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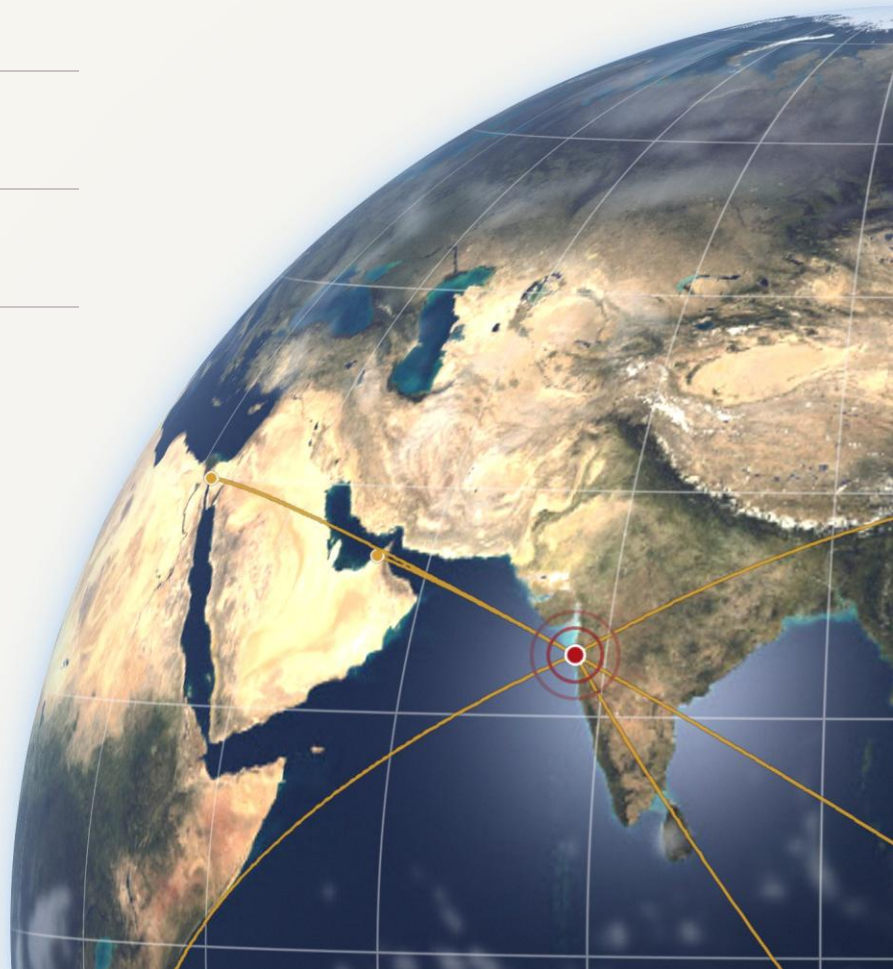
DECODED

Economy & Agriculture

Current Affairs Magazine
May to July 2026

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SECTION 1

Banking, Finance & Markets

01 AI Threats to the Financial Sector

Why India is scrambling over Claude Mythos [Forbes India](#)

PRELIMS POINTERS

Claude Mythos is a frontier AI model developed by **Anthropic** with unusually strong capabilities in **cybersecurity, vulnerability discovery, coding and autonomous reasoning**. Because it can find software flaws and potentially work out ways to exploit them, it was initially made available only under **restricted access** to a limited set of organisations (Project Glasswing).

- **Dual-use nature:** The same capability that finds and fixes vulnerabilities can be misused to attack digital systems.
- **Why India is exposed:** Banks, UPI, payment systems, fintech platforms, stock markets and cloud services are heavily digitised and run on common software.
- **IMF view:** The IMF has flagged AI-enabled cyber risk as a growing threat to **financial stability**, since flaws in widely used infrastructure can be found and exploited faster and across many institutions at once.

India's response

- **RBI:** Directed banks and other regulated entities to carry out **board-approved assessments** of risks from advanced AI models and prepare time-bound mitigation plans.
- **AI-led adversarial testing:** Institutions have been encouraged to test their systems against AI-enabled attacks before malicious actors do.
- **Testing of core software:** Indian technology firms have been checking widely used banking software, including **Finacle**, for weaknesses.
- **CERT-In:** The national cybersecurity agency is assessing the exposure of critical digital infrastructure.

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Why it is a threat

- 1 **Automated vulnerability discovery:** AI can scan software far faster than human security teams.
- 2 **Cheaper attacks:** Phishing, malware, credential theft and intrusion can be automated, lowering the skill needed for sophisticated attacks.
- 3 **Systemic risk:** Shared vendors, cloud providers and payment rails mean one flaw can spread across institutions.
- 4 **Digital payments at stake:** A disruption could hit consumers, businesses and markets at the same time.
- 5 **Data and identity theft:** Credentials and personal data become easier targets.
- 6 **Speed mismatch:** Attacks move at machine speed while detection and response remain human-paced.

02 100% FDI in the Insurance Sector

Govt notifies 100% FDI in insurance sector via automatic route, amends FEMA rules [The New Indian Express](#)

PRELIMS POINTERS

- **What changed:** Foreign investment of up to **100%** in Indian insurance companies is now allowed through the **automatic route**, with no prior government approval, subject to regulatory conditions.
- **Law behind it:** The **Sabka Bima Sabki Raksha (Amendment of Insurance Laws) Act, 2025** raised the ceiling from **74% to 100%**; the FEMA rules were amended in May 2026.
- **LIC is different:** Foreign investment in LIC stays capped at **20%**.
- **Leadership condition:** At least one among the **Chairperson, Managing Director or CEO** must be a **resident Indian citizen**.
- **Oversight continues:** Insurers still need an **IRDAI** licence and must follow the **Insurance Act, 1938** and solvency, investment and consumer-protection norms. The automatic route removes prior approval, not regulation.

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Potential benefits

- 1 **Wider coverage:** More capital to expand distribution and reach uninsured households.
- 2 **Efficiency:** Competition and technology can lower costs.
- 3 **Technology transfer:** AI-based underwriting, fraud detection, catastrophe modelling and digital claims.
- 4 **Long-term capital:** Insurers are patient investors who can fund infrastructure.
- 5 **Skilled jobs:** In actuarial services, claims management, fintech and intermediaries.

Concerns

- 1 **Outflow of profits** as dividends are repatriated.
- 2 **Market concentration** if large global insurers dominate segments.
- 3 **Mis-selling** and complex products that hurt consumers.
- 4 **Exposure to global shocks** through foreign parent companies.
- 5 **Sensitive data:** Health and financial data need strong governance.
- 6 **Urban bias:** Investors may prefer profitable cities over low-income and remote areas.

Way forward

- 1 **Pair liberalisation with consumer protection** against mis-selling, unfair pricing and claim delays.
- 2 **Incentivise rural insurance** through targeted distribution and digital channels.
- 3 **Strengthen IRDAI** to supervise technology-driven insurers.

03 Electronic Gold Receipts

NSE launches electronic gold receipts to formalise gold market [AIR News](#)

PRELIMS POINTERS

- **What they are:** **Electronic Gold Receipts (EGRs)** are dematerialised securities representing ownership of **physical gold** kept in **SEBI-accredited vaults**. They are held in a demat account and traded on exchanges like shares.
- **Legal status:** EGRs are notified as **securities** under the **Securities Contracts (Regulation) Act, 1956**.

- **Two-way conversion:** Physical gold can be deposited and converted into EGRs; EGRs can be converted back into physical gold.
- **Ecosystem:** SEBI, stock exchanges, clearing corporations, depositories and vault managers.
- **Background:** SEBI framed the EGR framework in 2021-22 and **BSE** launched the first EGR segment in **2022**. NSE's launch widens access.
- **Purpose:** Formalise the gold market, improve price transparency, standardise quality and reduce dependence on informal trade.

04 National Company Law Tribunal (NCLT)

SC takes suo motu cognisance of NCLT delays in approving resolution plans, flags grim situation [The New Indian Express](#)

PRELIMS POINTERS

- **Nature:** A quasi-judicial body set up under **Section 408 of the Companies Act, 2013**.
- **Constituted:** **1 June 2016**, replacing the **Company Law Board** and taking over company matters earlier handled by High Courts and BIFR.
- **Role under IBC:** It is the **Adjudicating Authority** for corporate insolvency under the **Insolvency and Bankruptcy Code, 2016**.
- **Other matters:** Mergers and amalgamations, oppression and mismanagement, reduction of share capital and winding up.
- **Appeals:** To the **National Company Law Appellate Tribunal (NCLAT)**, and then to the **Supreme Court** on questions of law.
- **Why in news:** The Supreme Court took **suo motu** note of long delays in approving resolution plans, which erode the value of distressed firms.

05 Ten Years of the Insolvency and Bankruptcy Code

10 Years of Insolvency and Bankruptcy Code 2016 [PIB](#)

PRELIMS POINTERS

- **What it is:** India's consolidated law for the insolvency of **companies, LLPs, partnership firms and individuals**, enacted in **2016**.
- **What it replaced:** A fragmented regime under SICA, the Companies Act, DRT laws and SARFAESI.
- **Shift in control:** From "**debtor in possession**" to "**creditor in control**", with the aim of saving viable businesses.
- **Core process:** In the **Corporate Insolvency Resolution Process (CIRP)**, the **Committee of Creditors (CoC)** evaluates and approves resolution plans.
- **Time limit:** CIRP should end within **330 days**, including litigation.
- **Outcomes:** Of **7,102** CIRPs closed by March 2026, **3,003** ended in liquidation.

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Issues and challenges

- 1 **Delays:** Many cases cross the 330-day limit, eroding asset value.

- 2 **NCLT capacity:** Vacancies among judicial and technical members, few benches and weak registries; a Parliamentary Committee has flagged this.
- 3 **Prolonged litigation** over resolution plans and repeated appeals.
- 4 **High liquidation share:** Many firms reach the IBC too late to be rescued.
- 5 **Asset erosion:** Delay costs employees, customers and going-concern value.
- 6 **Overload:** IBC cases crowd out NCLT's other company-law work.

Way forward

- 1 **Fill vacancies and add benches** at NCLT and NCLAT.
- 2 **Dedicated IBC benches** with their own members and registry.
- 3 **Milestone-based case management** and priority for old CIRPs.
- 4 **Clearer law** to reduce strategic litigation.
- 5 **Digital justice:** NCLT 2.0, e-filing, case tracking and automated listing.

06 Polymer Banknotes

India to get plastic notes? RBI considers decade-old plan [Mint](#)

PRELIMS POINTERS

- **What they are:** Notes printed on a thin, **non-fibrous, non-porous polymer** substrate instead of cotton-based paper.
- **Why in news:** In **July 2026** the government approved RBI's proposal for **field trials** of **₹10 and ₹20** polymer notes, about **one billion notes of each denomination**. Regular issue depends on the trial results.
- **No replacement of paper:** Polymer and paper notes are to **coexist**; there is no proposal to withdraw paper currency.
- **Background:** RBI first planned a polymer ₹10 trial in **2014**. **Australia** issued the world's first polymer notes in **1988**; the UK and Canada also use them.
- **Security features:** Transparent windows, micro-optic features and special inks make counterfeiting harder.

MAINS POINTERS

Advantages

- 1 **Durability:** Longer life for low-value notes that change hands often.
- 2 **Fewer replacements:** Fewer notes withdrawn and destroyed, lowering printing costs over time.
- 3 **Hygiene:** A smooth, non-porous surface stays cleaner than paper.
- 4 **Easier authentication** by the public and machines.
- 5 **Environmental gains through longevity:** Fewer reprints mean less material and energy over a note's life.
- 6 **Counterfeit resistance** through polymer-specific features.

07 India's First Blue Bond

Sagarmala Finance plans India's first blue bond issue [The Economic Times](#)

PRELIMS POINTERS

- **What it is:** A debt instrument whose proceeds fund projects for the **sustainable use and conservation of oceans, marine ecosystems and water resources**.
- **Blue vs green:** Similar to green bonds, but the use of proceeds is limited to the **blue economy**: sustainable fisheries, clean oceans, wastewater management, coastal infrastructure and marine renewable energy.
- **How it works:** Investors receive interest and repayment as usual; the issuer commits the money to eligible blue projects.
- **Issuer:** **Sagarmala Finance Corporation Ltd (SMFCL)**, the maritime-sector NBFC under the Ministry of Ports, Shipping and Waterways, plans India's first blue bond.
- **Global first:** **Seychelles** issued the world's first sovereign blue bond in **2018**.
- **Significance:** Mobilises private and institutional capital for the maritime sector and reduces reliance on the budget.

08 Credit Guarantee Scheme for Microfinance Institutions 2.0

Govt extends credit guarantee scheme for microfinance institutions [DD News](#)

PRELIMS POINTERS

CGSMFI 2.0 is a government-backed scheme launched in **March 2026** to revive lending to **Microfinance Institutions (MFIs)** and **NBFC-MFIs**, which in turn lend to small borrowers. It succeeds the first CGSMFI of **2021**.

- **Guarantor:** The **National Credit Guarantee Trustee Company (NCGTC)** covers banks and financial institutions against losses on loans to eligible MFIs.
- **Target:** Facilitate credit of up to **₹20,000 crore** to the MFI sector.
- **Guarantee cover (of amount in default):** **80%** for small MFIs, **75%** for medium and **70%** for large MFIs.

09 NSE's Ahimsa Index

NSE's new Ahimsa Index: Ethical investing, animal rights [The Indian Express](#)

PRELIMS POINTERS

The **Nifty500 Ahimsa Index**, launched by **NSE Indices** on **10 July 2026**, tracks companies from the **Nifty 500** whose businesses are judged consistent with **Ahimsa (non-violence)**, especially avoiding harm to animals. It was built with the **Ahimsagain Foundation** using its **Ahimsa Investment Movement (AIM)** framework.

How the screen works

- **Green:** Meets the Ahimsa criteria, so eligible.
- **Orange:** Partial compliance, so excluded.
- **Red:** Greater divergence, so excluded.

Significance

- **Ethical investing:** A benchmark built on animal-welfare criteria, not only financial ones.
- **Thematic index:** Applies an ethical filter to the Nifty 500 universe.

- **ESG trend:** Reflects growing interest in values-based investing.
- **Passive products:** Can anchor ETFs and index funds.
- **Related index:** It follows **BSE's Saatvik 100 Index**, which applies a broader ethical screen.

10 Withholding Tax

To attract foreign investors, govt considers cut in withholding tax [The Indian Express](#)

PRELIMS POINTERS

- **Meaning: Withholding Tax (WHT)** is tax deducted **at source** when a payment is made to a **non-resident**. The payer deducts the tax and deposits it with the government, much like **TDS**.
- **Where it applies:** Interest, dividends, royalties and fees for technical services earned by foreign investors in India.
- **Why in news:** The government is considering a cut in WHT on interest earned by foreign portfolio investors, to draw capital into Indian bonds.

MAINS POINTERS

Why a cut matters

- 1 **Better post-tax returns** for foreign investors in Indian securities.
- 2 **Competitiveness** of Indian bonds against other markets.
- 3 **Support for forex reserves** during periods of capital outflow.
- 4 **Lower cost of capital** for the government and borrowers.
- 5 **Deeper bond markets** through higher FPI participation and liquidity.
- 6 **Rupee stability:** More inflows can ease depreciation pressure, though global factors also matter.

SECTION 2

Reports, Indices & Statistics

01 Index of Services Production (ISP)

First Index of Services Production (ISP) [PIB](#)

PRELIMS POINTERS

- **What it is:** India's **first high-frequency indicator** of **services-sector output**, released by the **Ministry of Statistics and Programme Implementation (MoSPI)** from **July 2026**.
- **Purpose:** Tracks short-term changes in the volume of services produced by the formal sector, much as the **IIP** does for industry.
- **Base year:** **2024-25**.
- **Frequency:** **Monthly**, released around the 29th of each month with a lag of about **60 days**.
- **Data:** Draws on GST and other administrative data.
- **Why it matters:** Services are over half of GDP but lacked a monthly gauge until now.

02 Revised Index of Core Industries

Revised Index of Core Industries (ICI) [PIB](#)

PRELIMS POINTERS

The **Index of Core Industries (ICI)** is a **monthly** index compiled by the **Office of the Economic Adviser (OEA)**, **DPIIT**, **Ministry of Commerce & Industry**. It measures output of the key infrastructure industries and is a lead indicator for the IIP.

Key changes

- **New base year:** **2022-23**, replacing **2011-12**.
- **Nine industries:** **Iron ore** is added to the earlier eight: **coal, crude oil, natural gas, refinery products, fertilisers, steel, cement and electricity**.
- **Steel:** Measured as **gross** rather than net production, consistent with the IIP.
- **Coal:** Only **raw coal** is counted; washed coal and middlings are dropped to avoid double counting.
- **Weights:** Derived from the corresponding **IIP 2022-23** items.
- **Back series:** Data available from **April 2023**.

03 Energy Transition Index 2026

Global energy transition readiness dips, India among top gainers: WEF [Business Standard](#)

PRELIMS POINTERS

- **Publisher:** The **World Economic Forum (WEF)**, with **Accenture**; released annually.
- **What it measures:** How well countries are moving towards an energy system that is **secure, equitable and sustainable**, and whether they are ready for future transition. It covers **120 countries** on **44 indicators**.
- **Top three:** **Sweden, Finland and Denmark**, led by strong clean-energy systems and supportive policy.

- **India:** Ranked **70th**. Its score rose about **1.9%**, among the stronger gains by a major economy, helped by better **infrastructure and human capital**.
- **Global trend:** Overall readiness dipped.

04 State of India's Digital Economy Report 2026

India ranks 4th globally on AI performance, 5th in digital economy rankings: Report [The Economic Times](#)

PRELIMS POINTERS

- **Publisher:** The **ICRIER-Prosus Centre for Internet and Digital Economy (IPCIDE)**.
- **Coverage:** **71 countries**, covering about 96% of global GDP, 86% of internet users and 83% of the population.
- **Framework:** **CHIPS:** Connect, Harness, Innovate, Protect and Sustain, with AI indicators added.

Findings for India

- **5th** in overall digitalisation, up from **8th** in 2025.
- **4th** in AI performance, behind the **US, China and Singapore**.
- **Strengths:** Connectivity and digital usage; innovation remains weaker.
- **AI adoption:** India and China together account for nearly **two-fifths** of global AI adoption.
- **Digitally delivered trade:** About **\$328 billion**.
- **Talent:** The world's **second-largest AI talent pool**.

05 State of World Fisheries and Aquaculture 2026

India world's number two fish producer, tops inland catches: FAO 2026 report shows [Down To Earth](#)

PRELIMS POINTERS

SOFIA is the flagship report of the **Food and Agriculture Organization (FAO)** on fisheries, aquaculture, trade, consumption and stock health. The **2026 edition** (June 2026) mainly uses **2024** data.

Global findings

- **Record output:** **235 million tonnes** in 2024: 195 MT of aquatic animals and 40 MT of algae.
- **Aquaculture milestone:** **103 MT** of aquatic animals, crossing **100 MT** for the first time.
- **Capture plateau:** About **92 MT**, within the 86-94 MT band seen since the late 1980s.
- **Asia:** About **76%** of global production.
- **Food and jobs:** At least one-fifth of animal protein for about **3.1 billion** people; over **600 million** livelihoods.
- **Stock health:** The share of marine stocks within sustainable levels fell to **62.4%**.

India's position

- **Second-largest producer** of aquatic animals (about **9%**), after China.
- **First in inland capture**, with about **2.2 MT**, ahead of Bangladesh.
- **Second in aquaculture**, with about **12%** of farmed output.
- **Largest workforce:** About **17 million** fishers and fish farmers.

MAINS POINTERS

Why inland fisheries matter for India

- 1 **Resource base:** Rivers, canals, reservoirs, ponds, floodplains and wetlands.
- 2 **Food security:** Affordable protein and micronutrients.
- 3 **Rural livelihoods** across fishing, processing and trade.
- 4 **East and North-East:** Ganga, Brahmaputra and Barak floodplains are key.
- 5 **Women** play a major role in processing and marketing.
- 6 **Blue economy:** Contributes food, exports and jobs.

Concerns

- 1 **Declining marine sustainability** and **overfishing**.
- 2 **Climate change:** Warming, acidification and changing water availability.
- 3 **Habitat loss** from pollution and wetland destruction.
- 4 **Invasive species** in inland waters.
- 5 **Weak inland catch data** and under-reporting.

Government measures and way forward

- 1 **PM Matsya Sampada Yojana (PMMSY)** for production, infrastructure and post-harvest management.
- 2 **Cold chains, processing and markets** to cut post-harvest losses.
- 3 **Science-based management:** Stock assessments, catch limits and seasonal bans.
- 4 **Climate-resilient aquaculture** and early-warning systems.
- 5 **Better inland data** through standard classification of water bodies.

06 Logistics Port Performance Index

Logistics Port Performance Index (LPPI) [PIB](#)

PRELIMS POINTERS

- **What it is:** A national benchmarking of Indian ports, launched by the **Ministry of Ports, Shipping and Waterways** for FY 2024-25 under the **Sagar Aankalan** framework.
- **Parameters:** Vessel turnaround time, berth idle time, container dwell time and ship berth-day output. Absolute performance and year-on-year improvement carry **equal weight**.
- **Different from LPI:** The World Bank's **Logistics Performance Index** ranks **countries**; LPPI ranks **ports**.

Toppers

Category	Top performer
Dry bulk	Paradip Port Authority (Odisha)
Liquid bulk	Sikka Port and Terminals (Gujarat)
Container	Mundra Port (Gujarat); JNPA (Maharashtra) second

- **JNPA:** Crossed **8 million TEUs** and handled over **102 million tonnes** in FY 2025-26.
- **Global context:** Seven Indian ports are in the top 100 of the World Bank's **Container Port Performance Index 2024**.

07 Ease of Doing Research and Development in India

As India's R&D faces funding, talent crunch, NITI panel suggests 50 fixes [The Economic Times](#)

PRELIMS POINTERS

'Ease of Doing Research & Development in India: Removing Obstacles, Promoting Enablers' is a NITI Aayog report on structural bottlenecks faced by researchers. It drew on **400+ institutional leaders, 850+ scientists**, surveys and **8 regional consultations**, and makes about **50 recommendations**.

Current status

- **Low spending:** Gross Expenditure on R&D (GERD) is about **0.64% of GDP**.
- **Public dependence:** Industry funds a much smaller share than in leading economies.
- **Few researchers:** About **262** full-time-equivalent researchers per million people.
- **Red tape:** Procurement, finance rules and approvals eat into research time.
- **Weak lab-to-market** conversion into patents, start-ups and products.
- **State institutions** lag in funding and infrastructure.

Seven focus areas

- 1 R&D funding and utilisation
- 2 Human resources
- 3 Institutional structures and processes
- 4 Technology development, translation and commercialisation
- 5 Access to knowledge and resources
- 6 R&D in State institutions
- 7 Monitoring, evaluation and policy administration

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Key recommendations

- 1 **Raise GERD to at least 2% of GDP** within 4-5 years, with industry contributing about half.
- 2 **Time-bound fiscal incentives** for private R&D.
- 3 '**Vigyan Nidhi**': One mechanism for fellowships and manpower support.
- 4 **Professional R&D Offices** in institutions as single windows for grants, procurement and compliance.
- 5 **State-level RDI clusters** linking universities, labs, MSMEs and industry.
- 6 **Stronger Technology Transfer Offices** for IP, licensing and incubation.

These build on the **Anusandhan National Research Foundation (ANRF)** and the **₹1 lakh crore Research, Development and Innovation (RDI) Scheme**.

08 India as a Bioeconomy Powerhouse

NITI Aayog proposes ₹50,000-crore fund to make India global biotech power [The Hindu](#)

PRELIMS POINTERS

A **bioeconomy** uses biological resources, biotechnology and biological processes to make medicines, food, fuels, chemicals and materials sustainably. NITI Aayog's **2026 roadmap** aims to make India a **global bioeconomy powerhouse by 2035**.

- **Growth so far:** From **\$10 billion (2014)** to **\$195.3 billion (2025)**, about **4.8% of GDP**.

- **BioEconomy Growth Fund:** A proposed **₹50,000 crore** fund for **2026-2035**, as a special-purpose fund under the **₹1 lakh crore RDI framework**, to close the **lab-to-market** gap through scale-up finance, viability-gap funding, equity and milestone grants.
- **Targets:** **\$691 billion** by 2035 and **\$2.6 trillion** by 2047; a place among the **top three** biotech powers; **30 million+** high-value jobs.
- **Policy anchor:** The **BioE3 Policy** (Biotechnology for Economy, Environment and Employment).

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Why India is well placed

- 1 **Strong pharma base** in generics, vaccines and biosimilars.
- 2 **10,000+ biotech start-ups.**
- 3 **Research network** of DBT, CSIR, IITs and universities.
- 4 **Rich biodiversity** for agriculture, marine and bio-based products.
- 5 **Large domestic market** for vaccines, diagnostics and therapies.

Challenges

- 1 **Lab-to-market gap** at the scale-up stage.
- 2 **High capital needs** for labs, trials and plants.
- 3 **Regulatory complexity** and multiple approvals.
- 4 **Low private R&D** in deep biotech.
- 5 **Talent gaps** in synthetic biology, bioinformatics and biomanufacturing.
- 6 **Weak technology transfer** from public research.

Way forward

- 1 **Operationalise the Growth Fund** as patient, risk-sharing capital.
- 2 **Shared pilot plants and biofoundries.**
- 3 **Faster, science-based regulation** without diluting biosafety.
- 4 **Deeper industry-academia links** for licensing and joint R&D.

SECTION 3

Energy & Critical Minerals

01 India's Critical Mineral Supply Chains

India's critical mineral imports remain highly concentrated, exposing supply risks and driving diversification push [Down To Earth](#)

PRELIMS POINTERS

Critical minerals are economically and strategically vital but face a high risk of supply disruption. India has identified **30 critical minerals** (2023), including **lithium, cobalt, copper, graphite, nickel, rare earth elements, gallium and germanium**.

India's import dependence (FY25)

Mineral	Position
Lithium	100% import-dependent
Cobalt	59.77% of imports from Finland; about 70% of world mining is in the DR Congo, while China dominates processing
Copper ore	Tanzania 50.34%, Chile 23.72%
Graphite	Natural graphite sources are diversified; 91.26% of synthetic graphite comes from China
Nickel	Australia 64.69% of oxide and hydroxide; Belgium 65.27% of nickel sulphate

Across FY19-FY25, **Chile** was the largest overall supplier (2.8 million tonnes), mostly copper ore.

India's strategy

- **National Critical Mineral Mission (2025):** ₹16,300 crore of central outlay plus about ₹18,000 crore from PSUs, covering exploration to recycling.
- **MMDR Amendment Act, 2023:** The Centre can exclusively auction leases for specified critical and strategic minerals.
- **KABIL** (Khanij Bidesh India Ltd) acquires mineral assets abroad, for example lithium blocks in Argentina.
- **Partnerships:** Australia, Japan, the US, UK, EU, Argentina, Chile, Zambia and others; member of the **Minerals Security Partnership (MSP)** since 2023.
- **Recycling:** A **₹1,500 crore** incentive scheme (2025) to recover critical minerals from e-waste and used batteries.

MAINS POINTERS

Why they matter

- 1 **Energy transition:** Lithium, cobalt, nickel and graphite for EV and storage batteries.
- 2 **Grids and renewables** depend on copper.
- 3 **Electronics:** Gallium and germanium for semiconductors.
- 4 **Defence and aerospace** alloys and systems.
- 5 **Industrial competitiveness** and **national security**.

Supply-chain risks

- 1 **Geographic concentration** of mining and processing.

- 2 **Export controls** by resource-rich countries.
- 3 **China's processing dominance.**
- 4 **Geopolitical shocks** and **price volatility.**
- 5 **Processing bottleneck:** Mining alone is not enough.

Way forward

- 1 **Diversify suppliers.**
- 2 **Build the full chain:** Exploration, mining, refining, processing, manufacturing and recycling.
- 3 **Circular economy** for batteries and e-waste.
- 4 **Strategic stockpiles** of high-risk minerals.

02 India: World's Second-Largest Solar Growth Market

India becomes 2nd-largest solar growth market, surpassing US: MNRE [Hindustan Times](#)

PRELIMS POINTERS

- **2025 additions:** India added **37 GW+**, overtaking the **US (about 34 GW)**; **China** led with about **315 GW**.
- **FY 2025-26:** **44.61 GW** added, well above the 34 GW target.
- **Growth:** From **2.8 GW in 2014** to about **171 GW** by **September 2026** (MNRE).

Drivers

- **National Solar Mission (2010).**
- **Solar Parks Scheme** with shared infrastructure.
- **Competitive bidding** that drove tariffs down.
- **PM Surya Ghar: Muft Bijli Yojana** for rooftop solar in **1 crore** homes.
- **Green Energy Corridors** for transmission.
- **Domestic manufacturing** support for modules and cells.

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Significance

- 1 **Energy security** through lower fossil-fuel imports.
- 2 **Climate commitments** under the NDC.
- 3 **Rural access and jobs** through distributed solar.
- 4 **Manufacturing opportunity** in cells, wafers, inverters and batteries.

Challenges

- 1 **Intermittency** and the need for **storage.**
- 2 **Grid integration** and transmission gaps.
- 3 **Land conflicts** from large parks.
- 4 **Import dependence** for components and minerals.
- 5 **Weak DISCOM finances** and payment delays.

Way forward

- 1 **Scale up storage.**
- 2 **Strengthen transmission** and Green Energy Corridors.

- 3 **Promote rooftop, agrivoltaic and floating solar.**
- 4 **Build the full PV value chain**, not just assembly.
- 5 **Prefer low-conflict sites:** Rooftops, degraded land and canals.

03 Rail and Road Integrated Photovoltaics (RIPV)

Rail-road integrated photovoltaics (RIPV): Solar expert explains [The Indian Express](#)

PRELIMS POINTERS

RIPV means installing solar panels **on or alongside railway and road infrastructure** (beside tracks, on highway medians, noise barriers and crash barriers) so that transport corridors also generate power.

- **Dual use** of existing infrastructure.
- **Land-efficient:** Less need to acquire land for solar parks.
- **Distributed generation** along long corridors, close to demand.
- **Uses:** Railway traction, stations, EV charging and nearby loads.

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Significance for India

- 1 **Railway decarbonisation:** Indian Railways targets **Net Zero by 2030**.
- 2 **Eases land pressure** using vast linear networks.
- 3 **Energy security** and support for **electrified transport**.
- 4 **Turns infrastructure into energy assets** without changing its main function.

04 A Unified Energy Policy for India

A unified policy architecture for India's energy future [The Hindu](#)

PRELIMS POINTERS

The **Indian National Science Academy (INSA)** has proposed a **Unified National Energy Policy Framework** to replace fragmented, fuel-by-fuel policymaking with one approach covering coal, oil, gas, electricity, renewables, nuclear, storage and new technologies.

Four pillars (the '4As')

- **Adequacy:** Enough reliable supply through diversification, infrastructure and storage.
- **Access:** Universal, quality energy, including off-grid solutions.
- **Affordability:** Competitive markets, efficient technology and consumer protection.
- **Appropriate Sustainability:** Sustainability suited to India's development needs and resources.

Two guiding principles run across the pillars: **integrated planning** of the whole energy system and an **inclusive transition**.

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Why an integrated framework

- 1 **Rising demand** from growth and urbanisation.
- 2 **Fragmented governance** across ministries and regulators.
- 3 **Import dependence** for oil and gas.

- 4 **Renewable integration** needs joint planning of generation, grids and storage.
- 5 **Long-term goals:** Energy independence by **2047** and **net zero by 2070**.

Areas needing integration

- 1 **Renewables with storage** (batteries and pumped storage).
- 2 **Grids** matched to new capacity.
- 3 **Green hydrogen** for steel, fertilisers and heavy transport.
- 4 **Nuclear** as low-carbon baseload.
- 5 **Digital systems:** Smart grids and demand management.

Challenges

- 1 **Institutional silos.**
- 2 **Centre-State coordination:** Electricity is on the **Concurrent List**.
- 3 **High investment needs.**
- 4 **Weak DISCOMs.**
- 5 **Just transition** for coal regions and workers.
- 6 **Uncertain new technologies.**

Way forward

- 1 **A single national energy strategy** linking fuels, power, transport and industry.
- 2 **Joint Centre-State planning bodies.**
- 3 **Flexible grids** with storage.
- 4 **Reskilling and diversification** for fossil-fuel regions.

05 Long-Duration Energy Storage (LDES)

India's green transition missing long-duration energy storage [The Hindu](#)

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LDES systems store electricity for **many hours to days or longer** and release it when needed. They are key to managing the **intermittency** of solar and wind.

Main technologies

- **Pumped Storage Hydropower (PSH):** Pumps water uphill with surplus power and generates when it flows back.
- **Flow batteries:** Store energy in liquid electrolytes in external tanks, so energy and power scale separately.
- **Compressed Air Energy Storage (CAES):** Compressed air stored underground or in vessels.
- **Thermal storage:** Energy stored as heat or cold.
- **Hydrogen:** Surplus power makes hydrogen by electrolysis for later use.
- **Emerging options:** Gravity storage, liquid-air storage and new battery chemistries.

India's storage plans

- **Resource adequacy plan (2026):** About **80 GW of batteries** and **94 GW of pumped hydro** by FY 2035-36. But average durations are only about **4 hours** (batteries) and **6 hours** (pumped hydro), hence the call for longer-duration storage.

- **CEA projections:** Storage need rises from **82.37 GWh (2026-27)** to **411.4 GWh (2031-32)** and about **2,380 GWh** by 2047.

06 Ultrafast Organic Anodes

Ultrafast Organic Anodes [PIB](#)

PRELIMS POINTERS

Researchers at the **Indian Association for the Cultivation of Science (IACS)** and the **S. N. Bose National Centre for Basic Sciences**, both under the **Department of Science & Technology**, have developed a porous **organic anode** based on a **Covalent Organic Framework (COF)**.

- **COF:** A porous, ordered organic framework held together by strong covalent bonds.
- **How it works:** The pores act as channels, so **lithium ions move faster**; the framework provides sites to store ions.
- **Result:** A battery reached **80% charge in just over one minute** and kept its performance over many cycles.
- **Sodium too:** The same material stores **sodium ions**, pointing to use in **sodium-ion batteries**.
- **Significance:** Fast-charging, organic electrodes reduce reliance on conventional inorganic materials.

07 Smart Energy Storage Material

Smart Energy Storage Material [PIB](#)

PRELIMS POINTERS

Scientists at the **Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru**, an autonomous institute under the DST, have developed an **oxygen-deficient bimetallic oxide** that both **stores energy** and **shows its state of charge** by changing colour.

- **Composition:** $\text{Mo}_{0.11}\text{W}_{0.89}\text{O}_{3-x}$, an oxide of **molybdenum and tungsten**.
- **Oxygen vacancies:** Missing oxygen atoms create space and active sites for ions to move.
- **Colour change (electrochromism):** **Blue when charged, transparent when discharged**, as ion movement alters the electronic structure.
- **Dual function:** Storage material and built-in charge indicator, without separate sensors.

SECTION 4

Industry, Manufacturing & Services

01 Rethinking the PLI Scheme

Rethinking the Production-Linked Incentive (PLI) Scheme [Mint](#)

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The **Production-Linked Incentive (PLI) Scheme** (2020) gives incentives linked to **incremental production or sales** of specified products, not merely for setting up factories. It covers **14 sectors** with an approved outlay of **₹1.97 lakh crore**.

Achievements (by December 2025)

- **Investment:** Over **₹2.16 lakh crore**.
- **Production and sales:** Over **₹20.41 lakh crore**.
- **Jobs:** Over **14.39 lakh** direct and indirect.
- **Exports:** Over **₹8.3 lakh crore**.
- **Mobile phones:** More than **99%** of domestic demand is now met by local production.

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Issues with the current approach

- 1 **Import dependence:** High output can coexist with heavy component imports.
- 2 **Final-assembly bias** with weak upstream suppliers.
- 3 **Uneven participation** across sectors and firms.
- 4 **Fiscal cost** needing cost-benefit scrutiny.
- 5 **Little indigenous R&D** or IP.
- 6 **Concentration** of benefits among large firms.

What PLI 2.0 should focus on

- 1 **Domestic value addition** as the measure of success.
- 2 **Incremental exports** and deeper links to global value chains.
- 3 **Components:** Semiconductors, displays, batteries and precision parts.
- 4 **R&D, design and patents.**
- 5 **MSME supplier networks.**
- 6 **Green manufacturing:** Efficiency, circularity and low-carbon processes.

Way forward

- 1 **Quality over quantity:** Judge by value added, productivity, exports and jobs.
- 2 **Complete ecosystems:** Combine PLI with infrastructure, logistics, skills and R&D.
- 3 **Outcome-based incentives** with periodic review.

02 Mobile Phone Manufacturing Scheme

Mobile Phone Manufacturing Scheme [PIB](#)

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The **Mobile Phone Manufacturing Scheme (MPMS)**, approved by the Union Cabinet in **July 2026**, is a **₹62,500 crore** scheme to deepen phone manufacturing after the **PLI for Large Scale Electronics Manufacturing** ends. It aims to move India from assembly towards **higher domestic value addition (DVA)**, components, Indian brands and design.

- **Tenure:** 5 years, FY 2026-27 to FY 2030-31.
- **Two target segments:** **TS1** incentivises phone manufacturing; **TS2** supports **Indian brands**.
- **Incentive rate:** 2.25% to 5% on eligible sales under TS1, varying over the period.
- **Localisation bonus:** Up to 1.5% extra for domestic sourcing of key components and sub-assemblies.

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Challenges

- 1 **Low value addition** and imported components.
- 2 **Weak component base:** Displays, camera modules, PCBs and chips.
- 3 **R&D gap** in design and technology ownership.
- 4 **Competition** from East and South-East Asia.
- 5 **Building Indian brands** needs sustained investment.
- 6 **Subsidy dependence** cannot replace productivity.

Way forward

- 1 **Converge with the Electronics Components Manufacturing Scheme (ECMS).**
- 2 **Design-led manufacturing** in chips and embedded systems.
- 3 **Finance and global marketing support** for Indian brands.

03 Biopharma SHAKTI

Biopharma SHAKTI Initiative [PIB](#)

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Biopharma SHAKTI (Strategy for **H**ealthcare **A**dvancement through **K**nowledge, **T**echnology and **I**nnovation), announced in the **Union Budget 2026-27**, is a **₹10,000 crore, five-year** initiative to build a globally competitive ecosystem for **biologics and biosimilars**. It aims to launch **100 biologics by 2047**.

Components

- **Discovery grants and equity funds** for early-stage candidates.
- **NIPER network:** 3 new NIPERs and 7 **upgraded** for biopharma skills.
- **National Biopharma R&D Network** linking academia, start-ups and industry.
- **1,000+ accredited clinical-trial sites.**
- **Manufacturing support** for biosimilars, fermentation-based bulk drugs, delivery devices and packaging.

It marks a shift from India's strength in **generics** to complex, high-value **biopharmaceuticals**.

04 Industrial Climate Policy

India's patchy industrial climate strategy [The Hindu](#)

PRELIMS POINTERS

Industrial climate policy covers the regulatory, technological and market tools that cut emissions and energy use in industry. Industry accounts for **over 20%** of India's emissions: about **13%** from fuel use in manufacturing and construction and **9%** from industrial processes and product use.

Existing measures

- **Perform, Achieve and Trade (PAT):** Energy-efficiency targets with tradable **Energy Saving Certificates (ESCs)**.
- **Carbon Credit Trading Scheme (CCTS), 2023:** Emission-intensity targets for steel, cement, aluminium, fertilisers, petrochemicals, refining, pulp and paper, textiles and chlor-alkali; it is gradually replacing PAT for these sectors.
- **Green Steel Taxonomy (2024):** Steel emitting **below 2.2 tCO₂e per tonne** of finished steel qualifies as green.
- **Support for green technology:** Renewables, green hydrogen, CCUS and circularity.
- **Sector roadmaps** (for example steel) towards 2030, 2047 and 2070.
- **Reporting:** India's **first Biennial Transparency Report (BTR1)** gives sectoral emissions data.

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Key issues

- 1 **Coverage gap:** Over **40%** of manufacturing and construction emissions fall under "non-specific industries".
- 2 **Policy fragmentation:** PAT and CCTS cover only clearly defined energy-intensive sectors.
- 3 **Data deficit** at the sub-sector level.
- 4 **Weak price signal:** Earlier PAT cycles had a surplus of ESCerts.
- 5 **Competitiveness** concerns, especially for MSMEs.
- 6 **Trade risk:** The EU's **CBAM** entered its definitive phase in **January 2026**, so credible carbon accounting is essential for exporters.

Way forward

- 1 **Break up "non-specific industries"** into identifiable sub-sectors.
- 2 **Plant-level digital MRV** (measurement, reporting and verification).
- 3 **A predictable CCTS trajectory** aligned with the NDC and 2070 net zero.
- 4 **Cluster-level support** and green finance for MSMEs.

05 India's Toy Industry

From ancient craftsmanship to global competitiveness: India's toy industry charts a new growth story [DD News](#)

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Key trends

- **Exports** rose from **US\$203.5 million (FY 2018-19)** to **US\$384.7 million (FY 2025-26)**, up **89.1%**.
- **Imports** fell from **US\$371.7 million** to **US\$232.3 million**, down **37.5%**.

- **Trade surplus** of **US\$152 million** in key categories in FY 2025-26, against a deficit of **US\$213 million** in FY 2017-18.
- **Quality:** A 2025 BIS survey found **95%** of samples compliant, against **33%** in 2019.
- **Markets:** US, UK, Netherlands and Germany.
- **Heritage:** From Harappan clay toys and wooden dolls to educational and electronic toys.

Government measures

- **National Action Plan for Toys (NAPT).**
- **Toys (Quality Control) Order, 2020:** BIS certification mandatory from **January 2021**.
- **Customs duty** on toys (HS 9503) raised from **20% to 60%** in **2020**.
- **Mandatory testing** of imported consignments.
- **One District One Product (ODOP)** for traditional toy clusters.
- **Toy Biz International 2026:** **400** Indian brands and buyers from **40** countries.

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Significance

- 1 **Labour-intensive manufacturing** and jobs for artisans and MSMEs.
- 2 **Women entrepreneurs** in small-scale production.
- 3 **Soft power** through traditional toys.
- 4 **Import substitution with exports:** Atmanirbhar manufacturing linked to global markets.

Challenges

- 1 **Fragmented, informal units** with poor access to finance.
- 2 **Technology gap** in automation, moulding and electronics.
- 3 **Competition** from East Asia.
- 4 **Weak design, branding and IP.**
- 5 **Imported electronic components.**
- 6 **Rising safety and sustainability standards.**

Way forward

- 1 **From Make in India to Design in India:** Storytelling, STEM content and IP.
- 2 **Common facilities** for testing, tooling and design in clusters.
- 3 **Blend GI crafts with modern design.**
- 4 **Sustainable materials** such as bamboo, wood and recycled inputs.
- 5 **FTAs, exhibitions and e-commerce** for global reach.

06 India Leads in Ship Recycling

India leads in ship recycling [PIB](#)

PRELIMS POINTERS

Ship recycling is the dismantling of end-of-life ships to recover **steel, non-ferrous metals, machinery and equipment** while safely handling hazardous waste. India became the **world's leading ship-recycling nation** in 2025, with **35.4%** of the global total (up from 30.1% in 2024), recycling **2.99 million gross tonnes**.

The ecosystem

- **Alang-Sosiya (Gujarat):** About **98%** of India's activity; **128** operational plots with about **4.5 million LDT** a year of capacity.
- **Jobs:** About **15,000** direct and over **1.5 lakh** indirect.
- **Expansion plan:** Gujarat aims to double capacity to **9 million LDT**.

Government measures

- **Recycling of Ships Act, 2019.**
- **Hong Kong Convention (2009):** India acceded in **2019**; the Convention entered into force on **26 June 2025**.
- **₹53.5 crore** to upgrade yards; **115** facilities are now HKC-compliant.
- **Ship-breaking Credit Note:** Owners get a credit note worth **40% of scrap value**, usable against a new vessel built in an Indian shipyard.
- **EU recognition:** India seeks inclusion of compliant yards in the **EU List of Approved Ship Recycling Facilities**.

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Significance

- 1 **Circular economy:** Steel recovered without fresh iron ore.
- 2 **Employment** in dismantling, processing and logistics.
- 3 **Maritime industrialisation** alongside shipbuilding.
- 4 **Safer, regulated recycling** compared with unsafe beaching practices.

Challenges

- 1 **Hazardous materials:** Asbestos, PCBs, heavy metals and oils.
- 2 **Worker safety** risks from fires, explosions and toxic exposure.
- 3 **Coastal pollution** if poorly managed.
- 4 **Limited EU access.**
- 5 **Costly upgrades** for small yards.
- 6 **Concentration** of risk at Alang.

07 India's Tourism and Hospitality Sector

India's Tourism and Hospitality Sector [PIB](#)

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In **June 2026**, the **Ministry of Tourism and NITI Aayog** released "**Unlocking Growth in Tourism and Hospitality Sector**", focused on removing regulatory barriers and improving **Ease of Doing Business** in tourism.

Scale of the sector

- **GDP:** About **₹15.73 lakh crore**, or **5.22%** of GDP (FY 2023-24).
- **Jobs:** About **84.6 million**.
- **Domestic visits:** About **2.9 billion** in 2024, above the 2019 level of 2.3 billion.

- **International arrivals: 20.6 million** including NRIs in 2024; **9.95 million** foreign tourist arrivals excluding the diaspora.
- **Earnings:** About **US\$35 billion** in 2024, behind Türkiye, Thailand and Saudi Arabia.
- **Assets: 44 UNESCO World Heritage Sites, 106 national parks and 18 biosphere reserves.**

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Challenges

- 1 **Regulatory fragmentation:** Many approvals, licences and renewals.
- 2 **Too few hotel rooms** due to restrictive building norms (FAR, parking, plot size).
- 3 **Under 1.5%** of global international arrivals.
- 4 **e-Visa friction:** Lengthy forms, payment failures and glitches.
- 5 **Infrastructure gaps** in last-mile connectivity and amenities.
- 6 **Sustainability** pressure on water, waste and heritage sites.

Reform agenda

- 1 **Single-window, risk-based, time-bound clearances.**
- 2 **Liberalised hotel norms** with **Auto-DCR** for automated plan approval.
- 3 **A single Health Trade Licence** for ancillary hotel services.
- 4 **All India Tourist Permit** validity raised from **90 days to one year**, without state entry taxes.
- 5 **A 90-day, multiple-entry visa-on-arrival** for selected countries.

Significance

- 1 **Employment-intensive growth** across skill levels.
- 2 **Regional development** in rural, tribal, Himalayan and coastal areas.
- 3 **Women and MSMEs** through homestays, crafts and guides.
- 4 **Foreign exchange:** Tourism works like a services export.
- 5 **Cultural diplomacy.**

08 Drop Shipping

How does drop-shipping on Instagram affect users? Explained [The Hindu](#)

PRELIMS POINTERS

Drop shipping is an e-commerce model in which the seller **holds no inventory**. The seller takes the order and passes it to a **third-party supplier**, who ships directly to the customer. The seller keeps the margin between the retail and supplier prices.

How it works

- 1 A storefront is set up on Instagram, a website or WhatsApp.
- 2 Products are promoted through posts, reels, ads or influencers.
- 3 The customer orders and pays the retail price.
- 4 The seller forwards the order to the supplier.
- 5 The supplier ships directly to the customer.
- 6 The seller keeps the margin.

Features

- **No inventory** and **low entry barriers**.
- **Social-media driven** discovery and sales.
- **Global sourcing**, often from overseas suppliers.
- **Generative AI** makes professional-looking stores easy to build.

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Consumer concerns

- 1 **Long delivery times** and **poor quality** compared with the advertisement.
- 2 **Difficult returns and refunds**, especially from overseas suppliers.
- 3 **Opaque seller identity**.
- 4 **Regulation:** The **Consumer Protection (E-Commerce) Rules, 2020** require sellers to disclose their identity, grievance officer and return policy, but enforcement on social media is weak.

09 NIDAR 2.0

MeitY launches NIDAR 2.0 to develop drones powered by Indian-made chips [AIR News](#)

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- **Full form:** National Innovation Challenge for Drone Application and Research.
- **Launched by:** MeitY, with the **Drone Federation India (DFI)**, under the **SwaYaan** capacity-building initiative, in **July 2026**.
- **Shift in focus:** The first edition centred on drone applications; NIDAR 2.0 moves to **autonomous systems, indigenous avionics and core components**.
- **Indigenous chip:** Drones are to run on India's **VEGA** processor, developed by **C-DAC**.
- **Prize pool:** About **₹65 lakh**.

10 Gems of India Challenge

MIB launches Gems of India Challenge to promote digital creators [AIR News](#)

PRELIMS POINTERS

The **Gems of India Challenge** is a **Ministry of Information & Broadcasting** initiative to find and promote **grassroots digital creators** who document the stories, culture and heritage of India's districts through short-form content. The **pilot** began on **21 July 2026**.

- **Orange economy:** Strengthens the creative economy.
- **Small-town creators** brought into the formal content ecosystem.
- **District storytelling** on culture, heritage, tourism and traditions.
- **Cultural preservation:** A digital record of lesser-known crafts, festivals and histories.
- **Tourism promotion** through authentic local content.

SECTION 5

Infrastructure, Water & Land

01 Modernisation of Indian Railways

Tracks to transformation: Modernisation is powering a safer, faster Indian Railways [The Indian Express](#)

PRELIMS POINTERS

Railway modernisation now goes beyond new trains and stations to **track renewal, mechanised maintenance, advanced signalling, Kavach, electrification and AI-based inspection.**

Key areas and measures

- **Track renewal:** About **55,000 km** renewed since 2014, with heavier **60-kg rails** and long welded rails.
- **Mechanised maintenance:** Track machines up from **748 (2014)** to **1,785 (2026)**.
- **Advanced inspection:** Ultrasonic flaw detection, phased-array testing and oscillation monitoring.
- **Track Management System (TMS)** for predictive maintenance.
- **Kavach:** Indigenous **Automatic Train Protection; Kavach 4.0** commissioned on **2,490 route km** by July 2026.
- **Signalling:** Electronic interlocking, automatic block signalling and axle counters.
- **Mission Raftar:** Speeds raised towards **160 kmph** on selected corridors.
- **Electrification:** About **99.6%** of the broad-gauge network.
- **Modern trains:** Vande Bharat, Amrit Bharat and Namo Bharat.

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Impacts

- 1 **Safety:** Consequential accidents fell from **135 (2014-15)** to **16 (2025-26)**; rail and weld failures dropped about **90%**.
- 2 **Speed:** Track fit for **110 kmph+** rose from about 40% to nearly 80%.
- 3 **Freight efficiency** through stronger tracks and higher axle loads.
- 4 **Passenger experience:** Smoother rides, CCTV, fire safety and accessibility.
- 5 **Lower emissions** through electrification.

Challenges

- 1 **Ageing assets** still awaiting renewal.
- 2 **Congestion** leaves short maintenance windows.
- 3 **Uneven Kavach and signalling coverage.**
- 4 **Funding** for both capex and upkeep.
- 5 **Climate risks:** Floods, landslides and heatwaves.

Way forward

- 1 **Risk-based priority** for dense, accident-prone and climate-vulnerable routes.
- 2 **Predictive maintenance** with AI, IoT, satellites and digital twins.
- 3 **Faster Kavach roll-out** with interoperability and trained staff.

4 **More capacity:** Dedicated Freight Corridors and multi-tracking.

02 Dam Safety in India

Dam Safety in India [PIB](#)

PRELIMS POINTERS

India has the **third-largest number of large dams** in the world (after China and the US), with **6,628 specified dams**. More than **26%** are over **50 years old**.

Government measures

- **Dam Safety Act, 2021:** A legal framework for surveillance, inspection, operation and maintenance of specified dams.
- **Four-tier structure:** National Committee on Dam Safety (NCDS), National Dam Safety Authority (NDSA), State Committee on Dam Safety (SCDS) and State Dam Safety Organisation (SDSO).
- **DRIP Phase II and III:** ₹10,211 crore for 736 dams in 19 States and 3 central agencies.
- **Mandatory inspections** before and after the monsoon.
- **DHARMA:** A national digital platform for dam-health data; about **13,000 inspections** a year are recorded.
- **Early warning:** Instrumentation, inflow forecasting and Emergency Action Plans.

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Why dams are vulnerable

- 1 **Ageing structures** needing rehabilitation.
- 2 **Deferred maintenance** of spillways, gates and foundations.
- 3 **Extreme rainfall** and changing hydrology.
- 4 **Seismic risk**, especially in the Himalaya.
- 5 **Sedimentation** reducing storage and flood moderation.
- 6 **Downstream exposure** to sudden water release.

03 Mekedatu Dam Project

TN Assembly unanimously adopts resolution against Karnataka government's Mekedatu dam proposal [The Hindu](#)

PRELIMS POINTERS

Mekedatu is a proposed **balancing reservoir-cum-drinking water project** by Karnataka on the **Cauvery**, near Mekedatu in the **Bengaluru South district** (formerly Ramanagara), close to the Tamil Nadu border.

- **Scale (2019 report):** About **67.16 TMC** of storage, **400 MW** of hydropower, at an estimated **₹9,000 crore**.
- **Karnataka's case:** Drinking water for **Bengaluru** and better regulation of Cauvery flows, without affecting Tamil Nadu's share.
- **Tamil Nadu's objection:** More upstream storage could reduce or delay water reaching the State. Its Assembly passed a unanimous resolution against the project.
- **Legal background:** The Supreme Court's **2018** Cauvery judgment allotted Karnataka an extra **4.75 TMC** for Bengaluru's drinking water. In 2025 the Court called Tamil Nadu's challenge **premature**, leaving the project report to the **Cauvery Water Management Authority (CWMA)** and the **Central Water Commission**.

04 Afsluitdijk Dam and the Kalpasar Project

PM visits Afsluitdijk Dam [PIB](#)

PRELIMS POINTERS

The Prime Minister visited the **Afsluitdijk** in the **Netherlands** in **May 2026**. It is a **32-km dam and causeway**, completed in **1932**, that separates the **Wadden Sea** from the **IJsselmeer**. It turned the saltwater Zuiderzee into a freshwater lake and serves flood protection, freshwater storage, land reclamation and transport.

Why it matters for India

- **Kalpasar Project:** Gujarat's planned freshwater reservoir across the **Gulf of Khambhat**, which draws parallels with the Afsluitdijk.
- **Integrated water management:** Kalpasar combines freshwater storage, irrigation, transport and **tidal power**.
- **Climate resilience:** Dutch experience with sea-level rise and storm surges.
- **Engineering know-how** in dykes, sluices and pumping.

05 Geocell from Waste Plastic

Geocell [PIB](#)

PRELIMS POINTERS

A **geocell** is a three-dimensional, **honeycomb-like cellular confinement system**. Its cells are filled with soil, sand or aggregate, which stops the fill from spreading sideways and raises **load-bearing capacity and shear strength**. **CSIR-Central Road Research Institute (CRRI)**, with **BPCL**, has developed a geocell made from **processed end-of-life plastic**.

How it works

- **Confinement** of the infill material.
- **Load spreading** over a wider area.
- **Higher shear strength** and **less settlement**.
- **Materials:** Usually HDPE or polypropylene; new versions use waste plastic or jute.

Applications

- Roads on weak subgrades
- Slope protection and erosion control
- Railway formations
- Embankments in hilly and flood-prone areas

06 Land Pooling: An Alternative to Land Acquisition

How land pooling solves acquisition woes [The Hindu](#)

PRELIMS POINTERS

In **land pooling**, owners voluntarily contribute land for planned development. After roads, drainage, parks and utilities are built, a share of the **reconstituted, serviced land is returned** to them; the rest is used for public infrastructure. Unlike acquisition, owners become **partners in development**.

How it works

- 1 Fragmented parcels are pooled into one planning area.

- 2 Each owner contributes a fixed share of land.
- 3 Infrastructure, public facilities and EWS housing are built.
- 4 Remaining land is reshaped into regular, serviced plots.
- 5 Owners receive developed plots worth more than before.
- 6 Part of the value gain pays for the infrastructure (**value capture**).

Indian examples

- **Gujarat: Town Planning Schemes** in Ahmedabad, Surat, Rajkot, Vadodara and Gandhinagar, covering over **1,000 sq km**.
- **Maharashtra:** TP schemes for planned urban growth.
- **Amaravati (Andhra Pradesh):** Farmers pooled **34,568.8 acres** against a target of 37,941.58 acres.
- **Delhi:** The **DDA Land Pooling Policy (2018)** covers urbanisable areas including **104 villages**.
- **Punjab:** The **2025 policy** was **withdrawn in August 2025** after protests by farmers.

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Why it is an alternative to acquisition

- 1 **Less displacement:** Owners keep a stake.
- 2 **Less litigation** due to voluntary participation.
- 3 **Lower upfront cost** for government.
- 4 **Benefit sharing** in land-value gains.
- 5 **Planned urbanisation.**
- 6 **Preserves communities.**

Challenges

- 1 **Securing enough participation.**
- 2 **Unequal bargaining power** for small owners.
- 3 **Poor land records** (Guwahati showed manual, mismatched records).
- 4 **Valuation disputes.**
- 5 **Weak planning authorities.**
- 6 **Exclusion** of tenants, sharecroppers and informal occupants (the Punjab experience showed how quickly trust can break down).

Way forward

- 1 **Clear entitlements** before the scheme starts.
- 2 **Digitised, GIS-based land records.**
- 3 **Cover tenants and workers** in benefit sharing.
- 4 **Specialised land-pooling authorities.**

07 Methane Blast in the Teesta-VI Tunnel

Sikkim tunnel landslide: Workers dead, trapped; rescue operation underway [The Indian Express](#)

PRELIMS POINTERS

An explosion hit the under-construction **Head Race Tunnel** of the **500 MW Teesta Stage-VI Hydroelectric Project** at Samardung in **Namchi district, Sikkim**. **Methane** trapped in rock is suspected to have escaped during excavation and ignited, causing a blast, toxic fumes and a tunnel collapse that trapped workers. NDRF, SDRF and mine-safety teams struggled with gas, low oxygen and unstable rock.

Methane: key facts

- **Formula:** CH_4 , the simplest hydrocarbon and the main component of natural gas.
- **Explosive range:** About **5-15%** in air.
- **Lighter than air:** Collects near the roofs of tunnels and mines.
- **Odourless:** Commercial gas is odourised with **mercaptans** to detect leaks.
- **Greenhouse gas:** About **80 times** as potent as CO_2 over 20 years.
- **Where it occurs:** Coal seams and sedimentary rock, a known hazard in mining and tunnelling.

MAINS POINTERS

Lessons

- 1 **Continuous gas monitoring** and forced ventilation in Himalayan tunnels.
- 2 **Geological surveys** for gas-bearing strata before excavation.
- 3 **Trained rescue teams** and breathing equipment on site.
- 4 **Safety audits** of hydro projects in fragile terrain.

08 PARIVARTAN Scheme

PARIVARTAN Scheme [PIB](#)

PRELIMS POINTERS

PARIVARTAN (Programme for Accelerated Renewal and Incentivization of Vehicle Assets for Reducing Transport Air Pollution and Network Emissions) aims to speed up the replacement of **old, polluting trucks and buses** in the **National Capital Region (NCR)** with **BS-VI or electric vehicles**.

- **Guidelines approved by:** The **Ministry of Housing & Urban Affairs**, under which the NCR Planning Board works.
- **Implemented by:** The **Ministry of Road Transport & Highways**.
- **Funding channel:** The **National Capital Region Planning Board (NCRPB)**.
- **Why it matters:** Heavy diesel vehicles are a major source of NCR air pollution.

SECTION 6

Employment, Welfare & Inclusion

01 VB-G-RAM-G Act, 2025

VB-G-RAM-G Act, 2025 [PIB](#)

PRELIMS POINTERS

The **Viksit Bharat-Guarantee for Rozgar and Ajeevika Mission (Gramin) Act, 2025** replaces **MGNREGA** from **1 July 2026**. It links wage employment with **durable rural assets and livelihoods**.

Feature	MGNREGA (2005)	VB-G-RAM-G (2025)
Guaranteed days	100 per household	125 per household
Funding	Centre bore unskilled wages	Centrally Sponsored: 60:40; 90:10 for North-Eastern and Himalayan States
Allocation	Demand-driven	State-wise normative allocation; States pay any excess
Peak farm season	No pause	States notify up to 60 days a year with no works

- **Four priority works:** Water, core rural infrastructure, livelihood infrastructure and climate-extreme mitigation, planned by Gram Panchayats.
- **Technology:** Biometric authentication, geospatial tagging, dashboards and public disclosure.
- **Worker protections:** Unemployment allowance and compensation for delayed wages; payments through **DBT-SPARSH**.

MAINS POINTERS

Debates

- 1 **More days, more assets:** Seen as a move from relief to durable rural infrastructure.
- 2 **Fiscal federalism:** States now share the cost and bear spending beyond the normative allocation, which poorer States may struggle with.
- 3 **From demand to allocation:** Critics fear capped budgets weaken the "right to work".
- 4 **Farm-labour pause:** Protects farm labour supply at peak season, but limits workers' choice.

02 VISHWAS 2026

VISHWAS 2026 [PIB](#)

PRELIMS POINTERS

VISHWAS 2026 is a **one-time dispute-resolution scheme** of the **Employees' Provident Fund Organisation (EPFO)** to settle old disputes over **damages imposed on employers** for late or unpaid EPF contributions. It operates under **Section 14B of the EPF & MP Act, 1952** and **Section 128 of the Code on Social Security, 2020**, and runs for **six months from 29 June 2026**.

- **Cases covered:** Those under litigation, unpaid final orders, pending notices, and defaults where no notice has yet been issued.

- **Reduced damages:** For defaults before **14 June 2024**: **0.25%** a month for delays up to 2 months, **0.50%** for 2-4 months and **1%** beyond 4 months.
- **Pre-condition:** Interest under **Section 7Q** must be paid in full first.
- **Finality:** The employer gives up further litigation.
- **Digital filing** through the EPFO Employer Portal with DSC or e-Sign.

03 E-PRAAPTI Portal

EPFO to launch new portal to track inoperative accounts [The Hindu](#)

PRELIMS POINTERS

- **Full form:** EPF Aadhaar-Based Access Portal for Tracking Inoperative Accounts.
- **Purpose:** Help EPFO members **find and reactivate old, inoperative accounts**, especially legacy accounts not linked to a **Universal Account Number (UAN)**.
- **How:** **Aadhaar-based authentication** lets members prove identity, update details and link the old account to their UAN.

04 SARTHAK-PDS

SARTHAK-PDS Scheme [PIB](#)

PRELIMS POINTERS

SARTHAK-PDS (Scheme for Assistance in Ration Transport and Handling-Income with Automation in PDS) is an umbrella scheme approved by the **CCEA**. It runs until **31 March 2031**, with a central share of **₹25,530 crore** over the **16th Finance Commission** period.

- **Merges** support for intra-State movement and handling of foodgrains and **Fair Price Shop dealer margins** under the **NFSA** with **SMART-PDS**.
- **Last-mile delivery** of grain to Fair Price Shops.
- **Technology:** AI, machine learning, natural language processing and blockchain.
- **Unified architecture:** Common databases, real-time monitoring and **State Command and Control Centres**.
- **Aim:** Fewer leakages and more transparent, interoperable PDS.

05 SHE-MART Initiative

SHE-MART Initiative [PIB](#)

PRELIMS POINTERS

- **Full form:** Self Help Entrepreneurs: Marketing Avenues for Rural Transformation.
- **Origin:** A **Union Budget 2026-27** initiative under the **Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM)**, Ministry of Rural Development.
- **Aim:** **Community-owned retail outlets** for products of women-led **Self-Help Groups**.
- **Gap addressed:** Women may have credit and skills but lack reliable markets.
- **Target:** **1 crore women**.

06 Project Saksham

Project Saksham [PIB](#)

PRELIMS POINTERS

Project Saksham is a skilling and livelihood initiative of the **National Highways Authority of India (NHAI)** with the **Vertis Foundation**, focused on **rural women** in communities along National Highways.

- **Women-centric:** Over **80%** of beneficiaries are women.
- **Reach:** **12 training centres**; **6,000+** youth trained and **4,000+** placed.
- **Trades:** Electrical work, plumbing, appliance repair, tailoring, general duty assistant (nursing) and multi-skill technician.
- **Earnings:** About **₹13,000-16,000** a month.

07 SMILE Scheme

SMILE Scheme rehabilitates over 10,200 persons engaged in begging across 216 cities [DD News](#)

PRELIMS POINTERS

- **Full form:** **Support for Marginalised Individuals for Livelihood and Enterprise.**
- **Ministry:** **Social Justice and Empowerment**; a **Central Sector Scheme** launched in **2022**.
- **Two sub-schemes:** **Comprehensive Rehabilitation for Welfare of Transgender Persons** (which includes **Garima Greh** shelter homes) and **Comprehensive Rehabilitation of Persons Engaged in Begging.**
- **Begging component:** Identification, shelter, counselling, medical care, education, skilling and livelihoods.
- **Progress:** Over **10,200** persons rehabilitated across **216 cities**.

08 JANANI Platform

JANANI Platform [PIB](#)

PRELIMS POINTERS

JANANI (Journey of Antenatal, Natal and Neonatal Integrated Care) is a **Ministry of Health and Family Welfare** digital platform that creates a **lifelong digital health record** for women across their reproductive years. It upgrades the **RCH (Reproductive and Child Health) portal**.

- **Lifecycle tracking:** Antenatal care, delivery, postnatal and newborn care, child care and family planning.
- **QR-enabled Mother and Child Health (MCH) cards** that make records portable.
- **High-risk pregnancy alerts** for frontline workers.
- **Dashboards and due lists** for administrators.
- **Interoperability** with **U-WIN** and **POSHAN** platforms.

09 Nirbhay Raho Initiative

Nirbhay Raho Initiative [PIB](#)

PRELIMS POINTERS

- **Ministry:** **Panchayati Raj.**
- **Aim:** **Women's safety in rural areas** through awareness and capacity building.

- **Platform:** Panchayati Raj Institutions and grassroots functionaries.
- **Method:** Training of Trainers to build a pool that sensitises local stakeholders.
- **Significance:** Makes local governance gender-responsive and involves communities in prevention.

10 Viksit Vibrant Village Programme 2026

Viksit Vibrant Village Programme (VVVP) 2026 [PIB](#)

PRELIMS POINTERS

VVVP 2026 is a youth-led programme run through **Mera Yuva Bharat (MY Bharat)** under the **Department of Youth Affairs**. It connects young people with **border villages** to learn about their life, culture and needs.

- **Duration:** Two phases, **4-30 June 2026**.
- **Coverage:** **74 villages** in **Ladakh, Himachal Pradesh and Uttarakhand**.
- **Participants:** **400+** youth from every State and UT, chosen through a quiz taken by over **3 lakh**.
- **Activities:** Household surveys, Gram Sabhas, cleanliness and plantation drives, scheme awareness and home stays, in the spirit of **Ek Bharat Shreshtha Bharat**.
- **Parent programme:** The **Vibrant Villages Programme** (VVP-I, **2023**, northern border; VVP-II, **2025**, other land borders) of the Ministry of Home Affairs.

11 CHIRAG Centre

Railways' CHIRAG Centre for HR Excellence inaugurated at Moula Ali [The Hindu](#)

PRELIMS POINTERS

CHIRAG (Centre for **HR** Information Systems, **R**esearch and **A**nalytics in **G**overnance) is a **Centre of Excellence for HR management in Indian Railways**, opened at **Moula Ali, Hyderabad**.

- **HRMS training:** Role-based, certified training on the **Human Resource Management System**.
- **HRMS-MITRA:** A cadre of master trainers for the Zonal Railway Training Institutes.
- **Think tank** for evidence-based HR policy.
- **AI and ML** for workforce planning.

SECTION 7

Agriculture: Crops, Inputs & Sustainability

01 Direct Seeded Rice (DSR)

Punjab's Direct Seeded Rice: Groundwater, Herbicide and Soil Health [The Indian Express](#)

PRELIMS POINTERS

Direct Seeded Rice (DSR) sows seed **directly in the field**, instead of raising nursery seedlings and transplanting them into **puddled, flooded** fields. In Punjab's **Tar-Wattar DSR**, the field is irrigated before sowing and seeds are sown once the soil has the right moisture. It is promoted as a **water- and labour-saving** option in groundwater-stressed regions.

Transplanted rice	Direct Seeded Rice
Seedlings raised in a nursery	Seeds sown directly
Puddling required	No puddling
Fields kept flooded early on	No continuous flooding
More labour and water	Less labour and water
Standing water suppresses weeds	More weeds; greater dependence on herbicides

MAINS POINTERS

Concerns

- 1 **Weeds and herbicide load** can rise.
- 2 **Yield gaps** if sowing time and moisture are wrong.
- 3 **Soil-health and nutrient** effects (for example iron deficiency) need monitoring.
- 4 **Adoption** depends on extension support and incentives.

02 India's Cotton Sector

In cotton fields, policy is undoing what science built: the challenge for the Cotton Productivity Mission [The Indian Express](#)

PRELIMS POINTERS

Current status

- **Area:** The **world's largest** cotton area, about **11 million hectares**.
- **Low yield:** About **441 kg/ha** of lint (TE 2025-26), against about **2,340** in Australia, **2,311** in China and **1,943** in Brazil.
- **Output:** Rose from **13.6 million bales (2002-03)** to **39.8 million (2013-14)** after Bt cotton, then declined.
- **Rainfed:** About **67%** of cotton area.
- **Imports:** About **4 million bales** in 2025-26 for a traditional exporter.

Mission for Cotton Productivity

- **Outlay:** **₹5,659.22 crore** for **2026-27 to 2030-31**.
- **Targets:** Lint yield from about **440 to 755 kg/ha** and output of **498 lakh bales** by 2031.

- **High Density Planting System (HDPS):** Closer spacing; field trials show about **40%** higher yields.
- **Seeds:** High-yielding, pest- and climate-resilient varieties, including **Extra Long Staple (ELS)** cotton.
- **MSP procurement** by the **Cotton Corporation of India** through **571** centres.
- **Kasturi Cotton Bharat** for branding, certification and traceability.
- **Better ginning** and testing to cut contamination.

MAINS POINTERS

Issues

- 1 **Stagnant seed technology** since Bollgard II.
- 2 **Pink bollworm resistance:** The pest has developed **resistance to Bt cotton**, cutting yields.
- 3 **Weak R&D ecosystem:** Regulatory uncertainty and price controls deter private breeding.
- 4 **Rain dependence** and climate shocks.
- 5 **Poor value chain:** Outdated ginning, contamination and weak traceability.

Way forward

- 1 **Invest in next-generation varieties** through public and private R&D.
- 2 **Region-specific practices:** HDPS, drip, fertigation and precision farming.
- 3 **Integrated pest management** to delay resistance.
- 4 **Water and soil conservation** in rainfed belts.

03 Herbicide-Tolerant (IMI) Mustard Hybrids

New herbicide-tolerant mustard hybrids need diverse farming plans [The Hindu](#)

PRELIMS POINTERS

Imidazolinone (IMI)-tolerant mustard hybrids survive spraying with **imidazolinone herbicides**, so farmers can kill weeds without harming the crop. They target **Orobanche/Phelipanche (broomrape)**, a **parasitic weed** that attaches to mustard roots and draws water and nutrients.

How it works

- 1 IMI herbicides block the **ALS (acetolactate synthase)** enzyme that plants need to grow.
- 2 A **mutation** in the mustard's ALS gene makes the enzyme insensitive to the herbicide.
- 3 The herbicide kills weeds, including broomrape, while the crop survives.
- 4 **Non-GM:** Developed by **mutation breeding**, with no foreign gene. This sets it apart from the transgenic **GM mustard DMH-11**.

MAINS POINTERS

Concerns

- 1 **Herbicide-resistant weeds** if one herbicide is used year after year.
- 2 **Gene flow** of tolerance to related weedy plants.
- 3 **Residue and soil effects** of repeated spraying.
- 4 **Need for diverse plans:** Crop rotation, mixed weed control and stewardship rules.

04 National Seed Reserve

1.74 lakh quintals of National Seed Reserve made to ensure availability [AIR News](#)

PRELIMS POINTERS

- **What it is:** A reserve of quality **foundation and certified seeds** for emergencies such as **drought, floods, cyclones and delayed monsoon**.
- **Current stock:** About **1.74 lakh quintals**.
- **Varieties:** Mainly **short- and medium-duration** varieties for quick re-sowing after crop failure.
- **Purpose:** **Contingency preparedness**, not routine supply; a "seed safety net".
- **Implementing agencies:** **National Seeds Corporation**, State Seed Corporations and State agriculture departments, under the **Sub-Mission on Seeds and Planting Material**.
- **Finance:** A **revolving fund**, replenished from seed sales.

05 Fertiliser Use Efficiency

Improving efficiency of fertilizer use in India [The Hindu](#)

PRELIMS POINTERS

Fertiliser Use Efficiency (FUE) is the share of applied nutrients that crops actually take up. The rest is lost through **leaching, volatilisation, runoff, denitrification** or fixation in soil. India's challenge is to get more yield from every unit of nutrient, with less environmental damage.

Current pattern

- **Nitrogen dominance:** Heavy reliance on **urea** skews the **N:P:K** ratio far from the recommended **4:2:1**.
- **Low nitrogen-use efficiency:** Much of the applied nitrogen is lost.
- **Micronutrient deficiencies** (zinc, boron, iron, sulphur) despite heavy NPK use.
- **Regional variation** with cropping patterns and irrigation.

Government measures

- **Soil Health Card Scheme** for soil-test-based advice.
- **Neem-coated urea:** Slows nitrogen release and curbs diversion.
- **Nutrient Based Subsidy (NBS):** Subsidy on **P and K** fertilisers by nutrient content; urea stays outside NBS.
- **Nano urea** for targeted delivery.
- **PM-PRANAM:** Rewards States that cut chemical fertiliser use.
- **Integrated Nutrient Management (INM):** Chemical fertilisers combined with manures, biofertilisers and residues.

MAINS POINTERS

Why use is inefficient

- 1 **Subsidy distortion:** Cheap urea encourages over-use of nitrogen.
- 2 **Soil tests not acted on** at field level.
- 3 **Wrong timing and dose.**
- 4 **Excess irrigation** leaches nitrates.
- 5 **Little precision farming** among smallholders.

6 **Visible quick response** to urea encourages over-application.

Environmental impacts

- 1 **Nitrate pollution** of groundwater.
- 2 **Eutrophication** of rivers and lakes.
- 3 **Nitrous oxide (N₂O)** emissions, a potent greenhouse gas.
- 4 **Soil acidification** and loss of soil health.
- 5 **Financial loss** to farmers.

Way forward

- 1 **Rationalise subsidies** to favour balanced N:P:K.
- 2 **From cards to field adoption** of soil-test advice.
- 3 **4R stewardship**: Right source, Right dose, Right time, Right place.
- 4 **Precision agriculture**: Drones, sensors and variable-rate application.
- 5 **Lower import dependence** for fertilisers and feedstocks.

06 Fermented Organic Manure

Biogas association calls for blending of organic manure with fertilizers [The Hindu](#)

PRELIMS POINTERS

- **What it is: Fermented Organic Manure (FOM)** is made from the **digestate** left after organic waste (cattle dung, crop residue) is anaerobically digested in **biogas/Compressed Biogas (CBG)** plants.
- **Content: Organic carbon** with nitrogen, phosphorus and potassium.
- **Proposal:** The **Indian Biogas Association** wants **phased mandatory blending** of FOM with chemical fertilisers, reaching **10% by 2030**.
- **Scale:** Production is estimated at about **1 million tonnes a year**, set to grow as more CBG plants open.
- **Benefits:** Better soil health, lower chemical use and fewer fertiliser imports, while making CBG plants more viable.

07 Nano Urea

Nano urea and public health: Why India must proceed with caution [The Hindu](#)

PRELIMS POINTERS

- **What it is:** A liquid nitrogen fertiliser delivering nitrogen in **nanoparticles (about 20-50 nm)** instead of urea granules.
- **Developer:** IFFCO, launched in **2021**.
- **Use:** **Foliar spray** at key crop stages.
- **Aim:** Higher **nitrogen-use efficiency** and less granular urea.

MAINS POINTERS

Concerns

- 1 **Weak evidence base:** Long-term, independent field trials on yield are limited.
- 2 **Crop quality and soil health** effects are not fully known.

- 3 **Health and environment:** Possible effects of nanoparticles on farm workers and ecosystems.
- 4 **Need:** Independent trials, transparent data and a precautionary regulatory approach.

08 Green Urea

Green Urea [PIB](#)

PRELIMS POINTERS

- **What it is:** Urea made with **green hydrogen and green ammonia** instead of fossil gas, cutting the carbon footprint of nitrogen fertiliser.
- **Process:** Green hydrogen (electrolysis with renewable power) combines with nitrogen from the air to make **green ammonia** (Haber-Bosch process); ammonia then reacts with **CO₂** to make urea.
- **Key point:** Urea still needs **CO₂**, so a sustainable source is required, such as CO₂ captured from power, cement or steel plants.

Government measures

- **National Green Hydrogen Mission** as the policy umbrella.
- **SECI auction: 7.24 lakh tonnes a year** of green-ammonia supply allocated to fertiliser plants.
- **Ten-year offtake agreements** for investor certainty.
- **Bridging the cost gap** between green and grey ammonia.
- **Pilot:** A 150 TPD plant at **Pudimadaka (Andhra Pradesh)** combining electrolysis and CCUS.

MAINS POINTERS

Challenges

- 1 **High cost** of green ammonia compared with grey.
- 2 **Cheap, reliable renewable power** at scale.
- 3 **CO₂ sourcing**.
- 4 **Capital needs** for electrolyzers, CCUS and storage.
- 5 **Water** for electrolysis.
- 6 **Controlled, subsidised urea prices** make it hard for green urea to compete.

Way forward

- 1 **Cut green-hydrogen costs** through scale and domestic electrolyzers.
- 2 **CO₂ hubs** near cement, steel and power clusters.
- 3 **Integrated green-fertiliser parks**.

09 Acephate and Methamidophos in Chilli Exports

After China says no, exporters urge Andhra Pradesh to curb high-risk pesticides in chilli [The Hindu](#)

PRELIMS POINTERS

- **What they are:** **Organophosphate insecticides** against chewing and sucking pests.
- **Acephate:** Registered in India; classed as **moderately hazardous** (WHO Class II).
- **Methamidophos:** **Highly hazardous**; not registered for use in India, but it also forms as a **breakdown product of acephate**, so it can show up in residues.

- **Why in news:** China rejected some Indian **dry red chilli** consignments over residues. Exporters asked **Andhra Pradesh** (the Guntur belt) to curb these pesticides in export-oriented farming.
- **Remedies sought:** Residue-compliant cultivation, more testing and traceability.

10 Paraquat Ban

The human cost of a deadly weed killer: Banning of paraquat in Telangana [The Hindu](#)

PRELIMS POINTERS

- **What it is:** Paraquat dichloride is a **non-selective, contact herbicide** that kills green plant tissue by producing **reactive oxygen species**.
- **Danger:** Highly toxic if swallowed; even small amounts damage the **lungs (fibrosis)**, kidneys and other organs. There is **no specific antidote**.
- **Telangana:** Imposed a temporary ban in **April 2026** after many poisoning deaths, mostly suicides; its Assembly urged a national ban. **States can only ban a pesticide temporarily**.
- **Nationwide action:** On **13 July 2026**, the Centre notified a **draft ban** under the **Insecticides Act, 1968** on manufacture, import, sale and use, with **30 days** for objections.
- **Global position:** Banned in **over 70 countries**.

MAINS POINTERS

Issues

- 1 **Productivity vs public health:** Cheap and effective, but lethal.
- 2 **Self-harm** with farm chemicals is a major public-health problem.
- 3 **Need for alternatives** for farmers, and safe storage and sale rules.
- 4 **Regulation:** Stronger Centre-State coordination under a modern pesticide law.

11 National Mission for Sustainable Agriculture

National Mission for Sustainable Agriculture [PIB](#)

PRELIMS POINTERS

The **National Mission for Sustainable Agriculture (NMSA)**, launched in **2014-15**, is one of the missions under the **National Action Plan on Climate Change (NAPCC)**. It aims to make farming **productive, sustainable and climate-resilient**, with a focus on **rainfed areas**.

- **Rainfed Area Development (RAD):** Integrated farming that combines crops with horticulture, livestock, fisheries and agroforestry.
- **Soil Health Management (SHM):** Balanced fertiliser use, soil testing, organic inputs and micronutrients.
- **Climate-resilient practices:** Research and demonstrations against drought, floods and heat stress.
- **On-farm water management:** Originally part of NMSA, it became **Per Drop More Crop** under PMKSY in 2015.
- **Current status:** Since **2022-23**, NMSA components, Per Drop More Crop and the **Soil Health Card** scheme run under the **Rashtriya Krishi Vikas Yojana (RKVY)** umbrella.

12 Pradhan Mantri Krishi Sinchayee Yojana

Pradhan Mantri Krishi Sinchayee Yojana [PIB](#)

PRELIMS POINTERS

- **Launched:** 1 July 2015 as an umbrella scheme for irrigation.
- **Mottos:** "Har Khet Ko Pani" and "Per Drop More Crop".
- **Scope:** The whole irrigation chain, from water sources and canals to field application and watershed conservation.
- **Progress:** Over ₹64,407 crore of central assistance; over 2.7 crore farmers benefited; 24.61 million hectares covered.

Components

- **Accelerated Irrigation Benefits Programme (AIBP):** Completes major and medium projects.
- **Har Khet Ko Pani (HKKP):** Minor irrigation, command-area development and repair, renovation and restoration of water bodies.
- **Watershed Development** for rainfed and degraded land.
- **Per Drop More Crop:** Drip and sprinkler irrigation; implemented under RKVY since 2022-23.
- **M-CADWM:** Modernisation of Command Area Development and Water Management, approved in 2025-26 with ₹1,600 crore, using piped irrigation, SCADA and IoT.

13 Organic Farming

PM Modi inaugurates ₹4,000 crore projects at Sikkim's 50th Statehood event [AIR News](#)

PRELIMS POINTERS

Organic farming relies on natural inputs and ecological processes, and avoids synthetic fertilisers, pesticides and GMOs. Its methods include composting, green manuring, crop rotation, biological pest control and biofertilisers. **Sikkim**, which marked its **golden jubilee of statehood** in April 2026, became the **world's first fully organic State** in 2016 under the **Sikkim Organic Mission**, after a transition that began in 2003.

Principles

- **Organic nutrients:** Compost, FYM, vermicompost, green manure and biofertilisers.
- **Biological pest control.**
- **Crop diversification:** Rotation and intercropping.
- **Soil health and recycling** of residues and animal waste.

Government initiatives

- **Paramparagat Krishi Vikas Yojana (PKVY):** Cluster-based organic farming with FPOs and certification.
- **MOVCDNER:** Mission Organic Value Chain Development for the North Eastern Region.
- **NPOP:** National Programme for Organic Production (under APEDA), the certification framework for exports.
- **PGS-India:** A simpler, participatory certification system for domestic markets.
- **National Mission on Natural Farming (2024)** for chemical-free natural farming.

Feature	Organic farming	Natural farming
Inputs	Approved organic inputs, often bought in	Minimal external inputs; farm-made preparations
Certification	Formal systems (NPOP, PGS)	Usually no certification
Approach	Regulated production system	Self-sustaining, ecological approach

MAINS POINTERS

Significance

- 1 **Soil health** and less chemical pollution.
- 2 **Climate benefits** through soil carbon.
- 3 **Premium markets** for certified produce.
- 4 **Biodiversity** on and around farms.

Challenges

- 1 **Lower yields** during transition.
- 2 **Certification costs** for small farmers.
- 3 **Shortage of quality organic inputs.**
- 4 **Uncertain price premiums.**
- 5 **Contamination** from neighbouring farms.

SECTION 8

Agri Value Chains, GI & the North East

01 Fair and Remunerative Price for Sugarcane

Union Cabinet raises sugarcane FRP by ₹10 per quintal [The Hindu](#)

PRELIMS POINTERS

- **FRP 2026-27: ₹365 per quintal**, up from ₹355, at a basic recovery rate of **10.25%**.
- **Premium and floor: ₹3.56** more per quintal for every 0.1 percentage point of recovery above 10.25%; no deduction below **9.5%** recovery, where farmers get **₹338.30**.
- **Meaning:** The **minimum price sugar mills must legally pay** farmers for cane.
- **Legal basis:** The **Sugarcane (Control) Order, 1966**, under the **Essential Commodities Act, 1955**.
- **Fixed by:** The Centre, on the recommendation of the **Commission for Agricultural Costs and Prices (CACP)**, after consulting States.

FRP	MSP
Only for sugarcane	For 22 mandated crops
Legally binding on sugar mills	An announced support price; procurement varies by crop
Linked to the sugar recovery rate	Based on CACP's wider cost framework

02 Jaggery Production in India

Jaggery Production in India [PIB](#)

PRELIMS POINTERS

Jaggery (gur) is an unrefined sweetener made by concentrating sugarcane juice **without chemicals**, so it keeps some minerals. India makes **over 70%** of the world's jaggery.

- **Cane diverted:** About **20-30%** of India's sugarcane goes to jaggery.
- **Livelihoods:** About **2.5 million**, mostly in cottage and small units.
- **Major cane States (2024-25):** Uttar Pradesh **48.5%**, Maharashtra **24.1%**, Karnataka **10.5%**.

Government support

- **PM Kisan SAMPADA Yojana:** 5 jaggery units approved under its food-processing cluster component (as of December 2025).
- **PM Formalisation of Micro Food Processing Enterprises (PMFME):** 3,528 jaggery micro-units supported.
- **ODOP, GI tags** and **FSSAI** standards for quality and branding.

MAINS POINTERS

Challenges

- 1 **Unorganised production** with uneven quality and hygiene.
- 2 **Old furnaces** that waste energy.
- 3 **Unsafe clarifying agents**.

- 4 **Weak branding and packaging.**
- 5 **Seasonal price swings.**
- 6 **Export standards** on safety and residues.

Way forward

- 1 **Modern, energy-efficient units** with hygienic processing.
- 2 **Value-added products:** Organic, powdered and liquid jaggery.
- 3 **FPOs and SHGs** for collective processing and marketing.

03 Codex Alimentarius Commission

India strengthens global leadership in food standards at Codex Alimentarius Commission session [AIR News](#)

PRELIMS POINTERS

- **What it is:** The international food-standards body set up by the **FAO and WHO** in **1963**.
- **Purpose:** Science-based standards, guidelines and codes of practice to **protect consumer health** and ensure **fair food trade**.
- **Members:** **188 countries and the European Union**.
- **Legal weight:** Standards are **voluntary**, but the **WTO SPS Agreement** treats them as international benchmarks.
- **India's contact point:** **FSSAI**.

Why in news: the 49th session (Geneva, July 2026)

- **Seven standards adopted under India's leadership:** **Dried coriander seeds** and **fresh curry leaves** (India chaired), plus vanilla, large cardamom, safe water use in food processing, Campylobacter and Salmonella control in chicken, and prepackaged food labelling (India co-chaired).
- **New work** approved on India's proposal for a **cashew kernel** standard.
- India also co-chairs a working group on **new food sources and production systems**.

04 Arunachal Kiwi Mission

Arunachal Kiwi Mission [PIB](#)

PRELIMS POINTERS

The **Arunachal Kiwi Mission** is a state-led effort to make **Arunachal Pradesh** a hub for kiwi production and value addition. Arunachal is **India's largest kiwi producer**, with **over half** of national output, grown in **Ziro Valley, West Kameng, Tawang, Si-Yomi, Kamle and Papum Pare**.

- **Area expansion** with planting material and finance.
- **Productivity:** Better varieties, disease control and climate-resilient practices.
- **Post-harvest:** Cold storage, grading, packaging and transport.
- **Value addition:** Juice, jam, wine and dried fruit.
- **Branding:** 'Arunachal Kiwi' as a premium product.
- **Research:** Centres of Excellence for suitable varieties.

MAINS POINTERS

Why Arunachal suits kiwi

- 1 **Temperate, high-altitude** agro-climate.
- 2 **Organic edge:** Ziro kiwi was the first in India to be certified organic, under **MOVCD-NER** in 2020.
- 3 **Livelihoods** for tribal smallholders.
- 4 **Premium and export markets** through certification and branding.

05 Mission Queen Pineapple

Mission Queen Pineapple [PIB](#)

PRELIMS POINTERS

Mission Queen Pineapple is a **₹236 crore, three-year** initiative launched in **May 2026** to turn **Tripura's GI-tagged Queen Pineapple** from a commodity into a premium, export-oriented brand. It is anchored by the **Ministry of Development of North Eastern Region (MDoNER)** and brings together the agriculture, food processing, commerce and MSME ministries, **APEDA, ICAR, CSIR, TRIFED, NERAMAC** and the State government.

- **GI tag** in 2015; declared **State fruit** of Tripura in 2018.
- **Qualities:** Strong aroma, crisp low-fibre flesh and sweetness.
- **Livelihoods** for small and tribal farmers across most districts.
- **Products:** Juice, jam, confectionery, **bromelain** and **pineapple leaf fibre**.
- **Goal:** Move farmers from commodity prices to value-chain earnings.

06 Mission Golden Spice

Mission Golden Spice [PIB](#)

PRELIMS POINTERS

- **What it is:** A **₹175.45 crore, five-year** value-chain mission for **Meghalaya's GI-tagged Lakadong turmeric**, launched in **July 2026**.
- **Lakadong turmeric:** Grown in the **Jaintia Hills**; known for **high curcumin (about 7-10%)**, against about 2-3% in common varieties.
- **Aim:** Move from raw sales to processed, certified, branded exports as a **"Brand North East"** product.
- **Anchored by:** **MDoNER** and the **North Eastern Council**, with **APEDA, the Spices Board, the National Turmeric Board, ICAR, NABARD, SFAC** and the State government.

07 Mizoram Ginger Mission

Mizoram Ginger Mission [PIB](#)

PRELIMS POINTERS

The **Mizoram Ginger Mission** is a **₹189.79 crore** convergence initiative launched in **May 2026** by **MDoNER**, with the agriculture, rural development and food processing ministries, **NABARD, ICAR, APEDA**, the State government and private investors. It aims to turn **Mizo ginger** into a branded, processed export product.

- **High oleoresin:** About **6-8%**, against a global average of about 3%, which suits pharma and food processing.

- **Price gap:** Farmers get only about ₹8-15/kg, while processed products earn far more.
- **Reach:** About 20,000 farm households.
- **Brand North East:** Part of a strategy to give each North-Eastern State its own product.

08 Mission Senehgori for Muga Silk

Mission Senehgori launched for Assam Muga Silk [AIR News](#)

PRELIMS POINTERS

Mission Senehgori is an MDoNER cluster-based initiative to turn **Assam's Muga silk** into a high-value luxury textile. It covers the whole chain, from host-plant cultivation and silkworm seed to weaving, branding, exports, traceability and silk tourism.

- **Muga silk:** Golden silk **endemic to Assam**, from the silkworm *Antheraea assamensis*, which feeds on **Som and Soalu** leaves; **GI tag in 2007**.
- **Clusters:** Jorhat, Sivasagar, Lakhimpur, Dhemaji, Dibrugarh, Tinsukia, Majuli and **Sualkuchi**.
- **Institutions:** 30 FPOs, 1,180+ farmer interest groups and common facility centres.
- **Traceability:** GI-linked authentication of over 80% of traded Muga and digital tracing of 8,000+ households.
- **Tourism:** A Muga Silk Trail, Silk Tourism Park and annual **Muga Utsav**.

09 Padma Doree Initiative

Padma Doree Initiative [PIB](#)

PRELIMS POINTERS

- **What it is:** A cross-regional textile initiative of the **North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC)**, a CPSE under MDoNER.
- **The blend:** Eri silk of the North-East with **Chanderi** weaving of **Madhya Pradesh**.
- **Eri silk:** Called "**Ahimsa**" or **peace silk**, because the moth leaves the cocoon before the silk is spun.
- **Chanderi:** A renowned handloom tradition of Madhya Pradesh, with a **GI tag**.
- **Spirit:** **Ek Bharat Shreshtha Bharat**, sustainable luxury and artisan livelihoods.

10 BHARATI Initiative

BHARATI Initiative [PIB](#)

PRELIMS POINTERS

- **Full form:** **Bharat's Hub for Agritech, Resilience, Advancement and Incubation for Export Innovation**.
- **Run by:** **APEDA**, Ministry of Commerce & Industry.
- **Purpose:** Identify and accelerate **start-ups** in agri-food products, technology and export solutions.
- **Focus:** Innovation, value addition, technology adoption and global market readiness.
- **Target:** **US\$50 billion** of APEDA-scheduled exports by **2030**.

11 Khurasani Imli of Mandu

Khurasani Imli of Mandu awarded GI tag [The Times of India](#)

PRELIMS POINTERS

- **What it is:** The fruit of the **Baobab** (*Adansonia digitata*), an African tree, found around **Mandu** in **Dhar district, Madhya Pradesh**. It is **not tamarind**.
- **History:** Believed to have arrived about **600 years ago** with **Afghan and Arab traders**; Mandu now has **over 1,000** baobabs, among India's largest groups.
- **The name:** "**Imli**" for its tangy, tamarind-like pulp; "**Khurasani**" from **Khorasan**, the region the traders came from.
- **Use:** Drinks and local foods; parts of the tree are used in traditional medicine.

Geographical Indication: key facts

- **Meaning:** A sign for goods whose quality or reputation is linked to their **place of origin**.
- **Law:** **Geographical Indications of Goods (Registration and Protection) Act, 1999**, in force from **15 September 2003**.
- **International basis:** An IPR under **TRIPS Articles 22-24**.
- **Registry:** **Chennai**; the **Controller General of Patents, Designs and Trade Marks** is the Registrar.
- **Categories:** Agricultural (Basmati), natural (Makrana marble), manufactured and handicraft goods, and foodstuffs.
- **Validity:** **10 years**, renewable.
- **First Indian GI:** **Darjeeling tea (2004-05)**.
- **Who can apply:** Any association of producers or an organisation or authority representing them.

12 Miyazaki Mango

World's costliest Miyazaki mango offered to Lord Ram at Ayodhya's Ram Mandir [DD News](#)

PRELIMS POINTERS

- **Origin:** A premium mango from **Miyazaki Prefecture** on Japan's **Kyushu** island.
- **Brand:** Top grades are sold as "**Taiyo no Tamago**" (**Egg of the Sun**).
- **Traits:** Deep red skin, high sweetness and smooth texture.
- **In India:** Grown by farmers in **Madhya Pradesh, Odisha and Uttar Pradesh**; an Ayodhya farmer's two-year-old tree recently gave about a dozen fruits.

13 Sea Silk from Marine Waste

Golden sea silk recreated by Korean researchers from marine waste [The Indian Express](#)

PRELIMS POINTERS

- **What it is:** A rare, fine, **naturally golden fibre** made from the **byssus threads** that some bivalves use to anchor to rocks.
- **Traditional source:** The Mediterranean pen shell **Pinna nobilis**, prized in the ancient Mediterranean for its lightness, strength and shimmer.

- **Conservation:** *Pinna nobilis* is **Critically Endangered** (IUCN), so traditional sea silk is now almost impossible to produce.
- **Innovation:** Researchers at **POSTECH (South Korea)** recreated sea silk from **discarded byssus** of the farmed pen shell ***Atrina pectinata***, which closely resembles the traditional fibre.
- **Significance:** Turns **marine waste into a high-value sustainable textile**.



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Quarterly DECODED · Economy & Agriculture · May to July 2026

