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PRELIMS

POLITY & GOVERNANCE

Land Pooling: A Collaborative Alternative to Conventional Land Acquisition

Why in News?

The debate over **land pooling** has gained attention as India seeks faster land assembly for urban expansion and infrastructure while reducing conflicts associated with conventional **land acquisition**.

What is Land Pooling?

Land pooling is a **land assembly mechanism** in which multiple landowners voluntarily contribute their parcels to a common pool. The government/planning authority develops the pooled land by providing roads, utilities and other infrastructure. After development, landowners receive **smaller but serviced and more valuable plots**, while a portion is retained for public infrastructure and other uses.

Land Pooling vs Acquisition

Land Acquisition	Land Pooling
Ownership transferred to acquiring authority	Landowners participate in land assembly
Compensation generally monetary	Returns often include developed/reconstituted plots
Can involve compulsory acquisition	Generally based on participation/consent
Landowners may lose proximity to original land	Landowners can retain a stake in developed area

Supreme Court Judge Appointments: Strength Raised to 37

Why in News?

Five new judges were sworn in to the **Supreme Court of India**, taking its working strength to a record **37 judges, including the Chief Justice of India (CJI)**, with one vacancy at the time. The appointments followed recommendations of the **five-member Supreme Court Collegium**, government clearance and appointment warrants issued by the President.

Constitutional Framework

- **Article 124:** Establishes the Supreme Court and provides for appointment of its judges.
- Judges are **appointed by the President**.
- In practice, appointments follow the **collegium system**, under which the CJI-led collegium recommends candidates.
- A Supreme Court judge holds office until the age of **65 years**.
- Removal requires **impeachment by Parliament** on grounds of proved misbehaviour or incapacity.

2026 Strength Expansion

The sanctioned strength was increased through the **Supreme Court (Number of Judges) Amendment Ordinance, 2026**, from **34 to 38 judges including the CJI**—i.e. **37 puisne judges + CJI**. The subsequent amendment legislation seeks to formalise this expansion.

Right to Be Forgotten: Delhi HC Balances Privacy with Open Justice

Why in News?

The **Delhi High Court**, in *Laksh Vir Singh Yadav v. Union of India* (2026), recognised the **Right to Be Forgotten (RTBF)** as a facet of **informational privacy under Article 21**. It directed search engines and legal databases, in appropriate cases, to **de-index judicial records from name-based searches**.

What is the Right to Be Forgotten?

RTBF refers to an individual's ability to seek **removal or restricted accessibility of personal information** from digital platforms when its continued public availability causes disproportionate harm, particularly when information is outdated or no longer serves a legitimate public interest.

Importantly, the Court distinguished **de-indexing from deletion**:

- **De-indexing:** Information remains available but does not appear in name-based searches.
- **Deletion:** The underlying record itself is removed.

The Court favoured the former in appropriate cases, thereby preserving access to judicial records while protecting privacy.

Constitutional Linkage

- **Article 21:** Right to life and personal liberty → interpreted to include **privacy and informational autonomy**.
- **K.S. Puttaswamy v. Union of India (2017):** Constitutional recognition of privacy as a fundamental right.
- **Article 19(1)(a):** Freedom of speech and expression, including concerns regarding public access to information.

Viksit Vibrant Village Programme 2026: Youth Engagement in India's Borderlands

Why in News?

Mera Yuva Bharat (MY Bharat) launched the **Viksit Vibrant Village Programme (VVVP) 2026** to strengthen youth engagement, national integration and sustainable development in India's border villages. The first phase began on **3 June 2026**.

Key Features

- **Implementing body:** Department of Youth Affairs, Ministry of Youth Affairs & Sports, through **MY Bharat**.
- **Coverage:** Border villages in **Ladakh, Himachal Pradesh and Uttarakhand**.
- **Participants: 500 MY Bharat volunteers** selected through a nationwide online quiz involving over **3 lakh youth**.
- Implemented in **two phases**; Phase-I involved **250 volunteers across 43 villages**, while Phase-II covers **50 villages**.
- **Duration:** Seven-day immersive engagement.
- Activities include **household surveys, Gram Sabha participation, cleanliness and environmental campaigns, socio-economic assessment and village development planning**.
- Implemented in collaboration with the **Ministry of Home Affairs and Indo-Tibetan Border Police (ITBP)**.

Nation First Challenge

Five themes: **Swadeshi products, healthy cooking, public transport & fuel conservation, natural farming, and local tourism**.

National Awards for e-Governance 2026: Digital Governance at the Grassroots

Why in News?

The **29th National Awards for e-Governance (NAeG) 2026** recognised **17 projects/initiatives** for excellence in e-governance across **7 categories**. The awards seek to promote technology-driven, citizen-centric and grassroots governance. The award ceremony is scheduled during the **29th National Conference on e-Governance in Jaipur, Rajasthan**.

Key Features

- **10 Gold Awards, 6 Silver Awards and 1 Jury Award** were selected.

- Gold and Silver awardees receive **₹10 lakh and ₹5 lakh**, respectively, for implementation of projects or bridging resource gaps.
- Notable initiatives include:
  - **Agri Stack** – Ministry of Agriculture
  - **AI-enabled Clinical Decision Support in eSanjeevani**
  - **District Court Case Management System** – Kerala HC
  - **Panchayat Advancement Index** – Ministry of Panchayati Raj
  - **TRINETRA** – AI-based video surveillance in Ujjain
  - **CORS-based Real-Time Precise Positioning Services** – Survey of India (Jury Award).

Seven Award Categories

They cover **digital process re-engineering, AI/new-age technology, cybersecurity, district-level initiatives, grassroots Gram Panchayat initiatives, replication/scaling of e-governance projects, and data analytics**.

e-Jagriti: Digital Consumer Grievance Redressal Platform

Why in News?

The **Department of Consumer Affairs' e-Jagriti platform** won the **Silver Award** under **Category I – Government Process Re-engineering by Use of Technology for Digital Transformation** at the **National Awards for e-Governance 2026**. The award was selected from **341 nominations**.

What is e-Jagriti?

- Launched on **1 January 2025** by the **Department of Consumer Affairs**.
- It is an **AI-enabled, paperless digital platform** for consumer grievance redressal.
- It integrated four earlier applications:
  - **OCMS**
  - **e-Daakhil**
  - **NCDRC CMS**
  - **CONFONET**
- It enables consumers to **file complaints online, exchange documents digitally, track cases and participate in virtual hearings**.

Key Features

- **AI and machine-learning-enabled services**
- **Multilingual support**
- **AI chatbot**
- **Voice-to-text facility**
- **OTP-based onboarding**
- Online payments through **Bharat Kosh, PayGov and SBI ePay**
- SMS and email alerts
- Accessibility features for **persons with disabilities**
- Virtual hearings through hybrid infrastructure.

Virtual hearings are supported at **all NCDRC benches and 35 State Commissions**.

Right of an Accused to Travel Abroad: Balancing Liberty and Speedy Justice

Why in News?

The **Supreme Court** recently held that an accused person's right to travel abroad cannot be treated as absolute and must be balanced against the **victim's right to a speedy trial** and the broader interests of

justice. The Court restored a magistrate's order requiring the accused to obtain prior court permission before travelling overseas.

Constitutional Basis

- The **Right to Travel Abroad** has been recognized as part of the **Right to Personal Liberty under Article 21** of the Constitution.
- The landmark judgment in **Maneka Gandhi v. Union of India** expanded the scope of Article 21 and recognized foreign travel as a component of personal liberty.

Supreme Court's Observations

- An accused does not lose all constitutional rights merely because criminal proceedings are pending.
- However, courts must ensure that foreign travel does not:
  - Delay trial proceedings.
  - Affect the administration of justice.
  - Increase the risk of absconding.
- The right of victims and society to a **speedy trial** must also be protected.

Related Legal Concepts

- **Article 21** – Right to Life and Personal Liberty.
- **Speedy Trial** – Recognized as a fundamental right under Article 21 through judicial interpretation.
- **Passport Act, 1967** – Governs issuance, impounding, and regulation of passports.
- Courts may impose conditions such as security deposits, travel itineraries, or limited-duration permissions.

Forum Non Conveniens & Article 226

Why in News?

The Supreme Court held that **forum non conveniens** should rarely be used to deny a writ petition under **Article 226(1)** merely because another High Court may be a more convenient forum.

Key Points

- **Forum non conveniens:** Judicial principle allowing a court to decline a case when another competent court is considered a **more appropriate or convenient forum**.
- **Article 226(1):** High Courts can issue **writs** for enforcement of Fundamental Rights and **"for any other purpose."**
- **Article 226(2):** A High Court can exercise jurisdiction where the **cause of action, wholly or partly, arises within its territory**, even if the authority/person is located elsewhere.
- The ruling arose in **Baksish Ahmad v. Union of India**, involving a **BSF personnel** and service-related proceedings.
- The Court emphasised that **territorial jurisdiction under Article 226 cannot ordinarily be defeated merely on convenience grounds**.

National Pharmaceutical Pricing Authority (NPPA): India's Drug Price Regulator

Why in News?

The **National Pharmaceutical Pricing Authority (NPPA)** recently increased the ceiling prices of two critical anti-cancer drugs—**Cisplatin** and **Carboplatin**—by **50%** to address shortages caused by rising platinum prices and supply-chain disruptions. The decision was taken under special public-interest provisions to ensure uninterrupted availability of these life-saving medicines.

About NPPA

- Established in **1997**.

- An attached office of the **Department of Pharmaceuticals**, under the **Ministry of Chemicals and Fertilizers**.
- Functions as India's independent drug pricing regulator.
- Implements provisions of the **Drug Price Control Order (DPCO), 2013**.

Major Functions

- Fixes and revises **ceiling prices** of scheduled medicines.
- Monitors prices of non-scheduled drugs.
- Ensures availability of essential medicines at affordable prices.
- Enforces provisions of the **National List of Essential Medicines (NLEM)**.
- Monitors overcharging and recovers excess amounts from manufacturers.

Recent NPPA Decision

- Ceiling price of **Cisplatin** increased from ₹7.26/ml to ₹10.89/ml.
- Ceiling price of **Carboplatin** increased from ₹60.49/ml to ₹90.74/ml.
- Invoked **Para 19 of DPCO, 2013**, which grants extraordinary powers to revise prices in public interest.

Youth Co:Lab National Innovation Challenge 2026

Why in News?

Six youth-led startups were declared winners of the **8th Youth Co:Lab National Innovation Challenge 2026**, jointly led by **UNDP India** and **Citi Foundation** in partnership with **Atal Innovation Mission (AIM), NITI Aayog**, and implemented by **T-Hub Foundation**. The initiative promotes youth entrepreneurship aligned with sustainability goals.

Key Facts

- **Youth Co:Lab** was **co-created in 2017** by **UNDP** and **Citi Foundation** for the **Asia-Pacific** region.
- Launched in **India in 2019** with **AIM, NITI Aayog** as the national partner.
- Focuses on achieving the **UN Sustainable Development Goals (SDGs)** through **leadership, social innovation and entrepreneurship**.
- **2026 Challenge Themes:**
  - Sustainable Textiles & Fashion
  - Circular Economy Innovations
  - Sustainable Food Systems & Water Conservation
- Over **350 applications** from **28 States**; **50 startups** entered the National Springboard Programme, with the **Top 20** attending a bootcamp at **T-Hub, Hyderabad**.
- Top **3 winners** received **₹3.5 lakh** each; **3 runners-up** received **₹2.2 lakh** each.

INTERNATIONAL RELATIONS

UPI–Cambodia Linkage: Cross-Border Digital Payments

Why in News?

India has launched **UPI acceptance in Cambodia** through a partnership between **NPCI International Payments Limited (NIPL)** and **ACLEDA Bank**, Cambodia's major commercial bank. The first phase allows Indian travellers to make QR-based UPI payments at **over 4.5 million Cambodian merchant outlets**.

Key Features

- **Indian Partner:** NPCI International Payments Limited (NIPL), the international arm of NPCI.

- **Cambodian Partner: ACLEDA Bank**.
- Payments are enabled through Cambodia's **KHQR** system, allowing interoperability with UPI.
- **Phase I:** Indian UPI users can make payments at participating Cambodian merchants.
- **Phase II:** A **two-way payment corridor** is planned, enabling Cambodian visitors to use their domestic banking/payment applications to pay at UPI QR codes in India.
- The initiative is expected to facilitate **tourism, trade and greater financial connectivity** between India and Cambodia.

UPI and Internationalisation

UPI's overseas expansion is based on **interlinking domestic payment systems**, particularly through QR-based interoperability. Cambodia joins India's broader efforts to establish UPI acceptance and payment linkages across international markets.

As reported by News On AIR, UPI was already accepted in **Singapore, UAE, France, Mauritius, Nepal, Bhutan, Qatar and Sri Lanka** at the time of the announcement.

BHASHINI–Kathmandu University MoU: Voice-First Language AI for Nepal

Why in News?

The **Digital India BHASHINI Division (DIBD)** under the **Ministry of Electronics & Information Technology (MeitY)** signed an MoU with **Kathmandu University's Centre for Digital Public Infrastructure & Artificial Intelligence (DPI-AI)** to develop a **"voice-first" language translation platform for Nepal**. The agreement was signed on **6 June 2026**.

Key Features

- **Indian partner:** Digital India BHASHINI Division (DIBD), under MeitY.
- **Nepalese partner:** Kathmandu University's **Centre for DPI & AI**.
- **Focus:** Multilingual AI and **Digital Public Infrastructure (DPI)**.
- Development of:
  - Nepali **language datasets and speech corpora**
  - **Speech-to-text**
  - **Text-to-speech**
  - Machine translation
  - Multilingual conversational AI
- The partnership will support **digitisation and preservation of linguistic and literary heritage**, particularly of low-resource and underrepresented languages.
- It will also facilitate **joint research, capacity building, training and pilot projects** in NLP and multilingual AI.

Why is it Significant?

The initiative extends India's **DPI model beyond its borders** and uses AI to overcome **language, literacy and digital-access barriers**.

It can help Nepal provide government services in citizens' preferred languages while facilitating access to **education, skilling, digital commerce and public services**.

BHASHINI: Important Facts

BHASHINI is India's national initiative for **AI-driven multilingual digital inclusion and language technology**.

- Implemented through the **Digital India BHASHINI Division (DIBD)** under **Digital India Corporation (DIC)**.
- Operates through the **National Hub for Language Technology (NHLT)**.

- Supports **36 Indian text languages, 23 Indian voice languages and 35 international languages**.
- Powers more than **800 government websites** and processes over **15 million inferences daily**.

India Seeks Protection from Future U.S. Trade Probes

Why in News?

During negotiations for an **India–U.S. bilateral trade agreement**, India sought assurances that the U.S. would **not initiate fresh trade investigations or impose additional tariffs** after the agreement is signed.

Key Points

- **Issue:** U.S. **Section 301** investigations and potential tariffs.
- India wants the trade deal to provide **long-term tariff certainty** for Indian exporters.
- The U.S. had proposed additional tariffs on imports from **60 economies**, including India, under Section 301.
- India also sought resolution of ongoing investigations before finalising the deal.
- The negotiations aim to provide **preferential market access** and protect India's competitiveness vis-à-vis other exporting countries.

Section 301 –

- Part of the **U.S. Trade Act, 1974**.
- Allows the **U.S. Trade Representative (USTR)** to investigate and respond to **unfair or discriminatory foreign trade practices**.
- Possible responses include **additional tariffs or other trade restrictions**.

SIPRI Yearbook 2026: India's Nuclear Posture and Global Arms Trends

Why in News?

The **Stockholm International Peace Research Institute (SIPRI) Yearbook 2026** reported that India may have **operationally deployed 12 nuclear warheads** for the first time, marking a significant shift from its long-standing practice of keeping warheads and delivery systems separately stored during peacetime. SIPRI also estimated that India's nuclear arsenal increased from **180 to 190 warheads** as of January 2026.

About SIPRI

- **Stockholm International Peace Research Institute (SIPRI)** was established in **1966**.
- Headquarters: Stockholm.
- Independent international institute conducting research on:
    - o Armaments and military expenditure
    - o Arms transfers
    - o Nuclear weapons
    - o Disarmament and international security.

Key Findings on India

- India's estimated nuclear stockpile: **190 warheads** (January 2026).
- SIPRI believes India may have deployed **12 nuclear warheads** on operational platforms, possibly including a ballistic missile submarine.
- The shift is linked to:
    - o Canisterised missile systems.
    - o Expansion of sea-based nuclear deterrence.
    - o Development of longer-range delivery systems capable of reaching targets across China.

India's Nuclear Doctrine

- **No First Use (NFU)** policy.
- **Credible Minimum Deterrence** as the core principle.

- Emphasis on a **Nuclear Triad**:
  - Land-based missiles.
  - Aircraft-delivered weapons.
  - Sea-based deterrence through SSBNs (nuclear-powered ballistic missile submarines).

Global Nuclear Snapshot (SIPRI 2026)

- Estimated global inventory: **12,187 nuclear warheads**.
- China: **620 warheads**.
- India: **190 warheads**.
- Pakistan: **170 warheads**.
- SIPRI warns of a renewed global nuclear arms race and increasing reliance on nuclear weapons as instruments of national power.

China's Hukou System: Reform without Abolition

Why in News?

China is attempting to **ease its household registration (hukou) system** to facilitate migration and improve access to urban public services, while **retaining the system itself**.

What is Hukou?

- **Hukou** is China's household registration system introduced in **1958**.
- It classifies citizens mainly as **rural or urban residents** and links access to several public services to registered residence.
- Historically, it restricted **rural-to-urban migration** and contributed to the rural–urban divide.

Recent Reforms

- China has gradually relaxed hukou restrictions, particularly in **smaller and medium-sized cities**.
- The objective is to integrate **migrant workers** into urban areas and expand their access to:
  - Education
  - Healthcare
  - Housing
  - Social security
- Major metropolitan areas such as **Beijing, Shanghai and Shenzhen** retain comparatively stricter controls because of pressure on infrastructure and public services.

Why Important?

China has a huge **floating/migrant population** of rural-origin workers living in cities but historically lacking equal access to urban welfare benefits.

Hukou reform therefore seeks to address the **urban–rural inequality**, boost domestic consumption and support urbanisation.

India–Tajikistan: Deepening Economic Partnership

Why in News?

The **12th India–Tajikistan Joint Commission on Trade, Economic, Scientific and Technical Cooperation** reviewed ways to expand bilateral trade, investment, pharmaceuticals, agriculture, services, energy and connectivity.

Key Developments

- **India's exports to Tajikistan: US$58.12 million (2025–26)**, up **27.23%** year-on-year.
- Major exports: **drug formulations, biologicals, pulses, machinery, medical instruments, tea and AYUSH products**.

- **Services trade (2024):** India exported **US$123.89 million**; Tajikistan exported **US$37.56 million** to India.
- Cooperation identified in **hydropower, renewable energy, mining, critical minerals, IT, digital economy, tourism, logistics and banking**.
- Both sides agreed to improve **regulatory coordination and market access**, particularly for pharmaceuticals.

Strategic Significance

Tajikistan is strategically important to India because of its **Central Asian location**, proximity to Afghanistan and its potential in **hydropower and critical minerals**. Stronger economic engagement also supports India's broader **Connect Central Asia** approach.

Seychelles: India's Strategic Maritime Partner in the Western Indian Ocean

Why in News?

Prime Minister Narendra Modi paid a **three-day State Visit to Seychelles (27–29 June 2026)** as the **Guest of Honour** at the country's **Golden Jubilee National Day celebrations**. The visit marked **50 years of diplomatic relations** between India and Seychelles and resulted in the signing of **nine agreements**, a **₹1,250 crore Line of Credit**, and the launch of **UPI** in Seychelles, further strengthening bilateral and maritime cooperation.

About Seychelles

- An **archipelagic island nation** in the **Western Indian Ocean**, off the eastern coast of Africa.
- **Capital:** Victoria (on **Mahé Island**).
- Comprises **115 islands**, divided into:
  - **Granitic Islands** (e.g., Mahé, Praslin, La Digue)
  - **Coralline Islands (Atolls)** (e.g., Aldabra).
- **Highest Peak:** Morne Seychellois (905 m).
- **Currency:** Seychellois Rupee (SCR).
- **Official Languages:** English, French and Seychellois Creole.
- **Neighbouring maritime regions:** Madagascar, Mauritius, Comoros and Tanzania.
- Lies close to major **Sea Lines of Communication (SLOCs)** in the Indian Ocean.

Global Peace Index (GPI): Measuring Peacefulness Across Nations

Why in News?

According to the latest **Global Peace Index (GPI) 2026**, Sri Lanka climbed **14 places to 67th rank globally**, becoming the **second most peaceful country in South Asia** after Bhutan. The report highlights Sri Lanka's improvement in political stability, public security, and post-crisis recovery.

About the Global Peace Index (GPI)

- Published annually by the Institute for Economics and Peace (IEP).
- Launched in **2007**.
- Recognized as the world's leading measure of peacefulness.
- Covers **163 independent states and territories**, representing about **99.7% of the global population**.

Methodology

The index assesses peace using **23 qualitative and quantitative indicators** grouped under three domains:

1. **Societal Safety and Security**
2. **Ongoing Domestic and International Conflict**

3. **Militarisation**

Key Findings (GPI 2026)

- **Iceland** remains theworld's most peaceful country.
- **New Zealand**, **Switzerland**, **Austria**, and **Singapore** are among the top-ranked nations.
- Global peacefulnesshas declined for the **12th consecutive year**.
- South Asia remainsone of the least peaceful regions globally.
- Bhutan is the mostpeaceful country in South Asia, while Sri Lanka ranks second.

ECONOMY

RBI's 'Kill Switch': Emergency Brake Against Digital Payment Frauds

Why in News?

The **Reserve Bank of India (RBI)** is exploring a **"kill switch"** that would allow customers to quickly stop **all debit transactions** when they suspect digital fraud. The proposal forms part of RBI's broader efforts to strengthen safeguards in India's rapidly expanding digital-payment ecosystem.

What is the Kill Switch?

- An **emergency transaction-blocking mechanism** activated by the customer.
- Intended to provide a **single-point control** to immediately halt debit transactions across digital payment channels.
- Particularly useful when a customer suspects **unauthorised access, phishing, social-engineering fraud or loss of a device/card**.
- It complements existing **"switch on/switch off" controls**, through which customers can activate or deactivate selected card transaction facilities.

Related RBI Measures

RBI has also considered safeguards such as:

- **Cooling-off/processing delays** for certain first-time high-value P2P UPI transactions.
- Additional safeguards for vulnerable users.
- Greater customer control over digital-payment channels.

Zero Coupon Zero Principal (ZCZP) Instrument

Why in News?

The ICSI update explains the regulatory framework governing **ZCZP instruments**, an innovative mechanism through which eligible **not-for-profit organisations (NPOs)** can raise funds for specified social projects on the **Social Stock Exchange**.

What are ZCZP Instruments?

- **Zero Coupon:** No interest/coupon is paid to the subscriber.
- **Zero Principal:** The principal amount is **not repaid at maturity**.
- Thus, unlike conventional bonds, they offer **no monetary return**; the intended return is **social impact**.
- They are legally recognised as **securities** under the **Securities Contracts (Regulation) Act, 1956** since 2022.
- They can be issued only for a **specific eligible project/activity** and within a prescribed tenure.

Key Regulatory Facts

Under **SEBI ICDR Regulations, 2018**:

- Issuer: NPO registered on an **SSE**.
- Issue only in **dematerialised form**.
- **Minimum issue size:** ₹50 lakh.
- **Minimum application size:** ₹10,000.
- **Minimum subscription:** 75% of proposed funds.
- Below 75% subscription → **funds must be refunded**.
- Instruments are **non-transferable** during their tenure.

Dark Patterns: Hidden Costs in India's Digital Marketplace

Why in News?

A recent report highlighted that Indian online consumers may lose up to **₹28,000 crore annually** due to **dark patterns**—deceptive design practices that manipulate users into making choices they may not otherwise make.

What are Dark Patterns?

These are **UI/UX techniques designed to deceive or manipulate consumers**, such as:

- **Hidden costs:** Charges revealed only at checkout.
- **Forced action:** Making users provide information or subscribe to continue.
- **Subscription traps:** Difficult cancellation despite easy sign-up.
- **Bait-and-switch:** Advertising one option but steering users towards another.
- **False urgency:** Fake countdowns or limited-stock claims.
- **Confirm-shaming:** Using guilt to discourage users from declining an option.

Regulatory Framework

India's **Consumer Protection Act, 2019** empowers the **Central Consumer Protection Authority (CCPA)** to act against **unfair trade practices** and misleading advertisements. The CCPA has also issued **Guidelines for Prevention and Regulation of Dark Patterns, 2023**.

CGSMFI-2.0: Credit Guarantee for Microfinance Institutions

Why in News?

The government extended **Credit Guarantee Scheme for Microfinance Institutions-2.0 (CGSMFI-2.0)** up to **31 August 2026** or until ₹20,000 crore of guarantees are issued, whichever is earlier. The loan limit for large NBFC-MFIs/MFIs was also raised from **₹300 crore to ₹1,000 crore**.

Key Features

- **Launched:** 20 March 2026.
- **Implementing agency: National Credit Guarantee Trustee Company (NCGTC)**.
- Provides guarantee cover to **banks/financial institutions** against expected losses on loans provided to **NBFC-MFIs/MFIs** for onward lending to small borrowers.
- **₹770 crore** worth of loans have been sanctioned so far.
- Overall lending support targeted: up to **₹20,000 crore**.

Guarantee Coverage

MFI category	Guarantee
Small	**80%** of default
Medium	**75%**
Large	**70%**

- **Guarantee fee:** 0.50% p.a.
- Loan interest to MFIs: capped at **EBLR/MCLR + 2%**.
- MFIs must cap lending to small borrowers at **1 percentage point below their average lending rate of the previous six months**.

DigiDukaan: ONDC's Initiative to Digitise India's Kirana Economy

Why in News?

The Department for Promotion of Industry and Internal Trade (DPIIT), in collaboration with the Open Network for Digital Commerce (ONDC), recently held a Consumer Packaged Goods (CPG) Roundtable to discuss the expansion of **DigiDukaan**, an initiative aimed at digitising procurement for India's vast kirana retail network.

What is DigiDukaan?

- **DigiDukaan** is an initiative of the **Open Network for Digital Commerce (ONDC)**.
- It aims to **digitise kirana stores for B2B procurement** and integrate them into a modern digital supply chain ecosystem.
- Targets India's **1.4 crore kirana stores**, which account for nearly **75–80% of FMCG sales**.

Key Features

For Kirana Stores

- Direct procurement from suppliers.
- Better visibility of promotional schemes.
- Improved fill rates and working capital management.

For Distributors

- Digital order and collection systems.
- Wider retailer coverage without additional field costs.

For Brands

- Access to retailer demand signals.
- Better tracking of schemes and secondary sales data.

Implementation Status

- Pilot success in **Hyderabad** with over **10,000 retailers** and **35+ brands** onboarded.
- Expansion planned to **Jaipur, Mumbai, Bengaluru, and Delhi-NCR**.

Bharat Taxi Initiative: India's First Cooperative-Owned Ride-Hailing Platform

Why in News?

The **Bharat Taxi** initiative was formally launched by the **Union Minister of Home Affairs and Cooperation** in **Gujarat**, marking the country's **first cooperative-based ride-hailing platform**. The initiative seeks to provide a **driver-owned alternative** to private cab aggregators by promoting the cooperative model in the transport sector under the vision of **"Sahkar se Samriddhi"**.

About Bharat Taxi

- **India's first cooperative-owned ride-hailing platform**, operated by **Sahakar Taxi Cooperative Limited**.
- Promoted with support from the **Ministry of Cooperation** to strengthen the cooperative sector in the digital mobility ecosystem.
- Initially soft-launched in **December 2025**, followed by commercial expansion in **2026**.

Key Features

- **Drivers are co-owners** of the platform, ensuring profit-sharing instead of commission-based earnings.
- Aims to eliminate **surge pricing** and reduce intermediary commissions charged by private aggregators.
- Offers services including:
  - Taxi services
  - Auto-rickshaw services
  - Bike taxi services
- Initially launched across **14 cities in Gujarat**, with plans for phased expansion to other states.

Corporate Mitra Scheme: Building a Skilled Compliance Workforce for MSMEs

Why in News?

The **Ministry of CorporateAffairs(MCA)**launchedthe**CorporateMitra Scheme**, announced in the **Union Budget 2026–27**,tocreateanationwidecadreoftrainedpara-professionals who will assist **Micro, Small and Medium Enterprises(MSMEs)**withregulatorycompliance and business advisory services. The scheme will commencewith**2,000participants**,including**200from the North-East Region**.

About the CorporateMitraScheme

- **Nodal Ministry:**MinistryofCorporateAffairs(MCA).
- Objective:Provide**affordablecomplianceandadvisorysupport** to MSMEs, particularly in **Tier-II and Tier-IIIcities**.
- Introducedinthe**UnionBudget2026–27**toimprovethe**Ease of Doing Business** and strengthen the MSMEecosystem.

Key Features

- Initial intakeof**2,000participants**(including**200fromtheNorth-East**).
- **Eligibility:** Indiancitizensupto**30years**ofage.
- **Training Duration:12months**
  - o **6 months**ofacademiclearning.
  - o **6 months**ofon-the-jobtraining.
- Implemented incollaborationwith:
  - o **InstituteofCharteredAccountantsofIndia(ICAI)**
  - o **InstituteofCompanySecretariesofIndia(ICSI)**
  - o **InstituteofCostAccountantsofIndia(ICMAI)**
  - o **IIT Madras**
- Corporate MitraswillassistMSMEsin:
  - o GST compliance
  - o Accounting&bookkeeping
  - o Financial guidance
  - o Cost accounting
  - o Secretarial andregulatoryservices.

GEOGRAPHY

South Sudan Crisis: Civil War, UNMISS & India's Peacekeeping Role

Why in News?

Renewed violence in **South Sudan** has pushed the country towards another major humanitarian crisis, threatening the **2018 peace agreement**. India is a major contributor to the **United Nations Mission in South Sudan (UNMISS)**, with **4,268 personnel as of March 31, 2026**, making it the **second-largest troop contributor after Nepal**.

South Sudan

- Became independent from **Sudan on 9 July 2011**, becoming the world's newest country at that time.
- **Capital:** Juba.
- Located in **East-Central Africa**; landlocked.
- Major river: **White Nile**, which flows through the country.
- Shares borders with **Sudan, Ethiopia, Kenya, Uganda, Democratic Republic of the Congo and Central African Republic**.
- The country has faced conflict rooted partly in political rivalry between **President Salva Kiir** and **Riek Machar**.

UNMISS & India

- **UNMISS** was established by **UN Security Council Resolution 1996 (2011)**.
- Its mandate includes **protection of civilians, human rights, humanitarian assistance and support for implementation of the peace process**.
- Indian personnel undertake military, medical, engineering and humanitarian roles.
- Indian peacekeeper **Naib Subedar Sujit Kumar Pradhan** was posthumously awarded the **Dag Hammarskjöld Medal** for service under UNMISS.

Blue Moon–2026: Calendar Phenomenon Meets a Micromoon

Why in News?

A **Blue Moon** occurred on **31 May 2026**, after another Full Moon on 1 May. It was notable because this Blue Moon was also a **Micromoon**, making it a useful case for understanding lunar cycles and orbital distance.

What is a Blue Moon?

- A **monthly/calendar Blue Moon** is the **second Full Moon in a calendar month**.
- It occurs because the lunar synodic cycle is about **29.5 days**, while calendar months are generally longer.
- May 2026 had Full Moons on **1 and 31 May**.
- The term **does not ordinarily refer to the Moon appearing blue**.
- Another definition is a **seasonal Blue Moon**: the **third Full Moon in a season containing four Full Moons**.

Why was it a Micromoon?

A **Micromoon** occurs when a Full Moon happens near **apogee**, the point where the Moon is farthest from Earth in its elliptical orbit. The 31 May Full Moon was about **406,000 km** from Earth and appeared slightly smaller and dimmer than an average Full Moon.

Valley of Flowers National Park: Himalayan Alpine Biodiversity Hotspot

Why in News?

The **Valley of Flowers National Park** in **Chamoli district, Uttarakhand**, opened to tourists for the **2026 season**. The park will remain open until **31 October**, with the Forest Department emphasising visitor safety and conservation of its rich floral diversity.

Key Facts

- Located in the **Garhwal Himalayas** of Uttarakhand.
- Known for its spectacular **alpine meadows** containing **300+ species of flowering plants**, including several rare varieties.
- Established as a **National Park in 1982**.
- Forms part of the **Nanda Devi and Valley of Flowers National Parks**, a **UNESCO World Heritage Site** inscribed in **1988**.
- The landscape is characterised by **high-altitude meadows, glaciers, streams and rugged Himalayan terrain**.
- Important fauna include **snow leopard, Asiatic black bear, Himalayan musk deer, blue sheep (bharal) and Himalayan monal**.

Conservation Significance

The park is part of the **Nanda Devi Biosphere Reserve**, representing a high-altitude Himalayan ecosystem with considerable endemic and threatened biodiversity.

Pennar River: Seasonal River of the Drought-Prone Rayalaseema Region

Why in News?

The **Pennar River** in Andhra Pradesh witnessed an unusual flow of water ahead of the onset of the Southwest Monsoon in June 2026 due to intense pre-monsoon rains and gusty weather conditions. The rare event drew attention because the river is generally seasonal and associated with the drought-prone Rayalaseema region.

About the Pennar River

- Also known as:
  - **Penna**
  - **Penneru**
  - **Pinakini**
- A major east-flowing river of southern India flowing through **Karnataka and Andhra Pradesh**.

Origin and Course

- Originates in the **Nandi Hills** of **Chikkaballapur district, Karnataka**.
- Flows through the **Deccan Plateau** and enters Andhra Pradesh.
- Traverses the drought-prone **Rayalaseema region** before draining into the **Bay of Bengal near Nellore**.

100 Years of Solar Data

Why in News?

A study by scientists from the **Indian Institute of Astrophysics (IIA)** has used more than **100 years of archival observations from the Kodaikanal Solar Observatory** to investigate how large-scale **supergranulation patterns** on the Sun respond to its approximately **11-year solar activity cycle**. The study analysed around **34,000 Ca II K spectroheliograms** dating back to 1907.

What are Solar Supergranulations?

- **Supergranulations** are large-scale convection patterns on the Sun's surface.
- They form a network of cells through the movement of plasma in the Sun's outer layers.
- The cells have an average lifetime of about **24 hours** and are roughly **30,000 km wide**.

- Their boundaries contain concentrated **magnetic flux**, producing the characteristic chromospheric network.
- The cooler **intergranular lanes** separating these cells are about **6,000 km wide**.

Major Findings

- The widths and intensities of supergranular lanes show a strong correlation with **sunspot numbers**.
- The strongest correlations occur roughly between **11° and 22° latitude** in both hemispheres.
- **Lane-width correlations** peak around the period of solar maximum.
- **Intensity correlations** peak around **1.25–1.5 years after solar maximum**, indicating a time lag.
- The study found that the lag varies with latitude.
- The findings may improve understanding of **solar activity, solar irradiance variations and future solar-cycle prediction**.

Why is the 11-Year Solar Cycle Important?

The Sun's magnetic activity varies approximately every **11 years**, reflected in changes in **sunspot numbers, solar flares and coronal activity**.

Higher solar activity can influence **space weather**, which can affect:

- Satellites and spacecraft
- Radio communication
- Navigation systems
- Astronaut safety
- Power grids during severe geomagnetic disturbances

Aurora Borealis over India

Why in News?

A **strong geomagnetic storm** in June 2026 created the possibility of seeing the **Aurora Borealis (Northern Lights)** from parts of northern India. The storm was forecast to reach **G3 (strong)** intensity.

Key Points

- **Aurora:** Coloured lights produced when **charged solar particles interact with gases in Earth's upper atmosphere**.
- **Cause:** Mainly **Coronal Mass Ejection (CME)** interacting with Earth's **magnetosphere**.
- Normally occurs near polar regions, but **strong geomagnetic storms can push auroras to lower latitudes**.
- **India:** High-altitude regions of **Ladakh**, particularly **Hanle**, offer better chances of observing auroral activity.
- India witnessed rare auroral displays during the **May 2024 G5 geomagnetic storm**.

Why Important?

Strong geomagnetic storms can also disrupt:

- **Satellites**
- **GPS/navigation**
- **Radio communication**
- **Power grids**

Wangchhu Hydroelectric Project

Why in News?

Hindustan Construction Company (HCC) has secured a **₹127-crore contract** related to the **Wangchhu Hydroelectric Project** in Bhutan. The project is significant for **India–Bhutan energy cooperation**.

Key Facts

Location: Bhutan
River: Wangchhu
Capacity: 570 MW

- **Type: Peaking run-of-river** hydropower project.
- **Developers:** Adani Power and **Druk Green Power Corporation (DGPC)**, Bhutan's state-owned power utility.
- **Ownership:** DGPC – **51%**; Adani Power – **49%**.
- **Model: BOOT – Build, Own, Operate, Transfer**.
- **Investment:** Around **₹6,000 crore**.

Why is the Project Important?

The Wangchhu project is a **peaking run-of-river project**, meaning it is designed to provide electricity particularly during periods of high demand while limiting the need for a large conventional storage reservoir.

It will:

- Increase Bhutan's renewable electricity generation.
- Strengthen **India–Bhutan energy cooperation**.
- Create opportunities for Indian companies in Bhutan's infrastructure sector.
- Facilitate greater regional electricity connectivity and clean-energy trade.

Zojila Tunnel

Why in News?

The **Zojila Tunnel project** is nearing completion and is expected to provide **all-weather connectivity between Kashmir and Ladakh**. The tunnel's **14.15-km main tunnel** will become India's **longest road tunnel** once operational.

Key Facts

- **Location:** Sonamarg–Drass sector, Jammu & Kashmir/Ladakh.
- **Pass: Zojila Pass**, on the Srinagar–Leh highway (NH-1).
- **Length: 14.15 km** main tunnel.
- **Type:** Twin-tube road tunnel with an escape/parallel tunnel system.
- **Elevation:** Around **3,000 m**.
- **Developer:** National Highways & Infrastructure Development Corporation Ltd. (**NHIDCL**).
- **Purpose:** Provide **year-round connectivity** between Kashmir Valley and Ladakh.

Why is Zojila Important?

Zojila Pass remains vulnerable to **heavy snowfall, avalanches and extreme winter conditions**, often disrupting the Srinagar–Leh route.

The tunnel will:

- Ensure **all-weather movement** of people and goods.
- Reduce dependence on the seasonal mountain pass.
- Improve **military logistics and strategic mobility** towards Ladakh.
- Promote tourism and economic integration of Ladakh with the rest of India.
- Reduce travel time and improve road safety.

Strategic Significance

The project is particularly important because **Ladakh shares sensitive borders with China and Pakistan**. Reliable road connectivity strengthens India's ability to move **troops, equipment and supplies** to the region throughout the year.

Lonar Lake: World's Unique Meteorite Crater Lake in Basalt Under Ecological Stress

Why in News?

Lonar Lake in **Maharashtra** is witnessing an unusual **rise in water level**, submerging several ancient temples around the crater. Scientists are investigating the phenomenon, with studies suggesting that **groundwater inflow through deep borewells**, coupled with high rainfall, may be responsible for the persistent increase in the lake's water level.

About Lonar Lake

- Located in **Buldhana district, Maharashtra**.
- Formed by a **meteorite impact** around **50,000 years ago** (commonly accepted estimate).
- **Only known meteorite impact crater lake in basaltic rock** in the world, formed in the **Deccan Trap basalt**.
- It is an **endorheic (closed-basin)**, **saline and alkaline** lake with no natural outlet.
- The lake is about **1.8 km in diameter** and surrounded by steep crater walls and ancient **Hemadpanti temples**.
- Declared a **Ramsar Site** in **2020** and recognised as a **National Geo-heritage Monument** by the **Geological Survey of India (GSI)**.

Caspian Sea: World's Largest Inland Water Body Facing Rapid Shrinkage

Why in News?

Recent scientific studies have highlighted that the **Caspian Sea** has lost an area nearly equal to **Sicily** over the past three decades. While climate change has accelerated evaporation, researchers conclude that **human activities—particularly river damming and water diversion—are the primary drivers** of its shrinking water level.

About the Caspian Sea

- **World's largest inland enclosed water body**, often described as the **largest lake** despite its name.
- It is an **endorheic (closed-drainage) saline water body** with **no natural outlet**; water is lost mainly through evaporation.
- Bordered by **Russia, Kazakhstan, Turkmenistan, Iran, and Azerbaijan**.
- **Major inflow: Volga River** (contributes nearly **80%** of total inflow), followed by the **Ural** and **Kura** rivers.
- Rich in **petroleum and natural gas reserves** and globally renowned for **sturgeon**, the source of **caviar**.

ENVIRONMENT AND ECOLOGY

World Meteorological Organization (WMO): 91% Chance of 1.5°C Breach in Next 5 Years

Why in News?

- The **World Meteorological Organization (WMO)** released its annual report stating that global average temperatures are likely to continue at or near record levels over the next five years (2026-2030).
- There is a **91% chance** that global average temperatures will exceed **1.5°C above pre-industrial levels** (1850-1900 average) for at least one year between 2026 and 2030.
- There is an **86% chance** that at least one of the next five years will eclipse modern records to become the hottest year in history.

About WMO

Establishment

- **1950** as a specialized agency of the United Nations.

Predecessor

- Originated from the **International Meteorological Organization (IMO)**, founded in **1873**.

Headquarters

- **Geneva, Switzerland**.

Members

- **193 Members** (187 Member States + 6 Territories maintaining their own meteorological services).

Anaphalis sahyadrica: New High-Altitude Plant Species Discovered in Western Ghats

Why in News?

- A team of botanists from **Palakkad** discovered a new plant species in the **southern Western Ghats**.
- The species has been named **Anaphalis sahyadrica**.
- The discovery was part of the doctoral research of **S. Remya** from the Department of Botany, Government Victoria College, Palakkad.

About Anaphalis sahyadrica

Scientific Classification

- **Family:** Sunflower family (Asteraceae)
- **Genus:** *Anaphalis*

Etymology

- **sahyadrica** – named after the **Sahyadri** (Western Ghats) mountain range.

Habitat

- Found in **high-altitude montane grasslands** and **shola forest margins** of the Western Ghats.
- Specific locations: **Anamudi** and **Meesapulimala** in Kerala.
- Grows at elevations **above 2,200 metres** above sea level.

Plant Type

- **Subshrub** – a plant that has some characteristics of both a shrub and an herb.
  - Woody stems at the base, but the top of the plant is herbaceous (soft and green, lacking woody tissue).
  - Smaller than shrubs (usually less than 3 feet tall).

- More delicate and better suited to milder climates.

Key Identifying Features

- **Smooth, hairless leaves** with **three prominent veins**.
- Grows up to about **one metre** in height.
- Produces **90 to 120 white, hemispherical flower heads** (capitula).

Giant Malabar Squirrel: India's Colourful Arboreal Mammal

Why in News?

The Giant Malabar Squirrel was recently in the news following reports of its sighting and conservation-related discussions, drawing attention to the status of endemic wildlife species inhabiting India's forest ecosystems.

About the Giant Malabar Squirrel

- Scientific Name: **Ratufa indica**
- Commonly known as the **Indian Giant Squirrel**.
- One of the largest squirrel species in the world.
- Endemic to **India**, primarily found in the **Western Ghats**, Central Indian forests, and parts of the Eastern Ghats.
- It is a **diurnal** (active during the day) and **arboreal** (tree-dwelling) mammal.
- Noted for its striking multi-coloured fur, ranging from maroon and brown to cream and black shades.

Habitat and Ecological Importance

- Inhabits tropical, moist deciduous, and evergreen forests.
- Plays a crucial role in **seed dispersal**, contributing to forest regeneration.
- Builds large nests called **dreys** high in tree canopies.

Conservation Status

- **IUCN Red List:** Least Concern (LC)
- Protected under the **Wild Life (Protection) Act, 1972**.
- Major threats include habitat fragmentation, deforestation, and human encroachment.

Indopottia himalayensis: New Moss Species from the Western Himalaya

Why in News?

Scientists from the **Botanical Survey of India (BSI)** have discovered a new species of moss, **Indopottia himalayensis**, from the high-altitude forests of **Madhyamaheshwar, Uttarakhand** in the Western Himalayas. The discovery is significant because it expands the known distribution of the rare genus *Indopottia* into the Indian Himalayan Region for the first time.

About Indopottia himalayensis

- A newly identified moss species belonging to the family **Pottiaceae** and division **Bryophyta**.
- Found growing on **soil-covered rocks** in high-altitude Himalayan forests.
- Only the **third known species** of the genus *Indopottia* worldwide. The other species occur in the **Western Ghats** of India and **Thailand**.
- Characterized by:
  - Rounded stem reaching about 13 mm.
  - Single upright cylindrical spore capsule.
  - Distinctive capsule lid bending sideways when dry.
  - Absence of transparent bulging leaf cells seen in related species.

Isobutanol-Blended Diesel: India's Next Biofuel Transition

Why in News?

India may introduce a mandate for **isobutanol blending with diesel by the end of 2026**, as part of efforts to reduce crude-oil imports, improve energy security and lower transport-sector emissions. The government is reportedly examining blending of **up to 15% isobutanol** with diesel.

What is Isobutanol?

- **Isobutanol ($C_4H_{10}O$)** is a four-carbon alcohol that can be produced biologically from **sugars and other biomass feedstocks**.
- It has **higher energy density and lower hygroscopicity/corrosiveness than ethanol**, making it potentially more suitable for fuel applications.
- It can be used as a **biofuel/blending component** in conventional fuels.
- Compared with petrol, diesel has much higher consumption in India; hence, even modest diesel blending could have a significant impact on **oil-import dependence**.

India's Biofuel Linkage

The proposal complements India's existing **ethanol-blending programme**, but isobutanol is being explored specifically for **diesel**. **Bharat Petroleum Corporation Ltd. (BPCL)** is undertaking research on diesel–isobutanol blending, while **ARAI** has been asked to study engine compatibility.

E85 Fuel: India's Push Towards Flex-Fuel and Ethanol-Based Mobility

Why in News?

India launched **E85 fuel** in June 2026 as part of its ethanol-based mobility transition. Simultaneously, Maruti Suzuki unveiled the country's first **E85-compatible flex-fuel passenger car — WagonR Flex Fuel**. The initiative aligns with India's strategy to reduce crude oil imports and promote cleaner transport fuels.

What is E85 Fuel?

- **E85** is a fuel blend containing:
  - **85% Ethanol**
  - **15% Petrol (Gasoline)**
- It is primarily used in **Flex-Fuel Vehicles (FFVs)** designed to operate on varying ethanol-petrol blends.

What are Flex-Fuel Vehicles (FFVs)?

FFVs are vehicles capable of running on multiple fuel blends such as:

- E20 (20% ethanol)
- E85
- Even E100 in some models.

India's first E85-compatible car:

- **Maruti Suzuki WagonR Flex Fuel**
- Compatible with fuel blends ranging from **E20 to E100**.

Crotalaria phulei: New Plant Species Named After Savitribai Phule

Why in News?

Indian botanists have identified a **new flowering plant species, *Crotalaria phulei***, from the **Khairi–Umred forest near Nagpur, Maharashtra**. It has been named in honour of **Savitribai Phule**, marking a scientific tribute to the pioneering social reformer. The species was formally described in the taxonomic journal *Phytotaxa*.

Key Features

- **Family: Fabaceae (Leguminosae)** – the legume/pea family.
- **Genus:** *Crotalaria*, commonly known as **rattlepods**, because their dry pods can produce a rattling sound.
- It is an **undershrub**, growing up to about **1.5 metres**.
- Bears **large bright-yellow flowers**.
- Its pods contain distinctive **mottled creamy-olive seeds**, an important taxonomic characteristic.
- It closely resembles *Crotalaria juncea* (**sunhemp**) and *Crotalaria shrirangiana*.
- Flowers mainly during **November–January** and fruits during **December–January**.

Conservation Significance

The species has a **preliminary IUCN category of Data Deficient (DD)** because sufficient information on its population, distribution and threats is not yet available.

Sikkim: India's Pioneer in Plastic-Bag Prohibition

Why in News?

On **World Environment Day 2026**, attention was drawn to **Sikkim**, widely recognised as the **first Indian State to ban plastic bags**. Sikkim introduced the prohibition in **1998**, well before the nationwide framework for plastic-waste regulation. Its ban continues to be actively enforced in 2026.

Sikkim's Plastic-Free Initiatives

- In **June 1998**, Sikkim prohibited the delivery of goods in **plastic wrappers or plastic bags** through amendments to its Trade Licence rules.
- The State subsequently expanded restrictions on **single-use plastics (SUPs)**.
- Current enforcement covers items such as plastic-stemmed earbuds, balloon/candy/ice-cream sticks, plastic plates, cups, cutlery, straws, trays and certain plastic packaging.
- **Non-woven plastic carry bags below 60 GSM** and **polyethylene bags below 120 microns** without prescribed markings are also prohibited in the State.
- Enforcement involves the **State Pollution Control Board, Urban Local Bodies and Sikkim Police**.

National Framework

The **Plastic Waste Management Rules, 2016**, issued under the **Environment (Protection) Act, 1986**, provide India's principal regulatory framework for plastic waste. The 2021 amendment introduced restrictions on specified SUP items, effective from **1 July 2022**.

Jai Prakash Narayan Bird Sanctuary: India's 100th Ramsar Milestone

Why in News?

The **Jai Prakash Narayan Bird Sanctuary (Surha Tal)** in Ballia district of Uttar Pradesh was recently designated as **India's 100th Ramsar Site (Wetland of International Importance)**. The announcement coincided with **World Environment Day (5 June 2026)**, marking a significant milestone in India's wetland conservation efforts.

About Jai Prakash Narayan Bird Sanctuary

- Located in **Ballia district, Uttar Pradesh**.
- Also known as **Surha Tal (Surha Lake)**.
- Declared a bird sanctuary by the Uttar Pradesh Government in **1991**.
- It is a **freshwater wetland** situated in the middle stretch of the **Ganga River Basin**.
- Formed from an ancient **meander of the Ganga River** and receives freshwater through three channels.

Ecological Significance

- Falls along the **Central Asian Flyway**, a major migratory bird route.

- Supports over **310 bird species**, including around **125 waterbird species**.
- Hosts nearly **2 lakh migratory birds during winter**.
- Habitat for several threatened species such as:
  - **Common Pochard** (*Aythya ferina*) – Vulnerable
  - **Indian River Tern** (*Sterna aurantia*)
  - **Fishing Cat** (*Prionailurus viverrinus*) – Vulnerable

Portatrochammina bharatensis: New Foraminifera from Maharashtra

Why in News?

Scientists from the **Agharkar Research Institute (ARI), Pune** discovered a new species of microscopic **foraminifera**, named ***Portatrochammina bharatensis***, in the sediments of **Jaitapur Creek, Ratnagiri district, Maharashtra**, along the Konkan coast. The species name *bharatensis* honours **Bharat (India)**. **What are Foraminifera?**

- **Foraminifera (forams)** are predominantly **single-celled marine organisms**.
- They generally possess a shell-like structure called a **test**.
- Many species construct their tests by **agglutinating mineral particles** from their surroundings.
- ***P. bharatensis*** builds its test mainly using **quartz grains**.
- It is extremely small, measuring around **0.3–0.5 mm**.

How was the New Species Identified?

The researchers combined **morphological and molecular techniques**:

DNA sequencing of the **18S ribosomal RNA gene** helped establish its distinct genetic identity.

SEM-EDS (Scanning Electron Microscopy–Energy Dispersive X-ray Spectroscopy) was used to analyse the composition of its test.

Phylogenetic analysis placed it close to ***P. pacifica*** from the Pacific Ocean and ***P. antarctica*** from Antarctic waters, while confirming that the Indian species is genetically and morphologically distinct.

Ecological Significance

Foraminifera are important components of marine ecosystems because they:

- **Recycle nutrients** and contribute to marine food webs.
- Serve as food for larger organisms.
- Leave behind fossilised tests that can be used to **reconstruct past climates**, **date geological formations** and support **palaeoenvironmental studies**.
- Can serve as **indicators of environmental change and pollution**.

Nilgiri Tahr Population Rises to 1,364 in Tamil Nadu

Why in News?

The **2026 State-level synchronized population estimation** of the **Nilgiri Tahr (*Nilgiritragus hylocrius*)** recorded **1,364 individuals in Tamil Nadu**, indicating an increase in the population compared with earlier estimates. The State released the **Nilgiri Tahr 2026 population estimation report** during World Environment Day 2026.

Nilgiri Tahr: Key Facts

- **Scientific name:** *Nilgiritragus hylocrius*
- **Common name:** Nilgiri Tahr / Nilgiri ibex
- **Family: Bovidae**
- **Habitat:** High-altitude **montane grasslands and rocky cliffs** of the Western Ghats.
- **Distribution:** Primarily **Tamil Nadu and Kerala**.

- **State animal: Tamil Nadu**
- It is closely associated with the **shola–grassland ecosystem** of the southern Western Ghats.

Conservation Status

- **IUCN: Endangered**
- **Wildlife (Protection) Act, 1972: Schedule I**
- Major threats include:
  - Habitat loss and fragmentation
  - Invasive plant species
  - Disturbance and infrastructure development
  - Climate-change impacts on high-altitude grasslands

Project Nilgiri Tahr

Tamil Nadu launched **Project Nilgiri Tahr in October 2023** to conserve the State animal. Its objectives include population estimation, ecological research, habitat restoration, monitoring and **reintroduction into suitable historical habitats**.

The synchronised surveys cover Tahr habitats across Tamil Nadu and employ methods such as **direct sightings, photographic documentation and pellet-based studies**. The 2025 survey covered **176 survey blocks across 14 forest divisions**, with around 800 field personnel involved.

Sambhar Lake: Threat from Expanding Salt Pans and Algal Blooms

Why in News?

A study by researchers from the **National Remote Sensing Centre (NRSC-ISRO)** and **VIT-AP University** has highlighted the deteriorating ecological condition of **Sambhar Lake in Rajasthan**, India's largest inland saline wetland. Satellite-based analysis from **1984–2023** found shrinking natural water areas alongside expansion of artificial salt pans and algal blooms.

Key Findings

- **Natural water levels are declining**, partly because river inflows have been disrupted by dams and groundwater is being excessively extracted for salt production.
- **Artificial salt pans** have expanded, including an increase of nearly **2 sq km between 2022 and 2023**.
- **Algal blooms** covered as much as **43% of the lake's natural water surface in 2022**, particularly before the monsoon when water levels are lowest.
- Shallow water heats and evaporates rapidly, increasing **salinity and nutrient concentration**.
- Warm, stagnant and nutrient-rich water encourages excessive algal growth, which can **alter water chemistry and reduce dissolved oxygen**.
- This disrupts the food chain supporting **brine organisms and flamingos**, potentially affecting their breeding and population.

Technology Used

The study demonstrates the application of **remote sensing and machine learning in wetland conservation**:

- **Landsat 8 imagery** was used to monitor changes.
- **Random Forest** machine-learning algorithm classified different land-cover types.
- **NDWI (Normalized Difference Water Index)** was used to identify and map water.
- A **Surface Algal Bloom Index** was used to detect algal blooms from their spectral signatures.
- Long-term satellite observations enabled researchers to identify **spatial and temporal changes** in the wetland.

Bascanichthys chepakakiensis: New Snake Eel Discovery from the Bay of Bengal

Why in News?

Marine scientists have discovered a new species of snake eel, ***Bascanichthys chepakakiensis***, from the **Bay of Bengal** off India's eastern coast. The discovery was made while examining fishery bycatch from commercial trawlers operating near **Kakinada, Andhra Pradesh**, highlighting the rich but understudied marine biodiversity of Indian waters.

About Bascanichthys chepakakiensis

- A newly identified species belonging to the family **Ophichthidae (Snake Eels)**.
- First specimen was collected from **Kakinada Fishing Harbour (Andhra Pradesh)**; another specimen was later recorded from **Odisha's coast**.
- The name **"chepakakiensis"** is derived from Telugu words:
  - *Chepa* = Fish
  - *Kaki* = Local nickname for Kakinada.
- Only the **second species of the genus Bascanichthys** reported from Indian waters, ending a gap of nearly six decades in discoveries from this genus.

Distinctive Features

- Long, slender, snake-like body.
- Distinct **bicoloured appearance** with darker dorsal surface and lighter underside.
- Shorter snout, unique tooth arrangement, fewer vertebrae, and tiny flap-like pectoral fins.
- Identification was confirmed through **morphological analysis and mitochondrial COI gene sequencing**.

Kaziranga National Park: Rich Raptor & Stork Diversity

Why in News?

A recent bird survey recorded **30 species of raptors (birds of prey)** and **6 species of storks** in **Kaziranga National Park, Assam**, highlighting its importance as a major wetland and migratory-bird habitat. Kaziranga is also a **UNESCO World Heritage Site** and an important area for migratory birds.

Key Facts

- **Location:** Assam; Brahmaputra floodplain.
- **Ecosystems:** Alluvial grasslands, wetlands, forests and riverine habitats.
- **Raptors:** Birds of prey such as eagles, hawks, kites and vultures.
- **Storks:** Includes species such as **Greater Adjutant, Lesser Adjutant, Black-necked Stork and Asian Openbill**.
- **Conservation status:** UNESCO World Heritage Site (1985) and **Tiger Reserve** (2006).

Why Important?

Kaziranga's wetlands and floodplain ecosystem provide feeding and breeding habitats for both **resident and migratory birds**. Its annual flooding by the **Brahmaputra** plays an important role in maintaining these habitats.

Yellow Puffball Mushroom

Why in News?

A rare **yellow puffball mushroom**, tentatively identified as ***Bovista colorata***, was recorded in **Zedua village, Longding district, Arunachal Pradesh**, by scientists from **ICAR-Krishi Vigyan Kendra (KVK), Longding**.

Key Points

- **Scientific name:** *Bovista colorata*
- **Common name:** Yellow puffball mushroom

- **Location:** Longding, Arunachal Pradesh
- **Phylum: Basidiomycota**
- Unlike typical mushrooms, puffballs **lack gills**; spores develop **inside a closed, spherical fruiting body**.
- Important **decomposers**, contributing to nutrient recycling and soil health.
- The finding highlights the **underexplored fungal diversity of the Eastern Himalayas**.

FSSAI: Ban on Newspapers for Food Packaging

Why in News?

The **Food Safety and Standards Authority of India (FSSAI)** has directed food businesses to **stop using newspapers for packing, wrapping or serving food**, citing health risks.

Key Points

- **Regulation:** Food Safety and Standards **(Packaging) Regulations, 2018** prohibit newspapers or similar unapproved materials for direct food contact.
- **Health risks:** Printing inks may contain **lead and other heavy metals** that can migrate into food.
- Newspapers may also carry **microbial contamination** due to unhygienic handling.
- Applies to **street vendors, restaurants, caterers, cloud kitchens and other food businesses**.
- FSSAI recommends using **approved food-grade packaging materials** instead.

New Western Ghats Fish: *Eechathalakenda incognita*

Why in News?

Researchers have identified a **new species of freshwater barb fish, *Eechathalakenda incognita*** from the **Periyar Tiger Reserve, Kerala**. The discovery also resolved the uncertain evolutionary position of its genus.

Key Facts

- **Genus:** *Eechathalakenda*
- **New species:** *E. incognita*
- **Habitat:** Freshwater streams of the **Western Ghats**.
- The genus was earlier considered **monotypic**, containing only *E. ophicephala*.
- **Genetic analysis** using mitochondrial genes placed *Eechathalakenda* within the **subfamily Torinae** of the cyprinid family.
- The new species differs from *E. ophicephala* in **body pigmentation, fin rays, scales and skeletal features**, supported by genetic divergence.

Evolutionary Significance

The finding demonstrates how **DNA-based phylogenetic analysis** can reveal previously hidden biodiversity and correct uncertainties in taxonomic classification.

The Western Ghats is a **global biodiversity hotspot** with exceptionally high freshwater-fish endemism, making its streams important for evolutionary and conservation studies.

Fish-Survival Test for Caustic Soda Wastewater

Why in News?

Under the **Environment (Protection) Second Amendment Rules, 2025**, new standards require standalone caustic soda plants using **membrane-cell technology** to pass a **fish-survival bioassay** for their wastewater.

Key Facts

- **Caustic soda:** Sodium hydroxide (NaOH), widely used in **paper, textiles, soaps, aluminium, petrochemicals and water treatment**.
- **Bioassay requirement:** At least **90% fish survival after 96 hours** when exposed to **100% untreated wastewater** under laboratory conditions.

- The test measures **overall/combined toxicity**, rather than checking only individual pollutants.
- It is aligned with **IS 6582:1971** standards prescribed by the **Bureau of Indian Standards (BIS)**.
- The approach is also called **Whole Effluent Toxicity (WET) testing**.
- Wastewater standards include:
  - **pH:** 6.5–8.5
  - **Chloride:** ≤250 mg/L
  - **TSS:** ≤100 mg/L
  - **TDS:** ≤2,100 mg/L
- Maximum water consumption: **5 m³/tonne** of caustic soda; wastewater generation: **1 m³/tonne**.

Technology & Environment

Earlier caustic-soda production used **mercury-cell technology**, associated with serious mercury pollution. **Membrane-cell technology** is comparatively cleaner but its effluent still requires toxicity assessment.

Paraquat Dichloride: The Human Cost of a Deadly Herbicide

Why in News?

Telangana's experience with **paraquat poisoning** has renewed debate over the regulation of the herbicide. The Union government has subsequently moved toward a **nationwide prohibition of paraquat dichloride**, citing severe health risks, repeated poisoning incidents and the absence of a specific antidote.

What is Paraquat?

- A **synthetic, non-selective contact herbicide** belonging to the **bipyridyl/dipyridinium** chemical group.
- Used for rapid control of **weeds and grasses** and sometimes as a **crop desiccant**.
- It causes cellular oxidative damage and particularly affects the **lungs, kidneys and liver**.
- Ingestion can cause severe poisoning and **pulmonary fibrosis**; there is **no specific antidote**.

Regulatory Context

- India regulates insecticides under the **Insecticides Act, 1968**.
- The Centre's proposed prohibition covers **manufacture, import, transport, distribution, sale and use**.
- More than **70 countries** have banned the herbicide.

Tapanuli Orangutan: The World's Rarest Great Ape on the Brink of Extinction

Why in News?

Recent studies revealed that extreme rainfall, floods, and landslides triggered by **Cyclone Senyar** in Sumatra, Indonesia, killed an estimated **58 Tapanuli orangutans**, amounting to about **7% of the global population** of this critically endangered species. Scientists warn that the disaster has pushed the species closer to extinction.

About the Tapanuli Orangutan

- Scientific name: Pongo tapanuliensis
- Identified as a distinct species only in **2017**.
- One of the **three orangutan species**, alongside:
  - Bornean Orangutan
  - Sumatran Orangutan
- Endemic to the **Batang Toru Ecosystem** in **North Sumatra, Indonesia**.
- Population: **Fewer than 800 individuals** remain in the wild.

Key Characteristics

- Habitat: Tropical and subtropical moist broadleaf forests south of **Lake Toba**.

- Lifestyle: Exclusively **arboreal** (tree-dwelling).
- Diet: Omnivorous.
- Reproduction: Among the slowest-reproducing mammals in the world.
- Communication includes distinctive **"rolling calls."**

Conservation Concerns

- **IUCN Status:** Critically Endangered.
- Threats:
  - o Habitat fragmentation and deforestation.
  - o Mining and hydropower projects.
  - o Human-wildlife conflict.
  - o Climate change-induced extreme weather events.

SCIENCE & TECHNOLOGY

LAP1-B: JWST Discovers a Chemically Primitive Galaxy from the Early Universe

Why in News?

The **James Webb Space Telescope (JWST)** has enabled astronomers to study **LAP1-B**, an ultra-faint galaxy seen as it existed around **13 billion years ago**, roughly **800 million years after the Big Bang**. It has an exceptionally low abundance of heavy elements, making it the **most chemically primitive star-forming galaxy characterised so far**.

Key Scientific Findings

- **LAP1-B** is an **ultra-faint dwarf galaxy** from the early universe.
- Its gas-phase **oxygen abundance is only about 1/240th of the Sun's**, indicating extremely low **metallicity**.
- The galaxy was studied using **JWST**, with **gravitational lensing** by the massive galaxy cluster **MACS J0416** acting as a natural cosmic magnifier.
- Its primitive chemical composition provides clues about the conditions in which some of the **earliest generations of stars** formed.

Such galaxies may help explain the origin of **ultra-faint dwarf galaxies** observed around the Milky Way.

Concept: Metallicity

In astronomy, **metals refer to elements heavier than hydrogen and helium**. The first stars formed from nearly metal-free primordial gas. Stellar nucleosynthesis subsequently produced heavier elements and enriched the surrounding interstellar medium.

FemTech & PMOS: The Digital Transformation of Women's Health

Why in News?

The growing **FemTech (female technology) industry** is increasingly developing digital tools for women's health, including technologies aimed at **Premenstrual Oral Syndrome (PMOS)** and menstrual-cycle-related symptoms. The discussion highlights both the potential and limitations of technology-driven women's healthcare.

What is FemTech?

FemTech refers to technology-enabled products, services and platforms specifically addressing **women's health and healthcare needs**. It spans:

- Menstrual and reproductive health
- Fertility and pregnancy tracking
- Menopause management
- Wearable health devices
- Digital therapeutics and health-monitoring applications.

PMOS: Key Concept

Premenstrual Oral Syndrome (PMOS) is discussed in the article as a condition associated with **oral symptoms during the premenstrual phase**, illustrating how emerging FemTech applications can expand attention to less-recognised aspects of women's health.

However, **Premenstrual Syndrome (PMS)** is the established clinical term for a range of physical and emotional symptoms occurring before menstruation. UPSC aspirants should avoid conflating emerging terminology with universally recognised medical diagnoses.

Bolides: Explosive Fireballs in Earth's Atmosphere

Why in News?

A bright flash accompanied by an explosion-like boom was reported over parts of the United States, including Boston and Rhode Island, after a **bolide meteor** entered Earth's atmosphere. The event renewed interest in understanding bolides and related celestial phenomena.

What is a Bolide?

A **bolide** is an exceptionally bright meteor (fireball) that often explodes in the atmosphere due to intense pressure and heating during atmospheric entry. It is significantly brighter than ordinary meteors and may produce a sonic boom.

Meteor Terminology

- **Meteoroid:** Small rocky/metallic object in space.
- **Meteor:** Streak of light produced when a meteoroid enters Earth's atmosphere.
- **Bolide (Fireball):** Extremely bright meteor, often accompanied by an airburst.
- **Meteorite:** Fragment that survives atmospheric passage and reaches Earth's surface.

Zaynich: India's Breakthrough Antibiotic Against Antimicrobial Resistance (AMR)

Why in News?

Zaynich, a novel antibiotic developed by Indian pharmaceutical company Wockhardt, recently received approval from the **U.S. Food and Drug Administration (USFDA)** and marketing authorization from India's **Central Drugs Standard Control Organization (CDSCO)** for treating complicated urinary tract infections (cUTIs). It is being hailed as a major breakthrough amid the global decline in antibiotic innovation.

What is Zaynich?

- A **novel injectable antibiotic** comprising:
  - **Cefepime** (4th-generation cephalosporin antibiotic)
  - **Zidebactam** (first-in-class **β-lactam enhancer**)
- Designed to combat **multidrug-resistant (MDR) Gram-negative bacteria**, including:
  - *Escherichia coli (E. coli)*
  - *Klebsiella pneumoniae*
  - *Pseudomonas aeruginosa*
  - *Proteus mirabilis*

Daraxonrasib: Targeted RAS Therapy for Pancreatic Cancer

Why in News?

Daraxonrasib, an investigational oral anti-cancer drug, has shown a major survival benefit in patients with **previously treated metastatic pancreatic ductal adenocarcinoma (PDAC)**. Results from the Phase III **RASolute 302 trial** reported median overall survival of **13.2 months**, compared with **6.7 months** with standard chemotherapy.

What is Daraxonrasib?

- Also known as **RMC-6236**.
- It is a **first-in-class RAS(ON) multi-selective inhibitor**.
- Targets **RAS proteins in their active, GTP-bound state**, thereby disrupting signalling pathways that promote cancer-cell growth.
- It is particularly relevant to **RAS/KRAS-mutated cancers**; more than **90% of pancreatic cancers** carry cancer-driving KRAS mutations.
- Unlike allele-specific approaches such as KRAS G12C inhibitors, daraxonrasib is designed to act across multiple **RAS mutations**.

Key Clinical Finding

In the RASolute 302 trial, daraxonrasib reduced the risk of death by about **60%** compared with investigator-choice chemotherapy and also improved progression-free survival and tumour response.

ANRF Portal for Patent Filing & Research Paper Writing

Why in News?

The **Anusandhan National Research Foundation (ANRF)** announced a digital portal to provide **training and support in patent filing and research-paper writing** for researchers, students and innovators across India. The announcement was made by Union Minister Dr. Jitendra Singh on **4 June 2026**.

Key Features

- **Supported by: ANRF**
- **Target group:** Researchers, students and young innovators.
- **Major areas of support:**
  - Scientific writing
  - Research-paper publication
  - Intellectual Property Rights (IPR)

- Patent-filing procedures

- The portal aims to improve the **quality and impact of Indian research**, while helping convert research outcomes into **publications and intellectual property assets**.

Institutional Coordination

The announcement came during a joint review involving:

- Department of Science & Technology (DST)
- Department of Biotechnology (DBT)
- Department of Scientific and Industrial Research (DSIR)
- Ministry of Earth Sciences (MoES)
- ANRF

The government also stressed greater sharing of scientific achievements and institutional capabilities among laboratories to avoid duplication and promote collaboration.

AI Tool for Rare Skin Disease Diagnosis

Why in News?

Punjabi University, Patiala and PGIMER, Chandigarh have developed an **AI-based tool** to assist in diagnosing **Autoimmune Blistering Diseases (AIBDs)**—rare and difficult-to-diagnose skin disorders.

Key Points

- **AIBDs:** Autoimmune disorders in which the immune system attacks proteins that hold skin layers together, causing severe blistering.
- AI uses **clinical images/deep-learning techniques** to classify different AIBD subtypes.
- The AI models reportedly **outperformed participating dermatologists** in classification accuracy.
- Conventional confirmation often requires specialised tests such as **Direct Immunofluorescence (DIF)**, which can be costly and is mainly available at specialised centres.
- Potential benefit: **early diagnosis and specialist support**, particularly in rural and resource-limited areas.

Pyroprocessing

Why in News?

Pyroprocessing is a high-temperature **nuclear-fuel recycling technology** being explored for India's **closed nuclear fuel cycle**, particularly for recovering useful nuclear materials from spent fuel.

Key Points

- Uses **molten salts and high temperatures** instead of aqueous solutions used in conventional **PUREX** reprocessing.
- Can separate and recover **uranium, plutonium and other actinides** from spent nuclear fuel.
- Particularly relevant to India's **three-stage nuclear programme**, where plutonium and later **thorium-233/U-233** are important.
- Produces **less liquid radioactive waste** than conventional aqueous reprocessing.
- It can make recovered nuclear materials **more difficult to separate for weapons use**, offering potential proliferation-resistance advantages.
- Technology is being developed by India's **Department of Atomic Energy (DAE)**.

*Sagittarius A: Radio Evidence of a Black-Hole Wind**

Why in News?

Astronomers have found evidence of a **"gentle wind" emanating from Sagittarius A***, the **supermassive black hole at the centre of the Milky Way**, resolving a decades-old question about black-hole outflows.

The study used about **100 hours of observations over five years** with the **Atacama Large Millimeter/submillimeter Array (ALMA)** in Chile.

Key Findings

- **Sagittarius A*** lies at the **centre of the Milky Way** and is a relatively **quiet/low-activity black hole**.
- Researchers detected a **cone-shaped cavity/path** around it that lacked **cold carbon monoxide (CO)**.
- The cavity is interpreted as evidence of **hot gas/wind flowing outward** from the black hole.
- Black-hole winds arise when **accreting gas and dust heat up and exert pressure**, pushing surrounding matter outward.
- Stronger winds can influence **star formation** and the growth of the black hole itself.
- ALMA provided an image of the black hole's surroundings about **80 times sharper** than earlier observations.

BIS Standards for Tea Bags: Safer Food-Contact Materials

Why in News?

The **Bureau of Indian Standards (BIS)** has introduced India's **first dedicated standard for tea bags**, covering safety, quality, labelling and traceability. It prohibits **epichlorohydrin** and **chlorine bleaching** in tea-bag manufacture.

Key Provisions

- **Standard: IS 19787:2026 – Tea Bags: Specification**.
- Covers **tea-bag paper, thread, tags, fasteners, inks and adhesives**.
- Tea-bag paper must use **virgin pulp**; **Abacá fibres** may be used to improve strength.
- **Epichlorohydrin (ECH):** Used as a paper-strengthening chemical; classified by IARC as **probably carcinogenic to humans**.
- **Chlorine bleaching** is prohibited.
- Labels must provide **manufacturer's name/address, batch number, manufacturing date and expiry date**.
- The standard applies to **black tea, green tea and other recognised tea varieties** sold in tea bags.

Shigellosis Outbreak in Kerala: A Water- and Food-Borne Disease

Why in News?

Kerala reported a rise in **shigellosis cases during June 2026**, prompting heightened surveillance and public-health measures. Shigella infections are particularly concerning because they can spread rapidly through contaminated food and water.

What is Shigellosis?

- Caused by bacteria of the **genus *Shigella***.
- Primarily affects the **intestine** and causes **diarrhoea, fever and abdominal cramps**.
- Severe infection may cause **dysentery**, with blood or mucus in stools.
- **Transmission:** Mainly **faecal–oral route** through contaminated water, food or direct person-to-person contact.
- Even a **small number of bacteria** can cause infection, making it highly transmissible.
- Children, elderly people and vulnerable individuals face greater risk of severe dehydration.

Prevention & Control

- Safe drinking water and proper **sanitation**.
- Regular **handwashing** with soap.
- Hygienic food preparation and storage.

- Prompt diagnosis, rehydration and appropriate medical treatment.
- Improved wastewater and sewage management can reduce transmission.

Supernova SN 2023zcu: Unlocking the Cosmic Distance Scale

Why in News?

A study led by researchers from the Aryabhatta Research Institute of Observational Sciences has revealed that observations of **Supernova SN 2023zcu**, discovered in the galaxy **NGC 2139**, can improve distance measurements in the local universe and strengthen the cosmic distance scale.

About Supernova SN 2023zcu

- Discovered on **8 December 2023** in the spiral galaxy **NGC 2139**.
- Located about **90.7 million light-years** (27.8 Mpc) from Earth.
- Classified as a **Type IIP Core-Collapse Supernova**.

What is a Supernova?

A **supernova** is the catastrophic explosion of a star at the end of its life cycle, releasing enormous amounts of energy and heavy elements into space.

Major Types

1. **Core-Collapse Supernova (CCSN):**
    - Occurs when a massive star exhausts its nuclear fuel and collapses under gravity.
    - Often leaves behind a **neutron star** or **black hole**.
2. **Thermonuclear (Type Ia) Supernova:**
    - Occurs in binary star systems involving a white dwarf.

Key Findings of the Study

- The progenitor star was a **Red Supergiant** with a mass nearly **12 times that of the Sun**.
- Distance estimated using the **Expanding Photospheric Method (EPM)**.
- Presence of hydrogen-rich outer layers created the characteristic **plateau phase**, a defining feature of Type IIP supernovae.

ANCHOR: India's Cell-Resolution 3D Atlas of the Human Brainstem

Why in News?

The **Sudha Gopalakrishnan Brain Centre (SGBC), IIT Madras** has released **ANCHOR**, described by PIB as the world's most detailed **3D atlas of the human brainstem at cell resolution**. It was unveiled during the **3rd BRICS Neuroscience Symposium 2026**.

What is ANCHOR?

ANCHOR = Atlas of Neurochemical Characterization of the human brainstem with 3D Reconstruction.

- Provides **multimodal, 3D maps** covering prenatal, childhood and adult brains.
- Maps **200+ brainstem nuclei and fibre tracts**.
- Uses **500+ serial sections** and **8 complementary immunostains** to identify neurochemical cell types.
- Integrates **MRI, histology and chemo-architecture** through computational image visualisation.
- Made **publicly accessible** for researchers, clinicians and patients.

Why is the Brainstem Important?

The brainstem connects the **brain and spinal cord** and regulates vital functions such as **breathing, sleep–wake cycles and motor activity**. The atlas may help identify specific cell populations affected by neurological disorders.

SOLAR-1: America's First Dedicated Space Weather Monitoring Satellite

Why in News?

The United States recently activated **SOLAR-1**, its first satellite exclusively dedicated to continuous operational space weather monitoring. The satellite became fully operational after completing commissioning at the Sun–Earth Lagrange Point (L1).

About SOLAR-1

- Full form: **Space Weather Observations at L1 to Advance Readiness–1**.
- Earlier known as **SWFO-L1 (Space Weather Follow-On L1)**.
- Operated by National Oceanic and Atmospheric Administration (NOAA).
- First U.S. satellite dedicated solely to operational space weather forecasting.
- Launched on:
  - **24 September 2025**
  - Via SpaceX Falcon 9 rocket.

Orbit & Mission

- Positioned at **Sun–Earth Lagrange Point 1 (L1)**, nearly **1.6 million km from Earth**.
- L1 allows uninterrupted observation of the Sun before solar particles reach Earth.
- Monitors:
  - Solar winds
  - Coronal Mass Ejections (CMEs)
  - Solar magnetic activity
- Provides early warnings for:
  - GPS disruptions
  - Radio blackouts
  - Power-grid failures
  - Satellite communication disturbances.

Varya AI Model: India's Indigenous Video Story-Generating AI

Why in News?

India recently launched **Varya**, an indigenous AI-based video generation model developed by Avataar.ai with support from the IndiaAI Mission. The launch marks a significant step in India's efforts toward sovereign and culturally contextual AI development.

About Varya AI Model

- India's first **distilled video-generation AI model**.
- Developed under the support of the **Ministry of Electronics and Information Technology (MeitY)**.
- Converts:
  - Text prompts → Videos
  - Images → Video stories
- Designed specifically for Indian cultural and regional contexts including:
  - Festivals
  - Clothing
  - Food
  - Public spaces
  - Languages.

Key Technological Features

- Uses **AI distillation technique**:

- Reduces video-generation steps from **50 to 4**.
- Generates videos at nearly **10× lower cost** than leading global models.
- Estimated generation cost:
  - Around **₹0.48 per second** of video.
- Intended applications:
  - Education
  - MSME advertising
  - Governance communication
  - Digital storytelling.

HISTORY AND ART & CULTURE

Lokmata Ahilyabai Holkar: Governance, Heritage & Women's Empowerment

Why in News?

Prime Minister Narendra Modi paid tribute to **Lokmata Ahilyabai Holkar** on her birth anniversary on **31 May 2026**. The year also marked her **300th birth anniversary**, commemorated through national programmes highlighting her contribution to governance, social welfare and cultural preservation.

Who was Ahilyabai Holkar?

- Born in **1725 at Chondi, Maharashtra**.
- Belonged to the **Holkar dynasty of the Maratha Confederacy**.
- Became ruler of the **Malwa kingdom** after the death of her husband Khanderao Holkar and later her father-in-law Malhar Rao Holkar.
- Ruled from **1767 to 1795**, with **Maheshwar** as her principal seat of power.
- Known for **people-centric administration, justice, infrastructure and welfare-oriented governance**.

Cultural & Social Contributions

- Sponsored reconstruction/restoration of several important temples and pilgrimage centres, including **Kashi Vishwanath** and **Somnath**.
- Promoted **Maheshwari textiles**, helping establish Maheshwar as a major weaving centre.
- Supported **women's property rights and widow remarriage** and maintained women's security units.
- Developed **wells, ponds and irrigation facilities**, linking governance with water conservation.

Beaufort Castle: Strategic Fortress in the Levant

Why in News?

Beaufort Castle in southern Lebanon recently gained attention after reports emerged regarding Israeli military operations around the site amid escalating Israel–Lebanon tensions.

The castle's strategic location has once again highlighted its military and geopolitical significance.

About Beaufort Castle

A historic hilltop fortress located in **southern Lebanon**, overlooking the **Litani River Valley**.

Situated near the Lebanon–Israel border, making it strategically important for military surveillance.

Built during the **Crusader period** in the 12th century and later controlled by various powers, including Muslim rulers and Ottoman authorities.

Known in Arabic as **Qalaat al-Shaqif**.

Perched at an elevation of approximately **700 metres**, providing commanding views of surrounding territory.

Historical and Strategic Significance

- Originally constructed by Crusaders to secure routes between coastal and inland regions.
- Became a contested military position during multiple regional conflicts.
- Played a significant role during the **Lebanese Civil War**, Israeli interventions in Lebanon, and confrontations involving **Hezbollah**.
- Its elevated terrain makes it valuable for observation, defense, and control of movement in southern Lebanon.

Halma Tradition: Indigenous Model of Community Participation and Collective Action

What is Halma?

Halma is an age-old tradition of the **Bhil tribal community** based on **collective voluntary labour (Shramdaan)** and mutual cooperation. Under this practice, community members come together to solve common problems without wages, contracts, or external incentives.

Core Features

- Practised mainly among **Bhils** of **Madhya Pradesh, Rajasthan, Gujarat, and Maharashtra**.
- Mobilizes community labour for activities such as:
  - Water conservation structures
  - Well cleaning and restoration
  - House construction
  - Agricultural operations
  - Small dams and ponds creation
- Based on principles of **self-help, reciprocity, and social solidarity**.

Virupaksha Temple, Hampi: ASI Conservation & Vijayanagara Heritage

Why in News?

The **Archaeological Survey of India (ASI)** removed additional internal walls from the **gopuram of the Virupaksha Temple at Hampi**, restoring the original architectural layout. The walls had been added later for administrative use and had obstructed an original pillared space.

Virupaksha Temple:

- **Location:** Hampi, Vijayanagara district, Karnataka, on the **Tungabhadra River**.
- Dedicated to **Virupaksha**, a form of **Lord Shiva**.
- The temple has origins predating the Vijayanagara Empire and is associated with the **7th-century Chalukyas**; it was substantially expanded under the Vijayanagara rulers.
- **Krishnadevaraya** added the **Ranga Mantapa** in 1510 CE.
- The **Bistappa Gopuram** is a prominent multi-tiered gateway featuring granite, brick and stucco elements.
- Hampi was inscribed as a **UNESCO World Heritage Site in 1986** as the **Group of Monuments at Hampi**.

Conservation Significance

ASI used **selective dismantling and traditional conservation techniques**, including hand tools and lime mortar, to minimise structural vibrations and retain historical authenticity.

Operation Blue Star (1984): A Defining Internal Security Operation

Why in News?

The **42nd anniversary of Operation Blue Star** was observed in June 2026. During commemorative events at the **Akal Takht**, Sikh religious and political leaders discussed its legacy and contemporary issues related to Punjab. The event brought renewed attention to one of the most significant internal security operations in independent India.

What was Operation Blue Star?

- A military operation launched by the **Indian Army** between **1–8 June 1984**.
- Ordered by the government led by Indira Gandhi.
- Objective: To remove armed militants led by Jarnail Singh Bhindranwale and their supporters from the Golden Temple complex in Amritsar.

- The operation was conducted primarily within the **Harmandir Sahib (Golden Temple) complex**, including the **Akal Takht**.

Background

- During the late 1970s and early 1980s, Punjab witnessed growing militancy associated with the demand for **Khalistan**, a separate Sikh state.
- Armed militants had fortified positions inside the Golden Temple complex.
- The government viewed the situation as a serious challenge to national security and public order.

Major Consequences

- Death of Bhindranwale and several militants.
- Significant damage to the **Akal Takht** building.
- Widespread resentment among sections of the Sikh community.
- Assassination of Prime Minister Indira Gandhi on **31 October 1984** by her Sikh bodyguards.
- Subsequent **1984 Anti-Sikh Riots** in several parts of India.

Mahua Festival & Maharaja Chhatrasal

Why in News?

The **Mahua Festival** in Bhopal's Madhya Pradesh Tribal Museum featured a dance-drama on **Maharaja Chhatrasal**, the Bundela ruler known as **"Bundel Kesari" (Lion of Bundelkhand)**.

Key Points

- **Maharaja Chhatrasal (1649–1731):** Bundela ruler of **Bundelkhand**.
- Fought against **Mughal rule**, particularly during Aurangzeb's reign.
- Established an independent kingdom in Bundelkhand.
- **Peshwa Baji Rao I** assisted Chhatrasal against **Muhammad Khan Bangash** in 1729.
- Chhatrasal's daughter **Mastani** was associated with Baji Rao I.
- **Mahua Festival:** Celebrates **tribal culture, traditions, crafts, folk dances and performances** of Madhya Pradesh.

Angkor: Cambodia's Living Heritage

Why in News?

A BBC feature highlights the **lesser-known "living heritage" of Angkor**, where local communities continue traditional cultural practices alongside the ancient monuments.

Key Facts

- **Location:** Siem Reap Province, northern Cambodia.
- **Angkor:** Former centre of the **Khmer Empire**, which flourished mainly from the **9th–15th centuries**.
- The archaeological complex covers about **400 sq km** and includes temples, reservoirs, canals, embankments and ancient urban structures.
- Famous monuments include **Angkor Wat, Bayon and Banteay Srei**.
- UNESCO inscribed **Angkor as a World Heritage Site in 1992** under criteria **(i), (ii), (iii) and (iv)**.

Living Heritage

Angkor is not merely an archaeological site. Local communities continue:

- Religious **rituals and ceremonies**
- Traditional music and dance
- **Rice cultivation**
- Textile and basket weaving
- **Palm-sugar production**

- Traditional use of medicinal plants

UNESCO specifically recognises the relationship between Angkor's **tangible monuments and intangible cultural heritage**.

RISA – Timeless Tribal: Branding India's Tribal Heritage

Why in News?

The **Ministry of Tribal Affairs and TRIFED** launched **RISA – Timeless Tribal**, a premium brand and exclusive store to promote tribal **textiles, embroideries and handicrafts** in domestic and international markets.

Key Features

- **Objective:** Strengthen market linkages, product diversification, design development and income opportunities for tribal artisans.
- **First phase:** Covers **7 textile/embroidery traditions**:
  - **Assam:** Eri & Muga Silk
  - **Jharkhand:** Santal Cotton
  - **Ladakh:** Changpa Pashmina
  - **Odisha:** Kotpad Cotton & Dongria Embroidery
  - **Tamil Nadu:** Toda Embroidery
- Selected handicrafts include **Longpi Pottery (Manipur), Turtuk Brass Cutlery (Ladakh) and Dokhra Art (Chhattisgarh)**.
- **Implementation:** National Design Centre (NDC), an autonomous organisation under the **Ministry of Textiles**.
- **NID Haryana** is responsible for premium and environmentally sustainable packaging solutions.
- Focus areas include **skill upgradation, prototypes, stitching facilities, cluster strengthening and improved packaging**.

Institutional Linkage

TRIFED = Tribal Cooperative Marketing Development Federation of India; works under the **Ministry of Tribal Affairs** to support tribal producers and market tribal products.

Masroor Rock-Cut Temples: "Ellora of the Himalayas" and Nagara Rock-Cut Heritage

Why in News?

The ancient **Masroor Rock-Cut Temples** in Himachal Pradesh recently gained attention through media reports highlighting the site as the "Ellora of the Himalayas" and one of India's lesser-known monolithic temple complexes.

About Masroor Rock-Cut Temples

- Located in the **Kangra Valley** near the **Beas River** in Himachal Pradesh.
- Built around the **8th century CE**.
- Consists of **15 monolithic rock-cut temples** carved from a single sandstone ridge.
- Dedicated mainly to **Shiva, Rama, Lakshmana and Sita**.
- Commonly called:
  - "Ellora of Himachal"
  - "Himalayan Pyramid"

Architectural Features

- Follows the **North Indian Nagara style** of temple architecture.
- Unique because rock-cut architecture is rare in North India.
- Temple complex:
  - Symmetrical square-grid layout

- Mandala-style arrangement
- Shikhara structures
- Sacred water tank in front

- Faces **northeast towards the Dhauladhar Range**, unlike most east-facing Hindu temples.

Historical Significance

- Severely damaged during the **1905 Kangra earthquake**.
- First documented by **Henry Shuttleworth (1913)** and later surveyed by the Archaeological Survey of India in 1915.

Maharishi Sushruta: Father of Surgery and Pioneer of Ancient Indian Medicine

Why in News?

A **90-kg bronze statue of Maharishi Sushruta** was unveiled at the **Royal College of Surgeons of Edinburgh (Scotland)**, one of the world's oldest surgical institutions. The recognition highlights the enduring global influence of India's ancient medical knowledge and surgical traditions.

About Maharishi Sushruta

- Lived around **6th century BCE** and is widely regarded as the **"Father of Surgery"** and **"Father of Plastic Surgery."**
- Associated with the ancient city of **Kashi (Varanasi)** and believed to have been a disciple of **Divodasa Dhanvantari**, the legendary physician.
- Authored the **Sushruta Samhita**, one of the foundational texts of **Ayurveda**, focusing primarily on **Shalya Tantra (Surgery)**.

Sushruta Samhita: Key Contributions

- Describes **300+ surgical procedures** and **120+ surgical instruments**.
- Classifies surgery into **eight major categories**, including excision, incision, extraction, suturing, and puncturing.
- Documents treatment of **1,120 diseases** and the medicinal use of **700+ plants**.
- Advocated **cadaver dissection** for surgical training and emphasized **sterilization, ethics, anatomy, and practical learning**.
- Famous for pioneering **rhinoplasty (nose reconstruction)** using the **forehead skin flap technique**, a precursor to modern plastic surgery.

DEFENCE & SECURITY

Operation Mule Hunt: Gujarat's Crackdown on Cyber-Fraud Ecosystem

Why in News?

Gujarat Police recently revealed the outcomes of **Operation Mule Hunt 1.0**, a large-scale operation targeting cyber-fraud networks. The drive exposed cyber fraud worth approximately **₹2,289 crore**, led to action against **913 mule accounts**, registration of **565 FIRs**, and the arrest of **638 accused persons**.

What is Operation Mule Hunt?

- A specialized anti-cybercrime initiative launched by the **Gujarat Police CID Crime** and Cyber Centre of Excellence.
- Focuses on identifying and dismantling networks using **mule bank accounts** for routing proceeds of cyberfraud.

- Part of broader efforts to curb organized digital financial crimes and money laundering.

What is a Mule Account?

- A bank account used to **receive, transfer, or launder illegally obtained money**.
- The account holder, known as a **"money mule,"** may knowingly or unknowingly facilitate cybercrime.
- Such accounts help fraudsters obscure the money trail and evade law-enforcement agencies.

AGM-114 Hellfire Missile: Precision Strike Weapon

Why in News?

The **AGM-114 Hellfire** missile came into focus after a U.S. military operation involving a missile strike on an **Iran-bound tanker**. The episode highlights the continued operational relevance of the Hellfire as a precision-guided weapon.

What is Hellfire?

- **AGM-114 Hellfire** is an **air-to-surface precision-guided missile** developed in the United States.
- Originally designed primarily as an **anti-armour weapon**, it has evolved into a versatile missile for engaging vehicles, boats, structures and other targets.
- It can be launched from platforms including **attack helicopters, unmanned aerial vehicles (UAVs)** and certain fixed-wing aircraft.
- Different variants employ different guidance technologies, including **semi-active laser homing** and **millimetre-wave radar**.
- The missile uses a **solid-fuel rocket motor** and can carry different warhead configurations depending on the variant.

Why is it Important?

The Hellfire illustrates the evolution from conventional unguided weapons towards **precision-guided munitions (PGMs)**, enabling accurate engagement of targets while potentially reducing collateral damage.

C-295 Transport Aircraft: India's Tactical Airlift Modernisation

News Context

The C-295 aircraft is in news due to the successful **maiden test flight of the first "Made-in-India" C-295** assembled at Tata-Airbus Final Assembly Line (FAL) in Vadodara, marking a key milestone in India's defence manufacturing under **Atmanirbhar Bharat and Make in India** initiatives.

What is C-295 Aircraft?

- A **new-generation tactical transport aircraft** developed by Airbus (Spain)
- Designed for **light-to-medium military airlift operations**
- India signed contract for **56 aircraft (2021)** to replace Avro fleet

Key Features & Capabilities

Operational Roles

- Troop & cargo transport (up to ~71 personnel)
- Medical evacuation (MEDEVAC)
- Paratrooping & aerial delivery
- Maritime surveillance & special missions

Technical Features

- **Twin turboprop engines** (fuel-efficient, low-speed operations)
- **STOL capability** (short take-off & landing)
- Can operate from **unprepared/runway-short airstrips**
- Endurance up to **~11–13 hours**

- Rear ramp door for rapid deployment

India-Specific Programme

- First 16 aircraft: imported from Spain
- Remaining 40: manufactured in India at **Vadodara FAL (TASL–Airbus)**
- First private-sector **military aircraft production line in India**
- Expected localisation up to ~70–85% in later units

AN-32 Crash: India's Military Transport Aircraft

Why in News?

An **Indian Air Force (IAF) AN-32 transport aircraft** crashed at **Jorhat Air Force Station, Assam**, during a routine sortie on **13 June 2026**, killing five personnel. The cause of the accident was under investigation.

AN-32: Key Facts

- **Type:** Twin-engine **turboprop military transport aircraft**.
- **Origin:** Developed in the **Soviet Union** by Antonov.
- **Operator:** Indian Air Force.
- Designed specifically to perform effectively in **high-altitude airfields and hot/tropical conditions**.
- **Payload:** Around **7.5 tonnes**.
- Can carry approximately **50 passengers** or **42 paratroopers**.
- Used extensively for **logistics, troop movement and supply drops** to remote/high-altitude areas.

Strategic Significance

The AN-32 has been an important **tactical airlift platform**, particularly for supplying remote areas where road connectivity is difficult. Its high-altitude capability makes it relevant to India's **border logistics and military mobility**.

Project Kusha: India's Indigenous Long-Range Air Defence Shield

Why in News?

Defence Minister Rajnath Singh stated that India's indigenous air defence system **Project Kusha** will become a "game changer" for national security. The project reflects India's push for defence self-reliance under the **Atmanirbhar Bharat** initiative.

Key Highlights of Project Kusha

- Developed by Defence Research and Development Organisation (DRDO).
- Indigenous **Long-Range Air Defence System (LR-SAM equivalent)** designed to intercept:
  - Fighter aircraft
  - Stealth jets
  - Drones
  - Cruise missiles
  - Ballistic missiles
- Expected interception range:
  - Around **150 km, 250 km and 350 km** across different missile variants.
- Intended to complement and eventually reduce dependence on imported systems such as:
  - S-400 Triumf
- Likely deployment timeline: late 2020s.

FP-5 Flamingo Missile: Ukraine's Indigenous Long-Range Cruise Missile

Why in News?

Ukraine claimed that its **indigenously developed FP-5 Flamingo cruise missiles** struck a major **Russian defence manufacturing facility** in the **Volgograd region**, demonstrating its growing capability to conduct long-range precision strikes deep inside Russian territory.

About FP-5 Flamingo

- A **long-range, ground-launched cruise missile** developed by the Ukrainian defence company **Fire Point**.
- Entered operational service in **2025**.
- Designed to conduct **deep-strike missions** against high-value military and strategic targets.

Key Features

- **Maximum Range:** Up to **3,000 km**.
- **Warhead:** Up to **1,150 kg** payload.
- **Cruise Speed:** Approximately **850–900 km/h**.
- **Guidance System:** Combines **Inertial Navigation System (INS)** with **GNSS (satellite navigation)** and **anti-jamming technology**.
- Powered by an **AI-25TL turbofan engine** with a solid-fuel booster for launch.
- Capable of **low-altitude terrain-following flight**, enhancing survivability against enemy air defence systems.

Exercise RIMPAC 2026: World's Largest Multinational Maritime Exercise

Why in News?

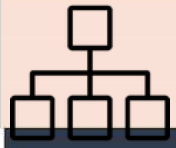
Exercise Rim of the Pacific (RIMPAC) 2026 commenced in and around the **Hawaiian Islands** from **24 June to 31 July 2026**. The **30th edition** of the biennial exercise brings together **31 participating nations**, over **30 warships**, **5 submarines**, around **140–206 aircraft**, and **more than 25,000 personnel**, making it the **world's largest international maritime exercise**.

About Exercise RIMPAC

- **Full Form: Rim of the Pacific (RIMPAC)**.
- **Started: 1971**; conducted **biennially (every two years)**.
- **Hosted by: U.S. Pacific Fleet** under the **U.S. Indo-Pacific Command (USINDOPACOM)**.
- **Venue:** Primarily in and around the **Hawaiian Islands** and the Pacific Ocean.
- **Theme (2026): "Partners: Integrated and Prepared."**

Objectives

- Enhance **interoperability** among allied and partner navies.
- Improve **collective maritime security** and freedom of navigation.
- Conduct advanced training in:
  - Anti-submarine warfare (ASW)
  - Air defence
  - Amphibious operations
  - HumanitarianAssistance and Disaster Relief (HADR)
  - Maritime Interdiction Operations (MIO)
  - Live-fire and**SINKEX (Sinking Exercise)**.



GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION

NFHS-6: India's Emerging "Double Burden" of Malnutrition

Why in News?

The **NFHS-6 (2023–24)** has highlighted a nutrition paradox: India has made progress in reducing **child undernutrition**, while **overweight, obesity and lifestyle-related diseases** are simultaneously increasing. The *Indian Express* editorial describes this as a **"double disease burden"** requiring a rethink of nutrition policy. **Key Findings**

- NFHS-6 covered nearly **6.79 lakh households across 715 districts**.
- **Stunting among under-5 children:** declined from **35.5% to 29.3%**.
- **Severe wasting:** declined significantly.
- More than **80% of infants aged 6–23 months** reportedly do not receive an adequate diet, indicating persistent problems of **dietary diversity and complementary feeding**.
- At the same time, around **30% of Indians are obese**, while about **one in six** reported high blood sugar, according to the editorial's discussion of NFHS-6 findings.

Concept: Double Burden of Malnutrition

It refers to the **coexistence of undernutrition and overweight/obesity**, often within the same population, household or individual lifecycle. Changing diets—from traditional **millets, pulses and fibre-rich foods** towards refined carbohydrates and processed foods—can intensify the problem.

Navachar Mantra: Scaling Grassroots Innovation Across India

Why in News?

The **Ministry of Skill Development and Entrepreneurship (MSDE)** launched **Navachar Mantra** on **3 June 2026** to identify, nurture and scale grassroots innovators and early-stage entrepreneurs, particularly from **Tier-2/Tier-3 towns, aspirational districts and underserved regions**.

Key Features

- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship.
- **Implementing Agency: National Institute for Entrepreneurship and Small Business Development (NIESBUD)**.
- **Technical Knowledge Partner: Foundation for Innovation and Technology Transfer (FITT), IIT Delhi**.
- Priority sectors include:
  - Agritech
  - HealthTech
  - EdTech & skilling
  - Climate & sustainability
  - Rural commerce
  - MSME enablement
- Selected innovators receive **year-long mentorship**, investor interactions, innovation showcases and support for **IPR, regulatory compliance, fundraising, market access and scaling**.
- The initiative seeks to connect innovators with **policymakers, industry leaders, investors and domain experts**.

PMKVY: Bridging the Skill–Employment Demand Gap

Why in News?

The **Public Accounts Committee (PAC)** criticised the implementation of the **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**, citing a mismatch between the skills imparted and actual industry demand. The concerns were based on findings of the **Comptroller and Auditor General (CAG)**.

PMKVY: Key Facts

- **Launched:** 2015.
- **Nodal Ministry: Ministry of Skill Development and Entrepreneurship (MSDE)**.
- It aims to provide **industry-relevant skill training**, certification and recognition of prior learning.
- **PMKVY 1.0:** Established the framework for short-term training and certification.
- **PMKVY 2.0:** Expanded geographical and sectoral coverage and strengthened State-led implementation.
- **PMKVY 3.0:** Introduced greater **bottom-up planning** through State Skill Development Missions and District Skill Committees.
- **PMKVY 4.0:** Emphasises **demand-driven, industry-aligned and outcome-oriented skilling**, including future-skill job roles.

Audit Concerns

The CAG-linked review highlighted inadequate alignment with labour-market demand and concerns over **placement outcomes and implementation irregularities**. The PAC stressed that training numbers alone should not be treated as the measure of success.

PM Vishwakarma–OSOP: Empowering Divyangjan Artisans

Why in News?

The **Ministry of MSME** is using the **One Station One Product (OSOP)** initiative under **PM Vishwakarma** to provide dedicated market outlets for **Divyangjan artisans** at high-footfall railway stations. The initiative aims to improve market access, visibility and sustainable livelihoods.

Key Features

- **PM Vishwakarma:** Flagship scheme supporting traditional artisans and craftspeople through **Samman, Samarthya and Samriddhi**.
- **OSOP:** Provides retail stalls at selected railway stations for showcasing and selling local/traditional products.
- **Divyangjan focus:** Promotes **economic independence and social inclusion** of artisans with disabilities.
- As of June 2026, **28 Divyangjan beneficiaries** had received stalls across **12 States/UTs**.
- Trades include **sculptors, carpenters, cobblers, doll/toy makers, metal smiths, basket makers and tailors**.
- Example: A Divyang metalsmith at **Deoghar** earned ₹19,000 in 15 days through the initiative.

PM-KUSUM: Accelerating Solarisation of Agriculture

Why in News?

The government highlighted the progress of **PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan)**, aimed at reducing farmers' dependence on conventional electricity and diesel by promoting **solar energy in agriculture**.

Key Features

- **Nodal Ministry:** Ministry of New and Renewable Energy (**MNRE**).
- **Launched:** 2019.
- **Objective:** Add **30.8 GW** of solar capacity by 2026.
- **Three Components:**

- **Component A:** Decentralised, grid-connected renewable-energy plants, generally **500 kW–2 MW**.
- **Component B:** Standalone **solar agricultural pumps** up to 7.5 HP.
- **Component C: Solarisation of grid-connected agricultural pumps**, allowing farmers to use solar power and sell surplus electricity to DISCOMs.

- **Financial support:** Central Financial Assistance (CFA) is provided, with states/DISCOMs and beneficiaries contributing the remaining cost.

Why Important?

PM-KUSUM can:

- Reduce **diesel consumption** and agricultural power subsidies.
- Lower farmers' irrigation costs.
- Promote **decentralised renewable energy**.
- Provide an additional income source through **sale of surplus electricity**.
- Reduce agricultural-sector carbon emissions.

PM RAHAT Scheme: Cashless Emergency Healthcare for Road Accident Victims

Why in News?

The **facial identification requirement** for beneficiaries under the **Prime Minister – Road Accident Victims' Hospitalisation and Assured Treatment (PM-RAHAT) Scheme** has been withdrawn to simplify access to benefits. Eligible road accident victims can now receive treatment without mandatory facial authentication, improving ease of implementation.

About PM RAHAT Scheme

- **Full Form: Prime Minister – Road Accident Victims' Hospitalisation and Assured Treatment (PM-RAHAT) Scheme**.
- **Nodal Ministry: Ministry of Road Transport and Highways (MoRTH)**.
- **Legal Basis: Section 162 of the Motor Vehicles Act, 1988**.
- Officially launched on **13 February 2026** to ensure that no road accident victim is denied treatment due to financial constraints.

Key Features

- Provides **cashless treatment up to ₹1.5 lakh per victim**.
- Coverage is available for **7 days from the date of the accident** on **any category of road**.
- **Stabilisation treatment:**
  - Up to **24 hours** for non-life-threatening injuries.
  - Up to **48 hours** for life-threatening injuries (subject to police authentication).
- Integrated with:
  - **Electronic Detailed Accident Report (eDAR)** platform of **MoRTH**.
  - **Transaction Management System (TMS 2.0)** of the **National Health Authority (NHA)**.
- Emergency assistance can be accessed through the **ERSS-112** helpline, and payments are made through the **Motor Vehicle Accident Fund (MVAF)**.

BHARATI Initiative: APEDA's Flagship Programme for Innovation-led Agri-food Exports

Why in News?

The **Agricultural and Processed Food Products Export Development Authority (APEDA)** successfully concluded the **first cohort of the BHARATI Programme**, with **100 startups** completing an export-focused acceleration programme aimed at promoting innovation and enhancing India's agri-food exports.

About BHARATI

- **BHARATI** stands for **Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Innovation**.
- It is a **flagship initiative of APEDA** under the **Ministry of Commerce & Industry**.
- Launched in **September 2025** to build an innovation-driven agri-export ecosystem and support APEDA's target of **USD 50 billion in scheduled product exports by 2030**.

Programme Highlights

- **100 startups** selected from **700+ applications** across **22 States and 2 UTs**.
- Included **68 agri-food startups**, **26 export-tech startups**, and **6 SPS, traceability & quality compliance innovators**.
- Featured a **120-hour acceleration programme** covering export readiness, market access, branding, packaging, regulatory compliance and investor connect.
- Top startups showcased products at **Gulfood 2026 (Dubai)**, facilitating over **100 B2B meetings** with global buyers.

MISCELLANEOUS

MY Bharat's Guinness Record: Digital Youth Participation & Viksit Bharat

Why in News?

Mera Yuva Bharat (MY Bharat), the flagship youth-engagement platform under the **Department of Youth Affairs**, received a **Guinness World Records** title for the **"Most Users to Take an Online Quiz in One Week."** A total of **3,90,812 participants** successfully completed the full-length **Viksit Bharat Young Leaders' Dialogue (VBYLD) Quiz** during the official assessment period.

Key Facts

- **Platform:** MY Bharat; launched in **October 2023**.
- **Ministry:** Ministry of Youth Affairs & Sports.
- The VBYLD Quiz witnessed participation from **50.42 lakh+ youth** across **all 28 States and 8 UTs**.
- During the Guinness assessment period (**25–31 October 2025**), over **8.39 lakh quiz participations** were recorded.
- After **digital forensic audits and validation**, Guinness certified **3,90,812 eligible participants**.
- MY Bharat had recorded **2.19 crore+ registrations** within three years of launch.

New GI-Tagged Tribal Crops of Madhya Pradesh

Why in News?

Four traditional tribal crops of **Madhya Pradesh** have been granted **Geographical Indication (GI) Tags** by the **GI Registry, Chennai**. The recognition aims to protect indigenous crop varieties, preserve traditional farming practices, and improve market access and income for tribal farmers, particularly those belonging to the **Baiga** and **Gond** communities.

New GI-Tagged Crops

- **Sitahi Kutki** – Traditional **minor millet** from **Dindori** district.
- **Nagdaman Kutki** – Indigenous **minor millet** cultivated in tribal areas of **Dindori**.
- **Baigani Arhar** – A unique **purple pigeon pea** traditionally grown by the **Baiga tribe**.
- **Mahakoshal Chhatriya Dhan (Chhatriya Paddy)** – Traditional paddy variety native to **Jabalpur** and **Katni** regions.

Significance

- Protects the crops' **regional identity** under the **Geographical Indications of Goods (Registration and Protection) Act, 1999**.
- Promotes **biodiversity conservation**, climate-resilient agriculture, and nutritional security through traditional **millet** varieties.
- Enhances export potential, branding, and premium pricing for tribal farmers while preserving indigenous agricultural knowledge.

MAINS

PAPER 1

Vikas Bhi, Virasat Bhi: India's Heritage-Led Development Journey

Introduction

Since 2014, under "Vikas Bhi, Virasat Bhi," India has strengthened heritage conservation through digitisation, tourism initiatives, UNESCO recognitions (31 to 44 World Heritage Sites), safeguarding of intangible heritage, and repatriation of antiquities, enhancing both cultural pride and global visibility.

Main Body

Heritage Conservation and Monument Preservation

Archaeological Survey of India (ASI):

- India has 3,686 centrally protected monuments (April 2026).
- ₹374 crore allocated for conservation and maintenance (2024-25).

National Mission on Monuments and Antiquities (NMMA):

- Documented 1.84 lakh monuments (built heritage and sites).
- Documented 17.20 lakh antiquities across India (March 2026).

Adopt a Heritage 2.0 (Revamped September 2023):

- Collaboration with private companies, PSUs, NGOs, trusts for visitor amenities at protected monuments.
- 30 MoUs signed (March 2026).

- Adopted monuments recorded 13.59 million visitors (FY 2024-25).

Pilgrimage Rejuvenation and Heritage Tourism

PRASHAD Scheme (Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive) – January 2015:

- 54 projects sanctioned across 28 States/UTs; total cost ₹1,726.74 crore.
- 32 projects physically completed (February 2026).
- IIM Rohtak Report (2021): increased visitor satisfaction, ease of travel, and positive visitor user experience.

Swadesh Darshan 1.0 (2014-15):

- 76 projects sanctioned; investment ₹5,290.33 crore.
- 75 projects physically completed (March 2026).

Swadesh Darshan 2.0 (Destination-centric approach):

- 53 projects sanctioned; investment ₹2,208.31 crore.

Challenge Based Destination Development (CBDD) – March 2024:

- 38 projects sanctioned; investment ₹697.94 crore.

HRIDAY Scheme (Heritage City Development and Augmentation Yojana) – January 2015:

- Implemented in 12 cities (Ajmer, Amaravati, Badami, Amritsar, Gaya, Varanasi, Warangal, Puri, Kancheepuram, Mathura, Velankanni).
- Mission period ended 31 March 2019.

Major Heritage Sites Redeveloped

Kashi Vishwanath Corridor (December 2021):

- ₹355 crore project; 5.5 acres; connects temple with Ganga River via four-lane pathway.
- Over 25.28 crore devotees in 3.5 years.
- Estimated economic impact: ₹1.25 lakh crore.
- Average visitor spending: ₹4,000–₹5,000 per person.
- 70% visitors from South India; 15% from other states.

Somnath Temple:

- Redevelopment of temple precincts; 1.5 km promenade.
- Annual devotees: 92–97 lakh; 13.77 lakh for Bilva Pooja; 3.56 lakh during Maha Shivratri 2025.
- Light and Sound Show: over 10 lakh visitors in 3 years.
- Sustainability: 30 lakh litres wastewater treated monthly; Miyawaki forest absorbing ~93,000 kg CO_2 annually; 4,700 paver blocks monthly from plastic waste.

Kedarnath:

- 12.9 km Sonprayag–Kedarnath Ropeway approved under Parvatmala Pariyojana; cost ₹4,081.28 crore; capacity 1,800 passengers per hour per direction.
- Reduces travel time from 8-9 hours to 36 minutes.
- Around 20 lakh pilgrims annually.

Ram Mandir, Ayodhya (Consecrated January 2024):

- Tourism revenue: ₹8,000–₹12,500 crore annually; estimated ₹18,000 crore annually by 2028.
- Visitor numbers: 57.5 million (2023) → over 160 million (2024) → 230 million (first half 2025).
- State investment: over ₹5,000 crore; Ayodhya contributing nearly 25% of UP's projected ₹70,000 crore tourism economy by 2028.

Mahakal Lok Project, Ujjain:

- Cultural corridor around temple; cost around ₹850 crore.

Maa Kamakhya Divya Lok Pariyojana, Assam:

- Modernising infrastructure at Kamakhya temple; enhancing tourism in Northeast.

Repatriation of Antiquities and Sacred Relics

Repatriation Achievements (Since 2014):

- Total 653 antiquities retrieved (as of May 2026).
- 613 artefacts brought back in last five years (major acceleration).

Piprahwa Relics of Lord Buddha (2025):

- Returned after 127 years.

Goddess Annapurna Idol (2021):

- Returned from Canada after 108 years.

Rama, Sita, Lakshmana Bronze Idols (2020):

- Returned from UK.

Global Exposition of Sacred Buddha Relics:

- Vietnam (2025): over 15 million devotees.
- Kalmykia, Russia (2025): over 90,000 visitors.
- Bhutan (2025): Global Peace Prayer Festival.
- Sri Lanka (2026): Gangaramaya Temple, Colombo.

Museums and Cultural Infrastructure

Museum Grant Scheme:

- Financial assistance for new museums and modernising existing ones.
- Emphasis on immersive museum formats, virtual and theme-based museums, Virtual Experiential Museums (VEM).

Archaeological Experiential Museum, Vadnagar (January 2025):

- Only museum in the world offering immersive archaeological experience.
- Cost ₹298 crore; area 12,500 sq. metres.
- Showcases over 5,000 artifacts; organic remains (food grains, DNA samples, skeletal remains).
- 4,000 sq. metre open excavation site with experiential walkway (depths 16-18 metres).

Yuge Yugeen Bharat National Museum:

- Under development in North and South Blocks (Central Vista Redevelopment).
- Area 1,54,000 sq. metres; presents India's civilisational journey spanning thousands of years.

National Museum of Indian Cinema (NMIC) (2019):

- Cost ₹140.61 crore; located at Films Division campus, Mumbai (including restored Gulshan Mahal).
- Over 17,000 visitors in May 2026.

UNESCO and Global Heritage Recognition

World Heritage Sites:

- Increased from 31 to 44 (12 new sites added between 2014 and early 2026).
- India hosted 46th UNESCO World Heritage Committee Session in New Delhi (2024).

Intangible Cultural Heritage:

- 15 UNESCO Intangible Cultural Heritage elements (including Yoga, Kumbh Mela, Deepawali, Durga Puja, Garba).

Vedic Heritage:

- Tradition of Vedic Chanting recognised as UNESCO Intangible Cultural Heritage.
- Rigveda manuscripts included in UNESCO's Memory of the World Register.

Digitisation and Knowledge Preservation

Gyan Bharatam Mission (2025):

- Flagship initiative for preserving, digitising, and disseminating India's manuscript heritage.
- Over 8 lakh digitised manuscripts; 1.29 lakh accessible on National Digital Repository.
- Outlay ₹482.85 crore (2024–31).

- AI-enabled tools: Handwritten Text Recognition (HTR), Optical Character Recognition (OCR), metadata extraction.

National Manuscript Survey (March 2026):

- For identifying, documenting, and creating comprehensive national database of manuscripts.

Vedic Heritage Portal (March 2023):

- National digital repository of Vedic heritage (Rigveda, Yajurveda, Samaveda, Atharvaveda).
- Over 500 hours of recordings; digital learning modules; recitation archives.

National Film Heritage Mission (2015):

- Preserve, digitise, and restore India's cinematic heritage.
- 1,469 titles (4.3 lakh minutes) digitised (December 2025).

AI and Technology for Cultural Preservation

BHASHINI (2022):

- Supports 22 languages (voice) and 36 languages (text); 350+ AI models; over 4 billion+ language transactions.
- Enabled real-time translation at Kashi Tamil Sangamam and Maha Kumbh 2025.

BharatGen:

- Developing AI models for 22 Scheduled Languages.

Adi-Vaani:

- AI-based platform for preserving and revitalising tribal languages (Santali, Bhili, Mundari, Gondi).
- Real-time translation, speech-to-text, language learning, digitisation of folklore.

Conclusion

India's heritage revival is reflected in the rise of UNESCO World Heritage Sites from 31 to 44, major pilgrim inflows at Kashi, Ayodhya and Somnath, heritage schemes like PRASHAD, conservation of 3,686 monuments by ASI, repatriation of 653 antiquities, large-scale manuscript digitisation through Gyan Bharatam, and promotion of linguistic and Vedic heritage through BHASHINI and the Vedic Heritage Portal.

India's Low-Fertility Future: Challenges of Ageing Before Prosperity

Introduction

India's TFR has fallen to 1.9, below the replacement level, signalling a shift to low fertility. However, uneven fertility patterns and rapid ageing—projected to reach 347 million elderly by 2050—pose major challenges. Strengthening pensions, healthcare, and social security is essential to sustain this demographic transition.

India's Fertility Decline: A Divergent Demographic Landscape

National Trends and Replacement Level

- **TFR (2024-25):** 1.9 (below replacement level of 2.1)
- **Global Comparison:** Below global average of 2.2
- **Rural-Urban Divide:** Rural fertility around replacement (2.1); urban fertility at 1.5

Geographic Disparities

- **Ultra-Low Fertility States:** Delhi (1.2), Kerala (1.3), Tamil Nadu (1.3), West Bengal (1.3)
- **Below Global Peers:** Lower than US (1.6), Finland (1.4), and Japan (1.3)
- **High Fertility States:** Bihar (2.9), Uttar Pradesh (2.6), Madhya Pradesh (2.4), Rajasthan (2.3)

Demographic Implications

- **Two Indias:** Some states ageing rapidly; others with large cohorts entering labour force
- **Policy Challenge:** Create productive opportunities for young in poorer states while strengthening systems for ageing populations

The Ageing Challenge: Institutional and Fiscal Weakness

Ageing Population Projections

- **Current Elderly (60+):** 150 million (2026)

- **Projected (2050):** 347 million (nearly one-fifth of population)
- **Dependency Burden:** 70% of elderly depend on others; 78% have no pension cover

Fiscal and Institutional Constraints

- **Per-Capita Income:** ~$2,800 (much lower than Western Europe/Japan at time of ageing)
- **Narrow Tax Base:** Net direct taxpayers: only ~6% of total population
- **Stretched State Finances:** States tasked with social-sector response are already fiscally strained
- **Weak Formal Employment:** Most workers in informal/semi-formal work; old-age income security outside formal contracts

Labour Market Fragility

- **Contribution-Based Pensions:** Require predictable earnings, formal employment, regular savings over decades
- **Assumption Fails:** Holds true for only a minority of Indian workforce
- **Existing Safety Nets:** Atal Pension Yojana requires sustained contributions (difficult for informal workers); National Social Assistance Programme pension: ₹200/month (60-79 years), ₹500/month (80+)

Erosion of Traditional Support Systems

The Hidden Welfare State

- **Joint Family System:** Absorbed old-age costs through co-resident children and unpaid female care
- **Weakening Arrangements:** Under pressure from urbanisation, migration, nuclear households, women's educational and work aspirations

Consequences of Migration

- **Studies on Left-Behind Elderly:** Migration improves monetary resources but worsens loneliness and health vulnerability
- **Care Deficit:** Unpaid care work not replaced by institutional support

Healthcare Demand Shift

- **Disease Profile Change:** Pressure from long-term management of hypertension, diabetes, dementia, disability, and palliative dependence
- **Institutional Gaps:** Need to embed geriatric care into nursing practice, district health planning, and primary care

Federal Dimension: Migration and Welfare Portability

Interstate Migration as a Coping Mechanism

- **Faster-Ageing States:** Will increasingly need workers from younger states
- **Younger States' Responsibility:** Must invest in education, health, and skills to ensure workers don't move into low-wage informality

Welfare Portability

- **Current Problem:** Welfare systems tied narrowly to domicile
- **Need for National Labour Market:** Workers' entitlements must move across state borders
- **Solution:** Portable welfare benefits as foundation of an ageing economy

Treating Migrants as Citizens

- **Challenge:** Older, richer, urbanised states must treat migrants as citizens who sustain their economies
- **Entitlements:** Must include access to healthcare, pensions, and social security regardless of domicile

Way Forward: Building Systems for an Ageing India

Income Security and Pensions

- **Minimum Pension Floor:** Inflation-indexed universal pension as basic layer of public risk-pooling

- **Strengthen Contributory Pensions:** Expand coverage, simplify for informal workers
- **Financial Inclusion:** Link pension payments to digital infrastructure (e.g., Aadhaar, UPI)
- **Sustained Contributions:** Create flexible contribution mechanisms for volatile incomes

Healthcare System Transformation

- **Geriatric Care Integration:** Embed into primary health centres, district hospitals, and nursing education
- **Chronic Disease Management:** Strengthen screening and management of hypertension, diabetes, dementia
- **Palliative Care:** Expand coverage for elderly with disabilities and terminal illnesses
- **Mission-Mode Action:** Sustained public investment similar to fertility, institutional deliveries, child survival

Federal Cooperation and Welfare Portability

- **Interstate Migration Framework:** Treat migrants as citizens, not temporary labour
- **Portable Entitlements:** Pensions, healthcare, and social security must move with workers
- **State Collaboration:** Create mechanisms for cost-sharing between origin and destination states
- **National Labour Market:** Dismantle domicile-based barriers to welfare access

Investment in Younger States

- **Education and Health:** Aggressive investment to build human capital
- **Skill Development:** Ensure workers are ready for productive employment
- **Employment Generation:** Create opportunities to absorb young cohorts
- **Avoid Low-Wage Informality:** Skilling must lead to quality jobs, not just migration into informality

Social and Institutional Reforms

- **Community-Based Care:** Strengthen support systems for left-behind elderly
- **Gender and Care:** Recognise and support unpaid care work
- **Public-Private Partnerships:** Engage private sector in elderly care and pension products
- **Awareness Campaigns:** Educate on financial planning for retirement and old age

Conclusion

India's shift to low fertility brings the challenge of rapidageing before achieving full economic and social development. With the elderly population set to morethan double by 2050, India must strengthen pensions, healthcare, and social security while creatingopportunities for its young workforce. A sustainable low-fertility future will depend on timely institutionaland welfare reforms.

PAPER2

International Day of Yoga 2026: From Soft Power to Preventive Healthcare

The**International Day of Yoga (IDY) 2026**, themed **"Yoga for Healthy Ageing"** (स्वस्थ आयु के लिए योग), reflects the growing recognition of yoga as a tool for preventive healthcare, healthy lifestyles, and active ageing. Over the last decade, IDY has evolved from a UN-designated observance into a global wellness movement, strengthening India's cultural diplomacy while promoting holistic health worldwide.

Why is IDY 2026 Significant?

Promoting Healthy Ageing

- Focuses on improving mobility, cognitive health, mental well-being, and functional independence among ageing populations.

- Addresses rising challenges of:
  - Non-Communicable Diseases (NCDs)
  - Lifestyle disorders
  - Mental health concerns.

Strengthening Preventive Healthcare

- Aligns with the shift from curative to preventive healthcare.
- Supports the vision of:
  - Ayushman Bharat
  - Fit India Movement
  - National Health Policy's wellness-based approach.

India's Soft Power Success

- UN adopted June 21 as IDY in 2014 with support from 175 countries.
- Yoga was inscribed on UNESCO's Intangible Cultural Heritage List in 2016.
- Today IDY is celebrated in over 190 countries.

Key Initiatives under IDY 2026

Yoga 365

- Encourages yoga as a daily practice rather than a one-day event.
- Promotes integration into schools, workplaces, homes, and communities.

Targeted Yoga Protocols

- Introduction of **10 Yoga Protocols** for:
  - Diabetes
  - Hypertension
  - Asthma
  - Mental health issues
  - Senior citizens, women, children, and de-addiction programmes.

Technology-Driven Outreach

- **Yoga Sangam Portal** for registrations and participation.
- **Yoga Park Portal** for mapping dedicated yoga spaces.

Innovative Initiatives

- "Yoga for Air Travel" protocol for long-distance travellers.
- Nationwide awareness campaigns and MyGov competitions.

Challenges

- Scientific validation and standardisation of therapeutic claims.
- Limited awareness in rural and underserved regions.
- Need for trained yoga professionals.
- Risk of commercialization overshadowing traditional philosophy.

Way Forward

- Integrate yoga into primary healthcare and school curricula.
- Expand evidence-based research through AYUSH institutions.
- Promote workplace and community wellness programmes.
- Strengthen global collaborations through WHO and international yoga centres.
- Focus on inclusivity for elderly, women, and vulnerable groups.

Conclusion

The evolution of International Day of Yoga from an annual celebration to the **Yoga 365 movement** signifies India's effort to mainstream preventive healthcare and holistic well-being. By combining cultural heritage, public health, and global outreach, yoga has emerged as an important instrument for achieving healthier societies and strengthening India's soft-power influence in the 21st century.

On Cough Syrups: A Long Overdue Prescription for Patient Safety

Introduction

The Centre's decision to remove cough syrups from Schedule K is a necessary step to address longstanding regulatory gaps. Triggered by repeated child deaths linked to contaminated syrups in India and abroad, the move mandates prescriptions for sale. However, its success depends on strict enforcement, transparency, and stronger rural healthcare systems.

Main Body

The Regulatory Failure: Schedule K Exemption

What Schedule K Did:

- Provided exemptions for certain medicines, enabling their sale through channels subject to weaker oversight than licensed pharmacies.
- Cough syrups (under Entry number 13 of Schedule K) could be sold without a prescription.

The Anomaly:

- Cough syrups were recognised as medicines but benefitted from exemptions that fostered a culture of self-medication.
- Poor prescription discipline and fragmented accountability across the supply chain.

The Consequence:

- Vulnerable communities, especially in villages with population less than 1,000, were most affected.
- In MP, the cough syrup Coldrif was found to contain diethylene glycol far in excess of permissible limits.

The Tragedies: Domestic and International

Domestic Incidents:

- October 2025: over 20 children died across Madhya Pradesh and Rajasthan.
- December 2019 – January 2020: similar casualties in Jammu.

International Incidents:

- India-made cough syrups tied to deaths of more than 140 children in Africa and Central Asia since 2022.

The Pattern:

- Contamination with diethylene glycol (toxic industrial solvent).
- Lack of quality control and inspection.
- Weak enforcement of drug regulations.

The New Rule: Prescription Mandate

What Has Changed:

- Cough syrups removed from Schedule K.
- All syrup-based medicines, including cough syrups containing opioids like codeine, can no longer be purchased over the counter.
- Now require a prescription from a registered medical practitioner.

The Intended Effect:

- Reduce self-medication.
- Improve prescription discipline.
- Ensure accountability in the supply chain.

Why the Prescription Mandate Alone Is Insufficient

Centre-State Coordination Deficit:

- Drug regulation suffers from fragmentation between central and state authorities.

- Loopholes in quality control and inspection persist.

Regulatory Capacity:

- Questions remain about the capacity of regulators to monitor a rapidly expanding pharma sector.

Rural Healthcare Access:

- Limited access to healthcare facilities in rural India risks pushing people toward unlicensed vendors.
- Villages with population less than 1,000 lack nearby pharmacies and doctors.

Adverse Event Reporting:

- Lack of transparency in reporting adverse drug events.
- No systematic mechanism for tracking and investigating complaints.

What Must Be Done: Beyond the Prescription Mandate

A. Rigorous Enforcement:

- Strengthen quality control and inspection mechanisms.
- Regular, unannounced inspections of manufacturing units.
- Penalties for violations (fines, suspension of licences, prosecution).

B. Greater Transparency in Reporting Adverse Events:

- Mandatory reporting of adverse drug events by manufacturers and healthcare providers.
- Publicly accessible database of reported adverse events.
- Timely investigation and corrective action.

C. Investment in Rural Healthcare:

- Expand access to healthcare facilities (primary health centres, community health centres).
- Ensure availability of qualified doctors and pharmacists in rural areas.
- Awareness programmes on the dangers of self-medication.

D. Regulatory Culture Shift:

- Prioritise patient safety over crisis management.
- Proactive regulation, not reactive response after tragedies.
- Build a culture of compliance, not evasion.

Conclusion

The removal of cough syrups from Schedule K addresses a long-standing regulatory lapse exposed by repeated child deaths in India and abroad. While mandatory prescriptions can curb misuse, effective drug safety requires stronger Centre–State coordination, stricter quality control, transparent adverse-event reporting, and improved rural healthcare access. Patient safety must remain the core of India's regulatory framework.

The Digital India: 11 Years of Transformation

Introduction

The Digital India Programme has transformed governance, financial inclusion, and service delivery, making India a global leader in Digital Public Infrastructure. With widespread internet access, digital payments, and Direct Benefit Transfers, it has emerged as a key driver of inclusive growth, innovation, and digital empowerment.

The Nine Pillars of Digital India

Broadband Highways and Connectivity

- **BharatNet:** 2.15 lakh+ Gram Panchayats connected (97%); 7 lakh km optical fibre laid
- **Broadband Subscribers:** 106.58 crore (March 2026)
- **Internet Users:** Over 109 crore with internet access
- **Mobile Connectivity:** 85.5% households own at least one smartphone

Public Internet Access and e-Governance

- **Common Service Centres:** 6.5 lakh+ delivering digital services in rural areas
- **Post Offices:** 1.6 lakh providing banking and citizen services
- **DigiLocker:** 70.69 crore users; 850+ crore documents issued

- **National Single Sign-On:** Seamless access to certificates, applications, payments

e-Kranti and Information for All

- **e-Courts:** 660 crore+ pages digitised; 1.07 crore cases filed online
- **MyGov:** Citizen engagement platform for participatory governance
- **Open Government Data:** Transparent access to government information

Electronics Manufacturing and IT for Jobs

- **Electronics Production:** ₹1.9 lakh crore (FY15) to ₹12 lakh crore (March 2026)
- **Mobile Manufacturing:** India is world's second-largest manufacturer
- **IT Industry Revenue:** USD 283 billion (FY25)
- **Global Capability Centres:** 2,100+ employing 26 lakh professionals

Flagship Initiatives Driving Transformation

JAM Trinity (Jan Dhan-Aadhaar-Mobile)

- **Jan Dhan Accounts:** 14.72 crore (2015) to 57.78 crore (Feb 2026); deposits ₹15,670 crore to ₹2.94 lakh crore
- **Aadhaar:** 0.42 crore (2010-11) to 144 crore enrolments; 2,393 crore e-KYC transactions
- **DBT Impact:** ₹51 lakh crore transferred directly to 176 crore citizens; 98% PDS food grains Aadhaar-authenticated
- **Global Recognition:** Aadhaar model studied by Egypt, Nigeria, Indonesia, Papua New Guinea

Unified Payments Interface (UPI)

- **Transactions:** 2 crore (FY17) to 24,162 crore (FY25-26)
- **Global Footprint:** Live in 9 countries (UAE, Singapore, France, Mauritius, Sri Lanka, Cambodia)
- **BHIM App:** Government-backed UPI app by NPCI

Digital Platforms for Public Health

- **eSanjeevani:** 48 crore+ telemedicine consultations; 2.3 lakh healthcare providers
- **CoWIN:** Managed 220 crore+ vaccine doses; global model for digital health
- **ORS/eHospital:** 1.37 crore+ online appointments
- **Tele MANAS:** 40.42 lakh calls; 53 cells, 23 mentoring institutes
- **MANAS:** 2.16 lakh drug-related inputs; 16,200 actionable intelligence inputs

Empowering Commerce and Markets

- **GeM:** ₹18.4 lakh crore cumulative GMV; 11 lakh+ MSMEs enabled
- **ONDC:** 20 crore buyers, 5 lakh sellers, 1,000 cities, 90 lakh monthly transactions
- **eSaras & Indiahandmade:** Digital markets for SHGs, weavers, artisans; integrated with ONDC

Technology-Enabled Public Services

- **UMANG:** 166 services (2017) to 2,572 services; 796.69 crore transactions
- **GSTN:** ₹2.43 lakh crore gross collections (April 2026); modernised indirect taxation
- **POSHAN Tracker:** 13.35 lakh Anganwadi Centres; 8.9 crore beneficiaries
- **PM GatiShakti:** 352 projects worth ₹16.10 lakh crore evaluated
- **MY Bharat:** 2.21 crore youth registered; 1.52 lakh volunteer opportunities; Guinness World Record for online quiz

Agriculture and Education

- **AgriStack:** 9.20 crore Farmer IDs generated; e-NAM, Kisan e-Mitra AI chatbot
- **DIKSHA:** 2 crore+ registered users; QR-coded textbooks, sign language resources
- **SWAYAM:** 4,400+ courses; 48 DTH channels (SWAYAM Prabha)
- **APAAR:** 33.74 crore unique student IDs for academic records

Digital Workforce Development

- **PMGDISHA:** 6.39 crore rural citizens trained in digital literacy
- **FutureSkills PRIME:** 26 lakh+ registrations; AI, cloud, cybersecurity training
- **Skill India Digital Hub:** 32 lakh+ candidates enrolled; 1,000+ courses in 23 languages
- **IndiaAI Mission:** AI skilling, infrastructure, and responsible AI adoption

Key Milestones and Impact

Digital Economy Growth

- **GDP Contribution:** 12-14% currently; projected to reach 20% in next decade
- **Global Digital Payments:** UPI handles ~49% of worldwide transaction volume
- **Electronics Manufacturing:** ₹12 lakh crore production; world's second-largest mobile manufacturer

Financial Inclusion

- **Bank Accounts:** 57.78 crore Jan Dhan accounts
- **DBT:** ₹51 lakh crore transferred; 176 crore citizens reached
- **Digital Transactions:** UPI, BHIM, and other platforms driving cashless economy

Citizen-Centric Services

- **DigiLocker:** 850 crore+ documents; paperless verification
- **UMANG:** 2,572 services; 796 crore transactions
- **eSanjeevani:** 48 crore teleconsultations; healthcare access in remote areas

Global Leadership

- **DPI Cooperation:** MoUs with 24 countries for India Stack
- **UPI Global:** Live in 9 countries
- **G20 Presidency:** Launched India Stack Global and Global DPI Repository
- **AI Summit:** First Global South country to host IndiaAI Impact Summit (Feb 2026); 100+ countries participated

Challenges

- **Digital Divide:** Connectivity gaps remain in remote and tribal areas
- **Data Privacy:** Concerns around Aadhaar, DigiLocker, and data security
- **Cybersecurity:** Rising threats; need for robust protection frameworks
- **Skill Gap:** Digital literacy needs continuous upgrading
- **Regulatory Framework:** Rapid technological changes require adaptive laws
- **Infrastructure:** BharatNet targets not fully achieved (97% GP connected)

Way Forward

Strengthening Infrastructure

- Complete BharatNet target (remaining 3% GPs)
- Expand 5G and 6G readiness
- Strengthen cybersecurity and data protection frameworks

Deepening Inclusion

- Enhance digital literacy for elderly, rural, and marginalised communities
- Expand PMGDISHA and similar programmes
- Develop multilingual and accessible digital platforms

Fostering Innovation

- Scale IndiaAI Mission and quantum computing initiatives
- Promote DPI-as-a-Service for global export
- Strengthen startup and GCC ecosystem

Global Leadership

- Expand UPI and India Stack to more countries

- Lead global conversations on DPI governance and data sovereignty
- Share digital public goods through Global DPI Repository

Governance and Regulation

- Enact comprehensive data protection and privacy laws
- Create adaptive regulatory frameworks for emerging technologies
- Strengthen grievance redressal and digital rights

Conclusion

The Digital India Programme has transformed governance, service delivery, and financial inclusion by building a robust Digital Public Infrastructure ecosystem. As India moves towards Viksit Bharat 2047, the focus must shift to bridging digital divides, strengthening cybersecurity, promoting innovation, and ensuring a secure, inclusive, and citizen-centric digital future.

Five Decades After the Emergency: Unheeded Warnings and Democratic Erosion

Introduction

Fifty years after the 1975 Emergency, concerns persist about democratic backsliding through subtler means such as media self-censorship, pressure on dissent, weakening institutional autonomy, and expansive use of national security narratives. While today's context differs from the Emergency, the episode remains a reminder of the need to safeguard democratic freedoms and accountability.

The Emergency (1975-77): A Historical Benchmark

Key Features

- **Prior Censorship:** Complete control over media content
- **Indefinite Detention:** Dissidents imprisoned without trial
- **Suspension of Habeas Corpus:** Sacred constitutional right temporarily revoked
- **Constitutional Subversion:** Two-thirds majority used to push through authoritarian measures
- **Sycophancy:** "Indira is India and India is Indira" – personality cult

Lessons Ignored

- Suppression of opposing viewpoints cannot succeed in a diverse, argumentative society
- Brute majorities can be misused to subvert democratic institutions
- Emergency excesses were meant to be a warning for future generations

Contemporary Challenges to Democracy

Media Freedom Under Strain

- **Self-Censorship:** Journalists soft-peddle uncomfortable truths to avoid offending power
- **Government Narratives:** Channels devote excessive time to ruling party spokespersons
- **Economic Pressure:** Fear of losing access to news sources essential for livelihoods
- **Harassment:** NewsClick portal shutdown, editor arrested under anti-terror laws (Delhi HC intervention)
- **Trump's Observation:** "Your reporters are much nicer than mine" – unwitting confirmation of reluctance to ask tough questions

Evolution of Censorship

- **Yesterday's Censor → Today's Media Adviser:** Professional communication experts with little connect to free marketplace of ideas
- **Narrative Management:** Treated as marketing/PR exercise, not democratic discourse
- **Social Media Trolling:** Toxic harassment of contrary viewpoints
- **Investigative Agencies:** Used to harass media dissenters and political opponents
- **National Security Bogey:** All-encompassing justification for violating citizens' rights; IT rules amended to access "unlawful" internet chatter

Erosion of Institutional Independence

- **Election Commission:** Exclusion of over 90 lakh names from West Bengal SIR rolls – question mark over electoral integrity
- **Constitutional Bodies:** Falling standards of independence and probity
- **Internal Party Democracy:** BJP parliamentary board rarely meets; merely rubber stamps decisions; surprise elevation of inexperienced persons as CMs without consultation
- **Horse-Trading:** TMC and Shiv Sena (UBT) MPs jumping ship overnight – reinforces belief that most politicians have a price

Executive Accountability Deficit

- **Radio Silence:** Government's silence over NEET and CBSE exam mess-ups affecting lakhs of students
- **Perception:** Responding to public complaints viewed as weakness
- **Lack of Internal Debate:** Ruling party lacks inner-party democracy
- **Two-Thirds Majority Pursuit:** Ethical majority through ballot box vs. post-election poaching of opposition legislators

Way Forward: Strengthening Democratic Resilience

Restoring Media Independence

- **Protect Press Freedom:** Ensure no harassment of journalists for reporting truth
- **Encourage Investigative Journalism:** Shift focus from studio debates to ground reporting
- **Counter Self-Censorship:** Create safe spaces for independent journalism
- **Accountability for Agencies:** Prevent misuse of investigative machinery against media

Strengthening Institutions

- **Election Commission:** Restore credibility; ensure transparent and inclusive electoral rolls
- **Constitutional Bodies:** Appointments must be transparent and non-partisan
- **Internal Party Democracy:** Encourage debate and consultation in political parties
- **Legislative Accountability:** Strengthen parliamentary oversight

Reforming Governance

- **Responsiveness:** Government must be directly answerable to people
- **Transparency:** End "radio silence" on public grievances
- **Ethical Majority:** Secure majority through ballot box, not post-election poaching
- **Rule of Law:** Investigative agencies must act independently, not as political tools

Learning from the Past

- **Remember Emergency Lessons:** Excessive authoritarianism backfires
- **Value Democracy:** India's diversity requires debate, not suppression
- **Media Advisers:** Learn from past media advisers (Sharada Prasad, B.G. Verghese, Arun Jaitley) who befriended journalists through access, tolerance, polite exchange
- **Respect Dissent:** Suppressing opposing viewpoints is both unethical and impractical

Conclusion

Five decades after the Emergency, concerns remain about democratic backsliding through subtler means such as curbs on dissent, institutional weakening, and reduced accountability. The lesson of 1975 is clear: safeguarding democratic institutions, media freedom, and constitutional values is essential for preserving the republic.

India's Ban on Irrational Fixed-Dose Combinations: Balancing Evidence, Safety, and Enforcement

Introduction

The ban on 16 irrational Fixed Dose Combination (FDC) drugs underscores the government's focus on patient safety and evidence-based medicine. While FDCs can improve treatment compliance, unsafe combinations pose health risks and contribute to antimicrobial resistance. Effective enforcement is essential to ensure such drugs are removed from the market and public health is protected.

Understanding Fixed-Dose Combinations (FDCs)

Definition and Rationale

- **Definition:** FDCs contain two or more active pharmaceutical ingredients in a fixed ratio in a single dosage form.
- **Rational Use:** Provide therapeutic benefits when drugs act by different mechanisms, have compatible pharmacokinetics, and enhanced efficacy.
- **Advantages:** Reduce pill burden, improve patient compliance, simplify dosage schedules, and can be cost-effective.
- **Applications:** Essential in chronic conditions like tuberculosis (TB), HIV/AIDS, malaria, diabetes, and cardiovascular diseases.

Risks of Irrational FDCs

- **Pharmacodynamic Mismatch:** Additive or antagonistic effects can reduce efficacy or enhance side effects.
- **Pharmacokinetic Disparity:** Different peak efficacy times for individual components reduce overall effectiveness.
- **Dose Inflexibility:** Patients cannot titrate individual drug doses; may be exposed to unnecessary drugs.
- **Adverse Reactions:** Difficulty identifying which ingredient causes an allergy or side effect.
- **Antimicrobial Resistance:** Irrational antibiotic FDCs contribute to AMR, a major public health crisis.

The Ban on 16 FDCs: Context and Rationale

Regulatory Background

- **Supreme Court Direction:** Ordered a comprehensive review of FDCs available in the Indian market.
- **Expert Committee Evaluation:** DTAB-constituted panel examined safety, efficacy, and therapeutic value.
- **Conclusion:** 16 combinations lacked adequate therapeutic justification and posed potential health risks.
- **Legal Basis:** Ban imposed under Section 26A of the Drugs and Cosmetics Act, 1940, which empowers the central government to prohibit drugs in public interest.

Categories of Banned Drugs

- **Dermatological Products:** Several combinations containing Aloe Vera with vitamins, oils, and herbal ingredients (10 out of 16 banned).
- **Analgesics and Antispasmodics:** Combinations like Acetyl Salicylic Acid + Ethoheptazine, Dicyclomine + Paracetamol + Clidinium Bromide.
- **Antibiotic-Based Formulations:** Amoxicillin + Serratiopeptidase, Amoxicillin + Serratiopeptidase + Lactobacillus Sporogenes, Cefadroxyl + Probenecid.
- **Other Formulations:** Gliclazide + Chromium Picolinate, Paracetamol + Lignocaine.

Precedents of FDC Bans in India

- **2016 Ban:** Government banned over 330 FDC drugs, deeming them irrational with immediate effect.
- **2018-2019 Bans:** 405 FDCs banned, including triple-drug combinations.
- **2024 Ban:** 156 FDCs banned in August 2024; 29 vitamin-mineral supplements banned in February 2026.
- **Consistency:** Actions demonstrate sustained regulatory effort to remove irrational combinations from the market.

Persistent Challenges

- **Enforcement Gaps:** Previous bans saw banned drugs still sold due to poor message percolation.
- **State-Level Approvals:** Many FDCs were approved by state authorities lacking technical expertise; 1083 irrational FDCs identified by Kokate Committee.
- **Industry Evasion:** Companies reformulate banned products with new components to circumvent orders.
- **Lack of Post-Market Surveillance:** No robust system for periodic review of FDCs older than 10 years.
- **Market Size:** India's large FDC market (over 6300 products) makes comprehensive regulation challenging.

Global Perspective

- **WHO Guidelines:** FDCs included in essential medicines list but limited to specific therapeutic classes; WHO advocates rational use.
- **US FDA:** Approves FDCs with demonstrated clinical benefit; nearly 63 products approved.
- **European Medicines Agency:** Updated guidelines emphasise clinical benefit over market authorisation.
- **India's Model:** More stringent in banning irrational FDCs compared to many countries, but faces unique enforcement challenges.

Way Forward

Strengthening Regulatory Mechanisms

- **Periodic Review:** Mandate review of all FDCs approved over 10 years ago.
- **State-Level Capacity Building:** Enhance technical expertise of state drug controllers.
- **Unified Approval System:** Ensure all FDCs are approved by CDSCO, not state authorities alone.
- **Pharmacovigilance:** Strengthen adverse drug reaction monitoring for FDCs.

Enforcement and Compliance

- **Strict Monitoring:** States must ensure banned drugs are not sold; penalties for non-compliance.
- **Digital Tracking:** Implement barcode-based tracking of FDCs from manufacture to pharmacy.
- **Public Awareness:** Inform healthcare professionals and patients about banned drugs and safer alternatives.
- **Industry Collaboration:** Provide clear guidelines for developing rational FDCs with proven clinical benefits.

Promoting Rational FDCs

- **Evidence-Based Development:** Encourage FDCs with demonstrated advantages over individual components.
- **WHO Alignment:** Align FDC approval with WHO prequalification standards.
- **Pharmacogenetic Screening:** Explore personalised FDCs using advancements like 3D printing.
- **Chronic Disease Focus:** Prioritise rational FDCs in TB, HIV, malaria, diabetes, and cardiovascular disease.

Conclusion

The ban on 16 irrational FDCs is a step towards safer and evidence-based healthcare. However, its success depends on strong enforcement, effective surveillance, and regular review of drug formulations. Strengthening regulatory capacity and ensuring compliance are essential to promote rational drug use and protect public health.

Negotiating Federalism in Higher Education

Introduction

Higher education in India has become a key arena reflecting changing federal dynamics. Though education is in the Concurrent List, issues such as regulation, curriculum, language policy, funding, and digital governance have increasingly strengthened the Union's role, making higher education an important component of India's evolving federal structure.

Main Body

Constitutional Framework: Concurrent List

Concurrent List (Entry 25): Education (including higher education) is a concurrent subject – both Union and States have legislative authority.

Union Government's Leverage:

- Ministry of Education.
- University Grants Commission (UGC).
- Various regulatory and accreditation bodies.
- Central funding mechanisms.

The Tension:

- Constitution gives both levels authority.

- In practice, Union government possesses substantial leverage over universities and colleges across the country.
- Access to central funding increasingly dependent on compliance with nationally designed reform agendas.

NEP 2020: A Restructuring Attempt

Key Reforms Proposed:

- Four-year undergraduate programmes.
- Academic Bank of Credits (ABC).
- Institutional restructuring.
- Multidisciplinary universities.
- Internationalisation initiatives (foreign university campuses in India).

Federal Implications:

- These reforms represent an expansion of the influence of the Centre into domains historically preserved for State governments.
- Contestations across States, particularly Tamil Nadu (three-language formula, UGC circular on third language).

Centre-State Tensions in Higher Education

Tamil Nadu:

- Repeatedly opposed various aspects of NEP 2020.
- Particularly the three-language formula.
- UGC circular on third language (2026).

Vice-Chancellor Appointments:

- Disputes over appointment of Vice-Chancellors.
- Powers of Governors in States such as Tamil Nadu, Kerala, Karnataka, and West Bengal.

Viksit Bharat Shiksha Adhishthan (VBSA) Bill, 2025:

- Proposes replacement of existing higher education regulatory bodies (including UGC).
- Generates apprehensions regarding gradual erosion of State government authority.

Instruments of Central Influence

Institutions of Eminence (IoE) Initiative:

- Central funding dependent on compliance with national reform agendas.

Anusandhan National Research Foundation (ANRF):

- Competitive research mechanisms.
- Central government influence over State universities.

Academic Bank of Credits (ABC):

- Digital governance mechanism.
- Expands Union government's capacity to standardise and monitor higher education governance across States.

Foreign University Campuses:

- Regulatory framework determined by Union government.
- Actual implementation depends on State governments (local administrative clearances, infrastructure support, investment facilitation).

State Responses: Strategic Adaptation

Not Purely Adversarial:

- Centre-State relations in higher education are not purely adversarial.
- Many States (including Opposition-ruled States) have selectively adapted aspects of reforms according to local political contexts.

Negotiated Federalism:

- Emergence of a more negotiated form of federalism characterised by strategic adaptation.

Internationalisation:

- Several States are seeking to position themselves as regional education hubs by facilitating partnerships with overseas institutions.

Regional Political Identities:

- In States with strong regional political identities, these reforms are viewed not just as administrative issues but as constitutional questions concerning the balance of power within the Indian Union.

The Core Federal Question

What Is at Stake:

- Distribution of power within the Indian Union.
- Whether higher education governance will be centralised or shared.

What Trajectory Depends On:

- Not only constitutional provisions or national-level policy frameworks.
- Also capacity of the Centre and the States to negotiate competing political and developmental priorities within the federal structure.

Conclusion

Although education is in the Concurrent List, governance increasingly favours the Union through the Ministry of Education, UGC, and reforms under the NEP 2020. Disputes over language policy, Vice-Chancellor appointments, and the proposed VBSA Bill (2025) reflect concerns about centralisation and State autonomy. At the same time, States have selectively adapted reforms, making higher education a space of negotiated federalism shaped by Centre–State bargaining.

Equality of Treatment for Persons with Disabilities

Introduction

Despite India's emergence as a digital welfare state, Persons with Disabilities (PwDs) remain excluded due to uneven pension policies, bureaucratic hurdles, and low public spending. India spends only 0.02% of GDP on disability welfare, far below countries like Brazil and South Africa, leaving many PwDs outside the reach of inclusive social security.

Main Body

The Inadequate Safety Net

Estimated Population of PwDs:

- 2011 Census: 2.68 crore PwDs.
- Today (conservative estimate): 4.5 crore – 6 crore (accounting for population growth and changing disease profiles).

Current Coverage and Amounts:

- Indira Gandhi National Disability Pension Scheme covers only a small fraction of PwDs.
- Pension amounts: ₹300-500 per month in most States; a few States offer ₹1,000-3,000.
- Fragmented, discretionary, and inadequate.

India's Spending on Disability Welfare (including pensions):

- India: 0.02% of GDP.
- South Africa: 0.12-0.15% (six times more).
- Brazil: 0.45-0.50% (20 times more).
- OECD countries: 2.2% (110 times more).
- Australia: 0.35-0.40% (20 times more).

Economic Case for Disability Pensions

GDP Loss Due to Exclusion (World Bank & UNDP):

- Low- and middle-income countries lose 3-7% of GDP when PwDs are excluded from education, employment, and social security.

Benefits of Disability Income:

- Improves household stability, rural consumption, and labour participation.
- Fiscal multiplier: 1.4-1.6.

Pro Bono Economics Report (2025):

- Socio-economic returns from disability pensions exceed their costs by nearly 48%.
- Disability pensions are an investment and an effective economic stimulus – not a welfare expense.

The Proposal: Minimum Universal Disability Pension Floor Rate (MUDPFR)

What It Is:

- A national minimum pension for all PwDs, regardless of where they live.
- States can provide additional top-ups.
- Shifts disability pensions from charity and discretion to citizenship rights.

Fiscal Estimates:

- ₹8,000 per month for 40 lakh beneficiaries: ₹38,400 crore annually (0.08% of GDP).
- ₹10,000 per month for 65 lakh beneficiaries: ₹78,000 crore annually.
- Even ₹15,000 per month would keep expenditure below 0.2% of GDP.

Comparison with Other Expenditures (fiscally manageable):

- Food subsidies: ₹2.05 lakh crore.
- Rural development: ₹1.80 lakh crore.
- Tax concessions and revenue foregone: ₹1.72 lakh crore.
- Infrastructure: ₹11.11 lakh crore.
- Disability pensions and inclusion receive only a tiny fraction of public expenditure.

International Precedents

National Disability Pension Systems:

- South Africa: national disability grant with uniform eligibility norms.
- Brazil: BPC (Benefício de Prestação Continuada) guarantees a national minimum income.
- Australia and New Zealand: nationwide disability pension systems.
- Kenya, Rwanda, Thailand, Indonesia: disability income support at national level.

Key Lesson:

- Centrally set standards promote uniformity, universality, and portability.

Constitutional and Legal Framework

Article 41 (Directive Principle):

- State to provide public assistance to persons with disabilities (among other groups).

Rights of Persons with Disabilities (RPwD) Act, 2016:

- Section 24 guarantees adequate social security, including pension benefits.

Supreme Court:

- Recognised right to live with dignity as a fundamental right.

The Gap:

- Legal provisions exist, but implementation is fragmented and discretionary.

Institutional Reform: Need for a Single National Authority

Current System (Fragmented):

- Shared between Ministry of Rural Development and Department of Empowerment of Persons with Disabilities.
- Duplication, delays, diffused accountability.

International Models:

- South Africa: SASSA (South African Social Security Agency).
- Australia: NDIA (National Disability Insurance Agency).

- Brazil: INSS (Instituto Nacional do Seguro Social).
- Ireland: Department of Social Protection.

Proposal for India:

- National Disability Pension Authority.
- Functions: eligibility norms, national registry, portability, digital integration, grievance redress, State-wise performance monitoring.
- One standard, one system, one nation.

Combining Pensions with Employment Support

International Models:

- Singapore, South Korea, South Africa, Brazil: integrate disability pensions with employment and social security systems.
- Nigeria: employer tax incentives.
- UK: Access to Work programme.
- Australia: wage subsidies.

India's Existing Schemes (Foundation for Expansion):

- PM-DAKSH (Pradhan Mantri Dakshta Aur Kushalta Sampann Mahabhiyan) – skill development.
- NAPS (National Apprenticeship Promotion Scheme).
- State-level employer incentives.

The Goal:

- Move PwDs from mere survival to productive participation.

International Commitments

- **UN Convention on Rights of Persons with Disabilities (UNCRPD):** Article 28 (adequate standard of living and social protection).
- **ILO Recommendation No. 202:** Social protection floors.
- **SDG 1.3:** Social protection systems for all.
- **G-20 New Delhi Leaders' Declaration:** Social protection as cornerstone of inclusive development.

Diplomatic Implication:

- Implementing a robust disability pension system would strengthen India's bid for a UN Security Council seat by translating commitments into action.

Constitutional Imperative and Moral Argument

The Problem:

- Disability pensions are one of the few entitlements determined by where a person lives.
- Geography decides the minimum support for survival.
- Federalism cannot be a justification for inequality.

The Principle:

- If dignity is a constitutional right, geography cannot decide minimum support.
- Persons with disabilities are rights-bearing citizens, not recipients of charity.
- A Viksit Bharat cannot leave its most vulnerable citizens at the mercy of a postcode lottery.

The Moral Question:

- Should India continue with a system where disability pensions vary according to State budgets, political priorities, and bureaucratic complexities?
- Or should the Republic guarantee a minimum level of support for all?

Conclusion

India spends only 0.02% of GDP on disability welfare despite evidence that excluding PwDs causes major economic losses. A proposed universal disability pension of ₹8,000 per month would cost just 0.08% of GDP and is

fiscally feasible. Backed by Article 41, the RPwD Act, and global models like South Africa and Brazil, India needs a uniform national disability pension system to ensure dignity and inclusive welfare for all PwDs.

Empowering the Poor: A Decade of Inclusive Transformation

Introduction

Over the past decade, targeted welfare interventions have significantly reduced multidimensional poverty and expanded access to basic services such as sanitation, drinking water, clean cooking fuel, healthcare, and food security. With improved service delivery and broader coverage, India's welfare framework has increasingly shifted from entitlement-based provision to saturation-driven inclusion.

Main Body

Multidimensional Poverty Reduction

Key Metrics:

- Multidimensional poverty declined from 29.17% (2013-14) to 11.28% (2022-23) – a 17.89 percentage-point reduction.
- Nearly 25 crore people lifted out of multidimensional poverty.
- Average inflation declined from 8.1% (2004-2014) to 5.1% (2014-2025) – improved household purchasing power.

Drivers:

- Large-scale expansion of welfare schemes and social protection measures.
- Financial inclusion, affordable healthcare, food security, housing, livelihood support.
- Digital governance reforms enabling last-mile delivery.

Universal Access to Water, Sanitation, and Hygiene (WASH)

Jal Jeevan Mission (2019):

- Fiscal allocations expanded by approximately 488% between 2020-21 and 2026-27 (reaching ₹67,670 crore).
- Household tap water coverage: 3.23 crore (August 2019) → 15.84 crore (May 2026) – 81.87% of 19.35 crore households.
- 2.77 lakh villages achieved 100% tap water coverage (Har Ghar Jal).
- Schools with tap water: 29,711 (2019) → 9.23 lakh (May 2026).
- Anganwadi Centres with tap water: 15,464 → 9.66 lakh.

Swachh Bharat Mission – Urban:

- Budget outlay increased from ₹62,009 crore (Phase 1, 2014-2021) to ₹1.41 lakh crore (Phase 2, 2021-2026) – 128.3% increase.
- Door-to-door waste collection: 43% (2014) → 98% (2026).
- Waste processing: 16% (2014) → 82% (2026).
- Individual household toilets: 63.74 lakh units completed (108.62% of target).
- Community/public toilets: 6.36 lakh units (125.46% of target).
- 4,692 cities declared ODF; 4,314 ODF+; 1,973 ODF++.

Swachh Bharat Mission – Grameen:

- Budget allocations increased from ₹3,929 crore (2014-15) to ₹7,192 crore (2026-27) – 83% increase.
- Over 12.11 crore individual household toilets constructed.
- Sanitation coverage: 39% (2014) → 100% (2019).
- India declared ODF in 2019.
- Over 5 lakh villages attained ODF Plus (Model) status (March 2026).
- Solid waste management active in 5.31 lakh villages; liquid/greywater management in 5.50 lakh villages.
- GOBARdhan: 14 operational biogas plants (FY 2018-19) → over 1,213 (May 2026).

Clean Cooking and Energy Access

Pradhan Mantri Ujjwala Yojana (2016):

- Over 10.57 crore free LPG connections to BPL women households (May 2026).
- Total LPG connections: 14.52 crore (2014) → 33.39 crore (2026) – 129.9% increase.

PM Surya Ghar: Muft Bijli Yojana (2024):

- Budget allocation: ₹6,250 crore (2024-25) → ₹22,000 crore (2026-27).
- Benefitted 36.8 lakh households (April 2026).
- Solar rooftop installations: 6.3 lakh (December 2024) → 30 lakh (April 2026).

Universal Village Electrification:

- SAUBHAGYA (2017): 100% of willing households electrified nationwide by March 2019.
- Deendayal Upadhyaya Gram Jyoti Yojana (2014): 100% village electrification achieved by 2025.
- Average daily electricity supply in rural areas: 12.5 hours (FY2014) → 22.6 hours (FY2025).
- Average daily electricity supply in urban areas: 22.1 hours (FY2014) → 23.4 hours (FY2025).

Healthcare and Food Security

Ayushman Bharat – PMJAY (2018):

- Annual health insurance coverage of ₹5 lakh per family for 12.37 crore vulnerable families (bottom 40%).
- 43.93 crore Ayushman Cards issued (May 2026).
- Hospitalizations: 29.96 lakh (June 2019) → 12.03 crore (May 2026) – treatment cost ₹1.80 lakh crore.
- Ayushman Bharat Digital Mission: 88.33 crore ABHA accounts created; 97.81 crore health records linked.
- 1.85 lakh Ayushman Arogya Mandirs facilitated 540 crore visits.
- AIIMS operational: 8 (1947-2014) → 15 (2014-2026).

Maternal and Child Health:

- Maternal Mortality Ratio: 130 (2014-16) → 88 (2021-23) per 100,000 live births.
- First-trimester antenatal care visits: 59% (NFHS-4) → 76.2% (NFHS-6).
- Mission Indradhanush: immunized 5.46 crore children and 1.32 crore pregnant women.

Food Security:

- PMGKAY (2020): free foodgrains to over 81 crore beneficiaries; extended for five years in January 2024.
- Fair Price Shops: 5.50 lakh (99.8%) automated for Aadhaar-based distribution.
- One Nation One Ration Card: over 2.07 billion transactions; nationwide portability.
- SARTHAK-PDS scheme (May 2026): ₹25,530 crore for technology-driven PDS modernisation.

Nutritional Outcomes (NFHS-6 vs NFHS-4):

- Stunting: 38.4% → 29.3%.
- Wasting: 21% → 19%.
- Underweight children: 35.8% → 31.8%.

Education Access and Learning Outcomes

Samagra Shiksha Abhiyan (2018-19):

- 4,073 schools upgraded; 1.49 lakh ICT/digital initiatives (smart classrooms).
- 25,000 schools covered under skill education.
- Schools with functional female sanitation facilities: 97.3%.
- Female primary school dropout rate: 4.6% (2013-14) → 0.3% (2024-25).
- Female secondary school dropout rate: 14.5% (2013-14) → 11.5% (2024-25).

Beti Bachao Beti Padhao (2015):

- Sex ratio: 943 (Census 2011) → 1,020 females per 1,000 males (2021).
- Secondary school enrolment for girls: 75.51% (2014-15) → 80.2% (2024-25).

Kasturba Gandhi Balika Vidyalayas:

- Sanctioned KGBVs: 3,609 (2014-15) → 5,639 (2024-25).

- Student enrolment: 3.52 lakh (2014-15) → 7.11 lakh (2024).

EWS Reservation (103rd Amendment, 2019):

- 10% reservation for Economically Weaker Sections in educational institutions and employment.
- Annual family income limit: ₹8 lakh.

Housing and Infrastructure

Pradhan Mantri Awas Yojana – Urban:

- Budget allocation: ₹4,175 crore (2015-16) → ₹18,625 crore (2026-27) – 346.1% increase.
- Houses completed: 8.04 lakh (2005-2014) → 98.10 lakh (2015-2026).
- 1.25 crore houses sanctioned (outlay ₹8.77 lakh crore).
- 96% of houses under PMAY-U 2.0 registered in name of a woman.

Pradhan Mantri Awas Yojana – Gramin:

- Budget allocation: ₹21 crore (2015-16) → ₹54,917 crore (2026-27) – 2.61 lakh% increase.
- 3.91 crore houses sanctioned; 3.03 crore completed (May 2026).
- 75% of beneficiaries are women.

Pradhan Mantri Gram Sadak Yojana:

- Budget allocation: ₹386 crore (2014-15) → ₹19,000 crore (2026-27).
- 99.6% of eligible habitations connected with all-weather roads.
- Road length completed: 3.86 lakh km (2000-2014) → 4.11 lakh km (2014-2026).
- Bridges completed: 484 → 10,256.

Financial Inclusion

Pradhan Mantri Jan Dhan Yojana (2014):

- Beneficiaries: 17.9 crore (August 2015) → 58.16 crore (May 2026) – 224.9% increase.
- Total balance: ₹3.02 lakh crore.
- 13.55 lakh Bank Mitras delivering branchless banking services.

Pradhan Mantri MUDRA Yojana (2015):

- Cumulative loan accounts: 3.49 crore (2016) → over 57 crore (2026).
- Disbursed loans worth ₹40.07 lakh crore.
- 49% of loans to SC/ST/OBC entrepreneurs.
- 66% of loans (38.29 crore accounts) to women entrepreneurs (₹16.88 lakh crore).

Livelihoods and Skill Development

DAY-NRLM (Rural):

- Women in SHGs: 2.37 crore → 10 crore.
- SHGs: 21.31 lakh → 91.75 lakh.
- Loan disbursement: ₹22,944 crore → ₹1.2 lakh crore.
- Lakhpati Didi (2023): 3.07 crore rural women achieved annual household income over ₹1 lakh.

PM Vishwakarma Yojana (2023):

- 30 lakh+ artisans registered; 23.97 lakh received skill training.
- 5.92 lakh artisans sanctioned credit; 16 lakh equipped with modern toolkits.

PM SVANidhi (2020):

- Beneficiaries: 26.37 lakh (Nov 2021) → 75.27 lakh (May 2026).
- Cumulative loan disbursements: ₹17,710.55 crore.
- Female beneficiaries: 46%.

Skill Development:

- Deen Dayal Upadhyaya Grameen Kaushalya Yojana: trained 43,038 (2014-15) → 17.71 lakh (2025-26).
- PMKVY: over 1.64 crore youth trained since inception.

- eShram portal: 14.40 crore (Dec 2021) → 31.64 crore (May 2026) unorganized worker registrations.

Social Security

- **National Pension System (NPS):** 1.05 crore (2016-17) → 2.17 crore (2025-26).
- **Atal Pension Yojana (APY):** 48.80 lakh (2016-17) → 8.96 crore (2025-26).
- **PM Jeevan Jyoti Bima Yojana:** 27.33 crore beneficiaries (May 2026).
- **PM Suraksha Bima Yojana:** 57.92 crore beneficiaries (May 2026).
- **PM Shram Yogi Maan-dhan:** 52.99 lakh registered (May 2026).

Tribal Development

- **PM-JANMAN (2023):** 2.66 lakh houses, 1,949 km roads, 750 Mobile Medical Units completed.
- **Eklavya Model Residential Schools:** 129 (2014-15) → 499 (May 2026); enrolment 1.54 lakh students.

Conclusion

India's welfare interventions have significantly reduced multidimensional poverty and expanded access to water, sanitation, healthcare, food security, financial inclusion, and rural connectivity. Improved social indicators and broader coverage reflect a shift from entitlement-based welfare to saturation-driven, inclusive development—from Antyodaya to Sarvodaya.

PAPER 3

India's Tourism Transformation: ADecade of Inclusive Growth

Introduction

Tourism has become a key pillar of India's economy, contributing US$231.6 billion and boosting jobs and cultural exchange. Supported by initiatives like Swadesh Darshan and PRASHAD, India improved its global tourism ranking from 25th (2016) to 20th (2024) and is projected to become the world's 4th largest tourism economy in the next decade.

Infrastructure Development: The Foundation of Tourism Growth

Swadesh Darshan Scheme

- **Phase 1 (2014):** 76 projects sanctioned with ₹5,000+ crore investment across 15 tourist circuits
- **Completion:** 75 projects physically completed, improving visitor amenities and connectivity
- **Swadesh Darshan 2.0 (2022):** Focus on sustainable, experience-based destination development
- **Examples:** Floating log huts at Tehri Lake (Uttarakhand); Mahabharata-themed attractions at Kurukshetra (Haryana)

PRASHAD Scheme (Pilgrimage Rejuvenation)

- **Sanctioned Projects:** 54 projects worth ₹1,700+ crore
- **Destinations Upgraded:** Somnath, Srisailam, Govardhan (Uttar Pradesh)
- **Impact:** Improved convenience, safety at high-footfall spiritual destinations; sustained local livelihoods

Special Assistance to States for Capital Investment (SASCI)

- **Budget 2024-25 Announcement:** Development of Iconic Tourist Centres to Global Scale
- **Projects Sanctioned:** 40 projects across 23 States with ₹3,295.76 crore outlay
- **Goal:** Transform high-potential destinations into world-class tourism hubs

Sustainability and Diversification

Addressing Overtourism

- **Niche Tourism Products:** Himalayan trekking trails, birdwatching circuits, turtle tourism
- **Benefits:** Distributed visitor flows, new opportunities in lesser-known destinations

Environmental and Cultural Preservation

- **Travel for LiFE Programme:** Encourages environmentally responsible practices among tourists, businesses, communities
- **Green Destinations Certification:** Mamallapuram – first UNESCO World Heritage site in South Asia to achieve Silver certification

Challenge-Based Destination Development (CBDD)

- **Projects Sanctioned:** 38 projects worth ₹697.94 crore under spiritual and eco-tourism
- **Examples:** Panidihing Bird Sanctuary (Assam); Nizam Sagar reservoir eco-tourism (Telangana)

Global Competitiveness and Digital Integration

International Rankings and Arrivals

- **International Arrivals (2014-2025):** 181.25 million (including NRIs)
- **Foreign Tourist Arrivals:** 93.35 million
- **Global Rank:** 20th (2024) from 25th (2016)
- **Economic Contribution:** US$231.6 billion; 8th largest tourism economy globally
- **WTTC Projection:** India to rise to 4th place globally over next decade

Digital and Policy Reforms

- **e-Tourist Visa System:** Expanded significantly, making travel more convenient
- **Digital Platforms:** NIDHI and NIDHI Plus streamline registration for accommodation providers, travel agents
- **Connectivity:** UDAN, Vande Bharat, railway modernisation, highway expansion, last-mile connectivity

Global Engagement and Soft Power

- **G20 Presidency (2023):** Showcased India's destinations, heritage, crafts, MICE tourism potential
- **"Incredible India" Campaign:** Revitalised with digital promotion, international travel marts, roadshows, strategic partnerships

Human Capital Development

Capacity Building

- **Training (2014-2025):** 4.5+ lakh persons trained under Capacity Building for Service Providers scheme
- **Union Budget 2026-27:** Proposals for National Institute of Hospitality; upskilling 10,000 tourist guides at iconic destinations

Domestic Tourism Promotion

- **PM's Call for Austerity:** Encouraged citizens to choose domestic tourism, support local livelihoods, artisans, small businesses

Employment and Livelihoods

- **Tourism as Job Creator:** Benefits hotels, transport operators, tour guides, artisans, restaurants, local enterprises
- **Regional Development:** Channels investments into emerging and remote destinations; generates sustainable livelihood opportunities

Challenges

- **Overtourism:** Popular destinations face strain; niche products still nascent
- **Regional Disparities:** Development concentrated in certain states; remote areas need more focus
- **Infrastructure Gaps:** Last-mile connectivity, quality accommodation remain issues in emerging destinations

- **Skilling Needs:** Service standards need continuous upgrading
- **Sustainability Implementation:** Policies require on-ground enforcement and community participation

Way Forward

- **Infrastructure:** Complete Swadesh Darshan/SASCI; improve connectivity and amenities.
- **Sustainability:** Promote eco, wellness, adventure and MICE tourism; enforce carrying capacity.
- **Digital:** Faster e-Visa; use UPI, DigiLocker and AI for tourism services.
- **Skills:** Establish National Institute of Hospitality; upskill guides and local communities.
- **Global Outreach:** Strengthen Incredible India; leverage diaspora and soft power.

Conclusion

India's tourism sector has transformed through improved infrastructure, digital innovation, and sustainable policies, emerging as a key pillar of Viksit Bharat @2047. While challenges such as overtourism, regional disparities, and skill gaps persist, continued reforms can help India achieve its goal of becoming the world's 4th largest tourism economy while ensuring inclusive growth and heritage conservation.

The Defence Decade: Enhanced Capability, Greater Capacity, Stronger Credibility

Introduction

India's defence sector underwent a major transformation between 2014 and 2026. The defence budget grew from ₹2.53 lakh crore to ₹7.85 lakh crore, indigenous production rose to ₹1.78 lakh crore, and exports surged from ₹686 crore to ₹38,424 crore. Reforms such as DAP 2020, Positive Indigenisation Lists, and iDEX boosted self-reliance, innovation, and defence diplomacy, strengthening India's position as a global defence partner.

Main Body

Rising Defence Budgets and Capital Expenditure

- Defence budget: ₹2.53 lakh crore (FY 2013–14) → ₹7.85 lakh crore (FY 2026–27).
- Capital expenditure: ₹94,588 crore (2014–15) → ₹2.19 lakh crore (2026–27).
- R&D allocation: ₹13,716 crore (FY 2014–15) → ₹29,100 crore (FY 2026–27) – over 112% increase.
- 25% of defence R&D budget opened to industry, start-ups, and academia (2022-23).

Innovations for Defence Excellence (iDEX)

- iDEX engages MSMEs, startups, individual innovators, research institutions, and academia.
- Scheme outlay: ₹498.78 crore (2021–22 to 2025–26).
- ADITI Scheme outlay: ₹750 crore (2023–24 to 2025–26).
- By March 2026: 676 startups/MSMEs/innovators engaged; 551 design and development contracts signed.

Technology Development Fund (TDF):

- Grants up to ₹50 crore for critical defence technologies.
- Additional corpus of ₹500 crore sanctioned for emerging technologies.
- 80 projects worth ₹334 crore being implemented (June 2026).

Development cum Production Partner (DcPP) Model:

- DRDO partners with Indian industry for technology transfer and production.
- 134 companies partnered as DcPPs or Production Agencies.
- 2,180 technology transfer agreements signed.
- Over 2,780 IPRs opened for use by Indian industry.

Defence Acquisition Reforms

Defence Procurement Procedure (DPP) 2016:

- Institutionalised and streamlined procurement processes.
- Promoted Make in India in defence.

Defence Acquisition Procedure (DAP) 2020:

- Major reforms for indigenous manufacturing.
- Increased opportunities for Indian companies.
- Encouraged domestic design, development, and production.

Defence Procurement Manual (DPM) 2025:

- Streamlined revenue procurement (worth nearly ₹1 lakh crore).
- Faster approvals, relaxed penalties for indigenous projects, assured long-term orders.

DAP 2026 (Draft):

- Simpler acquisition categories; stronger support for indigenous design and development.
- Recommends higher indigenous content requirements (up to 60%).

Indigenous Production and Industrial Capacity

- Defence production: ₹46,429 crore (2014–15) → ₹1.78 lakh crore (2025–26) – 110% increase since FY 2020-21.
- DPSUs/PSUs: 76% of production; private sector share: 24% (greater industry participation).
- Defence industrial licences: 258 (2015) → 834 (March 2026) – more than tripled.
- Ecosystem: 16 DPSUs, ~500 licensed defence companies, ~17,000 MSMEs.
- Ordnance Factory Board dissolved (2021); reorganised into 7 new DPSUs.

Defence Industrial Corridors:

- Uttar Pradesh: investment commitments ₹42,057 crore; grounded ₹4,409 crore (April 2026).
- Tamil Nadu: investment commitments ₹32,699 crore; grounded ₹6,446 crore.

Defence Exports

- Exports: ₹686 crore (2013–14) → ₹38,424 crore (2025–26) – over 5500% growth.
- Exports to over 80 countries; 145 exporting firms.
- Target: ₹50,000 crore by 2029.
- Nearly 65% of defence equipment now produced domestically (import dependence was 65–70% earlier).

Key Operational Milestones

Mission Shakti (27 March 2019): Anti-satellite capability – India joined select group.

Mission Divyastra (11 March 2024): Long-range missile with multiple warheads to different targets.

Operation Sindoor (2025): Indigenous systems (Akash missiles, BrahMos, anti-drone systems) supported armed forces.

Tejas: Final operational clearance (February 2019); 83 aircraft approved for induction.

Arjun Mk-IA: Inducted (February 2021).

Agnipath Scheme (15 June 2022): Recruits youth as Agniveers for four-year service; creates youthful, tech-savvy, combat-ready force.

Defence Diplomacy and Strategic Partnerships

India-US:

- LEMOA (2016), COMCASA (2018), BECA (2020).
- Major Defence Partner; STA-1 status.
- iCET (2023) → TRUST (2025); 10-year defence partnership framework (October 2025).

India-Russia:

- IRIGC-M&MTC; S-400 air defence systems; Su-30MKI upgrades.
- Exercise Indra (tri-services).
- Focus on co-production and MRO capabilities.

India-EU:

- Security and Defence Partnership signed (27 January 2026).
- Annual India–EU Security and Defence Dialogue; India–EU Defence Industry Forum.

India-France:

- Rafale deal (2016); 26 Rafale-Marine approved (2023).
- All six Kalvari-class Scorpene submarines delivered (2025).
- Horizon 2047 Defence Industrial Roadmap.

India-Japan:

- ACSA (2020); Exercise JIMEX; Special Strategic and Global Partnership.

India-UAE:

- Strategic Defence Partnership (January 2026); co-production, special operations, counter-terrorism.

India-Australia:

- Comprehensive Strategic Partnership (2020); Defence Ministers' Dialogue.

Multilateral Engagements:

- QUAD: central pillar; Exercise Malabar; Quad-at-Sea Mission (2025).
- SCO: championing counter-terrorism; zero tolerance for terrorism.
- ADMM-Plus: freedom of navigation; Act East Policy.
- SAGAR (2015) and MAHASAGAR (March 2025): India as net security provider in IOR.

Conclusion

India's defence sector transformed between 2014 and 2026 through higher spending, rising indigenous production, and record defence exports. Reforms such as DAP 2020, indigenisation initiatives, iDEX, and enhanced FDI boosted self-reliance and innovation. Combined with key military achievements and stronger defence diplomacy, India has emerged as a credible defence partner and manufacturing hub, advancing towards Vision 2047.

Indian Cities Need to Rethink Their Water Future

Introduction

Heat waves across India have been intensified by severe water shortages caused by groundwater depletion and declining reservoir levels. While climate change is a factor, unsustainable water use, urban over-extraction, and inadequate water management have deepened the crisis. Warnings by NITI Aayog and groundwater assessments highlight the need for long-term structural reforms to ensure water security.

Main Body

The Crisis: Structural, Not Just Seasonal

The CWMI Warning (2018):

- Indian cities are living beyond their hydrological means.
- Timelines may not have been accurate, but the warning should have prompted course correction.

Groundwater Oversaturation:

- Jal Shakti Ministry's Dynamic Groundwater Resources Assessment flagged the issue.
- Aquifers are being depleted faster than they can be replenished.

Reservoir Levels:

- Falling reservoir levels across the country.
- Heat waves and rising temperatures increase evaporation losses.

The Problem:

- Municipal and state-level authorities treat every crisis as an isolated event.

- Very little has been done to address structural reasons for water shortfall during the dry season.

Urban India's Water Inefficiency: Root Causes

Dilapidated Distribution Networks:

- Old, leaky pipes lose significant water before it reaches consumers.
- Non-revenue water (NRW) is high – water that is produced but not billed.

Inadequate Metering:

- Many urban households and industries are not metered.
- Without metering, there is no incentive for conservation.

Poor Municipal Governance:

- Weak institutional capacity for water management.
- Lack of coordination between agencies (water supply, sewerage, stormwater drainage).

Untreated Wastewater:

- Most cities do not treat wastewater to a level where it can be reused.
- Reuse potential for agriculture, industry, and non-potable urban uses is largely untapped.

Underharvesting of Rainwater:

- Rainwater harvesting is not enforced or implemented effectively.
- Urban landscapes are designed to drain water away, not retain it.

The Policy Gap: Supply-Side vs. Demand-Side Management

Mihir Shah Committee (2016):

- "The focus of water policy in independent India had been on augmenting supplies with little attention being paid to the demand-side management of water."
- This policy direction did play a major role in meeting food-security imperatives.
- However, there has been little emphasis on institutional innovations in the water sector.

Atal Bhujal Yojana:

- Early steps to encourage efficient use of water in agriculture.
- Demand-side management through community participation and groundwater regulation.

What Is Still Missing:

- Scientific analyses of water use at the household and industrial level.
- Prevention of overexploitation by the well-heeled (large households, high-consumption industries).
- Progressive water pricing to incentivise conservation.

Nature-Based Solutions: From Grey to Green Infrastructure

Grey Infrastructure (Drains and Pipes):

- Traditional approach: pipes, drains, treatment plants.
- Necessary but insufficient and expensive to maintain.

Nature-Based Solutions:

- Lake restoration projects in Mumbai and Bengaluru (welcome endeavours).
- Need to be taken up at scale to have meaningful impact.

China's Sponge City Project:

- Uses urban landscapes and green infrastructure.
- Permeable pavements, green roofs, rain gardens, constructed wetlands.
- Promotes natural retention of rainwater, reduces flooding, and recharges groundwater.

India's Gap:

- India still lacks a concerted policy like the Sponge City project.
- Cities that get flooded during monsoons shouldn't be parched in summers.

Way Forward: A Comprehensive Urban Water Strategy

A. Demand-Side Management:

- Universal metering of all water connections (households, industries, commercial).
- Progressive water pricing (higher tariffs for higher consumption).
- Public awareness campaigns on water conservation.
- Incentives for water-efficient fixtures and appliances.

B. Supply-Side Efficiency:

- Leak detection and repair in distribution networks (reduce NRW).
- Upgrading and expanding wastewater treatment capacity.
- Mandatory wastewater reuse for non-potable purposes (flushing, gardening, industrial cooling).
- Mandatory rainwater harvesting in all new buildings and retrofitting in existing ones.

C. Institutional Reforms:

- Single agency for urban water management (water supply, sewerage, stormwater drainage).
- Strengthen municipal governance with technical and financial capacity.
- Regulatory oversight with penalties for over-extraction and pollution.

D. Nature-Based Solutions at Scale:

- Adopt a national "Sponge City" programme adapted to Indian conditions.
- Lake and wetland restoration in all major cities.
- Permeable pavements and green infrastructure in urban planning.
- Integration of water management with urban development plans.

Conclusion

India’s urban water crisis is rooted in structural mismanagement rather than climate change alone. Despite warnings from NITI Aayog and groundwater assessments, cities continue to overexploit aquifers while facing leaky distribution systems, poor governance, inadequate wastewater treatment, and limited rainwater harvesting. Experts have stressed the need for demand-side water management, large-scale lake restoration, and integrated urban water policies to build long-term resilience.

India's Counter-Terrorism Transformation: From Reactive Management to Proactive Deterrence

Introduction

Over the past 12 years, India’s counter-terrorism framework has shifted from reactive crisis management to a proactive, doctrine-driven system. Earlier challenges included high terrorist incident rates, frequent unrest in J&K, and limited legal tools to designate individuals as terrorists. Since then, India has strengthened its legislative, institutional, operational, and diplomatic responses, culminating in the 2026 National Counter-Terrorism Policy “PRAHAAR.”

Background and Conceptual Foundation

Historical Context and Challenge Landscape (2014)

- Pakistan's ISI continued providing training, arms, and financial support to LeT, JeM, and Hizbul Mujahideen
- Kashmir separatism sustained by Over-Ground Worker networks complicating governance
- Emergence of ISIS introduced online radicalisation and self-radicalised attack threats
- Legal framework lacked provisions to designate individuals as terrorists

Constitutional and Legal Framework Evolution

- **UAPA Amendment Act, 2019:** Empowered Central Government to designate individuals as terrorists; 57 individuals designated including Masood Azhar, Dawood Ibrahim

- **Bharatiya Nyaya Sanhita, 2023:** First statutory definitions for terrorism and organised crime; death penalty where terrorist act results in death
- **NIA Amendment Act, 2019:** Expanded jurisdiction to include cyber terrorism and offences outside India
- **PMLA Amendments:** Sharper instruments to trace and confiscate terror-linked assets

Significance and Rationale

Institutional Strengthening and Intelligence Integration

- **NIA Transformation:** Budget grew from ₹91.32 crore (2014-15) to ₹394.66 crore (2024-25); conviction rate of 92.70% - highest globally
- **MAC Network:** Connects 28 central and state agencies; ₹500 crore technological upgrade with AI/ML-enabled analytical tools
- **NATGRID:** Connects 11 Central User Agencies, all 28 States and 8 UTs; GANDIVA tool enables multi-source intelligence analysis
- **CCTNS 2.0:** Connects all 17,798 police stations, eliminating information silos

Operational Doctrine: From Strategic Restraint to Deterrence

- **Surgical Strikes (2016):** Pre-emptive action against terrorist launch pads across LoC
- **Balakot Airstrike (2019):** Precision strike against JeM training facility in Pakistan
- **Operation Sindoor (2025):** Targeted terrorist infrastructure in Pakistan and PoJK
- Established principle: Terrorist attacks invite swift, calibrated, multidimensional consequences

Key Issues and Challenges

Evolving Nature of Terror Threats

- Terrorist networks moving towards decentralised, digitally mediated communication
- Use of end-to-end encrypted platforms, dark web, and cryptocurrencies
- "White-collar radicalisation": Educated, economically secure youth drawn into extremism
- Radicalisation diffusing into educational institutions and workplaces

Counter-Radicalisation Gap

- India's response remains primarily security-centric (intelligence gathering, disruption, prosecution)
- PRAHAAR acknowledges need to "attenuate conditions enabling terrorism" but implementation weak
- Global best practices offer lessons:
    - UK's "Prevent" strategy for early identification
    - Denmark's Aarhus Model for community engagement
    - Germany's HAYAT programme for family intervention

Technological and Fifth Generation Warfare Challenges

- Fifth Generation Warfare blurs traditional boundaries between war and peace
- Terrorist groups collaborate with organised criminal networks
- Exploitation of e-commerce platforms for procuring materials
- Drone-based attacks emerging as new threat vector
- NSG Ajit Doval's "0.5 front": Modern conflicts extend beyond military engagements

Way Forward

Strengthening Counter-Radicalisation Ecosystem

- Develop dedicated national counter-radicalisation policy complementing counter-terrorism framework
- Establish early identification mechanisms through multi-agency coordination
- Implement deradicalisation programs in prisons with continuous monitoring
- Engage community leaders, religious heads, and NGOs

- Develop counter-narrative campaigns addressing online radicalisation

Technological and Institutional Modernisation

- Continue investment in AI/ML-enabled threat detection
- Expand NATGRID's analytical capabilities
- Develop capabilities against drone-based threats and cyber-attacks
- Strengthen CyMAC with adequate resources and state-level integration
- Enhance public-private partnerships with e-commerce platforms and social media companies

Diplomatic and Legal Consolidation

- Continue leveraging FATF and UN platforms to expose state-sponsored terrorism
- Pursue UN Comprehensive Convention on International Terrorism (CCIT)
- Expand Mutual Legal Assistance Treaties and extradition arrangements
- Codify PRAHAAR into operational guidelines for all states and agencies
- Establish clear accountability mechanisms for consistent implementation across federal structure

Conclusion

India’s counter-terrorism transformation reflects a shift from managing terror to dismantling its root causes. The PRAHAAR doctrine consolidates reforms across prevention, response, capacity-building, and global cooperation. However, emerging threats like online radicalisation and hybrid warfare require continuous adaptation. Security now involves society alongside the state, aiming toward a resilient, development-focused “Jan-Kalyan” outcome.

India's Employment Transformation: From Reform to Rozgar

Introduction

India’s employment landscape has shifted significantly over the past decade, supported by initiatives like Make in India, Digital India, Startup India, and Skill India. From economic fragility in 2013 to a leading startup and digital economy today, employment generation has strengthened, reflected in improved employment elasticity. The PM Viksit Bharat Rozgar Yojana (PMVBRY), with a ₹1 lakh crore outlay targeting 3.5 crore jobs, marks a major push toward large-scale job creation.

Background and Conceptual Foundation

Historical Context and Challenge Landscape (2014)

- India counted among "Fragile Five" economies in 2013 with high inflation, fiscal deficit, and currency volatility
- Employment elasticity of 0.008 between 2011-12 and 2017-18 indicated weak job creation
- Social security coverage limited to only 25 crore people (19% of population) in 2015
- Limited formal sector job creation; informal economy dominated employment landscape

Policy Framework Evolution

- **Make in India (2014):** Manufacturing promotion through FDI liberalisation and infrastructure development
- **Digital India (2015):** Digital public infrastructure creating new employment opportunities
- **Startup India (2016):** Built one of the largest startup ecosystems globally
- **Skill India (2015):** Skill development and vocational training expansion
- **PM Mudra Yojana (2015):** Micro-financing for entrepreneurship
- **National Career Service Portal:** Digital job matching platform

Significance and Measurable Outcomes

Employment Generation

- **17crore jobs created between 2014-24** (compared to 2.9 crore during 2004-14) as per RBI KLEMS data

- **Employment elasticity improved** from 0.008 (2011-12 to 2017-18) to 1.11 (2017-18 to 2023-24)
- **Employment rate increased** from 46.8% (2017-18) to 57.4% (2025)
- **Unemployment declined** to ~3.1%, below global average of 4.8%
- **EPFO payroll data:** 8 crore formal-sector jobs added between 2017-2025

Social Security Expansion

- **Coverage increased** from 25 crore (19%) in 2015 to 94 crore (64.3%) in 2025
- **International recognition:** International Social Security Association's Award for Outstanding Achievement in Social Security (2025)
- Multiple schemes integrated:
  - o Employee State Insurance Corporation (ESIC)
  - o Employees' Provident Fund Organisation (EPFO)
  - o Pradhan Mantri Shram Yogi Maandhan (PMSYM)
  - o National Pension System (NPS) expansion

Pradhan Mantri Viksit Bharat Rozgar Yojana (PMVBRY)

- **Outlay:** Nearly ₹1 lakh crore
- **Target:** 3.5 crore employment opportunities over two years
- **Part A (Worker Incentive):** First-time employees receive financial assistance up to ₹15,000 in two instalments
- **Part B (Employer Incentive):**
  - o Incentives up to ₹3,000 per employee per month
  - o Up to 4 years for manufacturing employers
  - o Up to 2 years for other sectors
- **Current Disbursement:** ₹2,400 crore incentives to 15 lakh beneficiaries through DBT
- **Nationwide Implementation:** Events across 200 major industrial clusters

Key Issues and Challenges

Quality of Employment

- **Precarious employment:** Gig economy workers lack traditional benefits and job security
- **Platformisation of work:** Rapid growth of app-based platforms without adequate regulatory framework
- **Underemployment:** Educated youth working in jobs below their skill levels
- **Informal sector dominance:** Despite formalisation efforts, large workforce remains in informal employment

Skill-Job Mismatch

- **Skill gap:** India's workforce lacks industry-relevant skills despite Skill India initiatives
- **Technological disruption:** Automation and AI threaten traditional job categories
- **Educational outcomes:** Disconnect between academic curricula and industry requirements
- **Limited vocational training penetration:** Only small percentage of workforce has formal vocational training

Regional Disparities

- **Uneven industrial development:** Employment concentrated in few states
- **Rural-urban divide:** Limited non-farm employment opportunities in rural areas
- **Migration challenges:** Seasonal migration creates social and economic vulnerabilities
- **MSME constraints:** Small enterprises face compliance burden affecting formalisation

Labour Law Implementation

- **Multiple Labour Codes:** Implementation challenges across 4 codes (Code on Wages, Industrial Relations, Social Security, OSH & Working Conditions)
- **Compliance burden:** Small businesses struggle with multiple registrations and returns
- **Union representation:** Declining union membership affecting worker bargaining power
- **Contracted workforce:** Growing practice of contract labour limiting job security

Way Forward

Strengthening Employment Quality

- **Universal Social Security:** Extend coverage to all workers including gig and platform employees
- **Code of Practice:** Develop regulatory framework for platform economy addressing wages, benefits, working conditions
- **Quality monitoring:** Track not just job creation but job quality indicators
- **Productivity-linked wages:** Incentivise productivity improvement in informal sector

Skill Ecosystem Reform

- **Industry-driven curricula:** Regular curriculum revision based on industry 4.0 requirements
- **National Apprenticeship Promotion Scheme:** Expand apprenticeship opportunities
- **Digital skilling:** Focus on AI, data analytics, and emerging technologies
- **Lifelong learning:** Create platforms for continuous skill upgrading

MSME and Entrepreneurship Support

- **Compliance simplification:** Single window for labour and tax compliance
- **Technology adoption:** Support MSMEs in Industry 4.0 adoption
- **Credit access:** Expand MUDRA and other micro-financing mechanisms
- **Cluster development:** Focus on MSME clusters for infrastructure and market access

Regional and Rural Focus

- **Rural non-farm sector:** Promote rural entrepreneurship and agro-processing
- **Infrastructure development:** Improve connectivity and logistics in backward regions
- **State-level strategies:** Customised employment strategies for different states
- **District-level monitoring:** Create employment surveillance at district level

Conclusion

India's employment transformation reflects reforms, digital infrastructure, and welfare-led growth. Job creation has risen significantly from 2004–14 to 2014–24, supported by proactive policies. The PMVBRY scheme introduces a worker–employer partnership model to boost employment generation. However, challenges like job quality, skill gaps, and gig economy regulation persist. Moving toward Viksit Bharat, inclusive growth must ensure equitable distribution of economic gains.

Ashtalakshmi: Transforming India's North-East into a Growth and Strategic Gateway

Introduction

India's North-East, comprising eight states collectively known as **Ashtalakshmi**, is undergoing rapid transformation through improved connectivity, social infrastructure, and strategic investments. Driven by the **Act East Policy**, PM-DevINE, and major infrastructure projects, the region is increasingly being viewed as a bridge between India and Southeast Asia, contributing to national integration, economic growth, and border security.

Significance of North-East Development

Economic Importance

- Rich in hydropower, oil, gas, forests, bamboo, and tourism potential.
- Improved connectivity boosts trade, investment, and employment.

- Supports regional economic integration and reduces development disparities.

Strategic Importance

- Shares borders with China, Myanmar, Bangladesh, Bhutan, and Nepal.
- Serves as the gateway for India's Act East Policy.
- Strengthens border infrastructure and national security.

Social Importance

- Better access to healthcare, education, housing, and drinking water.
- Enhances inclusion of remote and tribal communities.

Key Drivers of Transformation

Connectivity Revolution

- Expansion of highways, railways, airports, and inland waterways.
- Landmark projects: **Bogibeel Bridge**, **Sela Tunnel**, regional airports under **UDAN**.
- Digital connectivity through **BharatNet** and telecom expansion.

Governance Initiatives

- **PM-DevINE**, **NESIDS**, and **North Eastern Council (NEC)**.
- Focus on infrastructure, livelihoods, tourism, and social development.

Energy and Green Growth

- Vast hydropower potential.
- Emerging opportunities in renewable energy and sustainable development.

Key Challenges

Economic

- Limited industrialisation and private investment.
- High logistics costs and small market size.

Social

- Youth unemployment and skill gaps.
- Uneven development across states.

Environmental

- Infrastructure projects in ecologically fragile regions.
- Concerns regarding biodiversity loss and displacement.

Security and Governance

- Legacy of insurgency and border management challenges.
- Administrative capacity constraints in project implementation.

Way Forward

- Develop **economic corridors** alongside transport infrastructure.
- Promote tourism, agro-processing, bamboo, and organic farming.
- Strengthen skill development and entrepreneurship.
- Ensure environmentally sustainable infrastructure.
- Enhance cross-border trade and connectivity under the Act East Policy.
- Foster cooperative federalism between Centre, States, and local institutions.

Conclusion

The North-East is gradually shifting from a peripheral region to a strategic growth hub. Sustained investments in connectivity, human capital, and sustainable development can transform Ashtalakshmi into a key driver of **Viksit Bharat 2047**, while strengthening national integration and India’s regional influence.

Rupee Reprieve and Bond Markets: A Temporary Respite

Introduction

The recent recovery in the rupee, bond markets, and debt inflows reflects improved external conditions, but underlying vulnerabilities remain. Geopolitical risks, capital outflows, fiscal pressures, and climate-related uncertainties highlight the need for sustained reforms, fiscal consolidation, and stronger investor confidence to ensure long-term macroeconomic stability.

The Current Reprieve: Factors and Indicators

Rupee Recovery and Bond Market Easing

- **Rupee:** Recovered to 94.4/USD from all-time-low of 96.6 (May 20)
- **Bond Yields:** 10-year government yields softened from 7.1% to below 6.8%
- **FPI Debt Inflows:** $5.2 billion in June (vs. $291 million, -$1.2 billion, -$926 million in previous three months)
- **Reasons:** Easing West Asian tensions, coordinated government-RBI actions

Commodity Price Correction

- **Brent Crude:** Closed at $72.6/barrel (from $126.4 in end-April)
- **Urea Imports:** $444.9-449.3/tonne (from $935-959 in April)
- **Impact:** Reduced import bill and inflationary pressures

Policy Measures Supporting Stability

- **Tax Exemption:** Complete tax exemption on FPI investments in government bonds
- **Swap Facilities:** At-par/concessional dollar-rupee swaps on FCNR(B) deposits and ECBs
- **Excise Duty Cut:** ₹10/litre cut on transport fuels (late-March)
- **RBI Intervention:** Coordinated actions to attract foreign inflows through debt, NRI deposits, and ECBs

Vulnerability: Why Reprieve is Short-Term

Geopolitical Fragility

- **West Asia Tensions:** Renewed hostilities since Thursday; daily vessel crossings through Strait of Hormuz half of peacetime levels
- **US-Iran Truce:** Fragile, uncertain duration
- **Supply Shocks:** Potential for renewed crude price spikes

Fiscal Pressures

- **Excise Duty Cut:** Revenue loss from ₹10/litre reduction on transport fuels
- **Fertiliser Subsidy:** Likely to significantly overshoot budget estimates despite global price dip
- **Centre's Finances:** Under pressure from multiple fronts
- **Debt-GDP Ratio:** Currently at 80% (not sustainable); target 60%

Equity Outflows and Capital Structure Mismatch

- **FPI Equity Outflows:** $5.5 billion+ in June; $3.5 billion (May), $6.5 billion (April), $12.7 billion (March)
- **Equity vs. Debt:** India should attract more equity than debt for sustainable growth
- **Concern:** Debt inflows are volatile; equity signals long-term confidence

Monsoon Deficit and Agricultural Vulnerability

- **June Rainfall:** 43% below normal
- **El Niño Threat:** Expected to fully bite, impacting kharif crop production
- **Impact:** Rural demand, inflation, food security, and macroeconomic stability

Way Forward: Strengthening Macroeconomic Foundations

Fiscal Consolidation and Debt Management

- **Target:** Reduce general government debt-GDP ratio to 60%
- **Action:** Rationalise subsidies, increase tax base, improve revenue collection
- **Priority:** Maintain fiscal deficit trajectory despite global uncertainty
- **State-Level:** Coordinate with states for consolidated fiscal prudence

Structural Reforms

- **Economic Reforms:** Labour, land, and capital market reforms
- **Legal Reforms:** Strengthen contract enforcement, dispute resolution, and property rights
- **Institutional Reforms:** Improve regulatory quality, governance, and transparency
- **Privatisation:** Continue strategic disinvestment and asset monetisation

Attracting Equity Investment

- **Investor Confidence:** Build trust through policy stability, rule of law, and growth consistency
- **Ease of Doing Business:** Simplify regulations, reduce compliance burden
- **Capital Market Development:** Strengthen domestic institutional investor base (mutual funds, insurance, pension)
- **Foreign Direct Investment:** Liberalise FDI in manufacturing and services

Managing External Vulnerabilities

- **Current Account:** Monitor and manage deficit within sustainable limits
- **Foreign Reserves:** Maintain adequate buffer for external shocks
- **Exchange Rate:** Allow flexible adjustment while preventing excessive volatility
- **Geopolitical Risk:** Diversify trade and investment partners to reduce concentration risk

Addressing Monsoon and Agricultural Challenges

- **Irrigation:** Accelerate investment in water management and irrigation infrastructure
- **Climate-Resilient Farming:** Promote drought-resistant crops and sustainable practices
- **Buffer Stocks:** Maintain adequate food stocks to manage supply shocks
- **Contingency Plan:** Prepare for potential food inflation and rural distress

Conclusion

The recent stability in the rupee and bond markets remains fragile amid geopolitical risks, fiscal pressures, and external uncertainties. Strengthening long-term macroeconomic resilience will require sustained economic reforms, fiscal consolidation, greater investor confidence, and a shift towards stable equity-led capital inflows to support sustainable growth.

From Job Seekers to Job Creators: The ASPIRE Story

Introduction

Launched in 2015, the ASPIRE scheme promotes rural entrepreneurship by supporting innovation, skill development, and micro-enterprises through Livelihood Business Incubators. With over 1.23 lakh beneficiaries trained and 1,200+ enterprises supported since FY 2022-23, the scheme has expanded livelihood opportunities, particularly for women and marginalized communities, helping transform rural job seekers into job creators.

Understanding ASPIRE: Objectives and Framework

Genesis and Evolution

- **Launched:** 2015 by Ministry of MSME
- **Objective:** Promote entrepreneurship and employment generation in rural and agro-based sectors
- **Evolution:** Operational guidelines (2018) strengthened incubation; revised guidelines (2023) focused on livelihood creation and measurable outcomes

Three-Tier Institutional Architecture

- **Scheme Steering Committee:** Policy guidance and oversight
- **Mentor Institutes:** Identify incubators, prepare project plans, design programmes, monitor outcomes
- **Host Institutions:** Operate Livelihood Business Incubators (LBIs)
- **Examples:** Indian Institute of Entrepreneurship (IIE) Guwahati, agricultural universities, IIT Jodhpur

Livelihood Business Incubators (LBIs)

- **Focus Areas:** Food processing, honey production, bamboo products, mushroom cultivation, spice processing, handicrafts, coir products
- **Services:** Training, mentoring, modern equipment access, business development, branding, accreditation, regulatory compliance, market linkages, finance access

Impact and Outcomes

Scale of Reach (As of June 2026)

- **LBIs Approved:** 109 across 27 States and UTs
- **Beneficiaries Trained:** 1,23,000+
- **Micro-Enterprises Facilitated (Since FY 2022-23):** 1,200+

Social Inclusion

- **Women Beneficiaries:** 28,500+ (since FY 2022-23)
- **SC Beneficiaries:** 8,700+
- **ST Beneficiaries:** 9,600+
- **OBC Beneficiaries:** 17,600+
- **Significance:** Expanding entrepreneurship beyond metropolitan centres to villages, small towns, underserved communities

Success Story: Mr. Banshailang Marbaniang

- **Location:** Mawsynram, Meghalaya (one of world's remotest, wettest places)
- **Challenge:** Lack of opportunities; friends/neighbours migrating for work
- **Intervention:** Training at IIE Guwahati (ASPIRE mentor institute)
- **Outcome:** Established food-processing enterprise using locally available agricultural produce
- **Recognition:** Invited as Special Guest to 75th Republic Day celebrations at Kartavya Path

Challenges

- **Scale:** 109 LBIs for vast rural India; need for expansion
- **Market Linkages:** Ensuring consistent access to markets for rural enterprises
- **Quality Assurance:** Maintaining training standards across diverse incubators
- **Financial Sustainability:** Post-incubation funding for scaling enterprises
- **Data Gaps:** Systematic tracking began only in FY 2022-23; earlier impact undocumented

Way Forward

Expansion and Reach

- Increase number of LBIs to cover all aspirational districts
- Establish sector-specific incubators (e.g., fisheries, organic farming, renewable energy)
- Integrate ASPIRE with other government schemes (MUDRA, Skill India, Start-up India)

Strengthening Ecosystem Support

- **Market Linkages:** Partner with e-commerce platforms, FPOs, and aggregators
- **Technology Adoption:** Promote digital tools for production, accounting, and marketing
- **Access to Finance:** Simplify linkages with banks, MFIs, and venture capital for rural startups
- **Quality Certification:** Support GI tagging, organic certification for rural products

Capacity Building and Monitoring

- Regular training of incubator managers and mentors
- Develop robust impact assessment framework
- Track long-term survival and growth of enterprises (not just creation)
- Share best practices across LBIs through knowledge platforms

Sustainability and Scaling

- Encourage public-private partnerships in incubator management

- Develop self-sustaining revenue models for LBIs
- Create alumni networks for peer learning and mentorship
- Link to value chains and exports for higher margins

Conclusion

The ASPIRE scheme has strengthened rural entrepreneurship by promoting innovation, skill development, and inclusive enterprise creation. To maximize its impact, greater focus is needed on expanding outreach, improving market linkages, leveraging digital platforms, and ensuring incubator sustainability. As India moves towards Viksit Bharat 2047, ASPIRE can play a vital role in fostering self-reliance and inclusive economic growth.

From Enterprise to Empowerment: The MSME Story

Introduction

MSMEs are a key driver of India's economy, contributing 31.1% to GDP, 35.4% to manufacturing output, and 48.58% to exports while employing nearly 39 crore people. Supported by reforms in credit access, digital governance, and entrepreneurship promotion, the sector is playing a crucial role in advancing inclusive growth and the vision of Viksit Bharat 2047.

India's MSME Landscape: Scale and Significance

Economic Contribution (January 2026 Data)

- **GDP:** 31.1% contribution
- **Manufacturing Output:** 35.4%
- **Exports:** 48.58%
- **Employment:** 38.9+ crore (second-largest after agriculture)
- **Enterprise Base:** 8.7+ crore registrations on Udyam Portal and Udyam Assist Platform

Revised Definition (Effective 1 April 2025)

- **Based on:** Investment and annual turnover
- **Objective:** Provide enterprises greater room to expand while continuing policy support
- **Impact:** Encourages formalisation and growth without losing MSME benefits

Entrepreneurial Diversity

- **First-generation entrepreneurs** emerging across semi-urban and rural areas
- **Women-led enterprises** growing significantly
- **Youth-led ventures** driving innovation
- **Traditional artisans** preserving crafts through schemes like PM Vishwakarma

Key Schemes and Initiatives

PM Vishwakarma (Artisan Empowerment)

- **Target:** 18 traditional trades (weavers, goldsmiths, carpenters, potters, etc.)
- **Achievements:** 30 lakh registrations achieved in 2 years (against 4-year target)
- **Skill Upgradation:** 24+ lakh beneficiaries completed basic training
- **Credit Support:** ₹5,133+ crore sanctioned to 5.98+ lakh beneficiaries (collateral-free, concessional interest)
- **Digital Incentive:** 7.91+ lakh beneficiaries digitally enabled
- **Success Story:** Smt. Villi (Nagaland basket maker) – monthly income rose 40% to ₹15,000

ASPIRE (Rural Entrepreneurship)

- **Livelihood Business Incubators:** 109 approved across 27 States/UTs
- **Beneficiaries Trained:** 1.23+ lakh
- **Enterprises Established:** 1,000+
- **Employment Generated:** 32,085 beneficiaries suitably employed

Prime Minister's Employment Generation Programme (PMEGP)

- **Objective:** Credit-linked subsidy for non-farm micro-enterprises
- **Applications:** Now in 19 regional languages (excluding English and Hindi)
- **Since Inception:** 10.84+ lakh enterprises supported; ₹29,623 crore subsidy; 97+ lakh jobs generated

MSME Champions Scheme

- **MSME Innovative:** 833 Host Institutes for incubation; 21 Design MoUs; 191 Patents, 807 Trademarks, 99 Designs, 6 GI registrations approved
- **MSME Sustainable (ZED):** 93.61+ lakh registrations; 6.68+ lakh certified (Zero Defect Zero Effect)
- **MSME Competitive (LEAN):** 65,647 registrations; 18,961 enterprises certified for lean practices

Self-Reliant India (SRI) Fund

- **Type:** Fund of Funds for equity support to MSMEs
- **Investment:** ₹2,851 crore invested in 761 MSMEs (as of May 2026)
- **Budget 2026-27:** Additional ₹2,000 crore for continued risk capital access

National SC-ST Hub (NSSH)

- **Objective:** Support SC/ST entrepreneurs in public procurement
- **Impact:** Procurement from SC/ST MSEs increased from ₹99 crore (2015-16) to ₹3,731 crore (2024-25)
- **Support:** 19,000+ SC/ST entrepreneurs supported (Jan-Oct 2025)
- **Success Story:** Rigtech Infra (Ranchi) – ₹25 lakh subsidy, ₹15.75 crore government tenders, ₹4-5 crore turnover, 16 jobs

Cluster Development and Traditional Industries

- **MSE-CDP:** 612 projects approved; 364 completed; 11 new projects (₹253.23 crore) in 2025-26
- **SFURTI:** 513 clusters approved; 3.03 lakh traditional artisans benefited; 376 clusters functional

Technology and Infrastructure

- **Technology Centres:** 18 centres; 20 new centres and 100 Extension Centres being developed
- **RAMP Scheme (World Bank supported):** 398 proposals worth ₹3,211.75 crore approved; 55+ lakh MSMEs impacted

Major Milestones (2025-26)

Formalisation and Credit

- **Udyam Registrations:** 8.7+ crore
- **CGTMSE (25 Years):** 29.03 lakh guarantees (₹3.77 lakh crore) approved in Jan-Nov 2025
- **Guarantee Ceiling Enhanced:** From ₹5 crore to ₹10 crore for collateral-free support

Governance and Grievance Redressal

- **MSME Samadhaan Portal:** 2.56+ lakh applications (₹55,244 crore); 58,148 cases disposed
- **CHAMPIONS Portal:** 39,494 grievances; 99.72% disposal rate
- **Online Dispute Resolution (ODR) Portal:** Launched for delayed payment disputes

Market Access and Exports

- **CPSE Procurement:** ₹31,443 crore (FY 2026-27); 54.51% from MSEs; 29,769 enterprises benefited
- **Khadi & Village Industries:** Sales crossed ₹1.27 lakh crore
- **Coir Exports:** Reached ₹6,614.40 crore (2025-26)

Inclusivity at IITF 2025

- **Stalls:** 292 stalls from 29 States/UTs
- **Women Entrepreneurs:** 67% of stalls
- **SC/ST Entrepreneurs:** 34% of stalls
- **Entrepreneurs with Disabilities:** 15 stalls provided

Challenges

- **Delayed Payments:** 2.56+ lakh applications (₹55,244 crore) reflect persistent issue

- **Access to Equity:** SRI Fund covers only 761 MSMEs; gap remains
- **Technology Adoption:** Many MSMEs still lack digital and modern manufacturing capabilities
- **Skilling Needs:** Rapidly changing technology requires continuous upskilling
- **Regional Disparities:** North East and remote areas need more infrastructure and support

Way Forward

Strengthening Access to Finance

- Expand CGTMSE coverage to ₹10 crore across all sectors
- Increase equity support through SRI Fund; encourage venture capital for MSMEs
- Promote fintech solutions for collateral-free lending

Technology and Innovation

- Scale up Technology Centres and Extension Centres network
- Promote Industry 4.0 adoption (IoT, AI, automation)
- Strengthen ZED certification for quality and sustainability

Market and Export Promotion

- Enhance CPSE procurement targets (60%+ from MSEs)
- Support MSMEs in global value chains through export incentives
- Promote e-commerce and digital marketing for rural enterprises

Addressing Delayed Payments

- Strengthen ODR and Samadhaan mechanisms
- Enforce strict timelines for CPSE and government payments
- Penalize defaulting buyers

Inclusivity and Regional Balance

- Expand PM Vishwakarma and ASPIRE to all districts
- Strengthen NSSH for SC/ST enterprises
- Focus on North East and aspirational districts through targeted schemes

Conclusion

India’s MSME sector has emerged as a pillar of inclusive growth through formalisation, digitalisation, and policy support. While challenges such as delayed payments, limited access to finance, and technology gaps persist, continued reforms can help MSMEs become more competitive, resilient, and innovative, strengthening their contribution to Viksit Bharat 2047.

India's Fire-Safety Crisis: A Systemic Failure of Enforcement and Awareness

Introduction

Recent fire incidents in coaching centres, hotels, and commercial buildings have exposed serious weaknesses in India's fire-safety framework. The problem stems from unauthorized building use, congested urban infrastructure, and poor compliance with safety norms. Despite regulations such as the National Building Code, weak enforcement, low awareness, and a reactive approach continue to undermine fire safety.

The Fire-Safety Crisis: Key Dimensions

Building Usage and Occupancy Mismatch

- **Sanctioned vs. Actual Use:** Buildings often sanctioned for residential purposes are used for commercial activities (e.g., coaching institutes, hotels)
- **Mixed-Use Development:** Permitted under master plans and building by-laws, but only if fire-safety regulations are complied with
- **Occupancy Overload:** Usage patterns and occupancy levels exceed original design parameters, increasing fire risk
- **Recent Example:** Lucknow fire incident (June 2026) – building reportedly sanctioned for residential use but accommodating commercial activities

Congested Urban Infrastructure

- **High-Footfall Areas:** Flourishing in urban villages, unauthorised colonies, Tier-II and Tier-III cities
- **Access Constraints:** Roads less than six metres wide; often do not allow entry of fire tenders
- **Infrastructure Deficit:** Lack of fire hydrants, water supply, and emergency access routes
- **Real-Estate Pressure:** Property unaffordability forcing lower-income groups into such areas

Lack of Awareness and Enforcement

- **Owner Apathy:** Widespread lack of awareness about fire-safety measures among building owners
- **Administrative Neglect:** Municipal authorities conduct sensitisation for stagnant water but not for fire safety
- **Corruption:** Irregularities in building plan approvals and compliance inspections
- **Archaic Regulations:** Outdated building codes that do not address modern urban challenges

Regulatory Relaxations and Compliance Gaps

- **Ease of Doing Business:** Compliance requirements relaxed for smaller-occupancy buildings
- **Misplaced Interpretation:** Applicants often fail to realise they remain responsible for fire-safety compliance
- **National Building Code Provisions:** Minimum access widths, refuge areas, fire staircases, and fire-safety equipment remain mandatory

Structural and Systemic Failures

Urban Planning and Affordable Housing Deficit

- **Real-Estate Bubble:** Multifold increase in property prices; housing unaffordable for middle and lower-income groups
- **Forced Migration:** Movement into urban villages and unauthorised colonies due to unaffordability
- **Failed Response:** Authorities call these areas illegal but fail to increase affordable housing supply
- **No Preemptive Planning:** Failure to anticipate demand and ensure basic infrastructure
- **Bulldozing as "Solution":** Not a sustainable approach; requires balanced infrastructure strategy

Fire-Safety Awareness Deficit

- **Uphaar Cinema Incident (1997):** Brought focus on large-occupancy buildings
- **Stringent Enforcement for Large Buildings:** Theatres, colleges, office complexes now have stricter approvals
- **Smaller Buildings Neglected:** Owners, residents, visitors, and officials remain unaware of basic safety measures
- **No Fire Drills:** Rarely conducted in smaller buildings
- **Basic Equipment Missing:** Many buildings lack fire extinguishers and emergency exits
- **No Corrective Effort:** Apparent lack of effort to address these shortcomings

Regulatory and Administrative Failures

- **Selective Enforcement:** Sealing drives and bulldozing after incidents, but no preventive action
- **No Systemic Review:** Failure to pause, assess mistakes, and implement sustained improvements
- **One-Time Response:** Response to incidents remains reactive rather than preventive
- **No Accountability:** Administrative agencies rarely held responsible for enforcement failures

Building Insurance and Maintenance Neglect

- **Lack of Awareness:** Regarding building insurance and its importance
- **Maintenance Gaps:** No regular safety audits or equipment checks
- **Electrical Malfunctions:** Common cause of fires; often due to poor wiring and lack of maintenance

Way Forward: Building a Fire-Safe India

Strengthening Regulatory Enforcement

- **Mandatory Audits:** Regular fire-safety audits for all buildings (small and large)
- **Strict Penalties:** Severe fines and legal action for non-compliance
- **No-Corruption Mechanism:** Digitise approvals and inspections to reduce corruption
- **Occupancy Certification:** Mandate fresh safety certification for change of use
- **Accountability:** Hold officials accountable for enforcement failures

Urban Planning and Infrastructure Upgrades

- **Affordable Housing:** Increase supply of affordable units to reduce pressure on unauthorised colonies
- **Infrastructure Strategy:** Develop balanced infrastructure for urban villages and congested areas
- **Access Roads:** Ensure minimum road width for fire tender access
- **Fire Hydrants:** Install and maintain fire hydrants in all urban areas
- **Mixed-Use Planning:** Integrate fire-safety provisions in mixed-use development approvals

Public Awareness and Capacity Building

- **Mass Awareness Campaigns:** Use media, schools, and community platforms
- **Owner Education:** Sensitise owners about fire-safety norms and responsibilities
- **Fire Drills:** Mandate regular drills for all buildings
- **Basic Equipment:** Ensure availability of fire extinguishers and smoke detectors
- **Community Engagement:** Involve residents' welfare associations in safety audits

Institutional and Legal Reforms

- **Unified Fire Code:** Consolidate all fire-safety regulations into a single, enforceable code
- **State Fire Service Modernisation:** Equip fire services with modern technology and training
- **Building Insurance:** Mandate insurance coverage for all buildings
- **Sustained Monitoring:** Establish periodic review mechanism for fire-safety compliance
- **Judicial Oversight:** Court-monitored compliance for high-risk areas

Post-Incident Response and Rehabilitation

- **Victim Compensation:** Ensure timely and adequate compensation
- **Investigation:** Thorough inquiry into causes and systemic failures
- **Preventive Corrections:** Implement recommendations from each incident
- **One-Time Affair:** Acknowledge that response cannot be a one-time affair; must be sustained

Conclusion

India's fire-safety crisis stems from weak enforcement, poor awareness, and inadequate urban planning. Existing regulations remain poorly implemented, while unsafe building use and infrastructure gaps heighten risks. Addressing the problem requires a shift from reactive measures to a preventive approach based on strict compliance, public awareness, infrastructure upgrades, and continuous monitoring to protect lives and property.

India's Emerging Technology Ecosystem: Building a Global Digital Power

Introduction

India has emerged as a global technology powerhouse through major investments in AI, semiconductors, quantum technologies, supercomputing, and cybersecurity. Rising from 81st to 38th in the Global Innovation Index and backed by initiatives like the IndiaAI Mission, Semicon India Programme, and National Quantum Mission, the country is building a strong innovation ecosystem to support Viksit Bharat 2047.

Digital India: The Backbone of Transformation

Connectivity Expansion

- **Optical Fibre:** Increased from 19.35 lakh route km (2019) to 42.36 lakh route km (2025)
- **Internet Connections:** 25.15 crore (2014) to 102.86 crore (2026)
- **Broadband Connections:** 6.1 crore (2014) to 99.56 crore (Dec 2025)
- **5G Rollout:** Reached 99.9% of districts – one of world's fastest

Affordability and Adoption

- **Data Consumption:** 61.66 MB/month (2014) to 24.01 GB/month (Dec 2025)
- **Data Cost:** ₹269/GB to ₹8-10/GB
- **Impact:** Expanded access to telemedicine, online education, digital payments, e-governance

Digital Public Infrastructure (DPI)

- **India Stack:** Aadhaar, UPI, DigiLocker, CoWIN, UMANG, GeM
- **Global Leadership:** DPI agreements with 23 countries; UPI operational in Singapore, UAE, France, Nepal, Sri Lanka
- **Trusted Governance:** Secure digital systems enabling inclusive service delivery at population scale

Key Emerging Technologies: Mission-Mode Initiatives

Semiconductors: Building Strategic Autonomy

- **Semicon India Programme (2021):** ₹76,000 crore outlay
- **ISM 2.0 (2026):** ₹1,000 crore initial outlay for FY 2026-27
- **Approved Projects (June 2026):** 12 projects worth ₹1.64 lakh crore – 1 semiconductor fab, 2 compound semiconductor fabs, 9 packaging units
- **Design Linked Incentive (DLI):** 24 companies received fiscal support; 7 chips fabricated including 12 nm designs
- **Chips to Start-up (C2S) Programme:** ₹250 crore; aims to develop 85,000 industry-ready professionals

Artificial Intelligence: Making AI Work for India

- **IndiaAI Mission (2024):** ₹10,300 crore outlay
- **Computing Infrastructure:** Common facility with 38,000+ GPUs being established
- **AI Kosh Platform:** 12,115 datasets and 306 AI models across 20 sectors
- **Startup Ecosystem:** 1.8 lakh startups; 89% using AI solutions
- **AI Impact Summit 2026:** Declarations by 92 countries; $200 billion AI investment commitments
- **India Joins Pax Silica:** Strategic coalition of democratic nations for securing the "silicon stack"

Quantum Technologies: Securing Future Frontiers

- **National Quantum Mission (2023):** ₹6,003.65 crore outlay
- **Four Thematic Hubs:** Engaging 152+ researchers across 43 organisations
- **Achievements:** 1,000-km secure quantum communication network (6 years ahead of schedule)
- **Quantum Valley:** Foundation stone laid in Amaravati (Feb 2026)
- **Startup Support:** 17 startups including 9 deep-tech ventures

Supercomputing: High-Performance Computing

- **National Supercomputing Mission (2015):** ₹4,500 crore outlay
- **Deployed Systems:** 38 supercomputers with 47 petaflops computing power
- **Indigenous Development:** PARAM Rudra series built with Indian-designed hardware and software

Cloud Computing and Blockchain

- **MeghRaj 2.0:** 2,323 government departments onboarded (342 in 2015-16)
- **National Blockchain Framework (2021):** ₹64.76 crore; Vishvasya Blockchain Stack, NBFLite sandbox
- **Applications:** 3 crore property documents verified; Digital Rupee (e₹) pilots; TRAI uses DLT for spam control

Data Centres and Biotechnology

- **Data Centre Capacity:** 375 MW (2020) to 1,500 MW (2025)
- **Biotechnology Sector:** Crossed $190 billion (June 2026); 94 bioincubators across 25 States
- **BioE3 Policy (2023):** Promoting bio-manufacturing and innovation-led growth

Building Human Capital and Research Capacity

Research and Innovation

- **Anusandhan National Research Foundation (ANRF):** Operationalised 2024; ₹264.70 crore grants awarded
- **RDI Scheme (2025):** ₹1 lakh crore corpus for private-sector R&D
- **Centres of Excellence in AI (₹1,490 crore):** Education, Healthcare, Sustainable Cities, Agriculture

Skilling for Emerging Technologies

- **FutureSkills PRIME:** 27.53 lakh registrations; 17.14 lakh learners trained; 80% from Tier-2/3 cities
- **NIELIT:** 56 centres, 750 affiliated institutes; became Deemed University (July 2024)
- **SOAR Programme (2025):** AI literacy for classes 6-12; 15,643 certifications under "AI to be Aware"
- **Skill India Digital Hub:** 1.5 crore registrations; 1,000+ courses across 23 languages

Indian Institutes of Skills

- **Operationalised (Oct 2024):** Mumbai and Ahmedabad under PPP model with Tata IIS
- **Focus Areas:** AI, mechatronics, digital manufacturing, data analytics, Industry 4.0

Global Credibility and Partnerships

International Recognition

- **Global Innovation Index:** 38th (2025) from 81st (2015)
- **Network Readiness Index:** Steady rise reflecting digital infrastructure improvements
- **Global Capability Centres:** 2,100+ GCCs employing 2.36 million professionals; nearly 50% AI-focused since 2021

Strategic Initiatives

- **Bharat 6G Alliance (2023):** Industry-led, government-facilitated initiative for indigenous 6G R&D
- **NEST Division (2020):** Technology diplomacy under Ministry of External Affairs
- **SEMICON India 2025:** 350+ exhibiting companies from 48 countries; 13 MoUs signed

Technology Diplomacy

- **India Stack:** DPI cooperation agreements with 23 countries
- **UPI Globalisation:** Operational in multiple countries including Singapore, UAE, France
- **Pax Silica Membership:** Joining strategic coalition of trusted democratic nations

Challenges

- **R&D Investment:** India's GERD (0.7% of GDP) lags behind China (2.4%), US (3.5%)
- **Semiconductor Manufacturing:** Fabrication ecosystem still nascent; global supply chain dependence
- **Skilling Gap:** Quality and scale of emerging technology skills need acceleration
- **IP Creation:** Patents per capita significantly lower than global peers
- **Regulatory Uncertainty:** Rapidly evolving tech requires adaptive legal frameworks

Way Forward

Strengthening Research and Development

- Increase GERD to 2% of GDP by 2030
- Strengthen industry-academia collaboration through ANRF and RDI
- Focus on IP creation and technology commercialisation
- Establish world-class research universities in emerging technology domains

Deepening Semiconductor Ecosystem

- Accelerate fabrication and packaging capacity
- Develop indigenous EDA tools and semiconductor equipment
- Strengthen supply chain resilience through strategic partnerships
- Expand C2S programme to create 2 lakh industry-ready professionals

Scaling AI and Quantum Capabilities

- Democratise AI compute infrastructure across institutions and startups
- Develop sovereign AI models for public service applications
- Create quantum workforce through dedicated training programmes
- Establish quantum communication network for strategic sectors

Digital Public Infrastructure Expansion

- Export India Stack as global digital public good
- Strengthen cybersecurity and data protection frameworks
- Integrate emerging technologies into DPI for smarter service delivery
- Build interoperable DPI frameworks with trusted partner countries

Human Capital and Skilling

- Integrate emerging technology curriculum in all higher education
- Scale FutureSkills PRIME and SOAR programmes
- Promote lifelong learning through Skill India Digital Hub
- Attract Indian diaspora researchers through fellowships and grants

Conclusion

India's technological transformation highlights its shift from a technology consumer to a technology creator. Backed by strategic investments in AI, semiconductors, quantum technologies, and digital infrastructure, India is strengthening self-reliance and global competitiveness. Sustained focus on R&D, innovation, and emerging technologies will be crucial to realizing the vision of Viksit Bharat 2047.

India's Space Odyssey: Building a Self-Reliant Space Power

Introduction

India's space programme has evolved into a key driver of development, security, and innovation. Milestones such as Chandrayaan-3, Aditya-L1, and the upcoming Gaganyaan mission, along with the growth of 400+ space startups and policy reforms, are strengthening India's position as a leading global space power.

India's Space Capability: Reaching Beyond Earth

Lunar Exploration - The Chandrayaan Programme

- **Chandrayaan-1 (2008):** Discovered water molecules on Moon's surface
- **Chandrayaan-2 (2019):** Provided highest-resolution lunar surface images (30 cm resolution)
- **Chandrayaan-3 (2023):** First country to soft-land near Moon's south pole; fourth nation to soft-land on lunar surface; confirmed presence of Sulphur
- **Future Missions:** Chandrayaan-4 (2027) for sample return; Chandrayaan-5/LUPEX with JAXA for polar exploration

Mars Orbiter Mission (Mangalyaan)

- First country to reach Mars on maiden attempt (2014)
- Only fourth space agency to place spacecraft in Martian orbit
- Remained operational for over 8 years (six-month design life)

Aditya-L1: India's First Solar Observatory

- Placed in halo orbit around Sun-Earth L1 point (2023)
- Studies solar corona, solar winds, and space weather
- Over 27 TB of solar observation data disseminated globally

Space Astronomy and Docking Capabilities

- **AstroSat:** India's first multi-wavelength space observatory; completed a decade in orbit (2025)
- **XPoSat (2024):** Expanded X-ray astronomy capabilities
- **SPADEX (2025):** Made India fourth nation to demonstrate autonomous docking; enabled power transfer and robotic arm testing in microgravity

Gaganyaan:India's First Human Spaceflight

- Aims to send 3 astronauts to 400-km orbit for 3 days
- Includes two uncrewed and one crewed mission
- Axiom-4 mission (2025) provided operational experience in microgravity research

Bharatiya Antariksh Station (BAS)

- Five-module space station in Low Earth Orbit
- First module (BAS-01) approved for launch by 2028
- Will support long-duration human missions and microgravity research

Venus Orbiter Mission (2028)

- India's first mission to Venus
- Will study geology, atmosphere, and ionosphere
- Demonstrates advanced aerobraking and thermal management systems

Building National Capacity: Private Participation and Innovation

Private Sector Transformation

- **Startups:** 1 (2014) to 400+ (Feb 2026)
- **Investment:** Exceeded $500 million; $150 million in 2025 alone
- **Key Players:** Pixxel, Dhruva Space, Skyroot Aerospace, Agnikul Cosmos, Bellatrix Aerospace
- **Indian Space Policy 2023:** Enabled private participation across space value chain

FDI Liberalisation (February 2024)

- **100% FDI (Automatic):** Satellite manufacturing components, ground segment subsystems
- **74% FDI (Automatic):** Satellite manufacturing, operations, data products
- **49% FDI (Automatic):** Launch vehicles, spaceports
- **100% FDI (Automatic):** Manufacturing components and subsystems

Institutional Reforms

- **IN-SPACe (2022):** Single-window authorisation for private activities; facilitated 71 technology transfers
- **NSIL (2019):** Commercialises ISRO technologies; revenues grew from ₹321.77 crore (FY22) to ₹3,246.09 crore (FY25)
- **NGP 2024:** Norms, Guidelines and Procedures for transparent space activities

Self-Reliant Space Transportation

- **Current Capability:** PSLV, GSLV, LVM3 for up to 10 tons to LEO
- **Next Generation Launch Vehicle (NGLV):** 30 tons to LEO capability
- **Reusable Launch Vehicle:** Partially reusable NGLV variant; winged body upper stage
- **Second Spaceport:** Kulasekarapattinam, Tamil Nadu
- **Third Launch Pad:** Sriharikota (₹3,984.86 crore approved, Jan 2025)

Indigenous Technologies

- **VIKRAM3201:** India's first fully indigenous 32-bit space microprocessor
- **KALPANA32:** High-reliability space processor
- **Electric Propulsion System:** First satellite targeted for 2026-27
- **Vikas Engine Throttling:** Critical for reusable rockets
- **CE20 Bootstrap Ignition:** Enables multiple engine restarts

Applications Touching Everyday Life

NavIC - India's Indigenous Navigation System

- Provides positioning across India and 1,500 km beyond
- Second-generation satellites: NVS-01 (2023), NVS-02 (2025)
- Applications: Power-grid synchronisation, train tracking, Aadhaar geo-tagging, vehicle monitoring
- South Africa partnership for NavIC reference station (2025)

Data-Driven Governance

- **Agriculture:** Crop acreage mapping, production forecasting, drought assessment
- **Water Resources:** India-WRIS, National Hydrology Project
- **Rural Development:** MGNREGA, PMGSY, PMKSY monitoring

Disaster Management

- **NDEM 5.0:** Real-time geospatial information for emergency response
- **SASAR:** Satellite Aided Search and Rescue programme
- Monitors cyclones, floods, landslides, forest fires

Health and Education

- **Telemedicine:** 179 nodes; 80 in high-altitude regions (J&K, Ladakh, Siachen)
- **PM e-VIDYA:** 370 educational television channels via GSAT-15 and GSAT-9

Supporting Coastal Communities

- **PFZ Advisories:** Potential Fishing Zone alerts reduce fuel consumption
- **Distress Alert Transmitters:** Emergency alerts from fishing vessels

Global Partnerships and Credibility

International Satellite Launches

- **Pre-2014:** 35 foreign satellites
- **Post-2014 (as on March 2026):** 399 foreign satellites
- **Space Agreements:** 300+ with 61 countries and 5 multilateral organisations

Major Collaborations

- **NISAR (NASA-ISRO):** Launched July 2025; monitors climate change and disasters
- **TRISHNA (CNES-ISRO):** Thermal imaging for natural resource assessment (2026)
- **Chandrayaan-5/LUPEX (JAXA-ISRO):** Lunar polar exploration (2027-28)
- **ESA-ISRO:** Joint statement on human spaceflight and BAS cooperation
- **Germany:** 11 satellites launched; new collaboration in optical communications, human spaceflight
- **Italy:** Joint Strategic Action Plan 2025-2029; lunar science focus
- **Saudi Arabia:** MoU for satellite development and space science

Regional Leadership

- **BIMSTEC Space Programme:** "Neighbourhood First" policy; NESAC training
- **South Asia Satellite (GSAT-9):** 12 Ku-band transponders for Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Sri Lanka
- **Bhutan:** MoU for peaceful uses of outer space (2020)
- **Mauritius:** Joint satellite development (2023)

India-Russia Partnership

- Dates back to 1975 (Aryabhata) and 1984 (Rakesh Sharma)
- Gaganyaan support: Astronaut training, life-support systems
- GLONASS-NavIC navigation cooperation

Challenges

- **Funding Constraints:** Space budget remains modest compared to global peers
- **Technology Gaps:** Semi-cryogenic engines, reusable launch systems still under development
- **Commercialisation Pace:** India's 2-3% global space economy share needs accelerated growth
- **Regulatory Framework:** Implementation of NGP 2024 requires continuous refinement
- **Skilled Workforce:** Need for specialised human resources in emerging space domains

Way Forward

Space Economy Expansion

- Target 8% global share by 2030; grow from $8 billion to $40-45 billion
- Strengthen NSIL commercialisation and technology transfer
- Expand PPP models (Earth Observation constellation approved 2026)

Technology Development

- Complete NGLV development for 30-ton LEO capability
- Demonstrate reusable launch vehicle technologies
- Expand electric propulsion and semi-cryogenic engine capabilities

Human Spaceflight and Space Station

- Execute Gaganyaan crewed mission
- Launch BAS-01 module by 2028
- Complete five-module Bharatiya Antariksh Station

Deep Space Exploration

- Chandrayaan-4 sample return (2027)
- Venus Orbiter Mission (2028)
- Chandrayaan-5/LUPEX with JAXA

Global Leadership

- Strengthen partnerships with NASA, ESA, JAXA, ROSCOSMOS
- Lead regional initiatives (BIMSTEC, South Asia Satellite)
- Promote peaceful and responsible use of outer space

Conclusion

India's space transformation reflects its rise from scientific capability to global space leadership. Achievements such as Chandrayaan-3, Aditya-L1, and a thriving space startup ecosystem highlight growing technological strength. Moving towards Space Vision 2047, India aims to combine space-led innovation with self-reliance and inclusive development.

PAPER 4

CASE STUDY

Q. You are the District Collector of a flood-affected district. Unprecedented rainfall has caused severe damage across multiple blocks. Thousands of families have been displaced, critical infrastructure has been damaged, and relief camps have been established.

The state government has released an initial relief package, but the available resources are far below the actual requirement. According to official assessments, Block A has suffered the highest economic losses, including damage to roads, markets, and agricultural land. However, Block B, inhabited largely by marginalized communities, has suffered comparatively lower economic losses but faces acute humanitarian distress due to poor housing, limited access to healthcare, and pre-existing socio-economic vulnerabilities.

A group of influential elected representatives demands that a larger share of relief funds be allocated to Block A, arguing that it contributes significantly to the district's economy and that rapid restoration there is essential for overall recovery. Simultaneously, humanitarian organizations urge you to prioritize Block B, emphasizing the greater vulnerability of its residents.

The media has begun scrutinizing relief allocation decisions. Political leaders, business associations, and civil society groups are all lobbying for their preferred outcomes. Any decision is likely to attract criticism from one section or another.

You are aware that relief allocation based purely on economic loss may overlook the needs of the most vulnerable, while allocation based solely on vulnerability may delay economic recovery and affect long-term development.

a) Identify the ethical issues, competing values, and stakeholders involved in the case.
b) Discuss the ethical dilemma between equity and efficiency in disaster governance.
c) What are the options available to you? Evaluate the merits and demerits of each option.
d) As District Collector, what course of action would you adopt? Justify your decision in the light of constitutional values, public service ethics, and principles of disaster management. **(20 Marks)**

Q. As an agent of the secret service of the armed forces, you have the responsibility of spying over the enemies and pass on vital strategic information to the government of your country. You have been trained and nurtured in a manner that you won't even hesitate to kill an innocent person if he/ she becomes an obstacle in your duty even unknowingly. For you, your country comes first and you regard your duty as the foremost service one can render to one's motherland.

One occasion, you intercept a message that the enemy country is planning to bomb the pilgrimage base camps stationed at various locations in the bordering state. In fact, troops have been mobilised to give effect to the plan and it is a matter of hours that heavy bombings would start. It is not even possible to launch a counter offensive at such a short notice as major battalions of the army have already been sent to provide relief in the flood hit areas of the country. Waiting for the army to take command would mean severe loss of lives in the base camps.

When your commanding officer comes to know about the scenario, he chalks out a plan and deputes you to give shape to it. However, you are shocked to know his plans. In order to avoid the bombings, he wants you to immediately bomb a school in the enemy territory which lies in close proximity to the border. By doing this, the attention of the enemy would get diverted to the school and they might divert their troops to the school for immediate relief. This would buy some time for the armed forces of your country and they would be able to evacuate the base camps and also take positions to retaliate in case of eventual bombings.

a) What options do you have in this situation?
b) Examine the pros and cons of each of the alternatives.
c) Which one would you choose and why? **(250 Words) (20)**

Q. Communal sentiments flare up quite easily in the district where you are posted as the SP. Frequent clashes between the two conflicting communities during fairs, festivals and at several other occasions have brought your district on the national stage many a times in the past. The higher ups in bureaucracy and politics have given stern directions to the police force under you to ensure law and order in the sensitive areas.

One day, you receive a telephone call from a boy belonging to the minority community. He loves and intends to marry a girl from the majority community. Even she wants the same. However, members from both the communities are hell bent to stop this "unholy" alliance and are ready to resort to violence if need arises. The boy asks you to provide security to the couple and arrange a safe and secure place for their marriage. You turn to action immediately and direct your subordinates to visit the distressed couple immediately and bring them to your office. You are confident that no one will be hurt in this process and everything will go as planned. However, a difficult situation awaits you. Just as the couple is brought to your office, thousands of members from both the communities start assembling in front of the building that houses your office. They are chanting all sorts of slogans and demand that the boy and the girl break their marriage and return to the respective families. You deploy hundreds of police personnel in front of the building to make sure that the crowd doesn't get violent. However, the tempers are running high and the crowd is getting really impatient. You are scared that if the crowd overpowers the force, it might lead to pandemonium and violence. You start thinking of using

tear gas or other crowd controlling measures. In the middle of all this, you receive the call of the Home Minister of the state. He insists that no force should be used against the crowd and that their demands should also be acceded to. When you tell him about your constitutional duty of protecting individual freedom and fundamental rights, he tells you that on any given day, security and law and order take precedence over individual freedom. Now answer the following questions:

a) What options do you have in this situation?

b) Would you agree to the directions given by the Home Minister? What can be its possible fallouts?

c) What is the best possible way out in this situation? Substantiate. **(250 Words) (20)**