80% in the US and China.
- GM crops can potentially **double India's oilseed output**, making domestic production globally competitive.

2. Reducing Import Dependency:

 With nearly 16 million tonnes of edible oil imported annually, GM technology offers a viable path to reducing this economic burden.

3. Learning from Global Best Practices:

- Countries like the **United States** and **China** have successfully deployed GM technologies **without major reported health or environmental risks**.
- These global models provide evidence-based confidence for India to adopt GM crops in a scientifically regulated manner.

Conclusion:

Download Our Application

get it on Goo<u>gle Plav</u>

India's risingedible oildemand, heavyimportdependency, and stagnantdomesticproductivityunderlinetheurgentneedforinnovativesolutions.Genetically Modified (GM) edible oils, if embraced with strong regulatory oversight, public awareness,and scientific rigor, could pave the way for a self-reliant and food-secure future.

<u> Freedom UPSC with Dhananjay Gautam</u>









GS Paper 3 – Environment & Disaster Management

Forecasting Extreme Weather Events with Artificial Intelligence (AI)

Context: As **extreme weather events** become more frequent and intense due to **climate change**, **Artificial Intelligence (AI)** is emerging as a **game-changing tool** for enhancing the **accuracy and speed** of weather predictions—offering new capabilities beyond traditional models.

Traditional Weather Prediction Models:

- Relies on Numerical Weather Prediction (NWP) models.
- Simulates atmospheric dynamics using **fluid dynamics** and **thermodynamic equations**.
- Inputs data from **satellites**, **radars**, and **weather stations**.
- Requires high-performance supercomputers to perform calculations.
- Governed by the **laws of physics**, offering detailed but computationally intensive forecasts.

AI-Based Weather Prediction Models:

- Driven by **data**, not physics.
- Employ **machine learning (ML)** algorithms to find patterns and correlations between variables (temperature, humidity, wind speed) and weather events (rainfall, cyclones).
- Capable of learning directly from historical and real-time data—without explicit programming of atmospheric science.

Advantages of AI in Weather Forecasting:

- **1. Big Data Integration:** AI can process vast datasets from multiple sources including **satellites, ground stations, radars,** and even **social media**, identifying subtle trends traditional models might miss.
- **2. Uncovering Nonlinear Relationships:** Capable of detecting **complex, nonlinear patterns** in atmospheric systems that traditional models may overlook.
- **3. Region-Specific Adaptability:** Enables **localized forecasting**, accounting for **topographical** and **climatic variations** across different regions.
- **4. Real-Time "Nowcasting":** Offers **short-term forecasts** (minutes to hours) crucial for **disaster response**, **aviation**, **urban planning**, and **agriculture**.

Challenges in AI-Based Weather Forecasting:

Download <u>Our Application</u> ____

Google Play

- **1. Complexity of Weather Systems:** The atmosphere is inherently **chaotic** and dynamic, requiring extremely **sophisticated models** to predict accurately.
- **2. Skills Gap:** Shortage of experts who are trained in both **meteorology** and **AI/ML**, slowing innovation and deployment.
- **3. Inadequate Sensor Infrastructure: Sparse meteorological data**, especially in **remote or mountainous areas**, hinders the development of robust AI models tailored to Indian geography.
- **4. Climate Change Uncertainty:** Models trained on **present climate data** may underperform in future scenarios due to **shifting baselines** caused by global warming.

Freedom UPSC with Dhananjay Gautam







- 5. Data Quality Issues: AI requires large, clean, and consistent datasets. Current data sources suffer from sensor errors, format inconsistencies, and gaps in spatial and temporal coverage.
- 6. Lack of Transparency: Many AI models, especially deep learning ones, operate as "black boxes", making them difficult to **interpret** or **trust**, especially for operational meteorologists and policy-makers.

Weather Forecasting Infrastructure in India:

- The **India Meteorological Department (IMD)** utilizes satellite data and supercomputers.
- Key satellites for meteorological observations include INSAT-3D, INSAT-3DR, and INSAT-3DS.
- These satellites provide data on **cloud motion**, **cloud top temperature**, and **water vapor** content, aiding in rainfall estimation, cyclone tracking, and short-term forecasts.

Recent Indian Initiatives to Enhance Forecasting:

1. Mission Mausam:

- Aims to modernize India's weather forecasting capabilities.
- Focuses on:
 - **Cutting-edge surveillance technologies** 0
 - Next-gen radars and satellites 0
 - AI/ML-driven forecasting methods

2. National Monsoon Mission (2012):

Shifted focus towards real-time, ground-level data to improve monsoon predictability.

3. Doppler Radar Expansion:

- IMD has expanded its Doppler radar network from 15 (2013) to 37 (2023).
- Doppler radars enhance short-term, localised rainfall prediction, improving timeliness and accuracy.

eedom

4. WINDS Initiative:

Download Our Application --

Google Play

- Launched by the **Ministry of Agriculture & Farmers Welfare**. •
- Will install over **200,000 ground stations** for **hyper-local weather data**, supporting **precision** farming and climate-resilient agriculture.

Conclusion:

AI is set to redefine the landscape of weather forecasting—offering faster, more accurate, and localized predictions. However, its success in India hinges on overcoming infrastructure gaps, training interdisciplinary talent, and enhancing data quality. If integrated strategically, AI could be a critical tool in climate adaptation, disaster mitigation, and agricultural resilience.

Freedom UPSC with Dhananjay Gautam









GS Paper 2 – International Relation

Suspension of the Indus Waters Treaty: Implications for India and Pakistan

Context: In response to a recent terror attack in **Pahalgam**, the **Cabinet Committee on Security (CCS)**, chaired by the Prime Minister of India, has decided to **hold the Indus Waters Treaty (IWT) 'in abeyance'** with immediate effect.

About the Cabinet Committee on Security (CCS):

- **Highest decision-making body** for national security in India.
- **Chaired by the Prime Minister**, with key ministers (Defence, Home, Finance, External Affairs) as members.



• The National Security Advisor (NSA) plays a pivotal role in policy coordination.

Understanding the Indus Waters Treaty (1960):

- Signed between India and Pakistan, brokered by the World Bank.
- India gets rights over **Eastern Rivers**: **Beas, Ravi, Sutlej**.
- Pakistan controls Western Rivers: Indus, Chenab, Jhelum.
- India can use western rivers non-consumptively (e.g., for hydropower), but cannot obstruct or alter flows.
- Considered one of the **most successful transboundary water treaties** globally.

Implications of Treaty Suspension for Pakistan:

1. Water Insecurity:

TOGETHER WE SCALE HEIGHTS

- Heavily reliant on the Indus River system for **agriculture**, **drinking water**, **and hydropower**.
- India's upstream position could be leveraged to manipulate or delay water flows, especially in dry seasons.

2. Agricultural Disruption:

• **Punjab and Sindh**, Pakistan's agricultural hubs, may face **crop failures**, threatening food security and rural livelihoods.

3. Energy Crisis:

• **Hydropower dependency** on the Indus Basin means disruptions could **reduce electricity generation**, aggravating power shortages.

4. Diplomatic and Geopolitical Fallout:

- Likely to trigger **escalated tensions** with India, diplomatic confrontation at international forums (e.g., **UN**, **ICJ**, **World Bank**).
- Pakistan may frame the move as a **breach of international law**, seeking global support and condemnation of India.

5. Internal Instability

Google Play











• Water shortages could spark **domestic unrest**, **political friction**, and **inter-provincial disputes**, especially between Punjab and Sindh.

Freedom UPSC

• May increase **reliance on China** for strategic and water-related support.

Implications for India:

1. Strategic Leverage:

- Acts as a **geopolitical signal** to counter terrorism.
- Provides India a **bargaining chip** to pressure Pakistan diplomatically and strategically.

2. Legal and Diplomatic Constraints:

- The IWT has **no unilateral exit clause**; withdrawal must be mutual or justified under international law.
- India risks being viewed as a **violator of treaty norms**, affecting global perception and bilateral relations.

3. Infrastructure and Environmental Concerns:

- Full use of Western Rivers requires **massive infrastructure investment** (dams, barrages, storage).
- Could raise environmental issues related to ecosystems, aquatic biodiversity, and local communities.

4. Regional Instability:

- Heightened tensions may trigger **military skirmishes** or border escalations.
- Unstable conditions in Pakistan may lead to spillover effects including refugee inflow and militant infiltration.

Legal Dimen<mark>sions: C</mark>an India Suspend the IWT?

- No exit clause in the treaty.
- Article IX and Annexures F & G lay out step-by-step dispute resolution: \rightarrow Permanent Indus Commission \rightarrow Neutral Expert \rightarrow Arbitration.
- Under Article 62 of the Vienna Convention, a "fundamental change of circumstances" can be invoked for withdrawal, but it remains contentious and subjective.
- The **World Bank and UN** may intervene to ensure treaty continuity due to its global significance.

Did You Know?

- 25% of Pakistan's GDP depends on the Indus River system.
- 80% of cultivated land and 237 million people depend on its waters.
- Major urban centers like Karachi, Lahore, Multan source water from this basin.

Conclusion:

The **suspension of the Indus Waters Treaty** is a **high-stakes move** that could reshape South Asia's **diplomatic, environmental, and security landscape**. While it provides India with **strategic leverage**, it risks **international backlash**, and may deepen instability in Pakistan. Both nations, and the international community, must tread carefully to avoid **water becoming a trigger for conflict** in an already tense region.

<u> Freedom UPSC with Dhananjay Gautan</u>









GS Paper 1 – Geography

Costa Rica in News: Poás Volcano Erupts in Central America

Context: Costa Rica, with its capital at **San José**, has recently made headlines due to the **eruption of Poás Volcano** — one of its most iconic geological features. Known for its rich biodiversity and progressive environmental policies, Costa Rica stands out as a jewel in **Central America**.

Location & Borders

- **Region:** Central America
- Neighboring Nations:
 - Nicaragua to the north
 - Panama to the southeast
- Coastlines:
 - Caribbean Sea to the east
 - Pacific Ocean to the west

Natural Landscape & Geological Marvels

Mountain Ranges

- **Cordillera Volcánica**: A major volcanic range running through central Costa Rica.
- **Cordillera de Talamanca**: Located along the **Costa Rica–Panama border**, this range is recognized as a **UNESCO World Heritage Site** for its **unique ecosystems** and **high endemism**.

Active Volcanoes

- **Poás Volcano:** Recently erupted; known for its large acidic crater lake and frequent gas emissions.
- Irazú Volcano: The highest active volcano in Costa Rica, last erupted in 1994.
- Arenal Volcano: Famous for its **perfect cone shape** and **tourism appeal**, although now in a resting phase since 2010.

Extra Insight: Costa Rica's Environmental Ethos

- **Over 25%** of Costa Rica's land is protected through **national parks and reserves**.
- It runs **almost entirely on renewable energy**, primarily hydro, wind, and geothermal sources.
- The country is often dubbed the **"Switzerland of Central America"** for its **peaceful policies** and **lack of a standing army since 1948**.

Did You Know?

- **Poás Volcano** is one of the **most accessible active volcanoes** in the world and is a key feature in **Poás Volcano National Park**.
- Costa Rica is part of the **Pacific Ring of Fire**, explaining its **volcanic activity and seismic risk**.

Download <u>Our Application</u>



Freedom UPSC with Dhananjay Gautan











GS Paper 3 – Environmental Ecology

New Discoveries in Indian Rivers: Labeo Uru & Labeo Chekida

Context: Two **new species of freshwater fish**, **Labeo uru** and **Labeo chekida**, have been recently discovered by scientists from **ICAR-National Bureau of Fish Genetic Resources (NBFGR)** in the **biodiversity-rich Western Ghats** — reaffirming the region's status as a **global ecological hotspot**.

About the Species:

Labeo Uru:

- Found in the **Chandragiri River**.
- Notable for its **sail-like dorsal fin**, which gives it a unique and striking appearance.
- Named **'uru'**, inspired by the traditional boat of the region, symbolizing its graceful dorsal profile.

Labeo Chekida:

- Discovered in the **Chalakkudy River**.
- Locally called **'kaka chekida'**, this species is **small and dark-bodied**.
- Known for its subtle beauty and distinct ecological niche.

Scientific Significance:

- Both species belong to the **genus Labeo**, which includes the well-known **Rohu group of freshwater fish**.
- Their discovery clears up a **long-standing taxonomic mystery** around **Labeo nigrescens**, originally described in **1870**.
- Morphological and genetic studies have now confirmed that **Labeo uru**, **Labeo chekida**, and **Labeo nigrescens** are **distinct species**.

Why It Matters:

- The Western Ghats is home to more than 250 species of freshwater fish, many of which are endemic.
- This discovery sheds light on **undocumented biodiversity** and highlights the need for **conservation of riverine ecosystems**.
- It also strengthens the case for **further scientific exploration** of India's rich inland aquatic life.

Did You Know?

- The **genus Labeo** includes many species that are economically important for **aquaculture and inland fisheries** in India.
- The **Western Ghats** is listed as a **UNESCO World Heritage Site** and is one of the **eight "hottest hotspots" of biological diversity** in the world.
- Several rivers in this region are **monsoon-fed and ecologically fragile**, making them highly sensitive to climate and human interference.

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u> _____









Paper 3 – Infrastructure (Energy

Arun-III Hydropower Project: Powering Regional Partnership

Context: During his recent official visit to Nepal, India's Minister of Power and Housing Affairs inspected the progress of the Arun-III Hydropower Project, a flagship initiative symbolizing the deepening energy and economic ties between the two nations.

About the Arun-III Hydropower Project:

- Located on the Arun River in the Sankhuwasabha District of Eastern Nepal, this is a 900 MW run-of-the-river hydropower project.
- The infrastructure features:
 - A 70-meter high concrete gravity dam.
 - An 11.74 km Head Race Tunnel (HRT).
 - An **underground powerhouse** with **four generating units**, each with a capacity of **225 MW**. 0

Development & Investment:

- The project is being implemented with **Indian assistance**, at an estimated cost of **2144 billion**.
- Developed on a Build-Own-Operate-Transfer (BOOT) model by SIVN Arun-III Power Development Company (SAPDC), a wholly owned subsidiary of India's SJVN.
- SIVN is a joint venture between the Government of India and the Government of Himachal Pradesh.

Operational Timeline & Ownership:

- SAPDC will operate the project for 25 years, excluding a 5-year construction period, after which it will be transferred to the Government of Nepal.
- Nepal will receive 21.9% of the total power generated as free electricity during this 25-year period.

Strategic and Economic Significance:

- Upon completion, Arun-III will be Nepal's largest hydropower facility, significantly enhancing the country's energy generation capacity.
- Surplus electricity will be exported to India, specifically from Dhalkebar (Nepal) to Muzaffarpur (India), bolstering regional grid interconnection and energy trade.
- The project will help reduce Nepal's energy imports, improve local employment opportunities, and promote **infrastructure development** in the region.

Why It Matters:

The Arun-III project exemplifies **South-South cooperation**, where India plays a pivotal role in • infrastructure-led development in neighboring countries.

Download <u>Our Application</u> ____ **<u>Freedom UPSC with Dhananjay Gautam 56</u>**

Google Play







- It supports **regional energy security**, a **clean energy transition**, and strengthens **people-to-people ties** through sustainable development.
- Hydropower, being **renewable and low-carbon**, aligns with the **global climate goals** under the **Paris Agreement**.

Did You Know?

- Nepal has a hydropower potential of over **83,000 MW**, of which only a small fraction has been tapped.
- The **Arun River** is a major tributary of the **Koshi River**, known for its swift flow and high energy potential.
- The cross-border power transmission line **Muzaffarpur–Dhalkebar** is one of the first high-capacity grid links between India and Nepal.

Freedom UPSC





Freedom UPSC









GS Paper 3 – Science & Technology

Revolutionary Breakthrough: New Technique to Estimate Helium Abundance in the Sun

Context: Researchers from the **Indian Institute of Astrophysics (IIA)** have pioneered a **novel method** to accurately estimate the **abundance of Helium** in the **Sun's photosphere**, overcoming a challenge that has puzzled astrophysicists for decades.

Why is Helium Hard to Detect?

Helium is the second most abundant element in the Sun. However, its detection in the photosphere is extremely difficult due to the absence of visible spectral lines.

Until now, scientists relied on **indirect methods** such as:

- Solar wind and coronal data
- Extrapolations from hotter stars
- Helioseismology (studying solar interior vibrations)

These approaches lacked precision since they did **not involve direct photospheric measurements**.

What's the New Method?

The IIA team developed an innovative approach using indirect spectral analysis of:

- Neutral Magnesium (Mg I) and Neutral Carbon (C I) lines
- Molecular lines of MgH, CH, and C₂

This method is grounded in the idea that **Helium abundance influences Hydrogen availability**, which in turn affects the **strength and formation of molecular lines** such as CH and MgH.

By analyzing **atomic and molecular abundances** of Magnesium and Carbon at various **Helium-to-Hydrogen (He/H) ratios**, the researchers found:

Only at a He/H ratio of ~0.1 do the data align — validating the commonly accepted solar helium abundance.

Quick Facts About Helium:

- Element Type: Noble gas, chemically inert due to its closed-shell electronic configuration
- Discovery: Identified in 1868 by Jules Janssen and Norman Lockyer during a solar eclipse
- Name Origin: Derived from the Greek word 'Helios' meaning 'Sun'
- Major Global Reserves: United States, Algeria, Russia
- India's Treasure Trove: The Rajmahal Volcanic Basin in Jharkhand houses a significant helium reserve, estimated to have been trapped for billions of years

Conclusion:

Download <u>Our Application</u>

Google Play

GET IT ON

This **breakthrough by Indian scientists** marks a major step forward in **solar physics**, offering a more **reliable and direct estimation** of **helium abundance** in the Sun's **photosphere**. It not only sharpens our understanding of solar composition but also enhances models of **stellar evolution**.

Freedom UPSC with Dhananjay Gautam











GS Paper 3 - Biotechnology, Health, Human Resources

India's First Human Gene Therapy Trial for Haemophilia: A Medical Milestone

Context: In a groundbreaking achievement, BRIC-inStem, Bengaluru, in collaboration with CMC Vellore, has successfully completed India's firstin-human gene therapy trial for Haemophilia. This marks a significant advancement in the field of genetic medicine and offers renewed hope for patients suffering from this rare disorder.

What is Gene Therapy?

Gene therapy is a cutting-edge biomedical technique that modifies or

replaces faulty genes within a person's cells to treat or prevent diseases. It aims to address the root genetic causes rather than just managing symptoms.

Key Approaches:

- **Replacing** a mutated gene with a healthy version
- **Inactivating** a malfunctioning gene
- **Introducing** an entirely new gene into the body

Unlike traditional treatments, gene therapy targets the **genetic blueprint** itself, using approaches like:

- **Ex vivo** modification of **stem cells** or **T-lymphocytes** outside the body ٠
- In vivo delivery of gene-editing tools directly into the patient

Understanding Haemophilia

Haemophilia is a rare genetic bleeding disorder where the blood fails to clot properly due to mutations in genes that encode clotting proteins.

Quick Facts:

- The disorder is **X-linked**, making males more prone to it •
- Affects approximately **1** in **10,000 people** globally
- **India bears a high patient burden**, highlighting the need for advanced therapies •

About BRIC-inStem

BRIC-inStem is a premier institute under the Biotechnology Research and Innovation Council (BRIC). It integrates 14 autonomous research institutions across India and is a frontrunner in translational and regenerative medicine.

Key Innovations:

- Gene therapy trials for rare diseases
- Anti-viral germicidal masks developed during COVID-19
- 'Kisan Kavach', a protective pesticide shield for farmers
- Biosafety Level III Lab for handling high-risk pathogens under the One Health Mission

Why This Matters

Google Play

This successful gene therapy trial is not just a national achievement — it represents a **new frontier in** precision medicine in India. It shows that homegrown scientific excellence can lead transformative healthcare initiatives that save lives and set global benchmarks.

Download Our Application -**Freedom UPSC with Dhananjay Gautam**









GS Paper 1 – Geography

6.2 Magnitude Earthquake Strikes Istanbul – Epicenter in Sea of Marmara

Context: A **powerful earthquake** measuring **6.2 on the Richter scale** recently struck **Istanbul**, with its **epicenter located in the Sea of Marmara**. The tremors were felt widely across the city, sparking concerns over future seismic threats in this geologically active zone.

About the Sea of Marmara:

The **Sea of Marmara** is a **small inland sea** situated entirely within **Turkey**, acting as a **natural divider** between the **European and Asian parts** of the country.

Key Facts:

- Area: Approximately 11,350 sq.km
- Length: About 280 km
- Widest Point: Up to 80 km

It forms a vital link between seas:

- Northeast: Connected to the Black Sea via the Bosphorus Strait
- Southwest: Linked to the Aegean Sea through the Dardanelles Strait

As a result, th<mark>e Sea of Marmara acts as a **transitional zone** between the **Black Sea** and the **Mediterranean** Sea.</mark>

Unique Salinity and Water Layers:

Due to the inflow of **cold**, **fresh water** from the **Black Sea** and **warm**, **salty water** from the **Mediterranean**, the sea displays a **layered water structure**:

- **Surface**: Fresher water
- Bottom: Much saltier water

Climate and Conditions:

The region enjoys a **humid subtropical climate**, characterized by:

- Hot summers
- Cold, wet winters

This climate supports rich biodiversity and dense human settlements along its coasts.

Tectonic Activity and Earthquake Risk:

Beneath the Sea of Marmara runs the **North Anatolian Fault**, a **major seismic fault line** responsible for multiple devastating **earthquakes** in Turkish history — making this region highly **seismically active**.

Freedom UPSC with Dhananjay Gautam

Major Islands in the Sea:

Some of the **notable islands** include:

- Marmara Island Turkey's second-largest island, rich in marble
- Prince Islands

Download <u>Our Application</u> -----

Google Play









• Avşa, Imrali, Ekinlik, and Paşalimani Islands

Key Coastal Cities:

Several major cities lie along the Sea of Marmara, including:

- Istanbul
- Izmit
- Balikesir
- Yalova
- Tekirdag
- Bursa
- Çanakkale

These urban areas are both culturally significant and economically vital, making earthquake preparedness even more crucial.

Conclusion:

This recent **earthquake in the Sea of Marmara** serves as a **stark reminder** of the region's **seismic vulnerability**. As urban development continues along its shores, there is a growing need for **resilient infrastructure** and **disaster preparedness** to safeguard both **lives** and **livelihoods**.

Freedom UPSC













GS Paper 2 – International Relation

Pakistan Suspends Simla Agreement After India's Response to Terror Attack

Context: In a **dramatic diplomatic shift**, **Pakistan has announced the suspension of the 1972 Simla Agreement**, following India's strong response to the recent **terror attack in Pahalgam**, Jammu and Kashmir. This move has sparked serious concerns over **regional peace**, especially around the **Line of Control (LoC)**.



What is the Simla Agreement?

The Simla Agreement was a landmark bilateral treaty

signed on **2nd July 1972** in **Shimla**, between **Indian Prime Minister Indira Gandhi** and **Pakistani President Zulfikar Ali Bhutto**. It was framed after the **1971 India-Pakistan War**, which led to the **creation of Bangladesh**.

Key Provisions:

- **Respect for Sovereignty**: Both countries agreed not to interfere in each other's internal affairs.
- **Bilateral Dispute Resolution**: All disputes, including **Kashmir**, were to be resolved **bilaterally**, without third-party involvement.
- **Redrawing the Ceasefire Line**: The old ceasefire line was converted into the **Line of Control (LoC)**.
- **Normalization of Ties**: Restoration of **trade**, **travel**, and **diplomatic channels** was encouraged.
- Release of POWs: India released over 93,000 Pakistani prisoners of war, one of the largest releases post-conflict.

Note: While the agreement laid the foundation for peaceful bilateralism, it lacked enforcement mechanisms and left **the Kashmir issue unresolved**, turning the **LoC into a de facto border**.

What Does the Suspension Mean?

From Bilateralism to Internationalization:

• Pakistan may now attempt to **internationalize the Kashmir issue**, inviting **UN**, **China**, or the **OIC** to mediate—**violating the Simla framework**.

Risks of Proxy Warfare:

• Past Pakistani actions, including the **1984 Siachen conflict** and the **1999 Kargil War**, were in breach of the agreement. Its suspension could **embolden proxy warfare** tactics once more.

Increased Military and Diplomatic Tensions:

• Though symbolic in the short term, this move could **escalate military posturing** and derail India's ongoing **developmental efforts in Jammu & Kashmir**, especially post **Article 370 abrogation**.

Impact on Regional Cooperation:

• Disruption of bilateral ties may also affect **SAARC** and other regional platforms, weakening collective action on **terrorism** and **economic development**.

<u>Freedom UPSC with Dhananjay Gautam 6</u>

How Should India Respond? Enhancing LoC Security

1. Deploy Anti-Drone Defense Systems:

• Install AI-based drone detection and radar systems

Download <u>Our Application</u> __

Google Play

GET IT ON







20 to 267 pril

• Collaborate with Israel's "Drone Dome" for high-precision responses

2. Strengthen Satellite & UAV Surveillance:

- Use Heron TP drones and real-time satellite imagery
- Employ AI analytics to detect infiltration and tunnel construction
- 3. Fortify Counter-Infiltration Grids:
 - Improve coordination between Army, BSF, police, and intelligence
 - Continuously update Standard Operating Procedures (SOPs) based on seasonal patterns

4. Revive Village Defence Committees (VDCs):

- Especially in areas like Anantnag
- Provide training, weapons, and integrate locals into early warning networks

5. Modernize Border Fencing:

- Implement smart fencing with laser walls, infrared sensors, and seismic detectors
- Prioritize vulnerable sectors such as Gurez, Uri, and Poonch

Conclusion: A Time for Strategic Recalibration

The **suspension of the Simla Agreement** is not just a diplomatic setback but an opportunity for **India to recalibrate its security strategy**. By:

- Strengthening border defenses
- Exposing Pakistan's role in terror networks, and
- Advocating for its re-listing in the FATF grey list

India can turn this challenge into a **strategic advantage** on both the **security and diplomatic fronts**.

FOGETHER WE SCALE HEIGHTS

Freedom UPSC with Dhananjay Gautam

Download <u>Our Application</u> GET IT ON

Google Plav











GS Paper 3 – Economic Development

Monsoon 2025 & Food Inflation in India: What's the Link?

Context: The **India Meteorological Department (IMD)** has projected an **above-normal monsoon** for **2025**, forecasting **rainfall at 105% of the Long Period Average (LPA)**. This is expected to **boost agricultural production** and support the government's efforts to **control food inflation**, which is closely tied to **rainfall variability** in India.



IMD's Monsoon Forecast 2025: Key Highlights

- **Rainfall Prediction**: Rainfall expected to be **105% of the LPA (87 cm)** with a ±5% margin
- Classification of rainfall:
 - **Deficient**: <90%
 - **Below Normal**: 90–95%
 - Normal: 96–104%
 - Above Normal: 105–110%
 - **Excess**: >110%

Climatic Support:

- Neutral El Niño-Southern Oscillation (ENSO)
- Positive Indian Ocean Dipole (IOD)
- Below-normal Eurasian snow cover, indicating stronger monsoon winds

Improved Forecast Accuracy:

Average deviation has dropped from 7.5% (2017–20) to 2.27% (2021–25)

Geographical Distribution:

- Below Normal: Jammu & Kashmir, Ladakh, Tamil Nadu, Bihar, Northeast
- Normal to Above Normal: Madhya Pradesh, Rajasthan, Maharashtra, Odisha, Chhattisgarh, Uttar Pradesh, West Bengal (key rain-fed agriculture zones)

Monsoon's Impact on Food Inflation:

Agricultural Yield & Crop Prices:

- Good rainfall usually improves **crop yields** and reduces prices.
- However, **individual crop prices** may still spike due to **localized production issues**.

Stats Snapshot (2015-24):

- 6 out of 10 years had normal or above-average rainfall.
- Years like FY16 & FY19 saw low rainfall, leading to weak agricultural growth: 0.65% in FY18, 2.7% in FY24 (Decade average: 4.45%)

Supply Chain & Transportation Costs:

- Heavy rainfall/floods disrupt transport and storage, causing logistics delays.
- Example: **2023 floods in Assam and Bihar** delayed staple movement, leading to **temporary price hikes**.

Download <u>Our Application</u> ----

Google Play









Monsoon Deficit & Import Costs:

- Poor monsoons increase **import dependency**, especially for **pulses and edible oils**.
- **2023 Example**: Low rainfall = spike in edible oil imports from **Indonesia & Malaysia**.
- In 2022–23, India imported 16.5 million tonnes of edible oils, with domestic production meeting just 40–45% of demand.

Beyond Rainfall: What Else Drives Food Inflation?

Despite high rainfall in **FY20, FY21, FY23, and FY25**, food inflation **remained high** (6–7%). In contrast, **below-normal rainfall years** like FY18 and FY19 saw **low food inflation** (2.2% and 0.7%).

Recent Trend:

- Food inflation fell from 8% (Dec 2024) to below 6% (Jan 2025)
- For the first time since July 2023, it dropped below headline inflation by March 2025

Other Contributing Factors:

- Supply Shocks: Hoarding, market disruptions, and black marketing affect prices
- Global Commodity Prices: Rise in edible oil & pulse prices directly impacts India due to high import reliance
- Monetary Policy: RBI's interest rate hikes raise input costs, especially for processed and packaged food
- **Government Policies**: MSP hikes support farmers but can raise inflation

Export bans (e.g., on onions or rice) protect local supply but may destabilize markets

• Infrastructure Gaps: Poor storage and transportation result in wastage and higher consumer prices

Conclusion: Rainfall Helps, But It's Not Everything

While a **strong monsoon** is a **positive sign for agriculture**, it is **not a silver bullet** for food inflation. **Structural reforms**, **efficient logistics**, **supply chain resilience**, and **global price monitoring** are just as crucial.



Google Plav











GS Paper 2 – Governance, Constitution, Polity, Social Justice

Tamil Nadu Bans Raw Egg Mayonnaise: A Bold Move for Public Health

Context: In a significant **public health decision**, the **Tamil Nadu government** has announced a **one-year ban**—effective from **April 8**, **2025**—on the **manufacture**, **storage**, **distribution**, **and sale** of **mayonnaise made with raw eggs**. The move is aimed at **preventing foodborne illnesses** in India's **hot and humid** climate, which heightens the risk of **bacterial contamination**.



What is Mayonnaise?

Origin and Composition:

Mayonnaise is a popular **cold emulsion sauce** believed to have originated in **France or Spain**. Today, it's a **global staple** in **fast food** and **homemade cooking**, especially as a **spread** or **dressing**.

Basic Ingredients

- Egg yolk
- Vegetable oil
- Vinegar or lemon juice
- Salt and seasonings

The **egg yolk proteins** act as **emulsifiers**, binding the **oil and acid** into a **smooth, stable mixture**.

Why Raw Eg<mark>gs are Ri</mark>sky

Health Hazards of Raw Egg Mayonnaise:

• Raw eggs can harbor harmful bacteria such as Salmonella and E. coli, which are not eliminated unless properly cooked or pasteurized.

Fact Check: According to the **World Health Organization (WHO)**, **Salmonella** causes over **93.8 million foodborne illnesses** and **155,000 deaths** globally each year.

Why Indian Conditions Are More Dangerous:

- **High temperatures** and **poor refrigeration** increase spoilage risks.
- Street vendors and unregulated kitchens often lack cold storage, leading to unsafe mayonnaise preparation.

Freedom UPSC with Dhananjay Gautam 66

Know the Pathogens:

- Salmonella: Causes fever, diarrhoea, vomiting, and abdominal pain
- E. coli: Some strains can cause kidney failure (e.g., E. coli 0157:H7)

High-Risk Groups:

- Children
- Elderly
- People with weakened immune systems

Expert Opinion: Why the Ban is Justified:

Health experts and nutritionists have welcomed the move, citing:

Download Our Application -









- Raw egg-based mayo as high-risk food
- The need for regulations on temperature-sensitive food items
- Availability of safer alternatives like eggless or pasteurized egg mayonnaise

Did You Know? Pasteurized eggs are **heat-treated** to eliminate bacteria without cooking the egg, making them safe for raw applications like mayonnaise.

Impact on the Food and Fast-Food Industry:

Urban Food Chains and Local Vendors:

- Many eateries use **homemade or locally-sourced mayonnaise**, which may not follow **food safety standards**.
- The ban will **encourage** a shift toward:
 - Eggless mayonnaise (already dominant in India)
 - Pasteurized egg-based alternatives

Market Trends:

• India's eggless mayo market is estimated to grow at a **CAGR of over 9%**, driven by **vegan trends**, **cost-efficiency**, and **religious dietary preferences**.

Not an Isolated Incident:

Tamil Nadu follows **Telangana**, which imposed a similar **one-year ban** in **November 2024**.

This step aligns with Tamil Nadu's history of **proactive health regulations**, such as:

- The gutka and paan masala bans
- Enforcement of food labeling norms
- Crackdown on adulterated milk and oil

Broader Health Policy Trend in India:

Tamil Nadu's decision reflects a **larger national shift** toward:

- Food safety awareness
- Preventive health measures
- Child and adolescent protection

Other Recent Bans in India:

- **Punjab** banned **caffeinated energy drinks** for children and near schools.
- Scientific assessments are underway to analyze long-term effects of these foods.

Public health experts argue that **prevention-based bans** are crucial in **reducing foodborne disease burdens**, especially in developing nations.



