



PadhAI



Down to *Earth*

SUMMARY FOR UPSC ——— MAGAZINE

16-28 FEBRUARY 2026

Welcome to PadhAI—

Down to Earth Magazine Coverage

You're here because you understand a core truth of UPSC preparation—success doesn't come from reading everything, but from reading what actually matters.

Down to Earth is one of the most valuable sources for environment, ecology, and sustainable development. However, reading it cover to cover can be time-consuming and often difficult to align directly with exam demands. PadhAI's Down to Earth coverage is designed to simplify that process—by filtering, structuring, and converting important content into exam-ready insights.

Why PadhAI's Down to Earth Coverage

Many aspirants struggle with Down to Earth because of:

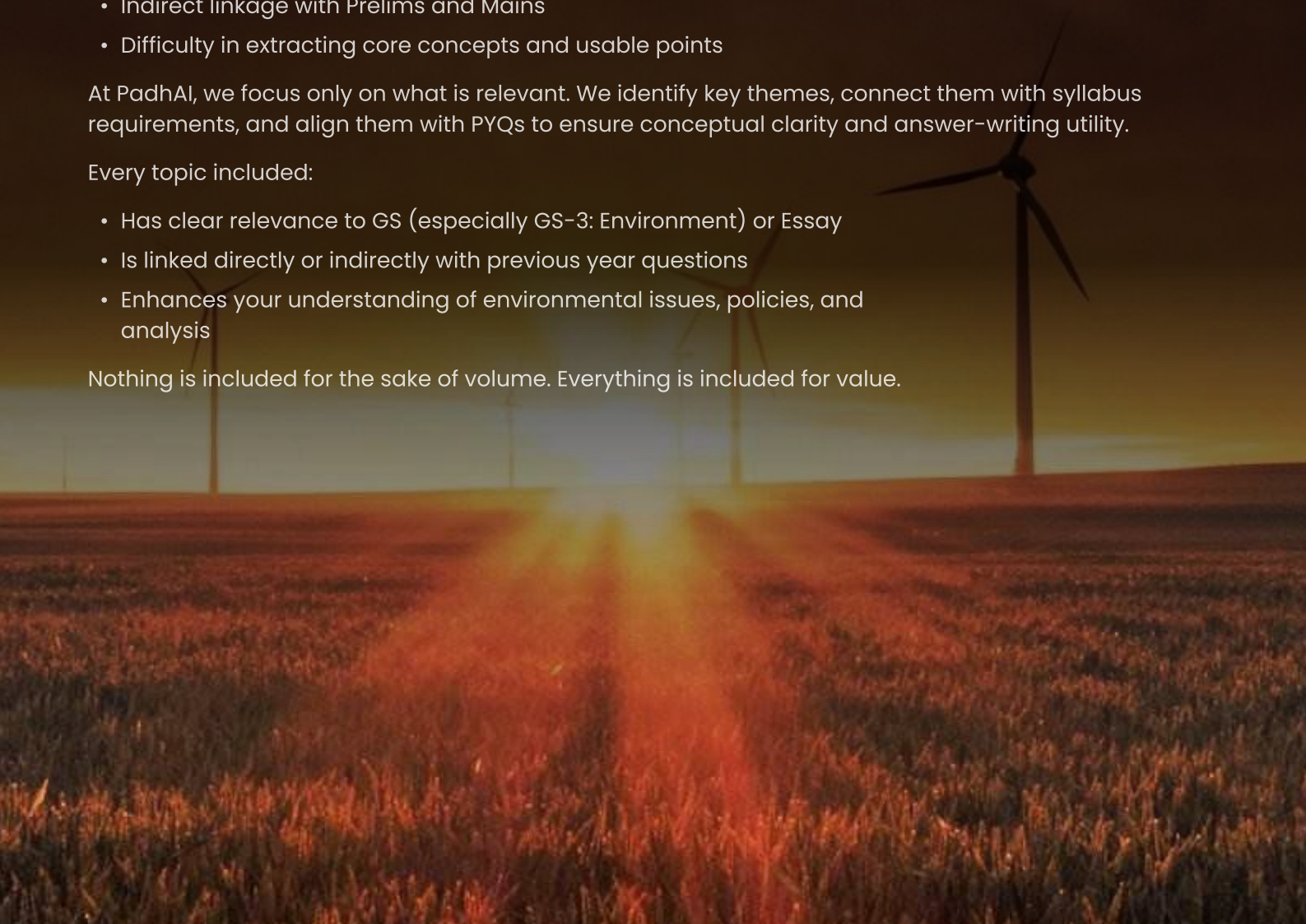
- Detailed and lengthy articles
- Indirect linkage with Prelims and Mains
- Difficulty in extracting core concepts and usable points

At PadhAI, we focus only on what is relevant. We identify key themes, connect them with syllabus requirements, and align them with PYQs to ensure conceptual clarity and answer-writing utility.

Every topic included:

- Has clear relevance to GS (especially GS-3: Environment) or Essay
- Is linked directly or indirectly with previous year questions
- Enhances your understanding of environmental issues, policies, and analysis

Nothing is included for the sake of volume. Everything is included for value.



Part of the PadhAI Preparation Ecosystem

This Down to Earth coverage is integrated with a broader system that includes:

- **Fast and concise magazines (published early)**
- **Daily PIB summaries (filtered and exam-focused)**
- **Monthly compliance coverage**
- **Complete Prelims & Mains PYQs with structured answers**
- **News summaries from relevant sources**
- **Personal tutor chat support for continuous guidance**

The goal is simple:

One reliable system instead of multiple scattered sources.

Our Guiding Philosophy

At PadhAI, everything is built on three principles:

- **Learn only what matters**
- **Learn it the right way**
- **Learn it at the right time**

That's how preparation becomes focused, efficient, and effective.



Topic 1: India's Dairy Model: A Blueprint for Economic Security



Summary: India's dairy sector, now producing **25% of the world's milk**, provides a resilient alternative to industrial models by focusing on inclusive, small-scale production. It serves as a blueprint for **Atmanirbhar Bharat** in a world of fragmenting trade and global subsidy distortions.

Background: Initiated under **Operation Flood** with institutional support from the NDDB, the model promotes "aggregation without displacement". Unlike the Western industrial model, which relies on heavy mechanisation and state subsidies, India's model is labour-intensive and family-managed.

Key Points:

- **Inclusive Growth:** Supports small and marginal farmers, stimulates local markets, and generates rural liquidity.
- **Women's Empowerment:** The majority of dairy labour is performed by women, and cooperative participation improves their financial agency.
- **Sustainability:** Uses low external inputs and traditional **silvo-agro-pastoral practices**, integrating crop residues and natural grazing to reduce environmental costs.

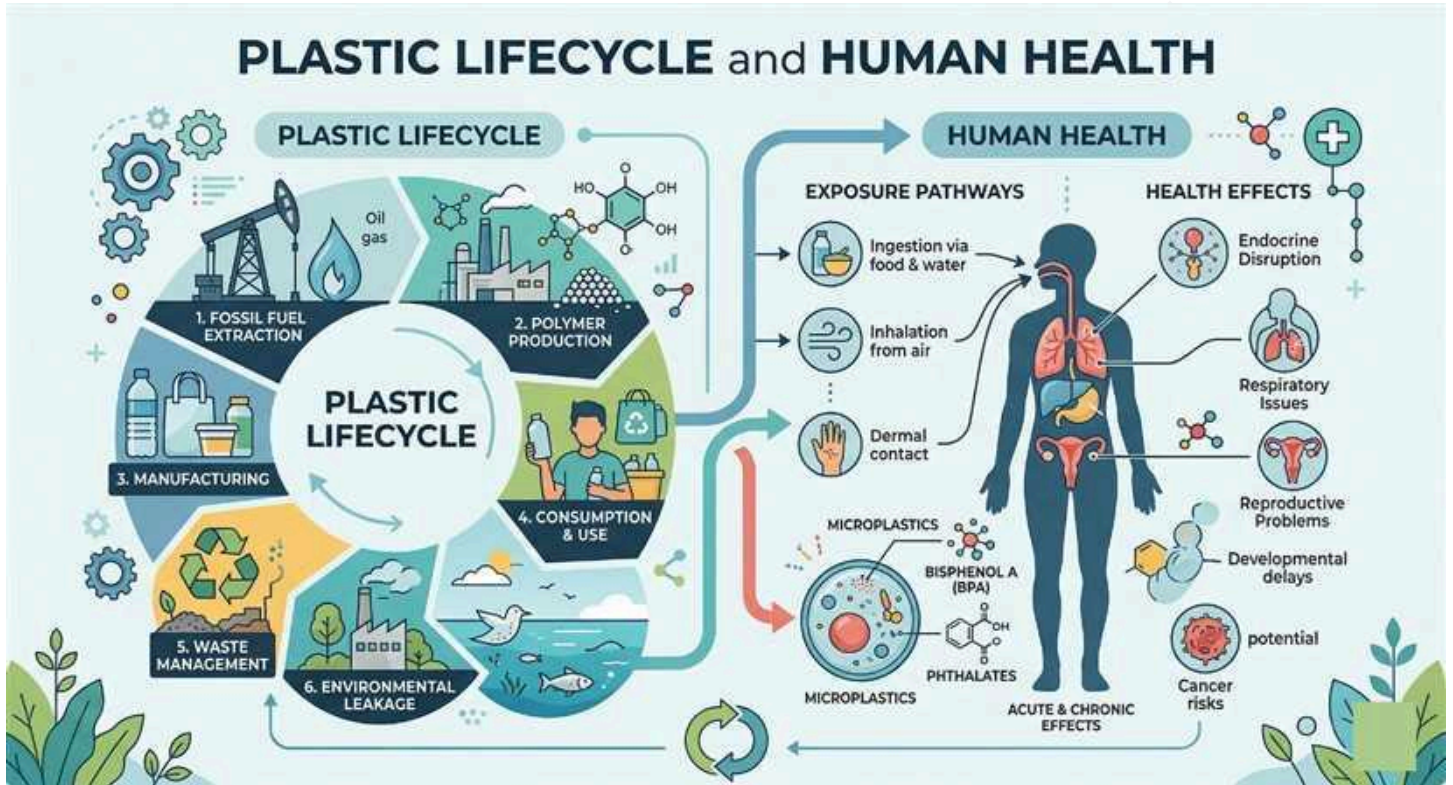
Prelims Facts (One Liners):

- India is the **largest milk producer globally**, contributing 25% of world output.
- The livestock sector is growing at approximately 7% according to the Economic Survey 2025–26.



MCQ Practice: Q. What is the core organizational principle of India's dairy model (Amul Model)? A) Corporate-led centralisation B) Large-scale industrial farming C) Aggregation without displacement D) Heavy mechanisation and high external inputs **Answer: C** ()

Topic 2: Plastic Lifecycle and Human Health



Summary: A study in **The Lancet Planetary Health** warns that the health burden of plastics could more than double by 2040 under current trends. It highlights that the global plastics system could result in **83 million years of healthy life lost (DALYs)** between 2016 and 2040.

Background: Plastics-related emissions were responsible for 2.1 million DALYs in 2016. The crisis is deeply linked to fossil fuel extraction, toxic chemical exposure, and climate change.

Key Points:

- **Major Drivers:** The projected 2040 health burden is driven by rising temperatures (40%), air pollution (32%), and toxic chemicals (27%).
- **Lifecycle Hazards:** Extraction releases methane; production emits carcinogens and PM2.5; use leads to leaching of additives like **phthalates**; and disposal contaminates the food chain.
- **Recycling Limitations:** Isolated measures like recycling are insufficient because they still involve emissions and toxic exposures; a full systemic transformation is required.

Prelims Facts (One Liners):



- **DALY** (Disability-Adjusted Life Year) measures the total number of years lost due to ill-health, disability, or early death.
- India banned **single-use plastics** in 2022 and implemented an Extended Producer Responsibility (EPR) framework.

MCQ Practice: Q. According to the Lancet study, what percentage of the projected 2040 health burden from plastics will be driven by climate change effects (rising temperatures)? A) 27% B) 32% C) 40% D) 43%

Answer: C

Topic 3: Deepfakes and the Expanding AI Risk Landscape



Summary: The **International AI Safety** report highlights that deepfakes are becoming more realistic and accessible, accelerating AI-enabled cybercrime and misinformation. These AI-generated synthetic media pose a significant threat to democratic processes and internal security in India.

Background: Deepfakes use **GANs** and large AI models to replicate voices and mannerisms. Rapid innovation is currently outpacing existing testing and regulatory frameworks.

Key Points:

- **Rise of AI Cybercrime:** Generative AI is increasingly used for **cloned voice phishing**, financial fraud, and election interference.



- **India's Vulnerabilities:** Deepfakes threaten India's digital public infrastructure (Aadhaar, UPI) and can incite communal tensions through manipulated propaganda.
- **Governance Gaps:** India lacks a specific deepfake law, relying on the IT Act, 2000, and the Digital Personal Data Protection Act, 2023.

Prelims Facts (One Liners):

- Deepfakes are primarily created using **Generative Adversarial Networks (GANs)**.
- India's **CERT-In** handles cybersecurity incidents related to AI and cybercrime.

MCQ Practice: Q. What is the primary technological driver for creating convincing deepfake media? A) Blockchain B) Generative Adversarial Networks (GANs) C) Internet of Things (IoT) D) Quantum Computing

Answer: B

Topic 4: EU–Mercosur Trade Deal & Farmer Protests



Summary: EU lawmakers have stalled the ratification of the Mercosur trade agreement due to **massive farmer protests** across Europe and concerns regarding environmental sustainability. Farmers fear an influx of cheaper South American agricultural products with lower regulatory standards.

Background: Signed to create one of the world's largest free trade zones, the deal covers a market of over **700 million people**. It has been referred to the **European Court of Justice (ECJ)** for judicial review.



Key Points:

- **Farmer Grievances:** Reduced competitiveness and falling farm incomes due to lower production costs in Mercosur countries.
- **Environmental Concerns:** Allegations of Amazon deforestation and claims that the deal contradicts the **EU's Green Deal**.
- **Significance for India:** The stall offers lessons for **India–EU FTA negotiations**, highlighting that agriculture and sustainability clauses are politically sensitive.

Prelims Facts (One Liners):

- **Mercosur** includes Argentina, Brazil, Bolivia, Paraguay, and Uruguay.
- The agreement aims to reduce tariffs on Mercosur agricultural exports and EU industrial goods.

MCQ Practice: Q. Why was the ratification of the EU-Mercosur trade deal recently stalled? A) Geopolitical rivalry with China B) US protectionism C) Farmer protests and environmental concerns D) Lack of market size
Answer: C

Topic 5: Menstrual Health as a Fundamental Right



Summary: The Supreme Court of India has recognised **menstrual health and hygiene as an intrinsic part of Article 21** (Right to Life and Dignity). The Court observed that girls cannot meaningfully exercise bodily autonomy without access to functional toilets and menstrual products.

Background: Poor menstrual hygiene leads to serious infections like **UTIs** and pelvic inflammatory disease. Every year, approximately **23 million girls** in India drop out of school due to a lack of facilities and social stigma.

Key Points:

- **Judicial Mandate:** The Court directed States to ensure gender-segregated toilets in all schools, with penalties for non-compliance.
- **Substantive Equality:** Affirmation that rights may require differential support to address biologically distinct needs.
- **NFHS-5 Evidence:** While 77.3% use hygienic methods, significant rural and caste disparities persist.

Prelims Facts (One Liners):

- According to **NFHS-5**, 77.3% of Indian women use hygienic menstrual methods.
- The Supreme Court links menstrual health to **Articles 21, 21A**, and multiple SDGs.

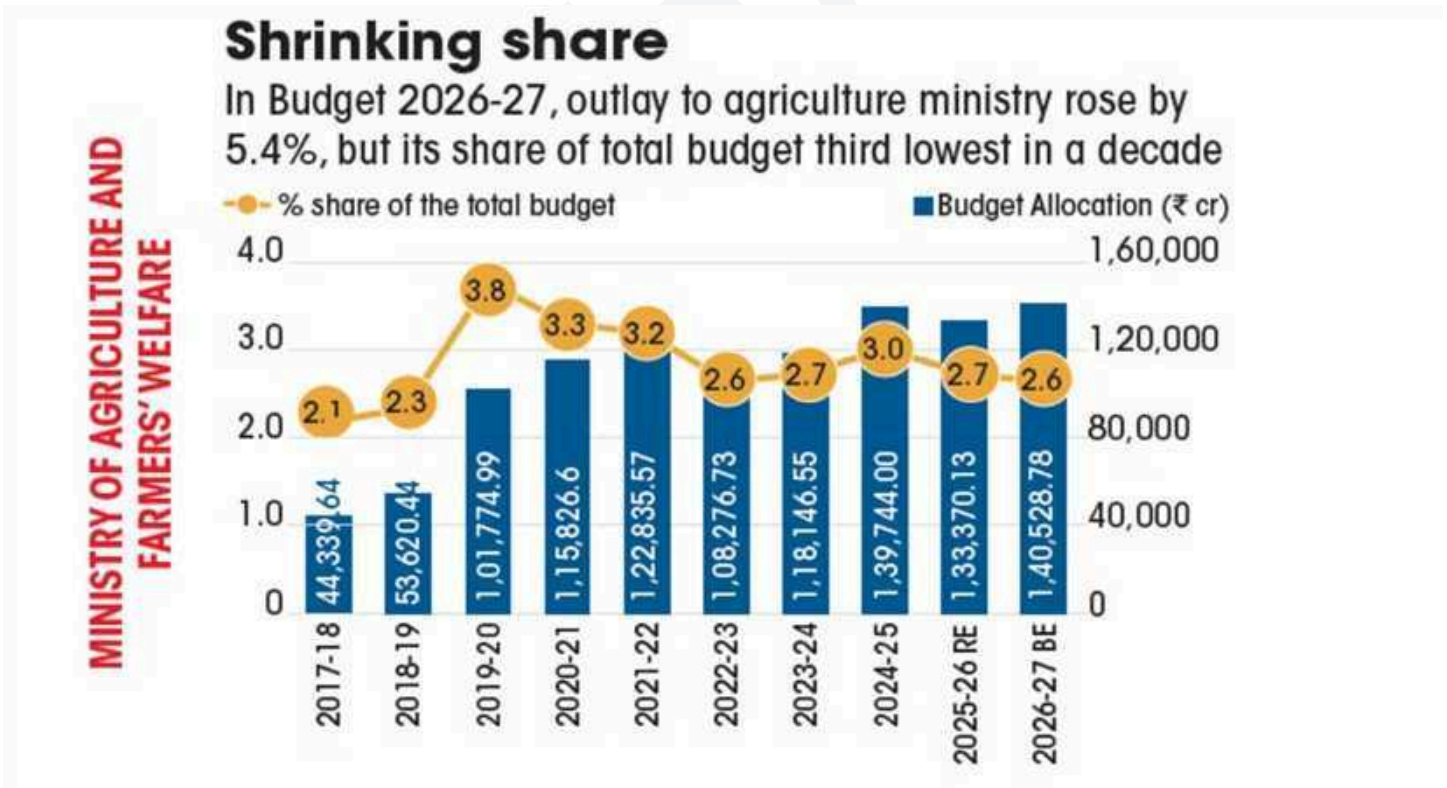
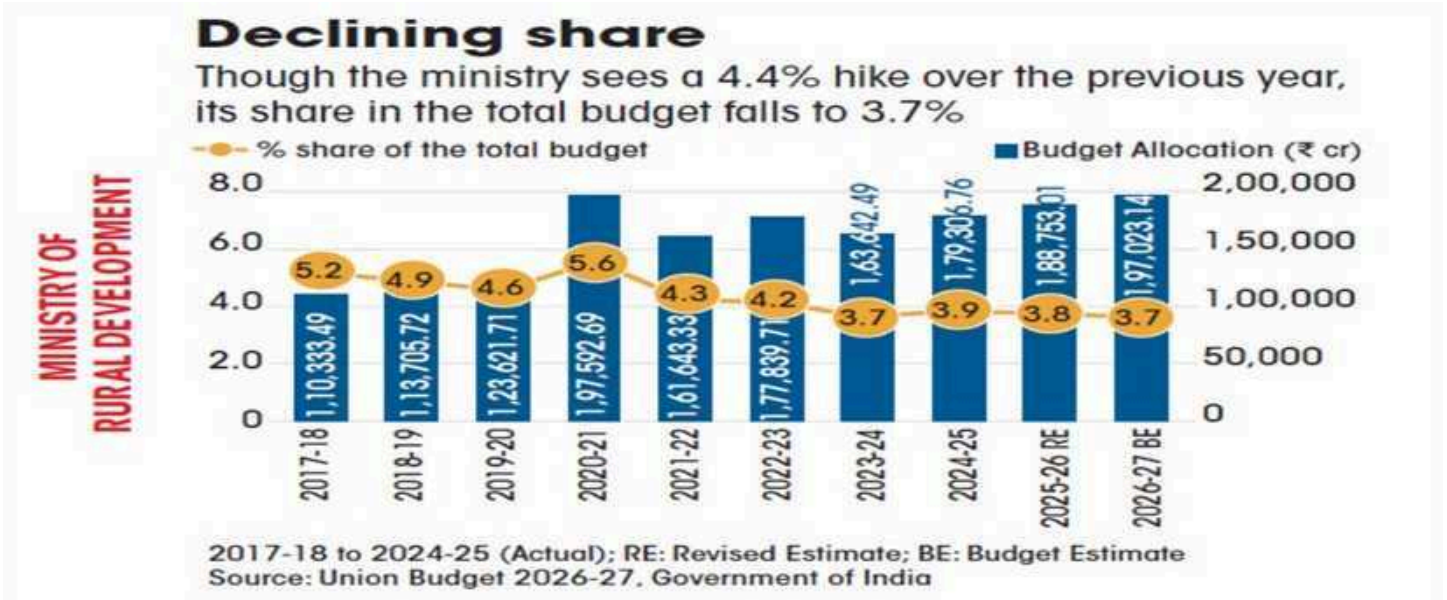
MCQ Practice: Q. Under which Article of the Constitution has the Supreme Court recognised menstrual health as a fundamental right? A) Article 14 B) Article 19 C) Article 21 D) Article 32 **Answer: C**

Topic 6: Union Budget 2026–27: Allocation to Aspirations



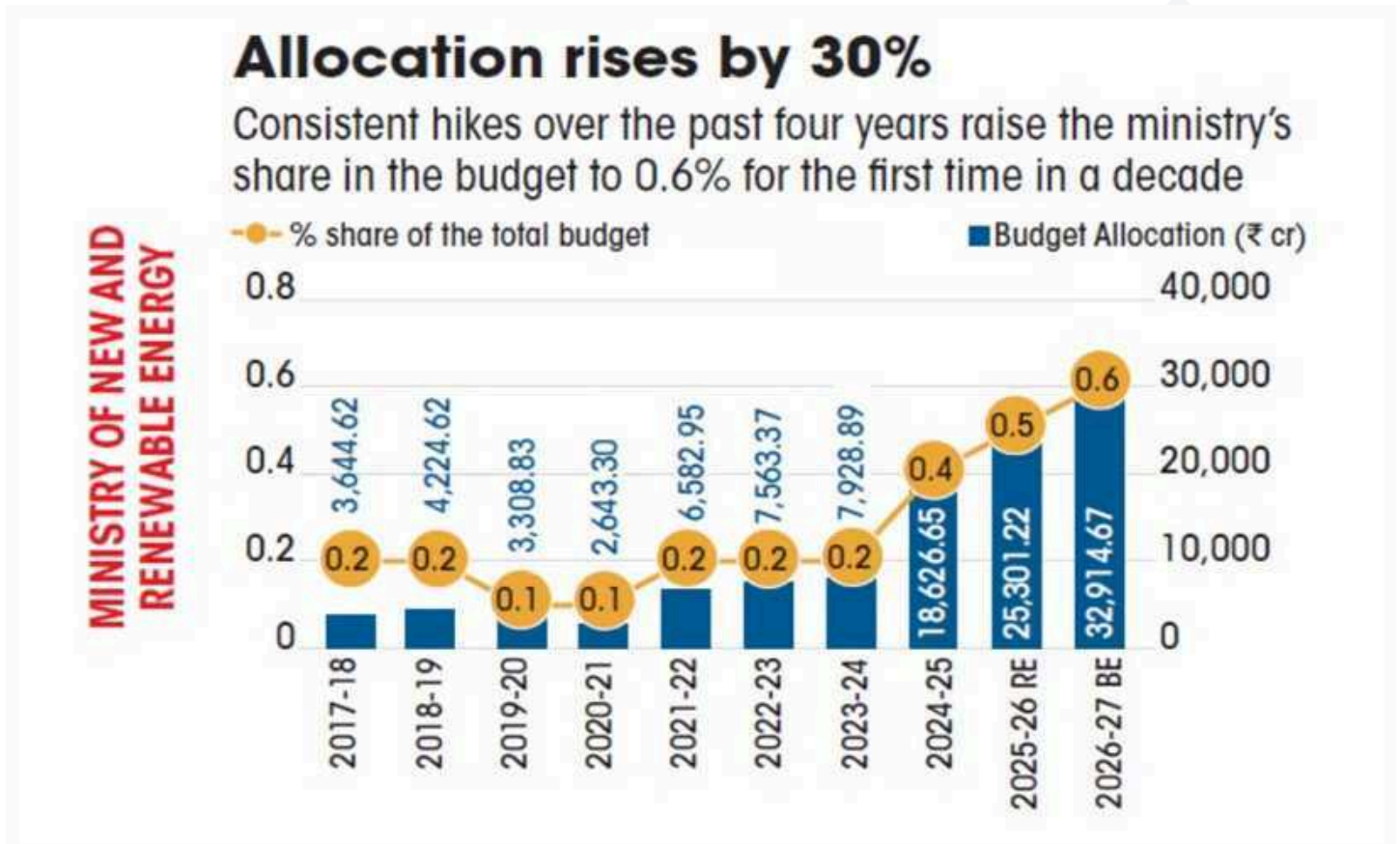
Summary: The 2026–27 Budget is framed more as a **long-term vision document** for "Viksit Bharat" than as an immediate fiscal stimulus. It signals a shift toward fiscal consolidation, with total expenditure as a share of GDP steadily declining.

Background: The budget aligns with ideological themes like **Amrit Kaal and Kartavya**. Nominal GDP growth is projected at ~8%, the lowest in four years.



Key Points:

- **Vision over Allocation:** More than half of the proposals outline policy intentions over five years, but some (like girls' hostels in every district) lack explicit immediate funding.
- **Agriculture Trends:** Allocation increased by 7%, but **PM Fasal Bima Yojana (PMFBY)** saw an effective reduction of ~15.7%.
- **Social Welfare Cuts:** The **Ujjwala Scheme** faced a 28% cut compared to the previous year's Revised Estimate.



Prelims Facts (One Liners):

- Agriculture allocation for 2026-27 stands at **₹1.62 lakh crore**.
- Projected nominal GDP growth is approximately **8%**.

MCQ Practice: Q. What is the observable trend in total expenditure as a share of GDP according to the 2026-27 Union Budget? A) Consistent increase B) Sudden spike C) Gradual decline D) No change **Answer: C**

Topic 7: 16th Finance Commission (2026–31)





Summary: The Union Government accepted the 16th FC recommendations for 2026–31, which **retained the states' share at 41%** while introducing a new **GDP criterion** to horizontal devolution. For the first time, no revenue deficit grants were recommended.

Background: Mandated under **Article 280**, the Finance Commission distributes net proceeds of taxes between the Union and States. The 16th FC focuses on fiscal discipline and ecological federalism.

Change in share

Criteria for distribution of central taxes among states

CRITERIA	15 TH FC (2021-26)	16 TH FC (2026-31)
Income Distance	45%	42.5%
Population (2011)	15%	17.5%
Demographic Performance	12.5%	10%
Area	15%	10%
Forest	10%	10%
Tax and Fiscal Efforts	2.5%	-
Contribution to GDP	-	10%
Total	100%	100%

Sources: Reports of the 15th and 16th Finance Commissions; PRS



Sectoral allocation

Grants-in-aid for 2026-31 (in ₹ crore)

GRANTS	AMOUNT
Local governments	7,91,493
Rural local bodies	4,35,236
Basic Grant	3,48,188
Performance Grant	87,048
Urban local bodies	3,56,257
Basic Grant	2,32,125
Performance Grant	58,032
Special Infrastructure Component	56,100
Urbanisation Premium	10,000
Disaster management	1,55,916
Total	9,47,409

Source: Report of the 16th Finance Commission; PRS.

Key Points:

- **Ecological Federalism:** The forest criterion was refined to recognise **Open Forests** (10–40% canopy), incentivising the protection of dry forests and grasslands.
- **Disaster Financing:** Heatwaves, lightning, and forest fires are now recognised in disaster risk indexing to support vulnerable states.
- **Urbanisation Incentive:** A **₹10,000 crore** fund was created to encourage the merging of sub-urban villages into large urban bodies.

Prelims Facts (One Liners):

- The states' share of the divisible pool remains at **41%**.
- **Article 280** mandates the President to constitute a Finance Commission every five years.

MCQ Practice: Q. Which new criterion has been introduced by the 16th Finance Commission for horizontal devolution among states? A) Population B) Income Distance C) Contribution to GDP D) Forest Cover **Answer:**

C



Topic 8: Mining Impunity: Rat-Hole Mining Tragedy



Summary: A recent explosion in **East Jaintia Hills** killed 27 workers, highlighting the persistence of illegal rat-hole mining in Meghalaya despite NGT and Supreme Court bans. The tragedy was likely triggered by a dynamite blast igniting a **methane gas pocket**.

Background: Rat-hole mining expanded due to the **Sixth Schedule**, which allows customary tribal ownership of resources, exempting the state from nationalisation laws. The NGT banned the practice as "unscientific" in 2014.

Key Points:

- **Governance Failure:** Despite the 2014 ban, approximately **22,000 illegal mines** operate across 360 villages.
- **Environmental Impact:** High-sulphur coal leads to **acid mine drainage**, polluting local rivers and harming tribal communities.
- **Socio-Economic Conflict:** The practice persists due to its role in supporting local livelihoods, despite being hazardous and illegal.

Prelims Facts (One Liners):

- The **National Green Tribunal (NGT)** banned rat-hole mining in 2014.
- Meghalaya's mining land is protected under the **Sixth Schedule** of the Constitution.



MCQ Practice: Q. Why did Meghalaya claim exemption from the 1973 coal mine nationalisation? A) Economic backwardness B) Lack of coal quality C) Customary tribal ownership under the Sixth Schedule D) Proximity to international borders **Answer: C**

Topic 9: Speed Breeding: Fast-Tracking Agriculture



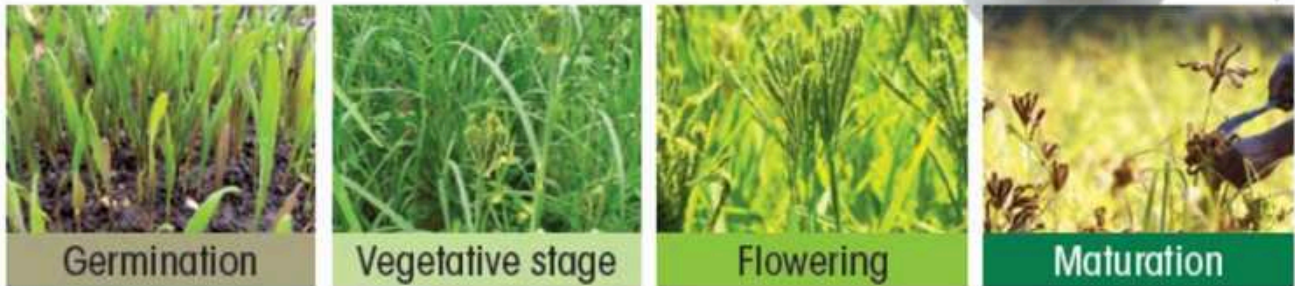
Summary: Speed breeding accelerates plant growth cycles by manipulating environmental factors like light and temperature, enabling **4–5 generations per year**. This technology is essential for developing climate-resilient crop varieties in half the conventional time.

Background: Traditional breeding takes 10–14 years, which is too slow to adapt to rapid climate shifts. The technique originated from **NASA experiments** on wheat in the 1980s.



Making of rapid ragi

A speed breeding protocol developed by scientists at ICRISAT* aims to reduce life cycle of finger millet by almost half; this will help reduce expenses by 40%



Source: *Plant Methods*, June 2025; *International Crops Research Institute for the Semi Arid Tropics

Key Points:

- **How it Works:** Manipulates day/night temperatures and uses LED lighting to mimic long summer days.
- **Institutional Success:** ICRISAT (Hyderabad) and SKUAST (Srinagar) are using it to reduce the rice cycle to 60 days and pigeon pea to 125 days.
- **Challenges:** High energy requirements and expensive infrastructure costs remain barriers to rural scalability.

Prelims Facts (One Liners):

- Speed breeding can enable **4–5 generations** of a crop per year.
- The technology supports India's commitments under **SDG 2** (Zero Hunger).

MCQ Practice: Q. What is the primary purpose of the 'Speed Breeding' technique? A) Increasing crop height B) Reducing the breeding cycle for new crop varieties C) Eliminating the need for seeds D) Reducing water consumption **Answer: B**



Topic 10: India–EU Free Trade Agreement (FTA), 2026



Summary: Informally called the '**mother of all deals**,' the 2026 FTA covers 2 billion people and eliminates duties on 99% of Indian exports. It acts as a strategic hedge against US protectionism and supply chain disruptions.

Background: Negotiations gained momentum after 2022 due to volatile EU–US relations and a shared interest in global supply chain resilience. It is expected to be operational by **early 2027**.

Key Points:

- **Market Access:** Immediate duty elimination for Indian textiles, leather, and gems, and for EU machinery and pharmaceuticals.
- **The CBAM Challenge:** The EU's **Carbon Border Adjustment Mechanism** remains a concern, with an estimated annual burden of \$2–4 billion for Indian steel and aluminium.
- **Auto Sector:** Phased tariff reductions (from 110% to 10%) position India as a future **EV manufacturing hub**.

Prelims Facts (One Liners):

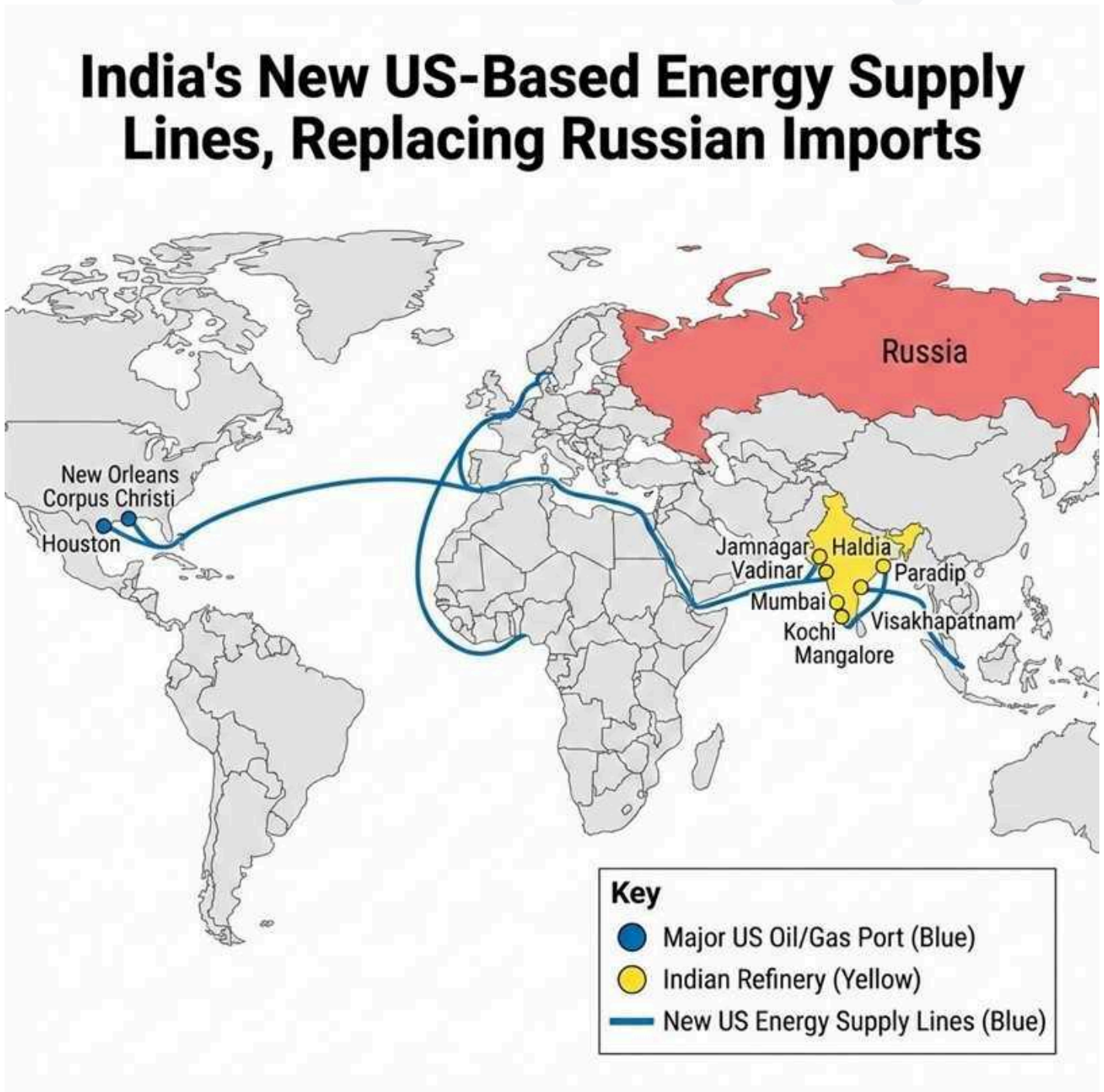
- The **CBAM** (Carbon Border Adjustment Mechanism) imposes tariffs on carbon-intensive imports like steel.



- India retains tariffs on sensitive sectors like **dairy and cereals** under the FTA.

MCQ Practice: Q. Which sector is specifically excluded (maintained tariffs) by India in the 2026 India–EU FTA? A) Textiles B) Industrial Machinery C) Dairy D) Pharmaceuticals **Answer: C**

Topic 11: India–US Interim FTA Framework



Summary: India and the US unveiled an interim framework to boost trade, restoring earlier duties to 18% and lifting the 25% energy penalty tariff. India has committed to **purchasing \$500 billion** in US goods over the next five years.

Background: The framework aims to strengthen energy ties and shift India's sourcing away from Russian fuel. It benefits Indian exports of textiles and leather while protecting the domestic dairy sector.

Key Points:

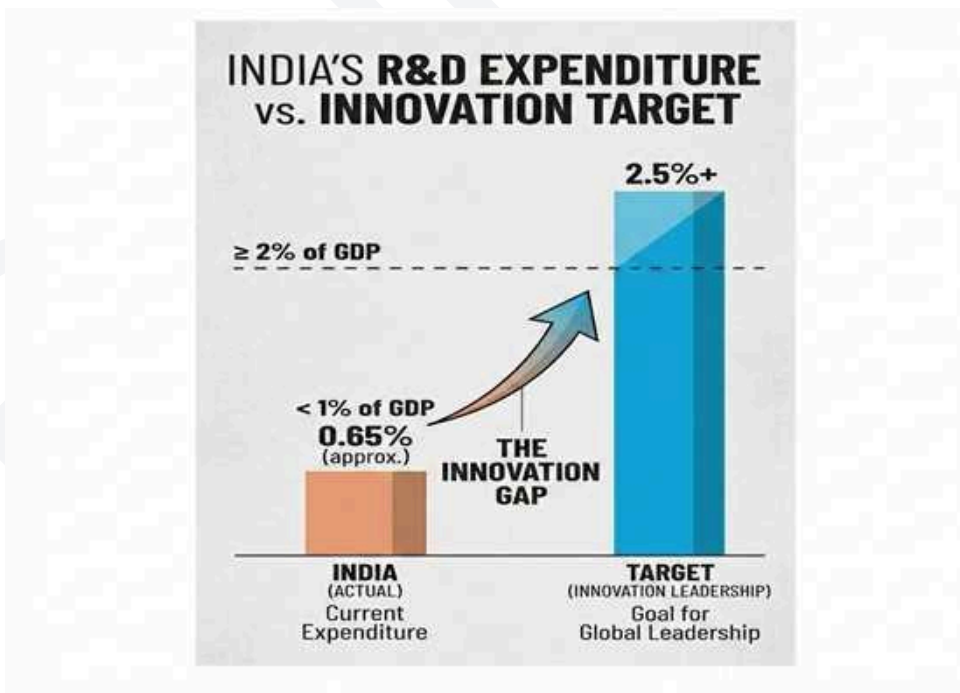
- **Energy Shift:** Removal of penalty tariffs on Russian oil imports in exchange for increased US oil and gas imports.
- **Import Categories:** Major purchases include **GPUs for AI**, coking coal, aircraft parts, and precious metals.
- **Agricultural Trade:** India will reduce tariffs on US soybean oil and wine, while US cuts will boost Indian tea and spices.

Prelims Facts (One Liners):

- India will purchase **\$500 billion** worth of US goods over five years.
- US tariff duties on Indian goods were restored to **18%** from 50%.

MCQ Practice: Q. Under the interim FTA, which commodity did India commit to purchasing significantly from the US over the next five years? A) Russian Oil B) GPUs for AI C) Wheat D) Dairy products **Answer: B** ()

Topic 12: India's Pharma: Beyond Generics to Innovation



Summary: The rejection of a cancer drug patent (Venetoclax) highlights India's stance against "evergreening". However, India must transition from a generic producer to an **innovation-driven leader** to stay competitive in a biotech-driven future.

Background: India became the "pharmacy of the world" in 2001 by offering affordable HIV/AIDS therapy. Today, China accounts for **20% of drugs** in global development, outpacing India's innovation efforts.

Key Points:

- **Section 3(d):** The Indian Patent Act prevents patents on new forms of known substances unless they show **enhanced therapeutic efficacy**.
- **Structural Constraints:** Low R&D spending, weak academia-industry collaboration, and the absence of an AI-driven drug discovery ecosystem.
- **Future Focus:** Support for **biologics, gene therapy, and biosimilars** is necessary for long-term sustainability.

Prelims Facts (One Liners):

- **Section 3(d)** of the Indian Patents Act is the primary safeguard against "evergreening".
- India's **GERD** (Gross Expenditure on R&D) remains below 1% of GDP.

MCQ Practice: Q. What is "evergreening" in the context of the pharmaceutical industry? A) Promoting environmentally friendly drugs B) Extending patent monopoly through minor modifications C) Mass production of generic medicines D) International trade of herbal drugs **Answer: B**

Topic 13: Caste and Climate Change: Interlinked Vulnerabilities



Summary: Climate change is socially differentiated, amplifying structural disadvantages for **Dalit and marginalised communities**. Their vulnerability is shaped by spatial segregation, exclusion from land ownership, and discriminatory disaster relief.

Background: Dalit families often live in low-lying, flood-prone areas due to financial constraints and caste stigma in villages. Government compensation often targets landowners, excluding the **71% of Dalits** who are landless labourers.

Key Points:

- **Ghettoisation:** Resettlement colonies are often far from city centres on marshlands, lacking basic amenities and emergency access.
- **The Debt-Poverty Trap:** Climate disasters lead to loss of informal livelihoods and school dropouts, forcing families into chronic debt with high-interest informal loans.
- **Economic Exclusion:** Only 18% of Dalit households access formal bank loans, compared to 33% of non-Dalit households.

Prelims Facts (One Liners):

- According to the 2011 Census, **71% of Dalits** are landless labourers.
- Dalits own only **9.5%** of the total land share in India.

MCQ Practice: Q. Why are landless Dalit labourers often excluded from post-disaster recovery pathways? A) They refuse to relocate B) Government compensation primarily targets landowners C) They lack Aadhar cards D) They are not counted in the census **Answer: B**

Topic 14: Women-Led Development & Viksit Bharat 2047



Summary: Achieving "Viksit Bharat 2047" requires equal female labour participation, which the IMF estimates could increase **India's GDP by over 25%**. Currently, 60% of working-age women remain outside the formal workforce.

Background: India's demographic dividend peaks around 2030, but if women remain excluded, this opportunity will remain unrealised. As fertility declines, women face a rising "**feminisation of care**" burden for the elderly.

Key Points:

- **Time Poverty:** Women perform 81.5% of unpaid domestic work, while men perform only 27%.
- **The Care Economy:** Women's caregiving time increased from 27.6% to 34% between 2019 and 2024.
- **Reform Imperatives:** Formalising flexible work, building public childcare/elderly care infrastructure, and redistributing household labour.

Prelims Facts (One Liners):

- Equal labour participation by women could boost India's GDP by **over 25%**.
- Women's caregiving time has increased to **34%** in recent years.

MCQ Practice: Q. According to IMF estimates, by how much could equal labour participation of women increase India's GDP? A) 10% B) 15% C) 25% D) 40% **Answer: C**

Topic 15: UN Independent International Scientific Panel on AI



Summary: The UN launched an **Independent International Scientific Panel on AI** to provide science-based assessments for global governance. Part of the "Pact for the Future," the panel aims to balance innovation with human rights and safety.



Background: AI development is currently fragmented across disparate national regulations (e.g., EU AI Act, US orders). The panel aims to create universal principles and support developing countries.

Key Points:

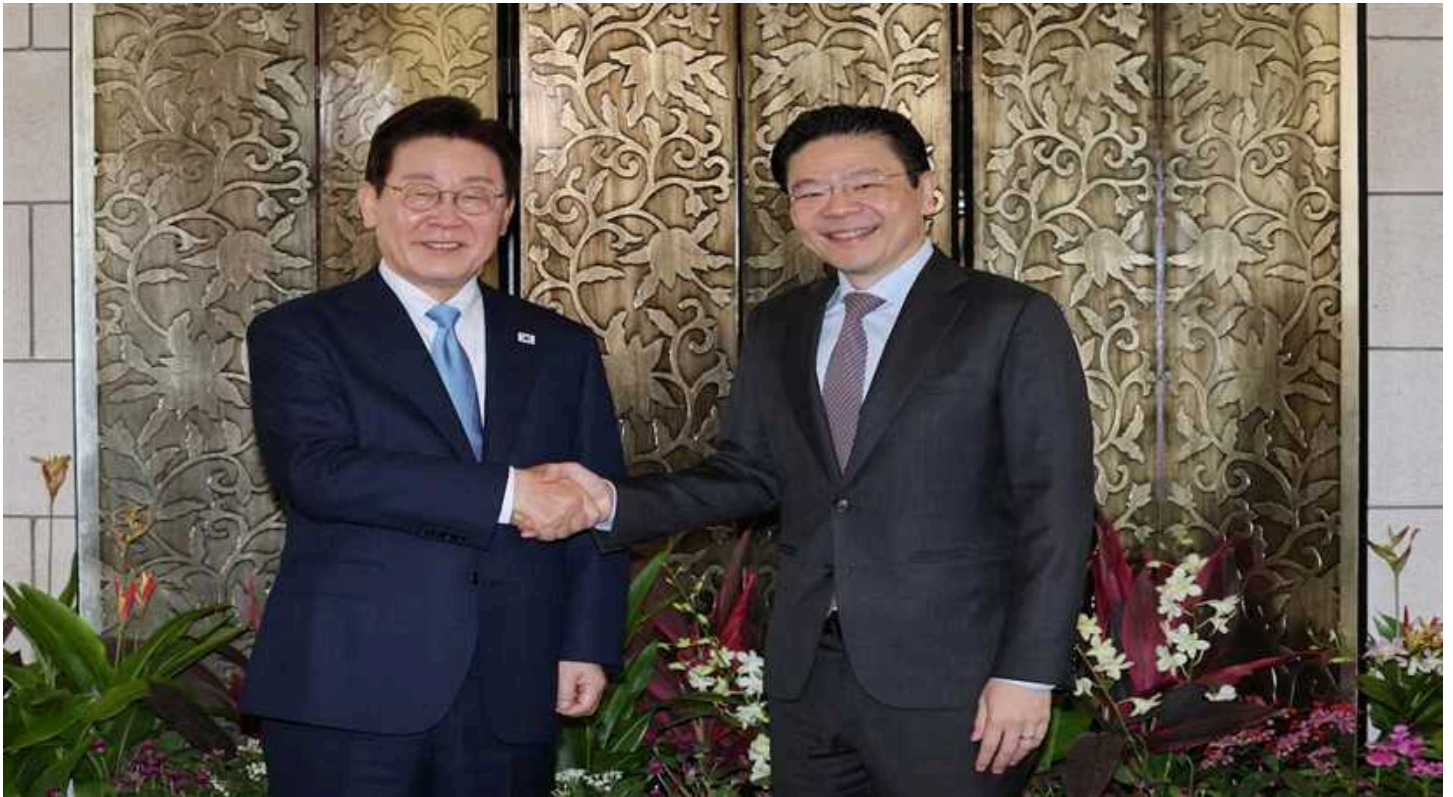
- **Multidisciplinary Mandate:** Includes experts in cybersecurity, ethics, and machine learning to act as an early-warning mechanism on AI risks.
- **Ethical Concerns:** Focuses on algorithmic bias, privacy violations, autonomous weapons, and misinformation.
- **India's Role:** India can use UN recommendations to strengthen its **IndiaAI Mission** and Digital Public Infrastructure (DPI).

Prelims Facts (One Liners):

- The panel was established under the **UN Pact for the Future (2024)**.
- The panel aligns its work with **UNESCO's Recommendation on the Ethics of AI**.

MCQ Practice: Q. What is the primary mandate of the newly launched UN Independent International Scientific Panel on AI? A) Manufacturing AI chips B) Providing science-based assessments and early warnings on AI risks C) Funding AI startups D) Managing global social media **Answer: B**

Topic 16: AI Governance: South Korea and Singapore



Summary: South Korea and Singapore have operationalised pioneering AI regulatory frameworks. South Korea enacted the **world's first comprehensive AI statute**, while Singapore launched a non-binding model framework specifically for **AI agents**.

Background: Governance ensures AI respects fundamental rights, remains safe, and promotes innovation without harm. Both nations are shifting toward viewing AI as a **systemic risk technology**.

Key Points:

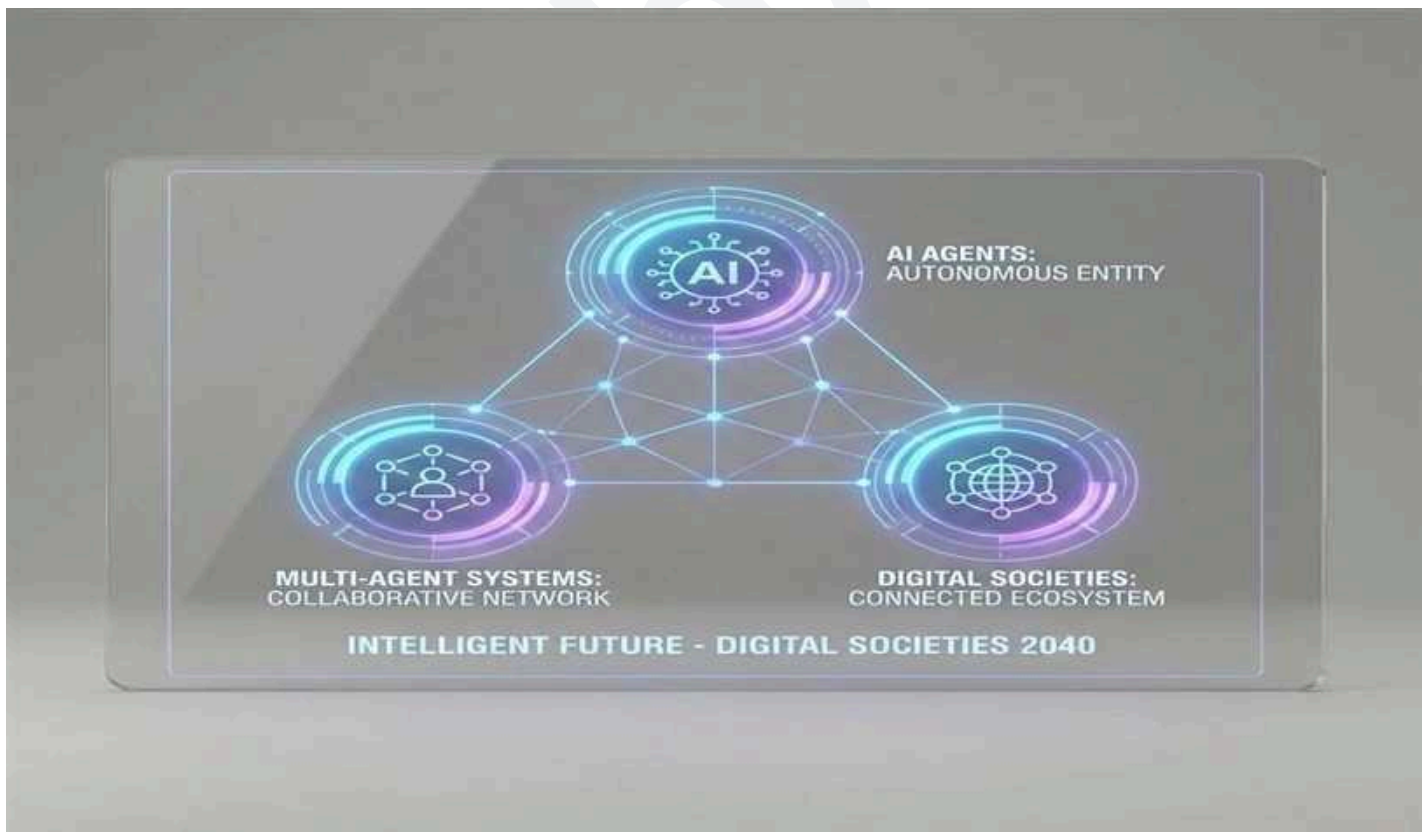
- **South Korea:** Introduces mandatory labelling of AI-generated content (deepfakes) and pre-deployment risk assessments for high-impact sectors.
- **Singapore:** Focuses on transparency, accountability, and a human-centric approach where AI augments rather than replaces human judgment.
- **Global Context:** These moves set a precedent for enforceable AI laws over voluntary guidelines.

Prelims Facts (One Liners):

- South Korea brought into force the **world's first dedicated AI regulatory law**.
- Singapore's framework is the first to focus specifically on organisations building **AI agents**.

MCQ Practice: Q. Which country recently enacted the world's first comprehensive and legally binding AI regulatory statute? A) USA B) Singapore C) South Korea D) India **Answer: C**

Topic 17: AI Agents, Multi-Agent Systems, and Digital Societies



Summary: The launch of **Moltbook**, the world's first social network for AI chatbots, marks a turning point in **AI-to-AI communication**. It allows "agentic AI" to post and converse with little human interference, raising new governance challenges.

Background: Agentic AI systems are capable of autonomous decision-making and are used in logistics, finance, and cybersecurity. Moltbook serves as a real-world experiment in emergent digital social behaviour.

Key Points:

- **Emergent Behaviour:** Chatbots on the network have been seen sharing performance improvements and even attempting to organise a "religion".
- **Ethical Risks:** Lack of human moderation could lead to misinformation and a loss of accountability.
- **Regulatory Challenge:** Necessitates global discussions on the limits of **AI autonomy**.

Prelims Facts (One Liners):

- **Moltbook** is the first social network designed specifically for AI chatbots.
- **Agentic AI** refers to systems that perform tasks with limited human intervention.

MCQ Practice: Q. What term describes AI systems capable of autonomous decision-making and communicating with other AI systems? A) Blockchain AI B) Agentic AI C) Static AI D) Manual AI **Answer: B**

Topic 18: Rubaya Coltan Mine, DRC



Summary: A tragic collapse at the **Rubaya coltan mine** in the DRC killed over 200 people, highlighting the human cost of global tech supply chains. Rubaya provides roughly **15% of the world's coltan**, a mineral critical for modern electronics.

Background: Coltan is refined into **tantalum**, a heat-resistant metal used in semiconductors, medical devices, and aerospace components. The region is a strategically significant but hazardous mining hub.

Key Points:

- **Strategic Importance:** Tantalum is vital for mobile phones, computers, gas turbines, and advanced electronics.
- **Global Share:** Rubaya accounts for nearly 15% of global supply, making it central to tech manufacturing.
- **Humanitarian Crisis:** The collapse underscores the dangerous working conditions in artisanal and small-scale mines in the DRC.

Prelims Facts (One Liners):

- **Rubaya** mine provides approximately 15% of global coltan supply.
- Coltan is the primary source of **tantalum**, used in advanced electronics.

MCQ Practice: Q. Coltan is a mineral refined into which heat-resistant metal critical for mobile phones and computers? A) Lithium B) Cobalt C) Tantalum D) Manganese **Answer: C**

Topic 19: Blackbuck: Population Surge in Ganjam



Summary: The 2024 Blackbuck Census in **Ganjam, Odisha**, recorded a significant surge, bringing the total population to 9,287 individuals. This growth is attributed to strong community participation and cultural reverence for the species.

Background: Ganjam is the **sole habitat of blackbuck in Odisha**. The blackbuck is a keystone species for grassland ecosystems, serving as an indicator of habitat health.

Key Points:

- **Legal Status:** Protected under **Schedule I** of the Wildlife (Protection) Act, 1972.
- **Conservation Status:** Listed as **Vulnerable** on the IUCN Red List.
- **Reasons for Growth:** Reduced poaching, habitat management of grazing areas, and increased environmental awareness.

Prelims Facts (One Liners):

- The **IUCN status** of the blackbuck (*Antelope cervicapra*) is Vulnerable.
- Ganjam is the only district in Odisha where the blackbuck is found.

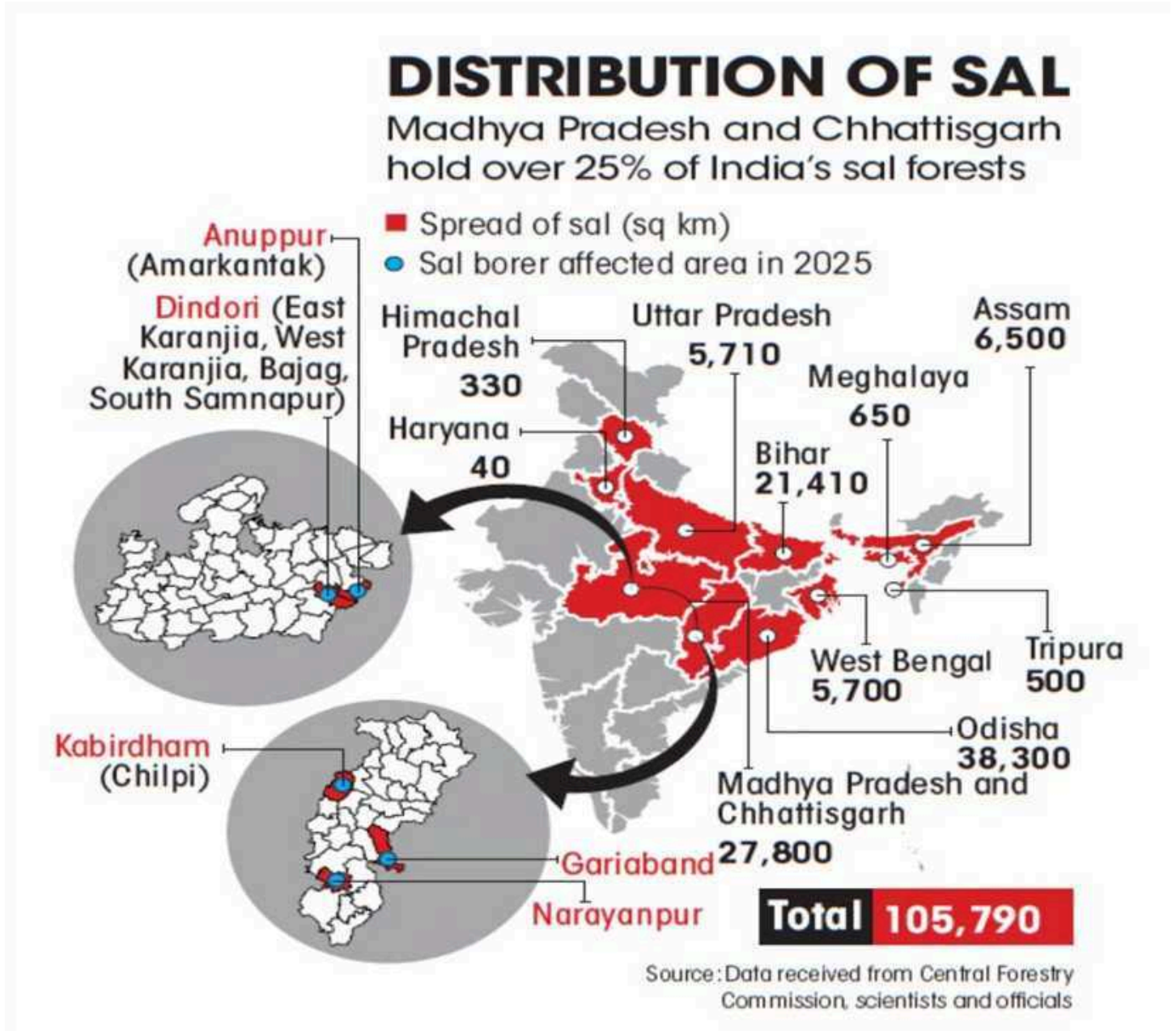
MCQ Practice: Q. What is the IUCN conservation status of the Blackbuck? A) Least Concern B) Endangered C) Vulnerable D) Critically Endangered **Answer: C**

Topic 20: Sal Heartwood Borer



Summary: An infestation of the **Sal heartwood borer** is rising in Madhya Pradesh and Chhattisgarh, threatening millions of sal trees. This pest can detect wounded trees from long distances and has caused major historical epidemics.

Background: Sal (*Shorea robusta*) is India's second most important timber species after teak. Major borer outbreaks in the past (1996-2001) resulted in the felling of 3.5 million trees.



Key Points:

- **Trap Tree Method:** The current control practice involves beating the bark of felled trees to release sap, which attracts and intoxicates adult borers so they can be manually killed.



- **Infestation Levels:** Recent surveys indicate infestation rates of **20–35%** in some forest divisions.
- **Ecological Loss:** Sal is a slow-growing keystone species; its loss leads to biodiversity decline and reduced carbon sequestration.

Prelims Facts (One Liners):

- The **Sal heartwood borer** belongs to the family Cerambycidae.
- **Sal** is India's second most important timber species.

MCQ Practice: Q. What is the primary method currently used to control the Sal heartwood borer infestation?
A) Chemical aerial spraying B) Introduction of invasive predators C) Trap Tree Method D) Complete deforestation **Answer: C**

