

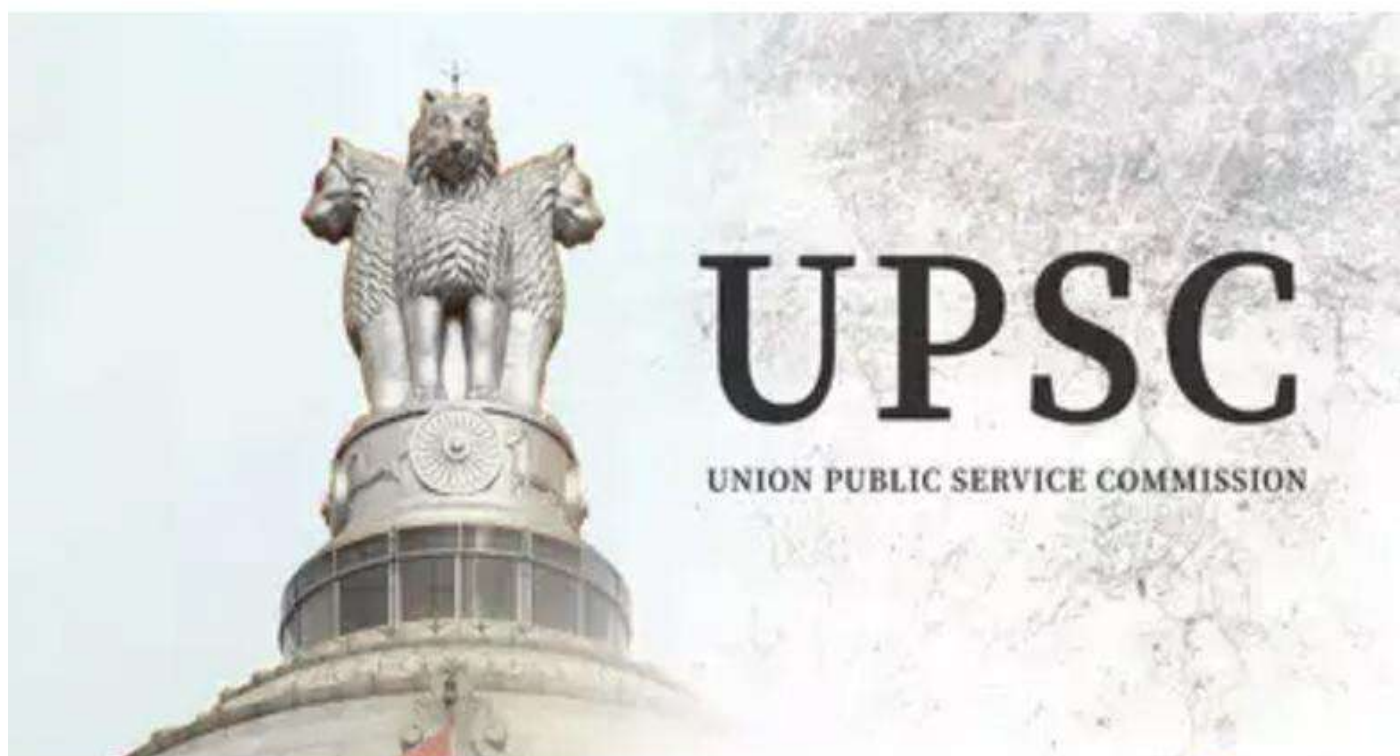


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September 2025

1. IMPORTANT TOPICS OF THE MONTH

1.1 GST 2.0 Reforms

In the 56th GST Council meeting, chaired by Union Finance Minister, the Next-Gen Goods and Services Tax (GST) reforms have been approved.

What are the features of current GST 1.0?

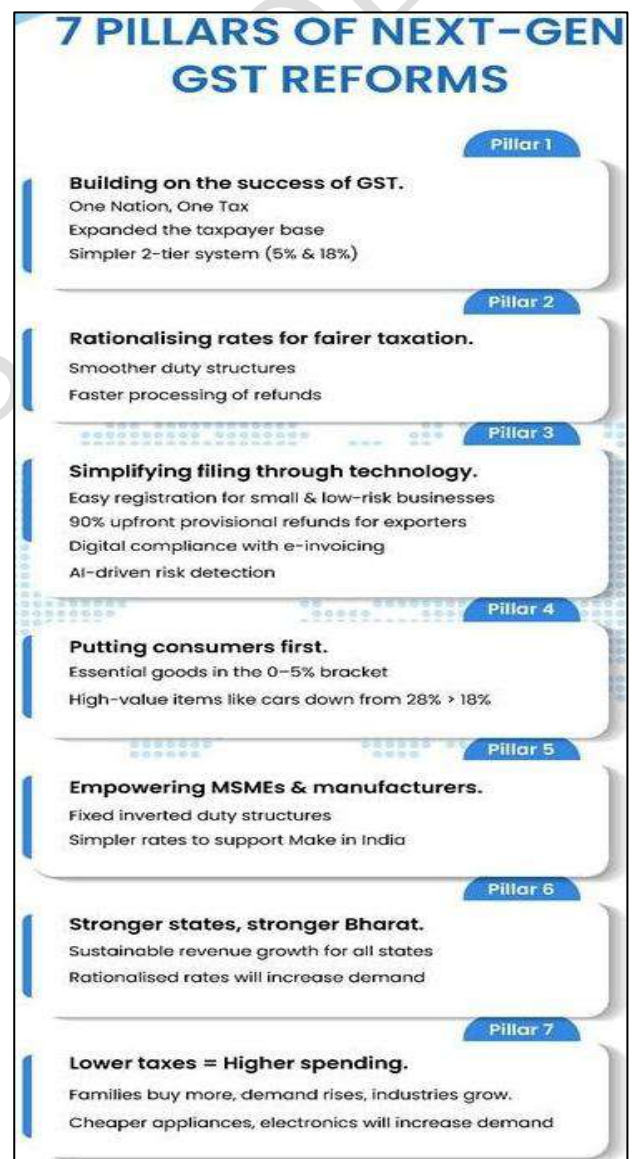
- **Launch** – GST, indirect tax structure, was launched with in 2017 by the Constitution 101st Amendment Act 2016.
- GST was born out of subsuming of 17 taxes and 13 cesses levied by the Central and State governments.
- **Tax Slabs** - Apart from zero-rated goods, it had four tax slabs 5%, 12%, 18 and 28%.
- **GST Council** - The GST Council is a joint forum of the Centre and the States which makes recommendations to the Union and the States on GST.
- **Decision taking** - Every decision of the GST Council is taken at its meeting by a majority of not less than 3/4th of the weighted votes of the Members present and voting.
- **Features of GST** -
 - Destination-based tax
 - Eliminated cascading of taxes (tax on tax)
 - Created a single national market with common rates and procedures
 - Input tax credit
 - Completely automated and faceless administration with all processes being online.

What is the performance of GST so far?

- **Expansion of Tax Base** - GST taxpayer base has grown from 66.5 lakh in 2017 to 1.51 crore in 2025, reflecting greater formalization of the economy.
- **Record Revenue Growth** - FY 2024–25 saw Rs.22.08 lakh crore in gross GST collections, doubling in just four years with a CAGR of 18%.
- **Economic Confidence** - Rising collections and active taxpayers reflect stronger compliance, improved systems, and robust economic fundamentals.
- Average monthly collections have risen to Rs. 2.04 lakh crore year from Rs. 82,000 crore in 2017–18.

What are the features of GST 2.0?

- **Next-Gen GST reforms** – It builds on GST's success with a simplified 2-tier structure, fairer taxation, and digital filing for ease and faster refunds.
- **Focus** – It focuses on improving the lives of the common man and ensuring ease of doing business for all, including small traders and businessmen.
- **Two slabs** - GST is simplified into a two-slab structure - Slab 1 – 5%, Slab 2 – 18%.
- **Household essentials** - GST reforms cut taxes on household essentials (soaps, toothpaste, Indian breads) to 5% or Nil boosting affordability.



- **Home Building & Materials** - The cut in GST on cement (from 28% to 18%) and construction materials like marbles, granites, wooden flooring, etc. cuts from 12% to 5%.
- **Health care sector** - Life-saving drugs, medicines reduced from 12% to Nil or 5% making healthcare affordable
- **Agriculture Sector** - Farm machinery, irrigation equipment cut from 12% to 5%, reducing farming costs
- **Service sector** - Lower GST will reduce costs for citizens and gives a fillip to the hospitality and service industries.
- For hotels the cuts from 12% to 5%; Gyms, salons, barbers, yoga GST cut from 18% to 5%.
- **Toys, Sports & Handicrafts** - Reduction of GST rate on manmade fibre from 18% to 5% and manmade yarn from 12% to 5% and for Wooden/metal/textile dolls & toys from 12% to 5%.
- **Luxury items and sin goods** - Tobacco, pan masala, aerated drinks, and luxury goods taxed at 40%.

NEXT-GEN GST REFORM

for Ease of Living & to build *Aatmanirbhar Bharat*

From farmers to enterprises, from households to businesses, the Next-Gen GST brings happiness for all!

Save Big on Daily Essentials

Items	From	To
Hair Oil, Shampoo, Toothpaste, Toilet Soap Bar, Tooth Brushes, Shaving Cream	18%	5%
Butter, Ghee, Cheese & Dairy Spreads	12%	5%
Pre-packaged Namkeens, Bhujia & Mixtures	12%	5%
Utensils	12%	5%
Feeding Bottles, Napkins for Babies & Clinical Diapers	12%	5%
Sewing Machines & Parts	12%	5%

Uplifting Farmers & Agriculture

Items	From	To
Tractor Tyres & Parts	18%	5%
Tractors	12%	5%
Specified Bio-Pesticides, Micro-Nutrients	12%	5%
Drip Irrigation System & Sprinklers	12%	5%
Agricultural, Horticultural or Forestry Machines for Soil Preparation, Cultivation, Harvesting & Threshing	12%	5%

Relief in Healthcare Sector

Items	From	To
Individual Health & Life Insurance	18%	Nil
Thermometer	18%	5%
Medical Grade Oxygen	12%	5%
All Diagnostic Kits & Reagents	12%	5%
Glucometer & Test Strips	12%	5%
Corrective Spectacles	12%	5%

Automobiles made affordable

Items	From	To
Petrol & Petrol Hybrid, LPG, CNG Cars (not exceeding - 1200 cc & 4000mm)	28%	18%
Diesel & Diesel Hybrid Cars (not exceeding - 1500 cc & 4000mm)	28%	18%
3 Wheeled Vehicles	28%	18%
Motor Cycles (350 cc & below)	28%	18%
Motor Vehicles for transport of goods	28%	18%

Affordable Education

Items	From	To
Maps, Charts & Globes	12%	Nil
Pencils, Sharpeners, Crayons & Pastels	12%	Nil
Exercise Books & Notebooks	12%	Nil
Eraser	5%	Nil

Save on Electronic Appliances

Items	From	To
Air Conditioners	28%	18%
Television (above 32") (including LED & LCD TVs)	28%	18%
Monitors & Projectors	28%	18%
Dish Washing Machines	28%	18%

What are the potential benefits GST 2.0 reforms?

- **Virtuous cycle** - The Next-Generation GST reforms are designed not just to reduce tax rates, but to create a virtuous cycle of growth.
- **Lower Prices, Higher Demand** - Cheaper goods and services increase household savings and stimulate consumption.
- **Support for MSMEs** - Reduced rates on inputs like cement, auto parts, and handicrafts lower costs and make small businesses more competitive.
- **Disputes Reduction** - A two-rate structure means fewer disputes, quicker decisions, and simpler compliance.

- **Wider Tax Net** - Simpler rates encourage compliance, expanding the tax base and improving revenues.
- **Support for Manufacturing** - Correcting inverted duty structures boosts domestic value addition & exports.
- **Economic Momentum** - Lower costs leads to higher demand which creates larger tax base and stronger revenues leading to sustainable growth.
- **Social Protection** - Exemption of GST on insurance and essential medicines strengthens household security and access to healthcare.

What are the challenges in implementing GST 2.0?

- **Effects on poor and middle class** - Two-thirds of the total GST, i.e. 64%, comes from the pockets of the poor and the middle class, but only 3% GST is collected from billionaires.
- **Impact on Center-State Relations** - A key demand of the states, made in the true spirit of cooperative federalism, the extension of compensation for another five years to fully protect their revenues, remains unaddressed.
- **Revenue Impact** - The rate rationalization is expected to lead to a short-term dip in revenue for both the central and state governments.
- The State of Kerala has said that it will lose upto Rs 8,000–10,000 crore annually under the new slabs.
- **Technical and Procedural Hurdles** – The system continues to face technical issues in GSTN portal during peak hours, the frequent changes in return formats can also be confusing for taxpayers,.
- **Sector-Specific Challenges** - For example, while the automotive and consumer durables sectors will likely see a boost from lower tax rates, other sectors like coal may face increased costs due to a higher GST rate.
- **Passing on Benefits to Consumers** - With the anti-profiteering provisions having expired, there's no legal mandate for businesses to pass on the savings from reduced tax rates directly to the end consumer.

What lies ahead?

- **Robust IT Infrastructure** - Upgrade GSTN systems to handle new rate structures and enable real-time invoice matching and simplified credit note issuance.
- **Public Awareness & Stakeholder Engagement** - Launch nationwide campaigns to educate consumers and businesses on benefits and changes.
- **Monitoring & Feedback Mechanisms** - Set up dashboards to track compliance, refund timelines, and dispute resolution.
- Use analytics to identify bottlenecks and areas needing policy tweaks.
- **Boosting Consumption & Inclusion** - Lower taxes on essentials and insurance will increase affordability, especially for middle- and lower-income households.

Conclusion:

- The adoption of a simplified GST structure and wide-ranging rate reductions marks a new chapter in India's tax journey.
- By focusing on affordability for citizens, competitiveness for businesses, and transparency in compliance, these reforms make GST not just a tax system, but a catalyst for inclusive prosperity and economic transformation.

1.2 Agri-Food System of India – Problems and Prospects

As India embarks on its transformative journey towards becoming a developed nation by 2047, no challenge is more fundamental than reimagining how we produce, process, trade, and consume food.

What are agri-food systems?

- **Agri-food systems** – It is a complex network encompassing all activities from agricultural production (crops, livestock, fisheries, forestry) to consumption and disposal, including storage, processing, transportation, distribution, and marketing.
- **Components** – The components of agrifood systems are production, processing, distribution, consumption, disposal/reusing.

- **Global economic value** – The global agrifood system has significant direct economic value from agricultural output, which was approximately \$4.8 trillion in 2024-2025.
- Beyond this, the system's reach extends much further, encompassing storage, processing, transportation, and retail, making it a foundational economic sector.
- **Hidden costs** – The value is complicated by \$10-\$12 trillion in annual hidden costs, mainly from unhealthy diets leading to diseases, that are not accounted for in traditional economic analyses.

What are the scenarios in India?

- **Total value** – The Indian food processing market is anticipated to reach \$535 billion by 2025.
- The gross value of output from agriculture and allied sectors was ₹29.49 lakh crore in 2023-24, with continued growth anticipated.
- **Hidden costs** – A \$1.3 trillion hidden cost associated with these systems, driven largely by unhealthy diets.
- **Total production of agro – foods**
 - **Food grains** – 354 million tonnes
 - **Horticulture** – 367 million tonnes
 - **Milk production** – 239.30 million tonnes
- **Exports** – \$51.91 billion in exports
- **Challenges** – Significant nutritional deficiencies persist particularly among children under 5 years and women of reproductive age.
- This paradox of being food secure while remaining nutritionally vulnerable illustrates why incremental reforms are insufficient.



What are the legacy of green revolution?

- **Focus on rice and wheat** – For over five decades, India's agricultural policy has been optimised for maximum yields and price stabilisation through public procurement of rice and wheat.
- **Associated challenges** – While achieving food security, this approach created today's challenges
 - Soil degradation in one-third of agricultural land,
 - Water stress in more than half the country's districts,
 - Critically low soil organic carbon levels, and increasing market risks for farmers.
- Climate change further exacerbates these challenges.
- Despite surplus production, nutritional deficiencies persist across all income groups.
- **Government initiatives** – Schemes such as the
 - Pradhan Mantri Krishi Sinchayee Yojana (**PMKSY**)
 - Pradhan Mantri Dhan-Dhanya Krishi Yojana (**PMDDKY**)
 - National Mission on Natural Farming (**NMNF**)
- These policies, are in the right direction and intend to optimise resource use and prioritise livelihoods and sustainable agriculture, however, there is a long way to go

Why there is a need for agri-food system framework?

- **Increased non-farm employments** – The average non-farm sector income is more than twice that of farming, high yield gaps, and a food surplus in most commodities.
- India needs a complete transformation from production-focused agriculture to comprehensive agrifood systems.

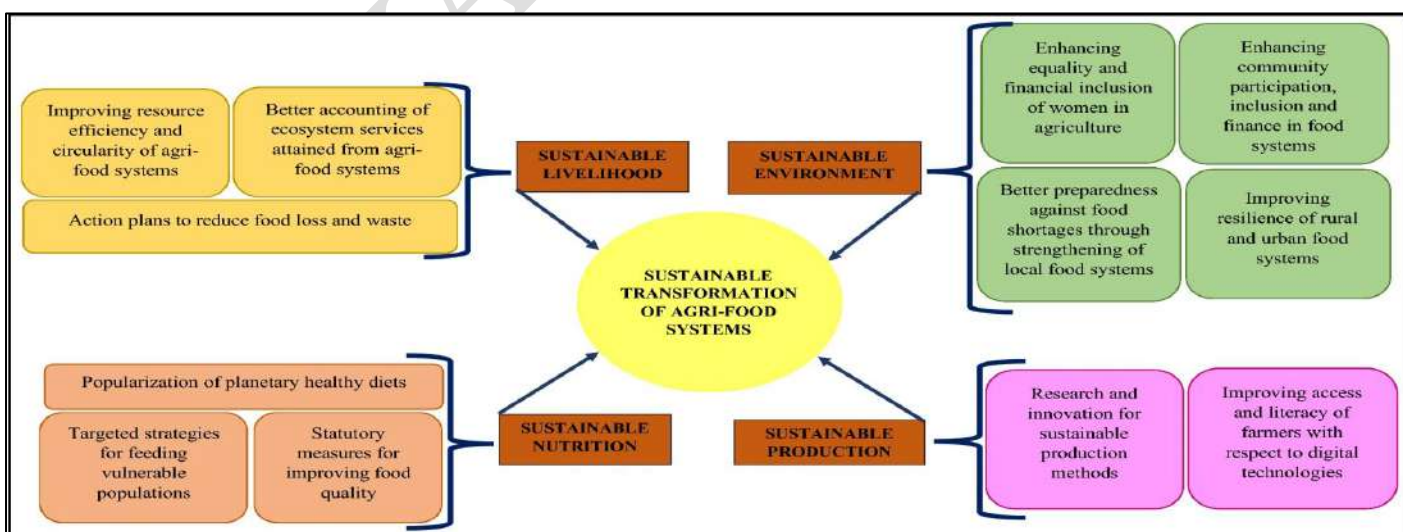
- **Offers a shift** – The agrifood systems framework offers a paradigm shift away from single-metric optimisation.
- **Provides optimization** – Instead of maximising only yields, it seeks to optimise simultaneously across three critical dimensions:
 - Economic viability for farmers,
 - Human health outcomes, and
 - Environmental sustainability.
- **Recognises our food systems** – This approach recognises that our food system encompasses the entire journey from farm to plate, not just production.

What are the triple challenge of 2047?

- **Triple challenges**
 - Guaranteeing food security – By 2047, India must feed 1.6 billion people
 - Ensuring adequate nutrition, not just calories.
 - Simultaneously reversing decades of environmental degradation and build resilience against escalating climate risks.
- **Restructuring** – This triple challenge demands fundamental restructuring.
 - **Economic optimization** – It means creating market-driven production systems that respond to consumer demand for diverse, nutritious, and sustainable foods rather than just staple grains.
 - **Health optimization** – It involves transitioning from “eating enough” to “eating well”—promoting nutritious commodities like millets, legumes, fruits, vegetables, fish, and dairy that provide essential nutrients.
 - **Environmental optimization** – It requires regenerative practices that improve soil health, conserve water, and reduce greenhouse gas emissions while maintaining productivity.

What can be the pillars of transformation?

- **Research Reorientation** – Programmes prioritising nutritional quality and regenerative systems alongside yield, and resource use efficiency
- Research optimising resource use, across entire watersheds and landscapes, and inclusive value chain innovations promoting inclusion and circularity within food systems.
- The future lies in research that treats farms as part of larger ecosystems, rather than isolated production units.
- **Digital innovations** – *Artificial Intelligence (AI), Machine Learning (ML), the Internet of Things (IoT)*, and real-time integrated data dashboards can accelerate research outcomes and power efficient decision-making.



- **Policy Repurposing** – Agriculture subsidies should be repurposed from unsustainable practices toward sustainable practices, climate-resilient infrastructure, and market-driven incentives.
- Policy reforms are needed to attract increased private investments into agricultural supply chains.
- True cost accounting for heavily subsidised energy and water resources will help correct distorted production decisions.

- **Eco-labelling and green credit systems** – It can create market incentives for sustainable practices, making environmental stewardship economically attractive.
- The farmers must be compensated for the societal ecosystem services generated by agriculture.
- **Institutional Innovations** – The transformation requires new institutional arrangements that navigate complexity and foster collaboration.
- Farmer-producer organisations/companies (FPOs/FPCs) and women's SHGs (self-help groups), besides cooperatives, can become the vehicle of agricultural transformation.
- **Improving collaboration** – Aligning FPOs/FPCs with agri-tech start-ups and anchoring them to the National Agricultural Research and Extension System (NARES) could be a game-changer in nurturing innovations.
- **Encouraging entrepreneurship** – Agri-tech start-ups and agri-entrepreneurs who face inconsistent markets and high transaction costs need greater policy incentives like the Production Linked Incentive (PLI) scheme and NARES's support for domain knowledge.
- **Setting up of regional task forces** – We need district-level and state-level task forces for agri-food systems that bring together farmers, researchers, extension, policymakers, processors, retailers, and consumers to coordinate local food systems.
- **Awareness creation** – To mainstream the agri-food systems approach in planning and action, there would be a need to create sustained awareness of systems thinking and strengthen capacity across scales and ensure enabling governance.
- **Cross-sectoral Convergence** – Food system transformation requires unprecedented coordination across government departments.
- From agriculture and water resources to power, rural development, food processing, fertilisers, environment and climate change, and nutrition sectors coordination is essential.
- This convergence extends beyond government to include private sector actors, civil society organisations, and research institutions.
- The Indian Council of Agricultural Research (ICAR) could play the role of a catalyst in encouraging this cross-coordination.

What are the Implementation Imperatives?

- **Helps in policy making** – This data-driven approach enables evidence-based policymaking and helps navigate trade-offs between objectives.
- **Offers immediate benefits** – It includes reduced transportation costs, improved food freshness, and enhanced community resilience and nutrition.
- **Strengthens local food systems** – Contextualised innovations and business models can strengthen local food systems, improve nutrition, and create employment opportunities across rural areas.
- **Reduces income disparity** – It addresses the income disparity where non-farm income is 2.5 times higher than farm income.
- **Creates employment** – It can create millions of jobs across the food value chain while preserving natural resources for future generations.
- **Promotes waste to health** – This approach transforms agricultural residues into valuable resources—biofuels, compost, or other products—creating additional income streams while reducing environmental pollution.
- **Creates a cycle of sustainability** – Combined with good agricultural practices and robust food safety standards, this creates a virtuous cycle of sustainability and profitability.
- **Future prospects** – A successful agri-food systems transformation can position India as a global leader in sustainable food production while ensuring nutritional security for all citizens.

What lies ahead?

- As we work toward Viksit Bharat 2047, how we transform our food system will largely determine whether we achieve our vision of a developed, prosperous, and sustainable India.
- The choice is clear that continue with incremental changes or embrace a comprehensive transformation that our future demands.
- The time for systems thinking in agriculture is now and India's agri-food revolution awaits.

1.3 Fiscal federalism – The Evolving Dynamics

The recent GST slab rationalisation has ignited debates over fiscal autonomy, with some states raising concerns over potential revenue losses and demanding adequate safeguards.

What is fiscal federalism?

- **Fiscal federalism** – It is the financial relationship and division of fiscal powers (taxation, spending, revenue sharing) between different levels of government within a federal system, such as central and state governments.
- **Constitutional provisions** – Articles 268 to 293 of the Indian Constitution govern the distribution of financial powers between the Union and state governments.
- The Seventh Schedule of the Constitution (Article 246) delineates the tax base between the centre and states.
- **The Finance Commission** – It is under Article 280, and has been bestowed with the exclusive power to recommend the distribution of intergovernmental finance, including tax devolution and grants-in-aid.
- The erstwhile Planning Commission, with overlapping functions, also played a decisive role in revenue allocation and disbursal of grants-in-aid to states.
- **Grants-in-aids** – The Constitution provides for grants-in-aid to states from the consolidated fund (Article 275) and regulates state borrowings (Article 293).

How the centre-state fiscal relation evolved?

- **3 phases of evolution** – Former RBI Governor Duvvuri Subbarao, in his reflections on India's fiscal federalism, traced the evolution of centre-state financial relations through 3 distinct phases.
- **The first phase** – This phase is described as 'docile federalism' (1947 to early 1970s).
- It was characterised by the domination of the centre in decision-making, facilitated by the single party rule and centralised allocation of resources.
- During this formative phase, states remained heavily dependent on the centre despite their growing contributions to the national tax pool.
- **The second phase** – This phase is termed 'cooperative federalism' (1970s to mid-1990s).
- It witnessed greater state involvement in economic decision-making and development planning.
- **The third phase** – It is the ongoing phase (mid-1990s to present).
- It is described as 'combative federalism', is marked by frequent contention between the union and state governments.
- This trajectory highlights how the nature of financial relations between the centre and states has significantly changed alongside the broader reforms, moving from planned development to competitive federalism.

What are the impact of reforms on fiscal federalism?

- **Enhanced competitive federalism** – The formation of NITI Aayog in 2015 underscored a shift away from planned development towards institutional mechanisms for competitive federalism.
- The Governing Council of NITI Aayog has emerged as a deliberative platform for the political leadership in both the centre and states.
- **Increased participation of states** – The introduction of Goods and Services Tax (GST) in 2017 created a new institutional framework for greater participation of states in fiscal matters.
- **Reduced state control** – However, the GST considerably curtailed states' control over revenue generation.
- Critics argue that the GST regime has tilted the balance of fiscal authority in favour of the centre.
 - **For instance**, the weighted voting system in the GST Council, in which the central government holds one-third of the total votes, has been viewed as inconsistent with the spirit of federalism.
- Thus, the centralisation of taxation powers erodes the fiscal autonomy of states.
- **Suggestive nature of GST council** – In Union of India versus Mohit Minerals Pvt. Ltd., the Supreme Court observed that recommendations of the GST Council are only suggestive.
- It therefore reaffirmed the state autonomy in fiscal matters.

What are the issues with the recent GST slab rationalization?

- **Lesson from Covid-19** – The pandemic exposed the financial vulnerability of states that have been heavily dependent on central transfers.
- **Interruption of disbursement** – During this period, the Central government failed to disburse GST compensation, originally designed to offset revenue loss of states, citing the situation as an “Act of God”.
- This deepened the trust deficit between the centre and states.
- **Demands from the states** – Several states demanded an extension of the GST compensation period, which was set to expire in June 2022, citing financial stress caused by the pandemic.
- **Rejection from the Union government** – The GST Council had decided to continue the collection of the GST Compensation Cess until March 2026 to serve the debt incurred by the centre used for compensating state revenue shortfalls during the Covid-19 pandemic.
- But the Union government rejected this demand
- **Issues with recent rationalisation of GST** – The recent GST slab rationalisation has raised concerns among opposition-ruled states regarding the potential revenue loss.
- **Fear of decreased autonomy** - States expressed apprehension that such measures could undermine states’ fiscal autonomy unless adequately compensated by the centre.
 - **For instance**, Karnataka Revenue Minister, cautioned that without adequate compensation, states would be reduced to “glorified municipalities”.
- Eight opposition-ruled states also jointly demanded protection against future losses arising from the slab rationalisation.
- **Refutation from the union government** – Union Finance Ministry rejected these demands, clarifying that the impact of rate cuts would be equally shared between the centre and states.
- The Union government also expects that increasing consumption, spurred by lower tax rates, would offset the revenue shortfall in the long run.

What are the issues between centre and states?

- **Issues with cess and surcharges** – Many have voiced concerns about the Union government’s reliance on cesses and surcharges, which fall outside the divisible tax pool.
- **Decrease in divisible tax pool** – The divisible tax pool had shrunk from 88.6% in 2011-12 to 78.9% in 2021-22.
- **Issues over centrally sponsored schemes** – States such as Tamil Nadu and Kerala have also raised concern over the rigid conditions attached to Centrally Sponsored Schemes (CSS).
- They are required to contribute a larger share to CSS despite having little role in their formulation.
- This has accentuated a horizontal disparity among states.
- **Delay in disbursement** – In addition, Karnataka, Kerala and Tamil Nadu have been fighting with the centre over delays in the disbursal of essential aid in response to natural disasters.
- **Concerns over grant-in-aid** – Fiscally stronger states have also been challenging the principles governing the grants-in-aid, which they call discriminatory.
- **Limit on borrowing power of states** – Kerala has moved the Supreme Court to challenge the centre’s imposition of a Net Borrowing Ceiling (NBC) that restricts states from even open market borrowing.
- States have argued that invoking Article 293, the Fiscal Responsibility and Budget Management Act, 2003, to curtail their borrowing amounts to encroachment on their fiscal autonomy.
- **Controversy over finance commission** – The working of the Finance Commission, a constitutional body under Article 280, has long been a source of contention between the Union and state governments.
- For instance, some states, particularly southern states, questioned the terms of reference of the 15th Finance Commission for its adoption of 2011 census data as the basis of devolution.
- They argued that this approach would penalise states that had performed better in demographic and developmental indicators.
- **Demand for increase in share** – Some states are demanding that the 16th Finance Commission increase their share to 50 per cent from the current 41 per cent.

Indian states are often regarded as enjoying more autonomy in terms of spending power compared to their counterparts in many federal countries like Brazil and Indonesia.

What can be done to build to strengthen the fiscal federalism?

- **Devising a proper mechanism** – A proper mechanism for coordination between the Finance Commission and GST Council is essential, as opined by Y V Reddy, chairman of the Fourteenth Finance Commission.
- **Reducing the political issues** – The existing mechanisms for state consultation, like the NITI Aayog Governing Council and the GST Council, should not be reduced to arenas of political battle.
- **Building consensus** – Meaningful state participation requires not only institutional reform but also genuine political will.
- Fiscal reforms that have implications for the federal balance must be built on consensus between the Union and state governments.
- **Reducing the advantage of union government** – Measures like weighted voting, risks undermines the federal nature of institutions and deepens the trust deficit.
- Building trust needs to underpin both the design and implementation of fiscal reforms.
- **Ensuring timely compensation** – The compensation to states for revenue losses incurred by states during the first five years of implementation of GST was a strong gesture of trust building while introducing structural reforms.
- States' demand for compensation needs serious and fair consideration by the Finance Commission in line with the constitutional mandate to protect fiscal federalism.
- **Implementing tailored approach** – The one-size-fits all approach may not help address the problem of horizontal imbalance.
 - **For instance**, small northeastern states are demanding a 25% increase in tax devolution, considering their unique challenges.
 - The Himalayan states like Uttarakhand seek compensation for ecological service costs and more weightage to forest cover in the tax devolution formula in line with a spirit of 'environmental federalism'.
- The standardised solutions to states' fiscal problems are neither desirable nor feasible.
- The underlying spirit of future reforms needs to be fiscal federalism grounded in consensus-driven formulation and trust-driven implementation.

G.S PAPER I

2. HISTORY

2.1 Harappan Script – The Unsolved Mystery

Scholars from around the world and across disciplines will be gathering in New Delhi this week to present their work on the Harappan script at a conference hosted by the Union Ministry of Culture.

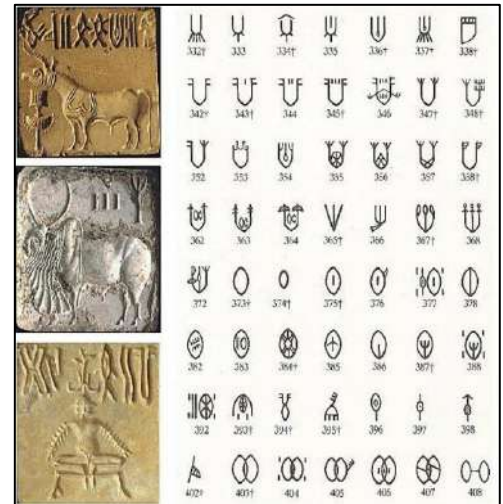
What are Harappan scripts?

- **Scripts** – It is a writing system that uses a defined set of symbols or characters, and a set of rules (orthography) to represent a language.
- **Harappan script** – It is also known as the Indus script, is a pictographic script of the Indus Valley Civilization.
- **Characteristics** – It is characterized by about 400 symbols; most found on small square seals.
- The inscriptions are typically very short, found mostly on seals, but also on pottery, tablets, and other artifacts.
- **Style of writing** – The common direction of writing is thought to be right-to-left.
- Some longer inscriptions sometimes used the boustrophedon style, where lines alternate direction, similar to how an ox plows a field.
- **Undeciphered script** - The script, and the underlying language that the Harappans spoke, are mysteries that endure more than a century.

Sir John Marshall announced the discovery of the Bronze Age culture that thrived in the Indus Valley between c. 3300 and 1300 BCE.

What are the different interpretations?

- **Claim of Sanskrit** – Historians close to the Sangh have long claimed that the underlying language represented by the Harappan script is Sanskrit.
 - Archaeologist S R Rao postulated in 1982 that the script contained 62 signs and linked the Indus script to Sanskrit and the Vedic civilisation.
- **Claim of Dravidian origin** – Others say that it is a form of proto-Dravidian.
- **Argument for tamil links** – Finnish Indologist Asko Parpola, in 1994 identified 425 distinct signs in the script which he had for decades linked to old Tamil.
- The script used a concept called *rebus* and the signs were pictures which stood for complete words by themselves.



***Rebus** is a concept in which pictograms represented the word for the object or action depicted, or any other word with a similar sound, irrespective of meaning. For instance, the fish sign, found in abundance on Indus seals, is unlikely to have meant actual fish, Parpola said.*

- Rather, he connected it to 'star' - A homophone (words with the same pronunciation but different meaning) of the Dravidian word for fish (min or meen).
- Parpola claimed to have found the Old Tamil names of all planets in the Indus script.
- His theory has found support from both Western and Indian scholars, including Iravatham Mahadevan, the leading researcher on the Indus script in the country.
 - **Support for the claim** – The existence of Brahui, an extant Dravidian language spoken by a small ethnic group in Balochistan in present-day Pakistan, appears to lend further weight to the Dravidian hypothesis.
- Some other scholars link the harappan script to Ho and Santali.
- Driving such claims, often made with scant evidence, is a bid to establish the antiquity of one's people and culture, and the political capital that such antiquity provides.
- **Not a script at all** – The more recent scholarship has questioned whether the Indus script represented any language at all.
- This hypothesis was based mainly on the fact that all the Indus inscriptions are very short with only about five characters on average with the longest having only 26 characters.
- This claim was made in a 2004 paper by historian Steve Farmer, computer linguist Richard Sproat, and Indologist Michael Witzel who said that the "script" constituted non-linguistic symbols of political and religious significance.

What are the challenges in deciphering the script?

- **Problems to be solved** – To decipher a script, the following subproblems must be solved in order
 - Deciding if a set of symbols actually represent a writing system.
 - Devising appropriate procedures to isolate or segment the stream of symbols into a sequence of single signs.
 - Reducing the set of signs to the minimal set for the writing system forming (its alphabet, syllabary, or inventory of signs) by identifying Allographs (the same sign written in a variant form, for example a printed 'a' and a cursive 'a').
 - Assigning to each symbol their specified value, whether phonetic or otherwise
- **3 unsolved issues** – In the case of the Indus script, many of these problems remain unsolved due to three main reasons.
- **No multilingual inscriptions** – There is evidence that the Indus Valley Civilisation had robust trade links with the contemporaneous Mesopotamian Civilisation.

- The cuneiform script of Mesopotamians was deciphered in the early 19th century, but no multilingual inscriptions have been discovered so far.
- **Language not known** – Undeciphered scripts/languages fall in three basic categories,
 - An unknown script writing a known language
 - A known script writing an unknown language
 - An unknown script writing an unknown language.
- Of these, the third category, in which the Indus script falls, is the most challenging to decipher as they provide scholars with the least number of points of reference to go by.
- **Not much is known about civilisation** – Although some 3,500 seals have been identified till date, given that each seal has on average only five characters inscribed, scholars simply do not have enough material to analyse.
- In fact, compared to contemporaneous ancient civilisations in Mesopotamia and Egypt, much less is known in general about the Harappan civilisation.

What lies ahead?

- Even today dhobis in India have their own signs which are useful for them but they are not what you would call language.
- Most prehistoric societies did not write the kind of things we write today.
- Commercial information was perhaps the first thing that any society would record in writing.

INDIAN SOCIETY

2.2 Marriages in India – Legal Interventions and Reforms

Over the years, there have been significant changes in marriage and maintenance laws.

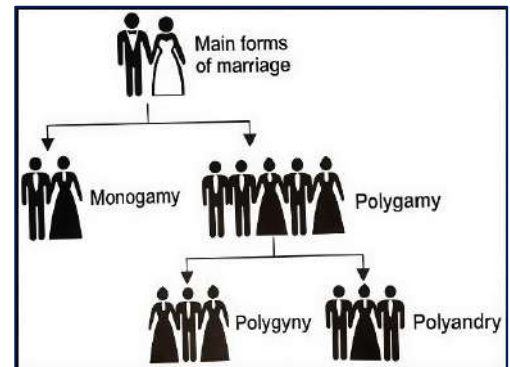
What is marriage?

- **Marriage** – It is a legally recognized, socially sanctioned union, typically between a man and a woman, forming a partnership with rights, obligations, and the purpose of creating a family and continuing lineage.
- **Types** – The two main forms of marriages are
 - **Monogamy**
 - **Polygamy**
- **Monogamy** – One man marries one woman at a time, and it is most common globally.
- **Polygamy** – Marriage with two or more spouses simultaneously.
- This includes two types
 - **Polygyny**
 - **Polyandry**
- **Polygyny** – It is a form of polygamy where one man is married to multiple women.
- This includes two forms
 - **Sororal Polygyny** – Man marries sisters simultaneously.
 - **Non-sororal Polygyny** – Man marries unrelated women for social, economic, or political reasons.
- **Polyandry** – It is the form where one woman is married to multiple men at the same time
- This includes two types
 - **Fraternal Polyandry** – Woman marries brothers, seen in Khas tribes of Uttaranchal.
 - **Non-fraternal Polyandry** – Woman marries unrelated men, practiced by the Nair caste in Kerala.
- **Other Forms** – There are other forms of Marriage also
 - **Endogamous** – Restricts marriage within one's own group.

- **Exogamous** – Requires marriage outside one's own group.
- **Inter-caste Marriage** – Union of individuals from different castes.
- **Child Marriage** – Marrying children before puberty

How the monogamous family emerged?

- **Prior to emergence of monogamy** – Before the monogamous family, there existed a state of unregulated sexual relations.
- **Influence of economic conditions** – In *The Origin of the Family, Private Property and the State* (1884), Friedrich Engels argues that changes in material conditions shape the organisation of family relations.
- Engels looks at the emergence of the monogamous family as an economic institution designed to ensure the inheritance of private property.
- **Indian context of sambandham** – Anthropologist Kathleen Gough's extensive work on the Nayars of Kerala shows that they followed a matrilineal kinship system in which property and lineage were traced through women.
- Their marital practices were not monogamous but based on sambandham.
- Children belonged to the mother's matrilineal joint family, known as the *taravad*, and the maternal uncles were the key male authority figures.
- A woman was also allowed to have more than one husband.
- However, Gough saw the practice of *sambandham* as a form of legitimate marriage.
- **British intervention** – But colonial interventions and subsequently the Hindu Marriage Act, 1955 saw such practices as immoral and illegal.
- **Cases of polyandry in India** – It has also existed in several parts of India, such as among *the Hatti community* in the Sirmaur district in Himachal Pradesh and the Jaunsar Bawar region in Uttarakhand.
- The members of the Hatti, community see themselves as descendants of Pandavas from the Mahabharata.
- They practice *jodidara* – a form of polyandry to prevent land fragmentation.
 - **For instance**, the recent marriage of Sunita Chauhan to two brothers, Kapil Negi and Pradeep Negi, created quite an internet storm, also reigniting debates about the legality of polyandry in India.
- The *Hindu Marriage Act, 1955* – Prohibits polyandry.
- But it is protected by the Himachal Pradesh High Court as part of customary law for the Hattis, who are a Scheduled tribe (ST) community.
- Such cases highlight the tensions between customary and constitutional laws, with opposition from women's organisations.
- **Cases in other countries** – In neighbouring Sri Lanka, polyandry in Kandyan areas was tied to landholding patterns.
- Anthropologist Edmund Leach has shown that the practice prevented the fragmentation of agricultural land among brothers by maintaining property jointly.
- **British intervention** – The British colonial administration discouraged and delegitimised polyandry amongst the Kandyan.
- Through such interventions, material and legal conditions promoted monogamy as the preferred mode of marriage.



Sambandham is a form of visiting relationship with the husband without involving cohabitation.

What are the issues between Cultural norms and gendered power structures?

- **Social pressure** – In contemporary times, matrilineal societies like the Khasis in Meghalaya are under social pressure.
- Groups like Syngkhong Rympei Thymmai (or 'Home Hearth Restructured') are advocating for the abolition of matriliney, arguing that it 'emasculates' men.
- **Existence of patriarchal control** – Although matriliney gives women more visibility and property rights, patriarchal control is still exercised in key areas like decision-making and leadership.

- **Raised conflict** – This tension between cultural norms and gendered power structures draws attention to a broader challenge in reforming family institutions.
- **Regulation of practices** – It is found that regulating practices like dowry and domestic violence are relatively easier than making the institution of marriage equitable.
- **The concept of public and private** – Both globally and in India, feminist movements have pressed for legal interventions to bridge the gap between the public and the private.
- The slogan, *personal is political*, captures this shift in feminist discourse.
- The issues like housework, domestic violence, and dowry that have been historically relegated to '*family matters*' are incorporated within the legal framework.
 - **For instance**, the Dowry Prohibition Act, 1961 and its subsequent amendments in 1976 and 1984 redefined dowry from a personal matter to a punishable crime.
- The Protection of Women from Domestic Violence Act (PWDVA) was enacted in 2005 to protect women of all communities from domestic abuse.

What are the laws that governs marriages in India?

DIFFERENT FAITHS, DIFFERENT LAWS	
The laws that govern marriage, divorce, inheritance and adoption among various religious communities	
MARRIAGE AND DIVORCE	
RELIGION	GOVERNING LAW
HINDU, BUDDHIST AND JAIN	Hindu Marriage Act (HMA), 1955
MUSLIM	Muslim Personal (Shariat) Application Act, 1937; Dissolution of Muslim Marriages Act, 1939, and the Muslim Women (Protection of Rights on Marriage) Act, 2019
CHRISTIAN	Christian Marriage Act, 1872; Indian Divorce Act, 1869
SIKH	Anand Marriage (Amendment) Act, 2012; nothing on divorce
PARSI	Parsi Marriage and Divorce Act, 1936
INHERITANCE AND ADOPTION	
RELIGION	GOVERNING LAW
HINDU, BUDDHIST AND JAIN	Hindu Succession Act, 1956, and the Hindu Minority and Guardianship Act, 1956
MUSLIM	Muslim Personal Law (Shariat) Application Act, 1937
CHRISTIAN	Indian Succession Act, 1925
SIKH	Hindu Succession Act, 1956
PARSI	Indian Succession Act, 1925



What are the measures needed to bring reforms in marriage?

- **Clear judicial interpretation** – A more consistent and standardised judicial interpretation of existing grounds for divorce like cruelty, desertion, and adultery may help reduce the influence of moralistic or subjective biases.
- **Gender equal provisions** – Making child custody laws more gender-equal would help encourage co-parenting and healthier models of separation.
- **Reforms in divorce** – The divorce process itself needs to be streamlined and made more accessible.
 - **For instance**, in cases of abuse, the mandatory mediation or “cooling off” period may be reconsidered.
- At the same time, it is important to recognise that while the law is a significant site for bringing reform, it is not sufficient on its own.
- **Need for social interventions** – Marriage as an institution reflects broader social inequality, and therefore, meaningful reforms require social interventions alongside legal reforms.
- It is important to recognise that while the law is a significant site for bringing reform, it is not sufficient on its own and needs to be complemented by social interventions.
 - **For example**, West Bengal has the highest proportion of females (6.3%) getting married before the age of 18 years followed by Jharkhand (4.6%).

- Both significantly above the national level of 2.1%, according to the latest statistical report of the Sample Registration System (SRS) published this month.
- It must be noted here that women's rights activists have seen law as a significant site for seeking social reform in issues related to gender and marriage to address the gender parity gap.
- There are other social identities, such as caste, community, religion, etc. that have been seen as impediments to gender equity further complicating efforts to reform marriage and gender norms through legal means.

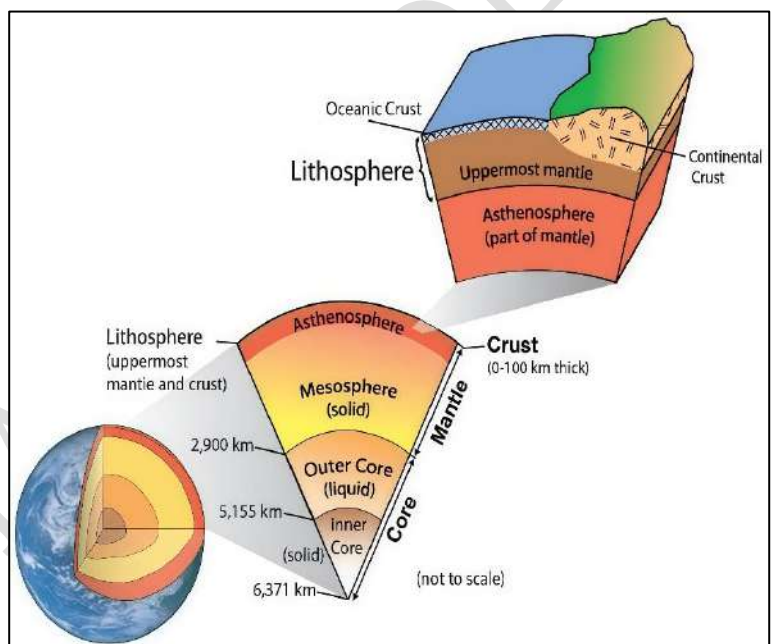
3. GEOGRAPHY

3.1 Earth's Shifting Forces and Natural Disasters

Apart from anthropogenic factors which cause disasters, it is also important to understand the role of earth's shifting forces.

What consists of Earth's interior?

- **The crust (5–70 km thick)** – The uppermost layer where all forms of life and relief features are located.
- **The mantle (extends to ~2,900 km depth)** – It is divided into the upper mantle (~700 km) and lower mantle (700-2,900 km).
- The upper mantle has been further subdivided into
 - lithosphere – Rigid, up to ~100 km
 - Asthenosphere - Below lithosphere up to ~700 km depth.
 - The asthenosphere is a ductile, semi-molten zone where convection currents move plates.
- **The core (~2,900-6,371 km)** – It extends to the Earth's centre and is composed of iron and nickel.



How plates move?

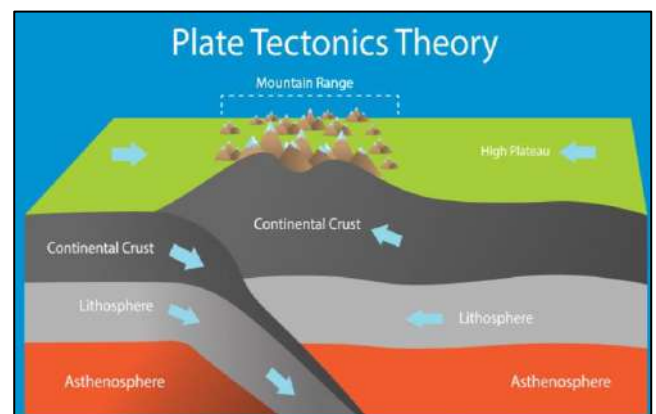
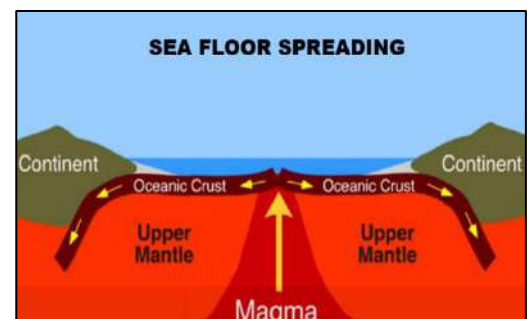
- **Rigid plates** – The Earth's surface is a mosaic of tectonic plates of various sizes.
- At present, there are seven major plates and a number of minor ones, all moving independently (floating) over a softer asthenosphere.
- **Asthenosphere** – The rigid masses (plates) are in continuous motion as they are floating over a semi-liquid surface below, known as the asthenosphere.
- These interactions lead to the formation of relief features such as mountains, plateaus, plains, etc.
- At the same time, they also cause destruction through tsunamis, volcanoes or earthquakes, as recently witnessed in Afghanistan.
- **Convergent boundaries** – At Convergent boundaries, crust is destroyed as denser plate sinks under less denser plate.
- This process is called subduction.
- Oceanic Plates are denser compared to continental plates and can form the deepest Earth features called trenches.
- **Divergent boundaries** – At divergent boundaries, tectonic plates pull away from each other, giving rise to new crust.
- **Transform boundaries** – They are formed when two plates move horizontally and slide past one another.

What are forces shaping the Earth's surface?

- **Forces** – The Earth's surface and its relief features are the result of the forces working on lithospheric plates.
- **Two types** – Based on their origin, these forces are known as endogenetic (internal) or exogenetic (external) forces.
- **Endogenetic forces** – They are constructive, creating relief features by altering surface shape and size.
- Based on the intensity, endogenetic forces could be sudden or diastrophic.
- Sudden forces cause immediate effects such as seismic activities, tsunamis and volcanic eruptions, creating faults, rift valleys, volcanic mountains, etc.
- **Exogenetic forces** – These are destructive, continuously breaking down relief features through weathering, erosion, mass wasting, and deposition.
- Notably, there are theories that help understand these tectonic movements and forces causing changes to the Earth's surface.

What are the different theories of evolution of earth?

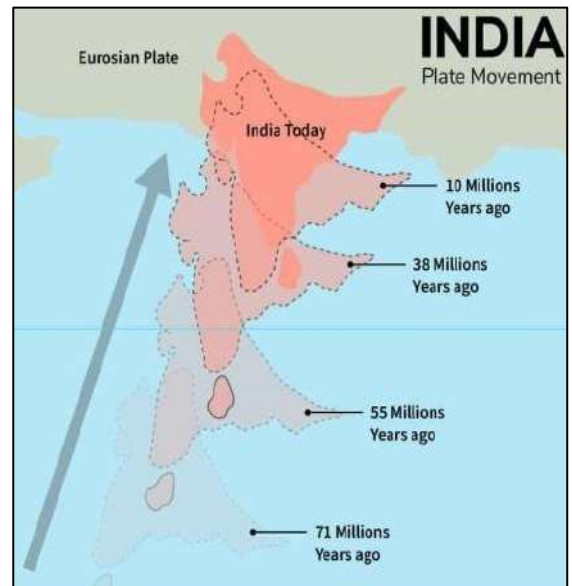
- **Continental drift theory** – In 1912, German Meteorologist Alfred Wegener proposed the theory of 'continental drift'.
- It revealed that the position of these continents is not stationary and continuously changing with varied rates over millions of years.
- This change is driven by forces like pole-fleeing force and the tidal force.
- While continental drifting was widely accepted, critics found these forces insufficient to move massive landmasses.
- **Role of convection currents** – In the 1930s, Arthur Holmes suggested that convection currents are operating in the entire mantle due to thermal differences of radioactive elements, causing continental drift.
- It may be noted here that during World War II, ocean exploration also revealed complex seafloor relief features.
- **Sea floor spreading** – In the 1960s, Harry Hess, a US Navy officer during the war, gave the hypothesis of 'sea-floor spreading'.
- Based on detailed mapping of the ocean floor and studies of paleomagnetic properties of rocks on either side of mid-oceanic ridges.
- Hess showed that new crust is formed at ridges and spreads outward.
- **Plate tectonics theory** – In 1967, Dan P. McKenzie, Robert L. Parker, and W. Jason Morgan independently integrated all the available information at that time and came up with the concept called 'plate tectonics'.
- It efficiently explains the changes occurring on the Earth surface at present or that occurred in the past.



What was the supercontinent and its breaking?

- The Earth formed 4.6 billion years ago and has been continuously changing ever since.
- **Pangea** – Around 300-200 million years ago (mya), there was a supercontinent called Pangea.
- **Panthalassa** – The Pangea was surrounded by a mega-ocean known as Panthalassa.
- **Breaking of Pangea** – Later, due to plate movements, Pangea broke into two parts
 - Laurasia – Present North America, Europe and Asia.
 - Gondwanaland – Present South America, Africa, Peninsular India, Australia and Antarctica.

- **Tethys Sea** – The space between these two landmasses was filled with water, which was named the Tethys Sea.
- **Cretaceous period** – During the cretaceous period (145-66 mya), Peninsular India, Madagascar, Australia and Antarctica were broken and drifted away from Gondwanaland.
- South America and Africa were separated during the middle cretaceous period and the southern part of the present Atlantic Ocean formed.
- **Late cretaceous period** – The North Atlantic Ocean was formed with the separation and opposite movement of the North American continent from Eurasia and Greenland.
- **Movement of Indian plate** – The present Indian plate consists of Peninsular India, which was earlier part of the Australian continent.
- It started moving northward around 71 million years ago, collided with the Eurasian plate, and created a continent-continent convergent boundary.
- Earlier, these two plates were separated by the Tethys Sea.
- **Origin of Himalayas and Indian Ocean** – The collision gave rise to the great Himalayan mountain ranges around 40 million years ago, and to the Indian Ocean.



Why there is a need to understand disaster preparedness with earth's natural process?

- **Dynamic nature of earth** – Evidence of Paleomagnetism from sea-floor spreading shows that oceans and continents have never been stationary.
- **Atlantic Ocean** – It has divergent boundaries between the North American and Eurasian plates in the north, and between the South American and African plates in the south.
- The ocean is expanding (~2.5 cm/yr), increasing the distance of the Americas from Europe and Africa, while new oceanic crust is also continuously being formed.
- **Pacific Ocean** – Eastern and western coastal areas of the Pacific Ocean have active convergent boundaries and often witness active volcanic activities thus called the Pacific Ring of Fire.
- Due to this convergence, oceanic plates are subducting and the Pacific basin is continuously shrinking.
- **Rise of Himalayas** – The Himalayas continue to rise as the Indian plate moves northward at approximately 5 cm/yr.
- This also means that the region is tectonically active and poses seismic risks to the region.
- It threatens infrastructure and lives, particularly in the Himalayan belt, northeastern states, and densely populated Indo-Gangetic plains, as seen during the 2015 Nepal earthquake and more recent seismic events in Afghanistan.
- Hence, balancing disaster preparedness with resource utilisation should remain a national priority.

3.2 Single-Thread and Multi-Thread River System

Recently, the geographers at the University of California Santa Barbara (UCSB) have reported in a paper published in Science that they have solved the mystery of river splits.

What was the research methodology?

- **Use of satellite** – To understand why some rivers flow in a single channel while others split into many threads, the researchers turned to satellites.
- They studied 36 years of global Landsat images, covering the period from 1985 to 2021.
- **Rivers studied** – From a worldwide survey of nearly 400 river sections, they chose 84 that were wide enough and moved at a speed suitable for their analysis.
- These included both single-thread and multithread rivers across different climates, slopes, and water flows.
- **Particle image velocimetry** – It is a computer technique called, which tracked small changes in images from year to year.

- This helped scientists measure how much a riverbank eroded and how much material accreted on the opposite side.
- **Pictures to maps** – They converted the satellite pictures into maps showing where land was dry and where it was covered by water.
- **Comparison** – By comparing thousands of cross-sections of the rivers over time, they generated millions of small vectors that recorded the directions and speeds of erosion and accretion.
- **Combining the data** – They combined all this data more than 4 lakh measurements of erosion versus accretion to test whether the two processes balanced out.
- This allowed them to discover the patterns that caused single or multithread rivers.
- **Result of the study** – They discovered the physical mechanism that causes there to be two types of rivers.

What are the two types of rivers?

- **Two types** – The rivers are classified into
 - Single-thread
 - Multi-thread
- **Single-thread rivers** – They are characterised by equilibrium between bank erosion and bar accretion.
- Material lost from one bank is balanced by the material deposited on the other, maintaining a stable width.
- **Multi-threaded rivers** – They consistently exhibit higher rates of erosion relative to the deposition on the opposite banks.
- This leads to the channel widening and eventually splitting. This imbalance, per the work, is the driving force behind multithreaded rivers.
- **Main factor** – It is, erosion is what drives the phenomenon of flow splitting in rivers.



Erosion is the geological process where Earth's surface materials, like soil and rock, are worn away and transported by natural forces such as water, wind, and ice.

What are the relevance of the study?

- **Features** – The two main types of rivers, single-thread and multi-thread, also feature different flood and erosion risks, ecosystem services, and water resources.
- **Disaster management** – These hazards and features are becoming more relevant as people and governments cope with more frequent and more intense water weather events.
- **Research** – The physical mechanism that dictates single versus multi-threading has been becoming a more important subject of research.
 - Previous research mostly examined where different types of rivers could be found.
 - Now researchers also focused on how these rivers changed over time.
- There is growing recognition that many rivers have historically transitioned from multi-channel to single-channel after human interference.
- **Correcting the misinterpretation** – For many decades, scientists have believed that single-channeled, meandering rivers needed vegetated banks to form and that plants and meandering rivers coevolved.
- Researchers reported that that idea is based on a misinterpretation of the sedimentary record.
- **Discovery of role of vegetation** – Vegetated River bends move in a different direction than unvegetated river bends, relative to the down-slope direction that the entire river flows.
- This renders the sedimentary deposits that unvegetated meandering rivers produce fundamentally different from the deposits of vegetated meandering rivers, even though they have the same form.
- Given a straight valley, vegetated river bends will move outwards toward the sides of the valley whereas unvegetated river bends will move down the valley, without moving sideways.

Human interference in river formation includes damming, diking, sediment mining, clearing and snagging, and agricultural development.

- Vegetation causes this difference in river movement mainly because it causes levees to form, which indirectly limits the sinuosity.
- In turn, sinuosity controls how and where bends of the river migrate.

Sinuosity is the ability to curve or bend easily and flexibly.

What are Insights for India?

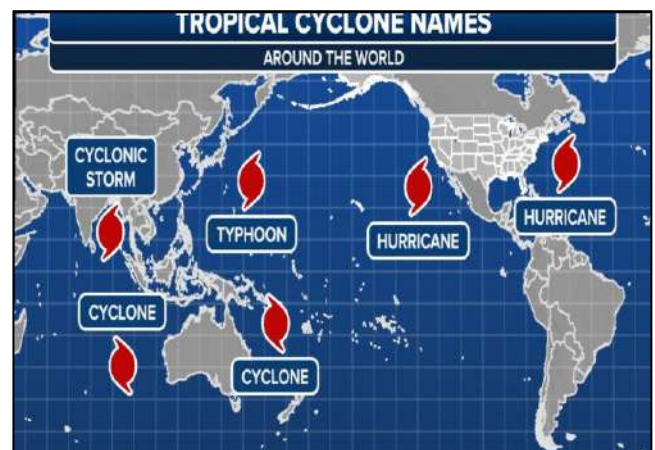
- **Rivers studied** – The researchers considered Ganga and Brahmaputra river stretches
- **Ganga** – The research considered three stretches of the Ganga, near Patna, Farakka, and Paksey (Bangladesh).
- **Brahmaputra** – They examined stretches near Bahadurabad (Bangladesh), Pandu (India), Pasighat (India), and one further upstream in the Himalaya.
- **Findings on Brahmaputra** – The Brahmaputra is a classical braided river.
- The team also found that the Brahmaputra's threads eroded their banks fast.
- The shape of their channels is fundamentally unstable.
- The subchannels are prone to widen and split over years and decades, because the flow laterally erodes riverbanks faster than it deposits along them.
- The find went against the conventional wisdom that erosion and deposition are in equilibrium.
- It is very surprising and intriguing that multi-thread rivers laterally erode faster than they deposit.
- The study has unravelled a new sort of way that rivers can maintain their form, which is fuelled not by equilibrium but instead cycles of instability as sub-channels repeatedly widen and split over time.
- This fundamental instability is an important consideration for river management.
- **Reducing flood risk** – Along multi-thread rivers like the Ganga and the Brahmaputra, the rating curves used to measure river flows must be updated more frequently in order as the channels change their shape.
- The problem in India is that in many parts, braided river sections have been artificially confined to single channels using built embankments.
- Multi-channel rivers require significantly less space and time to return to their natural state, leading to lower restoration costs.
- **Stressed on Nature-based solutions** – This includes measures that can significantly lower the risk of flooding in adjacent areas.
 - Removing artificial embankments
 - Restoring the river's connection with its natural floodplains
 - Creating vegetated buffer zones along riverbanks
 - Reactivating abandoned channels
 - Building wetlands in braided sections

3.3 Intensity of Super Typhoon Ragasa

Super Typhoon Ragasa is recorded as intense tropical cyclone in 2025. At its peak, Ragasa was moving with the maximum sustained winds of 280 kmph effecting Hong Kong region.

What is a Typhoon?

- **Typhoon** – It is the name for a powerful tropical cyclone that forms in the western North Pacific Ocean.
- While a typhoon and the terms for the same phenomenon in other parts of the world, their names vary based on geographical location.
- **Different Names for Tropical Cyclones by Region**
- **Hurricane** – This term is used for tropical cyclones in the North Atlantic Ocean, the Gulf of Mexico, the Caribbean Sea, and the eastern and central North Pacific Ocean.



- **Typhoon**– This name applies to tropical cyclones in the western North Pacific, particularly impacting areas like Japan, the Philippines, and China.
- **Cyclone** – In the Indian Ocean (including the Bay of Bengal and Arabian Sea) and the South Pacific Ocean, these powerful storms are known simply as cyclones.
- **Severe Tropical Cyclone**– In the western South Pacific and southeast Indian Ocean, the term "severe tropical cyclone" is used.
- **Characteristics** – These rotating storms are characterized by strong winds, heavy rainfall, and a low-pressure center, drawing energy from warm ocean waters.

How are tropical cyclones formed?

- **Location of formation** – Tropical cyclones form over warm ocean waters near the equator.
- **Initial formation process** – When the warm, moist air from the ocean surface rises upward, a lower air pressure area is formed below.
- **Air movement and pressure** – Air from surrounding areas with higher air pressure rushes into this low-pressure area, eventually rising, and it becomes warm and moist.
- **Cloud and thunderstorm formation** – As warm, moist air rises, it cools down, and the water in the air forms clouds and thunderstorms.
- **Cyclone strengthening** – This whole system of clouds and winds gains strength and momentum using the ocean's heat, and the water that evaporates from its surface.
- **Cyclone types** – Tropical Depression and Tropical Storm
- The weakest tropical cyclones are called **tropical depressions**.
- If a depression intensifies such that its maximum sustained winds reach 39 miles per hour [63 kmph], the tropical cyclone becomes a **tropical storm**," as per the National Oceanic and Atmospheric Administration (NOAA).
- **Cyclone classification based on speed** – Storm systems with wind speeds of 119 kmph and above are classified as hurricanes, typhoons, or tropical cyclones.
- The category of a tropical cyclone is determined by its sustained wind speed, as measured by the **Saffir-Simpson Hurricane Wind Scale**.
- Category 5 tropical cyclones, which are the strongest, have winds of 252 kmph or higher. Ragasa is a Category 5 tropical cyclone.

CATEGORY	WINDS (MPH)	DAMAGE
1	74-95	SOME
2	96-110	EXTENSIVE
3	111-129	DEVASTATING
4	130-156	CATASTROPHIC
5	157+	CATASTROPHIC

What made Super Typhoon Ragasa so intense?

- **Wind speed** – At its peak, Ragasa was moving with the maximum sustained winds of 280 kmph.
- **Wave impact** – Strong waves crash against the waterfront in Heng Fa Chuen area as Super Typhoon Ragasa approaches in Hong Kong.
- **Strong rain** – Super Typhoon Ragasa battered Hong Kong with fierce winds and pounding rain, and headed into southern China.
- It has forced two million people to evacuate in southern China and brought a "significant storm surge".
- **Water level rise** – Waters in coastal areas rising more than 3 metres above the reference level in Hong Kong.
- **Casualties** – Ragasa left at least 14 people dead in Taiwan and at least two dead in northern Philippines.
- Super Typhoon Ragasa, the storm is the most intense tropical cyclone recorded in 2025.
- This was close to the upper limit of how intense storms can be on Earth.

What is the reason for Ragasa intense?

- **Rise in temperatures** – There is a consensus that with rising global temperatures, tropical cyclones are becoming more intense.
 - **For instance**, the journal Climate and Atmospheric Science in July 2024 showed that tropical cyclones in Southeast Asia are now forming closer to coastlines, intensifying more rapidly, and lingering longer over land.

- This could be happening due to warmer surface temperatures of the ocean.
- **Rise in intensity of typhoons** – The more heat in the ocean, the more tropical cyclones you get to remove the heat.
- It is obvious that if warming up the oceans, results in typhoons getting bigger.
- **Dissipation of heat** – A lot of warm water, giving typhoon a lot of energy.
- Its track is perfect for maximum destruction because it has not made landfall over any significant area to reduce its strength.
- **Reached upper limit** – Given the extreme intensity of Ragasa, some scientists have observed that the storm almost reached the upper limit of what Earth is capable of producing.

*Average temperatures in the Pacific Ocean have risen by about 1.5 degrees Celsius in the past century, according to the **United Nations Environment Programme**.*

What is the impact of Ragasa typhoon?

- **The Southern China and Hong Kong** – This area have been affected by the 'dirty side' or 'right-front quadrant' of the storm.
- The 'dirty side' can bring more devastation as the forward motion of the storm is added to the background rotating circulation of the system, which is always in an anti-clockwise direction.
- **Intense wind effect** – The location at which the two movements – rotation around the eye and forward motion – combine is where the most powerful winds are found.
 - **For instance**, if a typhoon is moving at 48 kmph and has sustained winds of 161 kmph, the combination generates a wind speed of 209 kmph on the right-hand side.

A tropical cyclone has a 'clean' side and a 'dirty' side. In the northern hemisphere, the right-hand side of the storm (relative to its motion) is called the 'dirty' side, and the left-hand side is known as the 'clean' side.

4. SOCIAL ISSUES

4.1 Suicides in India – Issues and challenges

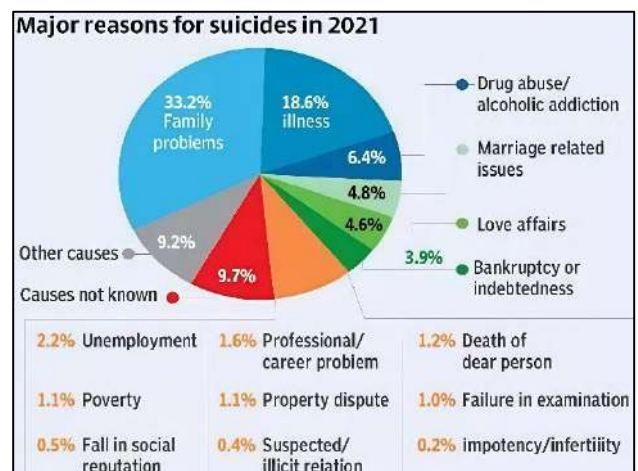
Recently, a 25-year-old an MBBS graduate from Hyderabad was saved from her attempt to suicide by reaching to the Tele-MANAS helpline.

What is suicide?

- **Suicide** – The act or an instance of ending one's own life voluntarily and intentionally.
- **Reasons** – The reasons for suicide are multi-faceted, influenced by social, cultural, biological, psychological, and environmental factors present across the life-course.
- **Complex issue** – Suicide is not only a mental health issue but is also deeply rooted in social determinants such as poverty, discrimination, gender inequity, and isolation.

What are the challenges in the system?

- **Shortage of trained mental health professionals** – Estimates indicate that India has 0.75 psychiatrists per 1,00,000 population.
- It is dismally lower than the World Health Organization's recommended 3 per 1,00,000 population.
- **Shortage of clinical psychologists and psychiatric nurses** – there is a lack of more clinical psychologists who can be trained to offer therapy, help people manage their thoughts better and improve their general sense of well-being.
 - **For instance**, in Kerala, this shortage is a huge problem in the mental health sector.



- **Inadequate resources** – Most helplines today struggle with inadequate resources, limited operating hours, and insufficiently trained counsellors.
- **Inaccessible and expensive** – The stigma around mental health has reduced in India, but only superficially while Help is still inaccessible and expensive.
 - **For instance**, in Kolkata many working professionals with depression are not being able to reach a professional at a moment of crisis.

What are the measures taken by the States?

- **Community efforts** – Broader community participation have been trialled in some States, often linking existing or new services to the Tele MANAS helpline, to stem suicide numbers.
 - **For instance**, in Karnataka, where the suicide rate stands at 20.2 per lakh population as of 2022, significantly higher than the national average of 12.4, several initiatives have been tried.
- **Karnataka** – SURAKSHA project under N-SPRITE a comprehensive community-based suicide prevention model in partnership between NIMHANS, the government of Karnataka, and a corporate.
- **Kerala** – Jeevanraksha, a district-level service has community gatekeepers stepping in to prevent suicides.
- Trained people are given periodic refresher training to recognise warning signs of suicide, give psychological first aid and refer people to mental health professionals.
- Kerala also has two other community-level mental health programmes, one of which specifically tackles post-partum depression.
- **Tamil Nadu** – TeleMANAS also collaborates with the helplines of the School Education and Social Welfare Departments.
- District Mental Health Programme and it has improved accessibility and helped reduce stigma around accessing mental health care.

What lies ahead?

- **Understanding the issue** – We must acknowledge that suicide is not only a mental health issue but also deeply rooted in social determinants such as poverty, discrimination, gender inequity, and isolation.
- **Decoding the cause** – Addressing systemic drivers of distress must be undertaken.
- **Timely interventions** – Suicide prevention must include building an ecosystem of empathy, inclusion, and timely care.
 - **For instance**, with over 1.7 lakh lives lost to suicide in 2022 and 1.8 million calls to the Tele-MANAS helpline as of February 2025, thousands of Indians need mental health help.
- **Increasing funding** – Increased government funding for awareness and trained human resources.
- **Social and community participation** – Building strong school and college-level mental health programmes, addressing social determinants.
- Combating stigma are some steps that need to be urgently undertaken.

Those in distress could seek help and counselling by clicking [here](#).

WOMEN

4.2 Domestic Sphere and Women empowerment

Under the present regime, when a myriad socio-economic and political challenges confront the people of India, developments in the “domestic sphere” are often deprioritized in agendas of resistance.

What is domestic sphere?

- **Domestic sphere** – It refers to the private realm of home, family, and personal relationships, often contrasted with the public sphere of work, politics, and economics.
- **Key aspects** – The key aspects of domestic sphere are
 - Privacy and Intimacy
 - Home and Family

- Caregiving
- Personal Identity
- **Historical perspective** – Historically, this concept has been associated with the idea of separate spheres, where women were relegated to the domestic sphere for child-rearing and homemaking, while men operated in the public sphere.

What are the issues women face in domestic sphere?

- **Dowry deaths** – An average of 7,000 women have died every year, from 2017 to 2022, in horrendous cases where they are burnt legally known as dowry deaths.
- **Domestic violence** – The National Family Health Survey-5 noted that 30% of the women surveyed reported violence by an intimate partner but only 14% made a police complaint.
- A third of the over 4.45 lakh cases of registered crimes against women are of domestic violence.
- **Neglect of the issues** – People never say a word about any instance of violence within the home or within the community as this would not fit in with the majoritarian ideology.
- **Sacramental nature of marriages** – Cultures that pressurise women to stay in violent marriages, to adjust because of the sacramental nature of marriage.
- The so-called honour crimes in self-choice inter-caste marriages are intrinsic to the ideological platform of the Hindutva eco-system today.

B.R. Ambedkar has been instrumental in the demolition of Hindu ideology by his proposals in the **Hindu Reform Bills**. The bill was about granting women the right to divorce and abolishing caste as a requirement for a valid marriage.

- **Efforts to dilute laws** – There are efforts to dilute laws against domestic violence in the name of misuse.
- The official argument in the Supreme Court case opposing the demand to criminalise marital rape as being “against the institution of marriage and Indian culture.
- **Nature of work** – Another aspect of the “domestic sphere” - the work women do within and outside the home has been highlighted by the recent Time Use survey (TUS) 2024.
- **Employment and related activities** – Taking the age group of 15-59 years
 - **Women** – 25% were in working an average of 5 hours.
 - **Men** – 75% men in the first category, working on an average of 8 hours a day.
- **Family enterprises** – The percentage of people working in family enterprises was
 - **Women** – 23% and they put in a little less than 2 hours of work.
 - **Men** – 14% and they work for an average of two 2 hours day.
- The work done in these two categories is recognised to be economically productive and is included in the System of National Accounts (SNA).

AVERAGE TIME SPENT IN A DAY PER PERSON

	2019		2024	
	Male	Female	Male	Female
Self-care and maintenance	729	723	710	706
Employment and related activities	459	333	473	341
Learning	426	423	415	413
Unpaid domestic services for household members	97	299	88	289
Culture, leisure, mass media, sports	164	165	177	164
Socialising and communication, community participation and religious practice	147	139	138	139
Unpaid volunteer, trainee and other unpaid work	102	99	139	108
Unpaid caregiving services for household members	76	134	75	137
Production of goods for own final use	198	116	137	104

All units in minutes

Source: MoSPI

What are the burden of work of women?

- **Two categories of work** – The TUS lists two other work-related categories
 - Unpaid domestic services.
 - Unpaid caregiving services.
- **Unpaid domestic services** – This includes cooking, cleaning, washing, etc.
 - **Women** – 93% of all women put in an average of seven hours a day
 - **Men** – Only 30% of men and they put in less than one and a half hours a day.
 - 70% of men do not do any domestic work.

- **Unpaid caregiving services** – This includes tasks, primarily in homes and communities, like childcare, elder care, and assistance for sick or disabled individuals, that are performed without monetary compensation.
 - **Women** – 41% of women put in more than 2 hours in unpaid domestic care.
 - **Men** – 21% who do, put in an average of an hour and 14 minutes a day.
 - In the unpaid caregiving category, 79% of men do no unpaid caregiving.
- **Less time for self-care** – The total working hours put in by women are more than men, and that women spend less time in eating, sleeping, and leisure than men.
- **Class and caste differences** – Further analysis will show the division of work in different income groups, especially for Scheduled Tribes and Scheduled Caste men and women.
- Women of the labouring classes shouldering a disproportionately higher share of work than men.
- **Misguiding interpretation** – The Press Information Bureau, in its press release dated February 25, 2025 with a summary of the survey headlined it as: “More acknowledgement of care-giving activities regardless of gender in Indian families”.
 - **Glorifying the inequalities** – The inequalities in time use were sought to be glorified with the line, “This corroborates the Indian social fabric wherein most of the care-giving responsibilities for household members are borne by the females of the household.”
 - According to the government’s viewpoint men give any time at all for care-giving, even if it is for an average of just 15 minutes, shows the greatness of the “Indian family”.
 - But women do 3 times the work in domestic and care-giving as men is something to be proud of the Indian social fabric.
- **Unrecognised works** – The millions of women who take on the responsibility of child-care services in anganwadi, mid-day meal services and as Accredited Social Health Activists (ASHA), are considered to be social volunteers and not workers.
 - They are given a measly amount as an honorarium and not as a minimum wage.
 - They are not recognised as government employees.
- **Hidden potential** – The State Bank of India, in a survey in 2023, showed that if unpaid work done by women was monetised it would amount to over 7% of the country’s GDP or ₹22.5 lakh crore a year.
- It also points to the undervaluation of the essential role played by a woman’s unpaid domestic work in the social reproduction of labour.
- Her work is not considered when a minimum wage is fixed.
- Typically, such a wage covers the bare subsistence needs of a worker and family, to keep him healthy enough to work the next day too.
- This subsistence level is actually subsidised by the woman’s unaccounted for and invisibilised domestic and care-giving work.
- The invisible component of a woman’s domestic work is what keeps the cost of subsistence and wages low.
- Thus, the struggle for a fair minimum wage has a direct relation to recognition of the invisible work that women do.

The work that is considered to be a **natural task** for women in the domestic sphere gets translated into low-wage work in care services in the public sphere.

How the policies of the government have a direct impact on the domestic sphere?

- **Legislative and Social Action** – Measures should be taken against Domestic Violence, and to
 - Criminalize **marital rape**.
 - Ensure swift, sensitive, and victim-centric mechanisms for **domestic violence redressed**.
- **Recognition of Unpaid Work** – Include **unpaid domestic labour** in national economic accounts.
 - Design **wage support schemes** for care workers.
- **Universal Public Services** – State-funded **childcare, eldercare**, and healthcare to be promoted to reduce burden on women.
- **Cultural Transformation** – There is a need to promote **gender-sensitive education**.

- Encourage **equal domestic responsibility** through media, curriculum, and community action.
- **Labour Rights for Scheme Workers** – Recognize **ASHA, anganwadi, and mid-day meal workers** as government employees.
 - Provide **minimum wages, social security, and job security**.
- **Equal Economic Participation** – Enforce **equal pay** for equal work.
 - Encourage **female workforce participation** through flexible work policies and safety provisions.

Quick facts

Time Use Survey (TUS)

- **Published by** – The National Statistical Office (NSO) in India has conducted TUS surveys, with the most recent being in 2024, to inform policy and understand societal trends.
- **Measures** – How individuals spend their time on various paid, unpaid, learning, and leisure activities.
- **Provide detailed data** – On daily life, including activities like paid employment, unpaid caregiving, domestic chores, and personal care.
- It offers insights into the distribution of work and leisure across different population groups, especially for gender-related analysis.

URBANISATION

4.3 Tackling Rapid Urbanisation – The Kerala Way

Recently, Kerala urban policy commission (KUPC) submitted a report on urban policy of the state.

What is Kerala urban policy commission (KUPC)?

- **KUPC** – It is an initiative by the government of Kerala, to develop and implement comprehensive policies for urban development and governance in the state.
- **Establishment** – It was set in motion in December 2023.
- **Mission** – It was charged with designing a 25-year urban roadmap that sees cities not as concrete problems, but as organic, climate-aware ecosystems.
- **Report** – The KUPC handed its report to the State in March 2025, the result was not a mild adjustment it was a structural reset.
- The blueprint promised nothing less than a data revolution, governance recalibration, identity revival, and finance empowerment all tied together in one bold vision.

What is the need for KUPC?

- **Rapid urbanisation** – Kerala was urbanising at a pace well ahead of the national average by late 2023.
- **Population explosion** – Estimates projected an urban population of over 80% by 2050.
- A seismic shift in a region where villages and towns interconnect in a delicate mosaic will take place.
- **Intensifying climate change** – Meanwhile, climate threats were intensifying.
 - Floods devastated Ernakulam
 - Landslides shattered hillsides
 - Coastal zones reeled from sea-level pressures.
- The gap between crisis and planning was growing wide.

What were the recommendations of the commission?

- **Climate and risk-aware zoning** – Any kind of urban planning must reflect hazard mapping of landslides, coastal inundation, flood zones etc.
- Planning becomes proactive, instead of being reactive.
- **A digital data observatory** – A real-time data nerve centre should be setup at the Kerala Institute of Local Administration.

- It could collate high-resolution Light Detection and Ranging, and ground penetrating radar, tide/water gauge, satellite and real-time weather data.
- Every municipality gains a living intelligence feed.
- **Green fees** – Projects in eco-sensitive zones could come with environmental levies (green fees) which would fund urban resilience.
- **Climate insurance** – A parametric insurance model ensures pre-approved payouts for disaster-prone areas.
- **Municipal bonds** – While Thiruvananthapuram, Kochi, and Kozhikode, being bigger cities, could issue municipal bonds.
- **Pooled bonds** – Smaller towns would use pooled instruments.
- **Governance overhaul** – City cabinets, led by mayors, could replace bureaucratic inertia.
 - Specialist cells (climate, waste, mobility, law) with dedicated municipal cadres should be formed.
 - A Jnanashree program would recruit and deploy youth tech talent.
- **Place-based economic revival** – Regions to be developed based on the place based economic activity.
- **Commons, culture, and care** – The report stressed the need to revive wetlands, reactivate waterways and preserve heritage zones.
- It also recommended city health councils to cater to migrants, students, gig workers.

Why is the report unique?

- **Blend of regional descriptions** – The KUPC highlighted a deeper innovation with the fusion of local narratives and data systems.
 - Fishermens' ordeals with coastal recession,
 - youth-crafted water conservation drives
 - Mobility woes voiced by bazaar vendors
- All became structured into the urban data apparatus.
- **Use of satellite imaging** – LIDAR maps are now used to
 - Register tidal health near fishing zones
 - Develop municipal dashboards carrying community-generated indicators
 - Construct city briefing templates reflecting lived stories.
- **Address local needs** – Rather than imposing top-down solutions, policies were co-produced with citizens.
- It gives Kerala an urban intelligence engine a living, breathing system where city systems absorb, interpret and act on the emotional, lived intelligence of local communities.
- KUPC isn't one big idea but it's the collision of several game-changing ones.
- **Considers regional issues** – The KUPC is the first State-level commission built for sub-national realities and not recycled from national frameworks.
- **Disaster management** – In its report, climate resilience is embedded and not appended every pillar integrates disaster awareness.



A pooled bond is a type of investment bond where multiple investors combine their money to invest in a diversified portfolio of securities.



- **Innovative funding mechanisms** – The report also calls for the emancipation of public finance through municipal bonds and green levies which give local bodies fiscal agency.
- **Overhauls urban governance** – It also re-defines governance from passive bureaucracies to dynamic election-led city cabinets, guided by youth technocrats.
- **Use of data** – Rich stories fuel data, and data fuels policy, closing the feedback loop between lived reality and institutional action.
- Together, these features dismantle silos in planning, finance, governance and re-assemble them into a 360° urban system.
- **Model for other states** – Kerala's Urban Commission offers a template with tangible takeaways for other States
 - Mandate a time-bound commission
 - Combine technical data with lived experience
 - Create dialogic systems where citizen inputs are mapped into data observatories
 - Empower local bodies with green levies, bonds, and risk premiums
 - Insert youth and specialists in governance.

What lies ahead?

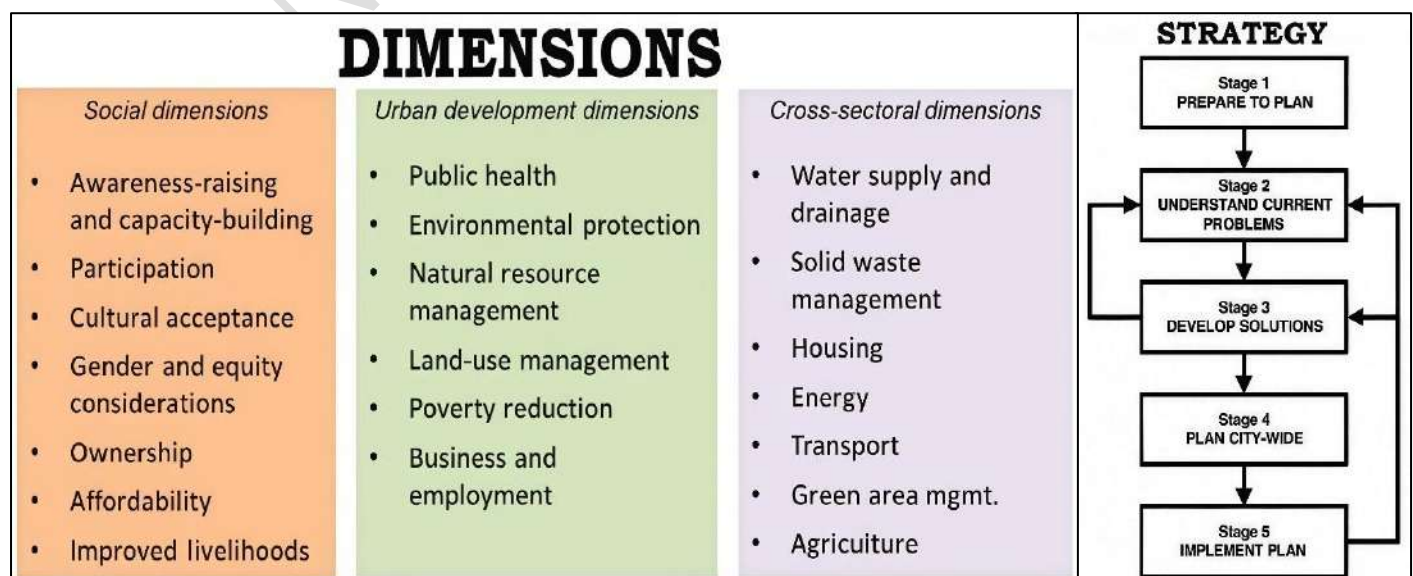
- The KUPC entwined climate awareness, community narrative, financial empowerment, digital governance, and identity economy into a living document-functional plan.
- As the first such State-level commission in the country, KUPC isn't an end it's a beginning.
- For Kerala, it's a chance to grow not just richer, but wiser, not just bigger, but better not just more urban, but more human.
- For others, it's a call to action, urban transformation isn't a problem to solve but It's a story to be authored together.

4.4 Town Action Plans of Uttarakhand – The future of Sanitation

Recently, nearly 100 Urban Local Bodies (ULB), in Uttarakhand, prepared their first structured town action plans (TAP) for faecal sludge, septage and used water management during district-wise workshops conducted by think tank National Institute of Urban Affairs (NIUA).

What is the town action plan on sanitation?

- **Town Action Plan on Sanitation** – It is a strategic vision document that outlines short, medium, and long-term strategies for a town or city to improve its sanitation services and achieve universal, safe, and sustainable sanitation for its residents.
- It is a strategic, step-by-step document that outlines how a town or community will address specific issues, implement projects, and achieve its goals.



What are the patterns behind key terms of a TAP?

- **Frequency of key terms** – To decode these plans, we examined the frequency of key terms words that recurred across towns and districts.
- Each keyword corresponds to tangible activities, allowing us to measure intent and scale.

Frequency of key terms recurring across TAPs

Keyword	Frequency
IEC (Messaging to users and workshops for masons and desludging operators)	89
Registration (of desludging vehicles/operators in the Municipal area)	80
Monitoring (Monitoring framework of desludging activities)	80
Survey (Create database of locations and types of containment system throughout the city)	73
GPS (Installing GPS tracking on Cesspool vehicles)	70
Safety (Ensuring workplace safety of sanitation workers)	54
Procurement (of Cesspool vehicles)	49
Behaviour (Community BCC for regular/timely desludging)	49
Site (Site identification and selection of treatment infrastructure)	39
Upgrade	38
Training (Capacity building of stakeholder at municipal level)	28
Coordination (with Jal Sansthan, Jal Nigam and UDD for seamless service delivery and fulfil the town requirements)	23
Bye-laws (Update the byelaws as per contextual information)	20
DPR (Prepare DPRs for small scale decentralised sanitation projects)	19
Technology (Interested in exploring new technologies in sanitation)	11
Energy	6

- **Emphasis on awareness and interface** – IEC, behaviour change and registration top the list.
- This shows ULBs are thinking not only about infrastructure but also about public service and systems.
- They want citizens to know the rules and operators to be visible and accountable.
- Sanitation is being framed as a service, not a last resort.
- **Towns want visibility and control** – Monitoring, GPS and surveys dominate.
- These are tools of governance, knowing where septic tanks are, who is emptying them, how often and whether it is safe.
- **Administration is getting serious about delivery** – Technical terms like site selection, procurement, training, DPR formulation and bye-law updates appear often.
- This reflect awareness of existing gaps and a readiness to plug them through structured planning, formal upgrades and financial foresight.

What are the roles of terrain in developing TAP?

- **Different terrain** – Uttarakhand is not a typical state its irregular terrain, plains, slopes, valleys and ridges dramatically shapes sanitation planning.
- Priorities vary with geography, demography and climate.
- **High-altitude towns** – Settled on slopes and valleys with steep gradients, fractured land parcels and freezing winters, these towns rarely find sewer lines viable.
- Septic tanks are scattered, desludging is seasonal and land for treatment plants is scarce.
 - **For example**, Joshimath, Pithoragarh, Chamoli.

- TAPs here call for detailed household surveys, careful site selection for shared treatment units, strong inter-departmental coordination and behaviour change efforts to adapt sanitation services to such terrain.
- **Mid-altitude towns** – Perched on ridges with dense urban cores, some of these towns already have partial sewer networks.
- Yet desludging is often informal, handled by small operators.
 - **For example**, Almora, Pauri, Tehri
- TAPs focus on bringing order — registering operators, ensuring safe practices, introducing basic monitoring such as vehicle tracking and training to improve both safety and service quality.
- **Plains towns** – With flat terrain and large populations, plains towns face service overloads, unregulated operators and scale challenges.
 - **For example**, Haridwar, Kashipur, Rudrapur
- TAPs here prioritise structured systems, digital platforms for desludging bookings, procurement of more vehicles, public awareness campaigns and cluster-level STPs to manage higher volumes.
- Across altitudes, towns are articulating solutions tailored to context.
- The collective intelligence in these TAPs is a testament to willingness. It signals that towns are ready for a sanitation leap, but they need support to clear the path.

What must be the priorities of the state?

- **Standardisation across the board** – ULBs know what they want, but formats, costing methods and documentation vary.
- Agencies should release standard templates for TAPs (with editable activity libraries), surveys, SOPs for desludging and performance dashboards.
- **Embedded technical handholding** – Terms like DPR, coordination and technology reveal gaps where ULBs need expertise.
- NIUA can provide field cells, engineers and planners who travel across clusters, helping towns finalise designs, contracts and implementation.
- **Funding Linked to Readiness** – ULBs with detailed TAPs, viable costing and inter-departmental coordination should be prioritised for funding.
- A progressive model, releasing funds against verified milestones, can reward initiative and set replicable examples.
- **Behaviour and Worker Safety as Non-Negotiable** – High demand for IEC and safety shows towns want to clean up not just infrastructure but also perceptions and worker dignity.
- This opens doors for awareness campaigns, certification programmes and feedback systems, linked with NAMASTE.
- **Build a Knowledge Loop** – Every activity, from PPE drives to site selection, must be documented.
- A centralised Sanitation Learning Portal for Uttarakhand could become the largest repository of mountain sanitation practices, recording both successes and failures.

Why this is a big deal for India?

- **Stresses a tailored approach** – National missions must recognise the need for mountain-specific sanitation approaches.
- **Model for other states** – More than 500 sanitation actions now articulated by Uttarakhand's towns, each shaped by local needs and endorsed by municipal leaders.
- This exercise can be easily replicated across the Indian Himalayan Region (IHR).
- **A source of data** - If formats are standardised, journeys documented, and outcomes tracked, the result will be not just Uttarakhand's progress but a wider repository of terrain-specific solutions for states like Sikkim, Himachal Pradesh, Nagaland, and Arunachal Pradesh.
- **A starting point** – The TAPs of Uttarakhand are not perfect, but they are honest and reflect readiness, ambition, and clarity.
- They Scale is not only about budgets and technologies but also about shared templates, peer learning, and repeatable protocols, and that is what Uttarakhand is poised to offer.

What lies ahead?

- If the state backs this momentum with structured support, and if national agencies turn these TAPs into living documents, India will gain both a robust repository of sanitation practices and a tested roadmap for the IHR, a region that has waited too long to be understood on its own terms.
- These TAPs, created as part of the operationalisation of the state's septage management protocol workshops, reflect something rare in sanitation planning, grounded and well-founded intent.
- With over 500 activities coded and categorised, we now have an extraordinary opportunity to understand where Uttarakhand's towns want to go and what is holding them back.

G. S. PAPER II

5. INDIAN POLITY

5.1 The Importance of India's Federal Design

Recently, The Supreme Court has sought a detailed response from the Centre on the issue of restoration of statehood to Jammu and Kashmir (J&K).

What is the issue?

- **Abrogation of article 370 and 35A** – On 5 August 2019, the Government of India revoked the special status, or autonomy, granted under Article 370 & 35A of the Indian Constitution to Jammu and Kashmir.

Article 370 (deleted) – It was a temporary provision that granted special autonomous status to the former state of Jammu and Kashmir (J&K), allowing it to have its own constitution and limited legislative powers on internal matters, while major powers like defense, foreign affairs, and communication remained with the Indian government.

Article 35A (deleted) – It was a constitutional provision that granted the Jammu and Kashmir Legislature the power to define "permanent residents" and provide them with special rights and privileges, particularly in areas like state employment, property acquisition, and settlement in the state.

- **Supreme Court's direction** – On December 11, 2023, the Supreme Court upheld the abrogation of Articles 370 and 35A.
- The SC also directed the Union Government to restore the statehood of Jammu and Kashmir and hold Legislative Assembly elections.
- **Elections for J&K assembly** – The election for the 90-member Assembly were held in October 2024, but there has not been any hint so far from the Government to restore the statehood as asked by the Court.

What is federalism?

- **Federalism** – Federalism is a system of government where power is constitutionally divided between a central authority and constituent regional units, such as states or provinces.
- **Characteristics** – Some of the key characteristics of federal system are
 - Division of power
 - Two levels of government
 - Independent authority
 - Shared governance
- **Examples** – This includes the United States, Germany, India, and Canada, etc.

How are States Created in India?

- **Process** – There are 3 processes enshrined in the Constitution of India for creating States
 - Admission
 - Establishment
 - Formation

- **Admission** – For admission of a new State into the territory of India, the entity should have its own organised political unit.
- It is also required that admission through acquisition shall be guided by international law.
 - **For example**, Jammu and Kashmir was admitted into India's territory by this process, through the Instrument of Accession in 1947.
- By executing this Instrument under the provisions of the Indian Independence Act, 1947, the then ruler of Kashmir, Maharaja Hari Singh agreed to accede his State to India.
- **Establishment** – For establishing a new State, territory shall be acquired as per the definition of acquisition in international law.
 - **For example**, India acquired Goa and Sikkim and established them as States.
- **Formation** – The process of forming a new State has been, in fact, the reorganization of an existing State which led India to take its number of 14 States in 1956 to 29 States before the enactment of the Jammu and Kashmir Reorganisation Act, 2019.
- **Article 3 of the Constitution** – It provides for this process of reorganisation wherein Parliament may by law form a new State by
 - Separation of territory from any State, or
 - By uniting two or more States or parts of States, or
 - By uniting any territory to a part of any State,
 - Increase the area of any State, diminish the area of any State, alter the boundaries of any State, or alter the name of any State.
- **Limitation** – The Union may diminish the area of a State, but it cannot take it away by making it a Union Territory.
- Therefore, it is mandatory for the Union to restore the statehood of Jammu and Kashmir.

What about India's federal design?

- **Union of state** – India has been made a Union of States which means that it is indivisible and that States have no right to secede.
- **Article 1 of the constitution** – India, that is Bharat, shall be a Union of States.
 - **The word 'India'** – It reflects a unitary federation.
 - **The word 'Bharat'** – It is a cultural connotation which signifies that India has a composite culture and that there is unity in diversity.
- **Federation not explicitly mentioned** – Despite being a two-tier system of governance, the word 'federation' is not used but rather 'Union' is written expressly.
- The idea behind this unique feature is to ensure India's federal character and unitary spirit.
- The direct use of the word 'Union' makes the Centre strong enough to protect the unity and integrity of the nation.
- The federal character is created to equitably distribute the resources establishing India as a welfare state.
- **Basic structure** – India's federal character has been included in the Basic Structure of the Constitution.
- **Position of Rajya Sabha** – Without a federal design, India's union would lose its existence.
- Hence, the Rajya Sabha has been made a permanent House in Article 83 (1) which writes that it shall not be subject to dissolution.
- The States' representation must always be there at the Union level to maintain and sustain India's unitary federation.
- Thus, it is imperative that the statehood of Jammu and Kashmir be restored to protect the sanctity of federation.

What lies ahead?

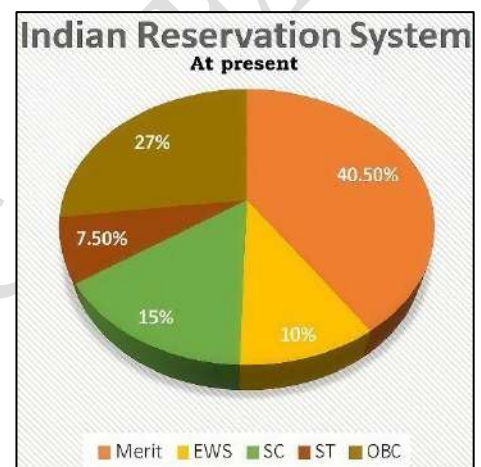
- The restoration of statehood would definitely empower the elected government in Jammu and Kashmir.
- This could also limit the powers of the Lieutenant Governor and affect the present position of the Union over the Union Territory of Jammu and Kashmir.

5.2 50% Cap on Reservation

Recently, the leader of the opposition in Bihar, Tejashwi Yadav, has declared that if voted to power, their alliance would increase reservation to 85%.

What are Reservations in India?

- **Reservations** – They are a system of affirmative action that provides a fixed percentage of seats in government jobs, educational institutions, and legislatures for historically disadvantaged groups, such as
 - Scheduled Castes (SC)
 - Scheduled Tribes (ST)
 - Other Backward Classes (OBC)
 - Economically Weaker Sections (EWS).
- **Objective** – The policy was established in the Indian Constitution to address centuries of social and economic inequality.
- To promote the empowerment of marginalized communities, and ensure their adequate representation in various sectors of society, stemming from the historical injustices of the caste system.
- **Constitutional provisions** – Articles 15 and 16 guarantee equality to all citizens in any action by the state (including admissions to educational institutions) and public employment respectively.
- In order to achieve social justice, these Articles also enable the state to make special provisions for the advancement of socially and educationally backward classes or Other Backward Classes (OBCs), SCs and STs.
- This results in a total reservation of 59.5%.
- The reservation percentages vary from State to State according to their demographic profile and policies.



What have courts ruled?

- The issue arises due to two ostensibly competing aspects of equality – formal and substantive.
- **Formal equality** – It is where the reservations are seen as an exception to equality of opportunity and hence cannot exceed 50%.
- **Balaji versus State of Mysore (1962)** – The SC noted that reservations under Articles 15 and 16 for backward classes should be 'within reasonable limits' and should be adjusted with the interests of the community as a whole.
- The court further ruled that such special provisions for reservation should not exceed 50%.
- **Substantive equality** – It is based on the belief that formal equality is not sufficient to redress the difference between groups that have enjoyed privileges in the past and groups that have been historically underprivileged and underrepresented.
- **State of Kerala versus N. M. Thomas (1975)** – A seven-judge bench have proposed the aspect of substantive equality.
- The court in this case opined that reservation for backward classes is not an exception to equality of opportunity but is an assertion and continuation of the same.
- However, since the 50% ceiling was not a question before the court, it did not give a binding judgment on this aspect in the case.
- **Indra Sawhney case (1992)** – A nine-judge Bench upheld the 27% reservation for OBCs.
- It opined that caste is a determinant of class in the Indian context.
- Further, in order to uphold the equality of opportunity, it reaffirmed the cap of 50% for reservation as held in the Balaji case, unless there are exceptional circumstances.
- The court also provided for the exclusion of a creamy layer within OBCs.

- **Janhit Abhiyan case (2022)** - The court by a majority of 3:2 upheld the constitutional validity of the EWS reservation.

The journey of reservations

A brief summary of important developments with respect to reservations at the central level

Year	Key development
1950 and 1951	Commencement of the Constitution and the First Amendment — enabling provisions in Articles 15 and 16 for the advancement of OBCs, SCs and STs
1982	Reservations for SCs and STs fixed at 15% and 7.5% respectively in central educational institutions and public sector undertakings
1990	The introduction of 27% reservation for OBCs in central government employment based on the recommendation of the Mandal Commission
2005	Article 15(5) inserted by the 93rd constitutional amendment that enabled reservations for OBCs, SCs and STs in educational institutions, including private ones
2019	Articles 15(6) and 16(6) inserted by the 103rd constitutional amendment which enabled up to 10% reservation for the EWS among the unreserved category in educational institutions and public employment

- It held that economic criteria could be a basis for reservation.
- It also opined that the 50% limit set in the Indra Sawhney case was meant for backward classes while the EWS reservation of 10% is for a different category among unreserved communities.

What are the issues and competing arguments?

- **Views of Dr. B.R. Ambedkar** – In his Constituent Assembly speech in November 1948, he justified the need to have reservations for backward communities that have been left out in the past.
- He also opined that reservations should be confined to a minority in order to uphold the guaranteed right of 'equality of opportunity.'
- **Recent demands** – There has been a growing demand for increasing the reservation percentage beyond the judicial cap of 50% to reflect the proportion of backward classes in the population.
- The demand for a caste census has been strong in order to have actual data about this proportion rather than mere estimates.
- **Unfilled seats** – It must also be noted that as per various government replies in Parliament, 40-50% of seats reserved for OBCs, SCs and STs in the Central government remain unfilled.
- Concentration of reservation benefits – The Rohini Commission, was set up for providing recommendations on the sub-categorisation among OBC castes.
- It has estimated that 97% of reserved jobs and seats in educational institutions have been garnered by just around 25% of the OBC castes/sub-castes at the central level.
- Close to 1,000 of around 2,600 communities under the OBC category have had no representation in jobs and educational institutes.
- A similar issue of concentration of reservation benefits persist in SC and ST categories as well.
- There is no exclusion of 'creamy layer' for SC/ST communities.
- **State of Punjab versus Davinder Singh (2024)** - Four judges of a seven-judge Bench impressed the Central government to frame suitable policies for the exclusion of 'creamy layer' in SC and ST reservations.
- The Central government in a cabinet meeting in August 2024 reaffirmed that the 'creamy layer' does not apply to reservations for SCs and STs.
- Critiques who are against the extension of a creamy layer to SCs and STs argue that the vacancies for these communities are anyway not fully filled.
- Therefore, the question of a creamy layer within such communities seizing the opportunities of even more marginalised castes does not arise.

- The exclusion of a creamy layer based on any criteria will result in an even more increased backlog of vacancies.
- There is also a fear that such backlog vacancies may be converted in the long run to unreserved seats thereby depriving the SCs and STs of their rightful share of opportunities.

What can be done?

- **Right to equality of opportunity** – It is a fundamental right and an increase in reservation up to 85% may be seen as violating such right.
- Nevertheless, substantive equality through affirmative action is required to uplift the underprivileged.
- **Discussion among stakeholders** – Based on empirical data of the ensuing Census in 2027, which will also enumerate backward castes, there must be wide ranging discussions with all stakeholders to arrive at a suitable level of reservation.
- **Sub-categorisation of OBCs** – Equally important is to implement sub-categorisation among the OBCs as per the Rohini Commission report based on Census data.
- **For SCs and STs** – As demanded in the plea before the Supreme Court, a two-tier reservation system may be considered.
- Under such a scheme, priority would be given to more marginalised sections before extending it to those who are relatively well-off within those communities.
- These measures would ensure that benefits of reservation reach the more marginalised among the underprivileged in successive generations.
- It must also be borne in mind that considering the opportunities available in the public sector and the young population of our country, any scheme of reservation would not meet the aspirations of large sections of the society.
- **Skill development** – There must be sincere efforts to provide suitable skill development mechanisms that would enable our youth to be gainfully employed.

5.3 New Foreigners Act

Recently, The Immigration and Foreigners Bill, 2025, was passed by Lok Sabha and Rajya Sabha and received the assent of the President.

What is the new Act?

- **Act – The Immigration and Foreigners Act, 2025**
- **Objective** – The new set of Rules and Orders give effect to a sweeping overhaul of India's system for regulating the entry, stay, and exit of foreign nationals, and identify exemptions available to certain classes of foreigners.
- **Consolidation** – The act consolidated India's regime for the entry, stay, movement, and exit of foreigners under a single statute.
- **Replacement** – The Act replaced the following acts
 - The Passport (Entry into India) Act, 1920
 - The Registration of Foreigners Act, 1939
 - The Foreigners Act, 1946
 - The Immigration (Carriers' Liability) Act, 2000

What is the Need for the new Act?

- **Issues with previous laws** – The previous legal framework was widely seen as being fragmented, complicated, and frequently subject to ambiguous interpretation.
- The four separate Acts of 1920, 1939, 1946, and 2000 had interlocking but sometimes confusing provisions.
- **No clear orders** – Exemptions for certain categories of entrants, such as Tibetan refugees, Sri Lankan Tamil refugees, citizens of Nepal and Bhutan, etc., were scattered across multiple orders, and were often not readily accessible or clear.
- **Delayed obligations** – Reporting obligations were often manual or delayed, resulting in data gaps for enforcement.

- **Ambiguity in enforcement** – The powers of local vs. central authorities, scope for compounding offences, and the rules for protected/ restricted areas were not uniform throughout the country.

What are the important provisions of the act?

- **Possession of valid documents** – All entrants must possess a valid passport or travel document.
- Valid visa is mandatory for a foreigner, unless explicitly exempted by the Act or by special orders of the central government.
- **Entry and exit only via notified posts** – The Act lists designated immigration posts, including all major airports, seaports, land border posts, and rail posts, through which foreigners can legally enter and exit India.
- **Powers of the Immigration Officer** – Officers at notified immigration posts have the final authority on entry, exit, and admissibility, and the power to validate or refuse entry or exit on national security grounds.
- **Defined registration and control mechanism** – Foreign nationals must register with designated Registration Officers.
- The district superintendent of police (SP)/ deputy commissioner of police (DCP) has been designated as the local civil authority for immigration and foreigners' regulation.
- A network of Foreigners' Regional Registration Officers (FRROs) has been vested with powers for specific regions and functions.
- **Obligations of accommodation providers and institutions** – Hotels, hostels, paying guest homes, religious institutions, and similar establishments must collect particulars of foreigners, obtain their signatures or thumb impressions.
- They should transmit a duly filled form electronically to the authorities within 24 hours of both arrival and departure of every foreigner, including holders of Overseas Citizen of India (OCI) cards.
- **Educational and medical notifications** – Universities and hospitals must notify the Registration Officer about foreigners admitted or treated.
- Hospitals must electronically report every birth and death of a foreigner within seven days.
- **Authority to shut down resorts, clubs** – The civil authority has the power to control, restrict, or shut down places frequently visited by foreigners if there are security, legal, or public order concerns.
- Such orders may be issued if, in the authority's opinion, the foreigner is a criminal, linked to unlawful associations, or otherwise undesirable".
- Those responsible for such premises cannot shift operations elsewhere without permission.
- **Special permit for protected/ restricted areas** – Movement into protected, restricted, or prohibited places will require a special permit.
- This must be applied for through designated online portals or mobile apps, with clearly specified forms and procedures.

Who are the Exempted categories of people?

- **Military personnel and family** – Members of the Indian military entering/ exiting the country on duty, and their families if traveling on government transport.
- **Citizens of Nepal and Bhutan** – If they are entering India via designated land or air borders (except through China, Macau, Hong Kong, or Pakistan), or possessing valid passports for air entry to other destinations.
- **Tibetan refugees** – With special entry permits, especially those who entered between 1959 and May 30, 2003, or later under designated posts.
- They can enter only if registered with authorities and holding a registration certificate.
- **Minority community refugees** – From Afghanistan, Bangladesh, Pakistan (Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians).
- Those who fled religious persecution and entered India on or before December 31, 2024, even if without valid travel documents or with documents that subsequently expired.
- **Registered Sri Lankan Tamil nationals** – Those who sheltered in India up to January 9, 2015.
- **Holders of diplomatic and official passports** – Those from certain countries where visa requirements are waived under intergovernmental agreements, or residents from nations eligible for visa on arrival at specific ports.

- **Foreign military personnel** – Those who are aboard warships visiting India for humanitarian exercises or events, unless excluded by a separate government notification.

What are the new initiatives the act?

- **Digital and electronic records** – The digital notification through portals and mobile apps that is required of accommodation providers, hospitals, and universities.
- It will create a robust database for enforcement and public health management, and making citizenship decisions.
- **Graduated fines/ compounding system** – The Rules prescribe graduated fines ranging from Rs.10,000 to Rs.5 lakh For violations such as
 - Overstaying and non-registration,
 - Violation of visa terms and
 - Unauthorized visit to protected areas
 - Failure to notify authorities
- Different rates apply to Tibetans, Mongolian Buddhist monks, and certain national groups from Pakistan, Bangladesh and Afghanistan, where fines are as low as Rs.50.
- **Protections and appeal mechanisms** – The Rules clarify appeals for fines and penalties, and exceptions for certain humanitarian cases.
- They provide limited protection for bona fide mistakes or compliance done in good faith.
- **Centralisation and delegation** – The Act empowers the central government to delegate functions to states and Union Territories, with power to modify, cancel, or issue special or general directions at any time.
- **No discretionary exemptions at local levels** – All exemptions for entry, visa, documentation, and protected or restricted area permits will be on the basis only of orders published by the central government.
- **Likely boost for enforcement** – With clearly designated officers and electronic records, the margin for error or ambiguity is expected to be reduced.
- Several offences can now be compounded quickly by paying the prescribed fines, reducing the burden on courts and making resolution more efficient.
- The listed exemptions for Tibetans, Sri Lankan Tamils, and the minority communities from Bangladesh, Afghanistan, and Pakistan have done away with the scope for discretion on a case-to-case basis.

5.4 Supreme Court Guidelines on DNA

Recently, The Supreme Court, in Kattavellai @ Devakar v. State of Tamil Nadu, recently issued guidelines to maintain the integrity of deoxyribonucleic acid (DNA) samples in criminal cases.

What are the issues the court noted?

- **Substantial delays** – The court found significant unexplained delays in sending samples of the vaginal swabs to the Forensic Science Laboratory (FSL) for DNA analysis.
- **Chain of custody** – The chain of custody of the sample could not be established.
- Under such circumstances, the court held that the possibility of sample contamination could be possible.
- **Absence of uniformity** – The court observed that there is neither uniformity nor a common procedure required to be followed by all investigating authorities.
- **Need for reform** – Police and Public Order are subjects mentioned in the State List of the Seventh Schedule of the Constitution.
- The Supreme Court deemed it necessary to issue these guidelines to have uniformity of procedure.

What are the guidelines?

- **Documentation** – Collection of DNA samples once made after due care and swift and appropriate packaging, including FIR number and date.
- The sections and statutes involved, details of the investigating officer, the police station, and the requisite serial number, shall be duly documented.

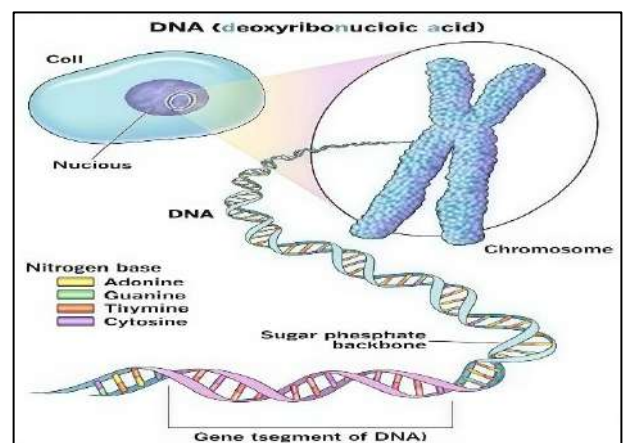
- The document recording the collection must include the signatures and designations of the medical professional present, the investigating officer, and independent witnesses.
- **Transportation** – The investigating officer shall be responsible for the transportation of the DNA evidence (sample) to the concerned police station or hospital, as the case may be.
- He must also ensure that the samples reach the concerned FSL within 48 hours of collection.
- In the event of any delay, the reasons must be recorded, and all efforts should be made to preserve the samples.
- **Tampering** – While samples are stored pending trial or appeal, no package shall be opened, altered, or resealed without express authorisation from the trial court.
- **Maintenance of custody register** – From the time of collection to the logical end, i.e., conviction or acquittal of the accused, a Chain of Custody Register must be maintained.
- This register must be appended to the trial court record.
- The investigating officer is responsible for explaining any lapses in compliance.
- The court directed the Director Generals of Police of all States to prepare sample forms of the Chain of Custody Register and all other necessary documentation as directed, and to ensure their dispatch to all districts with instructions.

What has the Supreme Court said so far?

- **Anil v. State of Maharashtra (2014)** – The Supreme Court observed that a DNA profile is valid and reliable, but this depends on quality control and procedure in the laboratory.
- **Devakar v. State of Tamil Nadu (2025)** – The court said that quality control and procedure outside the laboratory are equally important to ensure that the best results can be derived from collected samples.
- DNA evidence is in the nature of opinion evidence as envisaged under Section 45 of the Evidence Act (Section 39 of the Bharatiya Sakshya Adhiniyam, 2023).
- Like any other opinion evidence, its probative value varies from case to case.
- Therefore, DNA evidence must be proved scientifically and legally.
- **Manoj and Ors.v. State of Madhya Pradesh (2022)** – The Supreme Court rejected a DNA report on the ground that recovery was made from an open area and the likelihood of its contamination cannot be ruled out.
- It was also observed that the blood stains found on the articles were disintegrated, and the quantity was insufficient to run any classification test.
- **Rahul v. State of Delhi, Ministry of Home Affairs (2022)** – DNA evidence was rejected because it remained in the police Malkhana for two months and during such time, the possibility of tampering could not be ruled out.
- It was said that ‘the collection and sealing of the samples sent for examination were not free from suspicion.
- The court also said the trial court and the High Court did not examine the underlying basis of the findings in the DNA reports or whether the techniques used had been reliably applied by the concerned expert.
- While the investigating agency needs to ensure that samples are collected properly, without any possibility of contamination, and sent to the FSL without any (unexplained) delay, the expert must also ensure proper quality control and procedure in the FSL.

How important is the DNA evidence in criminal cases?

- **DNA** – Deoxyribonucleic acid (DNA), is a molecule that contains the genetic instructions for the development, functioning, growth, and reproduction of all living organisms.
- **Obtained from** - Biological materials, such as bone, blood, semen, saliva, hair, or skin.
- **DNA Identification** – If the DNA profile of a sample found at a crime scene matches the DNA profile of a suspect, it can be concluded that both samples have the same biological origin.
- However, it is not substantive evidence in criminal cases.



5.5 Personality Rights in India

Recently, the Delhi High Court has issued a series of orders protecting the personality rights of Bollywood celebrities from unauthorized commercial use.

What are personality rights?

- **Personality rights** – It is also called publicity rights and refer to a person's right to benefit, commercially or otherwise, from their identity or persona.
- **Key components** – This includes the person's name, image, voice, mannerisms or even a catchphrase or gesture that's unique to them.
- These rights also protect a person's identity from being misused or commercially exploited, and do not extend beyond the individual.
- **Categories** – It can be further categorized into two -
 - **Right of publicity** – Prevents the unauthorized commercial use of an individual's name, likeness, or other recognizable aspects of one's persona.
 - **Right to Privacy** – Violation of right to privacy, which in turn leads to undermining right to live with dignity.

What are the provisions related to personality rights in India?

- **Copyright Act, 1957** – It grants performers both exclusive rights under Section 38A and moral rights under Section 38B, allowing them to control how their performances are reproduced and to object to any distortion or misuse.
- **Trade Marks Act, 1999** – It permits individuals, particularly celebrities, to register distinctive attributes of their persona, such as names, signatures, or even catchphrases, as trademarks.
- **Article 21 of the constitution** – In India, personality or publicity rights are linked to privacy rights included under Article 21.
- **Article 19(1)(a) of the Constitution** – It guarantees every citizen the right to freedom of speech, which includes the creative freedom to criticize, parody, or satirise public figures.
- **Information Technology Act, 2000** – Section 66C of the act addresses the punishment for identity theft, specifically using someone else's electronic signature, password, or unique identification feature fraudulently or dishonestly.

What are the related judgements so far?

- **R. Rajagopal v. State of Tamil Nadu, 1994** – The Supreme Court ruled that the press can publish factual information from public records without consent, but cannot infringe on the right to privacy or publish private details without authorization.
- **DM Entertainment Pvt. Ltd. v. Baby Gift House, 2010** – The Delhi High Court ruled that using a celebrity's likeness without permission for commercial gain is illegal and amounts to unfair competition.
- **Shivaji Rao Gaikwad v. Varsha Productions, 2015** – The court recognized and protected personality rights, holding that celebrities are entitled to an injunction against the unauthorized use of their identity and a form of passing off.
- **Sushant Singh Rajput's case, 2021** – The Court refused to stay filmmakers from making movies about his life and death and,
 - Held that right to privacy, publicity and personality rights were not heritable, that is privacy dies with an individual, so do personality rights.
- **Digital Collectibles PTE Ltd. v. Galactus Funware Technology Pvt. Ltd. (2023)** – The Delhi High Court refused to issue a temporary ban on the use of Indian cricketers' names and images in a fantasy sports game.
- The Court held that the use of information already in the public domain could not reasonably mislead the public into believing there was an endorsement.

India does not have a dedicated law protecting personality rights, so judges defer to common law to decide on cases.

What are some of the global examples of recognition and protection?

- **United States** – Recognizes and protects identity and persona under the right to publicity.
- **Germany** – Recognizes personality rights, protecting individuals from unauthorized commercial exploitation of their persona.

- **United Kingdom (UK)** – Does not have a general personality law but provides remedies for specific breaches of personality rights through existing laws.
- **Denmark** – Recently, proposed amending its copyright laws so that every citizen owns the rights to their own face, voice and body.

What are the concerns of personality rights?

- **Lack of comprehensive law** – India lack a dedicated law for personality rights, forcing support on common law, privacy, defamation, and trademark laws, which can complicate enforcement.
- **Rise of AI** – The rise of AI has led to sophisticated deepfakes and voice cloning, allowing unauthorized use and commercial exploitation of a person's identity in a complex ways.
- **Commercial exploitation without consent** – Individuals, especially celebrities have raised concerns about their identities being misused for unauthorized merchandising, creation of fake profiles and websites, etc.
- **Damage to reputation** – The unauthorized use of a person's name, image, voice, especially through digital manipulation or AI, can harm their reputation and dignity.
- **Not an exclusive one** – Personality rights are not the exclusive privilege of celebrities, since all individuals enjoy the right to privacy.
- **Women targeted** – Ordinary citizens, especially women, are increasingly targeted through deepfakes and revenge pornography.

What can be done to improve personality rights in India?

- **Enact a specific law** – India requires a comprehensive law on personality rights instead of relying solely on court decisions.
- **Enhance awareness** – Greater public awareness about personality rights, coupled with continued judicial efforts to define and enforce them, is vital.
- **Address the issues with existing laws** – The copyright and trademark law can offer some protection, especially regarding publicity rights, a dedicated law would provide more specific safeguards that are currently lacking.

6. GOVERNMENT POLICIES AND INTERVENTIONS

6.1 Regulatory Assets of DISCOMs

Recently, The Supreme Court (SC) directed the State Electricity Regulatory Commissions (SERCs) and distribution companies (DISCOMs) to clear the existing regulatory assets within four years and liquidate any new assets within three years.

What are regulatory assets?

- **Regulatory assets** – They constitute the unrecoverable revenue gap due to the difference between the average cost of supply (ACS), and the ARR Annual Revenue Requirement (ARR) of DISCOMS.
- **For example**, Tata Power Delhi Distribution Limited (TPDDL), Uttar Haryana Bijli Vitran Nigam (UHBVN) are some well-known DISCOMS.
- **Average cost of supply (ACS)** – The expense incurred by a DISCOM to deliver a unit of electricity to consumers.
- **Annual revenue requirement (ARR)** – The revenue collected by the as consumer tariffs and subsidy payments from the government.
- **Loss for DISCOMs** – If the ACS is greater than the ARR, the DISCOM effectively makes a loss on the sale of every unit of electricity.
 - **For instance**, if a DISCOM's ACS is Rs 7.20/unit and ARR is Rs 7.00/unit, the gap is Rs 0.20 per unit.
- To avoid suddenly burdening consumers with an immediate tariff increase to recover the gap, SERCs allow the DISCOM to record the gap as a regulatory asset.

DISCOMs, or Distribution Companies, are electricity utilities responsible for purchasing power from generators (like coal, hydro, or solar power plants) and delivering it to end consumers such as households, industries, and businesses.

If the DISCOM supplies 10 billion units, the total shortfall is Rs 2,000 crore.

- This is essentially a deferred cost that the DISCOM is entitled to recover from consumers in the future, usually with interest.

What explains the ACS-ARR gap?

- **Contributing factors** – There are various reasons for the increasing regulatory gap
 - Non-cost reflective tariffs
 - Delays in the release of subsidies (for agriculture or low-income households) by State governments
 - Sudden increases in fuel prices (leading to increased power purchase costs)
- **Notable examples** – The Punjab SERC provides one of the earliest documented cases of regulatory assets in India when it identified a revenue gap of Rs 487.10 crore.
- Of this, Rs 150 crore was converted into a regulatory asset, to be recovered over two years: FY 2004-2005 and FY 2005-2006.
- The remainder, Rs 337.10 crore, was allowed to be recovered immediately via tariffs in FY 2003-2004.
- The Delhi ERC's true-up of FY 2022-23 and ARR for FY 2024-25 order mentioned a regulatory asset of Rs 36,057 crore for BSES Rajdhani and Rs 22,040 crore for BSES Yamuna, apart from a closing revenue gap (including carrying cost) of Rs 8,226.87 for Tata Power Delhi Distribution, Ltd.
- In Tamil Nadu, regulatory assets reported in FY 2021-2022 were Rs 89,375 crore, indicating the issue is not isolated but systemic and reflecting financial pressures across many state DISCOMs.

True-up is a process of adjusting financial records to correct discrepancies between estimated figures and actual results, bringing them into alignment with reality.

How are consumers and DISCOMs affected?

- **Recovery of regulatory assets** – If the regulatory assets reported by BSES Rajdhani, BSES Yamuna, and Tata Power, the DISCOMs operating in Delhi, are to be recovered within the four-year window set by the Supreme Court, they need to recover about Rs 16,580 crore a year.
- With Delhi's annual electricity consumption of 30 billion units, this works out to an additional Rs 5.5 per unit on average.
- Since consumers can't be burdened with such high and immediate tariff increases, the state employs regulatory assets.
- **Burden on consumers** – The immediate benefit of stable tariffs for consumers is eventually offset by steeper increases when the deferred costs are recovered. Since these assets also attract carrying costs, consumers pay the original gap as well as the additional interest.
- **Cash crunch on DISCOMs** – The persistence of large regulatory assets results in significant cash flow pressures.
- Because revenue doesn't cover current costs, DISCOMs often struggle to pay power generators on time, which can strain the entire power supply chain.
- **Loan burden on DISCOMs** – Many DISCOMs borrow to bridge the gap, increasing their debt burden.
- **Limited investment ability** – With so much money tied up in unrecovered costs, their ability to invest in modernising the grid, integrating renewable energy, and in better consumer services becomes limited.
- **Operational challenges** – The result is a vicious cycle in which financially distressed DISCOMs face greater operational challenges, which in turn make it harder to improve efficiency and recover costs on time.

What can be done?

- **Aligning tariffs with costs** – One important step is to ensure tariffs are aligned more closely with costs, while using targeted subsidies to protect vulnerable consumers.
- This ensures the burden is shared transparently rather than hidden in deferred recoveries.
- **Role of state government** – State governments also need to release subsidies on time so that DISCOMs aren't left carrying the financial gap on their books.
- **Automatic fuel cost adjustment mechanisms** – Tools such as the Fuel and Power Purchase Cost Adjustment mechanism, can help tariffs respond quickly to sudden changes in input costs.
- **Regular adjustment procedures** – Annual true-up exercises, where projected and actual expenses are reconciled, can prevent the build-up of large backlogs.

- **Role of regulatory commissions** – They play a critical role in maintaining discipline.
- By enforcing limits, ensuring transparency in accounting, and setting clear timelines for recovery, they can ensure regulatory assets remain an exceptional tool rather than a recurring feature.
- **Adopting best practices** – The DISCOMS could increase the revenues and reduce losses adopt innovative and best models such as the
 - **Regulated Asset Base (RAB)** – Utilities are allowed to recover their investment in regulated assets through tariffs, with a regulated rate of return on the asset base, thus ensuring long-term revenue certainty.
 - **United Kingdom's RIIO** – Revenue = Incentives + Innovation + Outputs (RIIO) model links utility revenues to asset investment and to clearly defined output parameters.
 - **For example**, reliability, customer service, and carbon reduction creating stronger accountability and performance incentives.
- However, adopting such mechanisms in India will require transparent valuation of regulatory assets and credible enforcement of efficiency targets.
- **Initiatives** – Digital energy grids and the India Energy Stack can enable advanced asset management, which can help recover regulatory assets through RAB models.
- Together, the models and the infrastructure could shift India's power sector to a dynamic, performance-driven model, aligning consumer tariffs with system efficiency and long-term sustainability.
- **Capping of regulatory assets** – The Supreme court also advised capping the regulatory asset at 3% of a DISCOM's Annual Revenue Requirement (ARR).
- **Transparent recovery mechanisms** – The SC also instructed regulators to set out transparent roadmaps for recovery, along with conducting intensive audits of DISCOMs that continue without recovering these assets.

What lies ahead?

- There is a need for coordinated action and greater financial discipline across the sector, so that electricity remains both affordable for households and sustainable for utilities.
- In sum, regulatory assets aren't the result of deliberate inaction by a single entity but a reflection of the broader challenges of balancing affordability, subsidy dependence, and cost recovery in India's electricity sector.

6.2 Tourism in India – Potential and Prospects

Tourism has been identified as sectors that can deliver transformative results, not just as a showcase of our heritage and soft power, but as an economic engine capable of generating growth, employment, and foreign exchange.

What is the status of tourism in India?

- **GDP** – At present, tourism contributes around 5% to India's GDP, compared to the global average of 10%.
 - Countries like Spain and the UAE, where tourism accounts for about 12% of GDP, illustrate the potential when the sector is treated as a national growth priority
- **Forex earnings** – In 2024, tourism generated \$28 billion or Rs.2, 45,000 crore in foreign exchange earnings for India.
- This is only a fraction of our potential.
- **Outbound travel** – In 2024, over 28 million Indians travelled abroad, spending an estimated \$28-31 billion.
- **Highest spenders** – Indian travellers are among the highest spenders globally, with a growing appetite for luxury, leisure, and immersive experiences.
- This presents both a challenge and an opportunity.
- Unless we offer comparable or superior experiences within India, much of this spending will continue to flow outward.

What is the Potential of tourism sector?

- **Economic growth** – Tourism has one of the highest economic multipliers of any sector.
- Every rupee spent flows through transport, crafts, food services and community enterprises.

- **Employment generation** – Tourism is among the most labour-intensive industries in the world, generating livelihoods across transport, hospitality, food services, handicrafts, wellness and entertainment.
- **Driver of green growth** – When developed sustainably, tourism is also a green growth driver, creating livelihoods without large-scale environmental costs.
- **Capacity building** – Inward-looking in development, outward-facing in benefits.
- It generates demand that cannot be taxed at foreign borders, creates jobs that cannot be offshored, and builds national pride alongside prosperity.
- **Acts as a shock absorber** – Improving the inbound share of tourism GDP will not only strengthen our external account but also provide a steady buffer against fluctuations in merchandise trade.
- **Potential of India** – The rise of wellness tourism, spiritual journeys, medical value travel, and immersive cultural experiences aligns perfectly with India's civilisational strengths.
- We do not need to reinvent ourselves, we simply need to present the India that already exists more effectively, more consistently and with world-class standards.
- **Hotels** – India currently has about 1,80,000 branded hotel rooms and 1.5 million unbranded rooms.
- **Future prospects** – If we can raise tourism's GDP contribution from 5% to 10% over the next decade, the results would be transformative
- An additional \$516 billion to the economy each year,
- 40 million new jobs
- Foreign exchange earnings rising to \$130-140 billion.
- Unlike goods exports, it is shaped primarily by perception, infrastructure, and facilitation all of which can be directly enhanced. There are some strategic pathways for this growth.

What are the initiatives introduced in budget 2025-26?

Investment in Tourism for Employment-led Growth

- > Top 50 tourist destination sites in the country to be developed in partnership with states through a challenge mode
- > States to be given performance-linked incentives for effective destination management
- > MUDRA loans for homestays to be provided
- > Special focus on destinations related to the life and times of Lord Buddha
- > Medical Tourism and Heal in India to be promoted in partnership with the private sector

What measures can be taken?

- **Focusing on every state** – A world-class destination in each state, blending infrastructure, sustainability, and brand, can shift India's positioning from a "place to see" to a "place to experience".
- **Simplification of e-visas** – Reducing immigration queues and delivering a seamless arrival experience are vital.
- With India's airlines set to expand their fleet by 1,000 aircraft, improved connectivity can give a decisive boost to tourism.
- **Advertisement and promotion** – The future lies in content-led promotion, influencer engagement and strategic digital storytelling.
- Millions of creators already showcase India to the world.

- The task now is to amplify this through AI-enabled curation and partnerships with global platforms.
- **Increase private investment** – Expanding the tourism sector's inclusion in the Harmonised Master List of Infrastructure can catalyse investments.
- This includes PPP projects like hotels, ropeways, wayside amenities, and convention centres.
- **Focus on quality of hotels** – Industry estimates indicate that we need to triple our capacity in branded and un-branded hotels to remain price-competitive, and position ourselves to host major global events and conventions.
- **Dekho Apna Desh campaign** – It can evolve into a national movement.
- Domestic tourism, accounting for 86% of sector revenues, fosters cultural exchange, economic redistribution, and national integration.
- Making interstate travel more affordable and convenient will amplify these benefits.

What lies ahead?

- There is a need to frame a tourism strategy that is bold, ambitious, and executed with purpose.
- International tariffs may be beyond our control, but the warmth of our welcome is entirely in our hands.

6.3 The Boundaries for Traditional Medicinal (AYUSH) practitioners

Recently, A controversy on X between a hepatologist and an Indian chess Grand Master, on whether practitioners of traditional medicine can claim to be doctors, has sparked much interpretation on the role and the status of practitioners of traditional Indian medicine systems such as Ayurveda and Unani, in India.

What are different perspectives on AYUSH?

- **A much old debate** – The origin of this argument can be traced back nearly 80 years beginning from 1946.
- **Bhore committee** – The Bhore Committee in 1946 supported firmly for modern, evidence-based medicine.
- The committee had pointed out that other countries were in the process of phasing out their traditional medicine systems.
- It recommended that states to decide on the extent to which traditional medicine played a role in their public health systems.
- **Opposition from traditional medicos** – The traditional medicine practitioners opposed Bhore committee report.
- They argued for the preservation of systems such as Ayurveda.
- **Committee on Indigenous Systems of Medicine** – The government established the committee in response to the opposition.
- It submitted the report in 1948 which enclosed the validity of traditional medicine in a narrative of Hindu nationalism.
- **The Indian Medicine Central Council Act, 1970** – It was Enacted under the Indira Gandhi government in 1970, while Jawaharlal Nehru refrained from granting official recognition to these systems.
- It recognised and regulates the practitioners of Ayurveda, Siddha and Unani.
- This act was replaced by the National Commission for Indian System of Medicine Act 2020.
- **Confused curriculum** – The syllabus for aspiring practitioners of Ayurveda is an absolute mish-mash of concepts
- It includes everything from doshas, prakriti, atmas (which includes learning the difference between paramatma and jivatma)
- They contain a very small inclusion of modern medical concepts such as cell physiology and anatomy.
- **Conflicting concepts** – The theory of tridosha attributes all ills to an imbalance of doshas.
- Modern medicine locates the concepts of some diseases such as infections in germ theory among others.
- Concepts such as integrative medicine make no sense because there is no middle ground between both systems of medicine.

What are the major points of friction among traditional and modern medicinal practitioners?

- **Boundaries** – The legal recognition led to questions on the exact boundaries between the practice of traditional and modern medicine.
- **Prescription of medicines** – Ayurvedic practitioners have consistently demanded the right to prescribe modern medicines developed by evidence-based modern science.
- **Demand for advantage** – Traditional Ayurvedic practitioners, claim the superiority of their art over modern medicine.
- **Rule 2(ee) of the Drugs and Cosmetics Rules, 1945** – It defined the class of registered medical practitioners who can prescribe modern medicine.
- This definition is complicated since it is not limited to doctors with a MBBS degree.
- **Powers to state government** – The Rule 2(ee), delegates a certain amount of power to State governments to pass orders declaring medical practitioners on their State medical registers.
- They are registered as persons practising the modern scientific system of medicine for the purposes of the Drugs & Cosmetics Act, 1940.
- Many State governments have used this power under Rule 2(ee) to allow registered practitioners of Ayurveda and Unani to prescribe modern medicine such as antibiotics.
- **Dr. Mukhtiar Chand vs The State Of Punjab** – The court stated that, the right to prescribe allopathic drug cannot be wholly divorced from the claim to practice allopathic medicine.
- In simple words Ayurvedic practitioners had no right to prescribe modern medicine.
- **Defiance of the Court's judgment** – State governments for the promulgation of orders under Rule 2(ee) allowing the Ayurvedic and Unani practitioners to prescribe modern medicine.
- This inevitably leads to litigation before the High Courts, usually by the Indian Medical Association, which often wins these cases.
- **Litigation by patients** – Patients have often sued practitioners of Ayurveda before consumer courts.
- They argue that they were misled into believing that they were being treated by a doctor with a MBBS degree who can prescribe modern medicine.
- **Issues on the medical procedures** – There has been a question whether modern medicinal procedures can be conducted legally by practitioners of Ayurveda and Unani.
 - **For example**, can a registered Ayurvedic practitioner “**intubate**” a patient? This is an important question to ask.
- **Falsification by hospitals** – Many hospitals claiming to practise modern medicine are hiring Ayurvedic practitioners.
- They employ people with Bachelor of Ayurvedic Medicine and Surgery (BAMS) degree at lower pay in place of graduates with a MBBS degree.
- **Notification by the Indian government in 2020** – It has allowed Ayurvedic practitioners (post graduates) to perform 58 minor surgeries.
- This including the removal of the gall bladder, appendix and benign tumours.
- The constitutionality of this notification is pending before the courts.

What are the challenges associated?

- **Problems on drugs** – If the notification of 2020 is upheld, the question that arises is whether these Ayurvedic practitioners can now use anaesthetic agents and antibiotics required to conduct surgeries.
- **Unscientific arguments** – The risks are high for public health in India since the possible strategy of Ayurvedic practitioners will be to argue that the modern surgeries were known in traditional Indian medicine.
- **Political factors** – It is not just the ruling party, most of the political parties feel compelled to support an visibly dangerous approach to public health.
- Even the opposition that the party said, it would “support” all systems of medicines instead of a promise to support only rational, evidence-based medicine.

- **Government policies** – The government is actively considering the inclusion of AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy) treatments under the Ayushman Bharat insurance scheme funded by tax-payers.
- **Huge Spending** – Approximately ₹20,000 crores to be spent on research councils functioning under the Ministry of AYUSH with a mandate to research AYUSH.

What lies ahead?

- The blind faith in traditional medicine could cost every citizen in the future, since the traditional medicines have very less evidences in terms of scientific revolutions.
- The government could consider the wellbeing, safety and informed consent of Indian citizens.

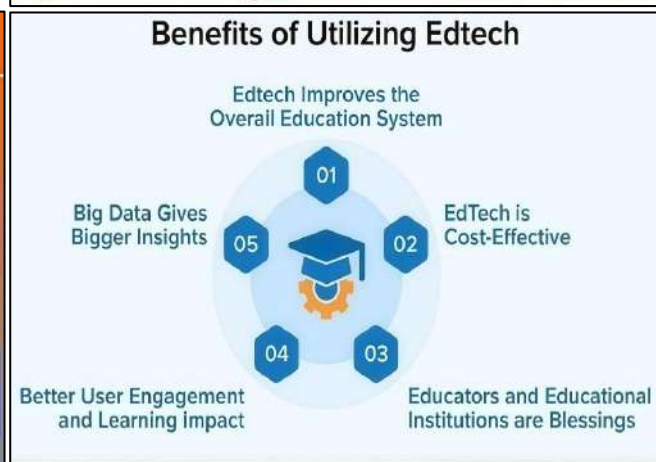
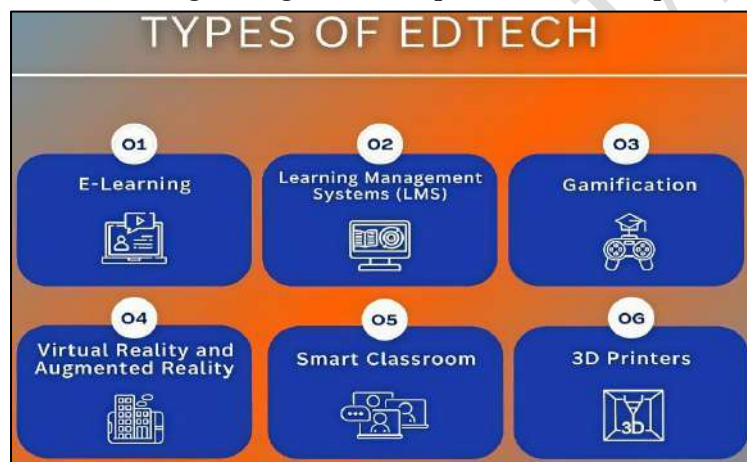
7. EDUCATION

7.1 EdTech in India

India's online learning sector is still booming and projected to triple by FY28, valuing Rs.8.5 lakh crore, with hundreds of millions of fresh signups annually.

What is EdTech?

- **EdTech** – It refers to the education technology sector, *which leverages digital tools to make learning more accessible* and personalized for students of all ages.
- **Important examples** – Companies include *BYJU'S, Unacademy, and Vedantu*, focusing on K-12 education, exam preparation, and upskilling.
- **Drivers of growth** – The sector, driven by increasing internet access and the demand for flexible learning, is a significant recipient of venture capital.



- **Future prospects** – India's online learning sector is still booming and *projected to triple by FY28*, valuing Rs.8.5 lakh crore, with hundreds of millions of fresh signups annually.

What are the issues in EdTech in India?

- **Content alone strategy** – The Indian Edtech industries focusses more on content than interaction among the learners.
- **Marginal course completion** – In India, *fewer than 4% of the students on SWAYAM have completed courses since it began in 2017*.
- While worldwide **Massive Open Online Courses (MOOCs)** achieve merely 5–15% completion rates.
- The myth that video is access, or that viewing is learning, is repeatedly debunked by the numbers.

- **Low household internet** – Home internet penetration in rural regions in 2024 was still roughly 25% lower than in the cities, and an enormous percentage of pupils have no day-to-day net access.
- **Hazard of content alone strategy** – there are three crucial hazards of a content-alone strategy
 - **Illusion of access** – Having a video does not guarantee that the learner will watch it.
 - **Illusion of learning** – Viewing a video doesn't ensure that the student has learned or retained anything.
 - **Illusion of equity** – Generalised content is not a guarantee that it is appropriate for all learners' individual language, level, or learning style.

What reforms can be done?

- **Active learning tools** – Like quizzes, polls, prompt chats, and live peer sessions boost online course completion by an estimated 30–35% over video-only experiences.
- Effective engagement is more than a feature, it's a proven accelerator of retention, confidence, and performance.
 - **For instance**, using personalised lesson pacing, local language toggles, and computer-tuned feedback, doubled the rate at which they completed content compared to static video models.
- **Developing more interactive podcast** – Though there were record enrollments in 2024, the highest-performing online groups were those with engaged peer groups, progress dashboards shared, and scheduled prompts for discussion.
- A podcast is like a radio show you can listen to on-demand, anytime & anywhere, using your phone or computer.
- These had milestone completion rates at levels 40% higher than for individuals working alone.
- **Prioritise interactive, frequent engagement** – Quizzes, peer problem-solving, and live chat must shift from "add-ons" to "essentials."
 - **Invest in real personalization** – Systems must be able to routinely deliver pacing, multi-language proficiency, and programming-independent feedback.
 - **Make mentorship mainstream** – Every student, regardless of geography, deserves support from trained online guides or community moderators.
- Adding a mentor or support group to the online student experience can increase the completion rate and make remarkable improvements in testing outcomes.
- It's not about the intellect; it's about the emotional support system in a lonely virtual world.
 - **Build healthy digital communities** – Facilitate student-led forums, progress gamification, and social accountability, proven to boost persistence and morale.

What lies ahead?

- Real reform will not be fostered by broadcasting more video but by broadening useful learning instances in terms of engagement, facilitation, and accommodation.
- Most revolutionary EdTech innovations in 2025 and onward are those that address students not as passive endpoints, but as active, distinct learners.
- When connection is combined with content, India's potential for online education is at last achieved.
- India could recast EdTech not as merely the provision of content, but as comprehensive, adaptive education fueled by engagement, propelled by personalisation, and extended by real human relationships.

7.2 Decline in Enrollment of school students

Recently the data released by the ministry of environment revealed that the students aged 3 to 11 falls by 25 lakh.

What is the issue?

- **Decline in enrollment** – Total school enrolment, from Class 1-12, drops by 11 lakh, an all-time low since 2018-19.
- Total enrolment of students aged between 3 and 11 in schools across India encompassing anganwadi, pre-school and Class 1 to 5 dropped by nearly 25 lakh in 2024-25 as compared to 2023-24.

- This data was given by the latest Unified District Information System for Education Plus (UDISE+) released by the Ministry of Education (MoE)
- The UDISE+ 2023-24 report said that 12.09 crore students enrolled in foundational and preparatory stages, which declined to 11.84 crore students, a dip of 24.93 lakh, in 2024-25.
- The latest data show that the total school enrolment number (from Class 1-12) has fallen by 11 lakh students, from 24.8 crore (2023-24) to 24.69 crore (2024-25), an all-time low since 2018-19.
- These include students in government, government-aided, private and other schools

What are the causes pointed out in the report?

- **Falling birth rates** – The decline in the enrolment numbers may largely be attributed to demographic shifts with falling birth rates in primary school-age population.
- Except Uttar Pradesh, Bihar and Meghalaya, all States have achieved fertility rates below replacement levels.
- Fewer children being born may be leading to lower enrollment.
- **India's total fertility rate (TFR)** – It dropped to 1.91 per woman by 2021, below the replacement level of 2.1, according to the latest National Family Health Survey 2021 data which is available.
- **Preference for private institution** – In addition, the decline could also be explained in terms of the presence of the children in pre-primary standalone private institutions, a senior official in MoE
- For calculating parameters such as Gross Enrollment Ratio (GER) – the total enrolment in a specific level of education and expressed as a percentage of the eligible official school-age population – the 2011 Census data was used.
- Once the 2026 census data is available, a lot of these projections will be modified.
- In the 2012-13 report, the total number of students studying in India from Class 1 to 12 was reported to be 26.3 crore.
- In November 2022, when the 2021-22 data were released, the number hovered around 26 crore.
- The 2022-23 data pegged the enrolment at 25.18 crore, which further fell to 24.8 crore in 2023-24, a drop of 6% or 1.22 crore, when compared to 2021-22.
- MoE officials have given a disclaimer that the reports of 2022-23 and 2023-24 are not strictly comparable to previous years because of a change in the 'methodology' of data collection.

***TFR** indicates average children born to a woman.
Replacement level is the level of fertility at which a population replaces itself.*

What are some positive outcomes?

- **Increased enrollment** – Officials pointed out that there was an increase of total enrolment of students by approximately 6 lakh between 2023-24 and 2024-25 in middle school (Class 6 to 8).
- While 6.31 crore students were accounted for in the 2023-24 report, this increased to 6.36 crore in 2024-25.
- **Total Enrolment in secondary section (Class 9 to 12)** – It saw an increase of roughly 8 lakh, a spike from 6.39 crore in 2023-24 to 6.48 crore in 2024-25.
- While the total enrolment has gone down, officials said that GER has improved.
- **At middle school level** – The GER rose from 89.5% in 2023-24 to 90.3% in 2024-25, while at secondary level it increased from 66.5% in 2023-24 to 68.5% in 2024-25.
- Also, dropout rates have reduced, meaning those joining school are not leaving as compared to earlier years.
- In preparatory stages, dropout rates have reduced from 3.7% to 2.3% between 2023-24 and 2024-25.
- During the same years in middle school, dropouts reduced from 5.2% to 3.5% and in secondary school from 10.9% to 8.2%.
- **Improved teacher-student ratio** – The Ministry said that while there was an increase in teacher student ratio between 2014-15 to 2024-25
 - **Foundational stage** – 1 teacher for every 15 students which has now improved to 1 teacher for every 10 students.
 - **Preparatory stage** - There was one teacher per 18 students which has improved to 1 teacher per 13 students in.

- **Middle school** – This has improved from 1 teacher per 26 students to one teacher per 17 students.
- **Secondary school** – From 1 teacher per 31 students to 1 teacher per 21 students, during the same duration.

Quick facts

UDISE+ Report

- **UDISE+** – It is a report from Unified District Information System for Education Plus initiative
- **Prepared by** – Department of School Education & Literacy (DoSE&L).
- **Released by** – Ministry of Education (MoE).
- **Based on** – Voluntary uploading of data by the schools having active UDISE+ codes.
- It is one of the largest Management Information Systems (MIS).
- **UDISE+ code** – It is allotted to a recognized school by the Central Government based on the recommendation of the respective State/UT Government where the school is located
- **Aim** – To facilitate online uploading of data at school level with inbuilt validation checks and the subsequent data verification at the Block, District and State level.
- It becomes truly “One Nation One Database”. • **Data** – It captures data for more than 60 fields for each student.
- **Child Aadhaar** – They were collected on the voluntarily basis.
- **EID** – A separate unique Educational ID (EID) for every student created in the UDISE+ portal which covers each and every child across the country.

7.3 The Right to Education Act and Minority Educational Institutions

Recently, the SC has questioned a 2014 judgment that exempted minority schools from the ambit of Right to Education Act.

What is the Right to Education (RTE) act?

- **Free elementary education** – The Act guarantees free elementary education for children of ages 6-14.
- **Government schools** – They are required to provide free education to all enrolled children.
- **Aided schools** – They must provide free seats proportionate to the aid they receive.
- **Private unaided schools** – They are required to reserve 25% of entry-level seats for children from disadvantaged groups, reimbursed by the state (Section 12(1) (c)).
- **Minimum standards** – The Act sets minimum standards of pupil-teacher ratios, trained teachers, infrastructure, and libraries.
- It bans corporal punishment and capitation fees, and places an obligation on all schools to contribute to universal education.

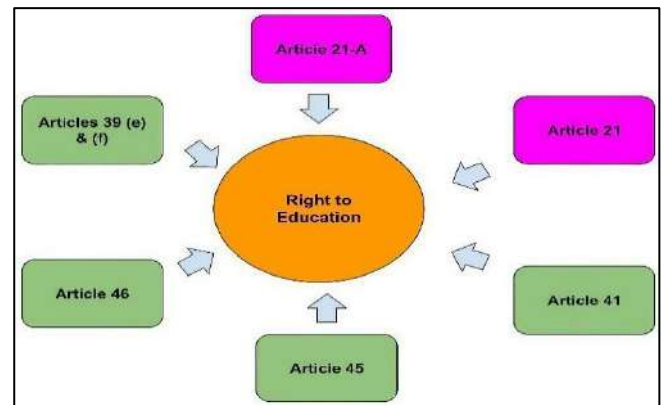
Corporal punishment in education is the deliberate application of physical force intended to cause pain or discomfort to a student as a method of discipline.

It typically involves hitting or slapping a student with a hand or an implement like a stick or belt.

What is the ongoing issues?

- **Under representation** – A study by the National Commission for Protection of Child Rights, found that
 - only 8.76% students in minority schools were from disadvantaged backgrounds
 - 62.5% of students belonged to non-minority communities.
- **Opposition by private institutions** – Private schools and minority groups complained that the 25% quota infringed on their autonomy, and the law was challenged in court.

- **Exemption from 25% norm** – The 2014 ruling in *pramati* judgement extended the exemption to all minority schools, regardless of whether they received government aid or not.
- **Misuse of minority status** – Following the judgment, many private schools were alleged to have sought minority status sometimes to escape RTE compliance.
- Many so-called minority schools that were essentially private institutions with a minority label could escape norms.
- They did not admit poor children from their own community and continued as elite institutions.
- **SC's observation** – The Supreme Court recently cast doubt on a Constitution Bench judgment on *pramati* case.
- The *pramati* case judgement has exempted minority educational institutions from the provisions of the Right of Children to Free and Compulsory Education Act, 2009 (RTE Act).
- **Undermining of RTE** – The court observed that by taking minority schools out of the ambit of the RTE Act, *Pramati* judgment may have jeopardised fundamental right to quality education for children studying in them.



What is the *pramati* judgement?

- **The five-judge Constitution Bench** – It was deciding the validity of The Constitution (86th Amendment) Act, 2002, which introduced Article 21.
- The Constitution (93rd Amendment) Act, 2005, which introduced Article 15(5) in the Constitution.
 - **Article 21A** – It established education as a fundamental right,
 - **Article 15(5)** – It allowed the state to make special provisions for backward classes, SCs, and STs in educational institutions, including private educational institutions, whether aided or unaided by the State, other than the minority educational institutions.
- **Exception to minority institutions** – It held that the RTE Act was unconstitutional if it applies to minority schools, aided or unaided, covered under clause (1) of Article 30.
- It upheld the validity of both amendments.
- The court reasoned that the unique character of minority institutions must be protected.
- **Concerns on Article 30(1)** – The court feared that forcing these institutions to comply with the RTE Act would lead to an abrogation of their fundamental right under Article 30(1).
- **Deprivation of minority character** – Section 12(1) (c) of RTE act poses a legal obligation to admit children belonging to weaker section and disadvantaged group in the neighbourhood who need not to be children of minority community.
- This provision may destroy the minority character of the institution in the long run.

Article 30(1) - All minorities, whether based on religion or language, shall have the right to establish and administer educational institutions of their choice.

What are the Criticism held by court on *Pramati* ruling?

- **Unfair judgement** – The Bench said that the verdict in *Pramati* appeared legally suspect, questionable, and disproportionate.
- Because the five-judge Bench had struck down the applicability of the entire RTE Act to minority institutions based almost entirely on its analysis of a single provision of the Act – Section 12(1)(c).
- **Exemption creates conflict** – The court pointed to a critical conflict created by the sweeping exemption.
 - **Article 30(1) of the Constitution** – It protects the right of minority groups to establish and administer their institutions.
 - **Article 21A** – It guarantees every child a fundamental right to education.
- **Deprives the right to education** – The court noted that exempting minority schools from the RTE Act denies children studying in them the statutory benefits.
- It also deprives the protections that flow from the fundamental right under Article 21A.

What lies ahead?

- The court called for a harmonious interpretation where the rights under Article 21A and Article 30(1) can and must co-exist mutually rather than one being treated as an unqualified trump card over the other.
- The court's ruling takes a step towards helping children in minority institutions to benefit from RTE norms on libraries, pupil-teacher ratios, and bans on corporal punishment, etc.
- The key issue is to strike a balance between minority rights and the universal right to education.
- The RTE Act is child-centric and not institution-centric.
- The act was about the fundamental right of the child, not the administrative rights of schools.
- The right of an individual child should be held higher than the collective right of groups to run institutions as they wish.

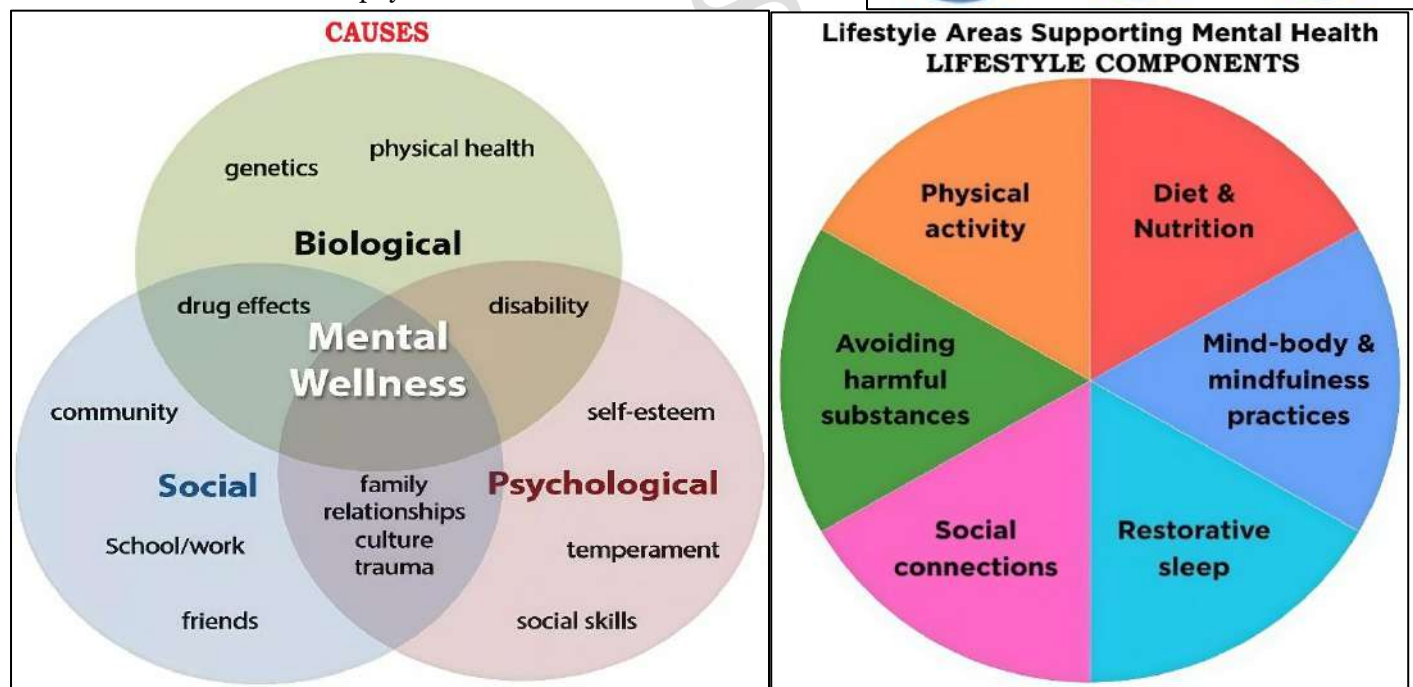
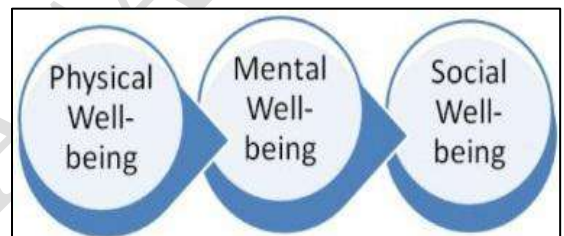
HEALTH

7.4 Mental Health – Issues and Challenges

Recently, the World Health Organization (WHO) report revealed that, more than 1 billion people are living with mental health disorders.

What is mental health?

- **Mental health** – The World Health Organization (WHO) defines mental health as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.
- Mental health is a public and global health topic that is not discussed as much as physical health.



- **Issues** – The issues and impacts of mental health are
 - **Impacts everyone** – Mental health conditions adversely affect people of all ages and income levels.
 - **Reason for disability** – They represent the second biggest reason for long-term disability, contributing to loss of healthy life.
 - **Increases health care costs** – They drive up health-care costs for affected people and families while inflicting substantial economic losses on a global scale.
 - Transforming mental health services is one of the most pressing public health challenges.

- **Stigma and reluctance** – The hesitancy to seek help and treatment and lack of manpower remain the major concerns in the sector.

What are the key findings of the report?

- **Report** – The new findings published in two reports
 - *World mental health today*
 - *Mental Health Atlas 2024*
- These highlight some areas of progress while exposing significant gaps in addressing mental health conditions worldwide.
- **Status of women** – The report shows that while prevalence of mental health disorders can vary by sex, women are disproportionately impacted overall.
- **Anxiety and depressive disorders** – These are the most common types of mental health disorders among both men and women.
- **Suicide** – It remains a devastating outcome, claiming an estimated 7,27,000 lives in 2021 alone.
- It is a leading cause of death among young people across all countries and socioeconomic contexts.
- Despite global efforts, progress in reducing suicide mortality is too low to meet the United Nations Sustainable Development Goal (SDG) of a one-third reduction in suicide rates by 2030.
- On the current trajectory, only a 12% reduction will be achieved by that deadline.
- **Economic impact** – While health-care costs are substantial, the indirect costs – particularly in lost productivity – are far greater.
- Depression and anxiety alone cost the global economy an estimated \$1 trillion each year.
- **Global Efforts** – The 2024 Mental Health Atlas found that since 2020, countries have been making significant strides in strengthening their mental health policies and planning.
- The report states that most countries have functional mental health promotion initiatives such as early childhood development, school-based mental health and suicide prevention programmes.
- Over 80% of countries now offer mental health and psychosocial support as part of emergency responses, up from 39% in 2020.
- Outpatient mental health services and tele-health are becoming more available, though access remains uneven.
- **Measures to be taken** – The WHO has said that, greater investment and action are needed globally to scale up services to protect and promote people's mental health.
- The findings also underscore the urgent need for sustained investment, stronger prioritization.
- Multi-sectoral collaboration to expand access to mental health care, reduce stigma, and tackle the root causes of mental health conditions.

What are the flaws in the mental care environment?

- **Absence of legal reforms** – While many countries have updated their policies, adopted rights-based approaches, and enhanced preparedness for mental health and psychosocial support during health emergencies, this momentum has not translated into legal reform.
- Countries remain off track to achieve the targets set in WHO's Comprehensive Mental Health Action Plan.
- Fewer countries have adopted or enforced rights-based mental health legislation, and only 45% of countries evaluated laws in full compliance with international human rights standards.
- **Reduced investments** – The report reveals a concerning stagnation in mental health investment.
- Median government spending on mental health remains at just 2% of total health budgets, unchanged since 2017.
- **Disparities in investments** – While high-income countries spend up to \$65 per person on mental health, low-income countries spend as little as \$0.04.
- **Less availability of mental health experts** – The global median number of mental health workers stands at 13 per 100,000 people, with extreme shortages in low- and middle-income countries.
- **Less Reforms and development of mental health services** – Fewer than 10% of countries have fully transitioned to community-based care models, with most countries still in the early stages of transition.

- Inpatient care continues to rely heavily on psychiatric hospitals, with nearly half of admissions occurring involuntarily and over 20% lasting longer than a year.
- Integration of mental health into primary care is advancing, with 71% of countries meeting at least three of five WHO criteria.
- **Gaps in data** – Only 22 countries provided sufficient data to estimate service coverage for psychosis.
- **Lack of care** – In low-income countries fewer than 10% of affected individuals receive care, compared to over 50% in higher-income nations, highlighting an urgent need to expand access and strengthen service delivery.

What is India's status on mental health?

- **Progress made** – There has been significant infrastructure development, the national tele-mental health programme has expanded.
- The educational development is happening at a fast pace and focused work is being done to create awareness about mental health and the treatment.
- **Insufficient budget** – India's direct mental health budget has remained at roughly Rs.1,000 crore for recent fiscal years, with FY 2025-26 allocating Rs.1,004 crore.
- This constitutes just over 1% of the Ministry's budget, with significant portions going to central institutions and programmes.
- Adequate funding for community-based programmes and the effective utilisation of allocated funds is still a concern.
- **Lack of experts** – India has a significant shortfall of mental health professionals, with roughly 0.7 psychiatrists per 100,000 people, far below the WHO's recommended ratio of 3 per 100,000 people.

What is the way ahead?

- Governments and global partners could urgently intensify efforts toward systemic transformation of mental health systems worldwide.
- Equitable financing of mental health services, legal and policy reform to uphold human rights, can be carried out.
- Sustained investment in the mental health workforce and expansion of community-based, person-centered care could be done.

*If you are in distress, please reach out to **MANAS** at 14416 or 18008914416 and **Sanjivini Society** for Mental Health at 011-40769002.*

7.5 Heart Health – Every Beat Counts

Recently, there has been a manifold increase in the cardiovascular disease and the world heart health day stresses the need to address the issue.

What is heart health day?

- **World heart day** – It is celebrated annually on September 29.
- **Aim** – To raise awareness about cardiovascular diseases, their risk factors, and preventive strategies.
- **Genesis** – The history of World Heart Day goes back to 1999, when the World Heart Federation (WHF) teamed up with the World Health Organization (WHO) to designate a day for global heart health awareness.
- **1st heart health day** – The first World Heart Day was held on September 29, 2000.
- **25th heart health day** – This year will mark 25 years of World Heart Day.
- This World Heart Day, we are telling the world: Don't miss a beat



What is the status of heart health?

- **World data** – Each year, cardiovascular disease (CVD) claims over 20.5 million lives.
- Up to 80% of premature CVD deaths are preventable through affordable access to care, early screening, increased opportunities to make healthy choices in nutrition, and by staying active.

What are the Common heart diseases?

- **Coronary Artery Disease (CAD)** – It arises when blood vessels supplying the heart narrow or become blocked due to plaque buildup.
- This reduces oxygen and nutrient flow to the heart muscles, causing chest pain (angina), shortness of breath, or heart attacks.
- **Heart Attack (Myocardial Infarction)** – It happens when a coronary artery suddenly becomes completely, 100% blocked.
- Symptoms include severe chest pain, sweating, and breathlessness.
- Rapid medical response with treatment such as Primary PCI (percutaneous coronary intervention) or thrombolysis can save lives.

HEALTH FACTS (Indian scenario)	
45% rise in cardiovascular deaths in India 	> 90 million Indians suffer from cardiovascular diseases (CVD) > 272 die of it per 1,00,000 > 14% of life years are lost due to CVD > 30% of adults aged 45 and above have self-reported prevalence of diagnosed CVD > 5-fold increase in deaths from atrial fibrillation since 1990
58% increase in cardiovascular diseases since 1990 	

CORONARY ARTERY DISEASE ARTERIES BECOME NARROW DUE TO ACCUMULATION OF CHOLESTEROL		HEART VALVE DISEASE IRREGULAR FUNCTIONING OF ONE OR MORE OF THE VALVES IN THE HEART
ARRHYTHMIA ABNORMAL HEART RHYTHM		HEART MUSCLE DISEASE (CARDIOMYOPATHY) HEART WALLS BECOME THICK OR HEART BECOMES ENLARGED.
HEART FAILURE LACK OF STRENGTH TO PUMP ENOUGH BLOOD TO THE ENTIRE BODY		CONGENITAL HEART DISEASE BIRTH RELATED HEART DEFECT

- **Cardiac Arrest** – It is a sudden loss of heart function, breathing, and consciousness.
- Often triggered by electrical disturbances, it can be fatal within minutes without immediate intervention such as CPR or defibrillation.
- Training and readiness for such emergencies is vital.
- **Hypertension (high blood pressure)** – It occurs when blood pumps through arteries at persistently high pressure.
- Often called a silent killer, if left untreated, hypertension can lead to a heart attack, stroke, kidney failure, or heart failure.
- **Heart Failure & Arrhythmias** – It arises when the heart cannot pump blood efficiently, resulting in fluid retention, fatigue, and breathlessness.
- Arrhythmias involve irregular heartbeats: too fast, too slow, or erratic.

What are the Heart-healthy habits?

- **Adopting healthy routines** – Simple practices such as regular check-ups, medication adherence, avoiding tobacco, limiting alcohol, and staying socially engaged reinforce heart protection.
- **A balanced diet** – It plays a central role in heart disease prevention.
- Focus on lean proteins, whole grains, fruits, vegetables, and healthy fats such as olive oil and nuts. Limit salt, red meat, sugary drinks, and trans fats.

- **Physical activity** – It strengthens the heart, lowers blood pressure, improves cholesterol, and aids weight control.
- Aim for at least 150 minutes of moderate aerobic activity or 75 minutes of vigorous exercise weekly, plus muscle-strengthening activities at least twice per week.
- **Mental health factors** – These are critical, yet often overlooked risk modulators.
- Prioritise 7–9 hours of quality sleep each night.



- Use relaxation techniques, mindfulness, or counselling to manage stress
- Building the heart's endurance through cardiac rehabilitation
- **Preventive care** – Cardiologists play a vital role in the diagnosis, management, and prevention of cardiovascular disease.
- At cardiac care units and cardiology centres, experts use tools including ECGs, echocardiograms, stress tests, blood tests, and cardiac catheterisation to assess heart health.
- The importance of World Heart Day lies in its power to raise mass awareness about heart diseases.
- Encourage early screening and detection, inspire governments and policymakers and motivate individuals to adopt healthier lifestyles

7.6 India's vaccination drive – A lesson for Every Nation

Recently, India's immunization programmes received a worldwide attention and recognition for fighting against various diseases.

What is Universal immunization programme (UIP)?

- **Vaccination** – It is one of the most effective and cost-efficient public health measures, saving millions of lives.
- **UIP** – India's Universal Immunisation Programme (UIP) is the world's largest, and annually vaccinates 2.6 crore infants and 2.9 crore pregnant women.
- It contributed to a decline in under-5 mortality from 45 to 31 per 1,000 live births between 2014 and 2021, according to the Sample Registration System 2021.
- **Vaccines included** – The UIP offers free immunisation against 12 diseases
 - 11 vaccines nationwide and
 - 1 vaccine in endemic areas.
- **Recent addition** – In the past decade, six vaccines were added to the UIP across age groups.
 - Tetanus and Adult Diphtheria

- Inactivated Poliovirus
- Measles-Rubella
- Rotavirus
- Pneumococcal Conjugate
- Japanese Encephalitis
- **Coverage** – India's full immunisation coverage was 62% in 2014 (National Family Health Survey-4, 2015-16).
- **Mission Indradhanush** – To achieve 90% coverage, India launched Mission Indradhanush (MI) in 2014.
- **Intensified mission Indradhanush** – In 2017, it launched the Intensified MI (IMI) programme to strategically target low-coverage areas and missed populations.
- By 2023, 12 phases of the MI and IMI had been completed, vaccinating 5.46 crore children and 1.32 crore pregnant women.
- **Inclusion into campaigns** – The MI and IMI phases were integrated into campaigns such as the Gram Swaraj Abhiyan and the Extended Gram Swaraj Abhiyan to further the outreach.
- As a result, full immunisation coverage increased in 2024–25.
- **Challenges** – Reaching remote and migratory populations, clusters with low awareness, and populations with vaccine hesitancy.
- **Innovative strategies** – Approaches such as 'zero-dose' outreach, digital tracking, and infrastructure improvements are being used to address these gaps.



Discover the power of the Universal Immunization Programme (UIP)!

Get vaccinated against **12** vaccine-preventable diseases at no cost.

Vaccines available nationally against these 11 diseases	Vaccine available sub-nationally against 1 disease
▶ Diphtheria ▶ Pertussis ▶ Tetanus ▶ Polio ▶ Measles ▶ Rubella ▶ Rotavirus diarrhea	▶ Hepatitis B ▶ Meningitis ▶ Severe form of childhood Tuberculosis ▶ Pneumonia caused by Hemophilus Influenza type B and Pneumococcal Pneumonia ▶ Japanese Encephalitis, JE vaccine is provided only in endemic districts



What are some achievements of Vaccine coverage?

- **Polio** – India has maintained its polio-free status since 2011 through continued stringent surveillance.
- Lessons from the National Polio Programme have strengthened the UIP and vaccine-preventable disease surveillance.
- **Tetanus** – India also achieved maternal and neonatal tetanus elimination in 2015 and was declared Yaws-free in 2016.
- **Measles-Rubella** – Between 2017 and 2019, through the nationwide Measles-Rubella catch-up campaign, 34.8 crore children aged 9 months to 15 years were vaccinated, alongside the introduction of the rubella vaccine into the UIP.
- **Unexpected Setbacks** – The COVID-19 pandemic disrupted routine immunisation services, causing setbacks in the gains made under UIP.
- Disruptive measles outbreaks between 2022 and 2024 signalled immunity gaps and affected large clusters of unimmunised children.
- **India's response** – In response, the IMI 5.0 in 2023 targeted under-five children across the country.
- The Zero Measles- Rubella Elimination campaign was launched in 2025 to boost public awareness about immunisation.
- These efforts aim to surpass 95% national Measles-Rubella coverage and build strong herd immunity.

What are the innovations, strengths and potential of India's vaccine programme?

- **Logistics** – India has prioritised cold chain logistics, system strengthening through the Pradhan Mantri Ayushman Bharat Health Infrastructure Mission.
- It strengthened the vaccine delivery and vaccination using the U-WIN platform.
- **U-WIN** – It enables end-to-end digital vaccination and record keeping and tracking of vaccination for pregnant women and children up to 16 years.
- It enables nationwide, anytime-anywhere access for vaccination services, especially for migratory populations.
- **Complementary digital technologies** – This includes

- The electronic Vaccine Intelligence Network for vaccine stock
- The National Cold Chain Management Information System for real-time cold chain tracking
- The SAFE-VAC module for vaccine safety reporting.
- **Scenarios during COVID** – During the COVID-19 pandemic, India was a frontrunner in vaccine development.
- The COVID-19 vaccination programme was launched on January 16, 2021, just weeks after the global rollout.
- By January 2023, over 220 crore doses had been administered, covering 97% of citizens with one dose and 90% with both doses, marking a great achievement in public health on the global stage.
- **Domestic manufacturing** – Despite pressure from various sectors, India relied on its domestic vaccine development and manufacturing capacity.
- **Proactive public-private partnerships** – Through this India not only met its national needs but also supported many low and middle-income countries.
- Through the Vaccine Maitri initiative, India reflected the spirit of Vasudhaiva Kutumbakam (the world is one family).
- **Future prospects** – With the 'Make in India' strategy, the country has the potential to transform the future global vaccine landscape.
- **Serves as a model** – India's immunisation achievements over the past decade are path-breaking and globally recognised as a model for emulation.
- **Recent awards** – On March 6, 2024, India received the Measles and Rubella Champion Award from the Measles and Rubella Partnership, honouring its efforts in the South-East Asia Region.
- India has made remarkable strides in expanding vaccine coverage, strengthening supply chains, enhancing surveillance, and building public trust.
- **Measures needed** – There remains a need to closely link high-quality and sensitive disease surveillance with immunisation efforts, as well as monitoring of anti-vaccine narratives.
- For a country's pandemic/epidemic preparedness, the immunisation and vaccine-preventable disease surveillance has to have a ONE-HEALTH lens.
- This would mean nurturing existing platforms and integrating joint surveillance of human, animal, and environmental systems.

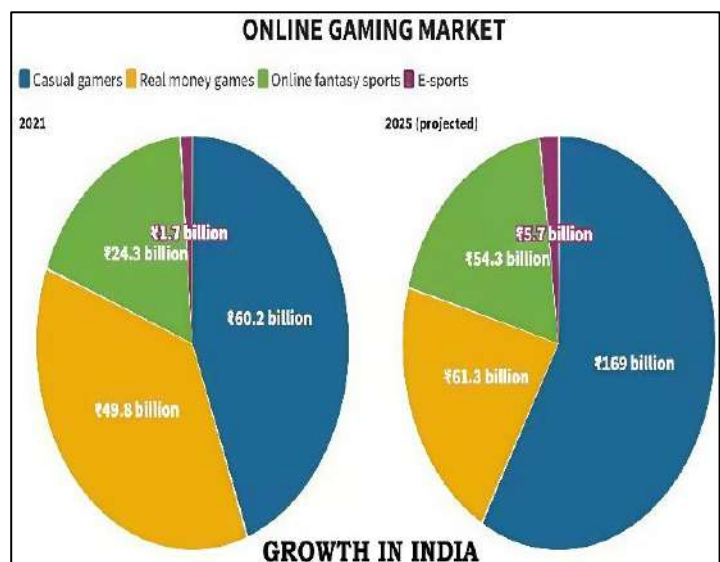
8. GOVERNANCE

8.1 Regulation of Online Gaming in India

Recently, the Parliament passed the Promotion and Regulation of Online Gaming Bill, 2025.

What are online games?

- **Online games** – It is the activity of playing a video game over a computer network, typically the internet, usually with other players or users.
- This allows players worldwide to connect and compete or cooperate with each other on a variety of devices, including consoles, PCs, and mobile phones.
- **Health effects** – The World Health Organization (WHO) has linked RMGs to compulsive behaviour, psychological distress, financial hardship, and an overall disruption of family life.
- **Economic loss** – Government data suggests that Indians are losing Rs.15, 000 crore every year due to Real Money Games (RMGs).



- Reflecting these dangers, 32 cases of suicide attributed to online gaming addiction have been reported in Karnataka in the past 31 months.
- The RMG industry says this ban may threaten more than two lakh jobs across 400+ companies.

What are the definitions of various online games?

- **Three segments** – The Act has proposed three categories for online games
 - E-sports, Social gaming and RMGs.
- While the Act aims to promote e-sports and social gaming segments, it seeks to ban all forms of RMGs and its advertisements.
- **Real money game** – The Act defines an online money game as an online game played regardless of whether it is based on skill, chance or both, and is played after a fee-payment or with an expectation of winning money or other stakes (can include credits, coins, tokens, virtual money, etc. which can be converted to money).
 - **Examples** includes variants of popular games like Poker, Rummy, Fantasy Cricket, and Ludo would be classified as RMGs.
- **E-sports** – The Act defines them as games which are recognized under the National Sports Governance Act, 2025 and are registered with the proposed regulatory authority.
- It may include the payment of a registration or participation fee alongside performance-based prize money.
- Examples include games like Grand Theft Auto and Call of Duty.
- **Social gaming** – While there is no legal definition of social gaming, it is included in the broader category of online games.
- It can be defined as games played on an electronic or digital device and operated as a software through the Internet.
- **Exception clause** – Under Section 4 of this Bill, the government can facilitate the development and availability of online social games for recreational and educational purposes.

How the online gaming will be regulated?

- **Punishments** – Offering online money games or engaging in transaction or authorisation of funds for the same will be punishable with imprisonment of up to three years, a fine of up to Rs.1 crore, or both.
- Unlawful advertisement will be punishable with imprisonment of up to 2 years, a fine up to Rs.50 lakh, or both.
- Under the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, offences shall be cognisable and non-bailable.
- No penal action for players has been codified.
- **Blocking/Disabling apps** – The central government stated that the Indian Computer Emergency Response Team (CERT-IN) will be tasked with blocking or disabling apps that continue to provide banned money gaming services in India.
- It may rope in Interpol to bring in offshore operators of money gaming platforms.
- **Regulatory authority** – The Act empowers the Central government to notify and constitute a regulatory authority to recognise, categorise, and register online games.
- **Complying with KYC** – Online gaming firms were required to comply with KYC norms, and uphold measures to safeguard children.
- It includes measures for parental access control alongside age rating mechanisms based on the nature and type of content.
- **No provision for minors** – The new act makes no provisions to constraint minors from playing online social games or e-sports.
- **Promotion of social gaming** – It also provides for a budget allocation from the Consolidated Fund of India to promote online social gaming in the country.

What is the need for the Act?

- **Loss of money** – The act was a response to complaints from users who had lost thousands of crores on online money games, and that it was not a knee-jerk reaction.
- **Malicious gaming algorithms** – The government said that there is irrefutable proof that the algorithms of online gaming firms do not allow for any user to emerge as a net winner in the long run.

- **Source of terror funding** – A Parliamentary Panel Report (2023) stated that gaming portals have become agents for funding terror activities.
- **Tax evasions** – A 2022 Financial Intelligence Report reported that online gaming firms had evaded tax of Rs.2,000 crore.
- In yet another report, the government said that gaming companies were involved in GST tax evasion of Rs.30,000 crore.
- **Fraudulent activities** – The Defense Ministry's think tank found that the Chinese App, FIEWIN, has defrauded Indian users of Rs.400 crore, with an ED investigation finding evidence of use of mule accounts and cryptocurrency wallets.
- The current Act says that the unchecked expansion of RMGs is linked to financial fraud, money laundering, tax evasion and many other unlawful activities.
- **Lack of transparency** – Gaming firms rely on opaque algorithms designed to manipulate user engagement, and that games can also be operated by bots or undisclosed agents undermining fairness and transparency.
- **Undermining domestic laws** – The Act says that gaming firms operate from offshore jurisdictions bypassing domestic laws, undermining state level regulations.
- This presents significant enforcement challenges in terms of extra-territorial jurisdiction and interstate inconsistencies.

What are measures already taken by India?

- **State list** – Entries 34 and 62 of the State List in the Seventh Schedule of the Constitution places the regulation and taxation of betting and gambling within the jurisdiction of State governments.
- **Central government measure** – In 2023, the Indian government reclassified GST brackets for online gaming along with casinos and horse racing, putting them in the same bracket as lotteries and betting.
- In October 2023, it imposed a uniform 28% GST on the entire entry fee/deposit, instead of platform commission.
- Gaming firms opposed this move, claiming that their platforms were skill based, and termed retrospective taxes as unfair and damaging.
- **Measures of state governments** – Various State governments have taken regulatory actions before.
- In 2017, Telangana became the first State to ban all forms of online gaming including skill-based games.
- In 2020, Andhra Pradesh banned online gambling, and in 2022, Tamil Nadu banned games Rummy Poker.
- **Supreme Court's intervention** – The Supreme Court (SC) this year granted a stay on notices issued to online gaming companies.
- The top court's decisions on whether fantasy sports, poker and rummy should be treated as games of skills or gambling, and on retrospective tax for RMG firms, are awaited.
- The Central government has requested the SC for one more week to file submissions in the GST dispute on online gaming, with industry players arguing that games of skill cannot be equated with gambling.
- The SC had earlier said that games like Rummy and Fantasy Sports involved a substantial degree of skill and cannot be equated with gambling.

What lies ahead?

- This Act does not distinguish between games of skills and games of chance, leading critics of the Act to say that it erases the intelligible difference and is violative of Article 19 (1) (g) of the Constitution, giving a guaranteed Right to Trade and Occupation.
- If the matter is challenged, then the SC can step in to shield the gaming industry with interim relief or issue a notice to the government to explain the rationale behind such a law.

8.2 Digital Transformation in Gram Panchayats

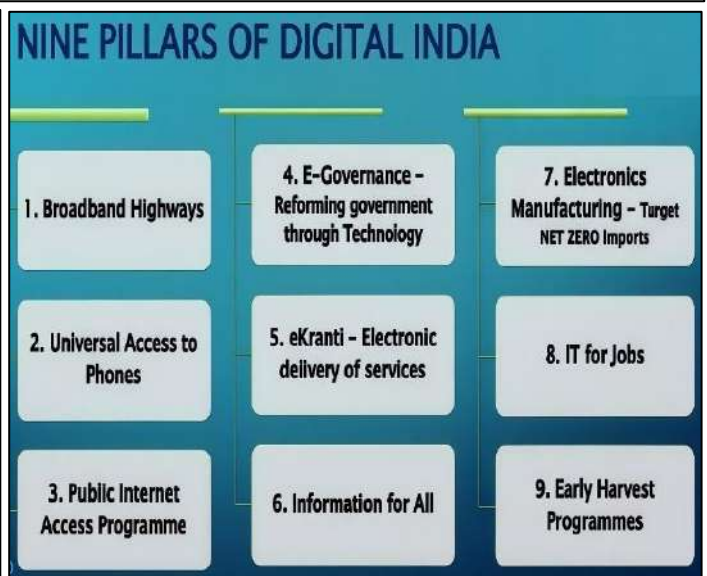
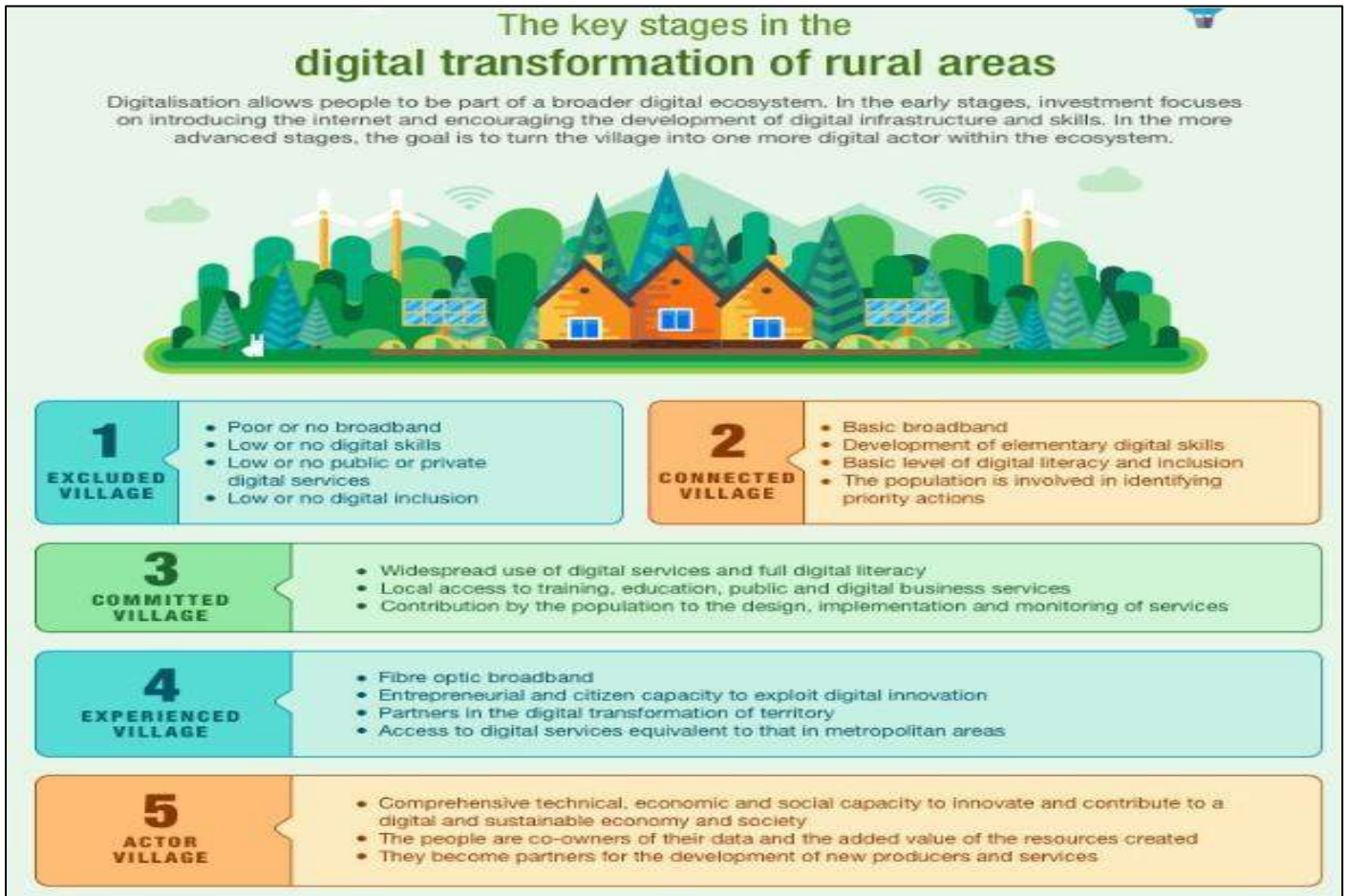
In recent times, The Ministry of Panchayati Raj (MoPR) has launched a series of digital reforms to strengthen Gram Panchayats.

What is digital transformation?

- **Digital transformation** – It is the integration of digital technology into all areas of a business and governance, fundamentally changing how an organization operates and delivers value to its customers.

- It's not just about new technology, but also about a cultural shift involving people, processes, and data to meet evolving market and customer demands.

What are the key initiatives in digital governance?



- SabhaSaar** – The Ministry of Panchayati Raj (MoPR) launched SabhaSaar in August 2025.
- It is an Artificial Intelligence (AI) tool that creates structured minutes of meetings from the audio or video of Gram Sabha and other Panchayat gatherings.
- It is linked with *Bhashini*, the National Language Translation Mission, which allows it to work in 14 Indian languages.
- This makes it accessible to communities across diverse regions.
- With the help of SabhaSaar, Gram Panchayat officials can now focus more on governance and service delivery.

- The tool handles the documentation work, thus ensuring real-time, unbiased records and greater transparency.
- **SVAMITVA** – The SVAMITVA (Survey of Villages and Mapping with Improved Technology in Village Areas) Scheme was launched on 24 April 2020, on National Panchayati Raj Day.
- The scheme gives rural households legal ownership papers for the homes and land they occupy.
- Using drones and advanced mapping tools, it clearly marks property boundaries.
- With these documents, families can obtain bank loans, resolve disputes and make better use of their assets.
- Gram Panchayats gain by improving property tax collection and enabling better resource planning.
- The scheme is implemented by Ministry of Panchayati Raj with support from the Survey of India, with the National Informatics Centre Services Inc. (NICSI) as the technology partner.
- The programme is an excellent model of Global Model of Citizen-Centric Governance.
- **BharatNet** – The Government of India launched BharatNet in October 2011, to bridge the digital divide.
- The project aims to deliver affordable, high-speed internet to every Gram Panchayat.
- BharatNet is being implemented in phases to cover all Gram Panchayats.
- The project provides broadband through Wi-Fi hotspots, Fibre to the Home (FTTH) connections and other services.
- So far, more than 13 lakh Fibre to the Home (FTTH) connections have been commissioned under BharatNet.
- These connections support online services such as e-education, e-health, e-governance and e-commerce.
- Farmers are also using the network to expand their knowledge of agriculture and stay updated on the latest practices and technologies.
- With BharatNet connectivity in Gram Panchayats, apps such as Gram Samvaad, Meri Panchayat, National Pest Surveillance System (NPSS) and PM Kisan bring governance, welfare and farm services directly to villager's phones.
- **eGramSwaraj** – The ministry launched eGramSwaraj under the e-Panchayat MMP on 24 April 2020, a user-friendly web-based portal.
- This is a work-based, comprehensive application that brings together all core functions of Panchayats on a single digital platform.
- It covers decentralised planning, budgeting, accounting, monitoring, progress reporting, asset management, and also enables online payments.
- **Meri Panchayat App** – It serves as an integrated mobile governance platform, designed and developed by the National Informatics Centre (NIC).
- It empowers rural communities by promoting transparency, accountability and citizen participation in Panchayat affairs.
- The app is powered by eGramSwaraj and linked with other portals of the Ministry of Panchayati Raj and the Government of India.
- The app empowers over 25 lakh elected representatives and nearly 95 crore rural residents across 2.65 lakh Gram Panchayats.
- Through Meri Panchayat App, citizens can effortlessly access, on their mobile devices:
 - Real-time Panchayat budgets, receipts, payments and development plans.
 - Details of elected representatives and local functionaries.
 - Information on public infrastructure and civic services within the Panchayat.
 - Gram Panchayat Development Plans (GPDs) with project tracking.
 - Weather forecasts at the Panchayat level.
 - Social audit tools, fund use data and grievance redressal with geo-tagged and geo-fenced features.
 - Multilingual interface with support for over 12 Indian languages for inclusiveness.
- **Panchayat NIRNAY** – The Panchayat NIRNAY portal is a real-time monitoring system for Gram Sabha meetings.

- It is one of the key pillars of local self-governance in rural India.
- The portal helps schedule meetings, notify citizens of agendas in advance and encourage wider participation.
- It records decisions of Gram Sabhas and makes them available for ready reference.
- The system replaces paper-based processes with a fully automated workflow.
- It allows Panchayats to share best practices across the country and manage meetings more effectively.
- **Gram Manchitra** – The Ministry of Panchayati Raj launched the Gram Manchitra Geographic Information System (GIS) application.
- It is a Platform to help Gram Panchayats prepare plans using geo-spatial technology.
- It offers a unified digital map where officials can visualise developmental works across different sectors and align them with the Gram Panchayat Development Plan (GPDP).
- Gram Manchitra provides a range of planning tools.
- These include identifying suitable sites for new projects, tracking local assets, estimating project costs and assessing likely impacts.
- By using GIS, Panchayats are able to design practical and achievable development plans, supported by clear data and evidence.

What lies ahead?

- These reforms aim to make governance faster, more transparent and more inclusive.
- This shift also reflects the Government's broader vision under *Digital India* and *Atmanirbhar Bharat*.

8.3 Regulation of Tobacco Products in India

Recently, there is an increase in the economic cost of tobacco and also increase in premature death of people due to tobacco use.

What are tobacco products?

- **Tobacco products** – They are items made from tobacco leaves, designed for human consumption.
- **Types** – They can be broadly categorized into smoked and smokeless products, each with various forms.
 - **Smoked products** include cigarettes, cigars, pipes, and waterpipes (hookahs/shisha).
 - **Smokeless products**, which don't involve burning tobacco, include chewing tobacco, snuff, snus, and tobacco pouches.
- **Recent developments** – This include heated tobacco products (HTPs) and nicotine-only products, which deliver nicotine without burning tobacco.
- **Economic cost** - In 2017, the annual economic costs of all tobacco products for the population aged 35 years and above in India were estimated at ₹1,773.4 billion (1.04% of GDP).
 - In addition to ₹566.7 billion (0.33% of GDP) in annual healthcare costs attributable to second-hand smoking.
 - These costs include direct medical and nonmedical expenditures, indirect morbidity costs, and indirect mortality costs of premature deaths.

What are the Gaps in the existing law?

- **Existing law** – The Cigarettes and Other Tobacco Products Act (COTPA), 2003, is a stringent Act.
- However, its implementation has varied and is poor in several Indian States.
- The legislation also has various other shortcomings that require urgent attention.
- **Lacks focus on smokeless tobacco (SLT)** – Although laws like the Food Safety and Standards (Prohibition and Restriction on Sales) Regulations, 2011, contribute to its control, they are relatively weak and poorly enforced.
- Being cheaper, culturally acceptable and associated with lesser stigma, SLT is the more commonly consumed form of tobacco in India.

- It is also known to be more carcinogenic than smoked forms of tobacco.
- **Fails to tackle of surrogate advertisements** – Exposure to tobacco advertisements is known to promote initiation in non-consumers.
- Though direct tobacco advertisements are banned in India, companies use similar packaging for mouth fresheners to build brand recognition and promote tobacco through classical conditioning.
- **Influence of social media** – While warning signs are mandatory, movies, social media, and over-the-top (OTT) streaming platforms are other ways of indirectly promoting tobacco use.
- Exposure to tobacco use in movies is known to be associated with the initiation of smoking in teens and young adults.
- **Issues with tax regime** – The tax burden on bidis, the most consumed smoked product, is just 22%, and about 50% on cigarettes far below the World Health Organisation's recommended 75%.
- SLT is also poorly taxed as it's largely produced in the unorganised sectors.
- Since the GST rollout in 2017, only two minor tax hikes (in 2020–21 and 2022–23) have been made, each raising overall tobacco taxes by just 2%.
- Combined with rising incomes, this has made tobacco more affordable.
- By avoiding substantial tobacco tax hikes, the Indian government is missing a key revenue opportunity and worsening public health outcomes.
- **Ineffective regulation of tobacco labels** – Although updated every two years, there's limited evidence on their effectiveness in preventing tobacco use.
- Unlike many European countries that use packaging to educate users about a range of tobacco-related harms.
- This includes cancer, fatal lung disease, peripheral vascular disease, and harm during pregnancy, and infertility - India's warnings rely mainly on fear-based messaging.
- From 2016 to 2020, warnings focused only on oral cancer and later on generic messages about early death.
- Given that packaging is a highly cost-effective public health tool, it should be better leveraged to inform and empower users to quit.
- **Inefficient approach** – The existing biomedical approach of tobacco control through tobacco cessation clinics fails to address the underlying social determinants of tobacco use.
- It is also being inadequate in providing access to tobacco cessation services to cater to the large number of tobacco users requiring support.
- **Lack of scientific interventions** – The Tobacco Free Education Institute (ToFEI) currently promotes awareness in schools through posters and biannual activities, but lacks the scientific rigour needed for effective tobacco control.
- **Inefficiency of ToFEI** – It falls short in several areas, it offers no cessation support for children, lacks teacher training and parental involvement, does not actively educate students on tobacco harms, and has no evaluation mechanism.
- **Issues with e-cigarettes** – India is one of the few countries to ban e-cigarettes.
- However, poor implementation of the Prohibition of Electronic Cigarettes Act (PECA) 2019 has also resulted in an increasing threat of e-cigarettes to public health in India.
- Despite the ban, e-cigarettes can be purchased online in India, making them more accessible to adolescents.

What needs to be done?

- **Need a holistic approach** – The National Tobacco Control Programme (NTCP), which currently focuses mainly on awareness generation and COTPA implementation, needs to take a holistic approach to tobacco control by addressing the social and commercial determinants of tobacco use.
- Poverty, stress, unemployment, and hunger are known to impact tobacco use and cessation rates.
- **School based strategy** – This includes enforcing tobacco-free policies, integrating prevention education from kindergarten to grade 12, training teachers, and involving families, supporting cessation for students and staff, and regularly evaluating programmes.
 - **For example, the U.S.'s national public health agency, the Centres for Disease Control and Prevention (CDC) recommends comprehensive school-based strategies.**

- **Lack of awareness** – The public health researchers are unaware of the most recent trends in tobacco consumption.
- **Inter-ministerial coordination** – Key ministries including Education, Law and Justice, Social Justice and Empowerment, Commerce and Industry, Consumer Affairs, Food and Public Distribution, Finance, Information and Broadcasting, and Health and Family Welfare must coordinate efforts to address both demand- and supply-side drivers of tobacco use.
- **Increase in investment** – Greater investment is needed not only in developing and implementing control measures but also in strengthening research institutions to produce regularly updated, robust data.
- **Development of holistic data** – It should inform assessments of tobacco use, evaluate control strategies, guide cessation interventions, and identify regional policy gaps.
- **Establishing an independent oversight body** – It is also essential to monitor and expose industry interference.
- **Stakeholder's collaboration** – Sustained collaboration among policymakers, implementers, and researchers is crucial to achieving a tobacco-free India.

9. INTERNATIONAL RELATIONS

9.1 India's Strategic Autonomy in a Multipolar World

The 2025 Shanghai Cooperation Organization (SCO) Summit in Tianjin unfolded under the shadow of shifting power equations.

What is strategic autonomy?

- **Definition** – It refers to a nation's ability to make sovereign decisions in foreign policy and defence without being constrained by external pressures or alliance obligations.
- **Implies independence** – It is not synonymous with isolationism or neutrality rather, it implies flexibility, independence and the capacity to engage with multiple powers on one's own terms.
- **Middle path** – Strategic autonomy offers a middle path between rigid bloc politics and passive disengagement.
- It demands deft diplomacy, institutional resilience, and a clear-eyed understanding of national interest.
- **Pursuit of strategic autonomy** – It is no longer a theoretical aspiration whereas, it's a daily diplomatic practice, fraught with complexity and consequence.
- Autonomy need be redefined – not as isolation, but as resilience and adaptability.

What are the challenges for India in maintaining strategic autonomy?

- **Accelerating global power shifts** – As global power shifts accelerate and traditional alliances fray, India finds itself navigating a delicate path between competing giants: the United States, China and Russia.
- **Fragmented world order** – The unipolar moment of American dominance has given way to a fragmented world order.
- **Fluid and unpredictable environment** – China's assertiveness, Russia's revisionism and the West's internal divisions creates a fluid and unpredictable environment.
- **Issues with US** – The Trump administration's erratic trade policies, followed by stinging tariffs and sanctions in his second term, have strained economic ties.
- **Disputes with China** – Aggressive actions, particularly along the shared border, its dominated regional order and economic competition directly threaten India's national security and sphere of influence.
- **Concerns with Russia** – Growing closeness to Beijing and its global isolation following the Ukraine conflict making it harder for India to maintain a balanced relationship with the West.
- **Domestic factors** – Political polarisation, economic vulnerabilities and institutional constraints can limit the effectiveness of autonomous decision-making.
- **Technological interdependence** – The global economy is increasingly interdependent, and technological ecosystems are dominated by a few players that will leads to overdependence on foreign countries.

What are the approaches followed by India?

- **Measured response** – It continues to engage with the U.S., maintains independent positions on global conflicts and insists on the primacy of national interest over ideological alignment.
- **Cautious engagement and firm deterrence** – It strengthens border infrastructure, deepens ties with Indo-Pacific partners, and invests in indigenous defence capabilities.
- **Resisting confrontation and capitulation** – By asserting sovereignty and refusing to be another country's counterweight by controlling Chinese access to the Indian economy and simultaneously keeping channels of communication open.
- **Preserve freedom** - From Nehru's non-alignment during the Cold War to the Modi government's "multi-alignment" in the current era -
- The successive governments have sought to preserve India's freedom of action while adapting to changing geopolitical realities.
- **Hedging** – India employs a "hedging" strategy, engaging with multiple powers to minimize risks and retain diplomatic independence rather than fully aligning with one power.

***Hedging**, here, refers to a foreign policy strategy where a state cultivates a middle-ground, flexible position to avoid choosing between competing great powers, instead seeking to maximize benefits from all sides by forming a combination of cooperation and caution.*

- **Technological and digital** – It encompasses data sovereignty, digital infrastructure and supply chain security.
- India's recent efforts to build indigenous platforms, secure critical minerals and assert its voice in global tech governance are some of the steps in this direction.

What need to be done for maintaining India's strategic autonomy?

- **Multi-alignment** – Rather than isolation, India pursues a multi-alignment strategy, building partnerships with diverse countries to enhance its agency and influence in a multipolar world.
- **Clear definition of national interest** – India could consistently articulate its core interests - territorial integrity, economic growth, technological advancement, and regional stability and ensure all foreign engagements align with these.
- **Engaging with global forums** – It participates in multilateral forums such as BRICS, SCO, IMEC, Quad, etc. and engaging with multiple nations play a balancing role without engaging into errands.
- **Need for stronger capabilities** – To maintain its standing, India need to make investment in its domestic defence production and deep-tech start-ups to secure its borders and assert its interests.
- **Economic and technological resilience** – Diversify trade partnerships and promote digital sovereignty by investing in indigenous tech infrastructure to avoid overdependence on foreign countries.
- **Cultural and soft power projection** – Leverage India's rich heritage, democratic values and global diaspora to shape narratives and build goodwill.
- **For shifting global order** – India needs to continue steadily to walk the tightrope — engaging with the U.S. without becoming a vassal, deterring China without provoking war, and partnering with Russia without inheriting its isolation.

Conclusion:

- Strategic autonomy is not just a slogan. It is a strategy - the art of navigating a turbulent world without losing one's bearings.
- In doing so, India does not reject the world — it reclaims its agency within it.
- Strategic autonomy is not about standing alone; it is about standing straight, and standing tall.

9.2 Iran and India – Ancient Civilisations and New Horizons

The world is undergoing a profound change which is long dominated by western powers, especially the United States, many people call this a "time of transition," while others label it as a "crisis of the Western-led international order."

What are the actions of United States and response from global south?

- **Hegemonic actions** – The blatant violations of international law, the unchecked use of force, trade wars, a disregard for global institutions, manipulation of the media, and irreversible destruction of the environment.

- **Toolkit of dominance** – The global financial system, monopoly over science and technology, imposition of so-called human rights standards, and control of global media is losing its effectiveness.
- **Response of Global South** – Countries, particularly in the Global South, refuse to remain under domination and discrimination of the west.
- **Begun a new path** – The global south has begun their new path by relying on local models, developing indigenous science and technology, and strengthening their defence and security.
- Emerging powers and ancient civilisations are redefining their roles.

What was the role played by ancient civilisations in redefining the roles?

- **Iran and India** – Two of the world's oldest and richest civilisations, have, for centuries, shaped global culture.
- **Peace and war** – Both civilisations valued peace and avoided war, fighting only in defence against aggression.
- **Cultural influence** – Even when defeated militarily, their cultural influence was so profound.
- They reshaped the conquerors, imparting their knowledge of statecraft, governance, literature, philosophy, and art and architecture to them.
- **Influence of Islam** – Iran's civilizational values continued in a new form, while India, recognised as the oldest continuous civilization was further enriched by Islamic influence.
- **Shared values** – The view of life as a gift, the belief in the ultimate triumph of good over evil, respect for diversity, the pursuit of inner purification and the commitment to spiritual growth

How is the modern era influence the world in defending the global south?

- **India's Anti-Colonial Legacy** – India, through its anti-colonial struggle and leadership of the Non-Aligned Movement, defended the rights of the Global South.
- **Iran's Defiance of Western Control** – Iran, by nationalising its oil industry and through the Islamic Revolution, resisted western domination.
- **Values needed today** – Peace, spirituality and respect for nature that can guide humanity in facing structural violence, environmental crises and social collapse.
- **Strategic cooperation** – India and Iran can together build the foundations of a just and humane order
 - By strengthening South-South cooperation,
 - Playing an active role in frameworks such as BRICS and
 - Advancing transformative projects such as the International North-South Transport Corridor (INSTC).

What is the role of west with respect to Palestine issue?

- **Supremacist & Brutality** – Nowhere else is the hypocrisy, the supremacism, and the brutality of the West more evident.
- **Resistance of Palestinian people** – They are standing on the front lines against occupation and expansionism.
- They are fighting for the right of all Global South nations to resist domination.
- **Iran's defence** – Iran's stance for its right to peaceful nuclear energy is also a defence of the South's right to development.
- At the same time, Iran becomes a stronghold for international law, diplomacy, and dialogue against those who claim to uphold human rights and democracy, yet constantly violate law and order.
- The struggle for Palestine seems to be the foremost concern of the Global South.

How the multilateral organisation has played against the dominance of west?

- **Promise for future** – BRICS offers the promise of an independent, participatory, and democratic future.
- BRICS hold great potential to challenge the economic dominance of the West.
- **Civilizational bridge** – The INSTC corridor is more than an economic route.
- It is a civilizational bridge, linking Eurasia, the Caucasus, India and Africa, while bringing stability to West Asia.

How the U.S.'s intervened in regional politics for its own interest?

- **West Asia** – The U.S. and its allies have consistently sought to prevent the emergence of indigenous regional security by supporting the Zionist regime.
- They fuelled the instability in Palestine, Lebanon, Iraq, Syria, Yemen, and Iran.
- **Response of Iran** – As the region's oldest civilisation, Iran has firmly opposed such interventions.
- It stood firmly against threatening the territorial integrity of the sovereign countries of the West Asia region.
- **South Asia** – The U.S. has played a major role in creating and expanding terrorist groups.
- **Interest of USA** – Whenever it has served its interests, Washington has intervened under the pretext of fighting terrorism.
- And whenever it has suited its agenda, it has even handed power back to those very terrorist groups.

What lies ahead?

- Iran and India, through civilizational wisdom, strategic independence and constructive partnership, can offer the world a new model.
- An order that is rooted in justice, common interests, and respect for human dignity.
- This is an order based not on domination, but on participation; not on superiority, but equality.
- It is a future where nations are not tools of the powerful, but builders of their own destiny.

9.3 Saudi-Pakistan Defence Pact

Recently, Saudi Arabia and Pakistan have signed a significant mutual defence pact.

What are the terms of the agreement?

- **Collective defence** – The official text released in Riyadh and Islamabad declares that “any aggression against either country shall be considered an aggression against both.”
- This principle of collective defence effectively commits each side to respond to threats to the other.
- **Permanent mechanisms** – The two countries will establish permanent coordination mechanisms, including a joint military committee, intelligence-sharing arrangements, and expanded training programmes.
- Pakistan has stationed military personnel in Saudi Arabia for decades.
- **Informal to formal** – The mutual defence agreement takes the partnership into a formal treaty framework from decades of informal military cooperation.
- **Stance on nuclear programme** – Saudi Arabia had reportedly provided generous financial assistance to Pakistan's nuclear programme.
- The agreement does not spell out whether Pakistan's nuclear capabilities extend to Saudi defence.
- **Clear symbolism** – Saudi Arabia is no longer satisfied with existing security ties and is letting Pakistan play a larger role in the Persian Gulf.

Why was the agreement signed now?

- **Inaction from US** – Qatar was a heavily defended ally of US and it came under Israeli attack without consequence.
- In 2019, when Iran's allies attacked Saudi oil installations, the U.S. looked away.
- Riyadh seems to have concluded that it cannot rely solely on U.S. security guarantees.
- Shifting focus of US – The U.S. doesn't want to get entangled in West Asia's conflicts any more as its strategic focus is shifting to East Asia.
- **The Gaza war** – The October 7, 2023 Hamas attack in Israel, and Israel's devastating response in Gaza, derailed Saudi Arabia's plans to normalise ties with Israel under the U.S.-brokered Abraham Accords.
- Since then, Israel's war in Gaza has spilled over into the region, deepening the insecurity of Gulf kingdoms.
- **Threat from Houthi rebels** – The Houthis in Yemen have also steadily expanded their military capabilities.

Qatar is home to the Al-Udeid airbase, the largest U.S. military base in West Asia.

- Their missile and drone strikes had disrupted Saudi oil facilities and shipping in the Red Sea.
- While there is a tenuous ceasefire between Saudi Arabia and the Houthis now, the Saudis continue to look at the Houthis as a challenge.
- The Saudis, the U.S. and Israel have repeatedly bombed Houthis, but they still remain a force in Yemen, controlling almost half of the country, including its capital Sanaa.
- **Significance of Saudi** – It is a Muslim-majority country, and has long experience in providing security services to the kingdom.
- **Pakistan's need** – In return, Pakistan needs Saudi financial support to stabilise its battered economy.

***The Houthis**, officially known as Ansar Allah (Partisans of God), are an Iranian-backed Shiite Muslim military and political movement in Yemen.*

What about West Asia's security landscape?

- **The plan of US** – The U.S.'s pre-October 7 plan was to bring Israel and the Gulf kingdoms closer.
- But Israel's attacks in Gaza, Syria, Lebanon, Yemen, Iran and Qatar have alarmed Arab states.
- **Demand of Saudi Arabia** – Post-October 7, Riyadh has said it would normalise ties with Israel only if Tel Aviv commits itself to the creation of a Palestinian state based on the 1967 border.
- **Israel's position** – Israel, on the other hand, says there won't be a Palestinian state.
- This means that the further expansion of the Abraham Accords is in doubt.
- By turning to Pakistan, Saudi Arabia is signalling to both Washington and Tel Aviv that it is diversifying its security alliances.
- **Potential risks** – Pakistan could be dragged into Saudi Arabia's regional rivalries with Iran or into the conflict in Yemen.
- For Saudi Arabia, the deal could entangle it in South Asian instability, particularly if tensions between India and Pakistan flare up again.
- The pact does not resolve Riyadh's core vulnerabilities, such as Iranian missile strikes or Houthi drones.
- It provides a hedge at a time when America's reliability is under doubt and Israel's behaviour is destabilising the region.

How does India view the pact?

- **Various complications** – the Saudi-Pakistan defence pact introduces complications on multiple fronts.
- **Strategic ties** – Over the past decade, New Delhi has invested heavily in its relations with Riyadh, deepening energy ties, expanding trade, and securing cooperation on counter-terrorism.
- Roughly 2.6 million Indian expatriates work in the kingdom.
- **Balancing the ties** – India has also sought to balance these ties with its growing strategic partnership with Israel.
- But Indian policy in West Asia clearly has a pro-Israeli tilt.
- **Israel's threat** – Now that Israeli-Saudi normalisation is not happening and Israel's unchecked militarism poses security threats to Gulf kingdoms, Saudi Arabia seems to have overlooked India's concerns by formalising the defence pact with Pakistan.
- **Saudi's hidden message** - If India can have a pro-Israel tilt, Riyadh can have a pro-Pakistan tilt is what the Saudis seem to be conveying.
- **Less attention for India** – As Arab monarchies diversify their alliances, they may be less sensitive to India's concerns.
- **Could reduce India's dominance** – If Pakistan successfully positions itself as a credible security provider to the Gulf, India's influence in the region could come under question.

What lies ahead?

- New Delhi must reckon with the broader structural shift that U.S. dominance in West Asia is no longer assured.
- Regional powers are recalibrating, and security arrangements once taken for granted are being reconfigured.
- India's interests ensuring energy security, protecting its diaspora, and preventing extremist spillovers are best served by stability and balance in the Gulf.

- New Delhi's best course lies in maintaining balance deepening economic and political ties with Riyadh, while continuing to engage with other Gulf states, Iran, and beyond.

9.4 Fentanyl - Uses and Concerns of the U.S.A

Recently, In the latest version of the Major's List sent to the U.S. Congress, President Donald Trump listed 23 countries as being significant sources and/or sites of transit of illicit drugs especially fentanyl that he said threaten the U.S and its people.

What is the Major's List?

- **Source countries** – The list of countries includes India, Pakistan, China, and Afghanistan.
- **Compilation** – The Major's List is compiled every year.
- **Contents** – It highlight regions where geography, commerce and/or industry contribute to the flow of narcotics or their precursor chemicals into international markets.
- The U.S. State Department has said that a country's presence on the list doesn't necessarily reflect the strength of its counter narcotics efforts.
- **Designation** – It is based on whether drugs or the chemicals used to make them are being produced or transported through that country in important quantities.
- **Failed countries** – Afghanistan, Bolivia, Myanmar, Colombia, and Venezuela were described as having "failed demonstrably" to meet their obligations under international drug-control agreements.

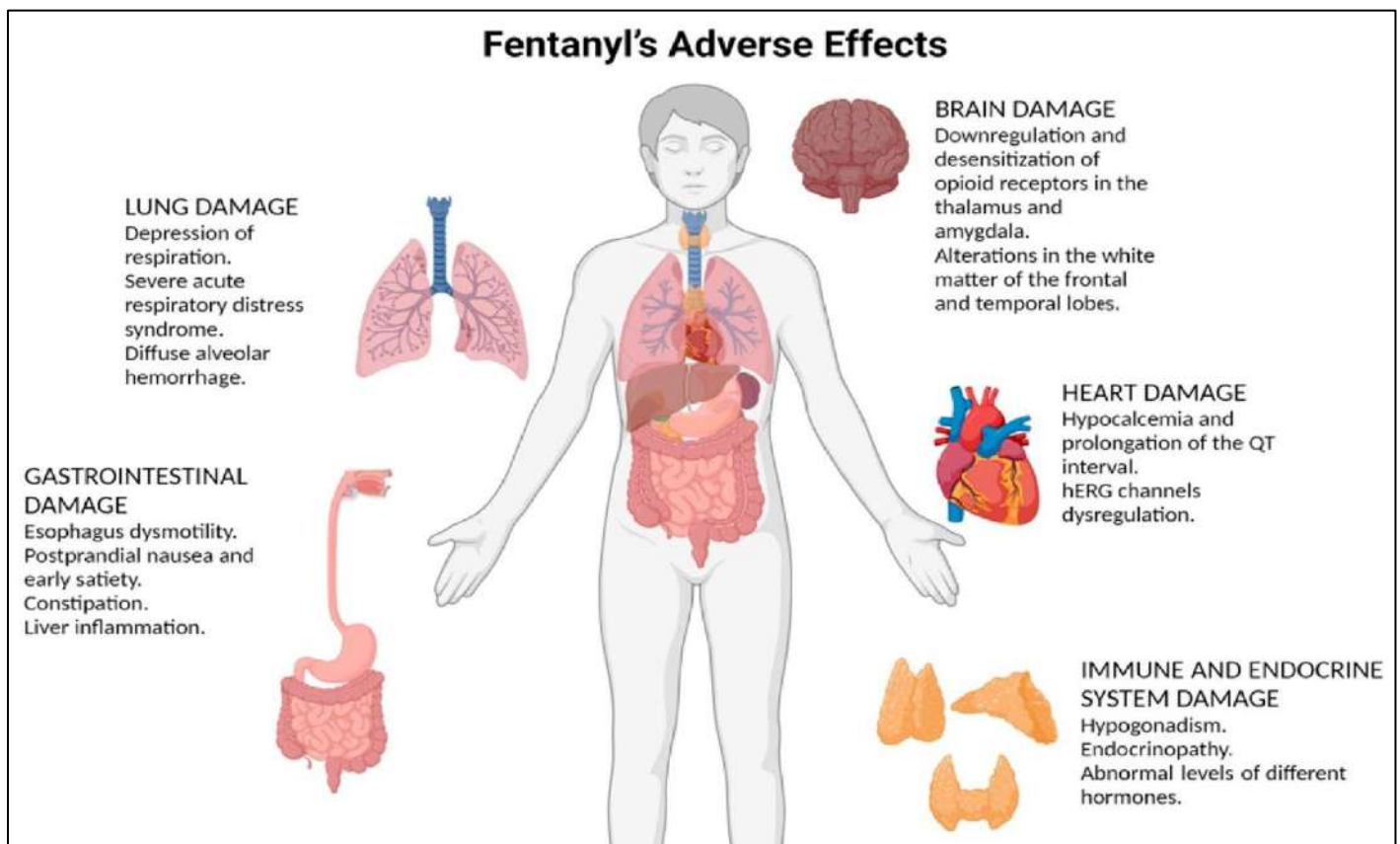
What is fentanyl?

- **Fentanyl** – It is a synthetic opioid and the leading cause of overdose drug deaths in the U.S.
- **Development** – It was first developed for medical use in the 1960s.

MEDICAL USES OF FENTANYL	WHAT ARE THE OVERDOSE SYMPTOMS OF FENTANYL?
• Pain Management: Used for post-surgical, cancer, and palliative care pain. • Anesthesia: Administered in surgeries and intensive care. • Epidural & Spinal Use: Enhances regional anesthesia. • Labor & Delivery: Provides pain relief during childbirth.	✓ OVERDOSE SYMPTOMS: • Slow or shallow breathing • Unresponsiveness & coma • Pinpoint pupils • Cyanosis (bluish skin) • Limp body & cold skin • Bradycardia (slow heart rate) ✓ Lethal Dose: – 2 mg is potentially fatal. ✓ Major Contributor to U.S. Opioid Deaths: Over 71,000 opioid-related deaths in 2021, primarily from fentanyl.

- In illicit settings, however, fentanyl is about 50-times more potent than heroin.
- Just 2 mg can be fatal because it's an agonist of the mu-opioid receptor.
- When fentanyl binds these receptors in sufficiently high quantities, it depresses the brainstem respiratory centres that control automatic breathing and crosses the blood-brain barrier and becomes highly concentrated in the central nervous system.
- Ultimately, the body suffers hypoventilation and respiratory depression.
- Opioid overdoses are reversed by naloxone, a competitive mu-opioid receptor antagonist that displaces opioids from the receptor and restores normal breathing.
- **Need for administration** – It is to be administered quickly because untreated respiratory failure can lead to brain injury and death within minutes.
- **Mortality in U.S** – According to U.S. data, from August 2023 to August 2024, more than 57,000 Americans died of opioid overdose, most of them involving fentanyl.
- The U.S. Drug Enforcement Administration (DEA) reported in 2022 that it seized 50.6 million fentanyl-laced pills and enough powdered fentanyl to account for 379 million potentially deadly doses, an amount sufficient to kill the entire U.S. population.

Mu-opioid receptor is a protein on nerve cells that normally responds to the body's own pain-modulating molecules.



Why is fentanyl hard to regulate?

- **Nature of production** – While heroin or cocaine are derived from plants, fentanyl is made in laboratories using compounds called its precursors.
- The most important of these are N-phenethyl-4-piperidone (NPP) and 4-anilino-N-phenethylpiperidine (4-ANPP).
- **Legitimate use** – These substances have legitimate industrial and pharmaceutical uses but they can also be diverted to illicit supply chains.
- **Role of precursor compound** – In a counterfeit laboratory, the precursors are processed into fentanyl powder by chemical reactions common in organic chemistry.
 - First, NPP is converted into 4-ANPP in a reductive amination reaction, where a nitrogen-bearing fragment is attached to the NPP ring and stabilised by a mild reducing agent.
 - Then, 4-ANPP undergoes an acylation reaction where an acyl group ($R-C(=O)$) is attached to the nitrogen atom, yielding fentanyl.
- These reactions can be carried out with ordinary glassware, solvents, and moderate amounts of heat.
- Once traffickers obtain the precursor compounds, they can easily turn them into fentanyl.
- Only very small amounts of precursors are required to make large quantities of fentanyl.
- These substances can be shipped discreetly, the trade has been difficult to regulate.

How is fentanyl supplied?

- **Supply chain** – The international fentanyl supply chain involves multiple actors.
- **Major players** – China and India play significant roles in the production of precursor chemicals, some of which are diverted into illegal channels.
- Mexican cartels are central in processing these precursors into fentanyl powder.
- **Made into pills** – Once produced, the powder is pressed into counterfeit pills or mixed with other narcotics and smuggled into the U.S., especially through its southwest border with Mexico.

What is the action taken by U.S?

- **Criminal prosecution** – In response, the U.S. government has pursued criminal prosecutions of companies and executives, trade penalties, diplomatic pressure, and enhanced law enforcement.

- In January 2025, two Indian companies, Raxuter Chemicals and Athos Chemicals, were charged with conspiring to export fentanyl precursors to the U.S. and Mexico.
- Bhavesh Lathiya, a senior executive at Raxuter Chemicals, was arrested in New York and charged with smuggling.
- **Denial of visa** – Following these cases, the U.S. Embassy in New Delhi revoked and denied visas for certain business executives and their families associated with trafficking fentanyl precursors.
- **Imposition of tariffs** – In February 2025, the Trump administration imposed tariffs of 25% on Canadian and Mexican imports and an additional 10% on Chinese imports citing fentanyl trafficking as one of the motivations.
- The tariffs on Canada and Mexico were suspended after those governments agreed to strengthen border enforcement, tariffs on China came into force.
- **Domestic measures** – The DEA has intensified operations to seize fentanyl shipments, dismantle trafficking networks, and intercept counterfeit pills that resemble legitimate drugs, such as oxycodone.
- In parallel, naloxone is being distributed more widely while awareness campaigns have warned consumers that counterfeit pills may contain lethal amounts of fentanyl.
- Treatment programmes for opioid dependence are being reinforced to reduce demand and provide alternatives to those struggling with addiction.

9.5 India – US Corn Problem

Recently, the US has expressed interest in exporting corn to India, but India remains cautious due to GM crop concerns, strong domestic production, and political considerations.

What is India's status about maize?

- **Production** – India's maize production is estimated at 356.73 lakh tonnes for the 2023-24 crop year.
- **Growing seasons** – About 83% of India's maize is grown during the Kharif season, though the Rabi season offers higher yields due to better irrigation.
- **Driving factors of growth** – The production is driven by the use of high-yielding seeds, improved irrigation, and increasing demand from the poultry and ethanol industries.
- **Aim of the government** – The government aims to double output to 86 million tonnes by 2047 to support food security and the growing demand from the animal feed and ethanol sectors.
- **India's global position** – India is the 5th largest maize producer, but only the 14th largest exporter.
- **Major maize producing states** - West Bengal, Telangana, Bihar, and Tamil Nadu, etc.
- **Major producing countries** – United States, China, and Brazil
- **Import** - Out of India's total corn (maize) imports of 0.97 million tonnes (mt) in 2024-25, a major chunk came from Myanmar and Ukraine.

Why India is not importing corn from USA?

- **Genetically Modified (GM)** – India does not permit any import of corn that is genetically modified (GMO), (Allowed only GM cotton for cultivation).
- **High Tariffs** – India allows up to 0.5 million tonnes of corn imports annually at 15%, with quantities beyond that attracting 50% duty.
- **Lead to Dumping** – The U.S. corn price is just about 70% of Indian maize without taking into account shipping, marketing costs and business margins, this would be equivalent to dumping.
- **Threat to domestic farmers** – A flood of cheap imports could cause domestic maize prices to crash, severely impacting the livelihoods of millions of Indian farmers.
- **Danger to ethanol program** – Import substitution through ethanol blending of 20% of petrol can potentially prevent \$10 billion of forex outgo every year, which could in turn go into the pockets of Indians including farmers.
- **Damage to India's maize ecosystem** – India has built a maize ecosystem for ethanol, the annual maize production has nearly doubled in the last two-three years.

- Import will destroy the ecosystem if we commit to cheap maize imports, leading to much distress to new maize farmers.

Why does the U.S. want to export to India?

- **Market potential** – India has a huge potential market for corn, given its rising consumption of animal products with an increase in population and per capita GDP.
- **Overproduction of cash crops** – The U.S. farming is characterized by overproduction of cash crops like corn, soya, etc.
- Out of a total 350 million tonnes of yearly corn production, some 45 million tonnes are exported.
- **Character of US farming** – It is essentially capitalist and characterized by high productivity, very large land holdings and high levels of mechanization.
- From time to time, the U.S. agriculture saw a shift from strengthening of hunger-nutrition and to industrial needs.
- **Use of maize in US** – In U.S, Maize is only marginally consumed directly by the people and widely used in industries, such as the manufacturing of processed products; ethanol production; plastic-making; as well as animal feed.

*As the **World Trade Organization** rules began to be enforced that required U.S. and other developed nations to cut farm subsidies, there has been a bigger thrust towards capitalist farming.*

What are the political stakes behind corn and soybean exports?

- **Democrat-Republican differences** – In USA, the corn belt is practically a region of Republican heartland.
- And the other base like California for specialty crops such as fruits and vegetables are of Democrat stronghold.
- In U.S this difference run deep and echo not just in political and economic viewpoints but also in lifestyles, type of power plants, agriculture crop choices and so on.
- **Issues with China** – Due to the China-U.S. standoff, China has stopped buying soybean from the U.S.
- China, a major soy user, imports three-fifths of its needs and is turning to other producers such as Brazil.

What lies ahead?

- It's a strategic stand of India which shows yes for trade and no for dependence.
- Refusing GMOs and US dairy is just the first step, India needs to prepare its farmers for global competitiveness without crutches.
- India can use this high tariff time to build a farm economy that exports value, not just commodities.
- To tackle this, India needs a cautious approach aligns with global norms on environmental protection, ethical food systems, and indigenous seed rights.

10. ECONOMY

10.1 Stablecoins – Risks and Regulation

Recently, Bank of England places limits on the transaction of stablecoin transactions.

What are stablecoins?

- **Stablecoins** – They are a form of cryptocurrency designed to maintain a stable value in relation to a certain asset.
- Unlike Bitcoin and other such cryptocurrencies that experience price volatility, stablecoins are typically pegged to a traditional currency such as the US dollar.
- **Ownership** – Their ownership is simultaneously registered in digital ledgers, eliminating the costs and lengthy processing times involved with traditional cross-border transitions.
- **Uses** – They are not generally used for transactional purposes, but instead by crypto investors to park their profits without converting them back into real money.
- **Advantages** – They enable cheap and fast transactions without the need for intermediaries in traditional payment mechanisms.

- **Global market** – This April, Standard Chartered Bank estimated that the size of the stablecoins market could increase tenfold to \$2 trillion by 2028.

What are the types of stablecoins?

- **Types** – There are primarily four types of stablecoins, of which three are pegged to a different asset, such as
 - **Fiat currency** – It means the government-issued currency authorised as legal tender.
 - **Commodities** – It includes gold, silver or oil.
 - **Cryptocurrencies**.
- **Algorithmic stablecoins** – It may be pegged to an asset, but are typically regulated through a computerised algorithm.
- This is similar to a currency peg, with more coins being generated if the stablecoin trades above its pegged value to cause a price reduction.

What are the risks associated with stablecoins?

- **Affects financial stability** – Stablecoins presently pose a threat to financial stability.
- There remains an ever-present ‘run’ risk, meaning a risk of mass withdrawal of holdings simultaneously, akin to a bank run during an economic crisis.
 - **For instance**, On May 11, 2022, the stablecoin TerraUSD (UST) crashed from its intended 1-to-1 peg to the US dollar by more than 60%, all but eliminating its dollar peg.
- Being an algorithmic stablecoin, the UST was not directly pegged to the dollar but through the related Luna token.
- According to a *Bloomberg* report, investors could (in theory) exchange one unit of the token, regardless of its current trading price, for \$1 worth of Luna.
- This trade helped UST maintain its value at close to \$1 and retain its status as the biggest algorithmic stablecoin by market value at the time.
- **Affects banking** – The Bank of England noted that stablecoin tokens could weaken the banking system by draining it of deposits.
- **Other risks** – In its latest annual economic report, the Bank for International Settlements (BIS), has identified three issues with stablecoins
- **Singleness** – Stablecoins traded in secondary markets, such as stock exchanges, usually have a slight deviation from the fiat currency they are pegged to, and may not be pegged at par.
- **Elasticity** – Stablecoins fail the test of elasticity, which implies adjusting the circulation of stablecoins to meet the market demand.
- The supply of stablecoins that can be issued depends on the issuer’s balance sheet, which cannot be expanded at will, unless they have the requisite cash or assets to back them.
- Therefore, any additional supply would need to be fully paid for upfront by its holders, unlike banks, which can expand (and contract) their balance sheets within regulatory limits.
- Thus, the system cannot expand quickly to provide additional liquidity in case of high demand.
- **Integrity** – The free trading of stablecoins across borders, on different exchanges and into self-hosted wallets makes them vulnerable to the risks of non-compliance with Know Your Customer (KYC) norms.
- This raises the risks of money laundering, terror funding and other suspicious activity.



How have other countries treated stablecoins?

- **GENIUS act** – US introduced the GENIUS Act into law, which **introduced a regulatory framework** for stablecoins.

- The Guiding and Establishing National Innovation for US Stablecoins Act, or the GENIUS Act, is the country's first major regulatory legislation and contains three significant provisions –
 - Only insured depository institutions, such as banks, credit unions, bank subsidiaries etc, approved by the Federal Reserve and demonstrating the ability to comply with the relevant law can issue stablecoins.
 - Stablecoin issuers must hold 1:1 reserves for any stablecoins issued, in such assets approved by regulators, such as physical currency, US Treasury bills, repurchase agreements and other low-risk assets.
 - All stablecoin issuers must comply with the Bank Secrecy Act, ensuring that they implement measures protecting against money laundering (AML) and the financing of terrorism (CFT) and bolstering consumer protection.
- **MiCA** – The European Union's Markets in Crypto-Assets Regulation (MiCA), passed in December 2024.
- It addresses all e-money tokens (EMT), which are digital tokens backed by a single fiat currency, and asset-referenced tokens (ART), meaning a basket of assets, including physical assets and cryptocurrencies.
- While MiCA does not specifically focus on stablecoins, it mandates that only authorised e-money institutions or credit institutions can issue an EMT.
- On the other hand, ART issuers must be EU-based and authorised by regulators.
- **Stablecoin ordinance** – The stablecoin ordinance was passed in May 2025 in Hong Kong.
- It requires all stablecoin issuers backed by the Hong Kong dollar to obtain a license from the Hong Kong Monetary Authority.
- All stablecoins must be backed by high-quality, liquid reserve assets, with the market value of the reserve pool at par with the value of the stablecoins in circulation.
- Most importantly, every issuer must implement measures against money laundering and financing of terrorism, as well as regular audits and disclosure.

10.2 Outward FDI Trend of INDIA

Recently, An analysis of RBI data by The Hindu shows that nearly 56% of such investments in 2024-25 were in low tax jurisdictions such as Singapore, Mauritius, UAE, the Netherlands, U.K. and Switzerland.

What is FDI?

- **FDI** – Foreign Direct Investment, is when an individual or business from one country invests in a business located in another country, with the goal of gaining a significant degree of influence or control over its operations.
- **Types of FDI** – It is differentiated into
 - Inward FDI
 - Outward FDI
- **Inward FDI** – It is when foreign companies or investors make direct investments into country's economy.
 - It brings foreign capital and can create jobs and wealth.
- **Outward FDI** – It is when a country's domestic companies invest in foreign economies.
 - It expands a country's companies globally, allowing for risk diversification and access to new markets and resources.

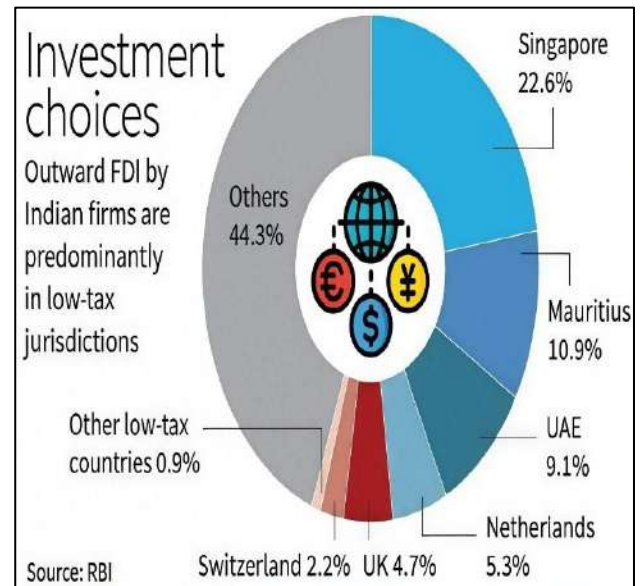


What are the trends in outward FDI of India?

- **Investing in tax havens** – Indian companies are increasingly leveraging tax havens, abroad to channel their foreign investments.

A tax haven refers to a country or jurisdiction that offers foreign individuals and businesses little to no tax liability in a politically and economically stable environment.

- This is done to increase their global presence, according to data as well as tax and investment experts.
- Tax haven countries typically impose low or no taxes on foreign income and provide financial secrecy for foreign investors.
- Total FDI investment – ₹3,488.5 crore of outward foreign direct investment (FDI) by India in 2023-24.
- Out of these about ₹1,946 crore went to these low tax jurisdictions.
- **Top three destinations** – Just three of these countries accounted for more than 40% of India's outward FDI in 2023-24.
 - Singapore (22.6%),
 - Mauritius (10.9%)
 - UAE (9.1%)
- Further, this trend seems to have increased in intensity in the current financial year.
- In the first quarter, these low tax jurisdictions accounted for 63% of India's total outward FDI.



Why investors choose these tax havens?

- **Strategic imperative** – Countries around the world, including India, have sought to crack down on the trend of companies shifting profits to these tax havens.
- But experts have said that choosing these low tax jurisdictions is also a strategic imperative for Indian companies.
 - **For example**, If an Indian company is looking to set up a subsidiary in Europe, the U.S., or any other country, then doing it through a special purpose vehicle in Singapore or a similar jurisdiction will help them in getting strategic investors, and in providing better tax positioning at the time of stake dilution.
- **Increased flexibility** – These jurisdictions are also more flexible in transferring funds and investments on a day-to-day basis.
- So, very often, these investments are not being made only to evade, avoid or reduce tax.
- **Platform for further investment** – They are often made because these jurisdictions form platforms for investment in third countries.
- **Provides tax stability** – These low-tax or tax efficient jurisdictions not only provide a tax advantage, but also offer tax stability.
- **Assists in fund raising** – For things like fund raising, or for an investor coming in, they usually like coming in at these intermediate jurisdictions.
- **Protects parent company** – Having an entity in the middle also protects the Indian parent company.
- **Preference for joint ventures** – The tendency of foreign companies to choose a low-tax jurisdiction is to form a joint venture rather than in India.
 - **For example**, a strategic partner from any other country will be happier investing into the Singapore entity, or one in a similar jurisdiction, than into the Indian entity because of our FDI regulations, our taxation and various other elements.
- The data of RBI for July 2025, shows that joint ventures accounted for almost 60% of the investments made by Indian companies in the low-tax jurisdictions.
- **Escaping higher tariffs** – The high tariffs imposed by the U.S. on imports from India could induce Indian companies to invest abroad, if they continue.
- There could be a lot of companies who will set up subsidiaries and other entities outside India, where the value addition is done, and accordingly escape the harsher tariffs on India.

10.3 Female Labour Force Participation in India

Recently, Prime Minister Narendra Modi emphasised the importance of developing stronger policies and laws to improve the Female labour force participation.

What is Female labour participation rate (FLFPR)?

- **FLFPR** – The female labour force participation rate (FLFPR) is the percentage of women aged 15 and older who are either employed or actively seeking employment.
- **Indian scenario** – Around 33 %, according to World Bank in 2024.
- **Global average** – It is around 49%,
- **Lower middle income countries** – 41%
- **Significance** – Critical for faster income growth
 - Better outcomes for families' health and education
 - Crucial for broader development outcomes.

Three Core Drivers of Female LFPR

- Socio-cultural norms – Societal attitude to women's work
- Supply-side factors – Women's willingness to work
- Demand-side factors – The availability of work

Why there is low FLFPR in India?

- **Care work** – Indian women spend 8times more time than men on unpaid care work.
 - According to UN the global average is 3times.
- **Unequal wages** – According to WEF Global Gender Gap Report 2024 India ranks 120th out of 146 countries in terms of wage equality for men and women.
- **Combined factors** – Socio-cultural norms, coupled with supply-side constraints, that are primarily responsible for keeping India's female LFPR low.
- **Demand side factors** – The other important reason is an absolute lack of demand for labour in India.

Component	Third grade	Fifth grade
Reading	23%	44%
Arithmetic	33%	30%

- **Low quality of education** – According to annual status of education report the learning levels of students are
- **Regional inequality** – States such as Rajasthan, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Jharkhand, Bihar still struggle to provide quality education for all.
- **Less skills** – Only 4.7% of India's workforce has undergone formal skills training.
 - In Germany and South Korea, the numbers are 75% and 96% respectively
- **Problematic labour laws** – Close to 15% of firms in India cite labour laws as a major or very severe constraint.
 - It is just 3.4% in Bangladesh and 6.4% in the Philippines.

Which are the peer countries of India with high FLFPR?

- **Peer countries** –Bangladesh and the Philippines.
- **Past scenario** – In 1990, both India and Bangladesh had similar participation rates for women, at 30 and 25%, respectively.
- **Three factors** – They differentiate India from the peer countries
 - Intensive employment
 - Labour intensity of the overall economy

Female LFPR: India & peers		
Country	GDP per capita*	Female LFPR (%)
India	9,160	33
Bangladesh	8,424	44
Philippines	9,901	50

- Level of economic development
- **Same level of economic development** – The level of economic development does not differ much among peer countries.
 - The focus is on the impact of the first two factors to distinct their impacts on female LFPR.

How Bangladesh increased the FLFPR?

- **Export-driven ready-made garment (RMG) industry** – It has played a pivotal role in this increase.
- **Increase in exports** – In 1983, RMG exports accounted for only 4% of Bangladesh's total exports, which increased to 81% in 2021, amounting to \$42 billion.
- **Role of Norms & willingness** – Differences across countries in female-intensive employment are largely due to societal norms and women's willingness to work.
- **Role of Capital-intensive growth** – Even if societal norms and supply-side factors are similar, the countries with a capital-intensive development path will have a lower female LFPR.
- **Female participation** – Over 60% of the RMG sector's employees are female according to Export Promotion Bureau of Bangladesh.
 - Without this meteoric rise in the RMG industry, Bangladesh's female participation would have been approximately 38%.
- **Role of demand side factors** – Bangladesh's evolution of female LFPR highlights the importance of the demand-side factors more clearly.

What lies ahead?

- Addressing these demand-side constraints could enable an environment for more women to enter and remain in the workforce, pushing up the female LFPR.
- Government could influence demand for work by alleviating constraints on education quality and labour laws.
- A more Employment-intensive growth path could be better from the perspective of female participation.
- Once implemented, this could hopefully unleash a virtuous cycle by positively impacting the supply and societal norms, pushing up the LFPR even further.
- If India had female employment intensity like its peer countries the female LFPR could rise to 37%- 43% up from its current level of 33%.

AGRICULTURE

10.4 Crop Protection Chemical Market in India

Recently, there has been a tremendous growth in the herbicides usage which is emerging as the largest segment of the crop protection chemical market in India.

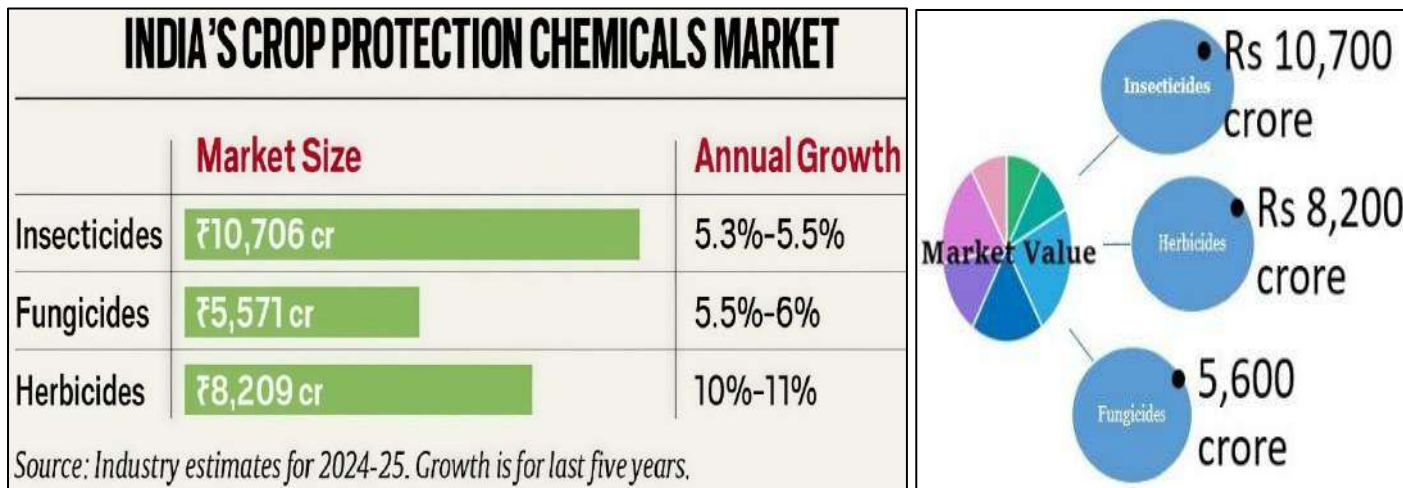
What are crop protection chemicals?

- **Crop protection chemicals** – They are substances used to manage and protect crops from pests, diseases, and weeds.
- **Types** – They include pesticides, herbicides, insecticides, and fungicides.
- **Pesticides** – These are basically substances sprayed on crops to protect against insects (pests).
 - Pests cause damage, whether directly by feeding on them or indirectly by transmitting disease.
 - **For example**, white-backed plant hopper, a pest that both feeds on rice plants and also spreads the Fiji virus disease, resulting in their stunted growth.
- **Fungicides** – Used to control fungal diseases such as blast and sheath blight in rice or powdery mildew and rusts in wheat.
- **Herbicides** – Used to kill or inhibit the growth of weeds.

What is the status of crop protection chemical market in India?

- **Total value** – India's organised domestic crop protection chemicals market is valued at roughly Rs 24,500 crore.

- **Emerging segment** – The market for herbicides is growing at the highest rate over 10% annually



- **Important players**

Companies	Country of origin	Market share
Bayer AG	German	15%
Syngenta	Chinese	12%
ADAMA	Chinese	10%
Sumitomo Chemical	Japan	7%
Corteva Agriscience	US	7%
Crystal Crop protection Ltd	India	4%
Dhanuka Agritech	India	6%

- **Sales rights with MNC's** – Crystal Crop protection Ltd (CCPL), recently purchased the rights to Ethoxysulfuron from Bayer AG for sales in India, Pakistan, Bangladesh and Southeast Asian countries.
- The deal also covered the Bayer's sunrice trademark for mixture products containing this active ingredient.
- CCPL had also acquired Gramoxone from Syngenta for sale in India.

Ethoxysulfuron is an herbicide used against broad-leaved weeds and sedges in rice and sugarcane.

Gramoxone is a broad-spectrum herbicide containing the active ingredient Paraquat.

Why there is an increase in the use of herbicide?

- **Traditional method** – Weed control has traditionally been through manual removal by hand or simple lightweight short-handled tools with flat blades such as **khurpi**.
- **Time-consuming** – Manual weeding labourer taking 8-10 hours to cover one acre.
- **Repetitive task** – Since the weeds regrow, the process has to often be repeated during the crop's lifecycle.
- **Increased labour wages** – According to the Labour Bureau's data, the all-India daily wage rate for plant protection workers averaged Rs 447.6 in December 2024, as against Rs 326.2 five years ago.
- **Labour shortage** – The number of people in rural India prepared to do this work of bending, digging and uprooting plants for long hours are getting fewer by the day.
- **Inefficiency of power weeders** – Power weeders take only 2-3 hours per acre, but aren't effective in pulling out weeds with deep roots or growing within densely planted crop areas.
- **Alternates solution** – Herbicides have become more like tractors and other labour-saving farm machinery a substitute for manual weeding.
- **Shift in approach** – Farmers tend to mostly spray herbicides only after the weeds appear and are seen (post-emergence).

- Recently farmers have been resorting to prophylactic application of pre-emergent herbicides around or just after crop sowing.
 - These stop the weeds from coming out, helping keep the field clean from the beginning.
 - Alternatively, they may use early post-emergent herbicides to control weeds at the crop's initial sensitive growth stage.
 - In both cases, the spraying is preventive, as opposed to being reactive.
- Increase in market** – The all-India market for herbicide segment grew by 10% in 2024-25 (from Rs 7,460 crore to Rs 8,209 crore).
- The sales of a Delhi-based company rose over 47%, from Rs 229 crore to Rs 337 crore.
 - It recorded a turnover of Rs 2,201 crore from crop protection chemicals last fiscal year.
- Substantial market share** – Out of the estimated Rs 1,500-crore paddy herbicide market, the pre-emergent sub-segment accounts for roughly Rs 550 crore.
- That share is about a fifth in the Rs 1,000-crore market for wheat herbicides.
- Monopoly** – The crop protection chemicals industry is practically a multinational monopoly.
- Some Indian companies, are attempting to acquire the rights to active ingredients and brands from big global majors or even introducing innovative formulations.
 - For instance**, CCPL has collaborated with the Ohio (US) - based Battelle and Japan's Mitsui AgriScience to develop a new paddy herbicide called Sikosa.

Prophylactic method is used for guarding or preventing the spread or occurrence of disease or infection.

Pre-emergent herbicides are applied before weeds germinate, creating a barrier in the soil to prevent

Post-emergent herbicides are applied to control weeds that have already emerged from the soil.

Sikosa

- Active ingredients** – Bensulfuron-methyl and Pretilachlor
- Method** – Oil-dispersion formulation (patented).
- Working** – Spreads quickly in water and works well when sprayed within 0-3 days after transplanting.
- Uses** – With a single 500-ml bottle, farmers can control narrowleaf, broadleaf and sedge weeds in transplanted paddy.
- Cost effective** – Rs 850-900 per acre, compared to Rs 2,000-plus with manual weeding.

Oil dispersion formulation method is commonly used for water-sensitive active ingredients and require specific products with unique properties that aim to ensure long-term stability for pesticide applications.

What lies ahead?

- India industries could actively engage in innovation and indigenous production of crop protection chemicals.
- Government and agro industries could find an alternate, innovative and sustainable solution to weed management.

INDUSTRIES, INFRASTRUCTURE & INVESTMENTS

10.5 Climate Resilient Cities – Need and Approach

Currently, urban areas are largely exposed to extreme vulnerability to flooding, extreme heat, cyclones, landslides and earthquakes and there is a need to build climate resilient cities.

What are climate resilient cities?

- Climate resilient cities** - Climate-resilient cities are urban areas designed and managed to withstand and adapt to the negative impacts of climate change, such as rising sea levels, extreme weather, and heat waves
- Strategies** – They achieve this by

- Integrating climate information into urban planning,
- Developing strategies to reduce vulnerability,
- Implementing adaptation measures like green infrastructure,
- Building robust systems to ensure continued functionality despite environmental shocks and stresses.



- **Notable climate-resilient cities** – These include
 - **Rotterdam** – Innovative water management and floating architecture.
 - **Singapore** – Integrating green infrastructure and smart technologies.
 - **Auckland** – The spongiest city using natural waterways for flood protection.
 - **Copenhagen** and **Ahmedabad** – Employing strategies like green roofs, rainwater catchment, and urban heat island mitigation through extensive greening.

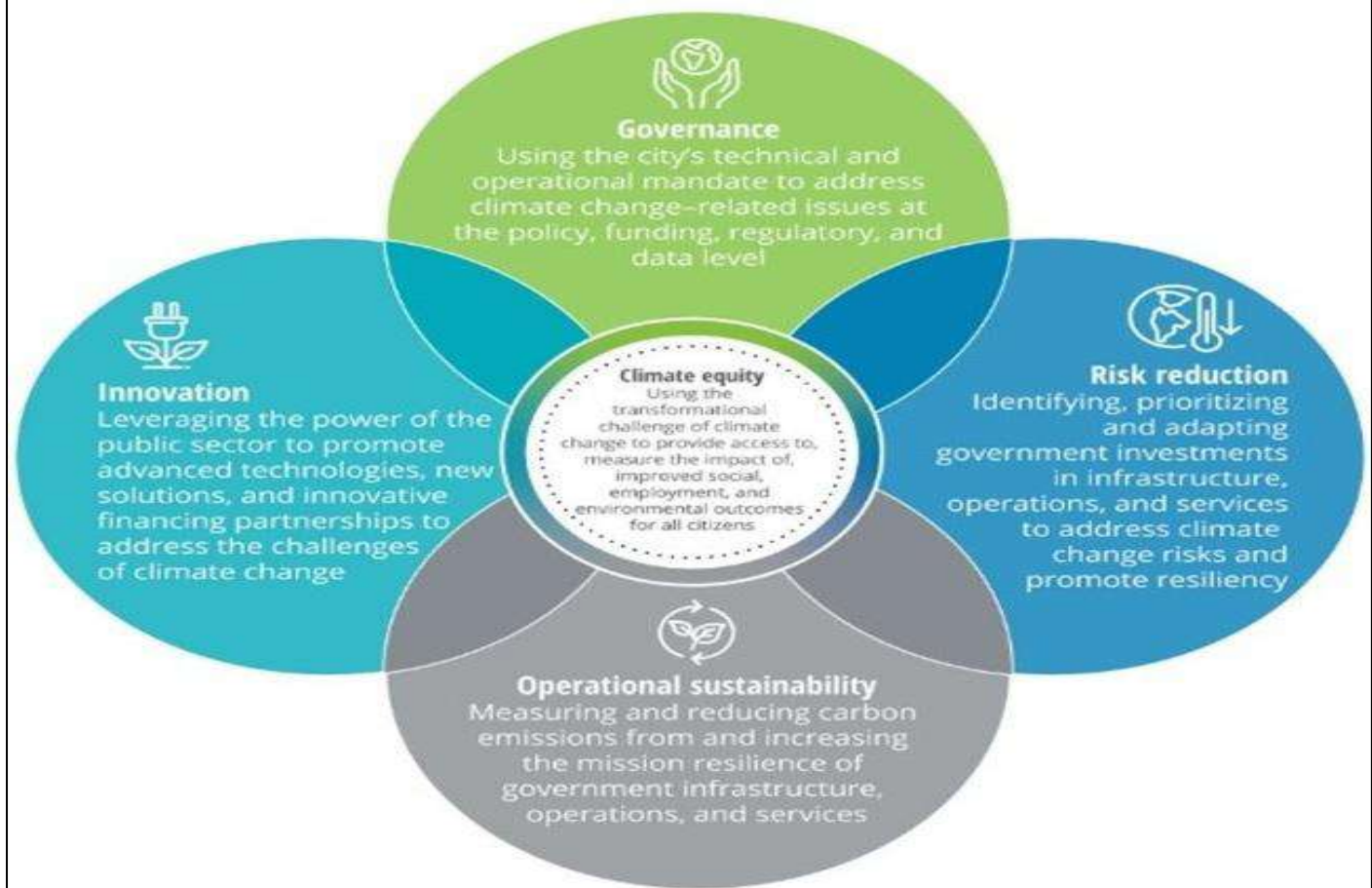
What is the need for climate resilient cities?

- **Rapid urbanization** – In another 25 years, the country's urban population is likely to soar to almost a billion, with some megacities becoming larger than individual countries.
- **Unplanned infrastructures** – A large share of urban infrastructure is yet to be designed and built.
- India's cities have a narrow window of opportunity to prepare for the future.
- **Job creation** – In just five years from now, Indian cities are expected to generate over 70% of new jobs.
- It will be critical for India's cities to draw up a blueprint for the future that will bring out the talent and entrepreneurship of its aspiring young generations.
- **Demand for housing** – By 2070, cities will need over 144 million new homes, along with the transportation systems and municipal services that can cater to these unprecedented numbers.
- The way these new housing units are planned, located, designed, constructed, and maintained will have a profound impact on cities and their inhabitants.
- Ensuring that new housing is part of compact city design with forward-looking planning can help make India's cities more prosperous, inclusive and climate-resilient.
- It will therefore be essential to make early investments in climate-resilient urban design and infrastructure to avert billions of dollars in annual damages while saving countless lives.
- **Risk of floods** – As the construction of new housing and infrastructure proceeds apace, more than two-thirds of India's urban dwellers will face the risk of pluvial or surface flooding, potentially racking up losses of \$5 billion by 2030, and \$30 billion by 2070.
- **Extreme heat** – The impacts of extreme heat, together with the urban heat island effect, are causing nighttime temperatures in major Indian cities to exceed those of surrounding areas by 3°C to 5°C year-round.
- **Transportation** – The efficiency of transportation is also vital for the productivity of a city and its people.
- Today, however, more than a quarter of India's urban roads are directly exposed to some level of flooding.
- In some cities, if just 10 to 20 per cent of roads are inundated, more than half of their transportation systems are likely to be disrupted.

What are the approaches to build climate resilient cities?

- **Mapping flood risks** – Areas that are vulnerable to floods should be mapped and early warning to be developed based on the local needs.
 - **For example**, Kolkata has adopted a city-level flood forecasting and warning system.
- **Improving drainage** – Drainage and storm water channels need to be strengthened to avoid frequent flooding of residential areas.
 - **For example**, Chennai is improving storm water management and flood preparedness to support the most vulnerable populations.

Multidimensional Approach to Climate Resilient Cities



- **Road Building and maintenance** – Developing alternative routes for roads that become blocked and can help avert climate-induced disruptions to economic activity.
- **Large investments** – More investment to be made in modernising municipal services including waste collection and converting waste to energy.
- It can improve the quality of air, water and soil, with far-reaching impacts on urban productivity and quality of life.
- **Building institutional capacity** – Institutions must be built in order to withstand any adverse situation arising from the sudden catastrophes and disasters
 - **For example**, Ahmedabad's Heat Action Plan by increasing tree cover and canopies, replacing heat-intensifying roofs with easily doable cool roofs, and shifting the working hours for outdoor labourers.
- **Promote collaboration** - Get the support of both the government and the citizens, for the undertaking is too large to go it alone.
- **Private sector participation** – promoting private sector engagement to bring efficiency and innovative financing and technical capacity for driving this major endeavour.
- **An integrated approach** – Cities that demarcates high-risk areas as no-build zones, improves city-wide drainage, promotes nature-based solutions that can absorb excess rainwater, and installs flood warning systems can help reduce this risk.
 - **Brazil**, for instance, which is now 80% urban, has moved beyond channelisation and structural flood control towards this more integrated approach.

What lies ahead?

- Over the next three decades, the cost of developing climate-resilient and low-carbon urban infrastructure and services could amount to \$10.95 trillion.
- While the investment is tremendous, it has the potential to save billions of dollars annually.

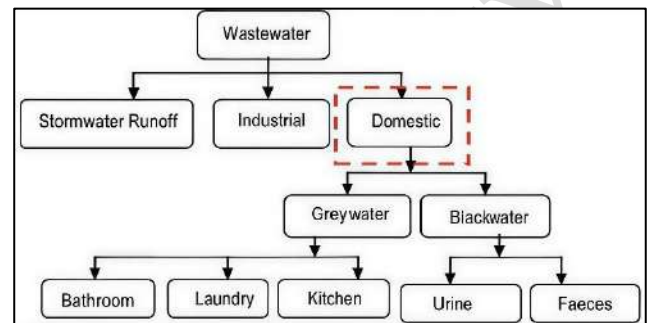
- Climate resilient cities could transform urban living by attracting investment, generating new jobs, fostering innovation and unlocking the full potential of India's people.
- Scaling up the measures to India's largest and most affected cities can not only avert hundreds of thousands of deaths every year, but also protect economic productivity, even during the peak summer months.

10.6 India's Water Crisis and Waste water Management

In India, the water and wastewater sector, particularly the reuse of treated wastewater, has recently gained attention, especially in water-stressed urban areas.

What is waste water?

- **Waste water** – It is used water from homes, industries, and other human activities that contains pollutants, making it unsafe for its original use or for discharge into the environment without treatment.
- It can also include stormwater runoff and infiltration from sewer systems.
- **Indian scenario** – According to the Central Pollution Control Board, Indian cities generate over 72,000 million litres per day (MLD) of sewage.
- **Contaminants** – Common contaminants include human waste, food scraps, chemicals, pathogens, and heavy metals.
- **Issues** – Wastewater is a significant environmental and health concern as it threatens aquatic ecosystems and human health if improperly managed or discharged untreated.



What is waste water management?

- **Waste water management** – It is the process of collecting, treating, and safely reusing or disposing of wastewater to protect public health and the environment.
- **Need** – India, which supports nearly 18% of the world's population with only 4% of global freshwater resources, faces acute stress on its water systems.
- Between 1951 and 2024, there has been a decline of 73% in per capita surface water availability in the country.
- The rising water scarcity across the world has drawn attention to wastewater treatment and reuse.
- **India's capacity** – The installed treatment capacity is less than 32,000 MLD.
- Only 28% of urban wastewater in India is treated, while the remaining 72% flows untreated into water bodies and land.
- **Potential** – Wastewater management can be a solution to bridge the gap between water demand and supply.



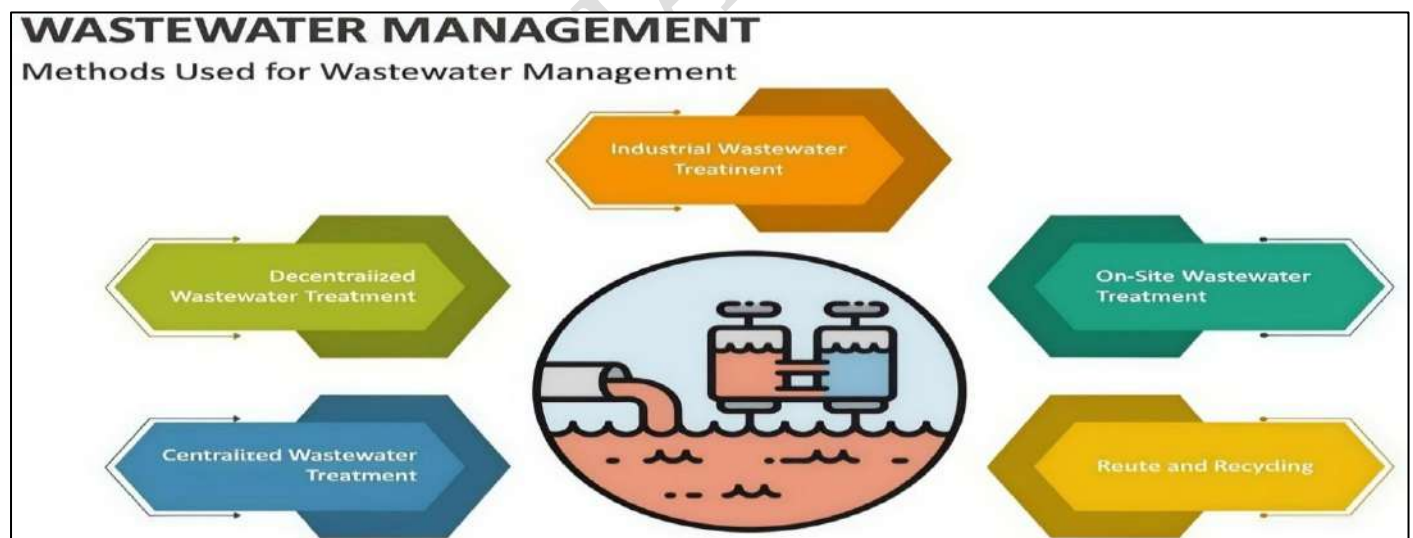
What are the sources and impact of wastewater?

- **Major sources** – Wastewater in India primarily originates from multiple sources, the most significant being
 - Domestic sewage
 - Industrial effluents
 - Agricultural run-off
- **Domestic sewage** – It constitutes the largest share, which flows directly into rivers and lakes.
 - **For example**, Yamuna receives 641 million litres of untreated sewage per day, turning the river ecologically dead.
- **Industrial discharges** - It adds another layer of pollution.
- According to the Pollution Control Board's Data, there are 3,519 highly polluting industries in the country that discharge wastewater into India's rivers.

- The Ganga basin is highly affected due to industrial pollution with tanneries in Kanpur and distilleries in Bihar being major sources.
- These effluents often contain heavy metals, dyes, and toxic chemicals, posing long-term risks to human and ecological health.
- **Agricultural run-off** – It is also a critical source of nutrient pollution that causes eutrophication (the process of water enrichment with excess nutrients, primarily phosphorus and nitrogen) in water bodies.
 - **For instance**, the Vembenad Lake in Kerala, a Ramsar Site, has witnessed a declining fish population due to nutrient pollution.
- **Impacts** – Wastewater is not only an environmental issue, but a serious public health concern too.
- Contaminated water is a major source of waterborne diseases such as diarrhoea, cholera and dysentery and has been linked to the spread of anti-microbial resistance.
 - Around 37.7 million Indians are affected by waterborne diseases annually.
- It also increases the cost of potable water treatment and affects livelihoods dependent on clean water, such as fisheries and tourism.

What are the legal and institutional framework?

- **The Water (Prevention and Control of Pollution) Act, 1974** – It was the first comprehensive legislation aimed at preventing and controlling water pollution.
- It established central and state pollution boards, and empowered them to set effluent standards, monitor compliance, and take corrective action.
- **The Central Pollution Control Board (CPCB)** – It issues guidelines on the treatment of wastewater, especially sewage water.
- **National Water Policy, 2012** – It has stressed integrated water resource management and explicitly recognised the need for wastewater recycling and reuse.
- **Schemes and initiatives** – Many schemes have also been taken to tackle river pollution
 - **National Mission for Clean Ganga** – It is also known as the Namami Gange programme, along with other river rejuvenation programmes aimed at restoring polluted river stretches identified by CPCB.



- **Swachh Bharat Abhiyan, AMRUT and the Smart Cities Mission** – These also promote wastewater reuse facilities in urban areas.
- These initiatives combine infrastructure development for sewage treatment with efforts at public participation and institutional coordination.
- **The Draft Liquid Waste Management Rules, 2024** – More recently, this were notified under the Environment Protection Act, 1986.
- It outlines measures to minimise waste generation, establish proper collection systems, ensure effective treatment, and promote the reuse or utilisation of treated wastewater and sludge.
- The draft rules align with the circular economy approach by promoting wastewater as a resource rather than a liability.

What are the available and evolving technological interventions?

- **Activated Sludge Process (ASP)** – It is a common aerobic method involving removal of suspended solids and organic contaminants through the activity of microorganisms such as bacteria, fungi and algae.
- **The Sequential Batch Reactor (SBR)** – It is an advanced wastewater treatment process that operates in batch mode through sequential phases.
- Its operational flexibility makes it one of the highly used methods in sewage wastewater treatment applications.
- **Up-flow Anaerobic Sludge Blanket (UASB)** – It is a conventional method and it is low-cost and energy-efficient.
- **Membrane Bioreactor (MBR)** – It integrates biological treatment with membrane filtration and produces high-quality effluent suitable for reuse in industrial and non-potable applications.
- It is a suitable choice for industrial areas and high-value urban areas where the benefits of reuse outweigh the costs.
- **Emerging Nano-technologies** – Nano filters show promise in enhancing treatment efficiency, though they are still at an experimental stage in India.

What are the critical gaps and challenges?

- **Enforcement gaps** – The impact of schemes has been constrained by gaps in enforcement, inadequate operation, and maintenance of treatment plants and fragmented governance.
- **Lack of policies and plans** – Only 11 out of 28 states have formulated wastewater reuse policies, and most lack clear roadmaps for implementation.
- **Inefficient conventional methods** – Most of these conventional methods of waste water treatment are less effective in handling complex industrial effluents and require a large space to operate.
- **Issues with new technologies** – High installation, continuous monitoring and high energy requirements and maintenance cost remains the major obstacle.

What measures can be taken?

- **Comprehensive national mandate** – The draft Liquid Waste Management Rules 2024, once operationalised, hold potential to standardise the treatment process and encourage reuse.
- **Technological interventions** – Particularly SBRs and MBRs, have shown promise in improving treatment efficiency and effluent quality.
- **Public-private partnerships** – It can also play a crucial role in financing and operating advanced treatment infrastructure.
- **Nature-based solutions** – It includes constructed wetlands, waste stabilisation ponds, and decentralised treatment plants, are being explored as cost-effective alternatives, particularly suitable for peri-urban and rural areas.
- **Awareness** – It is essential to overcome social resistance and build public trust in the safe use of treated wastewater, particularly for agricultural and non-potable uses.

What lies ahead?

- An integrated approach combining strong regulation, advanced technologies and promotion of water reuse will be essential for making wastewater management not just an environmental mandate but also a resource recovery opportunity for India's future.

10.7 Energy sovereignty of India

Recently, Russia has emerged as the India's single largest supplier of oil, accounting for roughly 35%-40% of total crude imports in 2024-25 – up from barely 2% before the Ukraine war.

What is the issue?

- **Heavy crude oil imports** – India imports over 85% of its crude oil and more than 50% of its natural gas.
- **Heavy reliance** – The discounted barrels from Russia have offered temporary relief to the import bill.
- But the heavy concentration also underscores the vulnerability of relying too much on one geopolitical partner.
- Diversification, not substitution, is the real currency of sovereignty

- **Outflow of Forex reserves** – In FY2023-24, India's merchandise imports stood at \$677 billion. Of this, crude oil and natural gas alone accounted for nearly \$170 billion, or over 25% of the total import bill.
- This outflow of foreign exchange pressures the rupee, inflates the trade deficit, and compromises macroeconomic stability
- **Israel-Iran tensions** – In June 2025, the world narrowly avoided a full-blown regional conflict following tensions between Israel and Iran.
- Had that flashpoint ignited, over 20 million barrels a day of global oil flows would have been threatened.
- Brent crude prices, already sensitive, could have breached the \$103 a barrel mark within days.
- The war did not begin, but the world came close enough to remember the fragility of its energy lifelines.

What are the defining moments of global energy security?

- **The 1973 oil crisis** - The Arab oil embargo against the United States and allied nations caused crude prices to quadruple, and exposed the West's overdependence on the Organization of the Petroleum Exporting Countries. But it catalysed the creation of strategic petroleum reserves, efficiency mandates, and diversified sourcing strategies.
- **Fukushima nuclear disaster 2011** – A tsunami-induced nuclear meltdown in Japan triggered a global crisis of confidence in nuclear power.
- However, with emissions rising due to increased coal and gas use, nuclear energy is again regaining favour.
- **Texas Freeze 2021** – Extreme cold froze gas pipelines and disabled wind turbines in energy-rich Texas.
- The event underscored the limits of systems built for cost efficiency rather than resilience and the importance of diversified and weather-hardened infrastructure.
- **Russia-Ukraine war 2022** – Europe's reliance on Russia for over 40% of its gas ended abruptly when Russia weaponised energy.
- The continent faced record liquefied natural gas prices and a coal revival.
- It was a stark lesson: no energy strategy is sovereign if it is single-sourced.
- **Iberian Peninsula Blackout 2025** – Spain and Portugal suffered a grid collapse due to over-reliance on intermittent renewables without sufficient dispatchable backup.
- The lack of inertia in the grid exposed the risks of phasing out conventional capacity too rapidly.

Global Energy Situation

- **Dominance of fossil fuel** – Fossil fuels still meet over 80% of global primary energy demand.
- **Hydrocarbons** – More than 90% of transportation runs on hydrocarbons.
- **Renewable energy** – Solar and wind, though scaling fast, are still under 10% of the global energy mix.
- **Investments** – Exploration investments in oil and gas have fallen sharply even as demand remains high.
- The result is a structurally tight supply that is vulnerable to even minor shocks.

What India should do?

- India must now decisively move toward an energy sovereignty doctrine that is anchored in domestic capacity, diversified technology, and resilient systems.
- It has **five foundational pillars**
- **Coal gasification** – India has over 150 billion tonnes of coal reserves. For decades, high ash content made them unattractive.
- But with technological advances in gasification and carbon capture, this domestic resource must be leveraged to produce syngas, methanol, hydrogen and fertilizers. We must overcome the ash barrier with innovation.
- **Biofuels** – The ethanol blending programme has already reduced crude imports and transferred over ₹92,000 crore to farmers.
- It has also delivered substantial savings in foreign exchange savings. With E20 on the horizon, annual income to the rural economy may grow further.

- Through the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme, hundreds of compressed biogas (CBG) plants are generating clean fuel and producing bio-manure rich in 20%-25% organic carbon.
- This can restore North India's degraded soils, where organic carbon has fallen to 0.5%, versus a healthy level of 2.5%.
- Improving soil health also enhances water and fertilizer retention, reducing runoff and pollution.
- **Nuclear energy** – India's nuclear footprint has remained stagnant at 8.8 GW for too long.
- We must revive the thorium road map, secure uranium partnerships and localise Small Modular Reactor technologies.
- In a grid dominated by renewables, nuclear provides the dispatchable backbone.
- **Green hydrogen** – India's target of 5 million metric tonnes a year by 2030 must be matched by localised electrolyser manufacturing, catalyst development and storage systems. The goal is not just green hydrogen. It is sovereign hydrogen.
- **Pumped hydro storage** – Pumped hydro is durable, proven, and essential for grid balancing.
- It complements renewable energy and provides the inertia missing in wind and solar-heavy systems. India must use its topography to create the storage infrastructure of the future.

What lies ahead?

- India must lead with energy realism not as a fallback but as the foundation of resilience and sovereignty.
- India's strategy must blend ambition with realism. The five pillars – coal gasification, biofuels, nuclear, green hydrogen and pumped hydropower are its sovereign spine.

DISASTER MANAGEMENT

10.8 Punjab Floods

Recently, Punjab faced its worst floods since 1988 in August this year.

What are the serious issues?

- **More villages affected** – Waters overflowing from the Sutlej, Beas, and Ravi rivers have destroyed several villages in the State.
- Early in August, the village of Dharali in Uttarkashi district of Uttarakhand disappeared after a deluge triggered a landslide.
- **Mortality** – At least 34 people died after intense rainfall lashed India-controlled Kashmir and several parts of Pakistan.
- **Frequent incidents** – This isn't the first time the Indian Himalayan region has suffered such catastrophe the 2013 Kedarnath floods and the 2021 disaster in Chamoli come to mind.
- **Undermining the seriousness** – Experts have already said calling every heavy-rain event a cloudburst risks oversimplifying the disasters.
- **Important factors** – Most of these natural disasters are often a combination of two factors
 - Climate change
 - Development.

What are the disaster potential of Himalayan region?

- **Unstable region** – The Himalayas are the world's youngest mountains and are high-energy environments characterised by instability and variability.
- **Prone to multiple disasters** – According to ICIMOD research, the mountains are also particularly susceptible to floods, cloudbursts, glacial lake eruptions, and landslides.
- **Increasing encroachments** – The Hindu Kush Mountains are currently being encroached on as well as hosting more tourists, infrastructure development projects, and power generation activities.

***Landslides** here are often triggered by heavy rainfall, slope undercutting or seismic activity.*

- **Insufficient EIA** – The absence of proper environmental impact assessments (EIA), experts have warned that the mountains are being pushed beyond their ability to cope.
- **Increasing Hydropower projects** – According to the Directorate of Energy of Himachal Pradesh, there are 1,144 hydropower plants in the state.
- Uttarakhand, has 40 operational hydroelectric plants while 87 more are at various stages of planning and construction.
- **Roads and other infrastructures** – The Centre has also sanctioned funds to build new bridges and widen roads.
- All these construction activities entail the use of heavy equipment to cut through the mountains.
- Highways are built without any attention to how they can increase disaster potential.
- **Development and climate change** – Supreme Court bench observed that the proliferation of development work is joining hands with climate change to worsen the effects of rain and temperature changes.
 - ***For example**, The apex court also issued a notice to the National Highways Authority of India following a petition that claimed 14 tunnels between Chandigarh and Manali turned into death traps during heavy rains.*
- **Rise in temperature** – The average temperature in the Indian Himalaya is already rising faster than the global average, resulting in reduced snowfall and more snow melt.
- **Rise in tourism** – It has stoked a demand for land on which to build hotels, homestays, and other facilities, and that in turn has been driving local deforestation.
- **Removal of native trees** – When the trees are removed, the soil is in boulders which will soon erode out.
- The erosion will increase the disaster potential of the area in terms of landslides and floods in the downstream villages.
- **Glacial lake outburst floods (GLOFs)** – According to ICIMOD, there were more than 25,000 classified glacial lakes in five major river basins across the Himalayas by 2018.
- This has more potential for GLOFs, placing communities and livelihoods downstream at more and more risk.

To know more about GLOFs click [here](#)

What are the observations of Supreme Court?

- **Destruction of forests** – Chief Justice of India called visuals of tree logs floating in flood waters in Himachal Pradesh, Jammu & Kashmir, Punjab, and Uttarakhand in the first week of September a very serious issue.
- If this goes on, we will not have any forests left.
- In Punjab, entire villages are inundated.
- **Concern on Himachal** – Himachal Pradesh may vanish in thin air from the map of India, if things proceed the way they are as of date.
- **Development vs Sustainability** – The bench also said governments shouldn't build revenue at the cost of ecological sustainability, and blamed human activity for worsening disasters.
- Development is needed, but not at the cost of the environment and lives.
- **Region based development** – The development in Himachal Pradesh and Uttarakhand can't happen according to the same plans drafted for metropolitan cities like Delhi and Mumbai.

What measures can be taken?

- **Responsible constructions** – Infrastructure changes have to be done keeping in mind such climatic variations like GLOFs, landslides, and even droughts.
- **Correction of courses** – The Himalayas are at a tipping point, and we need an urgent course correction that balances economy and energy.
- **Developing nature based solution** – We need nature-based solutions with the involvement of the local communities because they know the local landscape and the hazards that come with it.
- **Assessment of carrying capacity** – Assessing the carrying capacity of an area before implementing any project should be carried out.

- **Inclusion of Social impact assessment (SIA)** – Prior to making any major interventions in the mountains, there should be clearly defined steps in terms of an honest and independent social impact assessment.

***A Social Impact Assessment (SIA)** is a systematic process for identifying, analyzing, monitoring, and managing the intended and unintended social consequences, both positive and negative, of a planned project, program, or policy.*

It focuses on the effects on people and communities, examining changes in their lives, culture, well-being, and social structures to ensure development is socially responsible and sustainable.

- **Imparting climate education** – Building climate literacy amongst the locals to drive local self-governance is important.
- **Building in safe zones** – All the critical structures, such as hospitals and schools, must never be built in unsafe locations because they are the immediate places that house those affected by any disaster.

10.9 DHUSSI BANDHS

Recently, more than 50 Dhussi bandhs have been breached in Gurdaspur and Amritsar during the Punjab floods this monsoon.

What are dhussi bandhs?

- **Dhussi bandhs** – They are earthen flood-protection embankments, primarily constructed along the rivers of Punjab, India.
- **Built during** – Built mainly in the 1950s and 1960s.
- **Role** – These embankments protect villages and agricultural land from flooding during the monsoon season.
- **Location** – The embankments are built along major rivers like the Sutlej, Ravi, and Beas, as well as tributaries and seasonal rivulets known as "choes" and streams.
- According to the Water Resources Department, Sutlej has *bandhs* of around 226 km in length, Ravi 164 km, Beas 104 km, and Ghaggar around 100 km, with some 300 km of *bandhs* along tributaries, choes, and creeks.
- The total length of these bandhs across Punjab is approximately 900 km.
- **Construction** – They are mostly "kutchas," or earthen, with some sections having metalled or unmetalled roads on top used by local villagers.
- **Design** – The height of the bandhs can vary, ranging from 5–6 feet in some areas to 10–15 feet above the river's normal level in others, depending on the terrain.
- They typically have a width of 10–15 feet at the top.

What are the importance of dhussi bandhs?

- **Acts as protective barriers** – Since the 1950s–60s, when these *bandhs* were first constructed, these embankments have acted as protective barriers against floods.
- Before the construction of these *bandhs*, rivers flowed unchecked and often flooded nearby fields and homes during the monsoon.
- **Increases the capacity of rivers** – It reduces the direct impact of overflowing rivers and allowing rivers to carry more water during heavy rains.
- **Acts as protective shelters** – During river surges, many families shift to the embankments, as they see these as the safest ground to escape the deluge.

What are the current challenges faced by dhussi bandhs?

- **Weak constructions** – Weak, poorly built embankments frequently collapse under pressure.
- During heavy monsoons, these embankments are prone to breaches, which can cause severe flooding in surrounding villages and destroy agricultural crops.
 - **For instance**, Punjab has witnessed more than a half dozen major floods in 1978, 1988, 1993, 2008, 2019, 2023 and now 2025 mainly due to breaches in these bandhs.

- **Illegal mining** – Sand and gravel extraction along river beds has progressively eroded the base of embankments, loosening soil and weakening structures.
- Unchecked mining close to rivers reduces makes bandhs prone to caving in during high water flow.
- **Inadequate coverage** – Several stretches of the Sutlej, Beas, Ravi, and Ghaggar still lack embankments.
- **Enlarged settlements** – permanent human settlement on bandhs makes routine maintenance difficult.
- **Inadequate repair** – In 2025, it was reported that Punjab needed hundreds of crores of rupees to repair and strengthen these bandhs.

What can be done?

- **Increasing the height** – Experts say that to minimise flood risk, embankments must be raised to at least 15-20 feet above the riverbed.
- **Strengthening** – Weak points to be reinforced and their foundations should be widened.
- **Regular monitoring** – There should be a periodical monitoring of the bundhs to look for any cracks, breaks etc.
- **Construction of new bundhs** – The new bundhs should be constructed near the areas with potential flooding and more human settlements.
- Smaller *choes*, *nadies*, and *khads* also need such *bandhs*.
- *Choes, nadies and khads* are local names for seasonal streams in the Punjab region.
- **Regulating river bed** – It is important to mitigate flooding, maintain groundwater recharge, protect river ecosystems and biodiversity, and enable human uses like transportation and irrigation.

11. ENVIRONMENT

11.1 India's Integrated Approach to Wetland Sustainability

Recently, India introduced a resolution on 'Promoting Sustainable Lifestyles for the Wise Use of Wetlands' at Ramsar CoP15.

What is the Ramsar convention for wetlands?

- **Ramsar convention (1971)** – It is the only global environmental treaty dedicated to wetlands.
- Initially focused on migratory waterfowl habitats, it now covers all wetland types, recognizing their role in biodiversity, climate regulation, and human well-being.
- **Adopted in** – It was adopted in 1971 in the city of Ramsar in Iran and came into force in 1975.
- It was the first intergovernmental agreement focused exclusively on a specific ecosystem, i.e. wetlands.
- **Provides definition** – The convention provides a comprehensive definition of 'wetland' encompassing marshes, fens, peatlands and water bodies and includes natural, artificial, permanent and temporary wetlands.
- **3 main pillars** – It rests on the three main pillars:
 - Conservation of wetlands of international importance,
 - Promotion of the wise use of all wetlands within a country's territory and
 - International co-operation on shared wetland systems and migratory species.
- **The central principle of the convention** – It is "wise use" of the wetlands, which means "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development".
- **Signatories** – The convention has 172 parties.
- **Duties of the parties** – They need to designate wetlands having ecological, botanical, zoological, limnological or hydrological significance for inclusion in 'the list of wetlands of International importance'.
- The convention also requires contracting parties to consult and co-operate in managing transboundary wetlands and shared water systems.

- It further calls for the coordination of policies and regulations to conserve wetlands and their dependent biodiversity.
- **Designated wetlands** – There are 2,544 wetlands designated under the list.

What is Ramsar 15th Cop?

- **Ramsar 15th Conference of Parties (CoP15)** – It is the 15th meeting of the Conference of the Contracting Parties to the Convention on Wetlands of International Importance.
- **Held at** – Victoria Falls, Zimbabwe.
- **India's role** – It introduced and secured the adoption of a resolution on Promoting Sustainable lifestyles for the wise use of wetlands.
- The resolution highlights the need for integrating behavioural change and sustainable consumption patterns into wetland conservation strategies.
- It also aligns with Mission Life (Lifestyle for Environment), launched by India at UNFCCC COP 26, which encourages India to adopt pro-planet practices.
- **Wetlands** – They are the transitional ecosystems between terrestrial and aquatic environments, characterised by the presence of water-either permanently or seasonally, that supports diverse plant and animal life.

What are the renewed commitments under Ramsar CoP15?

- **Periodical meetings** – The representatives of the government of each of the contracting parties meet every three years (CoP).
- **Theme** – The theme of the CoP 15 was “Protecting Wetlands for Our Common Future”,
- It emphasises the important role wetlands play in sustaining ecological health, biodiversity, and climate resilience.
- **Main objectives** – To develop closer co-operation with other international environmental agreements, stronger institutions, wider partnership and adequate financial support.
- **5th strategic plan** – It adopted the 5th Strategic Plan of the Convention on Wetlands with a timeline of 2025-2034.
- **The vision of the plan** – A world living in harmony with nature where wetlands are valued, conserved, restored and wisely used, supporting a healthy planet and delivering benefits for all people.
- **Role of India** – It introduced a resolution on ‘Promoting Sustainable Lifestyles for the Wise Use of Wetlands’ which was formally adopted on July 30, 2025.
- The resolution focuses on the role of Individual and societal choices in conserving wetlands and aligns with global frameworks.
- It calls for voluntary integration of sustainable lifestyle practices into wetland management through education, awareness, collaboration and investment.

What are the significance of wetlands?

- **Maintain ecological balance** – They are rich in biodiversity and play a crucial role in maintaining the ecological balance.
- **Provide habitat** – They provide habitat and breeding grounds for nearly 40% of all plant and animal species.
- They are one of the most productive ecosystems on the planet.
- **Provide natural protection** – It protects nearly 60% of the global population living along coastlines by mitigating the impact of storm surges, hurricanes and tsunamis.
- **Provides provisions to human beings** – such as food and fodder, mainly rice and fish, and it also supports livelihoods through fisheries, agriculture and eco-tourism.
- **Delivers environmental and climate services** – It Acts as natural sponges, and absorb excess rainfall, thereby reducing the risk of floods.
- **Effective carbon sinks** – They store carbon in both soil and biomass.
- **Serves as ‘kidney of the landscape’** – Due to their ability to filter pollutants, purify water and maintain water quality.

What is the status of wetland conservation in India?

- India is one of the countries with the highest number of wetlands.
- **Number of wetlands** – It has 1309 wetlands covering 16.9 million hectares of area.
- **Wetlands under Ramsar convention** – 91 are listed under the Ramsar Convention.
- **Significance** – At least 6% of the Indian population is directly dependent upon wetlands for its livelihood.
- **Measures taken** – Recognising the significance of wetlands, India has undertaken several initiatives for their conservation and management.
- Wetland rules, 2017 (which replaced the Wetland rules, 2010) – These are notified under the Environment Protection Act.
- The rules restrict activities such as conversion of wetlands for non-wetland purposes, industrial encroachment, dumping and discharge of waste, construction and poaching.
- **Wetland committees** – To ensure the implementation of the rules, the National Wetland Committee and the State Wetland Authorities were established.
- **Policy measure** – On the policy front, the National Plan for Conservation of Aquatic Ecosystems has been implemented by the government for the conservation and management of wetlands and lakes.
- **National campaign** – In 2023, the Save Wetland campaign was launched under the Mission Sahbhagita to make wetland conservation a people's movement.
- **Four pillars of the mission** – It considers the wetland as 'Amrit Darohar' and works on four pillars
 - Communication, Education, Participation & Awareness

What are the concerns?

- **Threatened landscape** – Wetlands are also one of the earth's most threatened ecosystems.
- They are facing severe threats due to issues like urban encroachment, pollution and climate change.
- From 1970-2020, more than 35% of the world's wetlands have vanished due to various reasons.
- **Conversion of wetland** – Land conversion for agriculture, urbanization and Infrastructure development .
- **For instance**, in states like Punjab and Kerala, conversion of wetlands for agriculture & urban construction.
- **Pollution** – Industrial and domestic waste pollute water bodies, and unsustainable farming practices disrupt hydrology.
 - **For example**, It has severely affected wetlands such as Bellandur Lake in Bengaluru and Loktak Lake in Manipur.
- **Climate change** – It exacerbates these challenges by altering rainfall patterns and increasing the frequency of extreme events.
- **Urbanization and industries** – The wetlands in the Himalayan states are under threat due to unregulated urbanisation, unsustainable tourism, and climate change.
- **Effect of aquaculture** – In coastal states, unsustainable aquaculture, particularly shrimp farming, and overfishing have degraded many wetlands.

What are the measures to be taken?

- **Removal of encroachments** – To secure these ecosystems, the issue of encroachment and waste dumping in wetlands needs to be dealt with sternly.
- For this, strict enforcement of Wetland Rules, 2017 would help.
- **Effective implementation** – Policies and law should be implemented with full-fledged motive to conserve the ecology.
- **Public awareness and community participation** – They are indispensable, since local populations are both beneficiaries and guardians of wetlands.
- **Adequate funding** – Sustained and sufficient funding is necessary to support the restoration and management of wetlands.

What lies ahead?

By integrating legal enforcement with behavioural change and waste governance, India can move closer to achieving its commitment to 'wise use of wetland' and set a model for sustainable ecological stewardship.

11.2 Biochar and its Application

Indian carbon market set to be launched in 2026 and CO₂ removal technologies such as biochar are expected to play a crucial role.

What is biochar?

- **Biochar** – It is a type of charcoal rich in carbon and is produced from agricultural residue and organic municipal solid waste.
- **Potential of India** – India generates over 600 million metric tonnes of agricultural residue and over 60 million tonnes of municipal solid waste every year.

What are the potential applications of biochar?

- **Agriculture** – It can improve water retention, particularly in semi-dry and nutrient-depleted soils.
- It can also enhance soil organic carbon, helping restore degraded soils.
- **Tool for climate goals** – It offers a science-backed multisectoral pathway for India to achieve its climate and development goals.
- **Electricity generation** – Byproducts of biochar production, such as syngas (20-30 million tonnes) and bio-oil (24-40 million tonnes), can generate additional electricity and fuels.
- **Building material** – It can be explored as a low-carbon alternative to building materials.
- Adding 2-5% of biochar to concrete can improve mechanical strength, increase heat resistance by 20%.
- **Waste water treatment** – It offers a low-cost and effective option to reduce pollution.
- A kilogram of biochar, along with other substances, can treat 200-500 litres of wastewater.
- **Lowers coal demand** – Utilising syngas could generate around 8-13 TWh of power, equivalent to 0.5-0.7% of India's annual electricity generation, replacing 0.4-0.7 million tonnes of coal per year.
- **Reduces import** – Bio-oil can likewise potentially offset 12-19 million tonnes (or 8%) of diesel or kerosene production annually.
- It leads to lower crude oil imports and reducing more than 2% of India's total fossil-fuel-based emissions.
- **Source of Income** – Indian carbon market will generate additional income for investors and farmers through carbon credits.
- **Employment opportunity** – It has the potential to create approximately 5.2 lakh rural jobs, linking climate action with inclusive economic development.

A significant **portion of waste is burnt openly or dumped in landfills**, leading to air pollution from particulate matter and greenhouse gases such as methane, nitrous oxide, and CO₂.



India generates more than 70 billion litres of wastewater every day, of which 72% is left untreated.

Biochar as a Carbon Sink

- By using 30% to 50% of surplus waste, India can produce 15-26 million tonnes of biochar and remove 0.1 gigatonnes of CO₂-equivalent annually.
- This, in turn, can abate nitrous oxide emissions by 30-50%.
- Notably, nitrous oxide is a greenhouse gas with 273-times the warming potential of CO₂, making its mitigation a crucial benefit of biochar.

- **In soil** – It can hold carbon in the soil for 100-1,000 years due to its strong and stable characteristics, making it an effective long-term carbon sink.
- In carbon capture applications, modified biochar can adsorb CO₂ from industrial exhaust gases.
- **In building material** – It capture 115 kg of CO₂ per cubic metre, making building materials a stable carbon sink.

What hinders biochar's application?

- **Less efficient** – Its carbon removal efficiency is currently lower than that of conventional methods.
- **Remains underrepresented** - The absence of standardised feedstock markets and consistent carbon accounting methods, undermines investor confidence.
- **Limited awareness** – Less cognizance among stakeholders, weak monitoring, reporting, and verification frameworks hinders the progress.
- **Lack of coordination** – Areas such as agriculture, energy, and climate policy lack coordination among them.



What measures can be taken?

- **Research and development** – R&D is essential to create region-specific feedstock standards and to optimise biomass utilisation rates based on agro-climatic zones and crop types.
- **Integration into various plans** – Biochar should be systematically integrated into existing and upcoming frameworks.
- This includes crop residue management schemes, bioenergy initiatives in both urban and rural contexts.
- It also includes state-level climate strategies under the State Action Plans on Climate Change.
- **Acknowledgement** – Recognizing biochar as a verifiable carbon removal pathway within the Indian market is crucial.
- **Village level Deployment** – Biochar production equipment at the villages should be setup and can be operated by trained people.
- **Benefit analysis and integration** – It should be systematically integrated into policy and market frameworks to fully realise its potential.

What lies ahead?

- Participation and support from multiple stakeholders could truly serve as a scalable pathway for negative emissions across sectors.
- Viable business models could be developed for large-scale adoption and utilization of the technology.

11.3 Pandemic Preparedness by Vulture Conservation

Recent decline in vulture populations reminds us the connection between their conservation and pandemic preparedness, alarms need for natural conservation of vultures.

What are vultures?

- **Vultures** – These are large birds that feed mostly on animals found dead and that are related to the hawks and eagles but have weaker claws and the head usually naked.
- **Diet** – All vultures feed on carrion (animal carcasses), except for palm-nut vultures (*Gypohierax angolensis*), which feed on the fruit of the oil palm.
- Some species also hunt small prey, such as insects, lizards, smaller birds and rodents.
- The pieces of decaying meat and skin are less apt to stick to bare heads than to a thick mat of feathers.



- **Incubation** – Vultures usually have one mate a year. Nests are constructed using sticks and leaves, and are built in trees and cliffs. The same nest may be used for several years.
- **Ecological importance** – Vultures are critical for maintaining ecosystem balance by removing carcasses, helps prevent the spread of pathogens like anthrax, Clostridium botulinum, rabies.
- **Historical population decline** – Once numbering over 40 million in India, vulture populations have plummeted by over 95% since the 1990s due to the use of diclofenac.
- It is highlighting a significant public health issue linked to biodiversity loss.

What role do vultures play?

- **Safeguards ecosystems health** – As nature's clean-up crew, vultures play a crucial role in maintaining the health of our ecosystems by consuming dead animals.
- **Controlling spread of diseases** – Their scavenging activities likely control the spread of diseases, thus protecting both wildlife and human communities from potential outbreaks.
- **Recycling nutrients** – Vultures and their behavior of consuming carcasses helps recycle nutrients back into the soil.
- This potentially helps promote vegetation growth and maintains sustainable and healthy ecosystems.
- This natural waste management is both free and environmentally beneficial,
- **Providing advantages to livestock farmers** – Vultures reduces the need for artificial disposal methods such as transport to incineration plants.
- This minimizes related insurance pay-outs and greenhouse gas emissions.
- **Cultural and spiritual significance** – In many societies and regions vultures attract ecotourism, which generates substantial income for local communities.
- Their presence supports biodiversity and enhances ecosystem resilience.

How are vultures linked to pandemic preparedness?

- **Carcass management** – By being the first to encounter carcasses, vultures can help in surveillance and safe management of potential zoonotic spillover sources.
- **Reduction of zoonotic spillover** – The promptly disposing of carcasses by vultures reduce the risk of zoonotic spillover.
- This further, prevents transmission of pathogens from animals to humans, resists the emergence of pandemics.
- **Regional and global health linkages** – As part of the Central Asian Flyway (CAF), vultures connect ecosystems and disease risks across borders.
- **Ecosystem surveillance** – Vultures act as natural bio-monitors or first responders at carcasses, helping in early detection of outbreaks and providing crucial data.
- **Conservation as preparedness** – Lower-cost vulture conservation efforts, such as banning harmful drugs, creating safe zones can build systemic resilience against pandemics.
- Vulture conservation essential for both biodiversity and public health.

*A **Carcass** is the dead body of an animal, especially one that is to be cut up for meat or eaten by other animals. It can also refer to the frame or remains of an old, broken, or destroyed object, like a building or a vehicle.*

***Central Asian Flyway (CAF)**, a migratory route connecting breeding grounds in Central Asia to wintering areas across South Asia. This corridor spans more than 30 countries and is traversed by millions of migratory birds each year.*

What strategies can help protect vultures in India?

- **A post 2025 strategy with 5 pillars includes**
 - **Satellite telemetry** – Implement nationwide tracking to map habitats and spillover hotspots.
 - **Decision Support System (DSS)** – Integrate wildlife, livestock, and human health data for real-time risk analysis.
 - **Cross-sector coordination** – Strengthen links between environment, veterinary, and public health sectors within a One Health framework.
 - **Transboundary collaboration** – Work collaboratively through the Central Asian Flyway to enhance regional disease preparedness.

- This collaboration to be aligned with commitments under the **Convention on Migratory Species** and stronger disease preparedness.
- **Community stewardship** – Empower local communities, especially women and youth, to take active roles in surveillance and awareness.
- **Long-term goals** – Transitioning to a broader resilience framework by embedding health security dimensions into the existing Vulture Action Plan can conserve species and reduce pandemic risks.
- **Investing in vulture conservation** – Vulture conservation is modest compared to the potential costs of disease outbreaks, making it a vital area for intervention

What lies ahead?

- Protecting vultures is not only essential for conserving wildlife but also for maintaining the vital ecosystem services that all life depends on.
- The contribution of vultures may be formally recognized in pandemic preparedness strategies as holistic and sustainable measure.
- Local communities, who live alongside vultures, are critical partners in conservation efforts can be effectively utilized for better coordination and support.

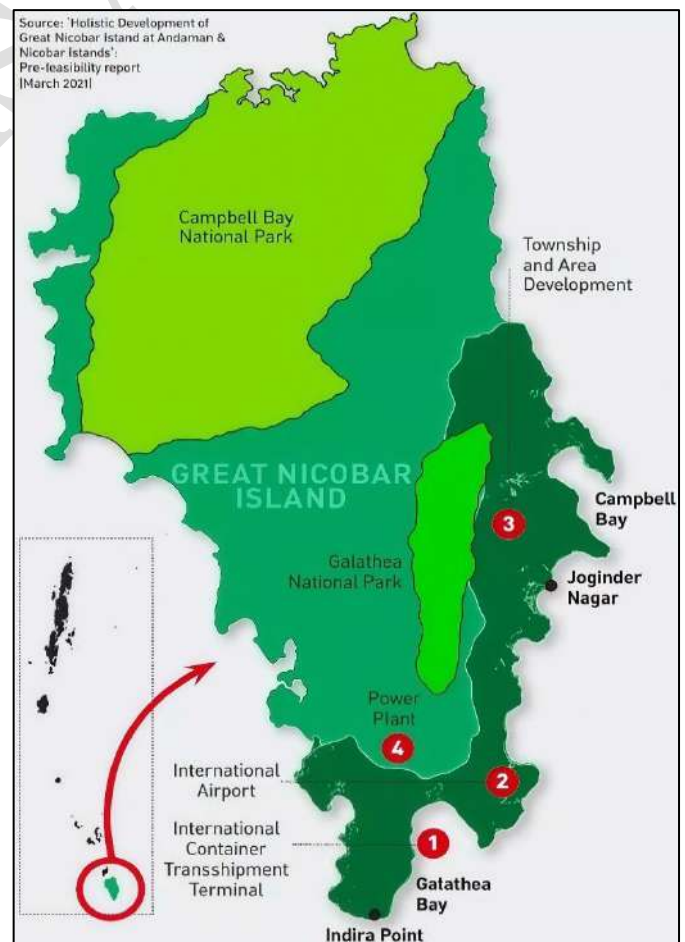
11.4 Ecological Disaster in the Nicobar Island

Recently, the former Environment minister of India labelled the Great Nicobar Island (GNI) infrastructure project as 'a maha ecological disaster'.

What is Great Nicobar Island (GNI) infrastructure project?

- **The GNI project** – It refers to the "Holistic Development of Great Nicobar," which is a large-scale infrastructure project on the Great Nicobar Island in India's Andaman and Nicobar Islands.
- **Conceived by** – NITI aayog in 2021.
- **Budget** – Central Government has granted Rs. 72,000 Crore for this project.
- **Components** – The various components of the projects are
 - Airport, for civilian and defence use
 - International container trans-shipment terminal (ICIT)
 - Township
- **Implementation** – Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO) is the project's implementing agency.
- The project is to be implemented in 3 phases over the next 30 years.
- **Significance** – It has various significance as
 - It ensures development in the Islands.
 - More than 1 lakh new direct jobs and 1.5 lakh indirect jobs are likely to be created on the island over the period of development.
 - It is important for national security and for consolidation of the Indian Ocean Region as a strategic location.

To know more about the Strategic significance of Andaman & Nicobar Islands, [click here](#)



What are the current issues associated with the project?

- **Lack of consultation** – As per the Article 338-A of the Constitution, the Government should have consulted the National Commission for Scheduled Tribes, but it has failed to do so.

- **Neglected of council's view** – The Government should have consulted the Tribal Council of Great Nicobar and Little Nicobar Island.
- Instead, the Council Chairman's plea that the Nicobarese tribals be allowed to return to their ancestral villages has been neglected.
- **Concerns for Nicobarese** – This project will now permanently displace the Nicobarese tribal community from their ancestral villages.
- These tribal people were forced to evacuate their villages during the Indian Ocean tsunami of 2004.
- **Concerns on Shompen** – The project denotifies a significant part of the Shompen tribal reserve
 - It destroys the forest ecosystems where the Shompen live,
 - It will cause a large-scale influx of people and tourists on the island.
- **Inadequate impact assessment** – There is inadequate environmental and social impact studies and assessment of the impact on Shompen and Nicobarese tribal communities.
- **Violation of FRA** – It violates the letter and spirit of the Forest Rights Act (2006), which holds the Shompen as the sole legally empowered authority to protect, preserve, regulate and manage the tribal reserve.
- **Environmental catastrophe** – The project will require the cutting down of trees on an estimated 15% of the island's land, decimating a nationally and globally unique rainforest ecosystem.
- The Ministry of Environment, Forests, and Climate Change estimates that 8.5 lakh trees may be cut.
- **Concerns with the afforestation measure** – The planned afforestation is in Haryana, which is thousands of kilometres away.
- This quarter of this land has now been auctioned off by the Haryana Government for mining.
- **Issues with High-powered committee (HPC)** – The committee reported that the port does not fall in the ICRZ-IA (ICRZ-IA), where ports are prohibited.
- It is in ICRZ-IB where these are permitted.
- **Violates CRZ** – The planned port site is also controversial with some of it falling under the Coastal Regulation Zone (CRZ) 1A.
- Port construction is prohibited in CRZ 1A areas due to the presence of turtle nesting sites and coral reefs.

Around 130 sq km of pristine forest inhabited by the Nicobarese, a Scheduled Tribe (ST), and the Shompens, a Particularly Vulnerable Tribal Group (PVTG), whose population is estimated to be between 200 and 300.

The Island's Shompen Policy, notified by the Union Ministry of Tribal Affairs, specifically requires the authorities to prioritise the tribe's welfare and integrity, when considering large scale development proposals.

The Social Impact Assessment (SIA) is being conducted as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

To know more about Island Coastal Regulation Zones (ICRZ), [click here](#)

What are the challenges associated with this project?

- **Impact on biodiversity** – It threatens one of the world's most unique flora and fauna ecosystems.
- These concerns about the project's impact on the Nicobar long-tailed macaque have been ignored.
- **Flaws in methodology** – The biodiversity assessments for the projects have come under questioning for critical methodological flaws.
- The assessment of sea turtle nesting sites was conducted in the off-season for nesting.
- Drones were employed to gauge the project's impact on dugongs, but these drones have limited capacity and can only assess shallow areas.
- **Undue pressure for assessment** – Evidence has emerged that the institutes were made to conduct these assessments under highly unusual conditions, bordering on duress.
- **Highly susceptible to natural disasters** – The project including the port is coming up in a seismically sensitive earthquake prone zone and attacks of tsunami (December 2004).

Duress is a legal concept where a person or entity acts not by free will but under the threat of something detrimental, such as financial pressure, a threat to life, or other illegitimate pressures.

What can be done?

- **Developing a balanced approach** – To reconcile national security and economic imperatives with the urgent need to protect Great Nicobar's unique ecological and cultural fragility.
- **Increasing transparency** – An independent monitoring body should be established to oversee compliance with environmental and social safeguards.
- **Conducting new assessments** – A new, detailed and credible environmental and economic assessment could necessarily be conducted based on comprehensive, on-site biodiversity studies.
- **Prioritizing indigenous rights** – Any development must proceed only with the free, prior and informed consent of the indigenous communities, as required by the Forest Rights Act.

11.5 Noise Pollution – Issues and Measures

The noise pollution is one of the health hazard that has crept up unacknowledged on Indian cities.

What is noise pollution?

- **Noise pollution** - Noise pollution is the presence of excessive, loud, or unwanted sound in the environment that negatively affects human and animal health, well-being, and the surrounding ecosystem.
- **Major sources** – These include transportation, industrial activities, construction, and household appliances.
- **Impacts** – It can cause issues like hearing loss, increased stress, and sleep disruption in humans, and can interfere with communication and behavior in wildlife.
- Medically, it is among the leading contributors to hypertension, sleep disruption, stress disorders, and cognitive decline.
- **Safe level** – The World Health Organization recommends residential daytime exposure not exceed 55 dB (A) – roughly the volume of a normal conversation.



How is noise pollution regulated in India?

- **Legal recognition** – Legally, it is already recognised as an air pollutant under the Air (Prevention and Control of Pollution) Act, 1981.
- **Regulation** – In India noise pollution is regulated by The Noise Pollution (Regulation and Control) Rules, 2000.

THE LOUDEST ALLOWED

Under The Noise Pollution (Regulation and Control) Rules, 2000

INDUSTRIAL AREAS:

75 dB (A) leq during daytime; 70 at night

COMMERCIAL AREAS:

65 dB during daytime, 55 at night

RESIDENTIAL AREAS:

55 dB during daytime, 45 at night

SILENCE ZONES:

50 dB during daytime, 40 dB at night

■ **Silence Zones** are defined as areas comprising up to 100 m around hospitals, educational institutions, courts, religious places, or any other area which is declared as such by the competent authority.

■ **Sound levels** are measured in dB (A) leq, which is the time-weighted average of the level of sound in decibels on scale A, which is relatable to human hearing.

DAYTIME IS DEFINED AS 6 am to 10 pm; NIGHTTIME IS 10 pm to 6 am.

- It set similar limits of 55 dB from 6 am to 10 pm, and 45 dB at night.
- But the decibel scale is not linear, a 10 dB increase means a ten-fold rise in intensity.
- Traffic corridors in Indian cities often exceed 70 dB (A).
- **Increased burden** – Most towns and cities in India routinely endure noise levels far above what is safe.

- **Most vulnerable people** – Along air pollution, the burden of this unchecked exposure falls heaviest on those least able to shield themselves.
- They are street vendors, delivery workers, traffic police, and residents of informal settlements.
- For them, the roar of the city is not an occasional nuisance but an everyday occupational hazard that slowly erodes health and well-being.

What are the issues in regulation of noise pollution?

- **Inadequate investment** – Yet, despite this dual recognition, India has barely invested in systematic monitoring or data collection to understand the scale of the damage.
- **Weak enforcement** – The responsibility is scattered across multiple authorities.
- **Short term interventions** – As with air quality, symbolic fixes occasional honking bans or festival crackdowns do little to tackle structural drivers.
- The result is a chronic, unaddressed public health crisis.
- **Inadequate monitoring** – Unlike air pollution, where satellites and low-cost sensors have transformed measurement, noise data in India are sporadic, reactive, and incomplete.
- **Structural and cultural barriers** – These factors hinder effective enforcement.
- **Lack of recognition** – Without recognition that noise can be as harmful as smog, many citizens tolerate or even participate in noisy practices.
- **Fragmented governance** – Pollution control boards, municipalities, and police all have partial jurisdiction, limited resources, and weak incentives to act.

What must be done?

- **Acknowledge the issue** – Treating noise on par with air and water pollution can make a significant change.
- **Monitoring** – Real-time sensors can create integrated maps of sound exposure.
- **Innovation** – Machine-learning tools can distinguish sources like traffic, construction, industry and it may guide targeted responses.
- **Including in planning and research** – Urban planning must incorporate noise mitigation.
- Researchers and policymakers should design evidence-based interventions grounded in public-health data.
- Health studies should explicitly track noise exposure, especially near schools, hospitals, and low-income areas.
- **Creating green buffers** such as trees and parks absorb sound, while zoning can shield residential areas from high-intensity noise corridors.
- While limited experiments with green belts for noise-reduction are promising, broader efforts must be scientifically assessed and community-informed.
- **Governance reforms** – Noise regulations must be enforceable, backed by transparent data and accountability.
- **Inter-agency collaboration** – Agencies must collaborate across sectors — from pollution boards to transport departments and municipalities.
- **Behavioral change** – Promoting walking and cycling for urban mobility.
 - **For example**, initiatives such as “No Honking Day” must evolve into sustained behavioural campaigns.
- **Adoption to e-vehicles** – A faster transition to electric buses, and enforcing honking restrictions systematically will bring measurable relief.
- **Community engagement** – Noise is tied to cultural and social practices, hence the solutions must be sensitive but firm.
- **Campaigns and Partnerships** – Awareness campaigns and partnerships with religious and community leaders can reshape norms without alienating communities.
- **Ensuring equity** – Those most exposed to noise often have the least means to protect themselves.
- The right to quiet must not be a privilege it must be a baseline condition of public health.

What lies ahead?

- India has already learned, painfully, that neglecting air pollution magnifies harm and widens inequity.

- The law already names it an air pollutant, what is missing is the political and civic will to act.
- By treating noise with the seriousness it deserves integrating it into clean-air agendas, embedding it in urban planning, and making it a priority for public health we can save lives, protect communities, and reclaim the basic human right to quiet.

12. SCIENCE & TECHNOLOGY

12.1 CEREBO

Recently, a device called CEREBO was developed to diagnose Traumatic brain injuries (TBIs).

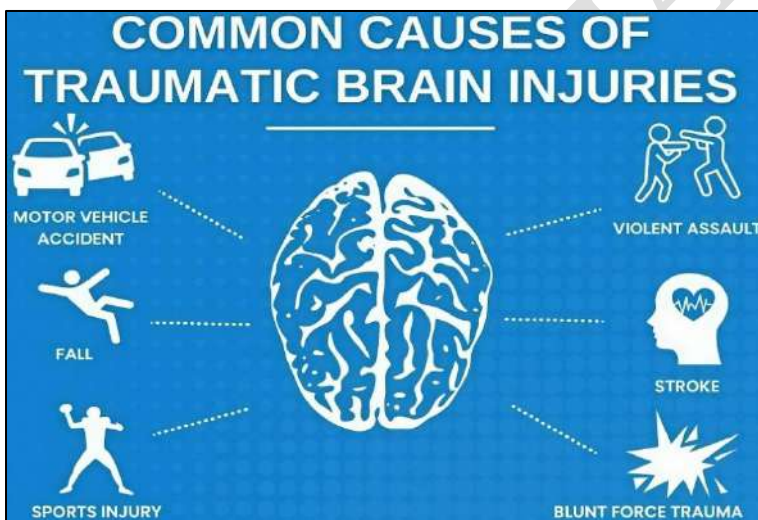
What is CEREBO?

- **CEREBO** – It is a novel hand-held, portable non-invasive brain injury diagnostic tool.
- **Developed by** – The Indian Council of Medical Research (ICMR), the Medical Device & Diagnostics Mission Secretariat (MDMS), AIIMS Bhopal, NIMHANS Bengaluru, and Bioscan Research.
- **Used for** – The device is to be used for Traumatic Brain Injuries (TBIs) and can detect intracranial bleeding and edema within a minute.
- **Accessibility** – It is safe for infants and pregnant women, and can be used by paramedic staff as well as unskilled personnel.



What are Traumatic Brain Injuries (TBI)?

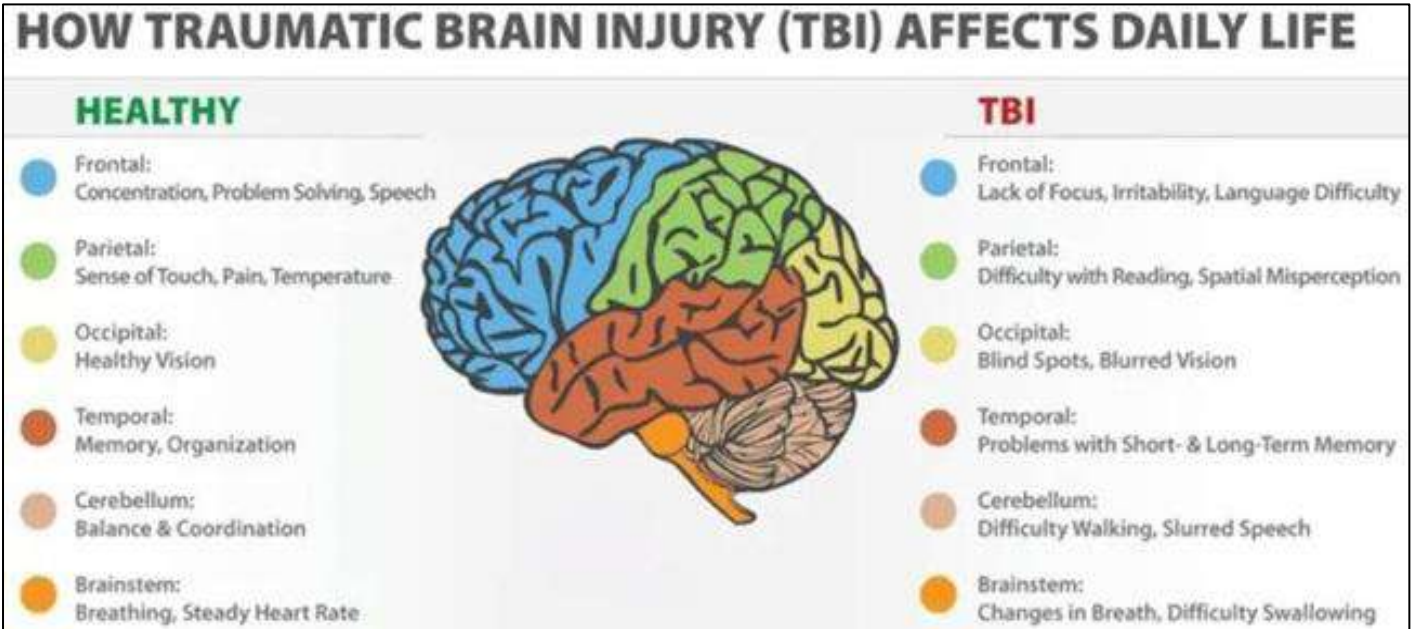
- **TBI** – It is a condition caused by a sudden trauma or injury to the head, which disrupts normal brain function.
- This injury can range from mild (concussion) to severe, often resulting in long-term physical, cognitive, emotional, and behavioural impairments.
- The severity of TBI depends on factors such as the force of impact, the location of the injury, and the individual's overall health.



What are the effects of TBIs?

- **Public health challenge** – TBIs are a significant public health challenge, particularly in emergency settings, rural areas, and underserved populations.
- **Increasing cases in developing countries** – According to an article titled, 'Epidemiology of traumatic brain injuries, TBIs are a leading cause of morbidity, mortality, disability and socio-economic losses in India and other developing countries.
 - **For example**, it is estimated that nearly 1.5 to 2 million persons are injured and one million succumb to death every year in India.

- **Leading causes** – Road traffic injuries are the leading cause (60%) of TBIs followed by falls (20%-25%) and violence (10%).
- It is possible for a TBI to go undiagnosed initially, especially if symptoms are mild or if there are no visible signs of injury.
- **Severe cases** – A TBI can cause permanent brain damage in some cases, particularly if the injury is severe or if there are complications such as bleeding or swelling in the brain.



- **Mild cases** – Patients with mild TBIs (concussions) may only require monitoring and observation to ensure symptoms do not worsen.
- Close monitoring of neurological status, vital signs, and cognitive function is important, especially in the first 24 to 48 hours after injury,” it adds.
- **Long-term consequences** – This include cognitive impairments (such as memory problems), emotional and behavioural changes (such as depression, anxiety), physical disabilities, and increased risk of neurodegenerative diseases later in life, say experts.

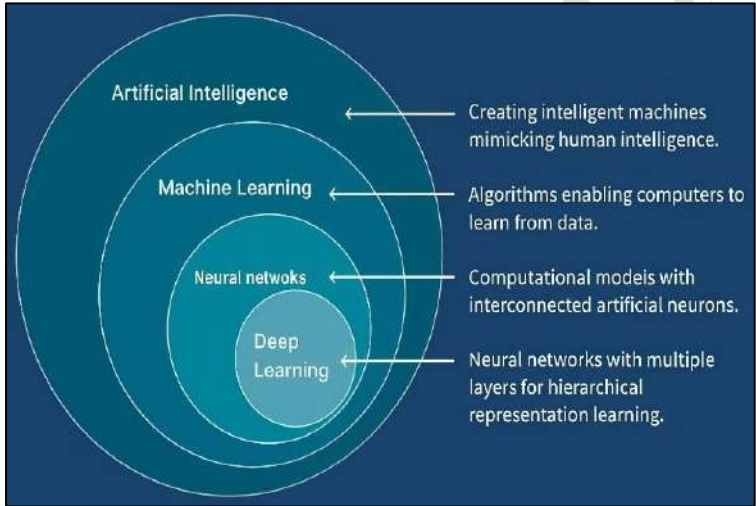
Why is this device important?

- **Ineffective traditional tools** – Traditional diagnostic methods, such as the Glasgow Coma Scale (GCS), are prone to errors and subjective interpretations.
- The imaging techniques require specialised infrastructure, trained personnel, and are cost-intensive.
- It is to address this issue that CEREBO has been developed using advanced near-infrared spectroscopy technology powered by machine learning.
- **Increased accessibility** – Offered as an option in settings where advanced diagnostic tools like CT or MRI scans are inaccessible or delayed, CEREBO provides colour-coded, radiation-free, and cost-effective results.
- **Portability** – The device is designed for deployment in ambulances, trauma centres, rural clinics, and disaster response units and is aimed at enhancing early TBI detection and patient outcomes.
- **Recognition** – According to the ICMR, CEREBO has undergone clinical validation, regulatory approvals, and feasibility studies, paving the way for global adoption in emergency and military healthcare systems.
- **Undergone multiple trials** – ICMR added that multi-centre clinical performance evaluation and utility trials were conducted at leading trauma care and neurosurgical centres.
- It generates prospective evidence on diagnostic accuracy, time-to-decision benefits, and integration feasibility within emergency care pathways.
- **Categorization of patients** – Post-market surveillance supported by ICMR-MDMS further confirmed its role in user adoption as a tool for effective categorization of patients for further neurological assessments.
- Health technology assessments also recommended the adoption of the device in tertiary care to accelerate CT scans, optimise triage, and reduce imaging costs.

12.2 AI and Human Labour

Recently, there has been a lot of challenges faced by the AI data annotators and workers in various countries.

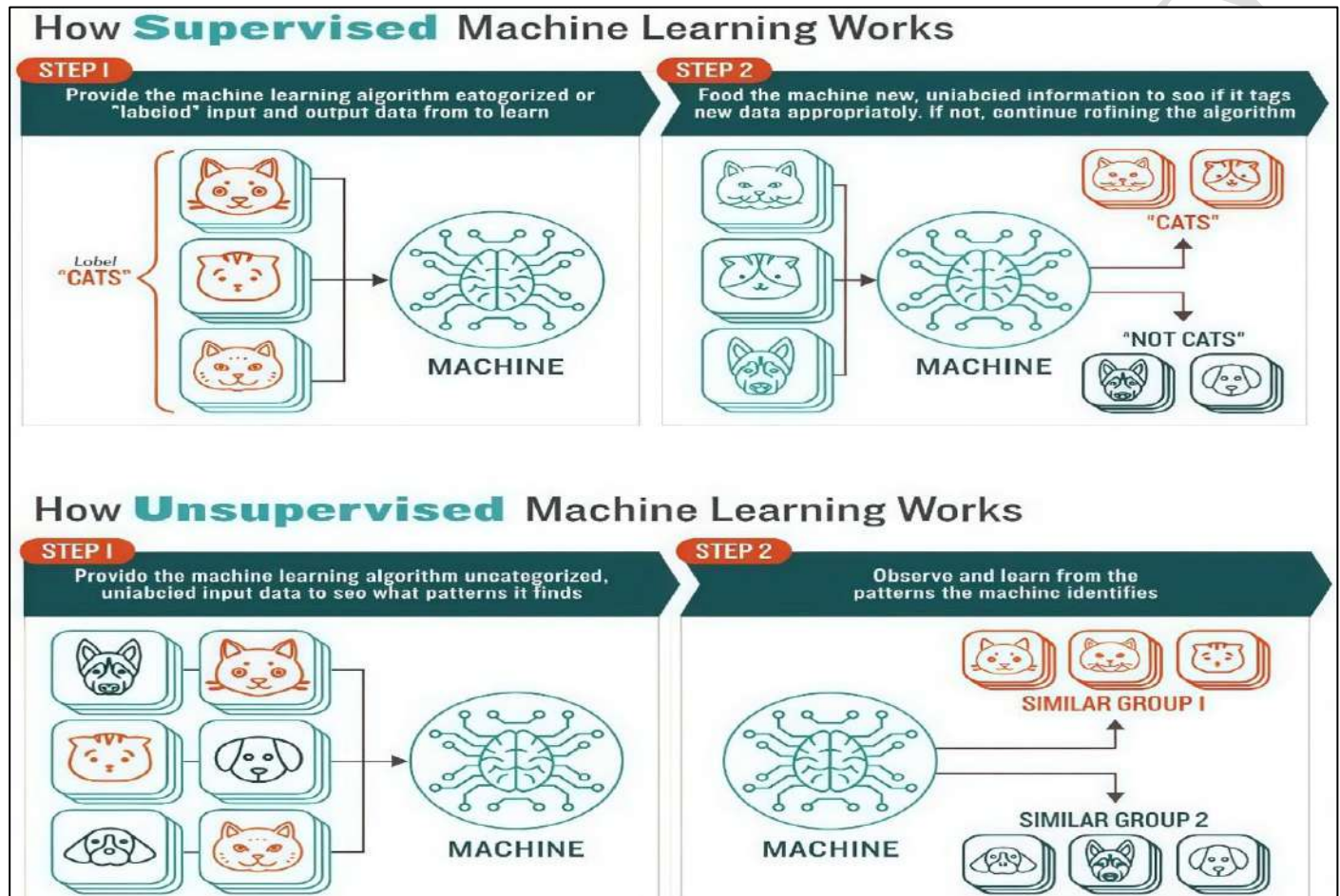
What are the important components of AI?

- **Artificial Intelligence (AI)** – It is a technology that empowers machines to perform tasks traditionally requiring human intelligence, such as learning, problem-solving, decision-making, and understanding language.
 - It works by using algorithms to analyze vast amounts of data, identify patterns, adapt to new information, and ultimately act and make decisions with minimal human input
 - **Algorithms** – In AI, an algorithm is a step-by-step set of instructions that enables a machine to process data, learn from it, identify patterns, and make decisions or predictions autonomously.
 - **Machine learning (ML)** – It is a type of artificial intelligence that enables computers to learn from data and improve their performance over time without being explicitly programmed.
 - **Neural network** – It is a machine learning system, inspired by the human brain that uses layers of interconnected nodes (neurons) to process data, recognize patterns, and make predictions.
 - **Deep learning** – It is a powerful subfield of artificial intelligence (AI) that uses "deep" artificial neural networks with multiple layers to learn complex patterns from vast amounts of data.
- 
- It enables machines to perform tasks like image recognition, language translation, and autonomous driving without explicit human instruction.
 - **Data annotation** – It is the process of labeling or tagging data to make it understandable for machine learning (ML) models.
 - This involves adding descriptive information, such as labels, tags, or bounding boxes, to data like images, text, audio, and video.
 - Annotated data helps ML models learn to recognize patterns, make predictions, and perform complex tasks.

What are the roles of human in AI and machine learning?

- **Role of human** – AI is not getting smarter on its own, it has been built on and continues to rely on human labour and energy resources.
- These systems are fed information and trained by workers who are invisibilised by large tech companies, and mainly located in developing countries.
- A machine cannot process the meaning behind raw data.
- **Data annotation** – Data annotators label raw images, audio, video, and text with information that trains AI and Machine Learning (ML) models.
- This, then, becomes the training set for AI and Machine Learning (ML) models.
 - **For example**, a large-language models (LLM) cannot recognise the colour 'yellow' unless the data has been labelled as such.
 - Similarly, self-driving cars rely on information from video footage that has been labelled to distinguish between a traffic sign and humans on the road.
- The higher the quality of the dataset, the better the output and the more human labour is involved in creating it.
- Data annotators play a major role in training LLMs like ChatGPT, Gemini, etc.
- An LLM is trained in three steps:
 - Self-supervised learning
 - Supervised learning

- Reinforcement learning.
- **Self-supervised learning** – In this step the machine picks up information from large datasets on the Internet.
- **Supervised learning and Reinforcement learning** – The data labellers or annotators enter in this stage.
- Here the information is fine-tuned for the LLM to give the most accurate response.
- **Automated features requiring humans** – Even features marketed as ‘fully automated’ are often underpinned by invisible human work.
 - **For example**, our social media feeds are ‘automatically’ filtered to censor sensitive and graphic content.
- This is only possible because human moderators labelled such content as harmful by going through thousands of uncensored images, texts and audio.



- The exposure to such content daily has also been reported to cause severe mental health issues like post-traumatic stress disorder, anxiety and depression in the workers.
- **Voice actors** – There are voice actors and actors behind AI-generated audios and videos.
- Actors may be required to film themselves dancing or singing for these machines to recognize human movements and sounds.
- Children have also been reportedly engaged to perform such tasks.
- **Feedback and response** – Humans give feedback on the output the AI produces for better responses to be generated over time, as well as remove errors and jailbreaks.

What are the challenges faced by AI developers?

- **Labour outsourcing** – This meticulous annotating work is outsourced by tech companies in Silicon Valley to mainly workers in countries like Kenya, India, Pakistan, China and the Philippines for low wages and long working hours.
- **Errors in data** – Several tech companies have been accused of employing non-experts for technical subjects that require prior knowledge.
- This is a contributing factor in the errors found in the output produced by AI.

- **For instance**, A data labeller from Kenya revealed that they were tasked with labelling medical scans for an AI system intended for use in healthcare services elsewhere, despite lacking relevant expertise
- Data labelling can be of two types
 - Those which do not require subject expertise
 - Those which are more niche and require subject expertise.
- However, due to errors resulting from this, companies are starting to ensure experts for such information being fed into the system.
- **Poor working conditions** – In 2024, AI tech workers from Kenya sent a letter to former U.S. President Joe Biden talking about the poor working conditions they are subjected to.
- Our working conditions amount to modern-day slavery,” the letter read.
- **Long working hours** – They said the content they have to annotate can range from pornography and beheadings to bestiality for more than eight hours a day, and for less than \$2 an hour, which is very low in comparison to industry standards.
- **Strict deadlines** – There are also strict deadlines to complete a task within a few seconds or minutes.
- They are constantly surveilled, and if they fall short of the targeted output, they are fired.
- **Undermining labour laws** – In Kenya, these US companies are undermining the local labor laws, the country’s justice system and violating international labor standards.
- When workers raised their concerns to the companies, they were sacked and their unions dismantled.
- **Engaged as gig workers** – Most AI tech workers are unaware of the large tech company they are working for and are engaged in online gig work.
- This is because, to minimise costs, AI companies outsource the work through intermediary digital platforms.
- The advancement of AI is powered by such “ghost workers.”
- **Fragmented labour network** – There are subcontract workers in these digital platforms who are paid per “microtask” they perform.
- Hence, the labour network becomes fragmented and lacking transparency.
- **Lack of recognition** – The lack of recognition and informalisation of their work helps tech companies to perpetuate this system of labour exploitation.

What lies ahead?

- There is a need to bring in stricter laws and regulations on AI companies and digital platforms.
- There should be regulations for the labour supply chains powering AI, ensuring transparency, fair pay, and dignity at work.

12.3 Protecting the Satellites

Recently, Indian government has approved a ₹27,000-crore programme to launch about 52 new surveillance satellites, with the first expected in 2026.

What are satellites?

- **Satellites** – Satellites are celestial bodies or man-made objects that orbit a larger body, such as a planet or star.
- **Types** – There are two main types
 - **Natural satellites** – This includes Earth's Moon, which orbit planets
 - **Artificial satellites** – Human-made objects launched into orbit for various purposes like communication, navigation (GPS), weather monitoring, and scientific research
- **Uses** – Satellites today guide airplanes and ships, power the internet, television services, and global financial transactions, and help scientists monitor the weather and climate change.
- They are also indispensable for national security as contemporary armies depend on satellites for communications, surveillance, and navigation.
- **Bodyguard satellites** – It is also known as surveillance satellites.

- They are dedicated spacecraft designed to escort and protect high-value satellites by monitoring close approaches, detecting threats, and countering hostile manoeuvres in orbit.

What are the risks faced by satellites?

- **Associated risks** – As the number of satellites in orbit has grown, so have the risks.
- Spacecraft can collide with debris, be jammed by radio interference, hacked through ground systems, and threatened by hostile manoeuvres by other satellites.
- **Threat of debris**– Even as a physical environment, space presents risks that would be unimaginable on the ground.
 - **For example**, a small screw left over from a rocket can punch a hole in a spacecraft traveling at 28,000 km per hour, enough to terminate the mission.
- **Risk from transmitters** – Satellites use radio signals to talk to the earth, including with users of navigation services.
- A powerful ground transmitter can jam a satellite's uplink or downlink or use spoofing.
- **Natural threats** – Solar storms can damage electronics, induce currents in power systems, and increase atmospheric drag, causing spacecraft to fall out of orbits sooner than expected.
- **Geopolitical threats** – Beyond debris and natural threats also lies the shadow of geopolitics. Satellites can be inspected, shadowed or even targeted by third-party actors.
- Rendezvous and proximity operations used to be a niche technology but have become ubiquitous today.
- While the satellite that allegedly approached the Indian satellite in 2024 didn't result in a collision, officials are said to be reading it as a test of capability and a warning.

Spoofing is where false signals imitate genuine ones can mislead navigation users.

What are the measures taken by various countries?

- **Managing debris risk** – To manage this risk, International organisations and countries have built large debris-tracking networks.
 - **UN** – The UN Committee on the Peaceful Uses of Outer Space (COPUOS) adopted voluntary guidelines in 2019 for the long-term sustainability of space.
 - **NATO** – It has declared space to be an operational domain, and have come together under the Combined Space Operations Initiative to promote responsible behaviour in orbit.
 - **US** – The US operates the Space Fence, a radar that can spot objects the size of a marble.
 - **EU** – The European Union runs EU Space Surveillance and Tracking (EUSST), which warns satellite operators about impending threats.
 - **India** – India has the Indian Space Situational Awareness and Management (IS4OM) centre in Bengaluru.
 - It is a satellite-tracking hub that tracks satellites, warns of dangerous encounters, and coordinates collision avoidance manoeuvres.
 - Indeed, in 2023 alone, Indian satellites executed more than 10 collision-avoidance manoeuvres.
 - In 2024, India hosted the Inter-Agency Debris Coordination Committee (IADC), where ISRO publicly declared its intention to pursue 'Debris-Free Space Missions by 2030'.
 - **Project NETRA** – India's Project NETRA is expanding these capabilities with new radars and telescopes.
 - The Multi-Object Tracking Radar at Sriharikota already provides some coverage while some new sites around the country are in the works.
- **Combating cyber threats** - Agencies worldwide issued advisories and set up partnerships.
 - **US** – The US has the Space Information Sharing and Analysis Centre (ISAC) to coordinate cyber threat intelligence.
 - Spacefaring agencies have responded to such threats by designing hardened waveforms and systems.
 - **For instance**, the US military developed its 'Protected Tactical Waveform' for anti-jam communications and 'Advanced Extremely High Frequency' satellites that use frequencies that are harder to disrupt.

- The US is also deploying an encrypted GPS M-code.
- **Europe** – It has rolled out Galileo OSNMA, which authenticates navigation messages to minimise spoofing.
- **India** – With the use of NavIC, The Indian Space Research Organisation (ISRO) has been testing Navigation Message Authentication (NMA).
- India's CERT-In has issued guidelines for satellite operators that emphasise strong encryption, network segmentation, secure credentials, regular patching, and incident reporting.
- India's new licensing framework through IN-SPACe also requires private operators to comply with safety and security standards.

Navigation Message Authentication (NMA), is a system that will allow receivers to verify that signals are the real deal.

- **Protecting from solar flares** – India also took a major step with the Aditya-L1 mission, launched to study the sun from the L1 Lagrange point.
- Data from this mission can yield early warning of coronal mass ejections and other solar activity.
- This helps satellite-controllers place spacecraft in safe mode and/or plan orbital manoeuvres that minimise exposure.

What can be the potentials of bodyguard satellites?

- **Positioning** – These spacecraft could be positioned near a critical satellite to monitor its surroundings.
- **Detection and warning** – It can detect suspicious manoeuvres by other satellites, warn of threats, and physically intervene if required.
- **Supports orbital assets** – They may also accompany orbital assets that protect against suspicious approaches.
- **Protection from hostile actions** – It act as a shield against anti-satellite (ASAT) weapons or hostile spacecraft.
- It can intercept or disable enemy satellites that try to approach or tamper with the protected satellite.
- **Inspection and repair** – It can move close to the main satellite to check for damages, malfunctions, or tampering.
- **Backup functions** – It can take over communication or navigation services if the main satellite fails.



What needs to be done?

- **Continuous monitoring** – Constant monitoring and signals must be encrypted, networks must be segmented to avoid threats from various sources.
- **Framing clear rules** – Clear and strict international rules could play an important role in protecting the satellites.
- **Ensuring re-entry** – Once a satellite has neared the end of its life, finally, operators need to ensure controlled re-entry and passivation, or adhere to restrictions on how long dead spacecraft can remain in orbit.

What lies ahead?

- In the final analysis, protecting satellites is no small feat – but the benefits have increasingly outweighed the expenses.

13. ETHICS

13.1 Assisted Death and the Right to Die

Recently, Actress Ruth Posner and her husband Michael, both in their late 90s, died at a suicide clinic in Switzerland which has renewed the polarising debate on assisted death, at the heart which is the idea of suffering.

This topic also falls under polity (GS-2).

What is assisted death?

- **Assisted death** – It is a broad term for providing means for a person to end their life.
- **Types** – It is differentiated into voluntary active euthanasia and physician assisted suicide.
- The fundamental difference between the two lies in who performs the final life-ending act.
- **Voluntary active euthanasia** – It is when the doctor, with consent from the patient, commits the final act.
- **Physician-assisted suicide** – The physician provides the means (like a lethal prescription) for the patient to self-administer, with the patient performing the final act themselves.
- Both practices occur at the request of a competent, suffering patient and involve physician involvement to end their life.

What are the arguments in favour of assisted death?

- **Ruth posner's mail** – She sent a mail to her family and friends before committing suicide and stated that “There came a point when failing senses, of sight and hearing and lack of energy was not living but existing that no care would improve.
- Many people support this as the standard justification for assisted death.
- **Plato's stance** – Greek philosopher Plato (c. 4th century BCE) in *The Republic* stated that those living with illness, who were not physically healthy, should be left to die.
- The idea is that at some point of time, suffering makes life not worth living that a life without dignity is not worth living.
- In such an instance, an individual should be able to exercise her agency to die.
- **The Idea of agency** – Anthropologists and sociologists broadly define agency as “the socio-culturally mediated capacity to act”.
- While in everyday parlance, the idea of agency often evokes an image of a “human actor whose intentional actions should produce the intended effects.”
- These effects are often constrained by external factors beyond any one person's control.
- This cannot be said, however, about dying.
- **Absence of mediating situations** – While the decision to die may be socio-culturally mediated (*more on that later*), the finality of death means that there are no mediating circumstances that influence the effects of one's actions.
- This makes dying of one's own decision the ultimate act of individual autonomy.
- **Fear of losing autonomy** – This is particularly important because multiple surveys have shown that the fear of losing autonomy at the end of life is the primary rationale for most geriatrics seeking assisted death.
- Assisted dying is essentially an act of taking back control.

What are the arguments against the assisted death?

- **Not an autonomy** – Critics argue that assisted dying is not an act of autonomy because there is no autonomy without life.
- **Corruption of dignity** – Assisted dying arises from a dignity that has a shape that corrupts itself.
- In the process of promoting the person's choice, it removes the very basis for doing this.
- **Influences other people** – Moreover, the rise of assisted dying in society creates a self-fulfilling cycle, and generates forces that influence people and reinforce its usage.
- This fundamentally undermines the autonomy argument.
- **Lacks definitional clarity** – Critics also argue that the idea of suffering lacks definitional clarity, opening a can of worms that can eat away at the heart of the social fabric.
 - **For instance**, The Posners, did not have any terminal illness; they simply felt their lives, with impaired senses and faculties, were not worth living.
- The same argument can also be made by a teenager who is suicidal due to pressures in school, or new mothers suffering from post-partum depression.
- **Raised interrogation** – At what point, then, does suffering make it justifiable to make the choice to die?

- If this choice were to be absolute, then all suicide would be justifiable.
- What does such a world look like?
- At the end of the day, a core function of ethics is to shape stable, just world.
- **Potential for misuse** – The fear is that a nebulous concept like suffering being justification for death can be misused by oppressive forces.
- After all, Adolf Hitler sent the disabled to death camps on the basis of the argument that their lives “were not worth living”.

What are the Safeguards and caveats in different countries?

- **Legality** – Assisted death remains illegal, even criminal, in most jurisdictions.
- Places that do allow assisted death often heavily regulate the practice.
- **UK** – The UK’s Terminally Ill Adults (End of Life) Bill, 2024, only allows those above 18 years of age who are terminally ill to opt for assisted death.
- It explicitly excludes persons with disabilities and mental disorders, requires the patient to receive permission from a High Court judge, and has multiple “periods of reflection” during which an individual can change her mind.
- The law also requires a person to be a resident of the UK for at least 12 months before filing an application.
- The UK law is considered to be among the strictest.
- **Switzerland** – It have loosened restrictions such to become destinations for “death tourism”.
- Swiss laws do not have any residence caveat, the process for assisted dying is also much less tedious.
- **India** – In 2018, the Supreme Court of India held that the “right to die with dignity” formed a part of the right to life with dignity under Article 21 of the Constitution of India.
- It recognised the legality of “passive euthanasia”.
- This not, however, assisted dying which requires a positive intervention to cause death.
- In India, concerns regarding misuse of such a law for the exploitation of the elderly by their families remains the primary impediment to an assisted dying law coming in any time soon.

***Passive euthanasia** is the withdrawal of life support from terminally ill patients or patients in a “permanent vegetative state”.*

What lies ahead?

- For proponents, suffering is the core justification for assisted death.
- For opponents, such a justification leads to a dangerous slippery slope.
- As one article in the conservative American journal *Nation Review* put it: “Once we decide that killing is an acceptable answer to suffering, the kind of suffering that qualifies us to be made dead continually expands.”
