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VIDHVATH IAS KAS ACADEMY
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STUDY CENTRE

DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

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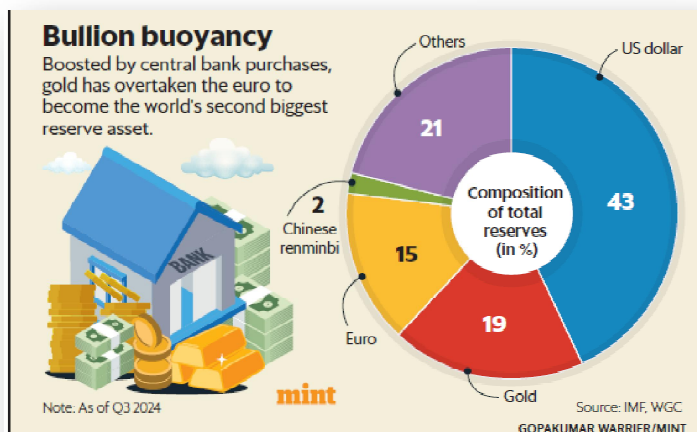
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1. Signals for India from Global Central Banks' Actions

1. Recent Global Central Bank Actions

- **US Federal Reserve** kept interest rates steady at 4.25–4.5% and delayed the expected rate cuts. It signaled only a **50 bps cut in 2025**, and **gradual cuts in 2026–27**.
- **Bank of England** also maintained rates at 4.25% despite earlier cuts.
- **Bank of Japan** indicated readiness to **raise rates further** if economic recovery sustains.
- The actions reflect a cautious stance amid persistent global inflation and geopolitical instability.

2. Major Global Concerns



- A key concern is **Trump's proposed tariff policy**, which could raise inflation globally.
- US Fed Chair **Jerome Powell** warned that tariffs would increase costs across the supply chain, affecting consumers.
- **Geopolitical risks**, like the **Israel-Iran conflict**, are further threatening energy prices and inflation control.

- **Unpredictability of global economic variables** is limiting policy maneuverability for central banks.

3. Impact on Global Asset Prices

- **Gold** has emerged as a safe haven: prices surged **30% in 2025 alone**, and doubled over two years.
- Global central banks purchased **1,000+ tonnes of gold annually** for the past three years—double the earlier decade's average.
- **Bond yields** have been volatile, and **stock markets** have recovered from earlier tariff shocks, suggesting selective investor confidence.

4. India's Current Economic Response

- In contrast, **RBI cut repo rate by 50 bps in June 2025**, signaling a focus on growth.
- RBI Governor **Sanjay Malhotra** acknowledged a “**fragile and fluid**” global economic scenario.
- The **US Fed's delayed rate cuts** may benefit Indian markets via **foreign portfolio investment (FPI)** inflows.
- Key concern for India: **uncertainty over the US-India trade deal** and future **US tariff regime**.



5. Near-Term Outlook: Global Stagflation Risks

- US Fed predicts **GDP growth slowing to 1.4% in 2025** (from 2.8% in 2024).
- **Unemployment may rise to 4.5%**; inflation may **exceed 3%**, well above the Fed's 2% target.
- This hints at **stagflation**—a mix of **stagnant growth and high inflation**.
- Japan also anticipates **moderated growth**, reflecting caution amid global trade tensions.

Additional Key Points for UPSC:

- **Definition – Stagflation:** A situation with stagnant economic growth, high inflation, and high unemployment.
- **Constitutional & Legal Context (India):**
 - **Monetary policy** is managed by RBI under **Section 45ZB of the RBI Act, 1934**, based on decisions by the **Monetary Policy Committee (MPC)**.
 - RBI's autonomy is protected under the **Constitutional principle of central bank independence**, though not explicitly codified.
- **Fiscal-Monetary Coordination** becomes crucial when navigating external economic shocks.

Conclusion

Global central banks are treading cautiously amid inflation, geopolitical tension, and trade uncertainties. India, while diverging with a rate cut, remains exposed to global headwinds. For UPSC aspirants, this situation offers insights into **monetary policy transmission, global macroeconomics, gold as a hedge**, and **India's vulnerability to global economic policies**. Careful monitoring of the **US-India trade negotiations** and **tariff impacts** will be critical going forward.

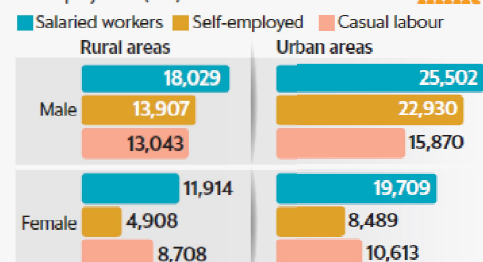
2. More Women Working, but Earnings a Concern

1. Rise in Female Labour Force Participation (FLFP)

- As per **Periodic Labour Force Survey (PLFS) 2023–24**, India has seen a **rise in women's participation** in the labour force, especially in **rural areas**.
- **Female Labour Force Participation Rate (LFPR)** increased to **35.1%**, compared to **76.4% for males**, indicating a wide **gender gap of 41.3 percentage points**.
- However, India still **ranks 131 out of 148** countries in the **Global Gender Gap Report 2025** by the **World Economic Forum**, reflecting persistent inequalities.

Across genders and geographies, salaried workers earn the highest

Average monthly earnings for 2023-24 by type of employment (in ₹)



Data is as per current weekly status. Casual labour on projects other than public works.

Source: Periodic Labour Force Survey



2. Dominance of Low-Quality Self-Employment

- In 2023–24, **66% of women workers** were in **self-employment**, up from 49% in 2017–18.
- This includes both **own-account work** and **unpaid work in family businesses**, such as in kirana stores or agricultural setups.
- The rise is less about **entrepreneurship** and more about the **lack of formal employment opportunities** for women.

3. Decline in Salaried Female Workers' Share

- While the absolute number of salaried women workers rose by **10 million**, their **proportion declined** from **24.3% in 2017–18 to 18.7% in 2023–24**.
- Only **eight states/UTs** (like Chandigarh, Delhi, Kerala, Goa) have over **30% salaried women**.
- In contrast, states like **Bihar (5.5%)** and **Uttar Pradesh (7.9%)** show extremely **low salaried female participation**, and even declining trends.

4. Earnings Gap and Nature of Employment

- **Salaried workers** earn the most; in **2023–24**, average monthly earnings for **salaried women** were around ₹13,043 (urban) and ₹8,489 (rural).
- **Self-employed women** earned even **less than casual labourers**, indicating the **poor quality** of much of the self-employment sector.
- The current **gig economy**, including food delivery or courier jobs, is **insecure, low-paying, and largely unregulated**.

5. Constitutional and Legal Provisions

- **Article 39(d)** of the Constitution promotes **equal pay for equal work** for men and women.
- **Article 16** ensures **equality of opportunity in public employment**.
- **Code on Wages, 2019** and **Social Security Code, 2020** aim to improve **labour rights and earnings** across informal sectors, including for women.
- However, the **informalisation of work** and under-representation of women in formal sectors continues to challenge enforcement.

Additional Key Terms:

- **Labour Force Participation Rate (LFPR)**: The proportion of the working-age population that is either employed or actively seeking work.
- **Self-employment**: Work where individuals operate their own businesses or are unpaid family workers; can vary widely in quality and income.
- **Salaried employment**: Jobs that offer regular wages and often social security benefits.
- **Gig Economy**: Labour market characterized by short-term contracts or freelance work, typically through digital platforms.



Conclusion

While India is witnessing an increase in women's participation in the labour force, especially in rural areas, the **quality of employment remains poor**. The **decline in salaried job share**, dominance of **low-paying self-employment**, and **gender pay disparities** highlight structural challenges. For UPSC aspirants, the issue intersects with **gender equality, employment policy, rural development, and social justice**, demanding **targeted policy interventions** to create **secure, formal, and remunerative job opportunities for women**.

3. US Strikes on Iran and Their Geopolitical & Economic Implications for India

1. Geopolitical Escalation in West Asia

- The **US airstrikes on Iranian nuclear sites** have significantly heightened **tensions in West Asia**, with Iran threatening “**everlasting consequences**”.
- Iran may **close the Strait of Hormuz**, a critical chokepoint for **20% of the world's oil trade**, potentially disrupting global energy supply.
- While the US has stated it does not aim for **regime change**, it warned of more targeted strikes if peace efforts fail.
- Global leaders, including **PM Modi**, have called for **de-escalation and dialogue** to prevent regional instability.



2. Economic Impact on India

- **Surging crude oil prices** may worsen **India's current account deficit (CAD)**, which rose to **\$11.5 billion (1.1% of GDP)** in Q3 FY25.
- **Higher oil and shipping costs** could lead to **increased retail (CPI) inflation**, which stood at **2.82% in May 2025**.
- According to L&T estimates, a **10% rise in oil prices** can reduce **India's GDP by 15 bps** and raise **CPI inflation by 30 bps**.
- Despite structural changes, India still imports about **16.5% of its total imports as oil** (down from 21% in 2018), exposing it to external price shocks.

3. Strategic Buffer Measures

- India has **diversified oil sourcing** and now relies less on the Strait of Hormuz for energy needs.
- **Oil Marketing Companies (OMCs)** have reserves for several weeks; **alternative supply routes** are being actively used.
- **Chabahar Port** in Iran, a strategic project for India, remains operational, and India continues to monitor the situation closely.



- Despite regional conflict, **Haifa Port in Israel** (operated by Adani Group) is functioning normally.

4. Trade and Investor Sentiment Risks

- India's **basmati rice exports** (1 million tonnes annually to Iran) face uncertainty; exporters are **holding shipments** due to rising conflict.
- Volatility in markets may reduce **foreign portfolio investment (FPI)** and **investor confidence**, impacting **domestic capital inflow**.
- The **Nifty and Sensex** have shown initial resilience, but fears of broader escalation could cause **market corrections** and capital flight.

5. Constitutional and Legal Provisions (India)

- **Article 21 (Right to Life)** includes access to basic amenities like food and energy—rising oil prices affect this indirectly.
- **Essential Commodities Act, 1955** empowers the government to regulate the production and supply of critical goods like petroleum during crisis.
- India's **Foreign Trade Policy** and bilateral agreements may need dynamic revision to handle shocks like export bans or disruptions.

Key Terms for UPSC:

- **Strait of Hormuz:** A narrow sea passage between the Persian Gulf and the Gulf of Oman; vital for global oil trade.
- **Current Account Deficit (CAD):** A measurement of a country's trade where the value of imports of goods and services exceeds the value of exports.
- **Consumer Price Index (CPI):** A measure of retail inflation; tracks changes in the price level of a basket of consumer goods and services.
- **Chabahar Port:** India's strategic port in southeastern Iran providing access to Afghanistan and Central Asia, bypassing Pakistan.

Conclusion

The US-Iran conflict has reopened geopolitical fault lines, with **serious ramifications for global oil supply, inflation, and Indian trade**. India's **resilience measures**, such as diversified oil sourcing and port investments, provide some cushion. However, **escalating tensions threaten economic stability, investor sentiment, and trade flows**, particularly in energy and agriculture sectors. For UPSC, this issue reflects the **interplay of geopolitics, economic vulnerabilities, strategic autonomy**, and the **need for robust diplomatic and economic responses** in global crises.



4. Reform-Linked Interest-Free Capex Loans to States – FY26

1. Overview of the Capex Loan Scheme

- The Union Government has allocated **₹1.5 trillion** as **interest-free capital expenditure (capex) loans** to states for **FY26**.
- The loans are interest-free for **50 years**, aimed at **boosting infrastructure, state-led growth, and economic recovery** post-COVID.
- Of the total amount, **60% will be unconditional or linked to core infrastructure**, while **40% is tied to targeted reform implementation** by states.

2. Key Reform Focus Areas for States



States will now be required to implement targeted reforms in key areas including digital public infrastructure for agriculture, and better urban planning. ISTOCKPHOTO

- States must implement **reforms in digitization, governance, urban planning, land records, and agriculture** to access the conditional funds.
- Specific reforms include:
 - Creation of **federated farmer databases**.
 - **Digitized land records and digital crop surveys**.
 - **Urban planning reforms**: mixed land use, road width rationalization, and flexible building codes.

- **Aadhaar-linked Direct Benefit Transfers (DBT)** integrated with RBI and NPCI for state-run schemes.

3. Importance of Digital Public Infrastructure (DPI)

- DPI in agriculture is central to this year's agenda, aligning with India's broader digital governance goals.
- Examples include real-time crop data, digital subsidy transfers, and geotagged beneficiary tracking.
- This supports **targeted delivery, agricultural productivity, and data-driven policymaking**.

4. State Contribution and Incentivization

- States contribute **20–25% of India's total infrastructure spending**, making them crucial players in capital formation.
- Reform-based disbursement incentivizes **good governance, ease of doing business, and long-term institutional strengthening**.



- Previous reform goals included **vehicle scrappage**, **urban finance**, **digital libraries**, and **housing stock enhancement for police**.

5. Legal & Constitutional Framework

- **Article 282** of the Constitution allows the **Centre to make grants** for any public purpose, forming the basis for such capex support.
- The scheme also aligns with **cooperative federalism**, encouraging states to improve governance voluntarily in return for fiscal assistance.
- Related legislation includes the **Fiscal Responsibility and Budget Management (FRBM) Act**, which governs fiscal prudence and deficit limits for states.

Important Definitions for UPSC:

- **Capex (Capital Expenditure):** Spending on assets like infrastructure, roads, or digital systems with long-term benefits.
- **Interest-Free Loan:** A loan that doesn't accrue interest but may have terms related to usage or performance.
- **Digital Public Infrastructure (DPI):** Foundational digital systems like Aadhaar, UPI, DBT that enable delivery of public services at scale.
- **Direct Benefit Transfer (DBT):** Government payment mechanism that transfers subsidies or benefits directly into beneficiaries' bank accounts.

Conclusion

The reform-linked interest-free capex loan scheme reflects the **Centre's strategy to promote results-oriented governance** in states. While 60% of the FY26 fund supports infrastructure, the remaining 40% conditions ensure states upgrade digital systems, land governance, and urban planning. For UPSC, this scheme showcases themes of **cooperative federalism**, **fiscal innovation**, and **governance reforms**—essential elements in India's ongoing development journey.

5. DGCA Introduces Special Audit Framework for Aviation Safety

1. Introduction of Comprehensive Special Audit Framework

- The **Directorate General of Civil Aviation (DGCA)** has introduced a **new audit framework** called "**Comprehensive Special Audits**", effective immediately.
- This comes in response to the **12 June Air India crash** that killed **241 people**, highlighting serious safety concerns in the civil aviation sector.
- The audits aim to ensure **holistic evaluation of safety, operational efficiency, and regulatory compliance** across airlines and aviation infrastructure.

2. Scope and Purpose of the Special Audits

- The audits will cover:



- **Flight operations**
- **Airworthiness of aircraft**
- **Licensing of personnel**
- **Aerodrome safety and air navigation services**
- The goal is to identify **systemic weaknesses** and ensure **corrective action**, bringing India's aviation regulatory practices in line with **global safety standards**.

3. Audit Triggers and Execution Protocol

- **Mandatory triggers** for initiating these special audits include:
 - **Serious accidents or incidents**
 - **Persistent non-compliance** with aviation regulations
 - **Operational disruptions**
 - Negative findings from **ICAO audits** or internal safety evaluations
- Each audit will be led by a **senior DGCA official (DDG or Director)**, supported by **technical experts** from various DGCA directorates.

4. Alignment with International Best Practices

- The framework draws from the **International Civil Aviation Organization (ICAO)**'s audit guidelines.
- It promotes **proactive surveillance**, **data-based risk assessments**, and **multi-disciplinary coordination** to strengthen regulatory oversight.
- It also complements India's obligations under the **Chicago Convention, 1944**, to maintain global aviation safety standards.

5. Legal and Constitutional Provisions

- **Aircraft Act, 1934** and **Aircraft Rules, 1937** provide the legislative framework for DGCA's regulatory powers.
- DGCA functions as a **statutory body under the Ministry of Civil Aviation**, empowered to enforce **air safety norms** and **certification processes**.
- The move also aligns with **Article 21 of the Constitution (Right to Life)**, which includes the right to **safe transportation and public safety**.

Important Definitions for UPSC:

- **DGCA (Directorate General of Civil Aviation):** India's regulatory body for civil aviation safety, licensing, and airworthiness.
- **ICAO (International Civil Aviation Organization):** A UN agency that codifies principles and techniques for international air navigation.





- **Comprehensive Special Audit:** A deep, multi-domain audit triggered by specific safety or compliance issues in aviation.
- **Airworthiness:** The measure of an aircraft's suitability for safe flight.

Conclusion

The DGCA's launch of a **Comprehensive Special Audit Framework** marks a critical step in **enhancing aviation safety and regulatory accountability** in India. In the wake of a major tragedy, it reflects the need for **robust institutional responses, global alignment, and risk-based oversight**. For UPSC, this topic connects to **public safety, regulatory reforms, disaster prevention, and international aviation standards**, making it essential for both **GS Paper II (Governance & Regulatory Bodies)** and **GS Paper III (Disaster Management & Infrastructure Safety)**.

6. Government Shelves ₹8,000-Crore Greenfield Cities Plan

1. Greenfield City Plan Shelved

- The **Union Government has shelved the ₹8,000-crore plan** for developing **eight new greenfield cities**, as initially recommended by the **15th Finance Commission (FC)**.
- The decision was taken after receiving **26 proposals** from various states, including Ayodhya (UP), Jagiroad (Assam), and GIFT City expansion (Gujarat).
- The fund will now be **subsumed into a new urban scheme** that focuses on **upgrading infrastructure in smaller towns** (population < 1 lakh).

2. Shift in Urban Development Strategy

- The **Prime Minister's Office (PMO)** directed the change, favoring **investments in organic cities** (existing towns and cities) over building new cities from scratch.
- This decision followed **inter-ministerial presentations** and consultations with stakeholders like **NITI Aayog and the Asian Development Bank (ADB)**.
- The policy shift aligns with the **100-day governance agenda** of the new government, focusing on **efficient and impactful urban spending**.

3. SASCI and Urban Expansion

- Urban development will now be promoted under the **Special Assistance to States for Capital Investment (SASCI)** scheme.
- **SASCI offers 50-year interest-free loans** for state-level infrastructure projects that implement central reforms.
- Rather than entirely new cities, the Centre is now promoting **greenfield townships**—self-contained urban extensions of existing cities or industrial belts.





4. Focus on Smaller Cities in Upcoming Urban Scheme

- A new ₹1 lakh crore “Urban Challenge” scheme (announced in the Budget) is under design by the **Ministry of Housing and Urban Affairs (MoHUA)**.
- This upcoming scheme is expected to **target smaller cities**, avoiding metros and large capital cities.
- Emphasis will be on **planned growth, infrastructure upgrades, and sustainable urbanization in Tier 2 and Tier 3 cities**.

5. Legal and Constitutional Aspects

- **Urban development is a State subject** under **Entry 5, List II of the Seventh Schedule**, but central support is extended through schemes and financial assistance.
- The shelving of the greenfield project reflects **fiscal prudence and adaptive federalism**.
- The **SASCI mechanism** operates within the framework of **Article 282**, which allows the Centre to give financial aid for public purposes even in state domains.

Important Definitions for UPSC:

- **Greenfield City**: A planned urban settlement built from scratch on undeveloped land, unlike brownfield (redeveloped) areas.
- **Organic Cities**: Existing towns or urban areas that develop naturally over time, as opposed to planned cities.
- **SASCI**: A central initiative providing interest-free long-term loans to states for capital investment, including urban development.
- **Urban Challenge Fund**: A proposed large-scale urban reform and infrastructure fund targeting small and mid-sized towns.

Conclusion

The government's decision to **shelve the greenfield cities plan** marks a strategic shift from building new urban centers to **strengthening existing smaller towns**. This reflects a focus on **sustainable, reform-linked, and cost-effective urbanization**, especially in the post-pandemic economy. For UPSC, this development connects to themes of **urban governance, fiscal federalism, planning strategy, and cooperative Centre-State relations** under India's evolving urban framework.

7. Centre Overhauls Highway Construction Bid Process with Set Timelines

1. New Timelines for Project Approvals and Clearances

- The **Ministry of Road Transport and Highways (MoRTH)** has issued a new framework to **streamline highway construction** by synchronizing **land acquisition, environmental, forest, and wildlife clearances** with bidding and project award processes.
- This applies to key highway building agencies such as the **National Highways Authority of India (NHAI)** and **National Highways and Infrastructure Development Corporation Ltd (NHIDCL)**.



2. Pre-Bid Readiness is Mandatory

- Now, **all statutory clearances and 90% Right of Way (RoW)** must be secured **before issuing the Letter of Award (LoA)**.
- Clearances from **Indian Railways, Inland Waterways Authority**, and even final cost estimates must be **completed before bid invitations**.
- A structured **timeline for land acquisition** is introduced, starting **60 days after alignment finalization**.

3. Expected Benefits and Expert Inputs

- Experts believe the overhaul will:
 - Minimize **disputes and delays**
 - Allow contractors to **mobilize immediately**
 - Enhance **cost control and timely execution**
- The plan also emphasizes the need for:
 - A **centralized digital platform** to track clearance status
 - **Independent verification agencies** for project readiness

4. Addressing Core Infrastructure Bottlenecks

- This reform addresses longstanding issues in infrastructure:
 - **Redesigns due to clearance delays**
 - **Time and cost overruns** in PPP (Public-Private Partnership) and EPC (Engineering, Procurement, Construction) projects
 - **Disputes over encroachments, environment permissions, and land use**



5. Legal and Constitutional Provisions

- **Land Acquisition** is governed by the **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013**.
- **Environmental and Forest Clearances** fall under the **Environment (Protection) Act, 1986**, and **Forest Conservation Act, 1980**.
- Road and highway development is under **Entry 13 of the Union List (Seventh Schedule)** of the Constitution—thus falling under **central jurisdiction**.

Important Definitions for UPSC:

- **Right of Way (RoW)**: The legal right to pass through property owned by another for highway construction.
- **Greenfield Project**: A project built from scratch on unused land.



- **Letter of Award (LoA):** Formal communication issued by the authority to the winning bidder of a contract.
- **EPC Model:** Engineering, Procurement, and Construction model, where a contractor is responsible for all activities from design to construction.

Conclusion

The Centre's decision to **mandate readiness-based bidding in highway construction** marks a **landmark reform in India's infrastructure governance**. By ensuring all major clearances and land acquisition are complete **before bidding**, the reform aims to boost **execution efficiency**, **curb project delays**, and **attract private investments**. For UPSC aspirants, the topic is important for **GS Paper III (Infrastructure, Public Investment, PPP)** and reflects themes of **good governance, project management, and regulatory coordination in large-scale development**.

8. Why Countries Are Broadcasting Their Spies' Exploits

1. Shift from Secrecy to Spectacle

- States like **Israel, Ukraine**, and the **US** now publish videos of **covert operations**—from Mossad drone strikes inside Iran to Ukrainian raids deep in Russia—to achieve **psychological impact** and **strategic messaging**.
- This represents a departure from the traditional “black-ops” doctrine where clandestine actions remained hidden for decades.

2. Drivers of Publicized Espionage

- **Psychological Warfare & Deterrence:** Broadcasting success demoralizes adversaries and warns other actors (e.g., Israel flaunting Mossad's reach).
- **Propaganda & Domestic Morale:** Real-time footage on social media rallies home audiences and legitimizes government security policies.
- **Diplomatic Signaling:** Public disclosures (e.g., Biden's 2021 reveal of Russian invasion plans) can reinforce alliances and credibility.



3. Erosion of Traditional Secrecy

- **Ubiquity of Cameras & AI Surveillance:** Smartphones, CCTV, doorbell cams, and AI face-recognition make operating undetected exceedingly difficult.
- **Digital Leaks & Whistleblowers:** The Snowden and Teixeira cases illustrate how vast troves of classified data can become public, further incentivizing pre-emptive disclosures.



4. Implications for Modern Warfare

- Emergence of a **“battle of timelines”**, where rapid dissemination of imagery can shape narratives before official statements.
- Intelligence agencies now design operations not only for impact on the ground but also for **optimal visibility** on digital platforms.
- Raises questions on **operational security** versus **strategic communication**.

5. Constitutional & Legal Framework in India

- **Official Secrets Act, 1923:** Governs protection of state secrets; unauthorized disclosure attracts penalties.
- **Information Technology Act, 2000 (Section 69):** Empowers government to intercept, monitor or decrypt digital information for national security.
- **Article 19(1)(a) vs. Reasonable Restrictions (Article 19(2)):** Balances freedom of speech with state’s power to impose restrictions in the interest of sovereignty and integrity.

Key Definitions

- **Covert Operation:** Government-sanctioned secret action against a target without overt military engagement.
- **Psychological Warfare:** Use of information and media to influence perceptions and morale of adversaries.
- **Black Ops:** Highly secret military or intelligence missions that remain unacknowledged by the sponsoring government.

Conclusion

The trend of publicizing espionage exploits marks a **new paradigm in intelligence and information warfare**, blending **military action** with **digital communications strategy**. For UPSC aspirants, it underscores the interplay among **technology**, **national security law**, and **media dynamics**, reflecting how **modern states leverage open-source platforms** to achieve geopolitical objectives.

9. Hindustan Zinc Reinvents an Ancient Mining Legacy at Zawar

1. Zawar: World’s Oldest Zinc Mining Site

- Zawar, in the Aravalli Hills of Rajasthan, is the **oldest known site of zinc mining and smelting**, dating back to **750 BCE**.
- Long before Europe smelted zinc in 1743 CE, India's **Bhil community** in Zawar had developed a sophisticated **reverse distillation technique** to refine zinc.
- Ancient retorts (clay pots) with turmeric lining and water-cooled chambers were used to condense pure zinc vapour.



2. Global Metallurgical Influence

- India exported **zinc and brass globally** from Zawar, influencing European metallurgy centuries later.
- The **European breakthrough in zinc smelting** was enabled by knowledge transferred from India.

3. Modern Legacy: Hindustan Zinc

- **Hindustan Zinc**, a **Vedanta Group** company, now operates the Zawar mines and is the **world's largest integrated zinc producer**, meeting **77% of India's zinc demand** and exporting to over 40 countries.
- Technologies such as **drone-based exploration**, **AI-driven 3D geological modeling**, and **borehole electromagnetics** are used for sustainable mining today.

4. Disinvestment and Economic Significance

- In 2002, **Hindustan Zinc was privatized**, marking one of the **most successful disinvestments** by the Indian government.
- Since privatization, **zinc production has grown fourfold**, making it a global benchmark in underground mining operations.
- In 2016, Zawar was declared a **National Geological Heritage Site** by the Geological Society of India.



5. Zinc: A Critical Metal in the Indian Economy

- **Zinc is vital in the steel industry**, preventing corrosion. India loses **5% of its GDP annually due to corrosion**, highlighting zinc's importance.
- Zawar's silver and zinc mines now form part of India's strategic mineral reserves, with **economic and strategic relevance**.

Key Definitions & Constitutional Provisions

- **Disinvestment**: The process by which the government sells its stake in public sector enterprises to private players.
- **Geological Heritage Site**: Recognized for preserving evidence of Earth's natural history; protected under **Environment Protection Act, 1986** (indirectly).
- **Critical Minerals Policy**: India identifies zinc as a **critical non-fuel mineral** for strategic and economic needs (as per Ministry of Mines).
- **Industrial Development**: Falls under the **Union List (Entry 52)** for regulation of mines and mineral development.

Conclusion

Zawar exemplifies India's ancient metallurgical brilliance and its seamless evolution into a **modern, sustainable mining hub**. From tribal innovation to **global leadership in zinc production**, the site mirrors India's dual heritage of **scientific legacy and industrial modernization**. For UPSC aspirants, Zawar



represents a case study in **technological transition, disinvestment success, and mineral resource governance.**

10. Covid-19 Declared Endemic in India

1. Covid-19 Now Endemic in India

- Top government scientists from the **Department of Biotechnology (DBT)** and **ICMR** have declared **Covid-19 as endemic** in India.
- Endemic means a disease that is **consistently present in a population or region**, but with **predictable, manageable patterns** of infection (unlike unpredictable pandemic waves).



2. Declining Caseload and Low Fatality

- As of June 2025, India's **active caseload has dropped to around 5,000**, with **only 112 deaths recorded in 2025**.
- Current circulating strains, such as **Omicron sub-variants NB.1.8.1 and LF.7**, are noted to be **mild and less virulent**.

3. Population Immunity and Mild Variants

- Scientists credit the declining spread to **high levels of population immunity**—due to **vaccination, natural infection, and immune memory**.
- Many asymptomatic or undetected infections also help build **herd immunity**, reducing the likelihood of future severe waves.

4. Reduced Testing, Limited Data

- While the risk of severe outbreaks is low, experts caution that **testing rates have significantly declined**, making **surveillance data limited**.
- Scientists call for **more scientific and systematic testing**, even in the endemic stage, to detect new variants early.

5. Cyclical Pattern and Immunity Decline

- Experts like **Dr. Rajeev Jayadevan** highlight Covid's **cyclical nature**—cases may rise temporarily when **immunity wanes**, but prior exposure and vaccination offer **strong protection from hospitalization or death**.

Key Definitions & Constitutional Context

- **Endemic:** A disease that persists in a region with regular, predictable occurrence (e.g., malaria in some Indian states).



- **Pandemic vs Endemic:** Pandemic is global and uncontrolled; endemic implies **regional stability** in spread.
- **Public Health:** Falls under **Entry 6 of State List** (Seventh Schedule); however, **infectious disease control** is also influenced by **Union List – Entry 29** (prevention of infectious diseases from spreading across states).
- **Disaster Management Act, 2005** was invoked during the pandemic, empowering the Centre for unified response coordination.

Conclusion

Covid-19 transitioning to an **endemic stage in India** marks a major milestone in the country's public health journey. It reflects the **success of vaccination drives, natural immune response, and health system resilience**. However, **surveillance, preparedness for new variants, and scientific monitoring** remain critical to manage periodic flare-ups and ensure India's continued readiness in handling public health emergencies.

11. Challenges in Organ Transplantation in India – Ministry of Health Report (June 2024)

1. Organ Transplantation Hampered by Infrastructure Deficiency

- A report by the **Union Ministry of Health and Family Welfare** (June 19, 2024) highlights **critical gaps** in India's organ transplantation programme.
- Government hospitals face **inadequate ICU beds, lack of dedicated transplant operation theatres (OTs), and non-availability of Transplant ICUs (TICUs)** needed to preserve brain-dead donors.

2. Skilled Manpower & Laboratory Shortages

- There is a **serious scarcity of trained transplant surgeons, intensivists, anaesthetists, and nephrologists** in government hospitals.
- Many institutions, including **several AIIMS centres, lack in-house HLA cross-matching labs**, delaying transplants due to reliance on external labs.

3. Low Capacity vs High Demand

- Only **13,476 kidney transplants** were conducted across all hospitals in 2023–24, against the **estimated requirement of 1 lakh**.
- The existing capacity of public sector hospitals is **inadequate**, and the **creation of new transplant centres** is urgently needed.





4. Procedural Bottlenecks and Legal Delays

- Delays in forming **Brain-Stem Death (BSD) Committees** and handling **medico-legal cases** involving trauma patients (a major donor pool) have emerged as major obstacles.
- **Formal approvals** and legal clearances required for deceased donation are cumbersome and slow.

5. Financial Constraints and Burden on Patients

- **High cost of lifelong immunosuppressant drugs**, essential post-transplant, is not fully covered under public schemes.
- **Liver and heart transplants**, and associated post-operative care costs, are **not yet included** under **Ayushman Bharat–PMJAY**, leading to significant financial strain.
- **Inadequate funding for advanced transplant programmes** (e.g., lung transplant) and **no formal incentives** for transplant teams have also been flagged.

Key Definitions & Constitutional Provisions

- **Organ Transplantation:** Medical procedure in which an organ is removed from one body and placed in another to replace a damaged or missing organ.
- **National Organ and Tissue Transplant Organisation (NOTTO):** Apex body under Ministry of Health for regulation and promotion of organ donation and transplantation.
- **Legal Framework:**
 - **Transplantation of Human Organs and Tissues Act, 1994** – Regulates organ donation and transplantation.
 - **Right to Health** (implicit under Article 21 – Right to Life) requires State to ensure availability of life-saving procedures like transplants.
 - **Ayushman Bharat PM-JAY:** Centrally sponsored health insurance scheme for the poor, but does not fully cover major transplant-related expenses yet.

Conclusion

India's organ transplant ecosystem faces **systemic challenges** ranging from **infrastructure shortages**, **manpower gaps**, to **funding constraints**. The Health Ministry's report rightly calls for a **comprehensive inclusion of organ transplant procedures and post-operative care** under **Ayushman Bharat PM-JAY**, and **capacity-building at government hospitals**. For a nation of India's size, a **robust, equitable, and efficient transplant programme** is essential to achieve the constitutional mandate of **Right to Life with dignity and access to healthcare**.

12. India's Quantum Communication Potential via Satellite – IIT Delhi Initiative

1. India's Satellite-Based Quantum Communication by 2030

- **Professor Bhaskar Kanseri (IIT Delhi)** has predicted that **India could achieve satellite-enabled quantum communication by 2030**, provided sufficient support from multidisciplinary teams, public funding, and private sector start-ups.



- His research team demonstrated **Quantum Key Distribution (QKD)** over a **1-kilometre distance in free space**, the longest such feat in India without using fibre cables.

2. What is Quantum Communication & Quantum Key Distribution (QKD)?

- **Quantum Communication** enables **ultra-secure information exchange** using principles of **quantum mechanics**, especially the behaviour of photons (particles of light).
- **QKD** uses photons to create encryption keys. The most secure method uses **quantum entanglement**, where any disturbance (e.g., hacking attempt) becomes instantly detectable.
- **Key benefit:** QKD ensures **eavesdropping-proof** communication — a strategic asset in cybersecurity, defence, and digital infrastructure.

3. Importance of Satellites for QKD

- While QKD can currently be conducted through **fibre optic cables**, their scalability is limited for distances over a few hundred km.
- **Satellites** can bridge vast distances, allowing **intercontinental secure communication**, making them ideal for **future quantum communication networks**.

4. Challenges in Free-Space Quantum Communication

- Free-space QKD (i.e., without cables) faces **environmental challenges** such as **air turbulence, pollution, and temperature gradients**, especially in urban areas like Delhi-NCR.



- These disturbances cause **beam divergence and high error rates**, though **technological improvements like beam optimisation** are expected to reduce them.

5. India vs Global Efforts in Quantum Tech

- **China** is currently the global leader, having **demonstrated satellite-based quantum communication over 1,700 km** in 2017 and 2020.
- India's progress, though slower, is steadily advancing through **'proof of concept' projects**, primarily academic-led (like at IIT Delhi), needing stronger government-industry-academia collaboration.

Key Terms and Constitutional Provisions

- **Quantum Entanglement:** A phenomenon where two particles remain interconnected, so that changes in one affect the other, instantly — foundational to QKD.
- **Quantum Key Distribution (QKD):** A method of creating encryption keys using quantum properties of particles, ensuring secure transmission.
- **Article 51A(h)** of the Indian Constitution encourages the development of scientific temper and spirit of inquiry, which includes fostering frontier technologies like quantum mechanics.
- **Digital India Mission, National Quantum Mission (2023)** and the **Make in India initiative** are policy platforms relevant to this topic.



Conclusion

India's foray into **quantum communication via satellites** marks a pivotal shift in national security, digital sovereignty, and scientific progress. With **IIT Delhi's milestone demonstration**, India is poised to build secure, scalable, and cutting-edge communication networks. However, realizing the **2030 goal** will require **substantial investment, innovation ecosystem development, and policy-level prioritization** through missions like the **National Quantum Mission**.

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