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IAS STUDY CIRCLE**

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CURRENT AFFAIRS

MAINS **UPSC CSE** **2026**
IAS Exam

Monthly Magazine



**Most Important
Current Affairs
Topics for CSE
Mains 2026**



**Topics Based on
Syllabus and
Previous Year
Questions**



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PREFACE

Dear Students,

Understanding and organizing Civil Services Exam relevant Current affairs in a crisp and concise manner is essential for success in the Civil Services exam. Our exclusive CSE Mains current affairs magazine will fulfil that need in your preparation.

Features

- Crisp, Clear and insightful analysis on key Current Affairs issues.
- Important issues segregated according to CSE Main Exam syllabus.
- Content written in question and answer format for clarity, easy recollection and coherence while writing the main examination.
- Exam relevant topics curated from The Hindu and Indian Express.

All the best

R.C.Reddy IAS Study Circle

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GS I - INDIAN HERITAGE AND CULTURE, HISTORY AND GEOGRAPHY OF THE WORLD AND SOCIETY

A. WORLD HISTORY

1. THE 250TH ANNIVERSARY OF THE AMERICAN REVOLUTION

Why in News?

- The U.S. government has launched **Task Force 250** and a **Story of America** video series to mark the 250th anniversary of the Declaration of Independence on **4 July 2026**.

American Revolution

- Nature:** A political and military struggle (1775–1783) in which thirteen British North American colonies broke away from imperial rule to form the United States.
- Outcome:** Creation of a republic grounded in popular sovereignty and individual rights.

Causes and immediate triggers

- Taxation without representation:** Post-war taxes (e.g., Stamp Act) imposed by Parliament without colonial representation sparked widespread protest.
- Enlightenment ideas:** Concepts of natural rights and government by consent inspired colonial leaders.
- Westward restrictions:** The Proclamation of 1763 limited settlement beyond the Appalachians, angering land-seeking colonists.
- Punitive measures:** The Coercive (Intolerable) Acts after the Boston Tea Party curtailed local self-rule and united colonial opposition.
- Economic grievances:** Mercantilist controls and trade limits frustrated colonial merchants seeking freer commerce.



Chronology of events

- Stamp Act (1765):** First direct tax on printed materials; led to organised resistance and boycotts.
- Boston Tea Party (1773):** Protest that escalated tensions and prompted harsh British reprisals.
- Lexington and Concord (1775):** First armed clashes that turned political dispute into war.

- **Declaration of Independence (1776):** Formal break from Britain, articulating rights and the rationale for independence.
- **Saratoga (1777):** Turning point that secured French military alliance.
- **Yorktown (1781):** Combined Franco-American victory that forced British surrender.
- **Treaty of Paris (1783):** Britain recognised U.S. independence and ended the war.

Key personalities

- **George Washington - Military Commander:** Led the Continental Army through eight years of war; kept the army intact during harsh winters and retreats; his steady leadership helped sustain the independence movement.
- **Thomas Jefferson - Principal Author:** Wrote the Declaration of Independence that explained why the colonies sought self-rule and set out ideas of natural rights and government by consent.
- **Benjamin Franklin - Diplomat and Negotiator:** Secured French military and financial support after the American victory at Saratoga; his diplomacy was crucial to winning the alliance that turned the tide against Britain.
- **John Adams - Political Advocate and Negotiator:** Argued forcefully for independence in the Continental Congress and later helped negotiate the Treaty of Paris that formally ended the war.

Global significance

- **Model of republicanism:** Demonstrated that a large polity could be governed without monarchy.
- **Inspiration:** Influenced the French Revolution and independence movements across the Americas.
- **Rights discourse:** Helped popularise ideas of individual rights and constitutional protections.

Conclusion

The 250th anniversary is an occasion to revisit how the Revolution reshaped governance, rights and global politics; commemorations seek to connect historical lessons to contemporary civic life.

B. INDIAN SOCIETY

I. Role of Women and Women's Organization, Population and Associated Issues, Poverty and Developmental issues, Urbanization, their problems and their remedies.

1. BREAKING THE CYCLE OF VIOLENCE AGAINST WOMEN

Why in News?

- The recent murder of a 27-year-old pregnant Delhi Police commando by her husband has reignited a national debate on the cycle of violence and trauma bonding.

How to break the cycle of Domestic Abuse

- **Understand the cycle:** Abuse often follows a pattern—tension builds, a violent episode occurs, then reconciliation, so recognising this helps survivors and helpers intervene early.
- **Break emotional bonds:** Trauma bonding and intermittent kindness trap victims; counselling and peer support are needed to weaken these ties.
- **Remove economic control:** Ensure financial independence through jobs, bank access, and emergency cash so victims can leave abusive situations.
- **Change social norms and services:** Strengthen legal protection, trauma-informed care, and community awareness so abuse is not normalised and survivors get timely help.

Incidence and Reporting Gaps

- **Domestic Abuse:** Over **30% of married women (18–49 years)** report spousal violence.
- **Reporting Gap:** Only **14% of victims** seek help from police or institutions.
- **Dowry Deaths:** NCRB: nearly **20 dowry deaths daily**.
- **Cyber Violence:** Stalking and bullying cases rose by **25% in 2024–25**.

Causes of Violence

- **Trauma Bonding:** Victims develop attachment to abusers as survival mechanism.
- **Patriarchal Norms:** Even professional women face pressure to be submissive.
- **Financial Coercion:** Abusers trap women in debt or seize salaries.
- **Dowry Practices:** Marriages treated as financial transactions, leading to abuse.
- **Institutional Barriers:** Women in uniform fear reporting abuse will harm their careers.

Initiatives Taken

- **One Stop Centres (Sakhi):** Medical, legal, and psychological support under one roof.
- **Fast Track Special Courts (FTSCs):** Speedy disposal of rape and POCSO cases.
- **Mission Shakti:** Umbrella scheme for women's safety and empowerment.
- **181 Women Helpline:** 24/7 emergency response for women in distress.

Challenges

- **Normalization of Harm:** Domestic violence seen as a private matter.
- **Legal Gaps:** Emotional abuse often ignored in law enforcement.
- **Weak Pre-Marriage Counseling:** Focus remains on ceremonies, not conflict resolution.
- **Occupational Stress:** Women in demanding jobs face added domestic friction.
- **Judicial Delays:** High pendency discourages victims from pursuing justice.

Way Ahead

- **Sensitization on Trauma Bonding:** Train police/social workers to recognize psychological entrapment.
- **Occupational Social Work:** Provide mental health support in high-stress professions.
- **Mandatory Pre-Marital Counseling:** Community programs to identify abusive traits early.
- **Safe Exit Pathways:** State-supported halfway houses for women leaving abusive homes.
- **Financial Safeguards:** Awareness and legal protection against coerced loans.

Conclusion

True empowerment requires valuing women's lives above marital sanctity. Unless society and institutions provide **psychologically safe spaces and robust support systems**, women will continue to face cycles of violence despite professional or financial independence.

II. Effects of Globalization on Indian society.

1. ATTRACTING TALENT POSITIONED ABROAD

Why in News?

- India is witnessing a **reverse brain drain** after recent **U.S. visa policy changes**, including a steep H-1B fee.

Reverse Brain Drain

- **Return of skilled professionals boosts local innovation and startups:** **Example:** An Indian software engineer returns from Silicon Valley to found a tech startup in Bengaluru, bringing global product practices and investor links that help scale the firm quickly.
- **Temporary or permanent return strengthens research and industry links:** **Example:** A scientist on a long-term fellowship in Germany returns to an Indian university as a visiting professor, setting up joint labs and training students while maintaining collaborative projects with European partners.

From Brain Drain to Brain Circulation

- **Policy goal:** Create a national plan to reverse talent loss by turning one-way emigration into two-way movement of skills, ideas and investment.
- **Engage the diaspora:** Invite NRIs and OCIs to return temporarily or permanently, and to contribute expertise, capital and global networks through incentives and streamlined pathways.
- **Build retention infrastructure:** Strengthen research labs, universities, startups and industry clusters so skilled professionals find attractive career and research opportunities at home.
- **Economic and social support:** Offer tax breaks, seed funding, housing assistance and family-friendly services to make relocation and long-term stay feasible.

Data & Trends

- **H-1B Dependence:** Indians form **71% of approvals** in FY2024.
- **Educational Profile:** Share of H-1B holders with master's degrees rose from **31% (2000) to 57% (2021)**.
- **Returnee Surge:** Ivy League graduates returning to India increased by **30%** amid U.S. visa uncertainty.
- **Global Capability Centres (GCCs):** Over **1,600 centres employing 1.66 million people** serve as landing hubs for returnees.
- **R&D Gap:** India invests **0.64% of GDP in R&D**, far below the U.S. (3.47%) and Israel (5.71%).

Opportunities for India

- **Global Capability Centres:** Now drive innovation in aerospace, semiconductors, and AI.
- **National Tech Missions:** Programs in AI and semiconductors offer frontier research opportunities.
- **Tier-2 Cities:** Initiatives like *Beyond Bengaluru* attract talent to Mysuru and Mangaluru with lower costs.
- **Startup Ecosystem:** India is the **third-largest globally**, offering platforms for returnees to launch ventures.
- **Academic-Industry Collaboration:** Schemes like **VAJRA Faculty** allow overseas experts to guide research without full relocation.

Government Initiatives

- **GATI:** Streamlines recruitment of overseas Indian experts.
- **eMigrate V2.0:** Digital platform for smooth migration and re-entry.
- **VAJRA:** Enables overseas scientists to join high-end R&D in India.
- **Know India Programme (KIP):** Connects young diaspora members with India's development journey.

Challenges

- **Family Readiness:** Limited international schools and costly housing deter permanent relocation.
- **Weak Private R&D:** Low investment restricts advanced research opportunities.
- **Institutional Barriers:** Difficult navigation of recruitment systems without local networks.
- **Infrastructure Gaps:** Tier-2 cities lack global-standard healthcare and labs.
- **High Household Costs:** Inflation and limited spousal employment support discourage long-term settlement.

Way Forward

- **Family-Friendly Policies:** Guarantee school seats and spousal hiring programs.
- **Boost Private R&D:** Tax credits and risk capital for advanced sectors.
- **Upgrade Research Infrastructure:** Build Ivy League-level labs in Tier-2 cities.
- **Affordable Housing Schemes:** Create innovation villages for returnees.
- **Brain Circulation Networks:** Formalize mentorship and short-term residencies before full relocation.

Conclusion

By strengthening social infrastructure, research facilities, and family support systems, India can evolve from being a **talent exporter to a global talent magnet**, turning global uncertainty into a domestic innovation dividend.

2. TRANSFORMING REPRESENTATION INTO REAL CHANGE BY 2029

Why in News?

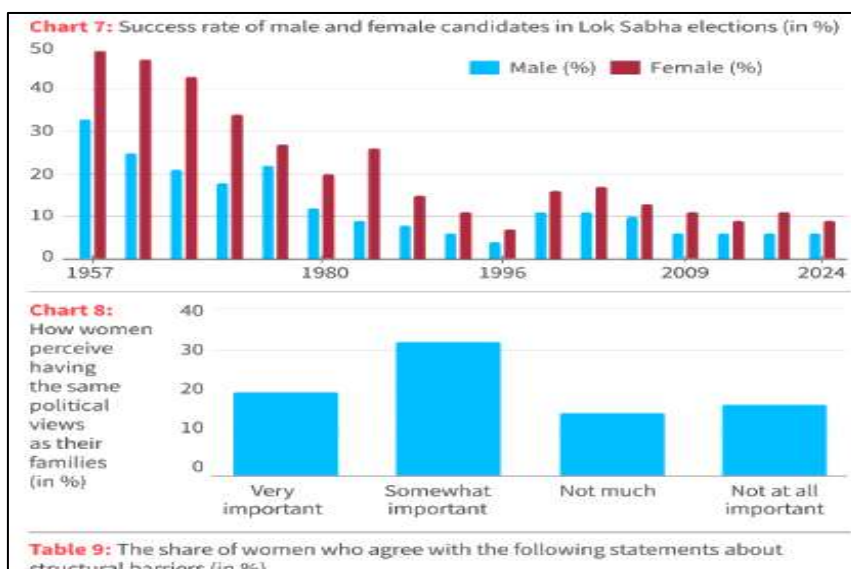
- The discussion around the Women's Reservation Act has intensified as India prepares for the 2029 lok sabha elections, which will see the first-ever implementation of 33% seat reservation for women.

Reservation to Policy Power

- **Objective:** Ensure the 2029 Parliament, with 33% women's reservation, converts numerical gains into policies that address hidden gendered problems.
- **Scope:** Focus on care economy, ageing women, unpaid work, gendered health needs, safety, and economic security.
- **Approach:** Move from token representation to sustained policy influence through gendered budgeting, data, and institutional reforms.

Women's Political Representation

- **Current status:** Women are about **13.6%** of the 18th Lok Sabha (2024).
- **Legal change:** **Nari Shakti Vandan Adhiniyam (2023)** mandates **33% reservation** in Lok Sabha and state assemblies by 2029.
- **Local success:** Over **1.4 million** elected women in panchayats due to 73rd and 74th Amendments.
- **Policy gap:** Parliamentary records show little focus on ageing women and unpaid care in bills and committee reports.



Why greater representation matters

- **Care economy:** Women legislators prioritise elder care, childcare, and public care infrastructure.
- **Health policy:** Female MPs push for gender-specific services such as maternal care and menopause clinics.
- **Safety and justice:** Increased female presence strengthens enforcement of laws against gender-based violence.
- **Economic inclusion:** Women leaders promote SHGs, FLFP, and schemes for women's financial independence.

Measures already taken

- **Constitutional reservation:** 33% seats in Parliament and assemblies.
- **Candidate pipelines:** Parties are grooming women candidates ahead of delimitation.
- **Grassroots schemes:** Lakhpati Didi and Drone Didi build leadership and technical skills.
- **Gender budgeting:** Institutionalised Gender Budget Statements to track women-focused spending.

Major challenges

- **Sarpanch-pati syndrome:** Male relatives often exercise power behind elected women.
- **Party barriers:** Patriarchal selection processes limit winnable tickets for women.
- **Double burden:** Political work plus unpaid domestic care reduces effectiveness.
- **Data deficit:** Lack of disaggregated data on ageing women and unpaid care work.
- **Online harassment:** Cyber-abuse deters active participation by women leaders.

Way forward

- **Capacity building:** Training on legislative procedure, budgeting, and gender policy.
- **Elder-care policy:** National framework with gendered budgeting and social security for older women.
- **Data reforms:** Mandatory gender-disaggregated data and a digital census of unpaid care.
- **Party reforms:** Transparent candidate selection and support systems for women MPs.
- **Accountability:** Monitor implementation of manifesto commitments on women's life-course issues.

Conclusion

Representation must lead to power: by 2029 India should ensure women's seats are used to redesign care systems, secure economic rights, and protect dignity across the life course.

C. GEOGRAPHY

I. Key Natural Resources

1. SECURING SUSTAINABLE WATER SOURCES

Why in News?

- Recently a parliamentary committee warned that many taps installed under the Jal Jeevan Mission run dry within a year, pressing the need to secure long-term water sources.

About Sustainable Water Sources

- **Sustainable water sources are natural** or managed supplies (rivers, aquifers, springs, ponds, treated reuse) that can provide safe water over the long term without being exhausted or polluted.
- **Objective:** Ensure household taps deliver continuous potable water by protecting, recharging and managing the source, not just laying pipes.
- **Service focus:** Shift from one-time connection targets to reliable year-round supply and source resilience.

Major Sources of Sustainable Water

- **Perennial rivers:** Managed surface flows with catchment protection and storage.
- **Recharged aquifers:** Groundwater replenished through rainwater harvesting and recharge structures.
- **Spring systems:** Protected hill springs with catchment conservation.
- **Ponds and tanks:** Local storage for village-level supply and groundwater recharge.
- **Treated wastewater:** Reuse for non-potable needs to reduce pressure on fresh sources.

Indian scenario:

- **Coverage:** About **12.56 crore** rural households received tap connections since 2019, but national coverage stalled at **~81%** by 2025.
- **Scale:** JJM is a large programme with planned investment of **₹8.69 lakh crore** and an extended deadline to 2028.
- **Baseline:** In 2019 only **17%** of rural homes had tap water; the mission achieved rapid infrastructure growth.
- **Last-mile cost:** Reaching the remaining **19–20%** of households will cost disproportionately more than the initial rollout.

Government initiatives

- **Jal Jeevan Mission:** Functional Household Tap Connections as the core delivery model.
- **Sujalam Bharat:** Digital mapping with unique Sujal Gaon IDs to track source-to-tap.
- **Source-to-Tap schemes:** 6.83 lakh sanctioned projects intended to cover the full supply chain.
- **Deadline extension:** Officially extended implementation timeline to 2028 to focus on sustainability.

Challenges

- **Source exhaustion:** Many sources dry up within months to a year after commissioning.
- **Data gap:** Poor documentation on whether schemes have permanent, recharged sources.
- **Geographic cost:** Remaining households are in remote, arid or hilly areas with high delivery costs.
- **Climate variability:** Erratic monsoons and higher temperatures reduce source reliability.
- **Institutional mismatch:** Weak coordination between local bodies, state water agencies and the national digital framework.

Way Ahead

- **Mandatory hydrogeological audits** for all schemes to certify 30-year source viability.
- **Integrate rainwater harvesting** and MGNREGS works for recharge (check dams, percolation tanks).
- **Real-time monitoring** via Sujalam Bharat dashboards and live source level data.
- **Community governance:** Strengthen Paani Samitis for local source protection and maintenance.
- **Conditional funding:** Link central releases to verified source sustainability and documentation.

Conclusion

JJM's success depends on securing and managing water sources, not only on installing taps. Long-term water security requires audits, recharge measures, community stewardship and digital transparency so that taps keep flowing for generations.

II. Important Geophysical Phenomena

1. DEFICIENT WINTER RAINS TRIGGER EARLY SUMMER IN INDIA

Why in News?

- India has witnessed an **unusually early rise in temperatures** this March, with heatwave-like conditions in north and west India due to **deficient winter rains and weak Western Disturbances**.

Western Disturbances (WDs): Key Drivers of Winter Weather

- Western Disturbances** are **extra-tropical cyclones** originating near the **Mediterranean region**.
- They travel eastward via **westerly winds**, reaching India through **West Asia and Pakistan**.
- On encountering the **Himalayas**, moist air rises → **cooling** → **cloud formation** → **rain/snowfall**.

Role in India's Climate

- Provide **major winter rainfall** to north and northwest India.
- Crucial for **snow accumulation in the Himalayas**.
- Help maintain **soil moisture and moderate temperatures**.

Reasons for Deficient Winter Rains (2025–26)

1. Weak and Fewer Western Disturbances

- Reduced frequency and intensity since late 2025.
- Less moisture transport led to **low rainfall and snowfall**.

2. Lack of Wind Convergence

- Normally, interaction of **westerlies and easterlies** brings rainfall.
- This season saw **poor convergence**, limiting precipitation.

3. Changing Climate Patterns

- Global warming** altering jet streams and storm tracks.
- Increasing variability in **timing and intensity of WDs**.

How Deficient Rainfall Leads to Early Summer

1. Low Soil Moisture

- Lack of rainfall reduces **soil water content**.
- Dry soil heats faster which leads to higher **surface temperatures**.

2. Reduced Snow Cover

- Less snowfall in Himalayas reduces **albedo effect**.
- Leads to **faster warming of surrounding regions**.

3. Clear Skies and High Solar Radiation

- Fewer clouds → more **direct sunlight** reaching the surface.
- Accelerates heating process.

Dry Winter and Early Heat

- February 2026 was the **third driest since 1901**.
- Rainfall in Jan–Feb: **16 mm**, nearly **60% below normal**.
- Lack of soil moisture → land heats faster → early onset of summer.
- Himachal Pradesh recorded **25°C in March**, rare for the season.
- Similar abnormal warmth seen in J&K and Ladakh.

Impacts of Early Heat Conditions

1. Agriculture (Rabi Crops at Risk)

- Crops like **wheat, mustard, gram, and pulses** are sensitive to heat.
- Early heat leads to **reduced grain filling and lower yields**.

2. Water Stress

- Increased irrigation demand → **pressure on groundwater**.
- Already dry winter worsens **water scarcity**.

3. Ecosystem and Snowmelt Changes

- Reduced snow affects **river flow patterns**.
- Impacts long-term **water security in Indo-Gangetic plains**.

4. Health Impacts

- Early heatwaves increase risks of **heat stress, dehydration, and fatigue**.

Way Forward

- **Strengthening Weather Forecasting:** Improve **early warning systems** for heatwaves and rainfall variability.
- **Climate-Resilient Agriculture:** Promote **heat-resistant crop varieties** and efficient irrigation (drip systems).
- **Water Resource Management:** Encourage **rainwater harvesting and groundwater recharge**.
- **Research on Western Disturbances:** Better understanding of **changing WD patterns under climate change**.
- **Urban Heat Mitigation:** Increase **green cover, cool roofs, and sustainable urban planning**.

Conclusion

Deficient winter rains and weak Western Disturbances highlight **growing climate variability**, making India vulnerable to early heatwaves. Strengthening climate resilience and adaptive strategies is essential for sustainable development.

2. DECLINING CAUVERY STREAMFLOW AND CLIMATE CHANGE IMPACTS

Why in News?

- A recent study by **Indian Institute of Technology Gandhinagar (2026)** projects a **decline in Cauvery river flow between 2026–2050** despite increasing rainfall trends.

Key Findings of the Study

1. Declining Streamflow Trend

- Study projects a **decline of around 3.5% in streamflow (2026–2050)**
- Historical data shows a **28% decline between 1951 and 2012**
- This indicates a **structural and long-term drying trend**

2. Rainfall–Runoff Decoupling

- Even with **increasing rainfall**, river flow is decreasing
- Suggests reduced **efficiency of water conversion into usable runoff**

3. Improved Scientific Modelling

- Global climate models show increase in flow but lack regional accuracy
- Refined models focusing on Indian conditions show **decline**, making them more reliable

Reasons for Declining Cauvery Flow

- **Rising Temperatures** – Higher temperatures increase evaporation and evapotranspiration, reducing effective water availability.
- **Erratic Rainfall Pattern** – Intense short-duration rainfall limits groundwater recharge and increases runoff losses.
- **Dependence on Dual Monsoons** – Variability in both Southwest and Northeast monsoons creates uncertainty in water availability.

Cauvery Basin

- Originates at **Talakaveri in Karnataka** and flows into the **Bay of Bengal**
- Total length is about **800 km**
- Covers states of **Karnataka, Tamil Nadu, Kerala, and Puducherry**
- Important tributaries include **Kabini, Hemavati, and Bhavani**
- Depends on **both Southwest and Northeast monsoons**, making it highly sensitive to variability

Anthropogenic Factors

- **Agricultural Pressure** – Excessive irrigation and water-intensive crops put heavy stress on river resources.
- **Urbanisation** – Rapid city expansion increases water demand and reduces natural recharge.
- **Groundwater Overexploitation** – Overuse of groundwater lowers base flow, weakening river discharge.
- **Land Use Changes** – Deforestation and urban surfaces reduce soil's ability to retain and recharge water.

Impacts

- **Agriculture and Food Security** – Declining River flow reduces crop yields and threatens farmer livelihoods.
- **Urban Water Crisis** – Reduced availability of water leads to shortages in cities.
- **Environmental Impact** – Loss of habitats and increased salinity harm ecosystems and biodiversity.
- **Economic Impact** – Lower water availability affects hydropower production and industrial activities.

Federal and Governance Issues

1. Water Sharing Conflicts

- Governed by **Cauvery Water Disputes Tribunal (CWDT)**
- Fixed allocations are not suitable under changing climate

2. Institutional Limitations

- **Cauvery Water Management Authority (CWMA)** lacks enforcement strength

3. Inter-State Disputes

- Projects like **Mekedatu** increase tensions among states

Challenges

- Static legal frameworks vs dynamic climate conditions
- Lack of transparent and real-time data
- Over-dependence on infrastructure-based solutions
- Uncertainty in long-term climate projections

Way Forward

- **Adaptive Water Sharing:** Introduce flexible allocation based on **real-time data and rainfall**
- **Strengthen Institutions:** Empower CWMA with **legal authority and transparency mechanisms**
- **Promote Efficient Water Use:** Encourage **micro-irrigation and less water-intensive crops**
- **Urban Water Management:** Focus on **rainwater harvesting, recycling, and reuse**
- **Ecosystem Restoration:** Afforestation and wetland protection to improve **water retention**
- **Improve Climate Research:** Develop **region-specific models** for better policy planning

Conclusion

Declining Cauvery flows show the **complex impact of climate change and human pressure on water systems**. A shift towards adaptive and cooperative water governance is essential to ensure sustainable and equitable water use.

3. MELTING GLACIERS AND EMERGING FLOOD RISK

Why in News?

- Recently an ISRO study linked the August 2025 Dharali flash flood in Uttarakhand finding highlights new, fast-emerging glacier hazards that demand revised monitoring and disaster planning.

What is deglaciation

- **Definition:** Deglaciation is the steady loss of glacier ice when melting and sublimation exceed snowfall and accumulation. **Example:** Many Himalayan glaciers have thinned noticeably since 2000, reducing their overall mass.
- **Exposure of old ice:** As seasonal snow and firn thin, older, darker ice becomes exposed and absorbs more heat, speeding melt. **Example:** The Srikanta Glacier showed reduced firn cover before the Dharali flash flood.
- **Small-scale failures:** Instability in exposed ice patches and nivation hollows can collapse suddenly, producing localised, high-energy floods. **Example:** The August 2025 Dharali event was linked to an ice-patch collapse rather than a large glacial lake breach.
- **Accelerated melt drivers:** Rising air temperatures, soot and dust deposition, and shifts from snow to rain at high elevations all accelerate glacier loss. **Example:** Black carbon near Gangotri has been associated with faster surface recession.

Himalayan glaciers

- Himalayan glaciers have lost about **0.5 m of vertical ice height per year** on average since 2000.
- The Hindu Kush Himalaya region is warming faster than the global average; projections show up to **75% glacier volume loss by 2100** under high emissions.
- **1.3+ billion people** depend on rivers fed by Himalayan glaciers; initial melt raises flows but long-term loss threatens water security.
- Incidents of GLOFs and ice-patch collapses have **tripled over two decades**.

Main causes

- **Rising temperatures:** Reduce insulating snow cover and expose darker ice that absorbs more heat.
- **Black carbon and dust:** Soot deposition increases solar absorption and accelerates melt.
- **Changing precipitation:** More rain and less snow at high altitudes reduce glacier recharge.
- **Local development:** Roads, tunnels and construction create heat islands and destabilise slopes.
- **Freeze-thaw cycles (nivation):** Repeated thawing erodes subsurface support, forming hollows that can collapse.

Impacts

- **Sudden floods:** Small ice failures can produce high-energy surges in narrow valleys.
- **Water insecurity:** Long-term decline in dry-season flows affects agriculture and hydropower.
- **Livelihood loss:** Mountain communities face reduced grazing, irrigation and displacement.
- **Infrastructure risk:** Roads, hydropower and settlements in valley bottoms become more vulnerable.

Measures taken

- **Satellite monitoring:** ISRO maps and tracks thousands of Himalayan glaciers.
- **National Mission for Sustaining the Himalayan Ecosystem:** Supports glacier research and adaptation.
- **Early warning systems:** Sensors and EWS installed in high-risk valleys after recent disasters.
- **International research partnerships:** Enhance glaciology capacity and data sharing.

Challenges

- Remote, rugged terrain limits ground monitoring and maintenance.
- Historical data gaps make rare ice-patch failures hard to predict.
- Transboundary politics hinder comprehensive regional studies.
- Rapid microclimate shifts reduce lead time for warnings.

Way ahead

- Integrate satellite and ground sensors to monitor small ice patches and nivation hollows.
- Train local communities in hazard recognition and community-led warnings.
- Enforce strict environmental audits for infrastructure near glaciers.
- Establish regional data-sharing mechanisms and a Himalayan glacier observatory.
- Map and monitor north-facing steep slopes as priority zones.

Conclusion

The Dharali event shows glacier hazards are evolving: disaster management must broaden focus to include subtle cryospheric instabilities, strengthen monitoring, and build community resilience to protect downstream populations.



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GS 2 - GOVERNANCE, CONSTITUTION, POLITY, SOCIAL JUSTICE AND INTERNATIONAL RELATIONS

A. POLITY

I. Federal structure of the Constitution

1. Uniform Civil Code

Why in the news?

- The Supreme Court of India **reiterated its support for a Uniform Civil Code**, observing that a common civil law framework would help address complexities arising from multiple personal laws governing marriage, divorce, and succession across communities.

Issues with Personal Laws in India

- Gender Inequality:** Women face discrimination in inheritance, marriage, and divorce across religions.
- Legal Fragmentation:** Multiple personal laws create inconsistency and confusion in civil matters.
- Slow Reform Process:** Piecemeal judicial interventions fail to ensure comprehensive change.

Comparative and Global Perspective

- International Practices:** Many countries follow uniform civil laws irrespective of religion, ensuring equality.
- Indian Exception:** Persistence of religion-based personal laws reflects colonial legacy and socio-cultural diversity.
- Learning from Models:** Gradual harmonisation, as seen in other jurisdictions, can guide Indian reforms.

Constitutional Provisions

- Article 44** contained in **part IV** of the Constitution says that the state “shall endeavor to secure for the citizens a uniform civil code throughout the territory of India”.
- Part IV of the Constitution** outlines the **Directive Principles of State Policy**, which, while not enforceable or justiciable in a court of law, are fundamental to the country’s governance.

Arguments in Favour of Uniform Civil Code (UCC)

- Equality before Law:** Ensures equal civil rights for all citizens by eliminating religion-based discrimination in personal laws.
- Gender Justice:** Removes unequal provisions in marriage, divorce, and inheritance, empowering women across communities.
- Legal Uniformity:** Simplifies the legal system by replacing multiple personal laws with a single coherent framework.
- National Integration:** Promotes unity and a sense of common citizenship beyond religious identities.
- Ease of Justice Delivery:** Reduces litigation complexity and delays by providing clear and uniform legal provisions.

Arguments Against Uniform Civil Code (UCC)

- Threat to Cultural Diversity:** Imposition of uniform laws may undermine India’s pluralistic traditions and distinct community practices.

- **Religious Freedom Concerns:** Personal laws are linked to faith, and UCC may be seen as violating rights under Article 25.
- **Lack of Consensus:** Absence of broad-based agreement among communities can lead to social tensions and resistance.
- **Risk of Majoritarian Bias:** Fear that UCC may reflect the customs of the majority community rather than true neutrality.
- **Implementation Challenges:** Harmonising diverse customs and practices into a single code is legally and administratively complex.

Uniform Civil Code as a Transformative Reform

- **Legal Uniformity:** Establishes a common set of civil laws applicable to all citizens.
- **Promotion of Gender Justice:** Ensures equal rights in inheritance, marriage, and family matters.
- **Economic Implications:** Predictable legal framework enhances investor confidence and contract enforcement.

Challenges in Implementing UCC

- **Cultural Pluralism:** Diverse customs and traditions make consensus-building difficult.
- **Political Sensitivities:** UCC is often viewed through ideological lenses, hindering objective debate.
- **Implementation Complexity:** Harmonising various laws requires careful drafting and wide consultations.

Way Forward

- **Phased Implementation:** Begin with gender-neutral reforms in inheritance and marriage laws.
- **Stakeholder Consultation:** Engage religious groups, civil society, and legal experts for consensus.
- **Awareness and Acceptance:** Public education to build trust and reduce resistance.
- **Balancing Unity and Diversity:** UCC must ensure equality without undermining India's pluralistic ethos.

II. Parliament and State legislatures

1. Privileges Committee

Why in the news?

- Lok Sabha Speaker Om Birla on Tuesday (March 3, 2026) reconstituted the Committee of Privileges. The panel, tasked with examining issues related to breaches of parliamentary privilege and recommending appropriate action.

About Parliamentary Privileges:

- It refers to the special rights, immunities, and powers enjoyed by Parliament as an institution and by Members of Parliament (MPs) individually.
- **Article 105** of the Constitution of India provides privileges to Parliament and its members, while **Article 194** of the Constitution of India provides similar privileges to state legislatures.
- These privileges ensure that legislators can perform their constitutional duties freely, effectively, and without external interference.
- **Types of Privileges:**
 - **Collective Privileges:** Rights of the House as a whole (e.g., right to regulate proceedings, punish for contempt, exclude strangers).
 - **Individual Privileges:** Rights of members (e.g., freedom of speech in Parliament, freedom from arrest in civil cases).
- **Composition:**
 - Lok Sabha Committee: 15 members nominated by the Speaker of the Lok Sabha.

- Rajya Sabha Committee: 10 members nominated by the Chairman of the Rajya Sabha.
- **Functions:**
 - Examines cases related to breach of privileges of the House and its members. Investigate the matter by calling witnesses and examining documents.
 - Determines whether a breach of privilege or contempt of the House has occurred.
 - The Committee of Privileges submits its report to the House, which may accept, reject, or modify its recommendations.
 - However, most privilege notices are usually rejected, with punitive action taken only in a few cases.
- **Significance:**
 - The Committee of Privileges protects the independence and dignity of Parliament and ensures accountability for actions that obstruct parliamentary functioning.
 - It helps maintain discipline and integrity in legislative proceedings.
- **Parliamentary Privileges are Enjoyed by MPs**
 - **Freedom of Speech:** Members enjoy complete freedom of speech within Parliament, protected under Article 105(1) of the Constitution.
 - **Immunity from Legal Proceedings:** Members cannot face legal action for speeches made or votes cast in Parliament or its committees, as per Article 105(2).
 - **Protection for Authorized Publications:** No legal proceedings can be initiated for publishing any report, paper, vote, or proceeding that has been authorized by Parliament (Article 105(2)).
 - **Exemption from Judicial Inquiry:** Courts are barred from inquiring into the validity of parliamentary proceedings based on alleged procedural irregularities, under Article 122(1).
 - **Freedom from Arrest:** Members are exempt from arrest in civil cases during parliamentary sessions, as well as 40 days before and after a session, according to Section 135A of the Code of Civil Procedure, 1908.
 - **Exemption from Jury Service:** They are exempted from jury service. They can refuse to give evidence and appear as a witness in a case pending in a court when Parliament is in session.

Conclusion

Parliamentary privileges are essential for legislative autonomy but require responsible use to balance independence with accountability.

2. Removal of Speaker

Why in the news?

- Recently, no-confidence motion moved against Lok Sabha Speaker Om Birla by the Opposition.

Removal of Speaker of Lok Sabha:

- According to **Article 94**, a speaker or Deputy Speaker can vacate their office under the following conditions:
 - **Ceasing to be a member:** As per Article 94(a), they cease to be a member of the House of the People.
 - **Resignation:** According to Article 94(b), they may resign at any time by writing addressed to the appropriate authority.
 - **Removal by Resolution:** Article 94(c) states they can be removed by a resolution passed by a majority of all the then members of the House.

Procedure for Removal of a Speaker or Deputy Speaker:

- **Notice of Resolution:** A member wishing to propose a resolution for removal must submit a written notice to the Secretary-General of the Lok Sabha. This notice can be submitted by two or more members jointly.

- **Minimum Notice Period:** A resolution for removal cannot be moved **unless at least 14 days' notice has been given.**
- This motion of removal can be **considered and discussed only when it has the support of at least 50 members.**
- **When a resolution for the removal of the Speaker of Lok Sabha is under consideration** of the House, he/she **cannot preside** at the sitting of the House, though he/she may be present in the House.
 - However, he/she **can speak and take part in the proceedings** of the House at such a time and **vote in the first instance**, though **not in the case of an equality of votes.**
- **Entry in List of Business:** Once the notice is received, a motion for leave to move the resolution is entered in the List of Business on a day fixed by the Speaker.

Historical Precedents:

- **1954:** Against **G.V. Mavalankar** (First Speaker).
- **1966:** Against **Hukam Singh.**
- **1987:** Against **Balram Jakhar.**

III. The Judiciary

1. SC Upholds 'Right to Die' for Man in Vegetative State

Why in the news?

- The Supreme Court permitted withdrawal of artificial life support to a patient in a permanent vegetative state, marking a significant development in end-of-life jurisprudence.

Concept of Passive Euthanasia

- **Definition:** Passive euthanasia involves withdrawal or withholding of life-sustaining treatment when recovery is not possible.
- **Medical Dimension:** Clinically Assisted Nutrition and Hydration (CANH) recognised as a medical intervention, not mere basic care.
- **Ethical Basis:** Focus on minimising suffering and preserving dignity rather than prolonging life artificially.

Constitutional and Ethical Dimensions

- **Right to Life (Article 21):** Interpreted to include right to die with dignity as part of a meaningful life.
- **Patient Autonomy:** Respect for individual choice, including advance directives or consent of family.
- **Dignity in Death:** Ensuring humane and compassionate end-of-life care.

Judicial Safeguards and Guidelines

- **Medical Board Review:** Decision must be based on expert medical opinion ensuring no possibility of recovery.
- **Family Consent:** Consensus among next of kin is essential to avoid misuse.
- **Procedural Safeguards:** Guidelines evolved to prevent arbitrary withdrawal of treatment and ensure transparency.

Challenges in End-of-Life Decision Making

- **Absence of Comprehensive Law:** Lack of statutory framework leads to ambiguity and inconsistent practices.
- **Socio-economic Pressures:** Financial distress may influence decisions regarding continuation of treatment.
- **Ethical Dilemmas:** Balancing sanctity of life with quality of life remains complex.

Need for Legislative Framework

- **Codification of Guidelines:** Clear law to regulate passive euthanasia and end-of-life care.
- **Palliative Care Integration:** Ensuring pain management and comfort during withdrawal process.
- **Protection Against Misuse:** Legal safeguards to prevent coercion or unethical practices.

Way Forward

- **Holistic End-of-Life Policy:** Integrating legal, medical, and ethical aspects into a unified framework.
- **Awareness on Living Wills:** Promoting advance directives to respect patient autonomy.
- **Strengthening Healthcare Systems:** Expanding palliative care services across India.
- **Balancing Ethics and Law:** Ensuring humane decisions while safeguarding fundamental rights.

2. Supreme Court Ruling on Scheduled Caste Status and Religion

Why in the news?

- The Supreme Court of India held that Scheduled Caste (SC) status is restricted to specific religions under the constitutional framework.

Identity question

The top court said that a person professing a religion other than those mentioned in Clause 3 cannot be part of a scheduled caste

■ Clause 3 of the Constitution (Scheduled Castes) Order, 1950, mandates that 'no person who professes a religion different from Hinduism shall be deemed to be a member of a Scheduled Caste'	■ The Sikh religion was added to the ambit of Clause 3 in 1956 ■ The provision was further amended in 1990 to include persons professing Buddhism ■ The top court observed that the bar in Clause 3 is 'categorical and absolute'
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Case Background and Judicial Findings

- **Petitioner's Claim:** A convert to Christianity sought protection under the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989.
- **High Court View:** Denied protection, stating caste is not recognised within Christianity.
- **Supreme Court Position:** Upheld the High Court, stating religious conversion nullifies SC identity legally.
- **Mutual Exclusivity:** Practising another religion and claiming SC status were held incompatible.

Constitutional and Legal Framework

- **Religious Limitation:** SC status is limited to Hindus, later extended to Sikhs (1956) and Buddhists (1990).
- **Statutory Interpretation:** The Court held the restriction under Clause 3 as "categorical and absolute".
- **Meaning of 'Profess':** Public declaration and practice of religion determines eligibility, not mere birth identity.
- **Exclusion Principle:** A person practising another religion cannot claim SC benefits, protections, or reservations.

Distinction with Scheduled Tribes Status

- **No Religious Restriction:** The Constitution (Scheduled Tribes) Order, 1950 does not impose religion-based exclusion.
- **Identity Test:** Tribal status depends on continuity of cultural and social practices.
- **Factual Determination:** Courts assess whether tribal identity persists despite conversion.

Implications of the Judgment

- **Clarity in Law:** Reinforces strict interpretation of constitutional provisions governing SC status.
- **Impact on Converts:** Converts to other religions lose access to reservation and legal protections under SC category.
- **Debate on Social Justice:** Raises concerns about continued caste-based discrimination despite religious conversion.
- **Policy Question:** Highlights need to revisit criteria for affirmative action in a changing social context.

IV. Constitutional and Non-Constitutional Bodies, Statutory, regulatory and quasi-judicial bodies

1. Removal of Chief Election Commissioner (CEC)

Why in the news?

- Opposition parties are considering an impeachment motion against the Chief Election Commissioner (CEC).

Removal of Chief Election Commissioner (CEC): Constitutional Procedure

- **Constitutional Provision:** Under Article 324(5), the Chief Election Commissioner can be removed only in a manner similar to a judge of the Supreme Court.
- **Grounds for Removal:** Removal is permitted only on “proved misbehaviour or incapacity”, ensuring a high threshold for accountability.

Procedure of Impeachment

- **Initiation of Motion:** A removal motion can be introduced in either House of Parliament by a specified number of members.
- **Investigation Process:** The allegations are examined, and evidence is evaluated to establish “proved misbehaviour or incapacity”.
- **Special Majority Requirement:** The motion must be passed by a special majority (majority of total membership + two-thirds of members present and voting in both Houses).

Role of the President

- **Final Authority:** After Parliament passes the motion, the President formally removes the CEC from office.
- **Binding Nature:** The President acts on the resolution passed by Parliament.

Safeguards for Independence

- **High Threshold:** Stringent procedure ensures protection from arbitrary or politically motivated removal.
- **Institutional Autonomy:** Ensures that the Election Commission functions independently without fear of executive pressure.
- **CEC vs Other Commissioners:** While the CEC enjoys protection similar to Supreme Court judges, other Election Commissioners can be removed on the recommendation of the CEC.

Significance

- **Ensuring Free and Fair Elections:** Strong removal safeguards uphold neutrality and credibility of the Election Commission.
- **Balance between Accountability and Independence:** The process prevents misuse while allowing action in cases of serious misconduct.

B. GOVERNANCE

I. Government policies and Interventions

1. AI and India's Legal Ecosystem

Why in the news?

- Courts in India are transitioning from paper-based systems to digital platforms under the e-Courts Mission Mode Project to improve access and efficiency.

Evolution: From Digitisation to Artificial Intelligence (AI)

- **e-Courts Mission Mode Project:** Launched in 2007, it focused on computerisation of records, Case Information Systems (CIS), and online cause lists.
- **Advanced Digital Reforms:** Introduction of e-filing, digital summons, automated case listing, and virtual courts improved accessibility and transparency.
- **Artificial Intelligence (AI) as Next Layer:** AI augments digital systems by processing language, identifying patterns, and assisting in complex judicial workflows.

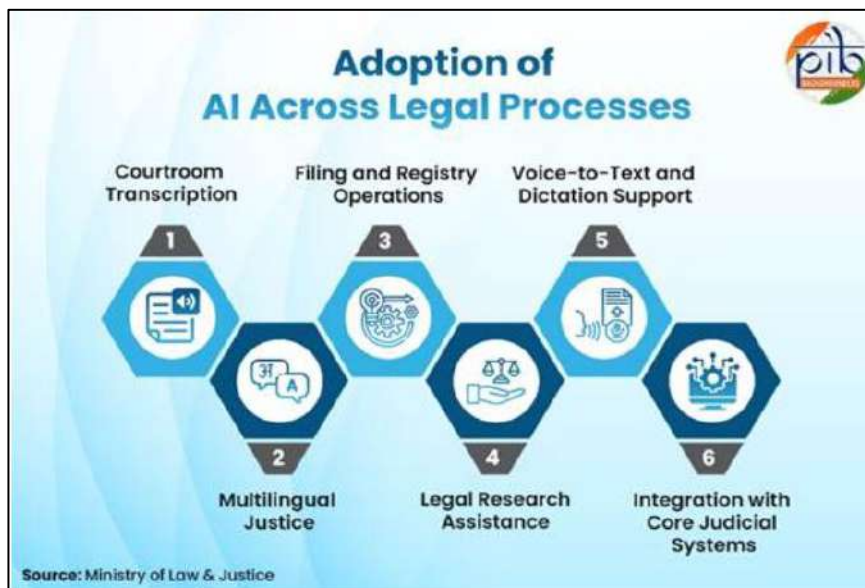
Applications of Artificial Intelligence (AI) in Judiciary

- **Transcription of Proceedings:** Automatic Speech Recognition (ASR) enables near real-time transcription of oral arguments, improving record accuracy and transparency.
- **Translation of Judgments:** Supreme Court Vidhik Anuvaad Software (SUVAS) uses Natural Language Processing (NLP) to translate judgments into regional languages, enhancing accessibility.
- **E-Filing and Registry Efficiency:** Machine Learning (ML) and Optical Character Recognition (OCR) tools identify defects in filings, reducing procedural delays.
- **Legal Research Assistance:** Tools like Legal Research Analysis Assistant (LegRAA) and Supreme Court Portal for Assistance in Court Efficiency (SUPACE) help judges analyse case laws efficiently.
- **Voice-to-Text Tools:** Applications like ASR-SHRUTI and PANINI assist in drafting judgments while maintaining judicial control.

Integration with Judicial Infrastructure

- **Integrated Case Management & Information System (ICMIS):** Enables e-notices, digital records, and seamless interlinking of courts and institutions.
- **Case Information System (CIS) 4.0:** Provides dashboards, real-time updates, and improved user interface for efficient case management.
- **Digital Courts 2.1 Platform:** Integrates AI tools into court workflows ensuring continuity within institutional frameworks.

Artificial Intelligence (AI) in Criminal Justice System



- **Inter-operable Criminal Justice System (ICJS)**: Connects police, courts, prisons, and forensic systems enabling seamless data sharing.
- **Data Management and Tracking**: AI improves access to First Information Reports (FIRs), charge sheets, and forensic reports, reducing delays.
- **Evidence Recording and Proceedings**: Tools like Nyaya Shruti and e-Sakshya enable secure video testimony and accurate digital evidence recording.
- **National Automated Fingerprint Identification System (NAFIS)**: Creates a centralised biometric database for efficient criminal identification.

Significance for Access to Justice

- **Improved Efficiency**: Automation reduces delays in filing, listing, and documentation processes.
- **Enhanced Accessibility**: Translation tools and digital platforms enable wider access across linguistic and geographical barriers.
- **Transparency and Accountability**: Real-time updates, digital records, and live streaming strengthen public trust.
- **Support to Judicial Functioning**: Artificial Intelligence (AI) assists judges in research and documentation without affecting decision-making autonomy.

Challenges

- **Digital Divide**: Unequal access to technology may limit benefits for rural and marginalised populations.
- **Data Privacy Concerns**: Handling sensitive judicial data requires robust safeguards.
- **Algorithmic Bias Risks**: Artificial Intelligence (AI) systems may reflect biases if not carefully designed and monitored.
- **Capacity Constraints**: Need for training judicial officers and staff in using advanced technologies.

Way Forward

- **Capacity Building**: Training judges, lawyers, and staff in Artificial Intelligence (AI) tools and digital systems.
- **Strengthening Infrastructure**: Expanding digital access to district and subordinate courts.
- **Ethical Artificial Intelligence (AI) Framework**: Ensuring fairness, transparency, and accountability in AI deployment.
- **Bridging Digital Divide**: Enhancing accessibility for rural litigants through legal aid and digital literacy.

2. Karnataka and Andhra Pradesh Calls for Banning Social Media Use for Children

Why in the news?

Karnataka and Andhra Pradesh proposed restricting social media access for children to address rising digital addiction and mental health concerns.

- **Policy Proposal:** Karnataka plans a ban for children below 16 years, while Andhra Pradesh proposes restrictions for those below 13 years with phased regulation.
- **Global Context:** Australia enacted a law in 2025 mandating platforms to block users under 16 with strict penalties.

Rationale Behind Social Media Restrictions

- **Mental Health Concerns:** Excessive social media use is linked to anxiety, depression and reduced attention span among children.
- **Addiction and Screen Time:** Increased mobile usage leads to behavioural addiction, affecting academic performance and social interaction.
- **Exposure to Harmful Content:** Children are vulnerable to cyberbullying, misinformation and inappropriate content online.
- **Developmental Impact:** Early exposure affects cognitive and emotional development during formative years.

Challenges in Implementation

- **Feasibility Issues:** Enforcing age verification on social media platforms remains technologically complex.
- **Digital Divide Concerns:** Restrictions may disproportionately affect access to educational and informational resources.
- **Freedom and Rights Debate:** Blanket bans raise concerns regarding children's rights and digital freedom.
- **Platform Compliance:** Ensuring cooperation from global tech companies is a major regulatory challenge.

Way Forward

- **Targeted Regulation:** Instead of blanket bans, age-appropriate guidelines and parental controls can be more effective.
- **Digital Literacy:** Promoting responsible usage through awareness programs in schools and communities is essential.
- **Technological Solutions:** Strengthening age verification and content moderation mechanisms.
- **Collaborative Approach:** Coordination between government, parents, schools and tech platforms is necessary for sustainable outcomes.

3. The Need to Recognise 'Volunteer' Care Work

Why in the news?

- The Union Budget 2026–27's proposal to train 1.5 lakh multiskilled caregivers under the National Skills Qualification Framework (NSQF) reflects India's growing recognition of care economy needs.

Existing Care Workforce and Its Role

- **Backbone of Welfare Delivery:** Accredited Social Health Activists (ASHAs), Anganwadi and mid-day meal workers ensure last-mile delivery of health, nutrition and education services across rural and urban India.
- **Continuity and Essential Nature of Work:** Their services are regular and indispensable, forming a permanent pillar of India's welfare architecture despite informal classification.
- **Precarious Working Conditions:** They receive low honorariums without formal contracts, paid leave or social security, reflecting systemic neglect.

Structural Issues in Care Economy

- **Informalisation of Labour:** The state classifies core service providers as ‘volunteers’ to avoid financial and legal obligations of formal employment.
- **Fragmented Welfare Support:** Limited benefits through schemes like Ayushman Bharat and Pradhan Mantri Shram Yogi Maandhan fail to ensure comprehensive protection.
- **Inter-State Disparities:** Variations in honorarium and benefits across States create unequal working conditions.

Gender Dimensions of Care Work

- **Feminisation of Care Economy:** Care work is predominantly performed by women, reinforcing gendered division of labour in society.
- **Care Penalty:** Time Use Survey 2024 shows women spend significantly more time on unpaid caregiving, limiting economic participation.
- **Social Norms and Undervaluation:** Care work is seen as a natural extension of women’s roles, leading to low recognition and wages.

Way Forward

- **Formalisation of Workforce:** Reclassify ‘volunteers’ as employees with fair wages, job security and social protection mechanisms.
- **Integration with Skill Ecosystem:** Extend National Skills Qualification Framework training to existing workers with certification of prior learning.
- **Gender-Sensitive Reforms:** Recognise care work as skilled labour and promote equitable distribution of caregiving responsibilities.
- **Adoption of International Labour Organisation Framework:** Implement Recognise, Reduce, Redistribute, Reward and Represent principles for decent care work.
- **Institutional Strengthening:** Ensure dedicated funding, policy coherence and representation of care workers in decision-making.

4. Challenges in Jal Jeevan Mission and the Need for Source Sustainability

Why in the news?

- The ₹8.69 lakh crore Jal Jeevan Mission (JJM) aims to ensure functional household tap connections in rural India, but concerns over water source sustainability threaten its long-term success.

Parliamentary Committee Observations

- **Threat to Long-Term Objectives:** Without sustainable sources, the goal of ensuring water supply for 25–30 years may remain unfulfilled.
- **Risk of Asset Redundancy:** Infrastructure created under JJM may become defunct if water sources are exhausted.
- **Need for Integrated Approach:** Emphasised adoption of “source to tap” model for holistic water management.

Achievements of Jal Jeevan Mission

- **Expansion of Tap Connections:** Coverage increased from 17% (3.23 crore households in 2019) to around 81%, reflecting significant infrastructure creation.
- **Improved Rural Water Access:** Millions of rural households now have access to piped potable water, reducing drudgery and improving health outcomes.
- **Focus on Service Delivery:** Recent policy shift emphasises sustainable service delivery over mere infrastructure expansion.

Key Challenges in Implementation

- **Source Sustainability Issues:** Water sources such as rivers, ponds and groundwater are depleting, with some drying up within 1–2 years of scheme implementation.
- **Infrastructure without Water Security:** Tap connections exist in many areas, but lack of reliable water sources undermines functionality.
- **Data and Monitoring Gaps:** Absence of State-level data on “source to tap” systems weakens planning and accountability.
- **Rising Cost for Universal Coverage:** Remaining 20% coverage requires disproportionately higher financial investment.

Government Initiatives and Reforms

- **Extension of Jal Jeevan Mission:** Programme extended till 2028 with additional funding to achieve universal coverage.
- **Sujalam Bharat Digital Framework:** A national digital system to map water supply chains and assign unique IDs to villages.
- **Shift in Policy Focus:** Transition from infrastructure creation to governance, sustainability and service delivery.

Way Forward

- **Ensuring Source Sustainability:** Promote rainwater harvesting, watershed management and groundwater recharge to maintain water sources.
- **Adopting Source-to-Tap Approach:** Integrate planning from water source to household delivery for long-term reliability.
- **Strengthening Data Systems:** Improve real-time monitoring and data sharing between Centre and States.
- **Community Participation:** Involve local bodies in water conservation and management for sustainable outcomes.
- **Efficient Resource Utilisation:** Prioritise water-stressed regions and optimise fund allocation for maximum impact.

5. Digital Personal Data Protection (DPDP) Act, 2023

Why in the news?

- The Supreme Court is examining the scope of “personal data” under Digital Personal Data Protection (DPDP) Act, 2023 amid concerns of restricting access to information.

Key Provisions and Issues in DPDP Framework

- **Ambiguity in Definitions:** Lack of clear distinction between “personal data” and “public data” creates scope for misuse.
- **Restriction on RTI:** Section 44(3) imposes limitations on disclosure of personal information, potentially weakening transparency laws.
- **Penalty-Centric Approach:** Heavy penalties for violations exist, but compensation to affected individuals is absent.

Concerns Raised by Petitioners

- **Impact on Journalism:** Restrictions may hinder journalists from accessing information related to public officials and governance.
- **Surveillance Risks:** Broad provisions may enable disproportionate state surveillance without adequate safeguards.

- **Regulatory Independence:** Data Protection Board's dependence on the Executive raises concerns about impartiality.

Constitutional Dimensions

- **Right to Privacy:** Recognised as a fundamental right in *K.S. Puttaswamy vs Union of India*.
- **Right to Information:** Derived from Article 19(1)(a), ensuring transparency and accountability in governance.
- **Balancing of Rights:** Court emphasises that neither privacy nor transparency should override the other disproportionately.

Challenges in Data Governance

- **Definitional Uncertainty:** Absence of clear legal standards leads to inconsistent interpretation and enforcement.
- **Digital Economy Pressures:** Increasing data flows to private entities raise concerns about misuse and control.
- **Institutional Gaps:** Weak grievance redressal mechanisms for individuals affected by data breaches.

Implications for Governance and Democracy

- **Transparency vs Confidentiality:** Excessive privacy protection may shield public authorities from scrutiny.
- **Citizen Rights:** Lack of compensation weakens protection for individuals whose data is misused.
- **Trust Deficit:** Perceived overreach may reduce public confidence in digital governance systems.

Way Forward

- **Clear Legal Definitions:** Distinguish between personal, sensitive, and public interest data.
- **Harmonisation with RTI Act:** Ensure data protection laws do not dilute transparency obligations.
- **Strengthening Regulatory Framework:** Ensure independence and accountability of Data Protection Board.
- **Balancing Rights Framework:** Develop proportionality-based approach to reconcile privacy and transparency.

6. Compulsory Voting in India

Why in the news?

Supreme Court on a poll-related matter, the raised questions regarding mandatory voting in elections.

- **Constitutional Status of Voting:** Under Article 326 of the Constitution of India, voting is a statutory right, not a fundamental duty or obligation.
- **Statutory Framework:** The Representation of the People Act, 1950 and 1951 Act govern voter registration and participation.
- **Feasibility Issues:** Large population, migration, and administrative constraints make enforcement of compulsory voting difficult.
- **Legal Concerns:** Mandatory voting may violate freedom of expression under Article 19(1), including the right not to vote.

Arguments Against Compulsory Voting

- **Practical Difficulties:** Monitoring and penalising non-voters in a vast and diverse country is unrealistic.
- **Harsh Penalties:** Fines or denial of services (as in countries like Australia) may be disproportionate in India.
- **Quality of Participation:** Forced voting may lead to uninformed or random choices, weakening democratic outcomes.
- **Expert Committee Views:** The Dinesh Goswami Committee and Law Commission of India did not support compulsory voting.

Arguments In Favour of Compulsory Voting

- **Higher Voter Turnout:** Evidence suggests compulsory voting increases turnout by around 7%.
- **Representative Democracy:** Ensures broader participation and legitimacy of elected governments.
- **Civic Responsibility:** Encourages citizens to actively engage in democratic processes.

Ways to Increase Voter Turnout Without Compulsion

- **Awareness Campaigns:** Strengthen voter education through initiatives by Election Commission of India using digital and social media.
- **Ease of Voting:** Improve accessibility through better polling infrastructure and simplified procedures.
- **Support for Migrant Workers:** Provide transport facilities and ensure implementation of paid holiday on polling day.
- **Remote Voting Options:** Develop secure technological solutions for absentee and remote voting.
- **Targeted Outreach:** Focus on urban apathy, youth participation, and first-time voters through behavioural campaigns.

Significance of Improving Voter Participation

- **Strengthening Democracy:** Higher turnout leads to more inclusive and representative governance.
- **Reducing Electoral Distortions:** Prevents candidates from winning with minority vote share.
- **Enhancing Legitimacy:** Improves public trust in electoral outcomes and institutions.

Conclusion

Compulsory voting is neither feasible nor desirable in India; instead, efforts should focus on awareness, accessibility, and electoral reforms to encourage voluntary participation.

7. Prison Reforms

Why in the news?

- The Supreme Court of India directed States to establish Open Correctional Institutions (OCIs) to address overcrowding and improve prison conditions.

Open Correctional Institutions (OCIs)

- **Concept and Features:** OCIs allow prisoners to live in open settings, engage in work, and maintain family contact under supervision.
- **Eligibility Criteria:** Prisoners must show good conduct, complete part of their sentence, and not be convicted of heinous crimes.
- **Rehabilitation Focus:** Encourages reintegration into society and reduces recidivism through responsibility and trust.
- **Underutilisation Issue:** Many States lack OCIs or fail to utilise existing capacity effectively.

Status of Prisons in India

- **Overcrowding Crisis:** Prisons operate at around 130% capacity, leading to severe shortages in basic amenities.
- **Undertrial Dominance:** Over 74% inmates are under-trials, reflecting systemic delays in the criminal justice system.
- **Poor Living Conditions:** Inadequate sanitation, food, healthcare, and rising custodial deaths highlight structural deficiencies.
- **Marginalised Impact:** Most inmates belong to underprivileged sections with limited access to legal resources.

Gender and Social Inclusion Concerns

- **Exclusion of Women:** Low participation of women in OCIs was termed discriminatory and violative of equality rights.
- **Constitutional Violation:** Denial of OCI access infringes Articles 14 and 21 ensuring equality and dignity.
- **Need for Inclusivity:** Infrastructure must include facilities for transgender persons, disabled inmates, and children in prisons.
- **Women-Specific Needs:** Prenatal, postnatal care and child support systems remain inadequate.

Legal and Administrative Gaps

- **Delay in Justice Delivery:** Long pendency of cases leads to excessive undertrial detention.
- **Weak Legal Aid:** Ineffective implementation of free legal aid denies timely bail and fair trial.
- **Mental Health Neglect:** Severe shortage of professionals, with one expert for thousands of prisoners.
- **Institutional Mindset:** Continued focus on punishment rather than reform hampers progressive prison policies.

Measures for Effective Prison Reforms

- **Strengthening Legal Aid:** Expand access through institutions like National Legal Services Authority to ensure speedy trials.
- **Expansion of OCIs:** Establish more open prisons and optimise existing infrastructure across States.
- **Judicial Monitoring:** Regular oversight to ensure compliance with reform directives.
- **Improving Infrastructure:** Upgrade sanitation, healthcare, and mental health services in prisons.
- **Changing Attitudes:** Promote a reformatory approach within prison administration and society.

Significance of Reforms

- **Human Rights Protection:** Ensures dignity and humane treatment of prisoners.
- **Reducing Overcrowding:** OCIs provide an effective mechanism to decongest prisons.
- **Reintegration into Society:** Facilitates rehabilitation and reduces repeat offences.
- **Strengthening Rule of Law:** Enhances fairness and efficiency in the criminal justice system.

Conclusion

The Supreme Court's intervention underscores the urgent need for comprehensive prison reforms combining legal aid, infrastructure expansion, and a shift towards a humane and rehabilitative justice system.

8. Corruption Perceptions Index 2025 (CPI)

Why in the news?

- The Corruption Perceptions Index 2025 shows a fall in global average score to 42, indicating worsening corruption trends.

India's Performance and Comparative Position

- **Score and Rank:** India scored 39 and ranked 91/182, remaining in the lower half globally.
- **Stagnant Trend:** India's score has remained between 38–41 over a decade, showing limited improvement.
- **Global Comparison:** India lags behind several emerging economies despite outperforming neighbours like Pakistan and Bangladesh.
- **Development Paradox:** Economic growth has not translated into improved governance perceptions.

Significance of CPI for India

- **Indicator of Governance Quality:** CPI measures perceived public sector integrity across procurement, judiciary, and regulation.
- **Impact on Investment:** Low scores influence investor confidence, sovereign ratings, and capital flows.
- **Economic Competitiveness:** Governance credibility has emerged as a key factor in global economic competition.
- **Policy Benchmark:** CPI serves as a tool to assess effectiveness of anti-corruption reforms.

Economic Costs of Corruption

- **Direct Financial Losses:** Corruption costs nearly 5% of global GDP, reflecting massive economic inefficiencies.
- **India-Specific Impact:** Estimated losses range from 0.5% to 1.5% of GDP annually due to corruption.
- **Distortion of Markets:** Encourages rent-seeking and increases transaction and compliance costs.
- **Opportunity Cost:** Diverts resources away from critical sectors like health, education, and infrastructure.

Structural Challenges in India

- **Complex Compliance Regime:** Over 26,000 imprisonment provisions create regulatory burden and discretion.
- **Business Constraints:** High compliance requirements increase entry barriers and operational uncertainty.
- **Rent-Seeking Risks:** Excessive criminalisation of regulations expands scope for corruption.
- **Institutional Weaknesses:** Gaps in enforcement, judicial delays, and regulatory opacity persist.

Measures for Improving Governance

- **Regulatory Simplification:** Reduce compliance burden and decriminalise minor offences.
- **Strengthening Institutions:** Enhance independence of judiciary, vigilance bodies, and oversight agencies.
- **Transparency Mechanisms:** Expand use of technology for real-time monitoring and disclosure.
- **Judicial Efficiency:** Speed up dispute resolution and enforcement mechanisms.
- **Civic Participation:** Promote accountability through active civil society and media engagement.

Significance for India's Growth Aspirations

- **Economic Ambition:** Achieving a \$10 trillion economy requires parallel governance reforms.
- **Trust and Legitimacy:** Strong institutions build public trust and policy credibility.
- **Sustainable Development:** Reducing corruption improves fiscal efficiency and inclusive growth.
- **Global Positioning:** Better governance enhances India's standing in global economic and political arenas.

Conclusion

India's economic rise must be complemented by sustained institutional reforms, making transparency and accountability central to governance for long-term growth and credibility.



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S. Chitharanjan - IPS

AIR 155 UPSC CSE 2021

“

I began my Civil Services preparation in 2012. I did not secure a rank in my first two attempts. In 2015, I secured All India Rank 574 and was selected for the Indian Railway Accounts Service (IRAS). In 2016, I secured All India Rank 357 and was allotted the Indian Revenue Service (Income Tax). Finally, in 2021, I secured All India Rank 155 and fulfilled my dream by being selected for the Indian Police Service (IPS). The mock interviews conducted at R.C.Reddy IAS Study Circle helped me immensely in refining my personality test performance. ”

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AIR- 161 UPSC CSE 2021

“

After completing engineering, I worked briefly in Chennai before joining the Telangana Irrigation Department as an AEE in 2016. While working, I prepared for the Civil Service exam for 5 years. I couldn't clear prelims in my first two attempts, wrote Mains in 2019, and missed the 2020 interview by seven marks. In 2021, I finally received the interview call and scored 201 marks in the interview. This was possible due to the mock interviews and guidance at R.C. Reddy IAS Study Circle. R.C. Reddy Sir also gave me many valuable suggestions. ”

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C. SOCIAL JUSTICE

I. Welfare Schemes for Vulnerable Sections

1. Centre Suspends Rice Fortification Scheme

Why in the news?

- The Union Government has temporarily suspended rice fortification under Pradhan Mantri Garib Kalyan Anna Yojana citing concerns over effectiveness.

Reasons for Suspension

- **Scientific Concerns:** Study by Indian Institute of Technology Kharagpur highlighted instability of micronutrients in fortified rice under real storage conditions.
- **Shelf-Life Issues:** Factors like moisture, temperature, and packaging reduce nutrient retention, limiting effectiveness.
- **Logistical Constraints:** Prolonged storage and handling lead to degradation of fortified rice kernels.

Criticism of Rice Fortification

- **Questioning Effectiveness:** Anaemia is multi-causal and not solely due to iron deficiency.
- **Health Concerns:** Risks of overconsumption of micronutrients may lead to toxicity in certain populations.
- **Cost Inefficiency:** Large-scale fortification involves high costs with limited measurable outcomes.

Significance of the Move

- **Shift towards Evidence-Based Policy:** Demonstrates willingness to revise welfare schemes based on research findings.
- **Focus on Nutritional Outcomes:** Emphasis shifts from input-based to outcome-based interventions.
- **Public Health Sensitivity:** Recognises complexity of malnutrition and anaemia in India.

Challenges in Addressing Anaemia

- **Multi-Dimensional Causes:** Includes poor diet, infections, genetic disorders, and socio-economic factors.
- **Implementation Gaps:** Weak monitoring and delivery mechanisms reduce scheme effectiveness.
- **Awareness and Behavioural Issues:** Limited knowledge about nutrition affects outcomes.

Way Forward

- **Diversified Nutrition Strategy:** Promote dietary diversity, supplementation, and public health interventions.
- **Strengthening Healthcare Systems:** Improve screening, diagnosis, and treatment of anaemia.
- **Targeted Interventions:** Focus on vulnerable groups like women and children with customised approaches.
- **Robust Research and Monitoring:** Continuous evaluation to ensure scientific and policy alignment.

2. Supreme Court Judgment on Maternity Leave

Why in the news?

The Supreme Court of India expanded maternity rights by recognising adoptive mothers' entitlement to paid leave irrespective of the child's age at adoption.

- **Key Ruling:** The Court held that adoptive mothers are entitled to 12 weeks of paid maternity leave without age restrictions on the child.

- **Legal Basis:** It struck down Section 60(4) of the Social Security Code, 2020 as unconstitutional for violating equality and dignity.
- **Equality Principle:** The Court affirmed that adoptive mothers have the same rights and responsibilities as biological mothers.

Issues with Section 60(4) Of Social Security Code, 2020

- **Arbitrary Age Limit:** The provision restricted maternity leave only if the adopted child was below 3 months, excluding most adoptive mothers.
- **Violation of Fundamental Rights:** It was held to violate Articles 14 and 21 by denying equal treatment and maternal care.
- **Practical Constraints:** Adoption procedures in India take longer, making the 3-month limit unrealistic.
- **Exclusion of Majority:** Data showed less than 5% of adopted children were below 3 months, making the law ineffective.

Court's View on Motherhood

- **Beyond Biological Lens:** The Court stated that motherhood cannot be confined to biological processes alone.
- **Reproductive Autonomy:** Adoption was recognised as part of a woman's reproductive choice and autonomy.
- **Child Development Needs:** Maternity leave is essential for emotional bonding and psychological development of the child.
- **Special Needs of Adoptees:** Children from institutional care require greater parental support due to higher stress levels.

Maternity Leave for Adoptive Mothers

- **Uniform Entitlement:** Adoptive mothers are now entitled to 12 weeks of paid leave irrespective of the child's age.
- **Parity with Biological Mothers:** Though biological mothers get 26 weeks, the Court removed discriminatory barriers for adoptive mothers.
- **Work-Life Balance:** The ruling ensures women are not forced to choose between career and childcare.
- **Child-Centric Approach:** Focus shifted from procedural limits to the welfare and integration of the child.

Recommendations on Paternity Leave

- **Need for Legal Framework:** The Court urged the Union government to frame a comprehensive law on paternity leave.
- **Promotion of Shared Parenting:** Recognised the role of fathers in childcare and family support systems.
- **Current Gap:** Only government employees get limited paternity leave, while the private sector lacks uniformity.
- **Gender Equality in Caregiving:** Encouraging paternity leave helps reduce gender bias in caregiving responsibilities.

Significance of the Judgment

- **Strengthening Gender Justice:** The ruling advances substantive equality for working women.
- **Inclusive Parenthood:** Recognises diverse forms of families including adoptive and non-biological parenting.
- **Child Welfare Focus:** Prioritises emotional and developmental needs of children over rigid legal provisions.
- **Progressive Labour Reform:** Signals the need for reforms in labour laws to align with social realities.

Conclusion

The judgment marks a shift towards inclusive and rights-based social security laws, urging the State to further institutionalise gender-neutral and child-centric leave policies.

II. Issues Relating to Development and Management of Social Sector/Services relating to Health, Education, Human Resources

1. India's Transformation into a Global Health Powerhouse

Why in the news?

- India aims to achieve equitable healthcare access through large-scale public health interventions and digital systems. Focus on affordable, accessible, and quality healthcare aligns with the vision of Viksit Bharat 2047.

Ayushman Bharat and Universal Health Coverage

- Ayushman Bharat Framework:** Integrated approach combining insurance, primary care, infrastructure, and digital health systems.
- Pradhan Mantri Jan Arogya Yojana (PM-JAY):** Provides ₹5 lakh coverage to vulnerable families, reducing catastrophic health expenditure.
- Ayushman Arogya Mandirs (AAMs):** Over 184,000 centres deliver preventive, promotive, and primary healthcare services.
- Ayushman Bharat Digital Mission (ABDM):** Over 863 million digital health IDs enable interoperable and accessible health records.

Strengthening Health Infrastructure

- Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM):** Focuses on district-level health systems, labs, and critical care capacity.
- Pandemic Preparedness:** Real-time surveillance and integrated health networks enhance response to disease outbreaks.
- Telemedicine Expansion:** Large-scale teleconsultations improve access in rural and remote areas.

Technology and Innovation in Healthcare

- Artificial Intelligence (AI) Integration:** AI supports diagnostics, predictive analytics, and patient management systems.
- Drone-Based Healthcare Delivery:** Initiatives like i-DRONE ensure last-mile delivery of vaccines and medical supplies.
- Digital Health Ecosystem:** Platforms enable remote consultations, digital prescriptions, and data-driven healthcare delivery.

National Health Mission and Public Health Outcomes

- Comprehensive Health Programmes:** National Health Mission addresses maternal, child, and communicable diseases.
- Immunisation Coverage:** Universal Immunisation Programme covers millions of children and pregnant women annually.
- Improved Health Indicators:** Significant reduction in maternal mortality, child mortality, and disease burden.

Pharmacy of the World

- Global Generic Medicine Supplier:** India provides 20% of global generic medicines and exports to over 200 countries.
- Vaccine Production Hub:** Supplies 55-60% of UNICEF vaccine demand.
- COVID-19 Response:** Indigenous vaccines highlight capability in research and large-scale manufacturing.

Biopharma and Bioeconomy Growth

- **Expanding Bioeconomy:** Rapid growth from \$10 billion to over \$165 billion, projected to reach \$300 billion by 2030.
- **National Biopharma Mission:** Supports innovation, research, and affordable healthcare solutions.
- **Biopharma SHAKTI Initiative:** Strengthens domestic manufacturing, clinical trials, and regulatory capacity.

Affordable Medicines and Accessibility

- **Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP):** Provides medicines at 50–90% lower prices through widespread outlets.
- **Affordable Medicines and Reliable Implants for Treatment (AMRIT):** Ensures access to affordable drugs and medical devices for tertiary care.

Medical Education Expansion

- **Institutional Growth:** Increase in medical colleges and establishment of new All India Institute of Medical Sciences institutions.
- **Increased सीट Capacity:** Significant rise in undergraduate and postgraduate medical seats strengthens healthcare workforce.

Medical Tourism and Global Health Role

- **Rising Medical Tourism:** Growth from 112,000 (2009) to over 600,000 (2024) patients reflects global trust in Indian healthcare.
- **Integrated Medical Hubs:** Planned hubs will enhance diagnostics, treatment, and rehabilitation services.
- **Global Health Contribution:** Affordable healthcare solutions support Global South countries.

Significance

- **Health Equity:** Expands access to marginalised and vulnerable populations.
- **Economic Growth:** Healthcare and pharmaceuticals contribute significantly to GDP and employment.
- **Global Leadership:** Positions India as a key player in global health governance and supply chains.

Challenges

- **Regional Disparities:** Uneven healthcare access across states and rural areas.
- **Human Resource Gaps:** Shortage of trained healthcare professionals in remote regions.
- **Rising Disease Burden:** Increasing non-communicable diseases require sustained focus.

Way Forward

- **Strengthening Primary Healthcare:** Focus on preventive and community-based health systems.
- **Enhancing Digital Integration:** Expand Artificial Intelligence (AI) and digital health infrastructure.
- **Public-Private Partnerships:** Encourage investment in healthcare **Focus on Research and Innovation:** Promote indigenous development of drugs and technologies.

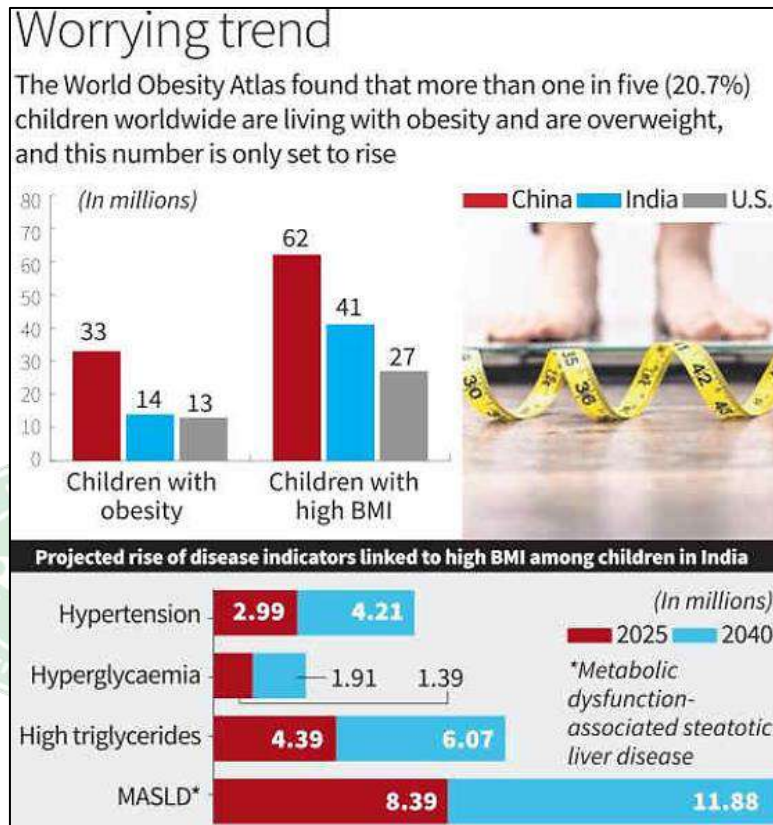
2. India Ranks Second Globally in Childhood Obesity

Why in the news?

- Nearly 15 million children aged five to nine and more than 26 million children aged 10 to 19 in India were overweight or obese in 2025, according to the World Obesity Atlas, 2026.

Findings of the Report

- **Global Scenario:** Around 200 million school-age children are overweight globally, with prevalence rising from 14.6% in 2010 to 20.7% in 2025.
- **India's Position:** India ranks second after China with 41 million high BMI children, reflecting rapid epidemiological transition.
- **Future Projections:** By 2040, 507 million children globally may be overweight or obese, indicating a looming crisis.



Determinants of Childhood Obesity

- **Physical Inactivity:** Nearly 74% of adolescents (11–17 years) fail to meet recommended activity levels, increasing obesity risk.
- **Dietary Patterns:** Increased intake of sugar-sweetened beverages and processed foods contributes to excess calorie consumption.
- **School Nutrition Gaps:** Only 35.5% of children receive school meals, limiting access to balanced nutrition.
- **Early Childhood Factors:** Around 32.6% of infants face sub-optimal breastfeeding, affecting long-term metabolism.
- **Maternal Health:** High BMI and Type 2 Diabetes among women influence intergenerational obesity risks.

Health and Socio-Economic Implications

- **Health Risks:** High BMI leads to Type 2 Diabetes, cardiovascular diseases and metabolic disorders at an early age.
- **Disease Burden:** India is projected to witness a rise in obesity-linked disease indicators by 2040.
- **Economic Impact:** Increased healthcare expenditure and reduced workforce productivity affect economic growth.
- **Social Impact:** Obesity affects mental health, self-esteem and overall quality of life among children.

Challenges in Addressing the Issue

- **Policy Gaps:** Weak implementation of nutrition and health policies limits effectiveness of interventions.
- **Food Environment:** Easy availability of junk food and aggressive marketing targets children.
- **Awareness Deficit:** Lack of knowledge among parents and communities about healthy lifestyle practices.
- **Urban Lifestyle:** Sedentary behaviour and reduced physical activity due to urbanisation worsen the problem.

Measures for Prevention and Control

- **Regulatory Measures:** Imposing taxes on sugar-sweetened beverages and restricting advertisements targeting children can reduce consumption.
- **School-Based Interventions:** Strengthening mid-day meals and ensuring compulsory physical activity promotes healthy habits.
- **Community Awareness:** Promoting breastfeeding, balanced diets and active lifestyles at household level is essential.
- **Healthcare Integration:** Early screening and management of obesity through primary healthcare systems can prevent complications.

Conclusion

A multi-sectoral strategy involving government, schools and families is required to curb childhood obesity. Preventive measures focusing on nutrition, physical activity and awareness can ensure a healthier demographic dividend.

3. Over Two-Fold Rise in Breast Cancer Incidence in 30 Years

Why in the news?

- The incidence of breast cancer in India has more than doubled over the past three decades

Key Factors

- **Lifestyle Changes:** Sedentary habits, obesity, alcohol and tobacco consumption.
- **Reproductive Factors:** Decline in breastfeeding practices and delayed childbirth.
- **Urbanisation:** Increased exposure to risk factors linked to modern lifestyles.
- **Improved Detection:** Enhanced screening and awareness leading to early diagnosis.

Challenges in Breast Cancer Management

- **Inequitable Access to Healthcare:** Rural–urban disparities in diagnostic and treatment facilities. High cost of advanced therapies limits access for economically weaker sections.
- **Infrastructural and Resource Gaps:** Shortage of oncologists and specialised centres in remote regions. Limited availability of globally approved drugs across India.
- **Low Awareness and Social Barriers:** Stigma and lack of awareness delay early detection. Neglect of male breast cancer cases due to low awareness.
- **Treatment Adherence Issues:** Financial constraints and lack of caregiver support lead to treatment discontinuation.

Recent Initiatives and Innovations

- **Community-Based Models:** Initiatives like *Project Pink Army* promote awareness and patient support systems.
- **Caregiver Support Measures:** Providing temporary employment to caregivers improves treatment completion rates.
- **Leveraging Government Schemes:** Utilisation of public health schemes to reduce financial burden.

- **Global Collaboration:** Multidisciplinary approach involving surgery, radiation, and systemic therapies enhances outcomes.

Measures for Effective Control

- **Strengthening Screening and Early Detection:** Nationwide screening programs under primary healthcare. Inclusion of both women and men in awareness campaigns.
- **Improving Accessibility and Affordability:** Expanding cancer care infrastructure in tier-2 and rural areas. Ensuring availability of essential cancer drugs at subsidised rates.
- **Promoting Preventive Health Behaviour:** Campaigns encouraging healthy lifestyles and breastfeeding. Regulation of tobacco and alcohol consumption.
- **Enhancing Multidisciplinary Care:** Integration of oncology services across specialties. Capacity building of healthcare professionals.
- **Community Participation:** Strengthening volunteer-driven movements for awareness and support. Involving NGOs and local bodies in cancer care outreach.

4. UN Report on Child Mortality

Why in the news?

- The United Nations Inter-Agency Group for Child Mortality Estimation (UNIGME) 2025 report highlights a decline in global child mortality, yet persistent challenges and slowing progress demand renewed policy focus.

Global Scenario of Child Mortality

- **Magnitude of the Problem:** Around 4.9 million children under five died in 2024, including 2.3 million newborns, indicating a significant global health concern.
- **Preventable Nature of Deaths:** Most deaths are avoidable through low-cost interventions such as immunisation, nutrition, and access to basic healthcare.
- **Slowing Progress Post-2015:** Though deaths have halved since 2000, the rate of reduction has slowed by over 60% after 2015.

Major Causes of Child Mortality

- **Neonatal Causes:** Preterm birth complications (36%) and birth-related complications (21%) are leading causes of newborn deaths.
- **Infectious Diseases:** Malaria, pneumonia, and diarrhoea remain major killers among children beyond infancy.
- **Malnutrition Impact:** Severe acute malnutrition directly caused over 1 lakh deaths and indirectly increases vulnerability to diseases.
- **Adolescent Mortality Trends:** Self-harm among girls and road accidents among boys are leading causes in the 15–19 age group.

Regional Disparities

- **Sub-Saharan Africa Burden:** Accounts for 58% of global under-five deaths due to weak health infrastructure and endemic diseases.
- **High-Burden Countries:** Nations like Pakistan, Somalia, and Sudan report significant deaths linked to malnutrition.
- **Inequality in Healthcare Access:** Disparities in access to quality healthcare services drive uneven mortality outcomes.

India's Progress in Reducing Child Mortality

- **Decline in Neonatal Mortality Rate (NMR):** Reduced from 57 per 1,000 live births in 1990 to 17 in 2024, indicating sustained progress.
- **Reduction in Under-5 Mortality Rate (U5MR):** Declined from 127 to 27 per 1,000 live births over the same period.
- **Public Health Interventions:** Expansion of institutional deliveries, immunisation programmes, and maternal healthcare contributed significantly.
- **Regional Leadership Role:** India has played a key role in reducing child mortality across South Asia.

Key Challenges

- **Persistent Neonatal Mortality:** Newborn deaths account for nearly half of under-five mortality, requiring focused interventions.
- **Hidden Burden of Malnutrition:** Underreporting of malnutrition-related deaths masks the actual scale of the problem.
- **Slowing Global Momentum:** Reduced pace of progress threatens achievement of Sustainable Development Goals (SDGs).
- **Socio-economic Inequalities:** Poverty, lack of awareness, and weak healthcare systems continue to hinder outcomes.

Way Forward

- **Strengthening Primary Healthcare Systems:** Improve accessibility and quality of maternal and child health services.
- **Focus on Nutrition Security:** Address malnutrition through integrated nutrition and health programmes.
- **Targeted Neonatal Care:** Enhance care during pregnancy, childbirth, and early neonatal period.
- **Data and Monitoring Improvements:** Strengthen mortality data systems for accurate policy interventions.
- **Global Cooperation:** Increase funding and collaboration to address regional disparities and achieve SDG targets.

5. Impact of West Asia Conflict on India's Medical Tourism Sector

Why in the news?

- Ongoing conflict in West Asia has reduced patient inflow to India, with hospitals reporting significant drops in international admissions.

Medical Tourism in India

- **Meaning and Concept of Medical Tourism:** Medical tourism refers to the practice of travelling across borders to obtain affordable and quality healthcare services.
- **India as a Global Healthcare Hub:** India has emerged as a preferred destination due to advanced treatment, skilled professionals, and cost-effective services.
- **Growth of the Sector:** Over the past two decades, India has witnessed steady growth in international patient inflow, contributing significantly to the economy.

Key Drivers of Medical Tourism in India

- **Cost Advantage and Affordability:** Treatment in India costs significantly less compared to developed countries, attracting patients from across the globe. India's medical tourism market was valued at around \$6 billion in 2022 and is projected to exceed \$13 billion in 2026.
- **Quality Healthcare Infrastructure:** Presence of accredited hospitals with modern technology ensures high standards of care and treatment outcomes.

- **Skilled Medical Professionals:** India has a large pool of well-trained doctors, many with international exposure and expertise.
- **Minimal Waiting Time:** Patients benefit from quicker access to procedures compared to long waiting periods in developed nations.
- **Diverse Treatment Options:** India offers a wide range of services including allopathy, Ayurveda, Yoga, and wellness therapies.
- **Leading Treatment Segments:** Cardiovascular treatments hold about 22% market share, while oncology is growing rapidly with high demand.

Major Source Regions of Medical Tourists

- **West Asia and Africa:** Patients from these regions form a major share due to proximity, affordability, and quality care. Approximately 2 million international patients visit India annually from over 70–80 countries for medical care.
- **South Asian Association for Regional Cooperation Countries:** Patients from neighbouring countries seek specialised and advanced treatments.
- **Developed Countries:** Patients from Europe and North America visit India for cost-effective elective procedures and surgeries.

Challenges in Medical Tourism Sector

- **Geopolitical and Travel Disruptions:** Conflicts and flight restrictions affect patient mobility and inflow into India.
- **Regulatory and Visa Issues:** Delays in medical visas and lack of streamlined processes create barriers for international patients.
- **Infrastructure and Regional Imbalance:** Concentration of facilities in major cities limits access and scalability.
- **Perception and Quality Concerns:** Variations in hospital standards can impact India's global reputation.

Way Forward

- **Expansion into New Markets:** Targeting regions like Central Asia, Africa, and Latin America can diversify patient inflow.
- **Digital Health and Telemedicine:** Use of teleconsultation can improve pre- and post-treatment care for international patients.
- **Improving Connectivity and Facilitation:** Better air connectivity and patient support systems can enhance accessibility.
- **Quality Standardisation and Accreditation:** Strengthening regulatory frameworks ensures consistent quality and trust.

D. INTERNATIONAL RELATIONS

I. India & World

1. PM Visit to Israel

Why in the news?

- Prime Minister Narendra Modi made a state visit to Israel from 25 to 26 February 2026.

Technology and Innovation Cooperation

- **Critical and Emerging Technologies (CET):** Collaboration in Artificial Intelligence (AI), semiconductors, quantum computing, and biotechnology enhances innovation ecosystems.
- **Research and Development (R&D) Collaboration:** Strengthening of India-Israel Industrial Research and Development and Innovation Fund (I4F) promotes joint industrial innovation.
- **Academic-Industry Linkages:** Integration of universities, researchers, and industries supports commercialization of innovations.
- **Space Cooperation:** Partnership between Indian Space Research Organisation and Israel Space Agency expands opportunities in space research and startup.

Defence and Security Cooperation

- **Defence Collaboration:** Memorandum of Understanding (MoU) on defence strengthens joint production, technology transfer, and military capability.
- **Cybersecurity Cooperation:** Establishment of Centre of Excellence enhances cyber resilience through capacity building and joint research.
- **Counter-Terrorism Efforts:** Both nations reaffirm zero tolerance towards terrorism and enhance intelligence and security cooperation.

Agriculture, Water and Sustainability

- **Agricultural Innovation:** Centres of Excellence and India-Israel Innovation Centre for Agriculture improve productivity and farmer training.
- **Water Management:** Cooperation in desalination, wastewater reuse, and river cleaning supports sustainable resource management.
- **Environmental Protection:** Joint efforts in climate action, biodiversity conservation, and circular economy promote sustainability.

People-to-People and Cultural Relations

- **Labour Mobility:** Agreements ensure safe migration and expand opportunities for Indian workers in multiple sectors.
- **Cultural Cooperation:** Film production, sports, and cultural exchanges strengthen societal connections.
- **Educational Collaboration:** Academic partnerships and India-Israel Academic Forum promote research, innovation, and student exchange.

Significance for India

- **Technological Advancement:** Access to cutting-edge technologies accelerates innovation and digital transformation.
- **Economic Growth:** Trade agreements and investments enhance industrial growth and job creation.
- **Strategic Security:** Defence and cybersecurity cooperation strengthens national security architecture.
- **Sustainable Development:** Agricultural and water partnerships support long-term environmental and economic sustainability.

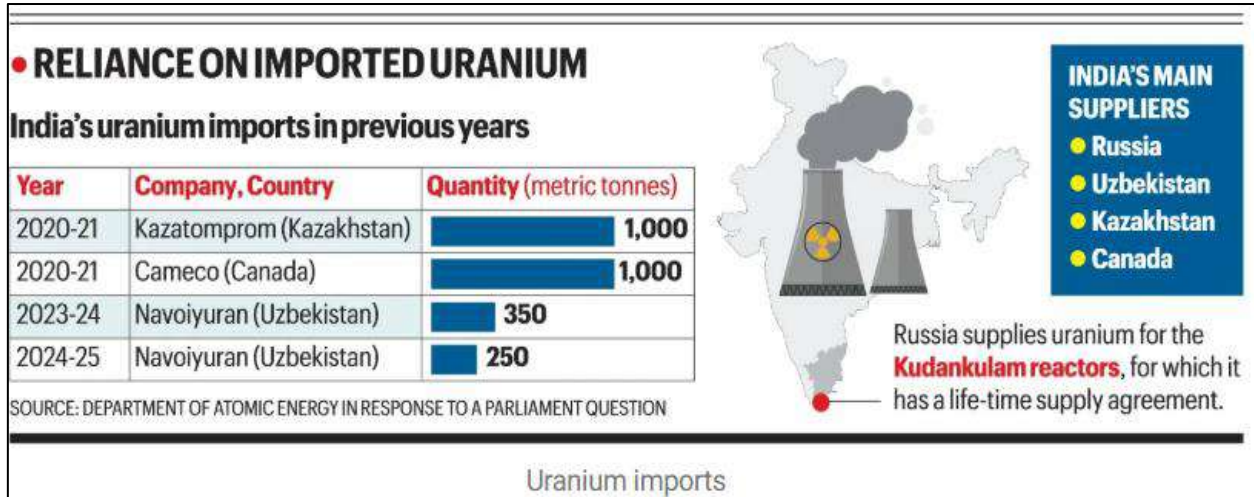
Challenges

- **Geopolitical Sensitivities:** Balancing relations in West Asia requires careful diplomatic engagement.
- **Implementation Gaps:** Effective execution of agreements remains a key challenge.
- **Technology Transfer Issues:** Intellectual property concerns may limit full-scale collaboration.

2. India and Canada Uranium Deal

Why in the news?

- Under the India and Canada Uranium Deal, Canadian supplier Cameco Corporation will supply approximately 22 million pounds (roughly 10,000 tonnes) of Uranium Ore Concentrates to India between 2027 and 2035.



Strategic Importance:

- Achieving the Target:** These agreements are crucial for achieving the target of 100 Gigawatt nuclear capacity by 2047.
- Dependence on Imported Uranium:** India meets over 70% of its uranium needs through imports due to low-grade domestic reserves.
- Quality Disadvantage:** Indian uranium ore has lower concentration compared to global standards, increasing extraction costs.
- Strategic Buffer:** Domestic production ensures supply security for both energy and strategic purposes.

Rising Uranium Demand:

- Future Demand Projection:** Current consumption is around 1,884 tonnes annually. Requirement may increase to about 5,400 tonnes per year with expansion plans.
- Clean Energy Transition:** Nuclear power supports low-carbon and reliable base-load energy generation.

Diversification of Supply Sources:

- Countries:** India imports uranium from Canada, Kazakhstan, Uzbekistan, and Russia.
- Geopolitical Advantage:** Diversification reduces dependency on a single country and enhances resilience.
- Future Expansion:** Potential agreements with Australia and United States can strengthen supply chains.
- Domestic Uranium Production Scenario:** Mining is mainly concentrated in Jharkhand and Andhra Pradesh.
- Exploration Expansion:** Surveys are being conducted across multiple states to identify new reserves.
- Reserve Constraints:** Limited economically viable reserves restrict self-sufficiency.

India's Three-Stage Nuclear Programme

- Stage One (Pressurised Heavy Water Reactors):** Uses natural uranium and forms the current operational base.
- Stage Two (Fast Breeder Reactors):** Prototype reactor at Kalpakkam focuses on plutonium utilisation.
- Stage Three (Thorium-Based Reactors):** Aims to use abundant thorium but is still under development.

Role of Thorium Advantage

- **Energy Security Potential:** Thorium can reduce long-term dependence on uranium imports.
- **Technological Gap:** Commercial deployment of thorium reactors requires further research.
- **Global Nuclear Energy Context:** Many countries are revisiting nuclear energy as a clean energy option.
- **Climate Commitments:** Nuclear power helps reduce greenhouse gas emissions.
- **India's Position:** India is emerging as a key player in global nuclear expansion.

Challenges in Nuclear Expansion:

- **High Cost:** High capital costs and long gestation periods delay projects.
- **Safety Concerns:** Issues related to radiation and nuclear waste management persist.
- **Fuel Supply Risks:** Geopolitical tensions can disrupt uranium supply chains.
- **Environmental and Regulatory Concerns:** Nuclear waste disposal remains a major challenge.
- **Land Acquisition Issues:** Public resistance affects project implementation.
- **Regulatory Oversight:** Strong safety frameworks are necessary for sustainable growth.

Measures for Strengthening Nuclear Sector:

- **Longterm Agreements:** Secure long-term international fuel agreements.
- **Boost Domestic Production:** Increase investment in uranium exploration and mining.
- **Enhance Research and Development:** Focus on thorium-based and advanced reactors.
- **Promote Public Awareness:** Improve transparency to build trust in nuclear energy.

Conclusion:

India's nuclear strategy combines import diversification, domestic capacity building, and technological advancement.



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GENERAL STUDIES - 3

A. INDIAN ECONOMY

I. Indian economy issues relating to planning, mobilization of resources

1. NEW GDP SERIES & FY26 GROWTH ESTIMATES

Why in News?

- India has released a **revised GDP series with 2022-23 as the base year**. The new data shows a **slight reduction in GDP size** and changes in sectoral composition.

What is GDP?

- Gross Domestic Product (GDP)** is the total monetary value of all final goods and services produced within a country during a specific period (usually one year).
- It reflects the **size and health of the economy**.
- GDP can be measured at **constant prices (real GDP)** to track growth and at **current prices (nominal GDP)** to measure the economy's size.

How is GDP Growth Measured?

- Production (Output) Method:** Measures value added across agriculture, industry, and services.
- Expenditure Method:** Adds consumption (C), investment (I), government spending (G), and net exports (X-M).
- Income Method:** Sums wages, profits, rent, and taxes minus subsidies.
- GDP growth rate shows the **percentage increase in real GDP over the previous year**.

Why Base Year Revision Matters

- Captures Emerging Sectors:** Revising the base year helps include new industries and economic activities that were not previously measured.
- Updates Data & Methods:** Ensures use of modern statistical techniques and improved data sources for more reliable estimates.
- Reflects Structural Shifts:** Accounts for changes in agriculture, industry, and services, showing how the economy has evolved.
- Enhances Accuracy:** Provides a more realistic picture of national accounts, making GDP and growth figures more credible.

New GDP Series

- Base Year Updated** from 2011-12 to **2022-23** for better accuracy. Incorporates **new and broader datasets** to improve representation.
- FY26 growth revised upward to **7.6%** (from 7.4% earlier).
- FY24 growth revised downward to **7.2%** (earlier 9.2%).
- FY25 growth revised upward to **7.1%** (from 6.5%).
- Nominal GDP figures have been revised slightly downward, affecting fiscal indicators like **fiscal deficit-to-GDP and debt-to-GDP ratios**.

Sector-wise Performance in FY26

- **Secondary Sector (Industry):** Expected to grow at **9.5%**. Manufacturing projected at strong **12.5% growth**. Construction growth slightly moderates to **6.9%**.
- **Primary Sector (Agriculture & Mining):** Growth expected to slow to **2.8%**. Agriculture may grow at **2.5%**, lower than last year. Mining growth declines to **5%**.
- **Tertiary Sector (Services):** Projected to grow at **8.9%**. Trade, hotels, and transport likely to grow above **10%**. Financial and IT services also show double-digit expansion.

Recent Trends in India's GDP

- Post-pandemic recovery has been strong, with growth above **7% for consecutive years**.
- Growth pattern shows **manufacturing and services leading**, while agriculture remains volatile.
- Quarterly FY26 growth shows moderation from **8.4% (Q2) to 7.8% (Q3)**.

Economic Implications

- **Impact on Targets:** A smaller revised GDP base may delay milestones like the **\$5 trillion economy goal (earlier targeted by 2027–28)**, as growth calculations will be made on a lower denominator.
- **Improved Statistical Accuracy:** The revision corrects earlier distortions. For example, the **2011–12 series showed manufacturing growth at 9–10%**, which many economists argued was overstated compared to actual industrial output trends.
- **Need for Transparency:** Concerns remain about credibility. The **IMF graded India's data quality as 'C' in 2019**, highlighting gaps in methodology and reliability. Economists now demand clearer disclosure of **data sources and statistical techniques** to avoid future debates.

GDP Growth Projections by Institutions (FY26)

- **Government of India:** ~7.6%
- **RBI:** Around 7–7.5%
- **IMF:** Around 6.5–7%
- **World Bank:** Around 6.5%

Conclusion

The new GDP series provides a more updated and realistic picture of India's economic structure and growth trends. India continues to remain one of the fastest-growing major economies globally.

2. OIL SUPPLY SECURITY FOR INDIA

Why in News?

- Crude oil prices surged above **\$100 per barrel**, briefly touching \$120, due to the ongoing Iran war and disruptions in the **Strait of Hormuz**, raising concerns about India's energy security.

Surge in Global Oil Prices

- Conflict in West Asia disrupted tanker movements through Hormuz, the world's most critical oil chokepoint.
- Prices rose to levels last seen in 2022, though a possible **400 million barrel release from G7 reserves** helped moderate the spike.
- Gulf producers cut output due to storage constraints, worsening supply fears.

India's Vulnerability

- India imports **88% of its crude oil**, making it highly sensitive to global price shocks.
- Nearly **2.5–2.7 million barrels per day** (half of India's imports) pass through Hormuz.
- A \$1 rise in oil prices increases India's import bill by **\$2 billion annually**.
- A 10% price hike can widen the **current account deficit by 0.4% of GDP**.

Strategic Importance of Hormuz

- Handles **15 million barrels daily**, about **20% of global oil trade**.
- Even with bypass pipelines, **9 million barrels/day remain at risk** if Hormuz is closed.
- India's dependence on Iraq, Saudi Arabia, UAE, and Kuwait makes Hormuz vital for supply security.

Impact on India's Economy

- Rising oil prices increase **inflation, weaken the rupee, and strain forex reserves**.
- LPG and LNG supplies also face risk, as **80% of LPG imports and over half of LNG imports** pass through Hormuz.
- Government fears supply disruption more than price volatility, prioritising **availability of fuel**.

Government Strategy

- **Diversifying imports:** 60% of crude already sourced outside Hormuz.
- **Fuel stocks:** India has **6–8 weeks of reserves**, continuously replenished.
- **LPG production ramped up** under Essential Commodities Act; imports secured from U.S., Russia, and Australia.
- **Stable pump prices** maintained to control inflation.
- **Gas allocation reprioritised** for critical sectors if LNG supply tightens.

Conclusion

With heavy dependence on imports and Hormuz chokepoint vulnerability, India must expand strategic reserves, diversify suppliers, and accelerate renewable adoption to safeguard long-term energy security.

3. FOREX RESERVES IN INDIA AND THEIR ROLE DURING CRISES

Why in News?

- Following the **West Asian conflict (2025–26)**, India's forex reserves fell by **\$19 billion in two weeks** leading to Wakening of India rupee.

What are Forex Reserves?

- Funds held by the **Reserve Bank of India (RBI)** in foreign currencies (mainly US dollars).
- Act as a **financial buffer** during global or domestic economic shocks.
- **Key roles:**
 - Finance **Current Account Deficit (CAD)**.
 - Stabilize rupee by selling dollars during capital outflows.
 - Strengthen macroeconomic credibility and investor confidence.

Current Status

- As of **March 13, 2026**, reserves stood at **\$709.75 billion**.
- Sufficient to cover **12+ months of imports**, considered very comfortable.
- Despite healthy levels, recent depletion signals vulnerability.

Historical Context

- **1991 BoP Crisis:** Reserves fell to cover only 2–3 weeks of imports.
 - India pledged gold (67 tonnes) to raise ~\$600 million.
 - Rupee devalued ~18.7% against the dollar.
 - Triggered landmark reforms: trade liberalisation, FDI opening, rupee convertibility.
- Other stress episodes: Asian Financial Crisis (1997). Global Financial Crisis (2008). COVID-19 Pandemic (2020). Russia-Ukraine War (2022). Current West Asian conflict (2025–26).

Current Concerns

- **FPI Outflows:** Large withdrawals from equity and debt markets increase dollar demand.
- **Crude Oil Prices:** India imports 85% of oil; prolonged conflict raises import bills.
- **Supply Chain Disruptions:** Conflict affects trade flows, straining BoP.
- **Widening CAD:** Higher oil costs + capital outflows → more pressure on reserves.

Way forward

- Maintain **adequate reserves** as first line of defence. **Enhance investor confidence** through stable macroeconomic policies.
- **Diversify energy sources** to reduce oil import dependence. **Strengthen domestic production** and export competitiveness.
- Use reserves **judiciously** for **rupee stabilization** without exhausting buffers.

Components of India's Forex Reserves

- **Foreign Currency Assets (FCA)**
 - Largest share of reserves, currently around **\$555 billion**.
 - Includes cash, deposits, and bonds denominated in foreign currencies.
 - Managed by the RBI in highly liquid and safe instruments.
 - Held across multiple currencies: **US dollar (dominant)**, **euro**, **pound sterling**, **Japanese yen**.
 - Value fluctuates with exchange rate movements.
- **Gold Reserves**
 - India holds physical gold as part of reserves, stored both domestically and abroad.
 - Provides diversification and acts as a hedge against currency volatility.
 - As of 2024, gold reserves were valued at **~\$65.7 billion**.
- **Special Drawing Rights (SDRs)**
 - Allocated by the **International Monetary Fund (IMF)**.
 - SDRs are an international reserve asset based on a basket of currencies (USD, EUR, GBP, JPY, CNY).
 - Can be exchanged for freely usable currencies during crises.
- **Reserve Position in IMF**
 - India's contribution to the IMF that can be drawn upon if needed.
 - Acts as a liquidity buffer and strengthens India's global financial credibility.

Conclusion

Building and safeguarding reserves is vital for currency stability, crisis management, and long-term economic resilience.

II. Growth and Development, employment

1. INDIA'S CYCLE OF DEPRIVATION AND AFFLUENCE

Why in News?

- Recent analysis of **income mobility trends (2014–2025)** shows rising **downward mobility** among households, especially in rural areas and disadvantaged social groups.

About Income Mobility

- Income mobility** refers to households moving **upward, downward, or remaining stable** in income groups over time.
- The findings highlight entrenched inequality** and uneven economic gains despite claims of falling poverty and inequality.
- Based on 2014 per capita income ranks: **Top 10%, Next 40%, Bottom 50%**

Overall Trends

- Downward mobility rose from **14% (2015) to 26.8% (2025)**.
- Upward mobility increased from **14.1% to 23.5%**, but lagged behind downward shifts.
- By 2025, **1 in 4 households** were worse-off compared to 2014.

Rural vs Urban

- Rural households:** 29% worse-off by 2025, with vulnerability persisting after 2019.
- Urban households:** Fared better, with gradual upward mobility, but still faced rising downward shifts.
- Gains concentrated in **urban centres**; rural areas bore the brunt of volatility.

Caste Patterns

- OBCs and SCs:** Sharp rise in downward mobility; SCs faced limited upward pathways.
- STs:** Lower downward mobility, some upward gains due to targeted interventions.
- Upper castes:** More resilience and upward movement.

Religious Groups

- Hindus & Muslims:** Higher downward mobility, modest upward gains.
- Sikhs & Christians:** Stronger upward mobility in early years, though momentum slowed later.
- Discrimination restricted **Muslim upward mobility** more than downward shifts.

Structural Insights

- Districts with **higher inequality** showed greater downward mobility.
- Education, urban location, and larger household size improved prospects.
- COVID-19 pandemic worsened vulnerabilities, especially in informal and rural sectors.

Implications

- Rising downward mobility signals **economic insecurity** and **social instability**.
- Inequality is not just about income gaps but about **restricted mobility opportunities**.
- Frustration may replace aspiration if households continue slipping down the ladder.

Way Forward

- **Strengthen Public Services** – Invest in health, education, and social protection.
- **Employment-Intensive Growth** – Focus on agriculture, manufacturing, and informal sector revival.
- **Address Discrimination** – Ensure equal access to assets, opportunities, and reduce caste/religion-based barriers.

Conclusion

India's economy shows **uneven progress** where more households are sliding into deprivation. Tackling entrenched inequality is essential to sustain social stability and restore faith in economic progress.

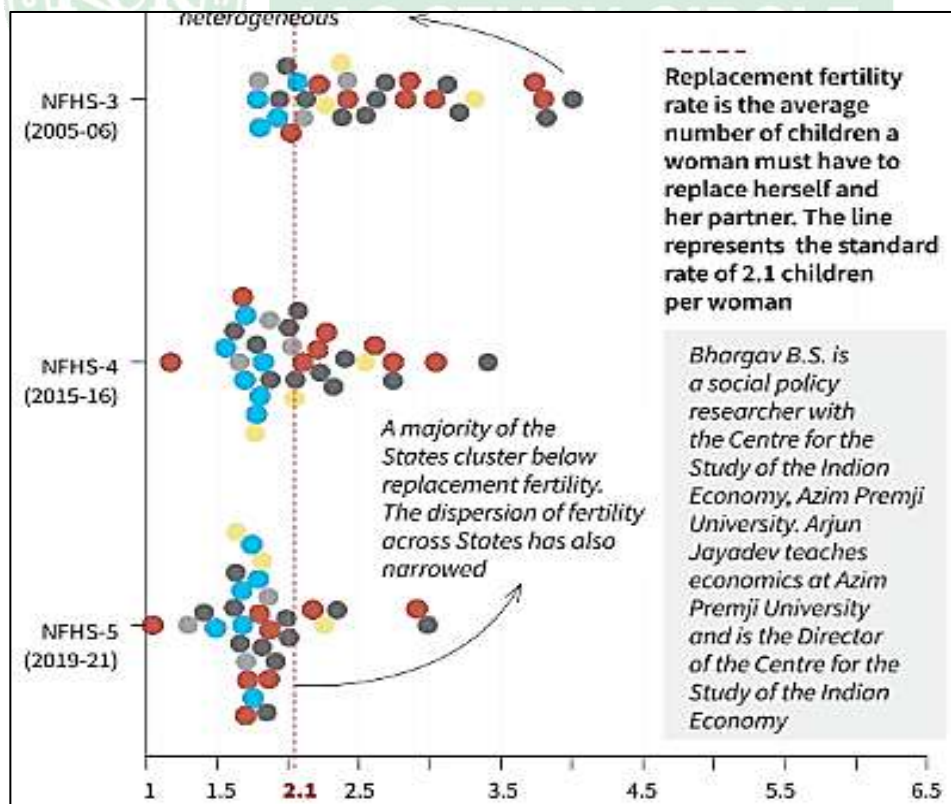
2. INDIA'S QUIET DEMOGRAPHIC REVOLUTION

Why in News?

- Recent NFHS data shows India's **Total Fertility Rate (TFR)** has fallen to around **replacement level (2.1)** is now moving towards a **low-fertility society**.

Fertility Transition

- **Rapid Decline:** TFR dropped from nearly **4 children per woman in the 1990s** to around **2.0 today**.
- **Regional Convergence:** Earlier, southern States had lower fertility, but now most States show **similar low levels**.
- **Sharp Declines:** Northeastern States (except Tripura), Uttar Pradesh, J&K, Haryana, Punjab, and Rajasthan recorded the **highest fertility reductions**.
- **Already Low States:** Karnataka, West Bengal, Gujarat, Maharashtra, and Odisha saw further decline despite starting at lower levels.



Reasons for Decline

- **Women's Education & Delayed Marriage:** Higher education increases labour market opportunities, reducing early childbearing.

- **Social Norms & Urbanisation:** Migration, media exposure, and decades of family planning campaigns spread **small family ideals**.
- **Public Health Successes:** Better child survival through **vaccination, maternal care, and nutrition** reduced the need for precautionary fertility.
- **Rising Costs of Children:** Education, healthcare, and housing expenses make children more of an **investment project** than contributors to household income.

Consequences

- **Demographic Dividend:** Larger working-age population with fewer dependents offers growth potential, but requires **labour-absorbing industries and public investment**.
- **Regional Divergence:** Southern and western States face **aging populations**, while northern and central States remain younger, driving **migration flows**.
- **Policy Shift Needed:** Focus must move from population control to building systems for a **low-fertility society** - childcare, pensions, healthcare for chronic diseases, and urban infrastructure.

Way Forward

- **Employment Generation & Skill Development:** Create labour-intensive industries and strengthen vocational training under **Skill India** to absorb the large working-age population.
- **Social Security & Healthcare Systems:** Build robust **pension schemes, elderly care, and chronic disease management** to prepare for an aging society.
- **Balanced Regional Development:** Invest in **education, infrastructure, and job creation** in northern and central States where fertility is still higher.

Demographic Dividend

Demographic Dividend refers to the **economic growth potential** that arises when the proportion of a country's **working-age population (15–64 years)** becomes larger than the dependent population (children below 15 years and elderly above 65 years).

- **Key Idea:** With fewer dependents, more people can work, save, and invest, boosting productivity and growth.
- **Conditions:** Dividend is realised only if there are **jobs, skills, and supportive policies** to absorb the workforce.

India's Demographic Dividend

- **Timeline:** India entered its demographic dividend phase around **2005–06**, expected to last till **2055–56**.
- **Scale:** India has one of the **largest youth populations** in the world — nearly **65% below 35 years**.
- **Regional Variation:**
 - **Southern & Western States:** Already moving towards **aging populations**.
 - **Northern & Central States:** Still have **high fertility and younger populations**, creating uneven opportunities.
- **Opportunities:** Potential for faster growth through **industrialisation, innovation, and services** if jobs are created.
- **Risks:** Without adequate employment and skill development, the dividend may turn into a **demographic burden** (unemployment, social unrest).

Conclusion

India's demographic story has shifted from fears of **population explosion** to challenges of **low fertility and aging**. The future policy must prioritise **employment generation, social security, healthcare** and prepare for an aging society.

3. FISCAL HEALTH INDEX 2026

Why in News?

- NITI Aayog released the **second annual edition of the Fiscal Health Index (FHI) 2026** in New Delhi.

About the Index

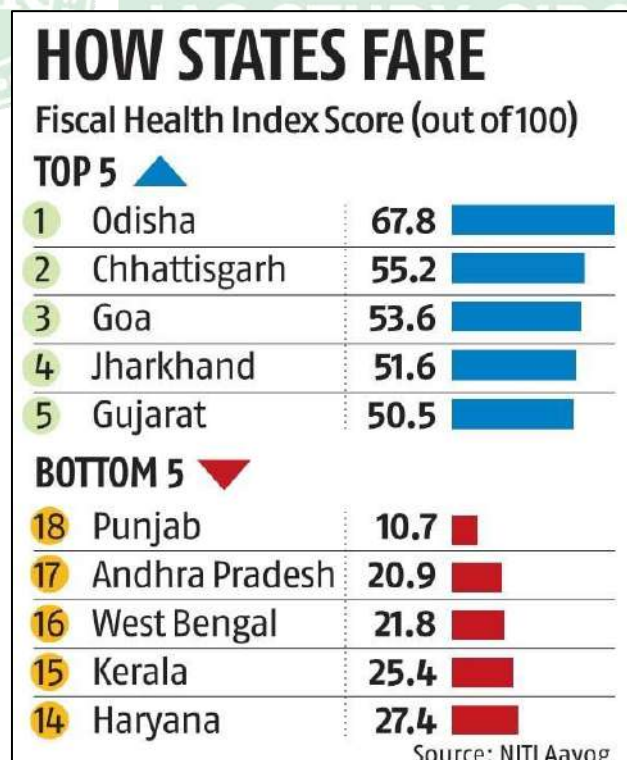
- Introduced by **NITI Aayog** to provide a **systematic and data-driven framework** for assessing state finances.
- Covers **18 major states** and **10 North-Eastern & Himalayan states**.
- Designed to guide **fiscal reforms** and promote **evidence-based policymaking**.

Five Pillars of Fiscal Health

- Quality of Expenditure** – efficiency and productivity of spending.
- Revenue Mobilisation** – ability to generate own tax and non-tax revenues.
- Fiscal Prudence** – discipline in managing deficits and liabilities.
- Debt Index** – overall debt levels of states.
- Debt Sustainability** – long-term ability to manage debt without stress.

Classification of States

- Achievers:** Strong fiscal discipline, high revenue, low deficits, manageable debt.
- Front Runners:** Broadly sound finances but weaker in some indicators.
- Performers:** Mixed results across pillars, moderate fiscal health.
- Aspirational:** Significant fiscal stress, high debt, persistent deficits, weak revenue base.



Highlights of FHI 2026

- Achievers:** Odisha, Goa, Jharkhand.
- Front Runners to Performers:** Karnataka, Telangana slipped in ranking.
- Aspirational States:** Kerala and Tamil Nadu moved down to this category.

- **North-Eastern & Himalayan States: Top performer** – Arunachal Pradesh. Followed by Uttarakhand, Tripura, Meghalaya, Assam, and Mizoram.

Significance

- **Comparable Fiscal Measure:** Provides a uniform benchmark to assess and compare the financial health of different States.
- **Policy Guidance:** Helps policymakers identify strengths and weaknesses in State finances, enabling targeted interventions.
- **Encourages Better Practices:** Motivates States to adopt sound fiscal management, reduce long-term risks, and ensure sustainable growth.

Conclusion:

The **Fiscal Health Index 2026** highlights both strengths and weaknesses in state finances, showing which states maintain discipline and which face stress.

III. Inclusive growth and issues

1. INSURANCE PENETRATION AND DENSITY IN INDIA

Why in News?

- Recent studies show that **insurance penetration and density figures do not reflect the real financial protection of households in India.**

What is Insurance?

- A contract where individuals pay premiums to insurers in exchange for financial protection against specified risks.
- **Types:** Life insurance, health insurance, motor insurance, property insurance, crop insurance, etc.
- **Purpose:** Provides financial security, income replacement, and risk sharing across society.

Why India Needs Strong Insurance Infrastructure

- **Low Penetration and Density:** Insurance penetration in India is **3.7% of GDP (2025)**, compared to the global average of ~7%.
- **Household Vulnerability:** Average life insurance claim payout is only **₹3.3 lakh**, insufficient for long-term income replacement.
- **Many households see insurance as a savings product** rather than risk protection, leading to inadequate coverage.
- **Economic Stability:** Insurance spreads risk across society, reducing the burden on government welfare schemes.

Limitations of Indicators

- **Premiums ≠ Protection:** Indicators measure premium collection, not actual household coverage. High premiums may still mean inadequate financial security.
- **Misleading Interpretation:** Penetration often mistaken as coverage; it only shows industry revenue relative to GDP. GDP growth fluctuations can distort penetration ratios.
- **Distorting Factors:** Rapid GDP growth lowers penetration even if insurance uptake rises. Insurers selling high-premium products inflate figures without improving protection.

Gap Between Premium and Protection

- Insurance products often marketed as savings tools rather than risk protection.
- Example: Life insurers settled over 10 lakh death claims worth ₹33,000 crore, with average payout ~₹3.3 lakh.
- While settlement ratios are high (97%), payouts are too small for long-term income replacement.
- Indicates **coverage inadequacy** despite premium growth.

Need for Better Measurement

- New metrics should assess: How many households have life insurance?
- Coverage level relative to household income. Data available through regulatory filings, census, and insurance databases.
- Would give clearer picture of financial security.

Policy Implications

- Improve Financial Protection:** Prioritise adequate life cover over premium growth.
- Product Reforms:** Promote pure risk-based products like term insurance.
- Better Data Framework:** Develop metrics focused on adequacy of coverage.
- Public Awareness:** Shift perception from insurance as savings to insurance as protection.

Concepts

- Insurance Penetration:** Ratio of total insurance premiums to GDP.
- Insurance Density:** Per capita premium paid (usually in US dollars).
- These are global indicators used for cross-country comparison and industry growth tracking.

Conclusion

India's insurance sector focus must be on **real household protection, adequacy of coverage, and risk-based products**. This will ensure genuine financial security and resilience for families.

IV. Economic survey & Budget

1. SIXTEENTH FINANCE COMMISSION AND STRENGTHENING URBAN GOVERNANCE

Why in News?

- The 16th Finance Commission (2026-31) has proposed a massive 230% increase in urban local body (ULB) grants, to strengthen urban governance by elevating their share to 45% of total local grants.

Constitutional Background

- The Finance Commission is a constitutional body** established under Article 280 of the Indian Constitution.
- It is constituted every five years** to recommend how tax revenues should be shared between the Union and the States.
- After the 73rd and 74th Constitutional Amendments**, grants to Panchayats and Municipalities became a regular and institutionalised feature.

Vertical Devolution

- The Commission has recommended that 41%** of the divisible pool of central taxes be devolved to the States.
- This percentage remains** the same as that recommended by the Fifteenth Finance Commission.
- The divisible pool excludes revenue** collected through cesses and surcharges, as well as the cost of tax collection.

- **By retaining 41%, the Commission** has ensured continuity and stability in fiscal federal relations.

Criteria for Horizontal Devolution

- **Income Distance** has been reduced to **42.5%**, but it remains the most important factor to support poorer States.
- **Population (2011 Census)** weightage has been increased to **17.5%**, reflecting demographic realities.
- **Demographic Performance** has been reduced to **10%**, balancing incentives for population control.
- **Area weightage** has been reduced to **10%**, limiting excessive advantage to geographically large States.

16th FC's Focus on Urban Governance (2026–2031):

- **Highest Ever Allocation:** The FC has raised the total ULG grant allocation significantly from previous cycles, accounting for 45% of total local body grants. This ensures higher fiscal liquidity for cities to meet their rapidly expanding needs.
- **Fiscal Decentralisation and Autonomy:** The commission has increased untied grants (approx. 60% of total), allowing cities greater autonomy to identify their own developmental needs and spending priorities.
- **Focus on Revenue Generation:** A key focus is incentivizing the modernization and revival of property tax as a primary source of own-source revenue for cities to reduce dependence on state/central transfers.
- **Urban-Rural Transition Focus:** Dedicated grants are provided for supporting infrastructure during the transition from rural to urban areas, addressing the infrastructure gap in census towns.
- **Service Delivery Performance:** Performance-linked grants are planned to encourage municipalities to improve services, particularly in waste management and water treatment

Rationale Behind Higher Urban Allocation

- **India's urban population** is projected to reach around **41% by 2031**.
- **Rapid urbanisation** is increasing pressure on housing, transport, sanitation, drinking water, and waste management.
- **Urban local bodies require stronger financial capacity** to manage infrastructure and service delivery.
- **The enhanced allocation** also acts as a safeguard in case future Census data shows even higher levels of urbanisation.

Uneven Distribution Across States

- **Since allocations are based on a formula**, outcomes vary significantly among States.
- **Some States such as Kerala and Maharashtra** have seen sharp increases in urban grants. Other States like Odisha have received moderate growth.
- **These variations highlight the challenges** in balancing demographic factors and fiscal federalism.

Challenges

- Rising dependence on **cesses and surcharges** undermines the spirit of cooperative federalism.
- Dropping **revenue deficit and equalisation grants** risks widening inequalities between richer and poorer States.
- The new **contribution criterion** may unfairly reward developed States while penalising less developed ones.
- Overestimation of **GDP growth projections** and ignoring GST revenue impacts may distort fiscal planning.

Way Forward

- Limit the use of **cesses and surcharges** and ensure they remain temporary and purpose-specific.
- Reintroduce **equalisation grants** to balance disparities and support critical services like health and education.
- **Strengthen the Finance Commission's role** in ensuring **equity and fairness** in fiscal transfers, while balancing efficiency with equalisation.

Conclusion

The Sixteenth Finance Commission reflects India's transition towards a more urban society by significantly enhancing funding for cities while maintaining stability in Centre–State fiscal relations.

2. FISCAL FEDERALISM AND THE TAX DEVOLUTION

Why in News?

- The Union government has accepted the **16th Finance Commission's recommendation** to retain **41% tax devolution to States**, sparking debate on the evolving nature of fiscal federalism in India.

Fiscal Federalism in India

- Refers to the **distribution of financial powers** between Centre and States.
- Constitutional provisions:
 - Articles 268–281** govern taxation and revenue sharing.
 - Article 280** establishes the Finance Commission.
 - 7th Schedule** divides taxation powers.
- Since the Centre collects most taxes, Finance Commissions recommend how revenues are shared.

Evolution of Tax Devolution

- 14th Finance Commission:** Raised States' share to **42%**.
- 15th Finance Commission:** Reduced to **41%** after J&K reorganisation.
- 16th Finance Commission:** Recommended continuing **41% share**.

Shrinking Divisible Pool

- Divisible pool excludes **cesses and surcharges**, retained by Centre.
- Share of divisible pool in gross tax revenues:
 - 13th FC: **89.2%**
 - 14th FC: **82.1%**
 - 15th FC: **78.3%**
- Actual transfers to States are lower than headline figures.

Recommendations of 16th FC

- Maintain 41% Tax Devolution** – The Union government will continue transferring 41% of the divisible pool of central taxes to States.
- Adopt Horizontal Distribution Formula** – The recommended formula for distributing funds among States has been accepted to ensure fair allocation.
- Support Local Bodies & Disaster Management** – Grants for rural and urban local bodies and funding for disaster management have been approved.
- Defer Structural Reforms** – Proposals related to fiscal responsibility laws, regulation of off-budget borrowings, subsidy rationalisation, and power sector (DISCOM) reforms have been postponed for later review.

Structural Issues in State Finances

- Rising debt burdens: Punjab (42.9% of GSDP), Rajasthan (37.9%), West Bengal (38.3%), Andhra Pradesh (34.6%).
- Borrowings often used for **revenue expenditure** (salaries, interest) rather than capital assets.
- Off-budget borrowings** keep liabilities hidden, worsening fiscal stress.

Horizontal Devolution Formula Changes

- Earlier: Rewarded **tax effort**.
- Now: **Contribution to GDP** carries 10% weight.
- Benefits richer States (Maharashtra, Gujarat, Karnataka).
- Poorer States (Bihar, Jharkhand, UP) may lose out → critics say this weakens **fiscal equalisation**.

Local Body Grants

- Recommended **₹7.91 lakh crore** for rural and urban local bodies.
- Divided into **basic grants** and **performance grants** (conditional on audits, data reporting, SFC constitution).
- Past implementation weak: only **62.6% of urban grants released** in previous FC period.

Conclusion

While retaining **41% devolution** signals continuity, the **shrinking divisible pool, shift in allocation formula, and deferred reforms** highlight challenges in India's fiscal federalism.

V. Agriculture and allied

1. SUSTAINABLE COCONUT CULTIVATION AND PRODUCTIVITY

Why in News?

- The Union Budget 2026-27 announced a **Coconut Promotion Scheme** to rejuvenate old gardens and expand plantations.

Current Status of Coconut Cultivation

- India is the **largest producer and consumer of coconuts**, yet domestic prices remain much higher than international levels.
- **Productivity per palm in India is already higher** than in countries like Sri Lanka, Indonesia, and the Philippines.
- **Hybrid varieties** such as **Dwarf × Tall palms** in Tamil Nadu can yield 250–300 tender coconuts per tree.
- The **Coconut Development Board** has expanded cultivation into non-traditional areas like Gujarat and Assam, partly offsetting losses in Kerala and Tamil Nadu due to disease.

Climate and Disease Challenges

- **Research by CPCRI** projects that plantation regions may face **temperature rises of 1.6–2.1°C by 2050 and up to 3.2°C by 2070**, intensifying drought stress.
- **Large parts of interior peninsular India**, including **Karnataka, Andhra Pradesh, and Tamil Nadu**, may become less suitable for coconut cultivation.
- **Traditional belts such as Kerala and western Tamil Nadu** remain viable but are severely affected by **root wilt disease**, which has devastated landscapes in districts like Alappuzha and Pollachi.

Scope of the New Scheme

- The scheme should **prioritise climate-resilient and wilt-tolerant varieties** rather than only distributing high-yield seedlings.
- **State horticulture departments** and universities can establish **mother palm gardens** to mass-produce resilient seedlings.
- **Institutions like CPCRI and Tamil Nadu Agricultural University** must be strengthened to breed **heat-tolerant, drought-resistant, and disease-resistant genotypes**.

- **Farmer Producer Organisations (FPOs)**, cooperatives, and private nurseries should be enabled to produce and distribute quality seedlings.
- **Direct benefit transfers** should replace substandard input distribution, allowing farmers to decide their own needs for irrigation, soil amendments, or rejuvenation.

Value Addition and Market Issues

- **Domestic demand** for coconuts is strong, and prices have tripled since 2024, leaving little surplus for value addition.
- Past schemes like the **Cluster Development Programme** failed due to high investment barriers and weak participation from FPOs and cooperatives.
- **Smaller, cooperative-based pilot projects** with partnerships from FMCG companies like **Amul or ITC** could provide better lessons than large, centrally designed clusters.

Challenges

- **Climate stress and diseases** such as root wilt are major threats to the long-term sustainability of coconut farming.
- **Poor implementation of earlier schemes** has weakened farmer confidence and reduced trust in government interventions.
- **Inadequate marketing support** leaves Farmer Producer Organisations (FPOs) vulnerable to financial risks when investing in processing units.
- **Excessive focus on productivity** overlooks the urgent need for resilience against climate change and disease outbreaks.

Way Forward

- Develop and distribute **climate-resilient and wilt-tolerant coconut varieties** suited to different regions.
- Strengthen **research institutions and agricultural universities** to breed improved, disease-resistant genotypes.
- Use **direct benefit transfers (DBTs)** to empower farmers to decide their own input and infrastructure needs.
- Promote **smaller, cooperative-based pilot projects** with strong marketing partnerships from experienced FMCG companies.

Conclusion

India's leadership in coconut cultivation can be sustained by prioritising **resilience over productivity**. Climate change and root wilt disease are the real threats, and the **Coconut Promotion Scheme** must address them through research.

2. SUPREME COURT PUSHES FOR AGRICULTURAL DIVERSIFICATION

Why in News?

- The Supreme Court of India has directed the Union government to encourage farmers to shift from water-intensive crops to towards pulses.

What is Agricultural Diversification?

- It means **moving away from dependence on a few staple crops** (mainly rice and wheat) to a wider mix including pulses, oilseeds, fruits, vegetables, livestock, and fisheries.
- Aim: **reduce risks, improve farmer incomes, conserve resources, and ensure nutritional security**.

Why India Needs Diversification

- **Water Scarcity:** Paddy requires ~3,000–5,000 litres of water per kg; pulses need far less, making them eco-friendly.

- **Nutritional Security:** Pulses are the main protein source for millions; India still imports ~2–3 million tonnes annually.
- **Income Stability:** Diversified farming reduces dependence on volatile cereal markets.
- **Climate Resilience:** Crop variety lowers vulnerability to droughts and floods.
- **Employment Generation:** Allied sectors like dairy, fisheries, and horticulture create rural jobs.
- **Economic Role:** Agriculture contributes ~18–20% of GDP and employs ~45% of India's workforce (Economic Survey 2025–26).

Indian Production Output

- **Pulses production:** ~27 million tonnes in 2024–25, demand ~32 million tonnes → imports fill the gap.
- **Horticulture output:** Surpassed foodgrain production, showing diversification in allied sectors.
- **Livestock sector:** Accounts for ~30% of agricultural GDP, growing faster than crops.
- **Groundwater depletion:** Punjab & Haryana face critical stress due to paddy monoculture.

Challenges

- **Policy Bias:** MSP and procurement heavily favour rice & wheat; pulses lack strong support.
- **Small Landholdings:** Difficult for marginal farmers to experiment with new crops.
- **Infrastructure Gaps:** Poor storage, transport, and marketing facilities.
- **Price Volatility:** Imports of yellow peas and other pulses depress domestic prices.
- **Awareness Issues:** Farmers often lack knowledge of diversification benefits.
- **Regional Imbalance:** North India remains heavily dependent on paddy cultivation.

Way Forward

- **Policy Reform:** Expand MSP coverage to pulses and oilseeds; ensure timely procurement.
- **Stakeholder Committees:** Involve ground-level experts and farmer representatives (as directed by SC).
- **Infrastructure Development:** Invest in storage, cold chains, and rural markets.
- **Awareness Campaigns:** Educate farmers on benefits of crop diversification.
- **Promote Allied Sectors:** Encourage dairy, fisheries, and horticulture for income diversification.

Conclusion

Agricultural diversification is essential for **food security, farmer welfare, and climate resilience**. India must move beyond its rice-wheat cycle to pulses, aligning with national goals of reducing imports.

3. INDIA'S DUAL DEPENDENCE ON WEST ASIA FOR UREA

Why in News?

- The ongoing **West Asia conflict** has disrupted LNG cargoes through the Strait of Hormuz, threatening India's **domestic urea production and import supply chains**.

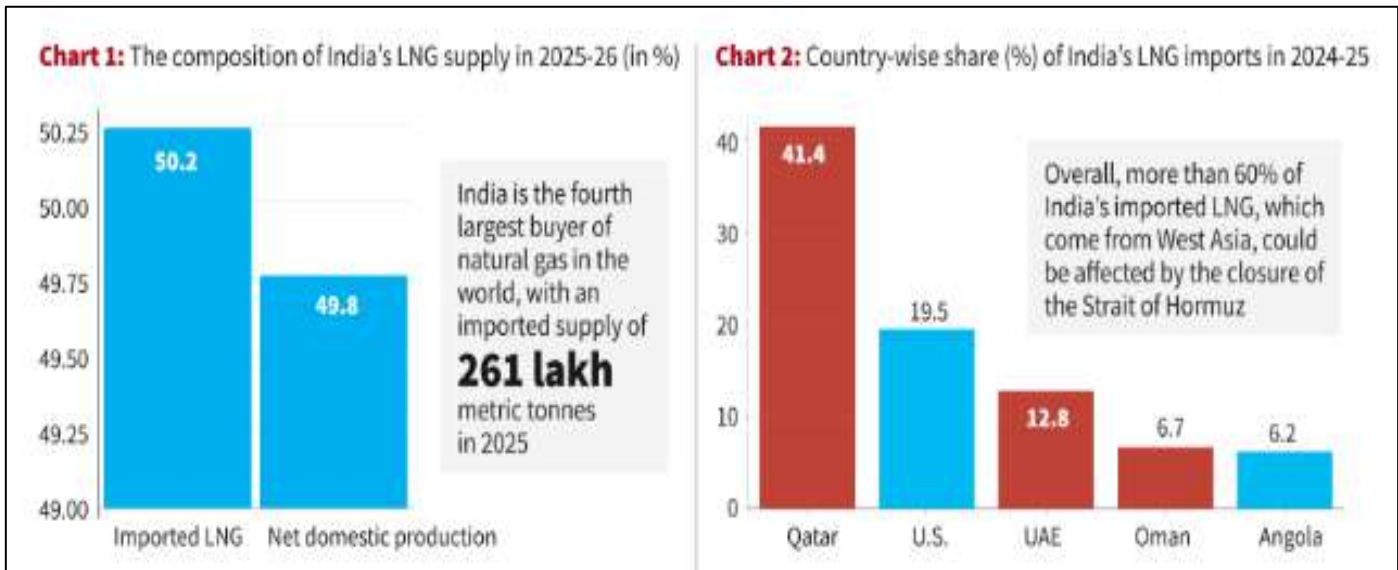
What is Urea?

- **Urea** is a nitrogen-rich fertilizer, widely used in India's agriculture.
- It is produced from **ammonia**, which requires **natural gas (LNG)** as feedstock.
- India consumes nearly **387 lakh metric tonnes (2025)**, making it the most used fertilizer in the country.

India's Dependence

- India imports over **50% of its natural gas**, with **40% tied to Qatar** and other Gulf suppliers.

- More than **60% of LNG imports** pass through the **Strait of Hormuz**, now a conflict zone.
- In 2025, India imported **2,300 lakh tonnes of urea**, with **71% from West Asia** (Oman, Saudi Arabia, Qatar, UAE).
- Domestic production (~306 lakh tonnes) does not meet demand, hence reliance on imports continues.



Government Response

- Issued the **Natural Gas (Supply Regulation) Order, 2026**, prioritising fertilizer sector in gas allocation.
- Urea reserves raised to **61.51 lakh tonnes** ahead of Kharif sowing season.

Challenges

- **Geopolitical risk:** Closure of Strait of Hormuz disrupts LNG and urea supply.
- **Import dependence:** Heavy reliance on West Asia makes India vulnerable.
- **Energy intensity:** Urea production requires large amounts of natural gas, linking fertilizer security to global energy markets.

India's Initiatives to Reduce Import Dependence

- **Diversification of supply:** Exploring LNG contracts with countries beyond West Asia (e.g., Australia, Russia, U.S.).
- **Alternative feedstocks:** Some plants still use **naphtha/fuel oil**, though less eco-friendly.
- **Promotion of balanced fertilization:** Encouraging use of **DAP, potash, bio-fertilizers, and nano-urea** to reduce overdependence on urea.
- **Nano Urea by IFFCO:** Liquid nano-urea reduces consumption per hectare, lowering import needs.
- **Organic and sustainable farming:** Expanding **organic manure, compost, and green manures** to cut chemical fertilizer demand.
- **Self-reliance push:** New urea plants under "Make in India" and revival of closed fertilizer units.

Conclusion

India's fertilizer security is tightly linked to **West Asian LNG and urea imports**, making it vulnerable to geopolitical shocks. Long-term resilience requires **diversification of energy sources and boosting domestic production capacity**.

4. RICE AND WHEAT PROCUREMENT

Why in News?

- A **Parliamentary Standing Committee on Consumer Affairs, Food and Public Distribution**, reported that **actual procurement of rice and wheat has consistently fallen** in several States.

Procurement Statistics

- Since **2022–23**, procurement of rice and wheat has been **less than 30% of total production**.
- Wheat procurement:
 - 76.71% of estimate (2023–24)
 - 71.35% of estimate (2024–25)
 - 87.29% of estimate (2025–26)
- **Rice procurement: consistently** below targets since 2022–23.
- Example (2024–25 Kharif season):
 - **Andhra Pradesh:** 25.6 lakh tonnes vs target 35 lakh tonnes.
 - **Karnataka:** 0.003 lakh tonnes vs target 5.29 lakh tonnes.
 - **Punjab:** 116.13 lakh tonnes vs target 124 lakh tonnes.

State Contributions

- **Punjab and Haryana:** traditionally contribute the largest share of wheat and rice procurement for the central pool.
- **Uttar Pradesh, Bihar, Gujarat:** procurement consistently below targets.
- Southern States (AP, Karnataka) also show shortfalls in rice procurement.

Why Procurement is Necessary

- Ensures **food security** through the Public Distribution System (PDS).
- Provides **price support to farmers** via Minimum Support Price (MSP).
- Maintains **buffer stocks** for emergencies and welfare schemes.
- Stabilises **market prices** and prevents distress sales.

Why Farmers Depend on Government Procurement

- **MSP assurance** protects farmers from volatile market prices.
- Private traders may offer lower rates, making government procurement more reliable.
- Procurement centres provide **ready buyers**, reducing uncertainty.
- Helps small and marginal farmers who lack bargaining power in open markets.

Factors Influencing Procurement

- **Production Variability:** Differences between estimated and actual crop output directly affect procurement levels.
- **Market Surplus & Price Trends:** Availability of surplus produce and prevailing market prices influence farmer decisions to sell to government agencies.
- **Effectiveness of Minimum Support Price (MSP):** If MSP is attractive compared to open market rates, farmers prefer selling to procurement centres; otherwise, they shift to private buyers.
- **Demand–Supply Dynamics:** Overall demand for food grains and supply conditions in domestic and international markets impact procurement volumes.
- **Role of Private Traders:** Active participation of private traders often diverts produce away from government procurement channels.

Challenges

- Fluctuations in **production vs estimates**.
- Farmers selling to private traders when **market price > MSP**.
- **Storage and logistics constraints** in some States. Weak **real-time monitoring** of crop arrivals.

Way Forward

- **Review estimation methods** for procurement requirements. **Strengthen coordination** between Centre and States.
- Introduce **digital monitoring systems** for production and arrivals. Diversify procurement beyond traditional States to balance regional gaps.
- Expand **storage and transport infrastructure**. Improve **awareness of MSP** among farmers.

Conclusion

A mix of better planning, stronger State coordination, and modern monitoring tools is essential to make procurement more **realistic, responsive, and effective**.

VI. Effects of liberalization on the economy

1. INVESTMENT FACILITATION FOR DEVELOPMENT (IFD) AGREEMENT AT WTO

Why in News?

- The **14th WTO Ministerial Conference (MC14)** in Cameroon will discuss incorporating the **IFD Agreement** into the Marrakesh Agreement (1995).

What is the IFD Agreement?

- **Focus:** Facilitating **Foreign Direct Investment (FDI)**, not liberalising it.
- Objectives: Improve transparency, reduce red tape, streamline approvals, and promote sustainable development.
- With **128 of 166 WTO members supporting IFD**, India and South Africa risk political isolation if they continue opposing it.
- **Features:**
 - Special and Differential Treatment (SDT) for developing countries.
 - Excludes market access, investment protection, ISDS, subsidies, and procurement.
- Nature: **Plurilateral agreement** — binding only on signatories, open for others later.

Global Support and WTO Context

- Support grew from 70 countries (2017) to 128 members now.
- Backed by WTO leadership as a way to revive rule-making amid institutional crisis (dispute settlement paralysis, unilateral tariffs).
- Seen as a step towards modernising WTO.

India's Opposition

- **Threat to Multilateralism:** WTO works on consensus; plurilateral deals risk fragmentation.
- **Two-Tier System:** Fear of elite club marginalising developing nations.
- **Negotiation Imbalance:** Diverts attention from unresolved issues like agriculture subsidies and food security.
- **China Angle:** 98 of 128 IFD members are part of BRI. Standardised rules may strengthen China's geo-economic influence in India's neighbourhood.

India's Tactical Position

- **Food Security Priority:** Seeks permanent solution on public stockholding (subsidies capped at 10% of production value).
- Relies on Bali Peace Clause (2013) to avoid disputes.
- May use opposition to IFD as leverage for concessions on agriculture.

Challenges

- **External:** Growing global consensus, African bloc shifting stance.
- **Internal:** Balancing FDI inflows with strategic autonomy; risk of isolation in WTO.

Way Forward

- **Calibrated Engagement:** Avoid outright rejection, shape IFD provisions.
- **Safeguard Multilateralism:** Push for consensus-based safeguards.
- **Strategic Bargaining:** Use IFD talks to secure food security concessions.
- **Coalition Building:** Strengthen alliances with Global South and South Africa.
- **Domestic Reforms:** Improve ease of doing business to attract FDI independently.

Conclusion

A **balanced, pragmatic approach** — defending food security while engaging constructively — will help India remain an influential voice in shaping WTO's future.

VII. Industry and Industrial Policies

1. SKILL INDIA ROADBLOCKS AND LESSONS LEARNED

Why in News?

- Despite the demographic dividend opportunity till 2040, weak vocational education enrolment, poor fund utilisation, have raised concerns about the effectiveness of the Skill India mission programme.

Current Status of Vocational Education

- In countries such as Germany and China, nearly **50% of secondary students** are enrolled in vocational streams, while in India the figure is only **1.3%**, reflecting neglect of vocational education.
- The **National Education Policy (NEP) 2020** promised that by 2025, half of all learners would be exposed to vocational education, but the term “exposed” itself shows a lack of seriousness in integrating skills into mainstream education.
- India spends only around **2% of its education budget** on vocational training, compared to **11% in China and Germany**.
- **Fragmented schemes across ministries** and poor data transparency have weakened accountability.

Audit Findings and Implementation Gaps

- The **Comptroller and Auditor General (CAG)** in 2025 highlighted serious lapses in the flagship **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**.
- Reports revealed that **94.5% of trainee bank accounts were invalid**, and only **41% of short-term trainees** secured placements.
- Earlier audits in 2015 had already flagged delays in financial reporting and weak accountability, showing little progress over a decade.

- **Internship schemes announced** in recent budgets have failed, with only **5% of allocated funds utilised** in FY 2026.

Alternative Financing Models

- **Skill Loans:** Instead of grants, funds could be extended as loans to students, similar to education loans, encouraging competition among institutions and demand-driven training.
- **Skill Vouchers:** Providing vouchers directly to trainees would give them purchasing power, improve accountability, and promote lifelong learning. Countries like **Singapore and Croatia** have successfully implemented such models.
- **Skill Levies:** Over **90 countries** use industry levies to finance skills. A reimbursable contribution system could make employers responsible for training, ensuring stable funding insulated from political cycles.

Data and Labour Market Information

- Current skill planning is **supply-driven** and disconnected from real demand.
- Periodic skill gap studies are insufficient; instead, **real-time labour market data** must feed into policy.
- Mandating online job boards to share anonymised data and integrating it into the **National Career Service portal** could help build a robust labour market information system.
- Use of **AI-based modelling and data mining** can provide accurate forecasts for emerging skill needs in areas like AI, digital, and green jobs.

Way Forward

- Increase budgetary allocation for vocational education to match global benchmarks.
- Shift from supply-driven schemes to **demand-driven financing models** like skill loans, vouchers, and levies.
- Ensure strict accountability and transparency in fund utilisation through independent audits.
- Align skill development with emerging sectors such as **AI, digital technologies, renewable energy, and foreign language training** for global labour markets.

Make in India

- **Launch Year:** The initiative was launched in **September 2014** by the Government of India.
- **Objective:** To transform India into a **global manufacturing hub**, attract foreign investment, and boost domestic production.
- **Logo & Symbolism:** The logo features a **lion made of cogs**, symbolising strength, manufacturing, and innovation.
- **Focus Sectors:** Initially targeted **25 priority sectors** such as automobiles, defence, aviation, biotechnology, chemicals, IT & BPM, textiles, and renewable energy.
- **Ease of Doing Business:** Emphasis on simplifying regulations, reducing red tape, and improving India's ranking in the **World Bank's Ease of Doing Business Index**.
- **FDI Reforms**

Conclusion

India's demographic dividend offers a once-in-a-lifetime opportunity. with stronger industry ownership, innovative financing models, make India the skill capital of the world.

2. INDIA TIGHTENS SOLAR SOURCING NORMS REDUCING CHINESE IMPORTS

Why in News?

- The government has expanded domestic sourcing rules to cover **solar wafers and ingots from June 2028**, aiming to reduce reliance on Chinese imports.

Solar Localisation Roadmap

- Current Mandate:** At present, the rules mainly cover **solar PV modules** for domestic sourcing.
- Upcoming Requirement (June 2026):** From this date, **solar cells** must also be sourced domestically, expanding the scope of localisation.
- Extended Rules (June 2028):** The mandate will further include **wafers and ingots**, which are critical upstream components in the solar supply chain.

India's Solar Import Dependence

- High Reliance on Imports** - India imports a large share of its solar cells, modules, wafers, and ingots, mainly from **China**.
- Domestic Capacity Exists but Limited** – While India has built strong module assembly capacity, **critical upstream components** (like wafers and polysilicon) are still not produced at scale domestically.
- Government Push for Localisation** – Policies like the **Approved List of Models and Manufacturers (ALMM)** and **Production Linked Incentive (PLI)** schemes aim to reduce import dependence.

Why the Policy Shift

- India has strong capacity in **modules (172 GW)** and **cells (27.2 GW)**.
- But wafer/ingot capacity is only **~2 GW**, leaving India reliant on imports.
- Wafers are essential for making solar cells, localisation reduces vulnerability.
- Aim: Build **end-to-end domestic supply chain** and reduce Chinese dominance.

ALMM Framework Expansion

- Approved List of Models and Manufacturers (ALMM)** ensure domestic sourcing.
 - List-I: Modules
 - List-II: Cells
 - List-III (new): Wafers
- Cascading requirement: Modules → Cells → Wafers must all be sourced from ALMM lists.
- Transitional exemption: Projects with bids before cut-off date remain exempt.

Challenges in Upstream Manufacturing

- High capital costs** and cheaper Chinese imports hinder local wafer/ingot production.
- PLI Scheme (₹24,000 crore, 2021)** aimed at 65 GW annual capacity.
- Progress uneven: Modules: 59% achieved, Cells: 22%, Wafers/Ingots: 10%, Polysilicon: 14%
- Overall operational capacity reached only **29% of awarded capacity** by June 2025.

Challenges to Solar Infrastructure

- Grid Integration & Curtailment:** India added **40+ GW of solar and wind capacity in 2025**, pushing total renewable capacity beyond **200 GW**.
- Import Dependence for Components:** Over **80% of India's solar module imports** come from China, exposing the sector to **supply chain risks and price volatility**.

- **Financing & Policy Delays:** India's gross expenditure on R&D is only ~0.7% of GDP, limiting innovation in solar technology.
- **Import Dependence (FY25 Data):** Solar cells: \$1,641 million, Wafers: \$156 million, Polysilicon: \$0.03 million → Highlights India's vulnerability in upstream segments.

Way Forward

- **Capital subsidy schemes** for wafers/ingots to attract investment.
- Strengthen **PLI implementation** with focus on upstream segments.
- Encourage **joint ventures and technology transfer** to build domestic expertise.
- Integrate India into **global solar value chains** while reducing reliance on China.

Conclusion

While module and cell production is advancing, bottlenecks in wafers and polysilicon remain, making **targeted policy support and investment essential for self-reliance and reducing Chinese import dependence.**

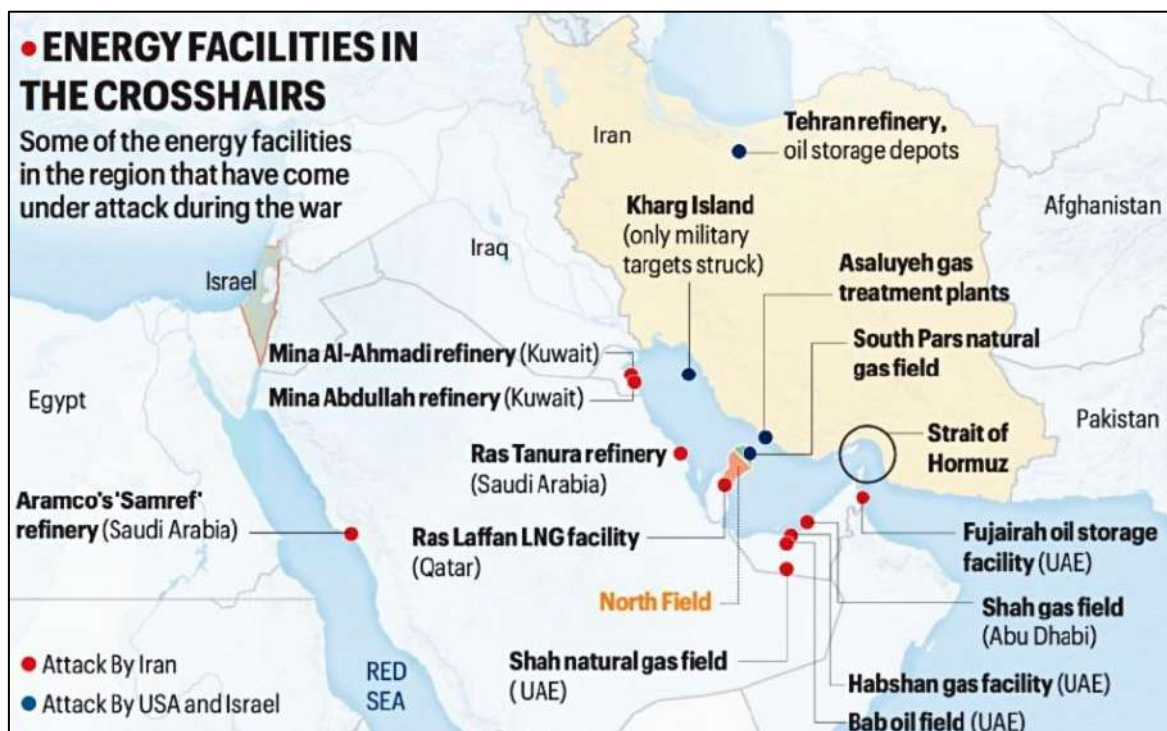
3. THREAT TO INDIA'S ENERGY SECURITY

Why in News?

- Recently Iranian missiles hit **Ras Laffan Industrial City, Qatar**, the world's largest LNG hub raises concerns for **global LNG supply and India's energy security.**

The Attack & Escalation

- **Conflict Trigger:** Israel struck the **South Pars gas field** (shared by Iran and Qatar), prompting Iran to retaliate against energy facilities in **Saudi Arabia, Kuwait, and Qatar's Ras Laffan.**
- **Global Energy Shock:** Ras Laffan, which supplies ~20% of global LNG, suffered major damage; Brent crude prices spiked to \$119/barrel before settling near \$112, reflecting severe market volatility.
- **Infrastructure Damage:** Qatar had already suspended LNG production earlier; the latest strikes caused **fires and extensive physical damage**, making recovery of gas output highly uncertain.



Strategic Importance of Ras Laffan

- **Core LNG Hub:** Ras Laffan hosts the **production, liquefaction, and export facilities** for Qatar's LNG industry.
- **Global Impact:** Any disruption here has a **direct effect on worldwide LNG flows**.
- **Recovery Challenges:** Restoration of supply is **uncertain due to extensive physical damage** to infrastructure.

Why Ras Laffan Matters for India

- **High Import Dependence:** India relies on imports for **~88% of crude oil** and **~50% of natural gas needs**.
- **Qatar's Role:** Qatar supplies **one-third of India's LPG** and **nearly half of its LNG requirements**.
- **Escalating Risks:** Earlier concerns were limited to **shipping delays in the Strait of Hormuz**; now, **damage to processing facilities** poses a deeper threat to energy security.

Broader Economic Implications

- **Fuel Price Surge:** Rising global fuel costs are likely to push **inflation higher** and add **fiscal pressure** on the government.
- **Financial Stress on Oil Companies:** Public sector oil firms may have to **absorb price shocks**, leading to **financial strain**.
- **Domestic Supply Concerns:** Early signs of **LPG shortages and delays** are already visible, affecting households.
- **Trade Risks with Qatar:** India's bilateral trade with Qatar (worth **~\$14 billion in 2024–25**) faces disruption, impacting both **energy imports and export balance**.

India's Diversification Strategy

- Traditionally, **~60% LPG imports** from Gulf.
- Now sourcing from **U.S., Norway, Canada, Algeria, Russia**.
- Diversification reduces risk but **raises shipping costs**.

Conclusion

Ras Laffan attack shows India's **high vulnerability to Gulf energy disruptions**. India must **diversify energy sources, boost domestic gas output, and expand renewables** to secure long-term energy needs.

VIII. Infrastructure

1. INDIA'S GAS GRID AND LESSONS FROM THE PAST

Why in News?

- The **West Asia war** has disrupted LNG supplies through the Strait of Hormuz, threatening India's energy security.

Background

- In 1955, Syed Husain Zaheer (CSIR scientist) proposed a **cross-country gas grid** using coal gasification.
- Suggested a **Town Gas Supply Scheme** for Hyderabad, piping gas from Singareni coalfields.
- Nehru supported the idea, but policymakers dismissed it as "infeasible."
- Wars of 1962 and 1965, funding delays, and lack of industrial support stalled the project.

Oil Shock of 1973 – Missed Opportunity

- OPEC's oil embargo exposed India's dependence on imported petroleum.
- Indira Gandhi admitted that ignoring Zaheer's plan was a mistake: coal gasification could have reduced strain.

- Eventually, pilot plants were set up, leading to **Integrated Gasification Combined Cycle (IGCC)** research with BHEL in 1985.

National Coal Gasification Mission (2021)

- Target: **Gasify 100 million tonnes of coal by 2030.**
- Investment: ₹85,000 crore committed.
- New company formed: **Bharat Coal Gasification & Chemicals Ltd (2024)** by Coal India and BHEL.
- Aim:** Reduce reliance on imported **natural gas, methanol, ammonia, fertilizers.**
- Seen as part of India's **clean coal technology** and energy independence strategy.

Challenges

- Delayed adoption:** India lost decades of research advantage.
- High costs:** Gasification plants require heavy investment and advanced technology.
- Environmental concerns:** Coal-based energy must align with climate commitments.
- Industrial linkages:** Past projects lacked strong industry partnerships.

Way Forward

- Accelerate Mission 2030:** Ensure timely implementation of coal gasification plants.
- Diversify energy sources:** Reduce dependence on West Asia by expanding domestic coal-based gas.
- R&D investment:** Strengthen CSIR and industry collaboration for advanced clean coal technologies.
- Climate balance:** Integrate gasification with carbon capture and renewable energy.
- Strategic reserves:** Build buffer stocks of LNG and coal-based substitutes to withstand global shocks.

Conclusion

India's failure to build a national gas grid in the 1950s shows how **short-term policy choices can weaken long-term energy security.** The current crisis highlights the need to **revive coal gasification, diversify energy sources, and invest in innovation** to achieve true energy independence.

IX. Trade and External sector

1. CANADA-INDIA ECONOMIC ALIGNMENT

Why in News?

- Canadian Prime Minister visit relaunched **Comprehensive Economic Partnership Agreement (CEPA) negotiations**, aiming to double bilateral trade **by 2030.**

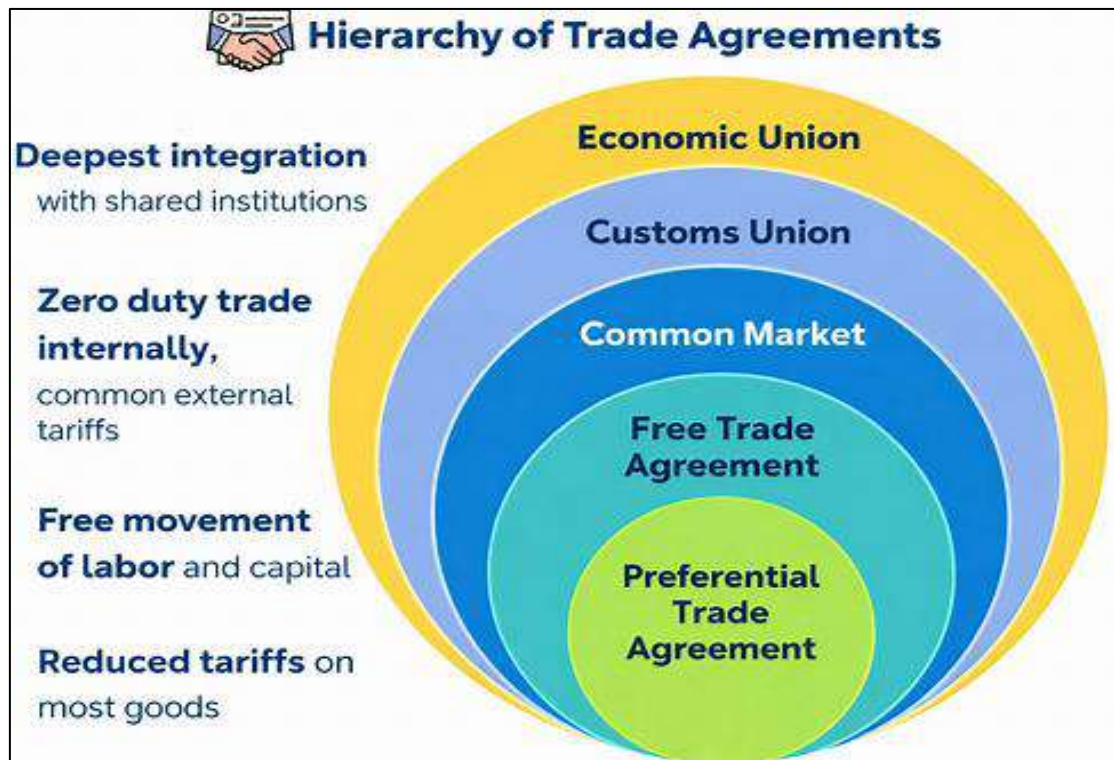
What is CEPA?

- A free trade agreement (FTA) that goes beyond goods trade to cover services, investment, intellectual property, and regulatory cooperation.
- Provides a rules-based framework for bilateral trade and investment between two countries.

Key Developments

- CEPA Relaunch:** Terms of Reference signed; agreement expected by end of 2026.
- Trade Benefits:**
 - Reduced barriers for Indian exporters.
 - Clearer rules for Indian investors in Canada.
 - Expanded access in technology, pharmaceuticals, and agriculture.

- **Strategic Signal:** Invitation extended to PM Modi to visit Canada, showing intent for sustained partnership.



Major Areas of Cooperation

- **Energy & Minerals:** Canada supplies uranium, oil, gas, and critical minerals. Example: **\$2.6 billion uranium supply deal** with Cameco.
- **Technology & Innovation:** Indian IT firms (e.g., HCL Technologies) investing in Canada's AI and innovation clusters.
- **Financial Services & Agriculture:** Successful joint ventures like **Sun Life–Aditya Birla**. Canada's agri-food exports can support India's food security needs.
- **Infrastructure & Investment:** Canadian pension funds have invested **over \$100 billion** in India's infrastructure and real estate.

Strategic Importance

- India already has trade deals with **Australia, UK, EU, US, and New Zealand**.
- Canada seeks diversification amid global geopolitical uncertainty.
- Alignment with India strengthens both economies and enhances resilience in global supply chains.

Way Forward

- **Finalize CEPA Quickly:** India and Canada signed Terms of Reference in **March 2026**, aiming for a **US\$50 billion trade target by 2030**.
- **Encourage Joint Ventures in Emerging Sectors:** Collaboration opportunities in **clean energy, AI, quantum computing, and infrastructure** are expanding.
- **India produces the world's largest annual pool of STEM graduates**, strengthening its position in AI and digital technologies.
- **Promote Institutional Investment:** Canada's pension funds and institutional investors are among the world's largest, with assets exceeding **CAD 2 trillion**.

Conclusion

With CEPA negotiations, energy partnerships, and large-scale investments, both nations have an opportunity to build a **strategic, long-term economic alignment** that benefits businesses and strengthens global resilience

2. WEST ASIA CRISIS AND MANGO TRADE DISRUPTION

Why in News?

- Escalating tensions in **West Asia** have disrupted mango pulp exports from **Chittoor district, Andhra Pradesh**, one of India's largest mango processing hubs.

Mango Export Trends

- India is among the **largest exporters of mango pulp**, with Chittoor contributing significantly.
- Major buyers include **West Asia, Europe, and North America**.
- Seasonal exports generate thousands of jobs and support mango farmers.

Current Challenges

- Export Blockage:** ₹300 crore worth of pulp stuck at West Asian ports. ₹1,000 crore worth of pulp barrels ready in Chittoor but unable to ship.
- Supply Chain Disruption:** Industry depends on **aseptic barrels and packaging bags** imported from Europe. Imports of these materials have been delayed, affecting storage and transport.
- Impact on Farmers:** The pulp industry buys **Totapuri mangoes** from local farmers. Prolonged disruption may reduce procurement, hurting farmer incomes.
- Seasonal Sensitivity:** February–April is a **critical export window**. Any delay risks pulp quality and trade commitments.

Way Forward

- Diversify Export Markets:** Explore new destinations beyond West Asia to reduce dependency.
- Strengthen Domestic Logistics:** Improve cold storage and warehousing to preserve pulp quality during delays.
- Boost Indigenous Packaging:** Encourage local production of aseptic barrels and bags to reduce reliance on imports.
- Government Support:** Provide relief measures, trade facilitation, and diplomatic engagement to reopen supply routes.

Conclusion

The West Asia crisis highlights the **vulnerability of India's agro-exports to geopolitical tensions**. timely policy support, diversification of markets, and strengthening of domestic supply chains are essential to protect **exporters**.

B. ENVIRONMENT

I. Biodiversity and conservation

1. ALIGNING RELIGIOUS TOURISM WITH ECOLOGY

Why in News?

- The **Standing Committee of the National Board for Wildlife (SCNBWL)** recently proposed to expand religious structures inside sanctuaries.

Religion-Ecology Linkages in India

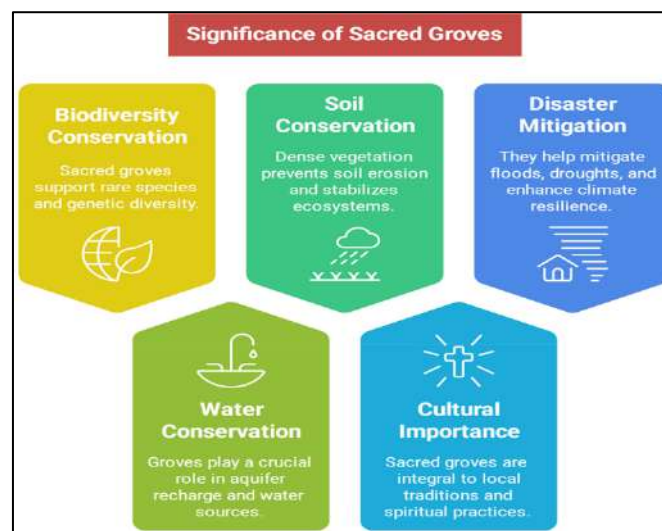
- **Overlap with Sensitive Ecosystems:** India's sacred geography often coincides with **forests, caves, shrines, and pilgrimage routes** located inside or near protected areas.
- **Traditional Regulation:** For centuries, **belief systems and community norms** restricted extraction and ensured coexistence with nature.
- **Rising Pressures:** Mass tourism and commercialisation now strain fragile ecosystems, with pilgrim numbers rising sharply (e.g., **Kumbh Mela 2019 drew ~25 crore visitors**).
- **Sacred Groves as Biodiversity Refuges:** India has over **13,000 documented sacred groves**, covering thousands of hectares, especially in Maharashtra, Karnataka, Kerala, and Himachal Pradesh. These groves conserve species diversity and water sources.
- **Protected Area Stress:** India has **104 national parks and 564 wildlife sanctuaries**, many hosting religious sites. Unregulated expansion risks **habitat fragmentation and human-wildlife conflict**

Sanctuary Expansion Concerns

- **Proposal in Gujarat:** A plan to expand a religious site inside a sanctuary was first approved but later withdrawn.
- **Precedent Risk:** Expansion could set a dangerous precedent for diverting protected areas to religious institutions.
- **Legal Restrictions:** Under the **Forest (Conservation) Act, 1980**, any construction on forest land after 1980 is treated as encroachment.
- **Wildlife Protection Norms:** The **Wildlife (Protection) Act, 1972** and NTCA guidelines allow only limited, justified interventions to manage ecological pressures.

Sacred Groves

- Sacred groves are **community-protected forest patches** linked to local faith traditions.
- They act as **biodiversity refuges**, restricting extraction and disturbance.
- India has over **13,000 documented sacred groves**, especially in states like Maharashtra, Karnataka, Kerala, and Himachal Pradesh.



Govt Initiatives

- **Forest Rights Act, 2006:** Recognises rights of Scheduled Tribes and forest dwellers.
- **National Tiger Conservation Authority (NTCA):** Issues norms for managing religious tourism in tiger reserves.
- **ATREE-WWF Guidelines (2023):** Proposed a **green pilgrimage model** with caps on visitors, waste management, and transport restrictions.

Ecological Challenges of Religious Tourism

- **Habitat Fragmentation:** Unregulated construction inside forests breaks natural habitats and increases **human–wildlife conflict** (e.g., rising leopard encounters near pilgrimage routes in Uttarakhand).
- **Ignoring Forest Rights:** Failure to recognise rights under the **Forest Rights Act, 2006** marginalises local communities who traditionally protect sacred groves and forest shrines.
- **Commercialisation Pressure:** Large pilgrimages overwhelm fragile ecosystems — for instance, the **Amarnath Yatra** and **Kumbh Mela** have reported issues of waste, pollution, and strain on local resources.

Way Forward

- **No-expansion principle:** Ban new constructions in core forest areas.
- **Case-by-case evaluation** of long-standing sites with strict ecological safeguards.
- **Mandatory settlement of forest rights** before regulating access.
- **Green pilgrimage models:** Visitor caps, waste management, bans on night traffic.
- **Multi-stakeholder governance:** Forest departments, temple trusts, local bodies, and conservation NGOs.
- **Awareness campaigns** involving religious leaders to promote eco-friendly practices.

Examples & Importance

- **Kalakad-Mundanthurai, Ranthambhore, Corbett:** Pilot projects showed reduced roadkill, plastic waste, and water contamination.
- **Sivakasi (Tamil Nadu):** Improved safety record in fireworks industry through training — similar awareness can help religious tourism.
- India hosts **millions of pilgrims annually** (e.g., 2.5 crore at Kumbh Mela 2019), making ecological safeguards critical.

Conclusion

India must integrate **faith and ecology** by protecting sacred landscapes while respecting cultural traditions. A principled approach zero tolerance for new encroachments, recognition of forest rights, and adoption of **green pilgrimage models**.

2. JUDICIAL PUSH FOR ENVIRONMENTAL CSR

Why in News?

- The Supreme Court recently emphasised that **environmental spending under CSR is not optional charity but a constitutional duty**.

CSR in India

- Channel corporate profits toward social and developmental goals.
- **Current Focus:** Majority of CSR funds go to education ($\approx 38\%$), healthcare ($\approx 22\%$), and rural development ($\approx 10\%$).
- **Neglect of Environment:** Only 7–9% of CSR spending is directed toward ecological projects.

What are CSR Funds?

- **A portion of corporate profits** (generally 2% of average net profits of the last 3 years) earmarked for social responsibility projects.
- **Mandated under the Companies Act, 2013** to Channel corporate profits toward social and developmental goals.
- **Eligible Recipients:** NGOs, trusts, societies, government schemes, and projects aligned with Schedule VII of the Companies Act.
- **Purpose:** To support initiatives in education, health, environment, rural development, skill training, and more.

Importance of CSR Funds

- **Social Development:** Bridges gaps in education, healthcare, and rural infrastructure.
- **Environmental Protection:** Can finance afforestation, waste management, water conservation, and biodiversity restoration.
- **Economic Impact:** Reduces inequality, supports livelihoods, and enhances sustainability.
- **Corporate Accountability:** Moves companies beyond profit-making to responsible citizenship.
- **Global Image:** Strengthens India's commitment to climate goals (Net Zero by 2070).

Judicial Push for Environmental CSR

- **Supreme Court View:** Environmental CSR is a **constitutional mandate**, not discretionary.
- **Article 51A(g):** Citizens and corporations must protect and improve the natural environment.
- **Implication:** Right to conduct business is tied to responsibility to restore ecological balance.
- **Mandate for Companies:** Environmental restoration must be prioritised alongside social projects.

Challenges

- **Preference for Quick Wins:** Awareness drives or small green projects chosen over long-term restoration.
- **Restoration Gap:** Industrial damage far exceeds investment in ecological recovery.
- **Technical Skills Needed:** Forest restoration requires expertise in soil, biodiversity, and native species.
- **Urban Bias:** CSR projects often concentrated in cities, neglecting degraded rural lands.

Way Forward

- **Shift to Ecosystem Recovery:** Focus on afforestation, habitat restoration, and water conservation.
- **Indicators of Success:** Soil carbon sequestration, biodiversity recovery, water retention.
- **Collaborations:** Partnerships between forest departments, universities, NGOs, and local communities.
- **Dedicated Funds:** Establish restoration trusts or escrow funds for long-term financing.
- **Corporate Governance Reform:** Move from shareholder-centric to ecosystem-centric accountability.

Conclusion

The Supreme Court's intervention reframes CSR as a **constitutional responsibility for ecological restoration**. For India to achieve sustainable development and meet climate commitments, corporations must treat environmental recovery as a **non-negotiable part of business strategy**.

3. STATE OF THE WORLD'S MIGRATORY SPECIES REPORT

Why in News?

- A recent global report has highlighted that **nearly half of migratory species populations are declining**, raising serious ecological concerns.

About the Report

- Prepared under **CMS (1979)**, a UN-backed treaty for wildlife conservation.
- Covers **1,189 officially listed migratory species** and analyses over **3,000 species globally**.
- Uses **scientific monitoring data and global research studies**.

Importance of Migratory Species

- Maintain **ecological balance** across regions.
- Aid in **pollination, pest control, and nutrient cycling**.

- Support **food security, tourism, and cultural traditions**.
- Link ecosystems across countries, making them vital for **global biodiversity**.

Key Findings of the Report

1. Declining Populations

- Around **49% of migratory species populations are declining**.
- Nearly **582 species show decreasing trends**.

2. Rising Extinction Risk

- About **24% of species face extinction threats**.
- **26 species moved to higher risk categories** recently.

3. Most Affected Groups

- **Birds** (cranes, pelicans, shorebirds)
- **Marine species** (sharks, turtles)
- **Land animals** (wildebeest, antelopes)

Major Threats

- **Habitat Loss and Fragmentation:** Urbanisation, agriculture, and infrastructure disrupt **migration routes**. Even loss of **one stopover site** can collapse entire migration cycles.
- **Overexploitation:** Hunting, overfishing, and illegal trade reduce populations.
- **Infrastructure Barriers:** Roads, railways, and fences block animal movement.
- **Climate Change:** Alters **migration timing and food availability**.
- **Emerging Diseases:** **Avian Influenza (H5N1)** causing mass mortality in birds and marine mammals.

Key Biodiversity Areas (KBAs)

- Around **9,372 KBAs identified globally**.
- Nearly **47% lack adequate protection**, making them vulnerable.

Positive Developments

- Some species show recovery due to **coordinated conservation efforts**:
 - Saiga Antelope
 - Scimitar-horned Oryx
 - Mediterranean Monk Seal
- Shows that **international cooperation can reverse declines**.

Challenges

- Lack of **cross-border coordination**
- Weak enforcement of conservation laws
- Insufficient **funding and monitoring systems**
- Growing **development pressures**

Way Forward

- **Strengthen International Cooperation:** Enhance collaboration under **CMS and global biodiversity frameworks**
- **Protect Migration Corridors:** Safeguard **critical habitats and stopover sites**
- **Integrate Conservation with Development:** Adopt **wildlife-friendly infrastructure planning**
- **Increase Funding and Research:** Invest in **monitoring systems and conservation programs**
- **Community Participation:** Engage local communities in **sustainable conservation practices**

Conclusion

The report highlights a **serious global biodiversity crisis**, with migratory species under increasing threat. Strengthened global cooperation and habitat protection are essential to ensure their survival.

II. Renewable Energy

1. COAL PLANT INFLEXIBILITY AND INDIA'S CLEAN ENERGY PUSH

Why in News?

- India's renewable push is being slowed by the **rigidity of coal plants**, highlighting the urgent need for flexible grid management and faster energy transition.

Coal Plant Inflexibility

- Coal plants lack flexibility** to reduce output during peak solar hours and ramp up after sunset.
- Many plants cannot operate below **55% Minimum Technical Load (MTL)**, limiting their ability to adjust generation.
- Running plants at lower loads risks **equipment damage, higher maintenance costs, and reduced lifespan**.

Impact on Renewable Energy

- Curtailement of Solar Power:** Between May–Dec 2025, India lost **2.3 TWh of solar energy**, enough to power 14 lakh households for a year.
- Financial Burden:** Compensation of ₹5.75–6.9 billion paid to renewable generators under grid management rules.
- Missed Climate Goals:** Curtailment prevents full use of clean energy, slowing progress toward **500 GW non-fossil capacity by 2030**.

Grid Safety Concerns

- India's grid must maintain frequency between **49.900–50.050 Hz**.
- In May 2025, frequency exceeded limits for **20% of the time** due to surplus solar power.
- Even after reducing coal generation to 58% and curtailing 10 GW solar, frequency rose to **50.48 Hz**, showing risks to grid stability.

Industry Concerns

- NTPC and other producers** warn that operating below 55% load causes stress on turbines and boilers.
- Poor coal quality and repeated ramping up/down accelerate wear and reduce reliability.
- Reluctance to adopt **two-shift operations** or reduce load to 40% due to technical risks.

Way Forward

- CEA Proposal:** Incentives for coal plants to operate flexibly.
- Grid Modernization:** Invest in storage solutions (batteries, pumped hydro) to absorb surplus renewable energy.
- Transmission Upgrades:** Strengthen intra-state and inter-state networks for better balancing.
- Policy Push:** Encourage phasing down old coal units and integrate flexible gas-based generation.
- Consumer Impact:** Curtailment costs are passed on in tariffs; reforms needed to protect consumers.

Conclusion

Without flexible thermal operations, storage expansion, and stronger grid management, renewable energy will continue to be curtailed, undermining both economic efficiency and climate goals.

III. Global Warming and Climate Change

1. BUILDING INDIA'S CLIMATE RESILIENCE WITH WATER AT THE CORE

Why in News?

- At **COP-30 (Belém, Brazil, 2025)**, water, sanitation, and hygiene (WASH) were formally integrated into global climate adaptation indicators.

Climate Change Felt Through Water

- Floods, droughts, glacial melt, saline intrusion, and erratic monsoons directly affect water systems.
- Agriculture contributes ~40% of methane emissions, with rice cultivation and livestock as major sources.
- Water efficiency, wastewater reuse, aquifer recharge, and resilient sanitation are now **climate strategies**.

Belém Adaptation Indicators

- Cluster 1: Water & Sanitation Resilience**
 - Reduce climate-induced water scarcity.
 - Build resilience to floods and droughts.
 - Ensure universal access to safe drinking water.
 - Upgrade sanitation to withstand extreme events.
- Cluster 2: Risk Governance**
 - Universal multi-hazard early warning systems by 2027.
 - Strengthened hydrometeorological services.
 - Updated national vulnerability assessments by 2030.

India's Progress

- Institutional Reform:** Ministry of Jal Shakti (2019) consolidated water governance.
- Water Vision 2047:** Focus on sustainability, equity, resilience.
- Groundwater Management:** NAQUIM 2.0 shifted from mapping to aquifer-level management plans.
- River Rejuvenation:** NMCG integrates biodiversity, digital monitoring, and international collaboration.

Challenges

- Water Scarcity:** Uneven distribution, most disasters are water-related.
- Adaptation Finance:** Global target of \$1.3 trillion annually by 2035, but funding pathways unclear.
- Digital Fragmentation:** Hydrological data exists but lacks AI-driven real-time integration into planning.

Way Forward

- Embed **climate stress indicators** into mission dashboards. **Classify water projects** explicitly as **climate investments**.
- Use **digital public infrastructure** to integrate hydrological data, crop advisories, insurance, and finance.
- Strengthen **community-led initiatives** for local resilience. Ensure **redundancy in water supply systems** to withstand floods and droughts.

Conference of the Parties (COP)

COP = Conference of the Parties, the supreme decision-making body of the UN Framework Convention on Climate Change (UNFCCC).

- **Members:** 198 countries (Parties) to the UNFCCC.
- **Purpose:**
 - Review progress on climate commitments.
 - Negotiate agreements like the **Kyoto Protocol (1997)** and **Paris Agreement (2015)**.
 - Assess emission reduction efforts and strengthen climate action.
- **Frequency:** Held annually since **1995 (Berlin, COP1)**.
- **Recent:** **COP30 took place in Belém, Brazil, in November 2025.**

Belém Declaration (2025)

- **Context:** Announced during **COP30 in Belém, Brazil**.
- **Key Themes:**
 - Recognition of the **Rights of Nature** as a guiding principle.
 - Strong support for **Indigenous peoples and local communities** as guardians of biodiversity.
 - Opposition to unchecked **fossil fuel expansion** and destructive mining projects.
 - Call for a **just transition** to renewable energy that respects ecosystems.
- **Significance:**
 - Represents a **global civil society and Indigenous pledge** to protect the Amazon and biodiversity.
 - Highlights concern about **agribusiness expansion, deforestation, and offshore oil drilling** near the Amazon.
 - Reinforces Brazil's role in global climate leadership under President Lula.

Conclusion

India already has strong foundations in water governance, but must quickly align missions, metrics, and finance with global adaptation indicators. By doing so, India can lead the **Global South** in operationalising climate resilience at scale.

IV. Indian Initiatives, efforts and Commitments

1. CHEETAHS MOVING FROM KUNO TO RAJASTHAN

Why in News?

- The **National Tiger Conservation Authority (NTCA)** stated that cheetahs moving from **Kuno National Park (Madhya Pradesh)** to **Baran district (Rajasthan)** are showing **natural territorial behaviour**.

Cheetah dispersal case

- **Natural Dispersal Behaviour:** Since **Feb 2026**, two cheetahs from **Kuno National Park** travelled **60–70 km into Rajasthan**. NTCA clarified this long-distance movement is **normal and anticipated** in the Project Cheetah.
- **Monitoring & Tracking:** Cheetahs are tracked via **satellite and radio collars**. A **joint inter-State team** monitors their movement to ensure safety and collect ecological data.

Project Cheetah

- **Reintroduction Effort:** Cheetahs went extinct in India in **1952**. Project launched in **September 2022** to reintroduce them.
- **Translocations:** **29 adult cheetahs** brought from Namibia, South Africa, and Botswana since 2022. **9 cheetahs from Botswana (Feb 2026)**.

- **Survival & Breeding:** 9 adults have died due to various causes. 28 cubs born in India, of which 12 have died. Some adults are housed in **Gandhi Sagar Wildlife Sanctuary** (Madhya Pradesh).
- **Significance of Current Movement:** Demonstrates **territorial dispersal behaviour**, essential for population spread.
- **Reinforces rationale** for the proposed **17,000 sq. km Kuno–Gandhi Sagar inter-State wildlife corridor**, spanning districts in Rajasthan and Madhya Pradesh.

Challenges

- **High Mortality Concerns:** Significant deaths among translocated adult cheetahs and cubs highlight survival challenges in adapting to Indian habitats.
- **Need for Intensive Monitoring:** Continuous satellite tracking, radio-collaring, and veterinary support are essential to ensure health, safety, and long-term survival.
- **Inter-State Coordination Issues:** Effective management of wildlife corridors requires strong cooperation between Madhya Pradesh and Rajasthan, along with clear protocols for dispersal and protection.

How Reintroduction Helps the Ecosystem

- **Restores Ecological Balance:** Cheetahs are top predators; they regulate prey populations like deer and antelope. Prevents overgrazing, which protects grasslands and biodiversity.
- **Boosts Biodiversity:** Presence of predators maintains healthy prey populations. Supports survival of smaller species and strengthens the food chain.
- **Improves Habitat Health:** Balanced prey numbers reduce pressure on vegetation. Healthy grasslands improve soil fertility, water retention, and carbon storage.
- **Scientific and Conservation Value:** Provides opportunities for ecological research and wildlife management. Strengthens India's global image in conservation efforts.

Challenges of cheetah reintroduction in India:

- **High Mortality & Health Risks:** Since the launch of **Project Cheetah (2022)**, several cheetahs have died due to stress, infections, and territorial fights.
- **Limited Habitat & Prey Base:** Kuno National Park has only **~750 sq. km** of core area, insufficient for a large cheetah population. Prey density (chital, blackbuck, etc.) is lower compared to African reserves, limiting long-term survival.
- **Human-Wildlife Conflict & Dispersal:** Cheetahs have dispersed **60–70 km outside Kuno into Rajasthan**, showing natural movement but increasing risk of conflict with villages and livestock.

Way Forward

- **Build Safe Corridors:** Develop the **Kuno–Gandhi Sagar landscape** so cheetahs can move freely and safely across states without human conflict.
- **Increase Survival Chances:** Provide better **veterinary care**, ensure enough prey animals, and improve habitat quality to help cheetahs live longer.
- **Involve Local Communities:** Work with nearby villages and communities to spread awareness, reduce conflicts, and make people active partners in conservation.

Extinction of Cheetahs in India

Timeline

- **1947:** The last three Asiatic cheetahs in India were killed in Koriya (now Chhattisgarh).
- **1952:** The Government of India officially declared the cheetah extinct in the country.

Reasons for Extinction

1. Overhunting and Sport Hunting

- Cheetahs were widely used by royalty for coursing (hunting with trained cheetahs).
- Excessive hunting reduced their population drastically.

2. Habitat Loss

- Expansion of agriculture and deforestation destroyed grasslands, the cheetah's natural habitat.
- Decline in prey species further weakened survival chances.

3. Human Pressure

- Capture for domestication and hunting expeditions.
- Lack of conservation measures during colonial and early post-independence periods.

Conclusion

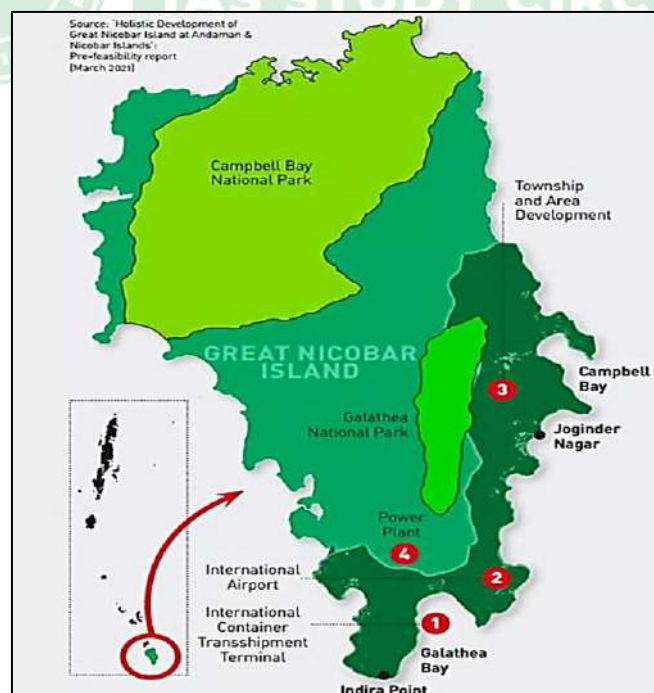
The dispersal of cheetahs from Kuno to Rajasthan highlights **natural ecological behaviour** and validates the vision of **Project Cheetah**.

V. Environmental impact assessment

1. GREAT NICOBAR LAND ACQUISITION AND ENVIRONMENTAL LAW

Why in News?

- Recently, settler families in **Campbell Bay Tehsil, Great Nicobar** raised objections to the **low compensation rates** fixed for land acquisition under the mega-infrastructure project.



Background

- About **300 ex-servicemen families** were settled in Great Nicobar between 1969–75, with land de-notified from tribal reserves.
- Current project involves acquisition of land at **₹113–₹180 per sq. m**, far lower than rates in Andaman tourism projects (₹11,370–₹20,500 per sq. m).

- Nearly **84 sq. km of tribal reserve** is proposed to be de-notified for project use.
- Tribal groups affected: **Shompen (PVTG)** and **Nicobarese**.

Environmental Law Perspective

- **Forest Rights Act (FRA), 2006:** Mandates recognition of **customary rights of tribal communities**. Requires **Gram Sabha consent** before diversion of forest land.
- **RFCTLARR Act, 2013:** Ensures **fair compensation and rehabilitation**. Procedural lapses in **social impact assessment** and inadequate compensation breach statutory safeguards.
- **Environmental Impact Assessment (EIA) Notification, 2006:** Large projects require **comprehensive EIA and public hearings**. Reports suggest lack of tribal participation.
- **Biological Diversity Act, 2002:** Great Nicobar hosts **unique biodiversity and pristine forests**. Project threatens **irreversible ecological loss**, undermining India's global commitments.

Challenges

- **Shompen (PVTG):** Nomadic hunter-gatherers with no use for monetary compensation, risk losing habitat.
- **Nicobarese:** Wish to return to pre-tsunami lands but face displacement again.
- **Settler vs Tribal Rights:** Settlers demand fair compensation, but tribal rights are sidelined.
- **Ecological Concerns:** Loss of forests, marine ecosystems, and biodiversity.

Way Forward

- **Strict Enforcement of Environmental & Tribal Rights Laws:** Ensure compliance with the **Forest Rights Act (2006)**, **RFCTLARR Act (2013)**, and **Biodiversity Act (2002)**.
- **Balanced Development with Ecological Safeguards:** Adopt a **sustainable infrastructure model** that minimises deforestation and biodiversity loss.
- **Inclusive Decision-Making & Rehabilitation:** Provide rehabilitation options for Nicobarese and protect the Shompen (PVTG) from forced displacement.

The Great Nicobar Project

- **The Great Nicobar Project is a strategic infrastructure** initiative aimed at boosting India's maritime presence, but it faces **criticism over environmental damage and tribal displacement**.

Strategic Maritime Importance

- The project is designed to enhance India's presence in the **Indian Ocean Region**, especially near the **Strait of Malacca**, a critical global shipping route.
- It aims to reduce dependence on foreign ports like **Singapore and Colombo** by building an **International Container Transshipment Terminal (ICTT)** with a capacity of **14.2 million TEUs**.

Multi-Component Infrastructure Plan

- The project includes:
 - A **dual-use airport** (civil and military)
 - A **power plant**
 - A **greenfield township**
- It is expected to be developed over **30 years in phases**, under the **Export Promotion Mission** and national security frameworks

Conclusion

The Great Nicobar project highlights a clear conflict where **development goals are pursued at the cost of environmental safeguards and tribal rights, raising serious concerns of law violations and ecological justice.**



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C. DISASTER MANAGEMENT

I. Disasters and their management

1. SAFETY IN EXPLOSIVES UNITS

Why in News?

- Recent explosions at **Firecrackers industry** killed workers, exposing serious lapses in safety norms and weak regulatory oversight in India's explosives industry.

Background

- India's high-risk industries often operate with **poor safety records**, unskilled labour, and weak regulation.
- The **Konaseema blast (2025)** killed 10 people, prompting new safety norms.
- Despite this, the **Vetlapalem blast (2026)** killed 20 workers, showing non-compliance.
- In Nagpur, multiple accidents in explosives factories have killed over 20 workers in two years, mostly women.

Major Concerns in Explosives Industry

- Exceeding Limits:** Many factories operate beyond their permitted quotas of explosives and workforce strength.
- Exploited Workforce:** Majority of workers are **poorly paid women**, often displaced from farmland acquired for factories.
- Political Influence:** Owners' strong political connections weaken enforcement and shield them from strict action.
- Regulatory Corruption:** The regulator, **Petroleum and Explosives Safety Organisation (PESO)**, has itself faced corruption inquiries for licence irregularities.
- Accountability Gap:** Despite repeated accidents, some factory owners have even received **national honours**, raising serious questions about responsibility and oversight.

Lessons from Tamil Nadu

- Sivakasi's fireworks industry, once infamous for child labour and accidents, improved safety through:
 - Worker training and awareness.**
 - Owner commitment to safety norms.**
 - However, illegal units still report accidents.

Challenges

- Weak Enforcement:** Safety rules and SOPs are poorly implemented, leading to frequent violations.
- Corruption & Influence:** Regulatory action is diluted by political connections and bribery.
- Untrained Workforce:** Workers often lack proper training and awareness of safety risks.
- Profit Over Safety:** Business owners prioritise financial gains over worker protection.
- No Accountability:** Repeated accidents occur without strict penalties or responsibility being fixed.

Way Forward

- Strict Enforcement:** Apply safety norms rigorously with zero tolerance for violations.
- Independent Oversight:** Strengthen PESO with transparent monitoring to curb corruption.
- Worker Training:** Make safety training compulsory for workers and supervisors.
- Technology Use:** Adopt modern tools for tracking explosive handling and storage.
- Owner Accountability:** Impose penalties, cancel licences, and enforce criminal liability for negligence.
- Learning from Sivakasi:** Replicate its model of awareness, training, and compliance to improve safety.
- Community Involvement:** Engage locals to ensure they are informed and protected.

Conclusion

Unless regulatory mechanisms are strengthened, owners held accountable, and workers trained, accidents will continue. A **safety-first approach** is essential to protect lives and restore trust in high-risk industries.

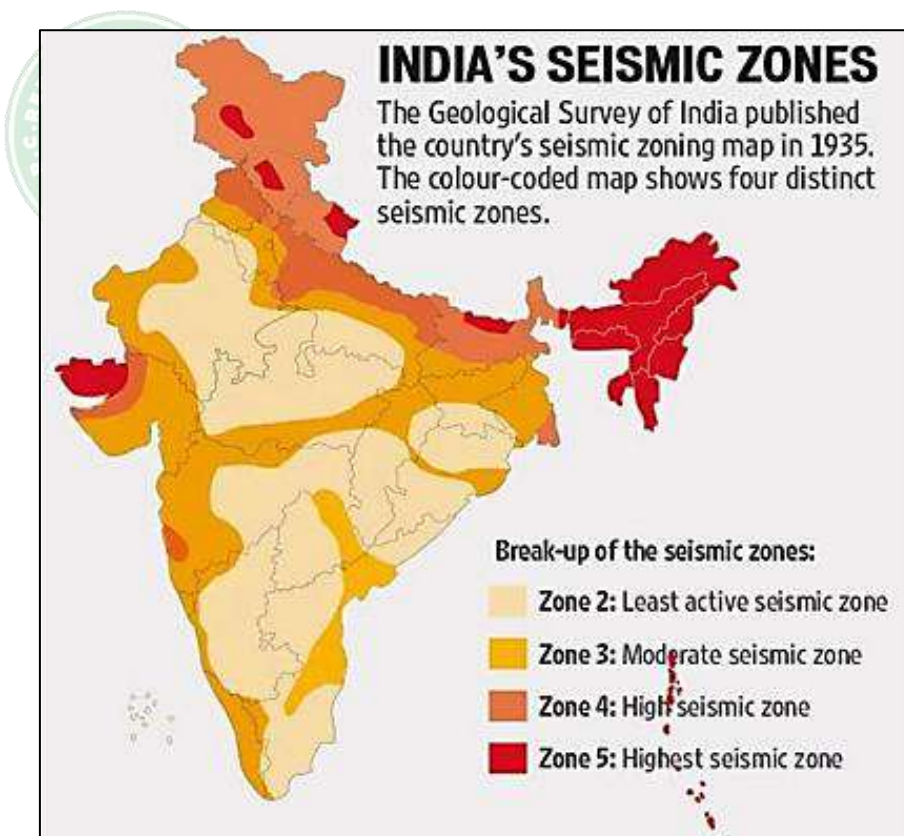
2. INDIA'S EARTHQUAKE SAFETY CODES FOR THE HIMALAYAS AND NORTHEAST

Why in News?

- India's earthquake safety codes are being debated after the government withdrew updated standards that would have raised hazard estimates for the **Himalayas and Northeast**.

Earthquake Safety Framework

- Earthquake Zones in India** – The country is divided into seismic zones (II–V), with Zone V covering the Himalayan belt prone to magnitude 8 quakes.
- IS 1893 Standard**: Engineers and architects must follow this code for earthquake-resistant design.
- Probabilistic Framework**: Recent studies recommended moving from past-event based mapping to probabilistic hazard assessment, incorporating soil conditions and seismic data.
- Global Comparison**: Countries like Japan and the U.S. use higher design accelerations (close to 1 g), while India's current values are lower.



Issue of Withdrawal

- The Bureau of Indian Standards (BIS) withdrew the **2025 update of IS 1893** after a Cabinet Secretariat order.
- The update was based on a decade of research by IITs, NDMA, and other institutions.
- Government cited concerns that stricter codes would raise construction costs, affecting infrastructure projects like metro rails and dams.

Scientific Findings

- Studies show **current hazard values are underestimated**, especially for Himalayan and Northeastern states.
- Probabilistic models used data from **69,000+ earthquake events** and monitoring stations, suggesting higher Peak Ground Acceleration (PGA) values.
- Evidence from past quakes (e.g., Shillong 1897) indicates PGA values exceeding 1 g, far above India's design thresholds.

Risks Highlighted

- **Structural Vulnerability:** Residential houses, bridges, and power plants face higher collapse risks.
- **Human Impact:** Around **95% of earthquake deaths occur in poorly designed 1–3 storey houses**.
- **Regional Strain:** Himalayan states carry decades of tectonic stress, making them highly vulnerable.

Cost Concerns vs. Safety

- Officials argue stricter codes would **increase steel and cement costs**, limiting public infrastructure spending.
- Scientists counter that **safety cannot be compromised**, as underestimated risks could lead to catastrophic losses.
- Other countries in the region (Nepal, Pakistan) already use higher PGA values than India's current map.

Lessons from the Past

- India's hazard mapping often updated **only after major quakes**, ignoring long-term strain.
- Lack of consideration for **local soil conditions** and amplification effects has weakened risk assessments.
- A probabilistic approach offers a more realistic picture of seismic threats.

Conclusion

India's withdrawal of the updated IS 1893 earthquake safety code has sparked a critical debate between **cost concerns and public safety**. Scientific evidence clearly shows that the **Himalayan and Northeastern states face underestimated seismic risks**.

D. SCIENCE AND TECHNOLOGY

I. Developments and their Applications and Effects in Everyday Life.

1. AI AND INDIA'S SOFTWARE SERVICES INDUSTRY

Why in News?

- Rapid adoption of **Artificial Intelligence (AI) and Large Language Models (LLMs)** is reshaping India's IT and BPO sectors coinciding with layoffs and restructuring in tech firms.

Transformation vs Disruption

- **AI Washing:** Some layoffs are labelled as "AI-driven" but are largely cost-cutting measures.
- **Positive Transformation:** Developers, testers, and product managers are using AI tools to improve productivity.
- **Shift in Model:** From **labour arbitrage** (adding manpower) to **intelligence arbitrage** (leveraging AI for efficiency).

Impact on Roles

- **Software Development:** AI assists coding, testing, DevOps, and product management, reducing time but requiring new skills (context engineering, refactoring).

- **Team Size:** Squads of 8–10 may shrink to 3–5, but new roles in **AI fine-tuning and monitoring** are emerging.
- **Revenue per Engineer:** Increasing due to efficiency gains.

Vulnerability of Entry-Level Jobs

- **BPO/KPO Roles:** Repetitive tasks in call centres and documentation are highly vulnerable to automation.
- **Agentic AI:** Can automate end-to-end processes, reducing large teams to small monitoring groups.
- **IT Services:** Less vulnerable, as human coordination across geographies and teams remains essential.

Global Partnerships

- Indian IT firms embed AI into the **Software Development Life Cycle** for regulated industries like banking.
- Partnerships with global AI leaders are **growth strategies**, not defensive moves.
- India consumes AI built abroad but adds value through **systems engineering, integration, and execution**.

Shifts in Business Models

- Moving from **time-and-material billing** to **outcome-based pricing**.
- Customers demand predictable delivery, quality, and cost clarity.

Challenges & Concerns

- **Job Security:** Entry-level layoffs without social safety nets.
- **Skill Gaps:** Reskilling limited to prompt engineering; lack of foundational AI research in India.
- **Regulation:** Need for transparency in algorithmic decision-making.
- **Environmental Impact:** AI-driven data centres consume high electricity and water.

Way Forward

- **Just Transition:** Introduce unemployment benefits and stronger worker protections.
- **Reskilling & Certification:** Formal skill accreditation under **Skill India** for AI-related roles.
- **Balanced Strategy:** Build sovereign LLMs while strengthening India's dominance in AI services.

Conclusion

India must balance growth with **social protections, reskilling, and strategic investments** to ensure a fair and sustainable transition.

2. AI-POWERED TAX GOVERNANCE IN INDIA

Why in News?

- At the **India AI Impact Summit (Feb 2026)**, experts highlighted India's use of Artificial Intelligence (AI) in tax administration, through the **Income Tax Department's Project Insight (PI)**.

India's Project Insight

- **Low Tax-GDP Ratio** - India's average **tax-to-GDP ratio (2001-22)** stands at **16.36%**, among the lowest in emerging economies.
- **Revenue Loss from Evasion** - Annual tax evasion costs India nearly **4.3% of total revenues**, weakening fiscal capacity.
- **Project Insight Initiative** - To tackle this, the **Income Tax Department launched Project Insight in 2017 (operational in 2019)**, leveraging **AI and data analytics** for better compliance and monitoring.

Benefits of Project

- **Promotes Voluntary Compliance:** Uses behavioural nudges like **SMS and email reminders** to encourage timely tax filing.
- **Creates 360° Taxpayer Profiles:** Integrates data from **banks, property records, GST, credit cards, and other sources** for holistic monitoring.
- **Detects Income Mismatches:** Identifies inconsistencies between **declared income and actual financial activity**, improving accuracy in assessments.
- **Automates Routine Work:** Handles repetitive tasks through automation, allowing officials to focus on **complex cases**.
- **Enhances Taxpayer Services:** Provides better support with **chatbots, quicker refunds, and faster grievance redressal**.

Outcomes So Far

- **Revised Returns & Extra Tax:** Since **2020–21**, over **1 crore revised returns** were filed, yielding an additional **₹11,000 crore** in tax revenue.
- **Foreign Income Disclosure:** Under the **NUDGE campaign**, **62% of taxpayers corrected returns**, declaring overseas assets worth **₹29,208 crore**.
- **Political Donation Deductions:** False claims of political donations were corrected, removing **₹963 crore** in wrongful deductions.
- **Faster Refunds:** Average refund processing time reduced sharply from **93 days to just 17 days**, improving taxpayer services.
- **AI Detection of Suppressed Sales:** Artificial intelligence identified **₹70,000 crore** in hidden turnover by restaurants since **2019–20**.

Opportunities and Benefits

- **Operational Efficiency:** Real-time processing of large financial datasets. Faster and more accurate decisions. Reduced costs and improved reliability.
- **Risk Management & Fraud Detection:** Predictive analytics to identify risks early. Detect suspicious transactions instantly.
- **Customer Experience:** AI chatbots and virtual assistants provide 24/7 support. Personalized product recommendations and investment advice.

Challenges

- **Data Quality & Provenance:** AI depends on reliable data; errors or complex family finances may trigger false positives.
- **Algorithmic Bias:** Models may replicate socio-economic/geographic biases (e.g., Dutch childcare scandal).
- **Explainability & Due Process:** Taxpayers must know why they are flagged and have a clear appeal mechanism. Human-in-the-loop review is essential.
- **Privacy & Security:** Sensitive financial data creates risks of misuse or cyberattacks.
- **Lack of Ombudsman:** No independent AI ombudsperson or external audits of risk-scoring models.

Conclusion

AI-driven tax governance has **boosted compliance and revenue mobilisation** in India, but without strong safeguards, it risks becoming a surveillance tool that undermines trust.

II. Achievements of Indians in Science & Technology

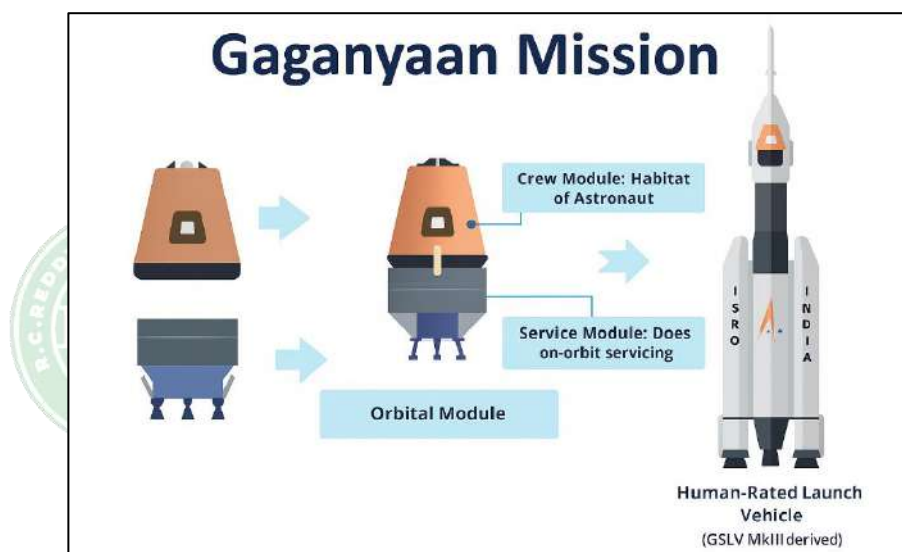
1. ASTRONAUT RE-ENTRY AND SURVIVAL

Why in News?

- India's upcoming **Gaganyaan mission** has brought attention to how astronauts safely return from space and survive the extreme conditions of atmospheric re-entry.

Thermal Protection and Heatshield

- More than **98% of re-entry energy** is dissipated into the atmosphere as heat.
- Capsules are protected by **heatshields** with thermal protection systems.
- Two methods are used: **ablation**, where the shield chars and erodes to carry heat away, and **insulation**, which prevents heat from reaching the capsule's structure.



Re-entry Corridor

- To return**, the capsule performs a **deorbit burn**, reducing speed so gravity pulls it back into the atmosphere.
- The re-entry corridor** is a narrow atmospheric window: Too shallow an angle makes the capsule skip off the atmosphere back into space.
- Precise guidance ensures** the capsule stays within safe limits.

Challenge of Re-entry

- Re-entry is the reverse of launch:** instead of fighting gravity, the spacecraft must shed immense orbital velocity.
- Scientists initially feared re-entry** would be impossible because the kinetic energy converts into extreme heat that could melt any material.
- The breakthrough** came with the **blunt body theory**, which showed that rounded capsules deflect most heat into the surrounding air rather than absorbing it.

Semi-Ballistic Flight

- A **purely ballistic body** falls like a stone, but a **semi-ballistic body** uses an offset centre of gravity to fly at an angle of attack.
- This creates **aerodynamic lift** in addition to drag, allowing the capsule to steer and glide.
- Controlled manoeuvres** help guide the capsule toward the targeted landing zone.

Communication Blackout

- **During re-entry**, extreme heat ionises air molecules, forming a **plasma sheath** that blocks radio signals.
- **This causes a temporary communication** blackout between astronauts and ground control.
- **Engineers reduce this risk** by using **relay satellites** and high-frequency signals that can pass through thinner plasma regions.

Parachute Deployment

- **Aerobraking slows the capsule**, but at lower altitudes the speed is still too high for safe landing.
- A **multi-stage parachute system** is deployed to further reduce velocity.
- **This ensures a soft landing**, usually in the sea, where recovery teams can reach the astronauts.

Gaganyaan Re-entry

- ISRO validated re-entry technology through the **2007 Space Capsule Recovery Experiment (SRE)** and the **2014 CARE mission**.
- In **Gaganyaan**, the **service module** will perform the deorbit burn and then separate, burning up during re-entry.
- The **crew module** will re-enter as a semi-ballistic body, guided by thrusters to stay within the corridor.
- A **three-stage parachute system** will ensure safe splashdown in the **Bay of Bengal**, the designated landing zone.

Conclusion

Surviving re-entry requires precise engineering, robust heatshields, careful navigation, and controlled landing systems. **ISRO's Gaganyaan mission will demonstrate India's ability** to safely return astronauts from orbit, marking a major milestone in human spaceflight capability.

III. Indigenization of Technology and Developing New Technology.

1. INDIA'S NEED FOR A MANDATORY R&D DISCLOSURE STANDARD

Why in News?

- Recently Experts have proposed a **Mandatory R&D and Technology Disclosure Standard** under SEBI's Listing Obligations and Disclosure Requirements (LODR) to improve transparency in India.

Mandatory R&D Disclosure Standard

- **Structured Innovation Reporting:** Requires listed firms to disclose R&D spend, patents, workforce details, project maturity, and revenue from new products under SEBI's LODR framework.
- **Transparency for Investors:** Helps markets distinguish genuine innovation from low-quality projects, reducing information gaps and lowering cost of capital.
- **Boost to Innovation:** Encourages higher R&D intensity, efficient resource use, and strengthens India's move toward a knowledge-driven economy without dictating spending levels.

India's R&D Ecosystem

- **Low R&D Intensity:** India's corporate R&D spending is only **0.23% of GDP**, far below global peers like **South Korea (4.8%)**, **China (2.4%)**, and the **OECD average (~2.5%)**.
- **Weak Disclosure Mechanisms:** Absence of structured reporting means investors cannot distinguish **genuine innovation** from **low-quality or copycat projects**, leading to mispricing.
- **Undervaluation of Innovation:** With poor visibility, innovation is systematically **undervalued and underproduced**, discouraging firms from investing in risky but high-impact projects.

- **Limited Indigenous Value-Add:** In licensed defence and aerospace production, India's domestic contribution has historically been **25–35%**, concentrated in structural manufacturing rather than mission systems.
- **Global Comparison:** Countries with mandatory R&D disclosure frameworks (e.g., **China's Shanghai Stock Exchange**) saw **6–12% rise in R&D intensity** in OECD economies and **3–14% rise** across large cross-country samples.

Significance

- **Promotes Quality Innovation** – Encourages strong projects while pruning weaker ones, ensuring **higher success rates in R&D**. For example, India's **startup ecosystem crossed 1.25 lakh registered startups (2025)**, showing the impact of innovation-focused policies.
- **Boosts Investment Efficiency** – Aligns funding with impactful ideas, improving returns. India's **gross expenditure on R&D (GERD) is ~0.7% of GDP**, lower than global peers, so efficient allocation is crucial.
- **Supports Knowledge Economy Goals** – Strengthens India's innovation ecosystem and aligns with the national vision of becoming a **\$5 trillion knowledge-driven economy**. Patent filings in India crossed **90,000 in 2023–24**, reflecting rising innovation activity.

Global Evidence

- **OECD Economies:** Studies show that **structured R&D disclosure** can raise innovation intensity by **6–12%**, proving transparency directly boosts investment in research.
- **China's Shanghai Stock Exchange:** Mandated disclosures led to **higher innovation output**, especially among **non-state enterprises, high-tech firms, and financially constrained companies**.
- **South Korea (K-IFRS Framework):** Introduction of **mandatory intangible asset disclosures** pushed firms to **increase R&D spending**, as visibility of innovation metrics created market discipline.
- **Cross-Country Firm Samples:** Evidence suggests disclosure improves **allocation of funds towards riskier innovation projects**, rather than traditional capital expenditure.
- **OECD Intangibles Report (2021):** Countries with compulsory innovation reporting achieved **better patent productivity and commercial outcomes** per unit of R&D spending.

Proposed Framework

- Disclosure standard under SEBI's LODR, 2015.
- Firms to report across five dimensions:
 - **R&D expenditure** (capital and revenue, with segment details).
 - **Patent activity** (filings, grants, expirations).
 - **Technology workforce composition**.
 - **Technology Readiness Level (TRL)** of major projects.
 - **Innovation turnover** (share of revenue from products introduced in last five years).
- Voluntary disclosure for two years, then mandatory.

Rationale

- **Reduces information asymmetry:** Investors can identify genuine innovators.
- **Lowers cost of capital:** Transparency builds investor confidence.
- **Strengthens market discipline:** Firms face pressure to improve innovation metrics.
- **Improves efficiency:** Better allocation of funds leads to more patents and stronger outcomes.
- **Non-distortionary policy:** Does not force spending, only ensures accurate information.

Conclusion

By shining light on innovation metrics, India can strengthen investor confidence, improve efficiency, and ensure that genuine innovation flourishes.

E. SECURITY

I. Role of External State and Non-state Actors in creating challenges to Internal Security.

1. PAKISTAN'S ARMS SALES AND STRATEGIC CONCERNS FOR INDIA

Why in News?

- Pakistan recently signed its **largest defence export deal worth \$4.6 billion** with Libya's National Army, alongside negotiations with Sudan for another multi-billion-dollar arms deal.

Recent Developments

- **Libya Deal:** Agreement with Libyan National Army for **16 JF-17 fighter jets** and **12 Super Mushak trainers**. Deal reportedly financed by the **UAE**.
- **Sudan Negotiations:** Talks with Sudan Armed Forces for **\$1.5 billion defence equipment**, including Karakorum-8 aircraft, drones, and air defence systems.
- **Pakistan claims defence exports** worth **\$13 billion**, including supplies to **Azerbaijan, Myanmar, Nigeria**, and offers to **Bangladesh**.

Drivers of Pakistan's Defence Push

- Leveraging joint ventures with **China and Türkiye**.
- Support from Gulf monarchies seeking regional proxies.
- Aggressive marketing using **Islamic solidarity, military links, and competitive pricing**.
- Strategic partnerships, including a **defence pact with Saudi Arabia** and backing from the **U.S. administration**.

Constraints

- **Limited Production Capacity:** Annual output restricted to about **25 JF-17 aircraft**, with dependence on foreign-sourced components.
- **Dependence on External Financing:** Many deals rely on **third-party funding from Gulf states**, making them vulnerable to external political and financial shifts.
- **Legal and Geopolitical Barriers:** Target markets such as **Libya and Sudan** are under **UN arms embargoes**, complicating legitimacy and execution of contracts.
- **Quality and Reputation Risks:** Concerns over **substandard product performance** could damage Pakistan's credibility in global defence markets.
- **Regional Rivalries:** **Saudi-UAE competition** and broader Gulf tensions may undermine or destabilise these defence agreements.

Strategic Implications for India

- Pakistan's growing role as a **security provider** in the Gulf could challenge India's influence.
- Defence exports help Islamabad shed its image of terrorism and financial instability.
- Enhanced military-industrial role may embolden Pakistan to revive **cross-border terrorism**.
- India risks losing strategic space in a region where it has strong **economic and energy ties**.

Steps for India

- **Expand Export Volume:** Scale up defence exports beyond the current **\$2.8 billion** by leveraging indigenous manufacturing capabilities.
- **Focus on Global South & Neighbourhood:** Target friendly nations and regional partners with **cost-effective, reliable systems** suited to their needs.
- **Leverage Oil Trade:** Use India's position as a major crude importer to encourage **Gulf states** to balance trade by procuring Indian defence products.
- **Utilise Aid & Credit Lines:** Integrate defence exports with India's **development aid programmes and concessional credit facilities** to support partner nations.
- **Create Dedicated Export Body:** Establish a **specialised defence export promotion organisation** with autonomy to market products, negotiate contracts, and conclude deals efficiently.

Conclusion

Pakistan's aggressive defence sales strategy is reshaping its role in West Asia and Africa. For India, the challenge lies in **scaling up defence exports, deepening partnerships, and leveraging economic influence** to maintain strategic balance in the region.



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