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**VIDHVATH IAS KAS ACADEMY**  
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**STUDY CENTRE**

# DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

**DATE: 29/07/2025 (TUESDAY)**



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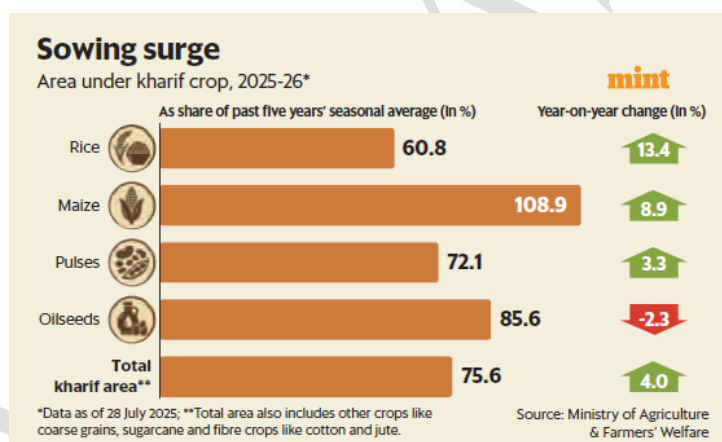
## I. Impact on Food Prices and Biofuel Sector

### ● Monsoon Performance and Regional Variations

- India receives about 75% of its annual rainfall during the **south-west monsoon (June–September)**.
- As of 27 July 2025, rainfall has been **8% above normal**, with **84% of the country receiving normal to excess rainfall**.
- However, certain states such as **Assam (-43%), Bihar (-44%), and Andhra Pradesh (-12%)** have witnessed **deficient rains**, raising concerns for local agriculture.

### ● Effect on Kharif Sowing Patterns

- Higher rainfall has resulted in a **13% increase in rice acreage** and **9% surge in maize sowing** (as of 28 July 2025).
- Pulses have seen a **3% rise**, while oilseeds acreage has declined by **3.5%**, attributed to **low domestic prices** and **cheap edible oil imports**.
- The increase in maize sowing reflects better **market price realization** and **industrial demand** (particularly from ethanol producers).



### ● Maize and the Biofuel Push

- Maize demand is increasing due to its rising use in **ethanol production**, alongside **broken rice and sugarcane**.
- Ethanol is part of India's **biofuel blending strategy**, aiming to reduce **crude oil imports** and **vehicular carbon emissions**.
- In FY 2024-25, India had to **import 1 million tonnes of maize**, reflecting a **sixfold increase** in imports due to domestic shortages.

### ● Impact on Food Prices and Inflation

- Food inflation recorded at **-1.06% in June 2025**, the lowest since 2019, largely due to increased cereal output.
- Higher rice production and stable pulse output will likely ensure **benign food prices** through the kharif season.
- Adequate monsoon also ensures **better reservoir levels**, which will **benefit rabi sowing** (starting October–November).

### ● Agricultural Trade-offs and Sustainability Concerns

- While maize expansion aids ethanol goals, shifting away from **native oilseeds and pulses**—which are **environmentally sustainable**—may lead to **agro-ecological imbalance**.
- Overdependence on **water-intensive rice** persists due to **government procurement via MSP**, undermining incentives to shift toward **climate-resilient crops**.



## • Constitutional & Policy Frameworks

- **Article 48** of the Constitution directs the State to promote agriculture on scientific lines and preserve the environment.
- **National Bio-Energy Mission, Ethanol Blending Programme (EBP), and National Policy on Biofuels (2018)** support ethanol use from alternative feedstocks like maize.
- **Minimum Support Price (MSP)** regime influences crop choices and distorts sustainable diversification.

## Conclusion & UPSC Relevance

Surplus rainfall in 2025 has improved kharif sowing and promises to lower food inflation while enhancing India's biofuel prospects. However, this must be balanced with environmental sustainability and crop diversification. For UPSC, the topic integrates **GS Paper 1 (Geography), GS Paper 3 (Agriculture, Economy, Environment), and Current Affairs**. Understanding the interplay between monsoon variability, food security, energy needs, and sustainable farming is crucial for both prelims and mains.

## 2. Rising Technical Defects in Indian Commercial Aircraft

### • Overview of Reported Technical Defects

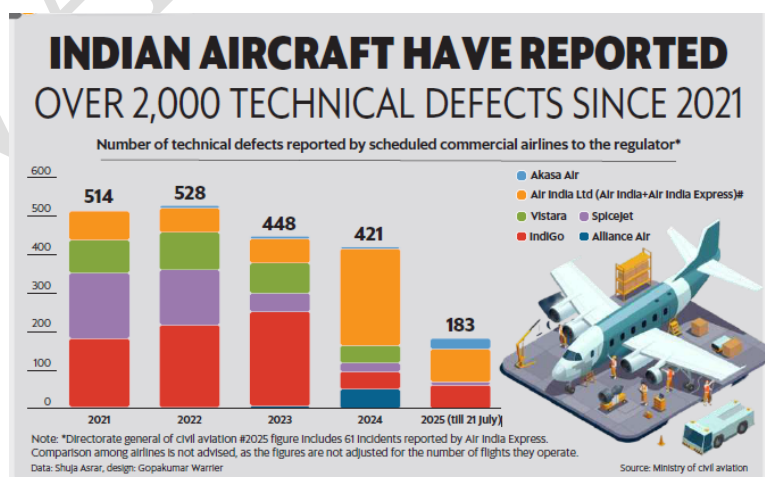
- Over **2,000 technical defects** have been reported by Indian **scheduled commercial airlines** from **2021 to July 2025**, as per the **Directorate General of Civil Aviation (DGCA)**.
- The highest number of reported defects are from major carriers like **Air India, IndiGo, SpiceJet, and Vistara**, but the figures **do not account for flight volume**, hence direct comparison is inadvisable.
- In 2025 (up to 21 July), **Air India Ltd (including Air India Express)** has reported the highest number of incidents (514), followed by IndiGo (528 in 2023), highlighting **recurring safety concerns**.

### • Understanding Technical Defects in Aviation

- **Technical Defect:** Any failure or malfunction of aircraft equipment, engine, or system affecting flight safety or operational capability.
- These may include **hydraulic failures, engine glitches, landing gear issues, or electronic system faults**.
- As per **ICAO standards**, all such incidents must be reported and assessed for corrective and preventive action.

### • Civil Aviation Safety Oversight Mechanism

- The **DGCA**, under the **Ministry of Civil Aviation**, is responsible for enforcing airworthiness, safety regulations, and certifying aircraft in India.





- **Aircraft Rules, 1937** and **The Civil Aviation Requirements (CAR)** provide regulatory backing for defect reporting and maintenance standards.
- DGCA issues **Airworthiness Directives (ADs)** and conducts **routine audits** and **surprise inspections** to ensure compliance.
- **Implications for Air Passenger Safety and Public Trust**
  - A high number of technical defects could erode **public confidence in air safety**, especially amid rapid expansion of India's aviation sector.
  - Despite the increase in air traffic, **safety must not be compromised**—highlighting the need for better **maintenance protocols, staff training, and airline accountability**.
  - Cases like **SpiceJet's recurrent maintenance issues** in the past have triggered DGCA warnings and **fleet restrictions**.
- **Challenges and the Way Forward**
  - Key concerns include **aging aircraft fleet, staffing shortages**, and pressure on airlines to **reduce maintenance turnaround time**.
  - There is a pressing need for **investment in aircraft engineering infrastructure, third-party audits, and skill development in aviation maintenance**.
  - Enhanced use of **digital diagnostic tools, predictive maintenance systems, and data-driven safety analysis** can reduce incident rates.
- **Constitutional & Legal Provisions**
  - **Article 21** of the Indian Constitution guarantees the **Right to Life**, which includes the right to safe travel.
  - The **Aircraft Act, 1934** empowers the Central Government to make regulations to ensure **safe aviation operations**.
  - India is also a signatory to the **Chicago Convention (1944)**, binding it to uphold global standards of civil aviation safety under ICAO.

### Conclusion & UPSC Relevance

The rising trend in reported technical defects in Indian aircraft calls for stronger regulatory oversight, better maintenance practices, and enhanced passenger safety frameworks. For UPSC, the topic is relevant for **GS Paper 2 (Governance and Regulation)**, **GS Paper 3 (Infrastructure – Aviation Sector, Disaster Management)**, and **Current Affairs**. It also reflects broader concerns over **infrastructure sustainability, safety governance, and public accountability** in high-growth sectors.

## 3. India-US Bilateral Trade Talks and the National Retail Trade Policy

### • Background of the National Retail Trade Policy

- The **National Retail Trade Policy**, first proposed in **2019**, aimed to address **structural challenges** faced by **brick-and-mortar retailers** and **MSMEs** in light of growing digitization and dominance of e-commerce platforms.





- The policy sought to improve **ease of doing business**, **access to affordable credit**, promote **digitization**, and develop **retail infrastructure** across the value chain.
- Despite its significance, the policy is now reportedly being **shelved**, as India focuses on finalizing the **India-US bilateral trade agreement**.

#### ● Implications of Shelving the Policy

- The move is seen as a **conciliatory gesture towards the US**, whose retail and agri-export interests (e.g., **GM maize, soy-based products, dairy**) are part of the ongoing negotiations.
- **US-based e-commerce firms** like **Walmart (Flipkart)** and **Amazon** may benefit from reduced regulatory oversight.
- Major **domestic retail players** such as **Reliance Retail, Tata, and DMart** may also gain due to reduced policy restrictions and compliance burdens.

#### ● Alternative Platforms Driving Reform

- Government sources argue that objectives of the retail policy are being met through **decentralized digital platforms** like the **Open Network for Digital Commerce (ONDC)** and **cooperative-led models** like **Sahkar taxi service**.
- These platforms aim to **democratize digital commerce**, **level the playing field**, and reduce reliance on monopolistic marketplaces by integrating small retailers and service providers.



#### ● India-US Trade Agreement Context

- The **bilateral trade pact** is in its final phase of negotiation, with **US delegations expected in August 2025** to resolve sticking points.
- India has already taken steps through the **Union Budget** and other measures to **liberalize trade policies**, but the **US seeks wider market access**, especially for **agriculture and retail sectors**.
- Trade-offs like **delaying domestic policies** are being viewed as part of India's diplomatic strategy to **unlock broader economic gains** through the agreement.

#### ● Challenges Faced by Indian MSMEs

- Experts and industry bodies like the **India SME Forum** have criticized the delay, arguing that **MSMEs still face hurdles** like **lack of credit, complex compliance, and digital exclusion**.
- A comprehensive retail policy was expected to **empower small businesses**, promote **fair competition**, and ensure **inclusive growth** in India's expanding organized retail sector, projected to touch **\$230 billion by 2030**.

#### ● Constitutional & Legal Provisions

- **Article 19(1)(g)** of the Constitution guarantees **freedom to practice any profession or to carry on any occupation, trade or business**, which includes retail activity.
- **Article 301** ensures **freedom of trade and commerce throughout the territory of India**.



- The proposed policy aligns with objectives under the **Micro, Small and Medium Enterprises Development Act, 2006** and **National Policy for Skill Development and Entrepreneurship, 2015** to foster MSME growth.

### Conclusion & UPSC Relevance

The shelving of the National Retail Trade Policy reflects a strategic compromise in the context of India-US trade negotiations. While such diplomacy may enhance bilateral economic relations, it raises concerns over the domestic retail ecosystem, especially MSMEs awaiting regulatory support. For UPSC, this topic links to **GS Paper 2 (Governance, International Relations)**, **GS Paper 3 (Economy, Trade Policy, MSMEs)**, and **Current Affairs**. It is relevant for understanding the intersection of **domestic policymaking**, **global trade diplomacy**, and **small business development**.

## 4. Industrial Output Growth Slows to 1.5% in June 2025

### • Current Status of Industrial Growth

- India's **Index of Industrial Production (IIP)** grew by only **1.5% in June 2025**, the slowest pace in **10 months**, according to data from the **Ministry of Statistics and Programme Implementation (MoSPI)**.
- This marks a sharp decline from the **4.9% growth recorded in June 2024**, indicating persisting weaknesses in the industrial sector.
- May 2025's IIP growth** was revised upward to **1.9%**, but the trend continues to reflect **volatility and lack of sustained recovery** in industrial activity.

### • Sector-Wise Performance and Disparities

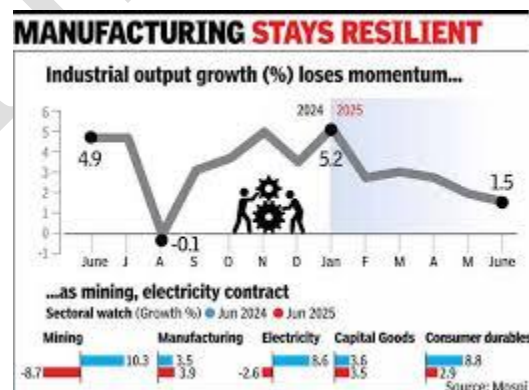
- Manufacturing sector** (78% weight in IIP) grew by **3.9%**, slightly better than May's 3.2%.
- Mining output** saw a major decline, contracting by **8.7%** (compared to -0.1% in May), reflecting weak commodity demand and operational issues.
- Electricity generation** also fell by **2.6%**, continuing a negative trend from May and contrasting sharply with the 8.6% growth in June 2024.

### • Use-Based Classification Trends

- Intermediate goods** output increased by **5.5%**, up from 4.7% in May, and **infrastructure/construction goods** rose by **7.2%**, showing resilience in investment-related activities.
- However, **capital goods**—a proxy for private sector investment—fell by **3.5%**, down sharply from a 13.3% increase in May, indicating subdued industrial investment.
- Primary goods production** contracted by **3%**, further reflecting sluggish demand for basic inputs.

### • Key Definitions for Clarity

- Index of Industrial Production (IIP)**: A composite indicator measuring short-term changes in the volume of production across mining, manufacturing, and electricity sectors.





- **Capital Goods:** Physical assets used to produce other goods and services, like machinery and tools; a fall here often signals weak investment sentiment.
- **Intermediate Goods:** Products used as inputs in the production of other goods; growth here may indicate future expansion in manufacturing.
- **Causes and Economic Implications**
  - Factors contributing to the industrial slowdown include **soft domestic consumption**, **global economic uncertainty**, **sector-specific disruptions**, and **slow private investment**.
  - The uneven industrial growth could impact **employment generation**, **investment sentiment**, and **overall GDP growth**, raising concerns for policymakers.
  - Consistent contraction in mining and electricity signals the need for **structural reforms**, especially in energy production and mineral resource management.
- **Constitutional & Legal Provisions**
  - **Article 39(c)** of the Directive Principles urges the State to ensure that economic activities do not lead to concentration of wealth and promote equitable growth.
  - The **Industries (Development and Regulation) Act, 1951** empowers the government to regulate and develop industries in the national interest.
  - Industrial growth is also aligned with the goals under **Make in India**, **PM Gati Shakti**, and the **National Infrastructure Pipeline** to boost manufacturing and infrastructure sectors.

### Conclusion & UPSC Relevance

The slowdown in industrial growth to 1.5% in June 2025 reveals ongoing challenges in ensuring broad-based, resilient recovery post-pandemic. Policymakers must address sector-specific bottlenecks, improve energy and mining outputs, and revive investment in capital goods. For UPSC, this topic is important under **GS Paper 3 (Indian Economy – Growth, Development, Infrastructure, and Industrial Policy)** and **Current Affairs**, as it highlights key aspects of economic performance, planning, and state intervention in the economy.

## 5. Hope for Further Interest Rate Cuts – Key Takeaways from Finance Ministry Report (June 2025)

- **Current Inflation Trends and Monetary Policy Outlook**
  - The **Finance Ministry's June 2025 Monthly Economic Review** signals potential for further **interest rate cuts**, citing **muted core inflation** and **headline inflation** well below the **RBI's target of 4%**.
  - **Headline CPI inflation** declined from **4.31% in January** to a **77-month low of 2.10% in June**, largely due to falling **food prices** (especially vegetables) and a **favourable base effect**.
  - The RBI has already **cut the repo rate by 100 basis points in 2025**—from **6.50% to 5.50%**, with cuts of 25 bps in February, 25 bps in April, and 50 bps in June—shifting toward an **accommodative monetary stance**.







## ● Core Inflation and Credit Growth Dynamics

- **Core inflation** (excluding food and fuel) remained **sticky around 4.4%**, but its overall subdued trend provides policy space for easing.
- Despite monetary easing and improved bank balance sheets, **credit growth has been sluggish**, influenced by **cautious borrower sentiment** and **risk-averse lending behaviour**.
- A noticeable shift toward **corporate bond markets and commercial papers** suggests preference for **lower-cost borrowing avenues** outside traditional banking.

## ● External and Geopolitical Risks

- Global challenges such as the **Russia-Ukraine conflict**, **instability in West Asia**, and **supply chain disruptions** continue to pose downside risks to India's economic outlook.
- Additionally, the **US economy contracted by 0.5% in Q1 2025**, potentially reducing demand for **Indian exports** and affecting trade balance and industrial performance.

## ● Definition of Key Terms for Clarity

- **Repo Rate**: The interest rate at which the RBI lends money to commercial banks; a reduction makes borrowing cheaper and boosts economic activity.
- **Headline Inflation**: Measures total inflation in the economy, including food and fuel.
- **Core Inflation**: Excludes volatile food and fuel prices; seen as a more stable indicator of underlying price trends.
- **Accommodative Monetary Policy**: A stance taken by central banks to **stimulate economic growth** by reducing interest rates and increasing liquidity.

## ● Policy Implications and Structural Recommendations

- The ministry emphasizes leveraging schemes like the **Employment Linked Incentive (ELI)** to stimulate corporate investment and **capitalize on low interest rates**.
- The positive inflation outlook offers a window for **pro-growth policies** and **support for MSMEs**, but a cautious watch on external shocks remains necessary.
- Continued focus is needed on **reviving credit flow**, **strengthening consumption**, and **ensuring price stability** through coordinated fiscal and monetary measures.

## ● Constitutional & Legal Provisions

- **Article 38** of the Constitution directs the State to secure a **social order for the promotion of the welfare of the people**, which includes maintaining **economic stability and price control**.
- The **Reserve Bank of India Act, 1934**, empowers the RBI to regulate monetary policy to achieve the goals of **price stability, economic growth, and financial stability**.
- The RBI's monetary policy framework is also guided by the **Monetary Policy Committee (MPC)**, established under the **Finance Act, 2016**, with inflation targeting as a primary mandate.

## Conclusion & UPSC Relevance

India's low inflation trajectory and the RBI's accommodative stance open up opportunities for further monetary easing to boost growth. However, global risks and credit sluggishness call for balanced macroeconomic management. For UPSC, this topic is highly relevant under **GS Paper 3 (Indian Economy)**



– Inflation, Monetary Policy, Growth and Development) and Current Affairs, covering themes like monetary governance, RBI's role, and global economic linkages.

## 6. Compensatory Afforestation Progress in India (2019–2024)

### • Overview of Compensatory Afforestation Achievement

- As per the latest report by the **Central Empowered Committee (CEC)**, India achieved **85% of its compensatory afforestation target** between **2019-20 and 2023-24**.
- A total of **178,261 hectares** of land was afforested against a target of **209,297 hectares**, reflecting significant progress under regulatory mandates.
- Gujarat, Madhya Pradesh, Mizoram, and Chandigarh** were among the few regions that **fully met their targets** for compensatory afforestation.

### • Definition and Purpose of Compensatory Afforestation

- Compensatory Afforestation (CA)** refers to the process of planting trees to compensate for forest land diverted for non-forest activities under the **Forest (Conservation) Act, 1980**.
- It is a critical mechanism to ensure **ecological restoration, biodiversity preservation, and carbon sequestration**, mitigating the impact of developmental projects on forest ecosystems.

### • Legal and Institutional Framework

- The requirement for CA is governed by the **Forest (Conservation) Act, 1980**, and implemented under the **Compensatory Afforestation Fund Act (CAF), 2016**.
- The **CAF Act, 2016**, establishes a mechanism to utilize funds collected from user agencies for afforestation and forest regeneration activities.
- The **Central Empowered Committee (CEC)**, constituted by the **Supreme Court**, oversees environmental compliance and forest conservation efforts, including CA progress.

COMPENSATORY AFFORESTATION SPEND			
Year	CAMPA* funds for Goa	Funds used	
2019-20	₹15.5cr	₹6.8cr	
2020-21	₹32.5cr	₹23.4cr	
2021-22	₹32.7cr	₹17.7cr	
2022-23	₹30.2cr	₹25.7cr	
2023-24	₹23.2cr	₹17.3cr up to Jan 2024	

\*CAMPA is the National Compensatory Afforestation Fund Management and Authority

### • Challenges in Implementation

- Despite the 85% achievement rate, several states are lagging, indicating **implementation gaps, land acquisition issues, and delays in fund utilization**.
- There is also growing concern about the **quality of afforestation**, species diversity, and whether afforested land can **truly compensate for rich natural forests** that were lost.
- Issues like **plantation on non-forest or degraded lands**, and lack of **community participation**, dilute the ecological effectiveness of CA.

### • Environmental and Developmental Balance

- Compensatory afforestation is a crucial tool to strike a **balance between development and environment**, especially in the context of infrastructure expansion, mining, and urbanization.



- Effective implementation of CA contributes to **climate change mitigation**, enhances **India's forest cover**, and supports its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement**.

#### • Constitutional & Policy Framework

- **Article 48A** (Directive Principles) obligates the State to **protect and improve the environment and safeguard forests and wildlife**.
- **Article 51A(g)** makes it a **fundamental duty** of every citizen to protect the environment.
- The **National Forest Policy, 1988** and India's commitment under **SDG 15 (Life on Land)** emphasize sustainable forest management and restoration.

#### Conclusion & UPSC Relevance

India's progress in compensatory afforestation reflects significant effort toward ecological restoration, though challenges in quality, land selection, and monitoring persist. Strengthening institutional mechanisms and ensuring community-led afforestation will be key to achieving sustainable forest regeneration. For UPSC, this topic is highly relevant under **GS Paper 3 (Environment, Forest Conservation, Climate Change)**, **GS Paper 2 (Governance and Judiciary Oversight)**, and **Current Affairs**, linking national forest policy with legal, ecological, and constitutional dimensions.

## 7. Discovery of Rare Earth Elements (REE) in Singrauli Coalfields

#### • Overview of the Discovery

- **Promising reserves of Rare Earth Elements (REE)** have been identified in the **Singrauli coalfields** located in **Madhya Pradesh**, as informed in the **Rajya Sabha** by the **Minister of Coal and Mines**.
- This finding is significant for India's resource security, as REEs are crucial for **advanced technologies, renewable energy, and defence applications**.
- **Coal India Ltd** is currently involved in **research and development (R&D)** projects to explore the commercial potential of **REE extraction from coal mine waste**.



#### • Definition and Importance of REEs

- **Rare Earth Elements (REEs)** are a group of 17 chemically similar metallic elements including **scandium, yttrium, and 15 lanthanides**.
- Despite the name, REEs are relatively abundant in the Earth's crust, but they are rarely found in economically exploitable concentrations.
- They are **strategic minerals** vital for **smartphones, electric vehicles, wind turbines, solar panels, missiles, and satellites**.

#### • Strategic Significance for India

- India currently imports the majority of its REE needs, mainly from **China**, which dominates the global supply chain.



- Domestic availability, like in Singrauli, could help reduce **import dependency**, strengthen **national security**, and boost the **Make in India** and **Atmanirbhar Bharat** initiatives.
- This discovery could also enhance India's capability to develop **green and high-tech industries** indigenously.

#### • Legal and Policy Framework

- REEs are listed under the category of "**Atomic Minerals**" governed by the **Atomic Energy Act, 1962**, and their mining is regulated accordingly.
- The **Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act)** provides for the regulation of mining activities in India, including exploration licenses for strategic minerals.
- The **National Mineral Policy, 2019** emphasizes the development of strategic and critical minerals like REEs, including private sector participation and use of advanced technology.

#### • Challenges in Extraction and Utilization

- Extraction of REEs from **coal ash and waste material** is **technically complex and expensive**, requiring specialized technology and environmental safeguards.
- Proper management is required to avoid **radioactive contamination**, especially in elements like thorium that often occur alongside REEs.
- Efficient **public-private partnerships**, **international collaboration**, and **investment in R&D** will be critical to sustainable exploitation.

#### • Constitutional Provisions

- **Article 39(b)** under the Directive Principles mandates that the ownership and control of material resources be distributed to best subserve the common good.
- **Article 48A** directs the State to protect and improve the environment, which becomes relevant in context of **eco-sensitive mineral extraction**.

#### Conclusion & UPSC Relevance

The identification of rare earth elements in Singrauli coalfields is a strategic development for India's technological self-reliance and economic security. With proper regulation, investment, and environmental safeguards, it could contribute significantly to India's energy transition and high-tech manufacturing goals. For UPSC, this topic is relevant under **GS Paper 1 (Resources)**, **GS Paper 3 (Economic Development, Science & Tech, Environment)**, **Current Affairs**, and themes related to **strategic minerals, critical technology, and mineral policy frameworks**.

### 8. Launch of NISAR Satellite – Key Points

#### • Overview of NISAR Satellite

- The **NASA-ISRO Synthetic Aperture Radar (NISAR)** satellite is scheduled for launch on **30 July** using India's **GSLV S16** rocket, as confirmed by **ISRO Chairman V. Narayanan**.
- NISAR is a **joint Earth observation mission** between the **Indian Space Research Organisation (ISRO)** and the **National Aeronautics and Space Administration (NASA)**, making it a symbol of Indo-US space collaboration.





- The satellite aims to monitor **Earth's surface dynamics** with unmatched accuracy using **dual-frequency synthetic aperture radar (SAR)**.

#### • Key Features and Objectives of NISAR

- **Synthetic Aperture Radar (SAR)** technology allows high-resolution imaging regardless of **weather conditions or daylight**, crucial for consistent earth observation.
- NISAR will use **L-band (NASA)** and **S-band (ISRO)** radar systems, making it the **first dual-frequency SAR satellite**.
- It will study **land deformation, ice-sheet dynamics, forest biomass, agricultural changes**, and **natural disasters** such as earthquakes and landslides.

#### • Strategic and Environmental Significance

- NISAR will provide **critical data for climate change modeling**, natural resource monitoring, and disaster preparedness.
- It supports sustainable development through **evidence-based policymaking**, especially in areas such as **agriculture, urban planning, and water resource management**.
- It enhances India's capabilities in **space-based environmental monitoring**, which aligns with commitments under **SDG 13 (Climate Action)**.

#### • International Collaboration and Technology Sharing

- The collaboration reflects deepening **Indo-US strategic ties in space technology** and joint innovation.
- India contributed the **S-band radar, satellite integration, and launch support**, while NASA provided the **L-band radar and associated systems**.
- It strengthens India's reputation as a reliable **launch and satellite development partner** in the global space economy.



#### • Legal and Institutional Framework

- The satellite program aligns with India's **Space Activities Bill (draft)** and long-standing space policy emphasizing **peaceful use of outer space**.
- ISRO functions under the **Department of Space**, governed by **Articles 73 and 77** of the Constitution, which empower the Union government to enter into international agreements.
- The mission complements India's **National Space Policy 2023**, which promotes greater collaboration with foreign agencies and private sector participation.

#### Conclusion & UPSC Relevance

The launch of NISAR marks a major leap in Earth observation capability, serving critical scientific, environmental, and strategic objectives. It demonstrates India's growing stature in global space cooperation and technological advancement. This topic is highly relevant for **UPSC GS Paper 3 (Science and Technology, Environment, Disaster Management)**, **GS Paper 2 (India-USA relations)**, and **Current Affairs**, especially in themes of space diplomacy, climate monitoring, and innovation in public services.



## 9. Decline in India's Crude Oil Imports – Key Points

### • Current Status of Crude Oil Imports

- India's crude oil imports in **June 2025** dropped to **20.32 million tonnes**, a **4.7% decline** from May 2025, reaching the **lowest level in five months** (since February 2025).
- Despite the monthly decline, on a **year-on-year basis**, imports rose by over **8%** compared to **18.81 million tonnes in June 2024**, as per the **Petroleum Planning and Analysis Cell (PPAC)**.
- India is the **world's third-largest oil importer and consumer**, after China and the United States.

### • Factors Contributing to the Decline

- Short-term factors such as **refinery maintenance shutdowns**, **fluctuating global oil prices**, and **domestic inventory adjustments** may have contributed to the lower imports in June.
- Geopolitical factors like **West Asia tensions** and supply uncertainty due to conflicts such as the **Russia-Ukraine war** may also affect oil procurement strategy.
- A growing shift towards **renewable energy**, **biofuels**, and **electric mobility initiatives** may also begin to show marginal impacts on demand over time.

### • Strategic and Economic Implications

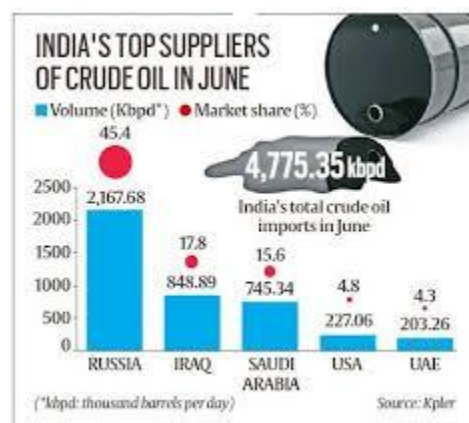
- A fall in crude oil imports may temporarily **ease India's trade deficit and import bill**, offering macroeconomic relief.
- However, since crude oil is a **critical input** for transport, power generation, and industry, sustained reduction could indicate **slowdown in domestic demand or industrial activity**.
- Oil import dependency affects India's **energy security**, **foreign exchange reserves**, and **inflation control** mechanisms.

### • Policy Context and Initiatives

- India aims to **reduce oil import dependence by 10%** by 2030 through domestic exploration (NELP, HELP), **ethanol blending (E20 target by 2025)**, and strategic oil reserves under **Indian Strategic Petroleum Reserves Limited (ISPRL)**.
- Schemes such as **Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME)** and the **National Bio-Energy Mission** aim to reduce reliance on fossil fuels.
- Constitutional basis: **Energy security** falls under **Entry 53 of the Union List (List I)** of the **Seventh Schedule** of the Constitution – Union control over oilfields and mineral resources.

### • Definitions and Concepts

- Crude Oil**: Unrefined petroleum product extracted from geological formations; processed to obtain fuels like petrol, diesel, jet fuel.
- Petroleum Planning and Analysis Cell (PPAC)**: A technical arm of the Ministry of Petroleum & Natural Gas that monitors oil and gas pricing, supply, and analysis.





## Conclusion & UPSC Relevance

The recent drop in India's crude oil imports indicates dynamic trends in energy consumption and external sector management. For UPSC, this topic is highly relevant under **GS Paper 3 (Energy, Infrastructure, Economy)** and **GS Paper 2 (Government Policies and International Relations)**. It also features in **Current Affairs**, particularly in the context of **energy security, sustainable development, and strategic autonomy**. Understanding India's oil import trends is crucial for evaluating macroeconomic stability and energy policy reforms.

## 10. Rise of Space Startups in India's Data Economy – Key Points

### ● Emergence of Data Analytics as Revenue Stream

India's private space startups are increasingly generating revenue by **offering Earth observation data and analytics** to clients across sectors. Firms like **Pixxel**, **Digantara**, and **GalaxEye** provide high-resolution satellite imagery and processed data for uses ranging from agriculture and insurance to urban planning and defence.

### ● Examples of Key Space Startups and Services

- **Pixxel** uses its imaging satellites for Earth observation applications.
- **Digantara** helps satellite operators with **space situational awareness (SSA)** and collision avoidance using debris-tracking data.
- **GalaxEye** is developing a hybrid sensor satellite offering high-resolution, cloud-penetrating imaging.
- **Agnikul Cosmos** and **Skyroot Aerospace** have completed sub-orbital demonstration missions and are engaging data-centric clients like agri-tech and fleet-monitoring firms.

### ● Growing Demand for Satellite Data Applications

The demand for satellite data is expanding rapidly across sectors such as:

- **Agriculture** (crop change detection)
- **Insurance** (risk scoring)
- **Urban governance** (urban sprawl and infrastructure tracking)
- **Finance** (real estate investment prediction by hedge funds)
- **Maritime surveillance and defence** (by governments seeking indigenous monitoring capacity)



### ● Policy Support and Institutional Framework

- The **Indian National Space Promotion and Authorization Centre (IN-SPACe)**, under the **Department of Space**, facilitates private sector participation.
- The space sector was officially opened to private entities in **2020**, with reforms enabling easier licensing, R&D collaboration, and access to ISRO's infrastructure.
- **Space Activities Bill (draft stage)** seeks to regulate and authorize private activities in outer space, ensuring compliance with **Outer Space Treaty (1967)**.



## ● Definitions and Key Concepts

- **Earth Observation (EO) Satellites:** Satellites that monitor Earth's physical, chemical, and biological systems.
- **Space Situational Awareness (SSA):** Tracking objects in orbit to avoid collisions and space debris.
- **Sub-orbital Flight:** A flight that reaches space but does not complete an orbit around the Earth.
- **Synthetic Aperture Radar (SAR):** A form of radar used to create detailed 2D or 3D reconstructions of landscapes regardless of cloud cover.

## Conclusion & UPSC Relevance

India's space startup ecosystem is undergoing a **paradigm shift from proving technology to commercialization**, with data services emerging as a dominant business model. As India's space economy targets **\$44 billion in revenue by 2033**, the sector holds immense strategic, economic, and governance value.

## II. Ensuring Drug Quality Compliance in India – Key Points

### ● Centre's Push for Drug Quality Enforcement

The **Drug Controller General of India (DCGI)** plans to direct states and Union Territories to **identify and act against pharmaceutical companies violating Good Manufacturing Practices (GMP)**. This move follows recent updates to GMP norms under **Schedule M of the Drugs and Cosmetics Rules, 1945**, aimed at strengthening drug quality control in India.

### ● Good Manufacturing Practices (GMP): Definition and Significance

**GMP refers to a system of ensuring that products are consistently produced and controlled according to quality standards.** It minimizes risks involved in pharmaceutical production and ensures safety, efficacy, and authenticity of medicines. It is essential to prevent counterfeit or substandard drugs from entering the market and to protect patient health.

### ● Revised Schedule M Guidelines and Compliance Deadlines

- Revised Schedule M aligns India's quality benchmarks with international standards.
- **Large pharma companies (₹250 crore+ turnover)** are already complying.
- **Small and medium enterprises (MSMEs)** have been given time till **31 December 2025** to upgrade their facilities to meet GMP norms.
- DCGI is expected to **issue directives to states/UTs** to inspect and verify non-compliant firms, especially those who haven't applied for upgrades.



### ● Challenges in Implementation

India has around **10,000 pharmaceutical companies**, of which **8,500 are MSMEs**, mainly located in **Maharashtra, Gujarat, Himachal Pradesh, and Andhra Pradesh**. However, **only about 2,000** of these small units have WHO-GMP certification, indicating a significant compliance gap that requires coordinated enforcement and support mechanisms.





### ● India's Global Pharma Footprint

- Valued at **\$50 billion in FY24**, with **\$23.5 billion** in domestic consumption.
- **Third largest in volume, 14th in value globally.**
- Supplies **20% of the world's generic medicines**, producing around **60,000 generic brands** across **60 therapeutic categories**, making India a vital player in global healthcare and pharmaceutical supply chains.

### Conclusion & UPSC Relevance

The push for **strict GMP compliance and enhanced regulatory oversight** marks a critical step in ensuring **public health, boosting global trust in Indian pharma exports, and enhancing ease of doing ethical business.**

## 12. Minimum Standards for Handling Diagnostic Samples: Key Highlights

### ● Need for Minimum Standards

The Ministry of Health and Family Welfare (MoHFW) has finalized draft minimum standards for the collection, handling, and transport of diagnostic samples, after consultations with subject experts. These are currently under legal vetting. Existing Indian Council of Medical Research (ICMR) guidelines are outdated and fragmented, lacking a unified and enforceable framework.

### ● Legal and Institutional Gaps

Current gaps include the persistence of unregulated standalone collection centres and the lack of uniform accountability for labs. Despite 2018 government notification to integrate collection centres with main labs, state-level enforcement remains weak. The National Accreditation Board for Testing and Calibration Laboratories (NABL) has raised concerns over inconsistencies in sample reporting and facility disclosures.

### ● Professional Oversight and Accountability Issues

Legal challenges, including a petition by Dr. Rohit Jain, highlight the absence of qualified signatories on diagnostic reports. The 2018 and 2020 amendments to the Clinical Establishment Rules allowed non-medical professionals (MSc/PhDs) to issue pathology reports without a qualified pathologist's countersignature—contravening a 2017 Supreme Court ruling. This has compromised report authenticity and patient safety.

### ● Notable Case and Policy Response

The 2021 RT-PCR scam during the Haridwar Kumbh Mela—where over 1 lakh fake tests were conducted—exposed the consequences of unregulated sample collection. The Delhi High Court directed the Centre to address the issue, prompting the creation of four expert subcommittees (pathology, biochemistry, hematology, microbiology) to develop Standard Operating Procedures (SOPs).



### ● Steps Toward Reform

The MoHFW has now assured the Delhi High Court of an impending policy notification. The policy aims to plug regulatory loopholes, standardize qualifications for sample handlers and report signatories, and enforce lab accountability. A final directive has been issued to complete the notification process within three months.



### • Key Definitions and Legal Provisions

- *Good Laboratory Practices (GLP)*: Set of principles intended to ensure the quality, integrity, and reliability of non-clinical laboratory studies.
- *Clinical Establishments Act, 2010*: A central legislation to regulate all clinical establishments in India.
- *NABL Accreditation*: Certifies labs for compliance with ISO standards, including sample handling and reporting accuracy.

### Conclusion and UPSC Relevance

Standardization of diagnostic procedures is essential to uphold public health integrity, ensure patient safety, and prevent medical fraud. This initiative aligns with the constitutional mandate under Article 47 (Duty of the State to raise the level of nutrition and the standard of living and to improve public health). For UPSC, this topic intersects GS Paper II (Governance, Polity), GS Paper III (Science & Tech, Health), and ethics in GS Paper IV (Medical Accountability). It also reflects the increasing role of legal oversight and institutional coordination in India's healthcare reforms.