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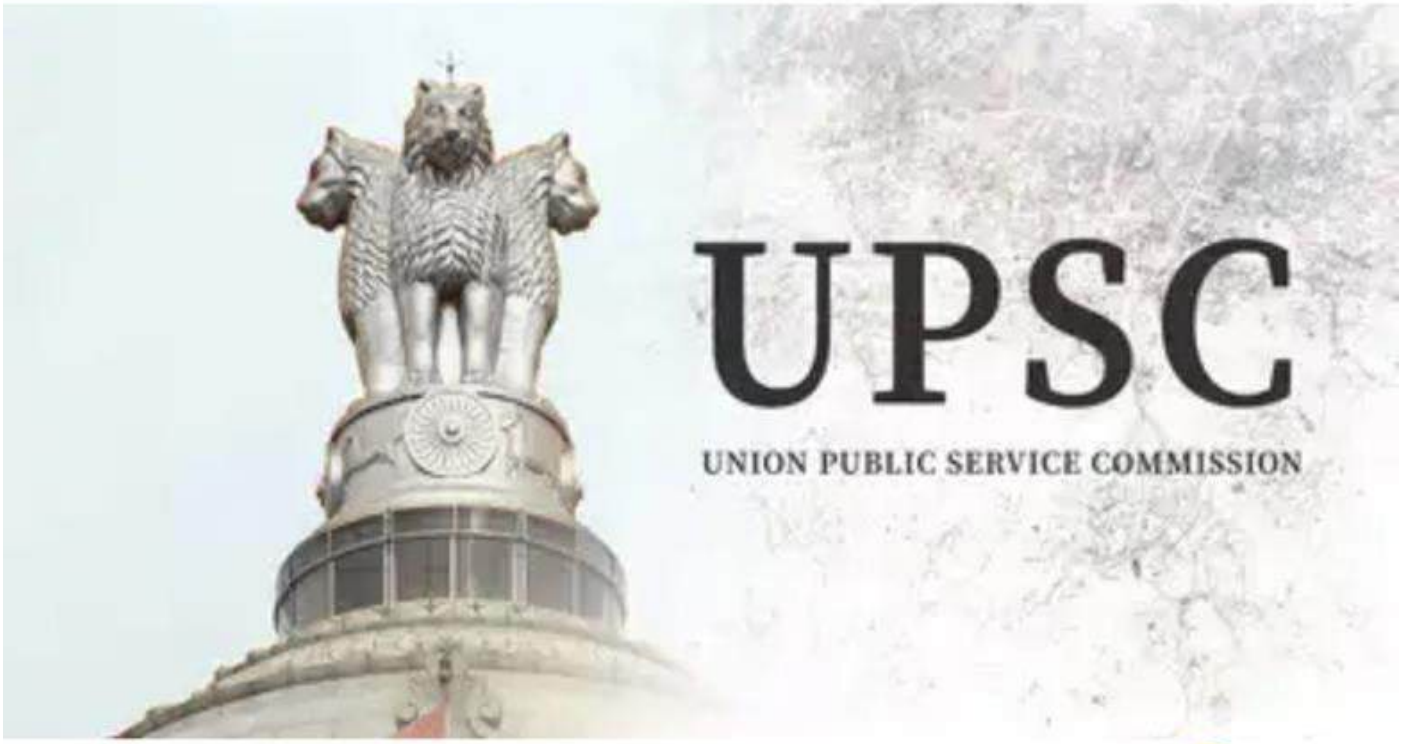
OCTOBER 2025

News Analysis



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INDEX

October 2025

1. IMPORTANT TOPICS OF THE MONTH

1.1 Wassenaar Arrangement – Need for Reform

Recently, the Azure platform of Microsoft was used by the Israeli's military to spy on the Palestinians.

What is the issue?

- **Misuse of Azure** – In August, a joint investigation by *The Guardian*, *+972 Magazine* and *Local Call* revealed the misuse of *Microsoft's Azure* to store audio recordings of Palestinians' phone calls.
- The military intelligence unit of Israel had built a cloud-based surveillance system using.

> ***Microsoft Azure*** *is a global cloud computing platform that offers a vast range of services for building, deploying, and managing applications and services.*

- **Unit 8200** – It is considered Israel's equivalent to the U.S.'s National Security Agency.
- It was reportedly uploading "audio files of millions of calls by Palestinians in the occupied territories" into a dedicated Azure environment.
- **Concerns** – Presently the modern Internet is built on vast computing backbones that a very small number of companies control it.
- But the modern infrastructure of Microsoft was used to deepen Israel's repression of Palestinians.
- It raised difficult questions about how export regimes can govern services, they may never have imagined when those rules were drafted.

What is the Wassenaar arrangement?

- **Wassenaar Arrangement** – It is a voluntary, multilateral "export control regime" for conventional arms and dual-use goods and technologies.

> ***Export regimes*** *are international agreements between supplier countries to control the export of sensitive goods and technologies to prevent the proliferation of weapons of mass destruction.* ***Dual-use*** *refers to the ability of a good or technology to be used for multiple purposes - usually peaceful and military.*

- **Established in** – The Arrangement, formally established in July 1996.
- **Secretariat** – It is in Vienna, Austria.
- **Purpose** – To ensure that the transfer of conventional arms and dual-use items does not contribute to destabilizing military capabilities or fall into the hands of terrorists.
- **Function** – It serves as an information exchange forum where participating states provide information on arms transfers, share insights on potential proliferation risks, and report on export license denials.
- **Structure** – The Arrangement operates through a plenary meeting, where decisions are made by consensus, and a small Secretariat based in Vienna, Austria.
- **Scope** – It covers conventional arms, such as small arms and light weapons, military aircraft, and armored vehicles, as well as a wide range of dual-use goods and technologies.
- **Membership** – It includes 42 participating states, primarily from NATO and the European Union.
- **India** – Became the 42nd member in 2017.

What are the issues with wassenaar arrangement?

- **Treating export as physical transfer** – Major obstacle is that many control regimes still conceptualise 'export' as physical transfer or download.
    - **For example,** the structure of the Arrangement was however conceived in an era when control meant physical exports of devices, chips, hardware modules, etc., and software transfers were written off as incidental.

- In the cloud, an export can also be remotely executed or invoked in API calls
- **Voluntary nature of the arrangement** – The Arrangement's voluntary nature is a weakness in high-risk settings.
- **Loopholes –** Moreover, the Arrangement is based on consensus, and any member can block modifications.
- As a result, the Arrangement's coverage is patchy and many states have loopholes to allow "defensive security research" and internal technology transfers.
- **Diversity of cloud** – Cloud services are global, a user in one country can trigger concerns in another
- **Rapid expansion of technology** – Cloud and AI technology move at high velocity, and the difficult to track and align.
- **Issues with domestic laws** – Even when a technology is controlled, the Arrangement requires individual countries to implement controls as per their domestic export control legislation, which often differs in ambition and political will.

What reforms need to be done?

- **Expanding the scope** – To bring the Arrangement into operational relevance, its scope needs to expand significantly.
    - **For example**, its list of controlled technologies should explicitly include infrastructure and services that enable large scale surveillance, profiling, discrimination, and real-time control and systems that break national boundaries (for example, regional biometric systems or cross-border data transfers linked to policing).
- Including such technologies in the control lists would require devising criteria for capacity thresholds and carving out defensive, benign uses under strict safeguards and licensing.
- **Need for binding role** – The Arrangement needs binding guidance that treats remote enablement, authorisation, and granting administration rights as equivalent to export if they provide access to a controlled technology.
- The Arrangement should also embed end-use controls more systematically.
- While classical export control is about military use or the proliferation of weapons of mass destruction, for cloud services and digital surveillance the risk is mass human rights abuses.
    - **For instance**, the license to use some technology should depend on the item's technical specs as well as on the identity of the user, the jurisdiction, the oversight regime, the legal mandate, and the risk of misuse.
- **Need for compulsory membership** – The Arrangement's voluntary nature is a weakness in high-risk settings.
- States should instead adopt a binding treaty or framework with obligations that include mandatory minimum standards for licensing, mandatory export denial in atrocity-prone jurisdictions, and supervision by peer review.
- **Need for interoperability standards** – National licensing authorities must share information and align their policy decisions.
- To this end, the Arrangement should include technical interoperability standards, a shared watchlist of flagged customers or entities, and exchange red alerts in real-time,
    - **For example**, when a cloud provider offers certain services to a blacklisted state.
- **Setting up of a powerful secretariat** – A specialised technical committee or secretariat should be set up.
- It must be empowered to propose interim updates, fast-track high priority controls, and receive inputs from independent experts.
- **Adoption of sunset clause** – The Arrangement should consider adopting a sunset mechanism that causes items to fall out of the control list unless their inclusion is renewed.
- **Domain specific control** – Given the additional challenge of global consensus, the Arrangement may also consider hosting a domain-specific control regime for AI, digital surveillance, cyber weapons, etc.
- This should align with the overall regime while possessing the ability to evolve faster.

How far these reforms be realistic?

- **Resistance from countries** – Some powerful states may resist stricter controls of cloud services by arguing it would stifle innovation, sovereignty and/or impose undue regulations on private industry.

- A small number of holdouts can still block changes to the Arrangement as it exists, especially those that benefit from providing surveillance technologies abroad.
- **Intricate tasks** - Mapping cloud systems to control categories, define thresholds, distinguishing benign versus malign use, and implementing cross-border licensing is an extremely intricate enterprise.
- **Possibility of reforms** – Some states, are already pushing national export controls on 'high technologies' currently beyond the Arrangement's reach.
    - **For example**, The EU's dual-use regulation now treats the transmission of cloud services as potentially subject to rules that apply to dual-use technologies.
- There's also leverage, as specified under the UN Guiding Principles, because cloud providers are large and interconnected.

What lies ahead?

- Stricter export controls could join corporate human rights duty frameworks and limits on public procurement to reinforce incentives on providers to refuse certain customers.
- The realities of cloud services and SaaS expose significant gaps, rendering the Arrangement incapable of being a credible shield against the misuse of cloud services.

1.2 SDT and India's Future

Recently, China has announced during a UN General Assembly event that it will no longer seek Special and Differential Treatment (SDT) in future WTO negotiations.

What is special and differential treatment (SDT)?

- **Special and Differential Treatment (SDT)** – It refers to provisions within World Trade Organization (WTO) agreements.
- It provides developing and least-developed countries (LDCs) with special rights, flexibility, and longer transition periods to implement trade rules, as well as measures to support their trade interests and infrastructure.
- **Key Provisions** – The key provisions of STD are
    - **Longer Implementation Periods** – Developing countries are often given more time to implement WTO agreements and commitments.
    - **Increased Trading Opportunities** – Measures are designed to help developing nations expand their trade.
    - **Support and Safeguards** – Provisions require members to protect the trade interests of developing countries and provide support for infrastructure and capacity building.
    - **Specific Measures** – It includes provisions for things like agricultural support for food security and protection of new industries.

How special and differential treatment helps countries?

- **Benefit for India** – Rooted in the GATT legacy, SDT grants flexibilities like higher tariffs and extended compliance periods.
- It is essential for shielding vulnerable populations in a nation where per capita income ranks 136th globally.
- At the heart of the debate lies agriculture, employing around half of India's workforce and underpinning the food security of 1.4 billion people.
- **Agreement on Agriculture (AoA)** – Under this the WTO's subsidies are boxed.
- The trade-distorting Amber Box is capped at 10% of production value for developing countries, versus 5% for developed ones.
- **Supports PDS** – India leverages Article 6.2 exemptions for input subsidies to low-income farmers.
- This channels over $40 billion annually through mechanisms like Minimum Support Prices (MSP) for staples such as rice and wheat.
- These support the Public Distribution System (PDS), distributing subsidised grains to 800 million beneficiaries.
- **Benefit for china** – This concession, preserves China's self-declared developing country status and all existing perks.

- The perks include lenient subsidy caps and phased implementation of agreements.
- **China's withdrawal from SDT** – It is a tactical retreat amid escalating US tariff pressures and long-standing US objections to the practice.
- While the WTO lauded it as a breakthrough for reform, sceptics see it as symbolic window-dressing, allowing China to deflect criticism without dismantling its agricultural and industrial advantages.

What are the pressures on India?

- **Caution for India** – The withdrawal of china from STD is a harbinger of intensified scrutiny.
- President Donald Trump has just announced 100% tariffs on branded and patented pharmaceutical products and also announced broader tariffs on furniture, kitchen cabinets, and trucks.
- **Pressure on India** – As one of the largest economies in the world, there already are demands for India to shed its developing nation armour.
- India's trajectory toward becoming an even larger economy will only amplify this pressure.
- Yet, this ascent clashes with India's reliance on SDT, a cornerstone since its 1995 WTO accession.
- However, the 1986-88 reference prices, critics argue, inflate India's reported Aggregate Measurement of Support (AMS), often exceeding the 10% threshold.
- **Complaints on India** – US and the Cairns Group targeted India for alleged market distortion.
- Developed nations, doling out $850 billion in global farm subsidies in 2023 (per OECD estimates).
- But they hypocritically target India's programmes while protecting their own through Green Box loopholes for research and environmental aid.

What will be the implications if India loses developing countries status?

- **Reduces subsidies** – Phased AMS reductions could slash subsidies by 20-30% over a decade, per AoA timelines.
- **Reduces rural income** – This leads to a 10-15% drop in rural incomes and heightened food price volatility.
- **Increases malnutrition** – It may affect 35% of children under five, might worsen, undermining the National Food Security Act.
- Recent WTO disputes, like the 2023 sugar subsidy panel, underscore these points where India averted penalties via SDT, but future plurilaterals may demand reciprocity.

What can India do to balance its priorities and ensure a pragmatic pivot?

- **Agriculture** – India should strive to lead the G33 coalition to extend the 2013 Bali Ministerial's interim "peace clause" on public stockholding beyond 2023, shielding MSP and PDS from WTO disputes until 2030.
- This can be tied to demands for developed nations to eliminate export subsidies, as pledged in 2005 at Hong Kong.
- It can look to transition input subsidies.
    - **For example**, fertilisers via direct benefit transfers, to Green Box measures like research, extension services, and climate-resilient crops.
- This aligns with WTO rules, as Green Box subsidies are exempt from caps, and supports India's 2040 net-zero goals.
- It can also advocate for updating AoA reference prices to reflect current market realities, reducing reported AMS breaches.
- **Service sector** – India's services dominance with 55% of GDP — offers leverage.
- **DBT** – Domestically, reforms like DBT which covers 90% of fertiliser subsidies can also help.
- **E-commerce** – India should join plurilateral e-commerce talks, offering commitments on consumer protection and cross-border data flows, in exchange for tariff-free access to developed markets.
- But this could be done with measure to protect national security.
- **Empowering MSME** – It should build domestic capacity, expand the Open Network for Digital Commerce (ONDC) to empower MSMEs in global e-commerce, and reduce reliance on SDT tariff protections.
- India must also negotiate data localisation flexibilities.

- **Push for tiered data regulations** – This allows developing nations longer transition periods to comply with global standards, preserving India's Personal Data Protection Act.
- **Phasing out non-essential SDT** – India should phase out SDT in sectors that are non-core and gradually reduce tariff protections over a decade, to gain market access across geographies or in areas where Indian exports face duties.
- It must also secure SDT exemptions for vulnerable segments.
- It should use Green Box funds to enhance processing and cold storage, boosting export competitiveness in select sectors without breaching WTO caps.
- **Intellectual property** – India must maintain compulsory licensing and patent opposition provisions under TRIPS Article 31, citing public health needs for 1.4 billion people, as affirmed in the 2001 Doha Declaration.
- It should offer phased alignment with stricter IP rules in non-critical sectors to secure concessions in other areas of strength.
- Alongside this, it should increase Green Box-style funding for biotech innovation, reducing dependence on generic exports while preserving access for low-income populations.
- **Tiered STD framework** – India should also propose a tiered SDT framework based on per capita GDP or sectoral competitiveness, allowing India to retain agricultural protections.
- Unlike China's state-driven economy, India's democratic constraints limit rapid SDT abandonment.
- By prioritising food security, leveraging e-commerce strengths, and trading non-core SDT, India can move forward while protecting vulnerable sectors.
- Proactive steps and advocacy will position India as a middle power, shaping a WTO that balances growth with equity.

1.3 Darjeeling Landslides

Recently as many as 14 people have been killed in multiple landslides triggered by heavy rain in the Darjeeling and Kalimpong districts of West Bengal.

What is a Landslide?

- **Landslide** – It is literally land mud, rocks, debris sliding down a slope.
- Landslides occur when the force of gravity becomes stronger than whatever '*glue*' was holding this material together.
- **Contributing factors** – The reason heavy rain often triggers landslides is that water makes the soil heavier and also reduces friction, making it easy for the soil and rocks to slide down a slope.
- In India, especially in the hills, unplanned construction has worsened matters.

> ***The glue*** *can be a combination of various factors, including tree roots holding soil together, the gradient of a slope, the weight and mass of the soil, channels available for water to move through the soil and down the slope, etc.*

- Buildings and roads are often built without accounting for how much load a slope can hold.
- Improper drainage networks leave water with no avenue to flow out safely.
- **Vulnerability of India** – About 0.42 million square km of India's landmass, or about 13% of its area, spread over 15 states and 4 Union Territories, is prone to landslides, according to the Geological Survey of India (GSI).
- This covers almost all the hilly regions in the country.
- About 0.18 million sq.km, or 42% of this vulnerable area is in the N-E region, where the terrain is mostly hilly.
- **Vulnerability of Darjeeling** – Darjeeling, known for its beauty and salubrious climate, has been a victim of several natural disasters in the past.
- Available records show that massive landslides occurred in 1899, 1934, 1950, 1968, 1975, 1980, 1991 and more recently in 2011 and 2015.
- The year 1968 saw devastating floods, also in October, killing over a thousand people.

What are main reasons for intensification of landslides in Darjeeling?

- **Increasing population** – The population in the hills has increased, mainly because of influx from the plains and neighbouring countries.

- The land-and-property-buying spree recorded metamorphic changes in the last three decades.
- **Climate change impact** – The impact of climate change has been quite distinctly visible in the changing rainfall pattern.
- The rainfall that remained fairly spread over from May and September has now become more intense and incessant, lasting for just a few hours over a few days.
- What is locally known as '*mushaldhare varsha*' (intense rainfall) has replaced the traditional steady and smooth '*sawnaay jhari*' (monsoon shower).
- **Changes in river course** – Rivers and jhoras (streams) have shown unprecedented course changes.
- They are generating new paths for hydrological flows and intrusions into human habitations and livelihoods.
- **Pressure of development** – Heavy, unsuitable and unsustainable development projects, like hydro power, railways, hotels and other installations, have been a massive onslaught on the limited carrying capacity of these hills.
- **Flooding** – The flooding of river beds, streams-*jhora* sidelines and other natural corridors with unplanned and unauthorised settlements have triggered arterial clogging.
- **Lack of dedicated agency** – Besides the relatively weaker institution of the District Collector, there is no professional agency to handle such devastation.
- **Shortage of skill and funds** – The local administrative institutions have neither the knowledge nor skills to handle such disasters, nor the funds, techniques, technology and manpower to effectively deal with these dangerous trends.
- **Lack of solid waste management –** The municipalities in the hills do not even have a simple solid waste management unit.
- This itself has become a major disaster-causing factor.
- **Deficiency in responses** – There is a lack of urgency with Central and state governments in both forewarning the hill communities and also in managing the aftermath of damages.
- **Lack of early warning** – Because an adequate early warning system is yet to be developed.
    - **For example**, cyclone warning generally comes well in advance for evacuation and relief efforts to mobilise.
- Some early warning systems have been developed, on a trial basis at a few locations in Kerala, Sikkim, and Uttarakhand.

What were the warnings provided by institutions and publications?

- **Landslide Atlas of India 2023** – It was published by Indian Space Research Organisation (ISRO).
- It ranked Darjeeling, 35th and as the most exposed area among 147 districts.
- **The State of Environment Report 1991** – It was published by the non-profit Centre for Science and Environment.
- It stated that during 1902-1978, there were nine cloud burst occurrences in the Teesta Valley.
- **Role of NGOs** – Several local NGOs, including Save the Hills led by Col Praful Rao of Kalimpong, have been highlighting these threats on social media and also through substantive debates and awareness campaigns.
- **Sikkim GLOF** – The Glacial Lake Outburst Flood (GLOF) in Sikkim in October 2023, triggered by the Lhonak lake breach, was very emphatically warned about in the Sikkim Human Development Report 2001.
- This GLOF not only claimed many human lives, it swept away the 1200-mw Chungthang Hydro power project.
- It also destroyed several public and military installations, and caused an estimated damage of over Rs 25,000 crore, almost 60% of the GDP of Sikkim of 2022-23.
- **Institutional inefficiency** – The most blatant example of this institutional failure is the state of damage in Darjeeling and Kalimpong that remains unattended after the GLOF.
    - **For instance**, in the Teesta Bazar area, river water continues to crisscross the highways, blocking the flow of people, goods and services almost every week.
- **National security ramifications –** Climate change-triggered impacts have dangerous portents and very deleterious national security ramifications in Darjeeling and surrounding areas.

- **Foreign exchange losses** – Many of Darjeeling's products have played a role in India's globalisation journey such as
    - Its famous tea
    - Cultivation of anti-malarial drugs like quinine
    - Mt Kanchenjunga-led natural beauty and tourism
    - Educational institutions
- All these historically crucial bastions of India's foreign exchange earnings have been doubly affected and eroded by climate change.
- **The long-standing demand** – There has been a long standing demand from people and various organisations to
    - Set up a national institution including on climate change studies and disaster management that would cater to the entire Himalayan regions of India, Bhutan, Nepal, Myanmar and the Tibet region.
    - To convert the historic Forest Rangers College in Kurseong as the first climate change studies and management centre in the Eastern Himalayas.
- The demand remains unaddressed by the Ministry of Environment and Forests in Delhi.

What lies ahead?

- A National Landslide Risk Management Strategy was finalised in 2019 but more work needs to be done.
- Given the Darjeeling district's sensitive geopolitical location at the chicken's neck, its politico-development status has to be now determined exclusively from the national security perspective.
- It has to be a national interest project in India's Act East Policy context.

1.4 Transformation of Indian Economy – A Economic Consolidation

Recently the external affairs minister noted the transformation of the Indian economy from the British era to present time and noted the resistance of India to economic domination.

What were the economic exploitations by British?

- **Serving British interest** – The sole purpose of the colonial Indian economy was to serve the interests of the British Empire.
- **Pre-colonial economy** – It was characterised by self-sufficiency in agriculture, flourishing handicrafts, and a favourable trade balance, was systematically undermined under colonial rule.
- **Diversion of Indian revenue** – During the mercantile phase of economic colonialism, the East India Company raised excessive revenues from India and diverted it to finance the export of Indian goods to Britain.
- **Effect of industrialisation in Britain** – The rise of British industrial capital, the Indian economy was gradually reduced to a mere supplier of raw materials and a market for finished goods from Britain.
- Industrialisation in Britain was thus at the direct expense of India's economy.
- **Rise of unequal competition** – Once assured of disproportionately high returns, the colonial administration encouraged private investment in India under conditions of unequal competition and monopoly.
- **Trade monopoly** – The East India Company's trade monopoly and British administration's support for private investment were deeply unfavourable to India.
- Even much-celebrated colonial infrastructure projects, such as the railways, were designed to serve British commercial interests rather than India's economic growth.
- **Results of the exploitation** – These exploitative policies led to a large-scale de-industrialisation, stagnation in agriculture, heavy tax imposition, and recurring famines that plunged millions into extreme poverty.

How Indian thinkers exposed British economic exploitation?

- **R Palme Dutt** – In his popular book *India To-day (1940)*, categorised this imperialist rule into three phases
    - Early capitalism
    - Industrial capital
    - Finance capital

- **Dadabhai Naoroji** – His Drain theory espoused in *Poverty and Un-British Rule in India (1901).*
- He noted that The British Indian Empire is *formed and maintained entirely by Indian money and mainly by Indian blood*.
- Britain has drawn thousands of millions of pounds besides.
- **R C Dutt** – His analysis of exploitative British policies in his book, *The Economic History of India (1901-1902).*
- **M G Ranade** – He is a critique of the dependent nature of the Indian economy.
- **G V Joshi** – He rightly observed that expenditure on the railways was to be reconsidered *as an Indian subsidy to British industries.*
- **Role of these thinkers** – These thinkers demonstrated how India was reduced to a dependent economy.
- **Responsibility of the leaders** – one of the foremost tasks for leaders of independent India was to consolidate and rebuild the economy devastated by nearly two centuries of colonial exploitation.

How India turned into a planned economy?

- **2 major ideologies** – India attained independence at the height of the Cold War, when two conflicting economic ideologies
    - Capitalism
    - Socialism
- These two major ideologies were shaping the world order.
- **India's position** – Having emerged from prolonged devastation caused by the dependence on a foreign power, India chose not to align with either ideology.
- Instead, it resorted to a pragmatic economic path that combined the features of both capitalist and socialist economies to address its unique challenges.
- **Pre independence plans** – The idea of economic planning predated independence, and some early proposals had already been advanced, including
    - The Visvesvaraya plan (1934),
    - The establishment of the National Planning Committee by the Indian National Congress (1938)
    - The Bombay Plan (1944)
    - The Gandhian Plan (1944)
    - The People's Plan (1945)
- **Inspiration from Soviet** – Drawing from the Soviet model of economic planning, the leadership of independent India chose a planned approach to development and *introduced the Five-Year Plans.*
- The economic vision underlying the Five-Year Plans (FYP) was not the complete replication of the socialist economy.
- **Approach of FYP** – It envisaged a mixed economy in which the state was primarily concerned with increased capital expenditure in the public sector while allowing the private sector to operate without complete subordination.
- **Establishment of planning commission** – It was established through an executive resolution in 1950.
- It was entrusted with the task of formulating and overseeing the Five-Year Plans.
- **First-Five Year Plan** – It focussed primarily on agriculture.
- **Second Five-Year Plan** – The focus shifted to rapid industrialisation, guided by the Mahalanobis model.
- **India's transformative path** – The formative years of planned development laid the foundation of India's economic trajectory, and aimed at
    - The eradication of poverty
    - Expansion of heavy industries
    - Raising national income
    - Modernising agriculture
    - Promoting import substitution

- Strengthening the leading role of the public sector.

How the economy became centralized?

- **Centralisation of economy** – The emulation of the Socialist model of economic planning and the adoption of the Five-Year Plans made the Indian economy distinctly centralised.
- **Vision for command economy** – Policymakers envisaged a 'command economy' in which important economic decisions were taken by the Union Government.
- **Justification for centralization** – There was an urgent need to address the nation-wide issues such as
  - De-industrialization
  - Agricultural backwardness
  - Trade imbalances
  - Low national income
  - Inadequate investment in the capital sector
  - Poor public infrastructure in the early years of independence
- These issues further justified the need for centralised economic policies.
- **Structure of planning commission** – The institutional structure of the Planning Commission reinforced these centralising tendencies.
- **The Planning Commission** – It was neither a constitutional nor a statutory body.
- **Governing body** – The planning commission was chaired by Prime Minister and consisted of members from the Union Cabinet and experts appointed by the central government.
- This arrangement placed policy-making under the control of the Union Government.
- **Reduced role of Finance Commission** – The role Finance commission mandated under Article 280 of the Constitution, was gradually sidelined by the Planning Commission.
- **Balancing the centralization** – To balance the centralising tendencies, *the National Development Council (NDC)* was established in 1952 as an apex body of the Planning Commission.
- The NDC *ensured the participation of the Chief Ministers of states* and *administrators of Union Territories* by providing a consultative platform.

How the roles of the states are changing over years?

- **During initial years** – The states had the minimal role in the economic planning in the formative years of independence.
- They were directed and regulated by the centralised plans and the programmes of the Planning Commission and the Union Government.
- **Agents for implementation** – Nevertheless, states were the agents for implementing policies directed by the Union Government.
- They were entrusted with the crucial task of resource mobilization.
- **Effects of LPG** – These centralising tendencies diminished with the structural changes brought about by economic liberalization, privatisation and globalization and also changes in taxation.
- **Abolition of planning commission** – The abolition of the Planning Commission in 2014 marked the formal end of the era of planned development in India.
- **Emergence of NITI aayog** – NITI Aayog, which was the successor of the planning commission was established in 2015.
- It was envisaged more as a federal institution.
- **Governing Council of NITI aayog** – It is chaired by the Prime Minister and includes Chief Ministers of all states and Administrators of Union Territories.
- It thereby ensures greater participation in policymaking.
- **Competitive and cooperative federalism** – This new framework of sought to replace the earlier top-down, one-size-fits-all approach with consensus-driven decision-making.
- It was intended to make states equal and responsible partners in the country's economic development.

- **The Emergence of GST** – The introduction of Goods and Services Tax (GST), curtailed states' fiscal autonomy.
- This has been seen as running contrary to the spirit of fiscal federalism, and paved the way for continuing tensions in centre-state relations.

What lies ahead?

- The economic consolidation achieved in the formative years of independence, followed by paradigm shifts in the economic policies, illustrates India's enduring capacity to respond to challenges posed by external factors and its adaptability in adverse circumstances.

1.5 Advancing Mental Healthcare in India

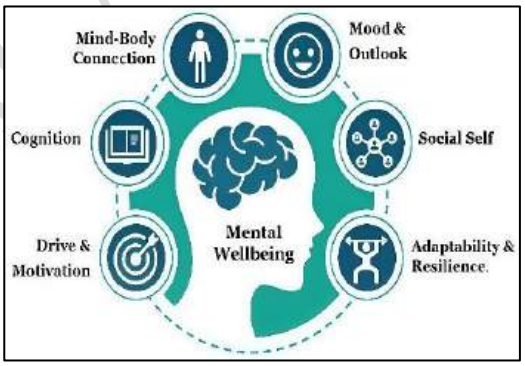
Recently there has been a considerable improvement in the mental health of people due to various efforts taken by the government of India.

What is mental health?

- **Mental health** – It refers to an individual's emotional, psychological, and social well-being.
- It influences how people think, feel, and behave in daily life. It also affects decision-making, stress management, and relationships.
- **World Health Organization (WHO) definition** – Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.

What are the Impacts of Poor Mental Health?

- **Impact on Productivity** – Poor mental health leads to lower workplace performance, increased absenteeism, and reduced efficiency.
- **Social and Emotional Well-being** – Mental well-being affects interpersonal relationships, self-confidence, and social interactions.
- **Economic Impact** – According to WHO, mental disorders contribute significantly to the global burden of disease, and untreated conditions can lead to high economic costs.



What are the mental health scenarios in India?

- **WHO Data Insight** – WHO estimates that the burden of mental health problems in India is 2443 disability-adjusted life years (DALYs) per 10000 population, the age-adjusted suicide rate per 100000 population is 21.1.
- **Prevalence** – The National Mental Health Survey (NMHS) 2015-16 by NIMHANS found that 10.6% of adults in India suffer from mental disorders.
- The lifetime prevalence of mental disorders in India is 13.7%.
- National studies reveal that 15% of India's adult population experiences mental health issues requiring intervention.
- Urban areas have a higher prevalence (13.5%) compared to rural (6.9%).
- **Economic loss** – The economic loss due to mental health conditions, between 2012-2030, is estimated at USD 1.03 trillion.
- **Treatment Gap** – 70% to 92% of people with mental disorders do not receive proper treatment due to lack of awareness, stigma, and shortage of professionals.
- **Lack of professionals** – According to the Indian Journal of Psychiatry India has 0.75 psychiatrists per 100,000 people, whereas WHO recommends at least 3 per 100,000.
- **Suggestion of Economic Survey 2024-25**
    - **Enhance Mental Health Education in Schools –** Early intervention strategies to address anxiety, stress, and behavioural issues in students.
    - **Improve Workplace Mental Health Policies** – Address job stress, long working hours, and burnout.

- **Expand Digital Mental Health Services –** Strengthen Tele MANAS and integrate AI-based mental health solutions.

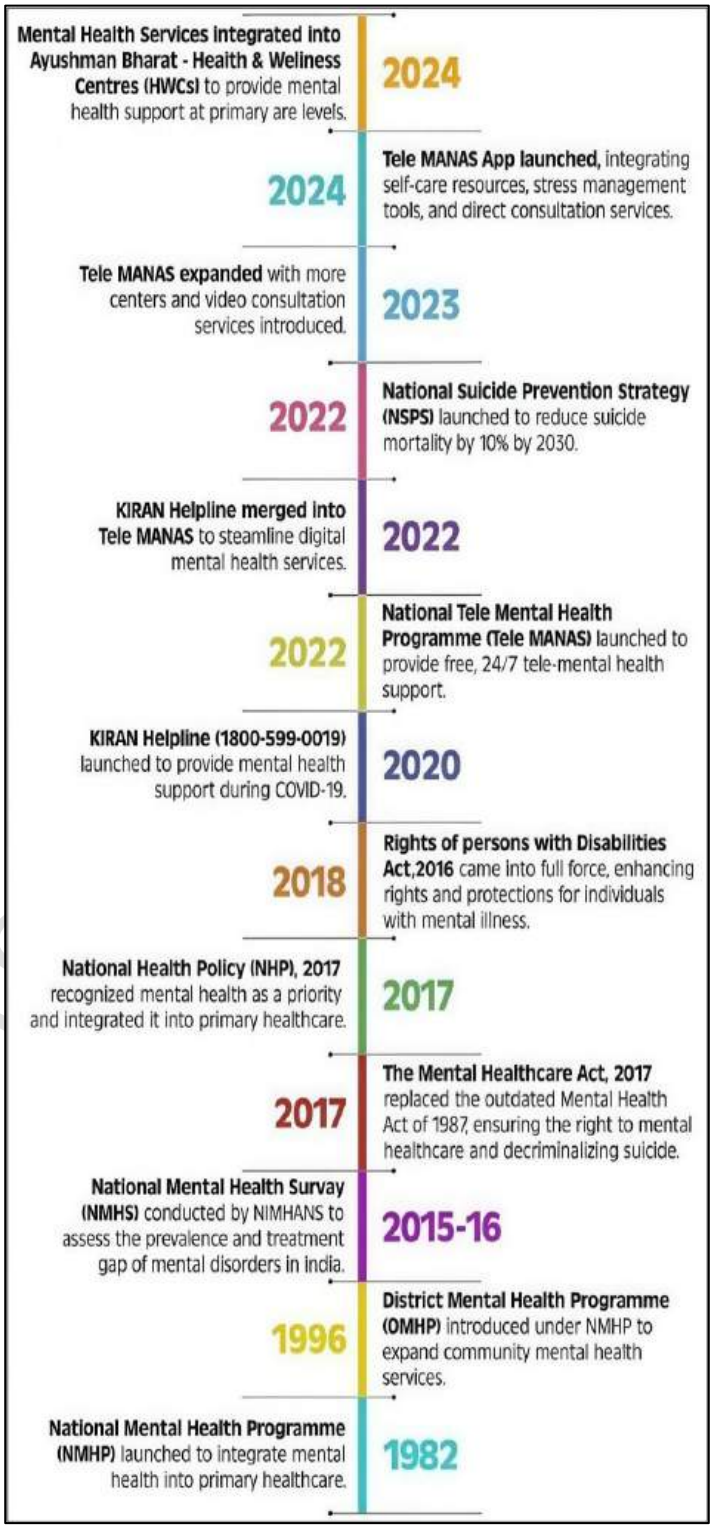
What are mental health infrastructures in India?

- **Centres for excellence** – As part of the National Mental Health Programme, in 2024, 25 Centres of Excellence were sanctioned set up to train more postgraduate students in mental health and provide advanced treatment.
- **PG departments** – 47 PG Departments in mental health have been established or upgraded in 19 government medical colleges.
- Mental health services are also being introduced in 22 newly established AIIMS.
- **Mental hospitals** – 47 Government-Run Mental Hospitals including 3 Central Mental Health Institutions such as
  - National Institute of Mental Health and Neuro Sciences, Bengaluru,
  - Lokopriya Gopinath Bordoloi Regional Institute of Mental Health, Tezpur, Assam
  - Central Institute of Psychiatry, Ranchi , were established.
- **Health & Wellness Centres (HWCs)** - Integration of Mental Health Services was done under the Ayushman Bharat.
- Under Ayushman Bharat, the government has upgraded more than 1.73 lakh Sub Health Centres (SHCs) and Primary Health Centres (PHCs) to Ayushman Arogya Mandirs.
- Mental health services have been added in the package of services under Comprehensive Primary Health Care provided at these Ayushman Arogya Mandirs.
- These HWCs provide
  - Basic counselling and psychiatric medication at PHC levels.
  - Training for general physicians to handle mild-to-moderate mental health conditions.
  - Linkages to district hospitals for advanced psychiatric care.
- This initiative ensures that mental healthcare is available in both urban and rural areas, reducing dependence on specialized hospitals and making psychiatric care more community-centric.

What are the policies and schemes of government of India regarding mental health?

- **National Mental Health Programme (NMHP) –** Launched in 1982, the primary goal was to ensure that mental healthcare becomes an integral part of the general healthcare system, rather than being confined to specialized hospitals.
- **Key components include**
- District Mental Health Programme (DMHP) was introduced under NMHP to expand community mental health services which covers 767 districts
- Provides counselling, outpatient services, suicide prevention programs, and awareness initiatives.
- 10-bedded inpatient mental health facilities at the district level.
- **NIMHANS Act, 2012** – Under this act, the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, was declared an Institute of National Importance.
- This recognition allowed NIMHANS to expand its academic and research capabilities, making it the premier institution for psychiatry, neuropsychology, and mental health sciences in India.
- **The Rights of Persons with Disabilities (RPwD) Act, 2016** – It expanded the definition of disability to include mental illness and introduced stronger legal protections for individuals with psychosocial disabilities.
- This act replaced the Persons with Disabilities (PWD) Act, 1995.
- The Act aligns with India's commitment to the UN Convention on the Rights of Persons with Disabilities (UNCRPD).
- It aims to ensure equality, dignity, and non-discrimination for persons with disabilities, including those with mental health conditions.
- **National Mental Healthcare Act, 2017** – This act was enacted to ensure the right to mental healthcare services, protect the dignity and rights of individuals with mental illness.

- It also ensures to align India's mental health laws with international standards, particularly the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).
- The Act replaced the Mental Health Act of 1987.
- It introduced several progressive changes to mental health care and services in India like the Right to affordable and quality mental healthcare services and the decriminalization of suicide in India.
- **National Health Policy, 2017** – This policy aimed to address mental health issues through a multi-pronged approach, integrating mental healthcare into primary healthcare, strengthening human resources, and improving treatment accessibility.
- NHP 2017 aimed to bridge the treatment gap by making psychological services available at Primary Health Centres (PHCs) and Health and Wellness Centres (HWCs) under Ayushman Bharat.
- **iGOT-Diksha Collaboration for Mental Health Training** –It is a digital learning initiative in to train healthcare professionals, frontline workers, and community health volunteers in mental healthcare.
- This program focuses on
    - Building capacity for mental health care at the grassroots level.
    - Equipping doctors and nurses with skills to diagnose and treat mental disorders.
    - Promoting mental health awareness in rural areas.
- Through iGOT-Diksha, India has expanded its mental health workforce, ensuring better early intervention strategies and community support mechanisms.
- **National Tele Mental Health Programme (Tele MANAS), 2022** – It provides free, 24/7 mental health support to individuals through *a national toll-free helpline (14416 / 1800-89-14416).*
- It is *available in 20 Indian languages.*



- As of February 7, 2025, the Tele MANAS helpline has handled over 1.81 million (18,27,951) calls since its launch in 2022, providing essential mental health support across India.
- The program is supported by 23 Mentoring Institutes nationwide, along with 5 Regional Coordinating Centers, ensuring efficient service delivery and expert guidance in mental healthcare.
- **Tele MANAS services**
    - Immediate tele-counselling by trained professionals.
    - Referral support to psychiatrists for severe cases.
    - Mental health awareness campaigns via digital platforms.
    - Mobile-based mental health interventions, ensuring accessibility in rural and remote areas.

KIRAN Helpline Merged into Tele MANAS – The KIRAN *Helpline (1800-599-0019)*, initially launched in 2020, was merged into Tele MANAS in 2022 to enhance the efficiency of mental health support services.

- Tele MANAS Mobile App & Video Consultation
- The Tele MANAS App was launched in October 2024.
- Offers self-care strategies, stress management tools, and direct access to mental health professionals.
- Video consultation services introduced in Karnataka, Tamil Nadu, and J&K.

The World Health Organization (WHO) *praised Tele MANAS as an effective and scalable mental health solution, making mental healthcare more inclusive and affordable.*

- This transition streamlined mental health helpline operations, making it more accessible and better integrated with India's healthcare system.
- During COVID-19, the government took crucial steps to support mental health.
- A 24/7 helpline provided nationwide psychosocial assistance, while health workers received online training through the iGOT-Diksha platform.
- Public awareness campaigns spread stress management strategies via media, and official guidelines and advisories were issued to promote mental well-being.
- These interventions played a vital role in addressing the psychological challenges of the pandemic.
- **National Suicide Prevention Strategy (NSPS)** – It was launched by the Ministry of Health and Family Welfare (MoHFW) in 2022, with the goal of reducing suicide mortality by 10% by 2030.
- Recognizing suicide as a public health concern, the strategy focuses on early intervention, crisis management, and mental health promotion.
- **Key components of NSPS –** This includes
  - Mental health screenings for students in schools and colleges.
  - Establishing crisis helplines and psychological support centers.
  - Community awareness programs to break the stigma around mental illness and suicide.
  - Stronger implementation of workplace mental health programs.
  - By focusing on high-risk populations, such as students, farmers, and young adults, the strategy ensures targeted intervention to prevent self-harm and improve overall well-being.

What lies ahead?

- Moving forward, India must strengthen awareness campaigns, expand workforce training and invest in digital mental health solutions.
- A mentally healthier India is vital for individual well-being, economic growth, and national development, requiring a whole-of-society approach to make mental healthcare accessible, inclusive, and stigma-free.

G.S PAPER I

2. HISTORY

2.1 Classical Languages of India

Recently the classical language list of India has got a new addition.

What are the classical languages of India?

- **11 languages** – Tamil, Sanskrit, Telugu, Kannada, Malayalam, and Odia, Marathi, Pali, Prakrit, Assamese, and Bengali.

- **Criteria –** The Government of India has established the following criteria for a language to be classified as a Classical Language:
    - High antiquity of its early texts or recorded history, spanning a period of 1,500-2,000 years.
    - A body of ancient literature or texts that is considered heritage by generations of speakers.
    - Knowledge texts, especially prose texts, in addition to poetry, epigraphical and inscriptional evidence.
    - The Classical Language and its literature may be distinct from its current form or show discontinuity with later forms derived from the original.

Why classical language status matters?

- **Recognising the historical importance** – Recognising a language as Classical is a way of honouring and acknowledging its historical importance and profound impact on India's cultural and intellectual identity.
- **Preservation** – To protect and transmit ancient knowledge, philosophies, and values over thousands of years.
- **Ensuring the relevance** – This status not only enhances their prestige but also supports efforts to protect, promote, and further study these languages, helping to ensure they remain relevant in today's world.

What are the steps undertaken to promote classical languages?

- **CIIL** – The promotion of all Indian languages, including Classical Languages, is done through the Central Institute of Indian Languages (CIIL), part of the Language Bureau of Ministry of Education.
- **Special centres** – They have been set up for the study and promotion of the classical languages, either independently or under CIIL.
- **Central Sanskrit universities** – In 2020, three Central Universities were established through an Act of Parliament to promote the study of Sanskrit.
    - These are the Central Sanskrit University and Shri Lal Bahadur Shastri National Sanskrit University in *New Delhi*, and the National Sanskrit University in *Tirupati.*
    - Financial assistance is provided to *Adarsh Sanskrit Mahavidyalayas and Shodha Sansthans.*
- **The Central Institute of Classical Tamil** – It has been established to promote and preserve classical Tamil literature.
- It facilitates the translation of ancient Tamil texts, supporting research, and providing courses for university students and scholars in Classical Tamil.
- The Central Institute of Classical Tamil at Chennai is doing extensive research relating to the classical phase of Tamil, from the early period to 600 A.D.
    - This includes texts like *Tolkāppiyam* - the most ancient extant Tamil grammar text, forty-one ancient Tamil Texts like *Natriṇai, Puranāṇūru, Kār Nārpatu* and others.
- The Centre is engaging multidisciplinary scholars to study the antiquity of Tamil, carrying out researches on Dravidian comparative grammar and the study of Tamil dialects, creating Tamil Chairs in world-class Universities, providing Grant-in-Aid for short term research projects to Institutes and researchers, among its many activities.
- The Centre is also translating ancient Tamil texts into multiple Indian and foreign languages.
- Under this project *Tirukkural has been translated into 28 Indian and over 30 world languages and also in Braille*.
- The Centre is publishing the classical Tamil texts into Braille and compiling a classical Tamil thesaurus.

> ***Braille** is a tactile writing system used by people who are blind or have a visual impairment, created with a series of six raised dots that represent letters, numbers, and symbols.*

- **Key Activities and Objectives of the Centres for Classical Languages**
    - Promote, propagate, and preserve India's Classical Languages and Literatures.
    - Research and Documentation.
    - Digitizing manuscripts in collaboration with State Museums and Archives.

- Publishing books, research reports, and manuscript catalogues.
- Translating classical texts into Indian and foreign languages.
- Audio-Visual Documentation: Producing documentaries on eminent scholars and classical texts.
- Promoting studies linking classical languages with epigraphy, archaeology, anthropology, numismatics, and ancient history.
- Conducting epistemological studies linking classical heritage with indigenous knowledge systems.

- **The Centre of Excellence for Studies in Classical Telugu (CESCT) –** It has been set up under CIIL and operates from a campus at Venkatachalam, SPSR Nellore (Andhra Pradesh).
- It has compiled a database containing approximately 10,000 classical epics with detailed information.
  - This includes dramas, temples of Andhra and Telangana, village records etc.
- All Telugu inscriptions have been edited and compiled into a book titled *"Telugu Sasanaalu"* The first Telugu grammar, '*Andhra Sabda Chintamani,'* and the pioneering prosody work, *'Kavijanasramam,'* have been translated into English.
- **The Centre of Excellence for Studies in Classical Kannada (CESCK) –** It has been set up under CIIL and operates on the University of Mysuru campus, Mysuru.
- It has a dedicated library, cultural laboratory, and new conference facilities.
- The CESCK has initiated various programs like Roadmap Meetings and Dissemination of Classical Kannada through its Training Programmes.
- The Centre functions in *4 foundational areas –* Research, Teaching, Documentation and Dissemination.
- It has published 7 books, and 22 more are ready for release.
- First musical notations *'Sankeerthana Lakshanam'* by poet-saint *Annamacharya*, which was originally written in Sanskrit, translated into Kannada.
- **The Centre of Excellence for Studies in Classical Odia (CESCO) –** It has been set up under CIIL and is located at the Eastern Regional Language Centre in Bhubaneswar.
- The Centre work to promote, propagate, and preserve the heritage of Classical Languages and Literatures, as well as to undertake and encourage research and documentation.
- It has undertaken projects based on sources of Classical languages like Odia, including analysis of inscriptions, linguistic study of mural paintings, archaeological remains, old palm leaf manuscripts, and compiling references from various ancient texts.
- **The Centre of Excellence for Studies in Classical Malayalam (CESCM) –** It has been set up under CIIL has been established at Thunchath Ezhuthachan Malayalam University, Tirur, Malappuram, Kerala, provided by the state government.

What lies ahead?

- "Virasat Bhi, Vikas Bhi"—this inspiring mantra from Prime Minister of India captures the essence of balancing India's rich heritage with progressive development.
- The country's classical languages serve as living symbols of this vision, showcasing the intellectual and cultural treasures of our civilisation.
- Classical Languages status also reflects a profound recognition of the invaluable role these languages have played in shaping India's intellectual heritage.
- The government's efforts have enabled institutions, scholars, and young people to connect with ourancient traditions.
- By safeguarding these languages for future generations, the government is reinforcing a broader vision of cultural self-reliance & national integration, aligns with the objectives of Atmanirbhar Bharat & a culturally rooted India.
- Through his dedication, India's historic voices continue to echo in a modern, confident Bharat.

2.2 Classical languages – Recent Additions and Their Contributions

The classical languages of India have contributed a large to the Indian literature and it is important to mention some of them.

What are the recently added classical languages?

- **Already recognised languages** – Tamil, Sanskrit, Kannada, Telugu, Malayalam, and Odia, were earlier accorded the status of classical languages between 2004 to 2024.
- **Languages added in 2024** – Marathi, Pali, Prakrit, Assamese, and Bengali.
- **Marathi** – It is an Indo-Aryan language spoken predominantly in Maharashtra, India.
- It boasts a rich literary history spanning more than a thousand years.
- With approximately *110 million native speaker*s, Marathi is one of the world's top 15 most spoken languages.
- It traces its roots back more than 2500 years, originating from languages such as
    - Prachina Maharatthi
    - Marahatthi
    - Maharastri Prakrta
    - Apabhramsa Marathi.
- The language has undergone significant changes but has maintained its continuity through various historical phases.
- Modern Marathi evolved from ancient languages spoken in the region, starting with Maharastri Prakrta, a dialect of the Prakrit languages spoken during the Satavahana era (2nd century BCE to 2nd century CE).
- **Pali** – The study of Pali is essential for reconstructing the history of ancient India, as its literature contains valuable materials that shed light on the past.
- Many Pali texts are still hidden in manuscripts that are difficult to access.
- Pali continues to be studied in Buddhist countries such as Sri Lanka, Myanmar, Thailand, and regions like Chittagong, as well as in Japan, Korea, Tibet, China, and Mongolia, where most Buddhists live.
- The earliest references to Pali are found in the commentaries of the Buddhist scholar *Buddhaghosa*.
- **Prakrit** – Prakrit, representing a spectrum of Middle Indo-Aryan languages, is integral to understanding India's rich linguistic and cultural heritage.
- This ancient language not only serves as a foundation for many modern Indian languages but also encapsulates the diverse traditions and philosophies that have shaped the subcontinent's historical narrative.
- According to Adi Shankaracharya, *"Vachah Prakrit Sanskritau Shrutigiro"*- Prakrit and Sanskrit languages are the true vehicles of Indian wisdom.
- **Assamese** – The official language of Assam has its roots in Sanskrit, with its development tracing back to as early as the 7th century A.D.
- Its direct ancestor, however, is the *Magadhi Apabhramsa*, a dialect closely linked to the Eastern Prakrit. Linguist G.A.
- Grierson noted that Magadhi was the predominant dialect of the region, while the eastern counterpart, Pracya Apabhramsa, spread south and southeast, ultimately evolving into modern Bengali.
- As Pracya Apabhramsa expanded eastward, it crossed north of the Ganges and reached the Assam valley, where it transformed into Assamese.
- The earliest recorded mention of Assamese can be found in the *Katha Gurucharit.*
- The etymology of the term *"Axomiya" (Assamese)* is subject to diverse interpretations; some scholars link it to geographical features, while others connect it to the Ahom dynasty, which ruled the region for six centuries.
- The Brahmaputra valley, including North Bengal, is referred to as *Pragjyotishpura* in the Mahabharata and as *Kamrupa* in the pillar inscription of Samudragupta from the fourth century A.D.
- The anglicised term "Assam" originated from "Axom," denoting the Brahmaputra valley, and from this evolved "Assamese," referring to the language spoken in the region.
- By the eighth century A.D., Assamese was already flourishing as a language.
- Assamese shares a common linguistic heritage with Oriya and Bengali, all of which descended from the same parent dialect, Magadhi Apabhramsa.

- **Bengali** – It is one of India's most prominent languages, holds a significant place in the cultural and linguistic history of the subcontinent.
- Bengali has poets, authors, and scholars who have shaped not only Bengal's cultural identity but also India's national consciousness.
- The earliest works in Bengali can be traced back to the 10th and 12th Century AD.
- From the earliest translations of Sanskrit epics to the revolutionary writings of the 19th and 20th centuries, Bengali literature has played a pivotal role in mobilising social, political, and intellectual movements.
- Bengali, along with Assamese and Oriya, as well as Magadhi, Maithili, and Bhojpuri, forms a linguistic group in the south-east zone, along with the languages.
- Its immediate source can be traced back to the Magadhi Prakrit, also known as Eastern Prakrit, which originated from Magadh (or Bihar).
- The language of Gauda-Banga, with other eastern languages, developed through Magadh Apabhramsa.
- Genetically, Bengali is derived from Indo-Aryan (IA) languages, which belong to the Indic sub-branch of the Indo-Iranian branch of the Indo-European family.

What are the contribution of the recently added classical languages?

- **Contribution of Marathi languages** – The Gathasaptasati, the earliest known Marathi literary work, is around 2000 years old and highlights the excellence of early Marathi poetry.
- It is a collection of poetry attributed to the Satavahana King Hala, believed to have been compiled in the 1st century CE.
- Following this, *Lilacharitra and Jnanesvari* emerged after Marathi reached a mature linguistic stage about eight centuries ago.
- Many stone inscriptions, copper plates, manuscripts, and old religious texts (pothis) beautifully show Marathi's rich historical roots.
- The Naneghata inscription is an extraordinary artefact that highlights the use of Marathi over 2500 years ago.
- Additionally, Marathi is mentioned in ancient Indian writings, including the Vinayapitaka, Dipavamsa, and Mahavamsa, as well as works by renowned authors such as Kalidasa and Vararuci.
- Marathi's literary heritage includes works by saints such as Sant Dnyaneshwar, Namdev, and Tukaram, among many others, whose contributions remain widely revered.
- **Contribution of Pali Language** – Pali is a rich tapestry woven from various dialects, adopted by Buddhist and Jain sects in ancient India as their sacred language.
- Lord Buddha, who lived around 500 B.C., used Pali to deliver his sermons, making it a key medium for spreading his teachings.
- The entire corpus of Buddhist canonical literature is written in Pali, most notably the *Tipitaka, which means "Threefold Basket."*
    - **Vinaya Pitaka** – It outlines the monastic rules for Buddhist monks, providing a framework for ethical conduct and community living.
    - **Sutta Pitaka** – It is a treasure trove of speeches and dialogues attributed to the Buddha, encapsulating his wisdom and philosophical insights.
    - **Abhidhamma Pitaka** – It explores into various topics related to ethics, psychology, and the theory of knowledge, offering a profound analysis of the mind and reality.
- Pali literature includes the *Jataka Kathas, non-canonical tales* of the Buddha's previous lives as the Bodhisattva or future Buddha.
- These stories connect with Indian common heritage, reflecting shared moral values and traditions.
- Together, they highlight Pali's role in preserving Indian thought and spirituality.
- **Contribution of Prakrit Language** – The Prakrit is widely acknowledged among linguists and scholars.
- Acharyas like *Panini, Chand, Vararuchi, and Samantbhadra* shaped its grammar.
- Prakrit was used by Mahatma Buddha and Mahavira to deliver sermons, helping them reach the masses.

- Its influence is seen in regional literature, with dramatic, poetic, and philosophical works contributing to fields such as astrology, mathematics, geology, chemistry, and botany.
- Prakrit is vital to Indian linguistics and dialects and has a rich legacy. The Rastrabhasha Hindi tradition is developed from Prakrit-Apabhransa.
- Vedic language also shows significant Prakrit elements, highlighting the importance of studying it to understand India's linguistic evolution.
- Prakrit inscriptions serve as vital historical records, providing insights into India's past.
- The inscriptions from the pre-Mauryan period, as well as those from King Ashoka and Kharvel, are primarily written in Prakrit.
- *Acharya Bharatmuni,* in his seminal work '*Natyashastra,*' recognised Prakrit as the language of the majority of Indians, rich in artistic expression and cultural diversity.
- This acknowledgement emphasises Prakrit's accessibility and importance as a mode of communication among the common people.
- Languages like Hindi, Bengali, and Marathi trace their development back to Prakrit, highlighting the importance of understanding Prakrit literature for a comprehensive grasp of the origins and evolution of modern languages.
- **Literary Contributions of Assamese Language** – The earliest example of pre-modern Assamese script is found in the *Charyapadas*.
- Charyapadas are ancient Buddhist Tantric texts composed by Buddhist Siddhacharyas and dates back to times between the 8th and 12th centuries.
- The Charyapadas share a close relationship with Assamese and other Magadhan languages, revealing the evolutionary stages of several Indian languages.
- The vocabulary in the Charyapadas includes words that are distinctly Assamese.
- Additionally, in terms of phonetics and morphology, the vocabulary closely resembles typical Assamese words, many of which have remained in the modern language.
- **Literary Contributions of Bengali Language** – The earliest extant specimens of ancient Bangla are the 47 spiritual hymns now known as charyapada composed by Buddhist monks.
- The Charyapada hymns possess both linguistic and literary value.
- The Siddhacharya, or composers of the Charyapada hymns, include *Luipa, Bhusukupa, kahnapa and Savarpa*.
- The earliest Bengali literary works can be traced back to the 10th and 12th centuries AD, initiated by extensive translations of great Sanskrit epics.
- The 16th century marked a turning point with religious reforms led by *Chaitanyaand* and the sacred law fostered by *Raghunath* and *Raghunandan.*
- The subsequent centuries witnessed the rise of original compositions, with notable figures such as *Mukunda Ram,* often referred to as the *"Chaucer of Bengal,"* and later literary masters like Bharat Chandra and Ram Prasad.
- The 19th century marked a golden era for Bengali literature, with influential figures such as Raja Ram Mohan Roy and Ishwar Chandra Vidyasagar making significant contributions.
- Newspapers like *Samvad Kaumudi, Som Prakash, and Bande Mataram* played pivotal roles during the freedom struggle, highlighting the power of the written word in mobilising the masses.
- *Bankim Chandra Chatterjee* pioneered Bengali fiction, while poets like *Rabindranath Tagore, Michael Madhusudan Dutta, Sukanta Bhattacharya, and Kaji Nazrul Islam* significantly contributed to the literary revolution that fuelled the fight for independence.
- Slogans like *'Jai Hind'* by Netaji Subhas Chandra Bose and *'Vande Mataram' by* Bankim Chandra Chattopadhyay resonated throughout the nation, inspiring generations.
- Our National Anthem *'Jana Gana Mana'*, composed by Rabindranath Tagore and our National song *'Vande Mataram'* by Bankim Chandra have both emerged out of Bengali poets.

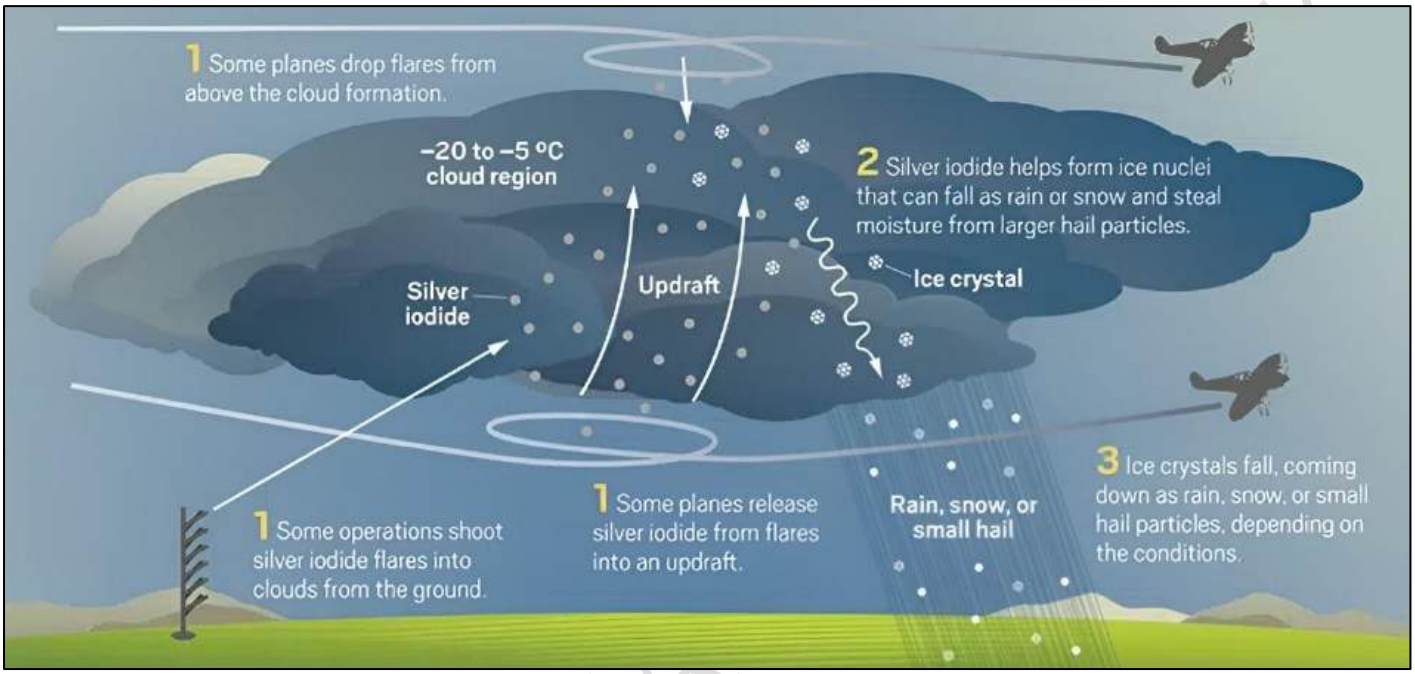
3. GEOGRAPHY

3.1 Cloud Seeding - Techniques and Limitations

Recently, The Government of the National Capital Territory Delhi carried out cloud seeding and artificial rain to reduce air pollution, it is necessary to understand how this works and if it is effective at all.

What is cloud seeding?

- **Cloud seeding** – It is a weather modification technique that aims to enhance precipitation by *dispersing specific chemicals* into existing clouds.
- These chemicals act as artificial condensation nuclei, around which moisture can accumulate to form larger water droplets or ice crystals, eventually resulting in rainfall.



- **Agents used** – The process typically uses agents such as
  - **Silver iodide** – It mimics the crystalline structure of ice.
  - **Potassium iodide** – It acts as an alternative nucleating material.
  - **Dry ice** (solid carbon dioxide) – It is used to cool the surrounding air rapidly.
  - **Sodium chloride** (common salt) – It is particularly effective in promoting droplet formation in warmer clouds.
- **Dispersal of agents** – Cloud seeding is most commonly conducted *using aircraft* that disperse the seeding agents directly into the targeted cloud systems.
- In some cases, *ground-based generators* are used when wind conditions can effectively carry the aerosols upward into the cloud layer.
- In some cases, *even drones are used*.

What are the primary requirement for artificial rain?

- **Scientific preconditions**– For cloud seeding to be successful, specific requirements must be met
  - Moisture-rich clouds, particularly cumulus and nimbostratus types, are essential.
  - The presence of super-cooled water droplets within the clouds, favourable wind patterns, and suitable humidity levels are crucial for achieving the desired outcome.
- Cloud seeding is not effective in dry conditions or when the sky is clear, as it cannot create clouds but can only enhance existing ones.
- The presence of existing moisture-laden clouds that have not yet produced rainfall is a prerequisite for cloud seeding.
- This process enhances the natural potential of such clouds to generate precipitation but cannot create rain in clear skies.
- Accurate forecasting of cloud availability is therefore critical.

- **Sufficient moisture –** The target clouds must contain an adequate amount of water vapour and liquid water to be condensed into precipitation.
- In some cases, a cloud's moisture content must be at least 50 per cent.
- **Cloud characteristics –** Clouds targeted for seeding must have sufficient vertical thickness.
    - **For example**, some cloud-seeding projects require clouds to be at least 1 kilometre thick.
    - For cold cloud seeding, the cloud must contain "supercooled" liquid water, which is water that remains a liquid despite having a temperature below freezing. The cloud must be at least −20°C to −7°C.
    - For warm cloud seeding, the cloud temperature must be above freezing.
- **Favourable winds –** The wind conditions must be suitable for the project.
    - Wind direction must transport the seeding material toward the intended area.
    - Wind speed must not be so high that it prevents clouds from growing tall or blows the seeding agents away from the target zone.
- **Vertical air currents –** Clouds with strong vertical updrafts are considered ideal because they help disperse the seeding agents and promote cloud development.

What are the monsoon relevance and limitations?

- **Relevance**
    - **Monsoon provides an Ideal condition** – The Indian monsoon season often provides ideal conditions for cloud seeding, as it brings abundant moisture and widespread cloud cover.
    - This period can be beneficial for targeting rain-deficient zones within the larger monsoon system.
- **Limitations**
    - **Natural rainfall** – It complicates the ability to measure the specific impact of cloud seeding interventions.
    - **Atmospheric variations** – Weather variability and shifting atmospheric conditions can further delay or reduce the effectiveness of seeding efforts.
    - **Flooding** – There is also a potential risk of excessive rainfall or local flooding if seeding is not carefully managed.

What are the applications in key areas?

- **Temporary relief** – It can provide temporary relief during severe droughts by augmenting rainfall, especially for agriculture and rural water security.
- **Emergency intervention** – It may also serve as an emergency air-quality intervention during episodes of extreme pollution, when artificial rain can help wash suspended pollutants out of the air.
- **Stabilisation of agriculture** – Furthermore, it can support agricultural stabilisation in rain-fed areas during delayed or weak monsoons by supplementing natural rainfall.

What are the limitations of cloud seeding?

- **Environmental risks** – There are environmental risks associated with the use of chemical agents, which can potentially contaminate soil and water bodies and impact biodiversity.
- Long-term exposure may also affect soil fertility and groundwater quality.
- **Limited effectiveness** – The technique has limited efficacy because it cannot induce rainfall in the absence of suitable clouds or sufficient moisture.
- **Ethical and legal concerns** – These concerns also arise, particularly regarding the manipulation of weather systems and the potential impact on rainfall patterns in neighbouring regions.
- **Undermine long term solutions –** Focusing on cloud seeding as a pollution-control strategy may distract from essential, long-term reforms in air-quality management and sustainable urban planning.
- **Region based challenges** – The practical possibility of cloud seeding in region of *Delhi and Indo-Gangetic plains* are
    - **Extreme pollution events** – They typically occur during the winter months, when atmospheric conditions lack the high humidity required for successful seeding.

- Even when clouds are present, they are often part of larger synoptic weather systems that already bring natural rainfall, thereby reducing the marginal benefit of artificial rain.
- When cloud seeding does produce rainfall, the effects are usually short-lived, lasting from a few hours to a couple of days.
- **Unintended consequences** – Diverting rainfall from neighbouring areas, raises both ethical and geopolitical concerns.

What is the status of cloud seeding experiment in India?

> ***India** has been experimenting with cloud seeding, commonly known as artificial rain, since the 1950s, primarily as a drought management tool.*

- **Initiatives by states** – States such as Tamil Nadu, Karnataka, Maharashtra, and Andhra Pradesh have undertaken cloud seeding operations to augment rainfall in water-scarce regions.
- **Expansion of the experiment** – In recent times, interest in cloud seeding has expanded beyond drought relief to include its potential as an emergency measure for improving air quality, particularly in highly polluted urban areas such as Delhi.
- **Delayed plans** – Successive governments in Delhi have explored the idea of inducing artificial rain to improve ambient air quality.
- However, the plan has repeatedly faced setbacks due to delays in obtaining inter-agency clearances, unfavourable meteorological conditions, and the unavailability of suitable clouds.
- **Revival of the experiment** – In 2025, the initiative was revived, with the Delhi government signing a Memorandum of Understanding (MoU) with IIT Kanpur to conduct five cloud-seeding trials in northwest Delhi.
- The project, approved by 23 departments, including the Directorate General of Civil Aviation (DGCA), aims to explore whether artificial rain can be a viable solution to tackle rising pollution levels during the winter.
- IIT-Kanpur will deploy its own aircraft for the operation

What should be done?

- **Ensure scientific validation** – Cloud seeding must be backed by real-time scientific validation using satellite data, Doppler radar tracking, and high-resolution meteorological modelling.
- **Develop SOPs** – Standard operating procedures (SOPs) should be developed for the execution, monitoring, and post-event assessment of all cloud seeding operations to ensure accountability and measure outcomes effectively.
- **Establish regulatory framework** – Regulatory frameworks must be established to ensure environmental safety, ethical governance, and transparent application of weather modification technologies.
- **Develop long term solutions** – Cloud seeding offers a scientifically plausible yet highly conditional solution for inducing rainfall and managing air pollution.
- It should be viewed as a supplementary intervention within a broader emergency response framework, rather than as a primary strategy.
- These micro-meteorological interventions require thorough scientific investigation, robust risk assessments, and careful interstate coordination before implementation.
- **Comprehensive analysis** – Any decision to employ cloud seeding must be grounded in comprehensive meteorological analysis, transparent decision-making processes, and a clear understanding of the trade-offs involved.

What lies ahead?

- In the short term, cloud seeding should be considered only as an emergency measure, particularly when air quality indices exceed hazardous levels or during extreme droughts
- India's long-term focus must remain on sustainable air quality solutions, improved urban planning, and climate-resilient development pathways.

4. SOCIAL ISSUES

4.1 Total Fertility Rate in India – Report and Reality

Recently, there is a large gap between real and calculated Total Fertility Rate (TFR) is particularly relevant in a developing country such as India

What is the recent UN report?

- **UN report** – The recent United Nations Population Fund's State of World Population 2025 report shows that India's current Total Fertility Rate (TFR) has fallen to 1.9.
- **Shift of focus** – This sub-replacement fertility has shifted the focus of discourse from the belief that rapid population growth is the root of economic backwardness to new concerns about ageing populations.
- **Questions raised by UN report** – The report brings urgent questions to the forefront.
    - Does the methodology used to calculate TFR accurately reflect public perception?
    - Could the decline in TFR pose risks to India's economic trajectory, thereby creating the need to raise the TFR?

What is the perceived meaning of TFR?

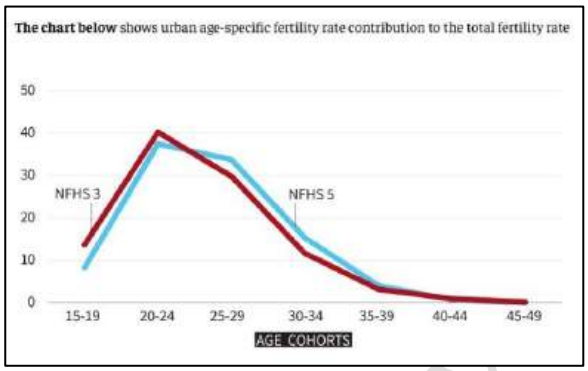
- **TFR** – Total fertility rate (TFR) is the average number of children a woman would have in her lifetime, based on the current age-specific fertility rates.
- However, it is a statistical measure which calculates the average number of children a woman would have in her lifetime if she experienced the current birth rate trends at each age cohorts *from 15 to 49 years throughout her reproductive life.*
- **Division of reproductive age** – The reproductive age is divided into seven five-year age cohorts of, *15-19, 20-24, 25-29, 30-34, 35-39, 40-44, and 45-49.*
- **Age specific fertility rate** – For each age cohort, the number of live births per 1,000 women in a given year is calculated, this is known as *age-specific fertility rate (ASFR).*
- These ASFRs are then converted into per-woman figures by multiplying each rate by five (since each cohort covers five years) and dividing by 1,000. Adding up the figures for all seven cohorts gives us the TFR.
- **Synthetic cohort assumption** – This calculation assumes that that today's 15–19 age cohort will show fertility patterns similar to today's 45-49 cohort (or other older cohorts) once they themselves reach that age, and vice versa.

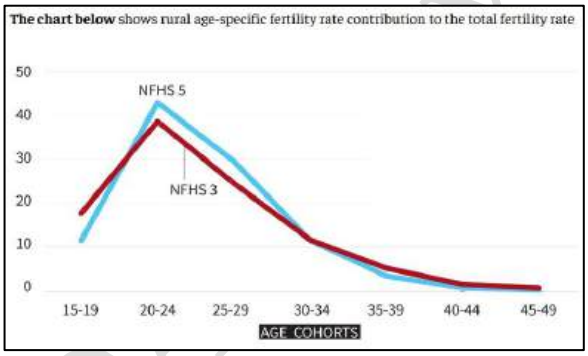
> ***A cohort** is a group of people who share a common characteristic, like age or birth year.*

What are the limitations of TFR calculation?

- **Assumption vs Reality** – Real fertility preferences do not follow the synthetic cohort assumption.
- They often evolve differently, as future younger cohorts are likely to exhibit preferences that differ from those of today's older women.
- **Tempo effect** – TFR is a point-in-time measure, which is highly sensitive to a phenomenon known as the tempo effect.
- This refers to changes in the timing of childbearing, not necessarily reduction in the number of births.
- **Skipping the postponed births** – Since TFR is calculated from the ASFRs of women in a given cohort, births postponed are not captured in that year's data.
- So, the fertility of women who delay childbirth is effectively 'missed' even though they may have the same number of children later.
- Thus, tempo effect artificially reduces the TFR and gives a false impression of lower fertility.
- The phenomena exacerbates when birth postponement takes place in the majority of the younger age cohorts.
- Interestingly, today's postponement will overestimate future TFR calculation.
- This large gap between real and calculated TFR is particularly relevant in India, which is simultaneously undergoing economic, social, and cultural transitions.
- These include rising female literacy and a more career-oriented outlook among women that creates a stronger incentive to delay childbirth.
- **Exclusion** – TFR excludes births to women below 15 and above 49, based on the assumption that such cases are negligible.

- This assumption is less valid in developing and Islamic countries where early marriages are common.
- Owing to legal and social sensitivities, births to underage girls are often concealed.
- **Skipped questions** – Moreover, survey enumerators may also avoid uncomfortable questions, as noted in the 2020 DHS Methodological Report.
- The ASFR trends presented reflect a shift in childbirth patterns, with fertility being postponed from younger to older cohorts.
- **Urban areas** – In urban areas, the decline in the share of ASFR among the youngest two cohorts (15-19 and 20-24) and the corresponding increase across the older cohorts (25-29 to 45-49) strongly indicates a postponement of fertility preferences rather than an overall decline in fertility.
- **Rural areas** – In rural areas, a decline in the share of ASFR is observed in the 15-19 age cohorts, along with an increase in the 20-24 to 30-34 age cohorts.
- This also suggests a postponement of fertility preferences.





- However, unlike in urban areas, this shift is largely confined to the middle age cohorts.
- The declining share of older cohorts (35-39 and above) points to a reduction in fertility preference in these age cohorts.

What lies ahead?

- Given these problems, and amid growing calls to raise the TFR due to concerns over ageing population, it is important to recognise that historically, sub-replacement fertility has not constrained economic progress, as evidenced in Europe, the U.S., and several newly industrialised economies.
- Moreover, India has missed the opportunity to fully harness its demographic dividend, constrained by persistent youth unemployment, a challenge likely to intensify with automation and AI.
- More importantly, the current size of the elderly population remains largely independent of present fertility trends.
- While caring for the ageing population is a moral responsibility of the state, its urgency does not automatically increase simply because of a reported decline in TFR.

G. S. PAPER II

5. INDIAN POLITY

5.1 Ladakh – Protest for Statehood

Recently, there was a violent protest erupted in Leh city which led to the death of four people and injuries to around 150 people, including security personnel.

What is the background?

- **Abrogation of Article 370** – The special status of Jammu and Kashmir under Article 370 was read down by Parliament on August 5, 2019.
- **Split of state** – The State was split into two Union Territories
  - **J&K** – With assembly
  - **Ladakh** – Without an Assembly.

- **Apprehension of people** – The fear of big businesses and conglomerates taking away land and jobs from the local people led to this demand.

What is the ongoing issue?

- **Detain of protestors** – On September 26, prominent educationist and climate activist of Ladakh, Sonam Wangchuk, was detained under *the National Security Act (NSA), 1980* for disrupting public order.
- **Hunger strike** – On September 10, Mr. Wangchuk, on behalf of the *Leh Apex Body (LAB)* and the *Kargil Democratic Alliance (KDA)*, announced a 35-day hunger strike.
- They demanded the resumption of talks with the Union Ministry of Home Affairs (MHA).
- **Demands of the protestors** – They had 4 demands
    - Inclusion of Ladakh in the Sixth Schedule of the Constitution (tribal status),
    - Statehood for ladakh
    - Separate Lok Sabha seats for Leh and Kargil,
    - Filling of existing government vacancies.

As per the 2011 Census, ***the total population of Ladakh was 2,74,289.***

- **Formation of high-powered committee** – The government formed a High-Powered Committee (HPC) headed by Minister of State for Home Nityanand Rai on January 2023.
- The HPS was formed as a result of campaigns by groups in Kargil and Leh demanding constitutional safeguards, protection of land, preservation of culture and demand for employment opportunities.
- The committee comprised members of LAB and KDA and civil society representatives, who rejected the HPC, saying only pro-government members appeared to have been picked.
- The HPC was reconstituted on November 30, 2023
- **The terms of reference of the committee** – It includes
    - Measures to protect the region's unique culture and language taking into consideration its geographical location and strategic importance
    - To ensure protection of land and employment for the people of Ladakh
    - To discuss measures for inclusive development and employment generation in the region
    - To discuss measures related to the empowerment of the Ladakh Autonomous Hill District Councils of Leh and Kargil and to examine constitutional safeguards for the measures.
- **Breakdown of talks** – The talks between the members of the committee broke down in March 2024.
- On October 6, 2024, Mr. Wangchuk sat on an indefinite fast in Delhi to draw the government's attention to their demands, following which the MHA agreed to resume talks.
- The HPC, including leaders from Leh and Kargil, met on December 3, 2024, followed by another meeting on January 15, 2025.
- The committee last met on May 27.
- The members also met Home Minister Amit Shah at his residence the following day.

What happened since the last round of talks?

- **President's notification** – Following the meeting, on June 3, President Droupadi Murmu notified 4 Regulations for the Union Territory of Ladakh.
- **New policies** – The notification defined new policies on reservation, languages, domiciles and composition of hill councils for Ladakh.
- **Reservation** – The Regulations paved the way for *85% reservation for resident Ladakhis* in government jobs.
- **Rejection of the talks** – The Ladakh groups allege that their core demands of Statehood and inclusion in the Sixth Schedule have not been met.

What is the government's stand?

- **Government's assurance** – Union Home Secretary on his visit to Ladakh on July 1 had assured the protestors a discussion on the 2 points.
    - The MHA had informed a parliamentary standing committee in 2022 that the objective for inclusion of a tribal population under the Sixth Schedule is to ensure its overall socio-economic development.

- It said the UT administration had already been taking care of this aspect and that sufficient funds were being provided to Ladakh.

- **Engagement with civil societies** – After the violent protests, the MHA said in a statement that it had been actively engaged with LAB and KDA and a series of meetings were held.
- **Increased reservation** – The process of dialogue through this mechanism has yielded phenomenal results by increasing reservations for Ladakh's Scheduled Tribe[s] from 45% to 84%.
- This also provides one-third reservations to women in the councils and declaring Bhoti and Purgi as official languages.
- With this process of recruitment, 1,800 posts opened up for tribals," the MHA said.

5.2 Importance of ADR

Recently the, Minister of Law and Justice reaffirmed the government's commitment to legal reforms rooted in India's civilisational ethos.

What is ADR?

- **ADR** – Alternative Dispute Resolution (ADR) refers to the methods and processes for resolving disputes or disagreements outside of formal court proceedings.
- **Benefits** – It provides a less expensive, faster, and more flexible alternative to traditional litigation.

What is the basis of ADR?

- **Constitutional basis** – It is enshrined in Article 39A, which mandates the state to provide equal justice and free legal aid.
- **Code of civil procedure** – Various ADR processes, such as arbitration, conciliation, mediation, and judicial settlement (Lok Adalat), are recognised under Section 89 of the Code of Civil Procedure, 1908.
- **Legal basis** – To regulate processes, these have been incorporated into law.
    - **For example**, under the Arbitration and Conciliation Act 1996 (amended in 2021), civil and compoundable offences like theft, criminal trespass, and adultery are resolved through a binding award or resolution, respectively.
- **The Arbitration Act, 2021** – It also mentions the establishment of an Indian Arbitration Council, giving legal backing to arbitration agreements.
- The law fixes a maximum period of 180 days for dispute resolution, ensuring faster justice.
- On many occasions, even after such a solution, if a party is dissatisfied, they can exit the process after two sessions of mediation.
- Pre-litigation mediation for resolving civil and commercial disputes will not increase the number of pending cases.

How do Lok Adalats function?

- **Governing law** – Lok Adalats are governed by the Legal Services Authorities Act, 1987, inspired by Article 39A.
- Apart from Permanent Lok Adalat (Section 22-B of the Act), provisions of the National Lok Adalat and e-Lok Adalat are directly helpful in strengthening the justice system.
- **1st lok adalat** – The first Lok Adalat in India was organised in Gujarat in 1999.
- **Feature** – The biggest feature of Lok Adalats is *that their decisions shall be final* and there is *no possibility of appeal*.
- This does not mean that the powers of these courts are absolute.

- The reason for no appeal is that these courts resolve disputes before litigation.
- In order to prevent any possible absoluteness, it is provided that the dissatisfied party can file a suit in a court.

Why is strengthening ADR crucial?

- **Tool for social change** – Mediation is a tool for social change, where social norms are brought in line with constitutional values through the exchange of views and flow of information.
- **Ensures true justice** – Solutions arrived at through invaluable discussions during mediation ensure true justice for individuals and groups on their terms, in a language they understand, and provide a platform that protects their sentiments.
- **Increases interaction** – It will also strengthen interpersonal relationships by increasing interaction at the social level.
- **Prevalence of interstate disparities** – The India Justice Report also highlights inter-State disparities in terms of the backlog of cases.
- The report says that pending cases have exceeded 5 crore, and High Courts and district courts are facing vacancy rates of 33% and 21% respectively.
- Judges in Uttar Pradesh, Himachal Pradesh and Kerala have workloads exceeding 4,000 cases.
- **Increased pendency of cases** – A substantial number of cases in High Courts and subordinate courts have been pending for over 10 years.
- According to the *National Judicial Data Grid (NJDG)*, the total number of pending cases in India is 4,57,96,239.
- In the Supreme Court, the number of pending cases is 81,768, and in the High Courts, it is approximately 62.9 lakh.
- **Numerous challenges** – The India Justice Report 2025 highlights significant challenges in India's justice system, particularly including access, delays, and accountability.
- These delays often result in injustice, increasing the focus on ADR as a faster, cost-effective, and socially inclusive way to deliver justice.

> ***NJDG*** *provides real-time data on case pendency and disposal, offering a comprehensive view of the judicial system's performance across States and courts.*

> ***The India Justice Report*** *ranks States based on their performance on various aspects of the justice system, including case pendency, with other factors like court infrastructure and judge availability.*
> *It is initiated and released by Tata Trusts in collaboration with various civil society organizations and data partners.*

- States like Andhra Pradesh, Uttar Pradesh, and Bihar have a considerable number of pending cases.
- This urgently demands rapid disposal and necessitates the strengthening of the ADR for effective per capita justice delivery.

What lies ahead?

- The law ministry stressed the need for ADR Citing the doctrine of *Panch Parmeshwar*.
  - This doctrine embodies the principle of collective consensus in dispute resolution.
- The ministry also called for global cooperation to strengthen Alternative Dispute Resolution (ADR) mechanisms.

5.3 Various Electoral Forms

Recently, the Election Commission (EC) has just concluded the special intensive revision (SIR) of electoral rolls in Bihar and it proposes to roll it out in other States in a phased manner.

What is the current significance of SIR?

- **Revision of electoral rolls** – Section 21 of the Representation of the People Act, 1950 (RP Act), deals with the preparation and revision of electoral rolls.
- A summary revision is carried out before each general election or by-election in any constituency.
- **Special revision** – The RP Act also authorises the EC to carry out a special revision of the electoral roll at any time.

- The EC, through its order dated June 24, had decided to conduct SIR for the entire country.
- **SIR in Bihar** – Since the Bihar Assembly elections are due in November, the Commission issued guidelines for the SIR of the Bihar electoral roll, with July 1 as the qualifying date.
- The SIR process in Bihar involved
- Submission of enumeration forms by all registered voters,
- Submission of any eligible documents to prove citizenship (for electors registered after 2003),
- Publication of draft electoral rolls based on forms submitted,
- Period for filing claims and objections, verification and disposal of claims and objections by the Electoral Registration Officers (ERO), and publication of final roll.
- The SIR process was challenged in the Supreme Court.
- **SC's direction** – In its interim orders, the court had directed the EC to accept Aadhaar as one of the eligible documents to be submitted along with the enumeration forms as proof of identity.
- The final roll for Bihar was released by the EC on September 30.
- **National coverage of SIR** – The Commission proposes to complete the SIR process for the entire country in a phased manner based on the Assembly election schedules for various States.

What are the various forms of electoral rolls?

- **Statutory basis** – These forms are provided in the Registration of Electors Rules, 1960 (RER).
- In the present context, it is important for citizens to be aware of the various forms that deal with electoral rolls.

What are the conflicting arguments and should be done?

- **Contrasting arguments** – There are political arguments both for and against the SIR exercise as carried out in Bihar.
- **Need for clean electoral rolls** – Clean electoral rolls are paramount for the conduct of free and fair elections, which is essential for our functioning democracy.

Various forms with respect to electoral rolls as per RER

Form Number	Description
Form 6	Application to be submitted by new voters to be registered as an elector. As per section 19 of the RP Act, the qualifying dates for completion of 18 years of age, are 1st day of January, April, July and October of the year in which the electoral roll is prepared or revised.
Form 6A	Form for inclusion by an Overseas Elector. Non-Resident indians who have shifted out of india, on account of education, employment or otherwise, can register as an elector in the constituency in which their address as per passport is located.
Form 7	Objection for proposed inclusion/deletion of name from existing roll. This form can be filed by a registered elector in a constituency in respect of any other registered elector or proposed inclusion in the roll or for deletion of applicant's own name.
Form 8	Form for shifting residence/correction of entries. This form can be filed by a registered elector for shifting of residence or correction of entries.
Form 5	Notice of publication of draft electoral roll by the ERO.
Form 9	List of applications for inclusion of names received in Form 6.
Form 10	List of applications for objection to inclusion of names received in Form 7.
Form 11	List of objections/applications for correction of entries received in Form 8.
Form 11A	List of applications for shifting of address within the constituency received in Form 8.
Form 11B	List of applications for shifting of address outside the constituency received in Form 8.

'Forms 9 to 118 are prepared and published by the ERO

- The EC would hopefully devise a more spread-out schedule in future SIRs that provides adequate time for hassle-free participation by voters.
- **Inclusion of aadhar** – The list of eligible documents is also likely to include Aadhaar as proof of identity, in subsequent SIRs as per the Supreme Court directive.
- **Duties of citizens** – Citizens should ensure that they verify the published draft rolls.
- They should fill out the enumeration forms as required.
- New voters and electors who have migrated to different constituencies should fill out the relevant forms.
- Political parties and civil society groups should assist citizens, especially the most marginalised sections, throughout the process.
- This would ensure a clean electoral roll without compromising on the right to vote of every eligible citizen.

5.4 Fiscal Architecture of Municipalities – Issues and Solutions

Recently, urban local bodies face a sharp financial constraint and municipal finance is dependent on intergovernmental transfers, loans, and schemes.

How did cities lose its tax revenues?

- **Effect of GST** – After the introduction of the Goods and Services Tax (GST), Indian cities lost nearly 19% of their own revenue sources.
    - **For instance**, Octroi, entry tax, and local surcharges which are the traditional lifelines of municipal budgets were subsumed into the GST framework.
- **Unfulfilled promises** – Assured compensatory mechanisms have largely bypassed the municipal level, deepening cities' dependence on State and Central grants.
- Therefore, municipalities lack both fiscal autonomy and predictable revenue streams.
- **Downturn of democracy** – The result is a peculiar inversion of democracy, where power is centralised and responsibility decentralised.
- Indian cities are not generating revenue, not because they are inefficient, but because the fiscal architecture has failed them.
- The core of the problem lies in the centralisation of taxation powers.
- **Responsibility without authority** – Cities are expected to deliver solid waste management, affordable housing, climate resilience, and digital infrastructure, but without the resources to fund such services.
    - **For example,** urban India generates nearly two-thirds of the national GDP, yet its municipalities control less than 1% of the country's tax revenue.

What are the issues with the municipal finances?

- **Flawed framework of municipal bonds** – It is not merely that cities are unable to generate capital to back their bonds, it is that the very framework of assessing credibility is skewed.
- Every major policy pronouncement from NITI Aayog's urban strategy to the latest reform-linked incentive grant promotes bonds as the new frontier of local finance.
- However, the credibility of Indian municipal bonds remains abysmally low.
- **Ideological error** – A city's creditworthiness is often judged narrowly by its own revenue performance such as, property taxes, user charges, and fees.

> ***Municipal bonds*** *are debt securities issued by states, cities, and other local governments to raise money for public projects like building schools, highways, and water systems.*

- But it completely discounting the regular flow of grants and transfers from higher levels of government.
- When the RBI or credit rating agencies discount grants as non-recurring income, they propagate the myth that cities survive on charity.
- In truth, these grants are legitimate entitlements, part of a redistributive compact enshrined in the Constitution.
- The 74th Amendment consider of cities as the equal tiers of governance entitled to a share of the tax pool.
- While property tax reform is important, this narrow prescription is inadequate and unjust.
- **Inadequacy of property tax** – It is inadequate because property tax typically accounts for only 20-25% of a city's total revenue potential, and is often politically and administratively constrained.
- It is unjust because it shifts the burden of urban financing disproportionately onto residents, especially in lower-income settlements already struggling with poor services.

> ***World Bank and Asian Development Bank*** *have long argued that cities should become "self-reliant" by focusing on property tax collection and user fees.*

- **Issues with user fees** – The obsession with "user pays" logic converts public goods into private commodities.
- Clean water, sanitation, public lighting, and mobility these are not marketable products but collective entitlements.

What is the way ahead?

- **Decentralizing more financial powers** – India must democratise the fiscal contract to empower the local bodies.

- In Scandinavian countries, the cities enjoy strong fiscal health, the local tax base is the foundation of the welfare state.
    - **For instance**, Municipalities in Denmark, Sweden, and Norway have the right to levy and collect income taxes directly, ensuring a transparent and accountable relationship between citizens and local governments.
- This decentralised model has produced both efficiency and equity.
- Citizens can see where their money goes, and cities have the flexibility to plan for the long term.
- Most importantly, transfers from higher levels of government are treated as part of a shared fiscal ecosystem, not as discretionary favours.
- **Implement different models** – There is a need for reimagined model of fiscal federalism, where municipalities have predictable, adequate, and untied revenues.
- These revenues are both from their own sources and from constitutionally mandated transfers.
- **Legitimatize the grants** – For municipal bonds to become credible instruments, the first step is to recognise grants and shared taxes as legitimate components of city income.
- Only then can cities build a trustworthy balance sheet.
- **Redesign the rating system** – The rating system must account for the governance capacity of a city which includes, transparency, audit compliance, citizen participation, rather than solely relying on financial metrics.
- **Allocation for collateral** – Cities should be empowered to earmark a portion of their GST compensation or State share as collateral for municipal borrowing.
- Such reforms would restore the principle of cooperative federalism that the Constitution envisaged.

What lies ahead?

- India's urban future depends on fiscal justice.
- Municipal finance must be seen not as a bookkeeping exercise but as a moral and political question.
- The grants that flow to cities are not gifts; they are part of a social contract.
- The revenues that cities generate are not charity; they are a right.
- True reform will begin only when India accepts that cities are not cost centres, they are the foundation of national prosperity.

6. GOVERNMENT POLICIES AND INTERVENTIONS

6.1 Inter-state Migrant Workmen Act

A recent murder of 5-year-old boy in Punjab by a migrant labourer called for the strict implementation of the Inter-State Migrant Workmen Act.

What is the issue?

- **Influx of migrants** – Punjab saw an influx of migrants from other states after the Green Revolution, which saw a rapid rise in paddy cultivation in the state.
- **Apprehension on migrant workers** – Punjab subsequently witnessed a wave of anger against migrant workers, with many panchayats passing resolutions which stated that migrants would not be allowed to stay in their villages.
- Farmer unions, farm labourer organisations and industry bodies too condemned the crime and demanded the strictest possible punishment for the accused.
- But they also urged the government to act against the rising anti-migrant narrative in the state.
- **Demand for implementation** – The Samyukta Kisan Morcha's (SKM's) Punjab unit asked the Punjab government to seriously implement the already existing Punjab Inter-State Migrant Workmen Act, 1979.

What is the act?

- **Act –** The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979.

- It is a central legislation enacted by Parliament to protect workers who migrate from one state to another for employment, usually through contractors.
- **Notified on** – It was notified for nationwide enforcement on October 2, 1980.
- **Objective** – The Act's objective is to regulate recruitment, ensure registration of establishments and contractors, and guarantee workers basic rights such as equal wages, displacement allowance, journey allowance, housing, medical facilities, and protective clothing, while holding contractors and employers accountable.

Why Punjab needed the act?

- **Large dependency of migrant workers** – Punjab has historically depended on a large number of migrant workers from Bihar, Uttar Pradesh, Odisha and Jharkhand, particularly in agriculture, brick kilns, construction and industry.
- The trend began in the early 1970s with the onset of the Green Revolution.
- **Increased role of migrant workers** – After initially coming to rural Punjab for paddy sowing, migrants gradually started working in factories and other settings.
- **Large population of migrants** – A survey conducted by the Parvasi Wing of the SAD-BJP government in 2016 estimated Punjab's migrant population at 39 lakh.
- The highest concentration of the migrant population is in Ludhiana, followed by Jalandhar, Amritsar, Mohali, Bathinda, Phagwara and Hoshiarpur.
- **Registered migrants** – During the Covid-19 lockdown in 2020, 18 lakh migrants registered with the Punjab government to return to their homes.
- Of these, nearly 10 lakh were from Uttar Pradesh and 6 lakh from Bihar.
- Others listed West Bengal, Odisha and Madhya Pradesh as their native states.
- **Protecting migrant workers** – The Act was thus essential to protect such workers from exploitation and underpayment, and to maintain accountability and legal oversight over large-scale labour migration.
- Punjab formally adopted the law by framing its own Inter-State Migrant Workmen (Punjab) Rules, 1983, which came into effect in April 1983.
- These rules laid down practical procedures such as registration, licensing, record-keeping, and the duties of contractors and employers within the state.

What are the important rules on migrant workers registration?

- **Registration** – Any establishment or contractor employing 5 or more interstate migrant workers must register with the Registering/Licensing Officer appointed under the Punjab Rules.
- **Web portal** – Registration and licensing are carried out through the e-Labour Punjab portal, where details such as the establishment's name and address, number of workers, nature of work and particulars of contractors must be submitted.
- **Requirements from contractors** – They are also required to provide information about any previous convictions, security deposits and compliance with labour laws.
- **Fee** – A nominal fee is charged based on the number of workers employed, and licenses are valid for one year, after which renewal is required.
- **Maintenance of records** – Employers must maintain records such as muster rolls, wage registers and overtime registers, and notify labour authorities of any major change in workforce or contractor details.
- However, apart from in a few organised industrial sectors, many organisations do not follow this registration process.

6.2 Jal Jeevan Mission (JJM)

India has achieved a major milestone under the Jal Jeevan Mission (Har Ghar Jal), with over 81 % of rural households having access to clean tap water, marking a significant step towards universal water security in rural India.

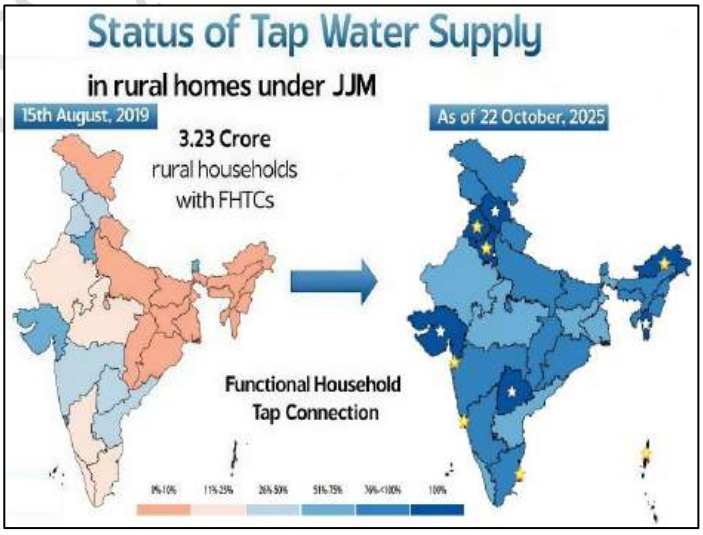
What is jal jeevan mission?

- **Aim -** To provide ***Functional Household Tap Connections (FHTC)*** to provide 55 lpcd (litre per capita per day) drinking water to all rural households in the country by 2024.
    - 75% of the target achieved over 5 years, so **extended till 2028**.

- **Launched in –** August 2019.
- **Nodal Ministry –** Ministry of Jal Shakti.
- **Funding –** Centrally Sponsored Scheme.
- **Objective –**
    - Ensure universal FHTC in rural India, prioritizing water-scarce and vulnerable areas.
    - Emphasizes institutional access, regular monitoring, and community ownership through voluntary contributions.
    - Sustainability is supported via infrastructure, source protection, and O&M funding.
    - Capacity building and awareness campaigns foster long-term engagement and safe water practices.

What are the key components of JJM?

- **In-Village Piped Water Supply Infrastructure –** Development of piped water systems within villages to ensure tap water connections to every rural household.
- **Sustainable Drinking Water Sources –** Development of reliable drinking water sources and/ or augmentation of existing sources to provide long-term sustainability to water supply system.
- **Bulk Water Transfer & Distribution –** Establishment of bulk water transfer systems, treatment plants, and distribution networks.
- **Technological Interventions for Water Quality –** Implementation of technologies to remove contaminants where water quality is an issue.
- **Retrofitting of Existing Schemes –** Upgrading completed and ongoing schemes to provide FHTCs at a minimum service level of 55 lpcd.
- **Grey Water Management –** Treatment and reuse of grey water to promote water conservation.
- **Community Capacity Building –** Support activities aimed at building the capacities of communities for sustainable water management.
- **Contingency Funds –** Provision of funds to address unforeseen challenges or issues arising from natural disasters or calamities.



What are the progress under the Jal Jeevan Mission?

- **Ensuring safety** – The JJM continues to make ***steady progress*** towards ensuring safe and adequate drinking water for every rural household in India.
- **States/UTs with 100% Coverage –** *11 States & Union Territories* - achieved **full tap water connectivity** for all rural households.
    - **UTs** – Goa, Andaman & Nicobar Islands, Dadra & Nagar Haveli & Daman & Diu.
    - **States** – Haryana, Telangana, Puducherry, Gujarat, Himachal Pradesh, Punjab, Mizoram, and Arunachal Pradesh.
- In 2019, when the Mission was launched, *only 3.23 crore households (16.71 %)* had access to tap water.
- Since then, *12.48 crore additional households* have been connected, marking one of the fastest expansions of basic infrastructure in rural India.

Quality Assurance and Monitoring (QA&M) system under JJM

- It is a **multi-tiered, community-driven** framework designed to ensure that rural households receive safe, potable tap water.
- It combines **on-site testing** with a robust network of laboratories and uses a digital information system for tracking and reporting.

- As of 21 October 2025, a total of 2,843 laboratories tested 38.78 lakh water samples across 4,49,961 villages in the country.
- 24.80 lakh women have been trained to test water quality using **Field Testing Kits (FTKs)** in 5.07 lakh villages.

What are the digital innovation helps in transforming rural water supply?

- **RPWSS module –** It is a **digital registry** for rural water projects, aims to enhance transparency, accountability, and efficiency in the management of rural water infrastructure.
- The module assigns a **unique ID** to every rural piped water supply scheme to improve transparency, accountability, and efficiency.
- **Integrated with GIS mapping & PM Gati Shakti –** Offers real-time dashboards, predictive analytics, and tools for efficient operation and maintenance.
- **JJM Dashboard –** Provides real-time tracking of mission progress across states, districts, and villages and promotes transparency, accountability, healthy competition among regions to achieve universal tap water coverage.
- **Digital training platforms –** JJM Digital Academy uses technology to train professionals and community members on sustainable water management, operations, and maintenance.

What are the impacts of JJM?

- **Reduce burden for women –** WHO estimates that by providing tap connection to every rural household will save over 5.5 crore hours daily, primarily for women.
- **Health & economic benefit –** Ensuring universal access to safely managed drinking water across all Indian households could:
  - Prevent nearly 4 lakh deaths from diarrheal diseases
  - Avert around 14 million DALYs (Disability Adjusted Life Years)
  - Save up to ₹8.2 lakh crore in health-related costs.
- **Empowering women –** 8.3%-point drop in household fetching water from outside, resulting in 9 crore women no longer need to fetch water – led to 7.4%-point rise in women's participation in agriculture & allied activities (SBI research).
- **Reduction in mortality rate –** Safe water coverage could reduce mortality among **children under 5** by nearly 30%, potentially saving more than 1,00,000 lives annually (Nobel laureate Prof. Michael Kremer's research).
- **Employment generation –** JJM has potential to generate nearly 3 crore person-years of employment during its build-out, with nearly 25 lakh women being trained to use Field Testing Kits (IIM-Bangalore + ILO).

What are the successful initiatives driven by communities & supported by technology?

- **Digital Governance and Transparency – West Bengal**
  - **Jal Mitra app** – It is a Management Information System (MIS) aligned with the JJM.
  - Aims to ensure FHTCs to every rural household, while emphasizing sustained service delivery, community ownership, and participatory monitoring through digital innovation.
  - It tracked 13.70 crore community activities (April 2024–August 2025), facilitated functionality assessments for 80.39 lakh households across 22,111 villages.
- **Converting Water Scarcity to Water Security – Rajasthan**
  - The **Bothara village** has severe water scarcity and groundwater exploitation exceeding 103%.
  - The Water Security Plan prepared by the village's Water Security Committee (WSC) adopted a **ridge-to-valley approach**.
  - Check dams and contour trenches were built, leading to a 70-foot rise in the water level of an open well within 10 days of the check dam's completion.
  - Led to increase the village's annual water storage capacity by 11.77%.

*The success of the JJM lies not only in infrastructure creation but also in the spirit **of "Jan Bhagidari se Peyjal Prabandhan",** community-led water governance combined with innovative use of technology.*

What lies ahead?

- In just 6 years, JJM is turning the ***vision of Har Ghar Jal*** into reality through rapid expansion, digital innovation, and strong community involvement.
- With sustainability and equity at its core, the Mission stands as a model of good governance and people-led development, taking India closer to universal and reliable water security.

7. GOVERNANCE

7.1 Caste Based Atrocities – The Persisting Peril

Despite constitutional promises of equality, Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs) face persistent caste-based violence and exclusion.

Why the caste-based discrimination persists till today?

- **Persisting discriminations** – From assaults in rural areas for defying caste norms to urban discrimination in housing and employment, caste continues to deny citizens dignity and opportunity.
- **Belief in caste-based superiority** – It persists even today, enabling social elites to perpetrate acts of violence, ranging from forcing Dalits to drink urine to ostracising Adivasis for asserting land rights, with alarming impunity.
- **Societal failure** – The acts of caste-based violence reflect not only individual prejudice but a societal failure to internalise humanitarian values.
- This raises questions about India's claim of being a civilised society.
- **Lack of governmental actions** – The current political dispensation, led by the current government, has fallen short in addressing this crisis.
    - **For instance**, the government occasionally promotes symbolic gestures by including Dalits and Adivasis in religious rituals, but these efforts lack substance.
- **Inappropriate narratives** – Hindutva narratives often frame resistance from marginalised communities as a threat to cultural unity.
- They often label activists as "Hindu phobic" and this rhetoric stifles legitimate demands for justice.
    - **For instance**, Hindutva narratives abused those who protested, an order of the Supreme Court that diluted provisions of the Atrocities Act.
- **Cultural Restrictions on Dalit** – Restrictions on Bahujan cultural expressions (as seen during the release of the Hindi film Phule) further alienate these communities from becoming part of the mainstream discourse.
- **Inefficient implementation of policies** – Policies promoting social justice, such as reservations in education and employment, are inconsistently implemented.
- As a result, social elites continue to control and dominate institutions.
- **Lack of policy framework** – The absence of a robust policy framework to bridge the gap between social elites and subaltern groups is glaring.
- **Lack of political will** – The political parties and its affiliated organisations have not launched a national campaign to challenge caste prejudice or foster inter-caste fraternity in the fear that it would dilute the privileges of dominant castes.
- **Elevation of dominant narratives** – The promotion of Brahmanical cultural narratives often relegates the struggles of Dalit and Adivasi communities to the margins.
- They portray the resistance of Dalits as a challenge to traditional authority rather than as a fight for universal dignity.
- **Fragmented Dalit movements** – Today, such movements are fragmented or are relegated to the periphery, with little capacity to challenge current social ills.
- The response of civil society to caste atrocities has also waned.
- **Lack of strict enforcement of laws** – While there are laws, enforcement is hampered by delayed investigations, low conviction rates, and societal bias within the judiciary and the police.

- **For instance**, a 2023 study by the National Campaign on Dalit Human Rights noted that over 60% of cases under the Atrocities Act remain pending in courts.

- This underscores the need for systemic reforms beyond legal provisions.

***The National Crime Records Bureau (NCRB) report**, released in late September, reported that 57,789 cases were registered against SCs in 2023.*
It marks a 0.4% increase over the 57,582 cases reported in 2022, and 12,960 cases were registered against STs in 2023, a sharp 28.8% increase over the 10,064 cases reported in 2022.

What are the movements and measures that reshaped caste dynamics?

- **The Dalit Panthers** – This movement in the 1970s galvanised marginalised communities, asserting their right to political power and social prestige.
- **Rise of Dalit parties** – The rise of the Bahujan Samaj Party in northern India further empowered Dalits and OBCs, amplifying their voices in governance and public discourse.
- **Upsurge of Dalit arts** – Intellectual influences and cultural initiatives, from Dalit literature to Adivasi art, laid claim to India's pluralistic heritage.
- **Rise of reformers –** Social reformers such as Mahatma Phule, B.R. Ambedkar, Periyar, and Mahatma Gandhi, who challenged the Brahmanical caste order, remain a beacon of hope.
- **Legal safeguards** – The anti-caste movements, coupled with constitutional safeguards such as the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989, aimed to dismantle caste hierarchies.

What are the measures need to be taken?

- **Strengthening existing laws** – The state must strengthen the enforcement of existing laws, ensuring swift prosecution of perpetrators and sensitising law enforcement agencies about the ills of the caste system.
- **Evolving a national campaign** – Political leaders must champion a national campaign to promote egalitarian values, using education, the media, and public platforms to challenge conventional caste relationships based on hierarchies and prejudices.
- **Building up of dialogue** – Civil society, including religious institutions, cultural organisations, and academia must foster dialogue to bridge divides between communities.
- **Firming up affirmative action** – The affirmative action policies should be rigorously implemented, with transparent monitoring to ensure equitable access to education, jobs, and resources.
- **Need for leadership** – Most crucially, Dalit, Adivasi, and Bahujan voices must be amplified.
- The legacy of resistance against the caste system needs a new podium and leadership.
- **Revival of anti-caste social movements** – It will build solidarity among marginalised social groups and re-establish the social justice agenda as a prime concern.

7.2 Indian Legal Ground – Opened for Global Counsels

The India Alternative Dispute Resolution Week, organised by the Mumbai Centre for International Arbitration in Bengaluru, Mumbai and Delhi last month, reflects a change unimaginable just a decade ago.

What are the episodes that took place?

- **Arrival of foreign counsels** – Top litigation and arbitration counsel from across the globe flocked to India in such a short span of time.
- They transacted the best practices with the Indian Bar and Bench, in a manner hitherto seen in New York, London, and Singapore.
- The idea of India as the place for resolution of international commercial disputes would have been considered impossible.
- **Measure of Supreme Court** – The Supreme Court of India threw its weight behind the idea of making India a destination for the resolution of high-value commercial disputes —
    - For adjudicating disputes related to domestic investments
    - For adjudicating disputes related to cross-border investments.

***The Supreme Court of India** known for decades for its exceptional judicial activism and for protecting the constitutional rights of India's citizenry.*

- **Interest in India** – The fact is that international interest in the Indian legal profession is not new.
- In fact, foreign lawyers were interested in tapping the Indian market as early as the 1990s, when the economy opened up.
- **Concerns** – Indian law firms were small, know-how was patchy, and the possibility of scaling up was limited by the fragmented manner in which firms were organised.
- There was also a brain drain from the five-year law schools.
- In short, the Indian legal industry, at that juncture, was simply not ready to jostle with foreign law firms.

What were the decisions of the court?

- **Bombay HC** - In its 2009 decision in *Lawyers Collective*, the Bombay High Court disallowed foreign law firms from practising both corporate transactional work and litigation in India, even if they had on their rolls Indian qualified lawyers.
- **Madras HC** – The Madras High Court doubled down the position in *A.K. Balaji*, but fortunately left a small crack open by permitting temporary advice on foreign law to be provided by foreign lawyers.
- **Supreme Court** – In 2018, the Supreme Court harmonised the aspects
    - Fly-in, fly-out advice was fine, but permanent offices were not.
    - Foreign law firms that wanted to open offices in India were left standing at the wedge, which then gradually led to a waning of their interests.
- Many critics called the Indian approach narrow.
- In truth, it was really about timing.
- The worry was never that Indian lawyers lacked ability.
    - **For example**, Sir Benegal Rau, or Fali Nariman, or Soli Sorabjee's, advocacy travelled well beyond Indian courts.
- Rather, the concern was that domestic firms would be muscled out by foreign law firms.

How Does the Scenario changed?

- **Enlarged staff** – Indian law firms hitherto manned by 15-20 lawyers, have over 1,000 lawyers with significant global exposure.
- **Increased expertise** – The top-notch know-how, allows Indian law firms to grow even further.
- **Indigenous growth** – Commendable in this growth has also been the fact that unlike many other sectors in India which grew because of the introduction of foreign direct investment, the Indian legal profession grew organically, with little or no outside support.
- **Foreign presence** – Today, Indian law firms have offices abroad, and Indian lawyers are often dually or triply qualified, practising across jurisdictions and climbing to the very top of their fields.
- **A powerful push** – It is against this backdrop that the Bar Council of India's 2025 Rules for Registration and Regulation of Foreign Lawyers and Law Firms can be seen as the first formal step towards providing new impetus to the growth of the Indian legal profession.
- This comes on the heels of the Bar Council's first substantive acknowledgement in 2023, indicating that the Bar was open to allowing foreign lawyers to practise foreign and international law in India.
- The 2025 amendments give a framework.

What are the challenges?

- **Compliance burden** – The framework bristles with compliance obligations, be it registrations, ministry certifications, annual filings or the 60-day cap on unregistered "fly-in" work.
- While these may feel like red tape, they ensure foreign expertise complements rather than eclipses the domestic profession.
- Concerns about such requirements deterring entrants remain, and indeed, it is better to air these now than after the floodgates open.
- **Legal limitations** – Foreign firms may only set up shop in India if Indian lawyers are given the same rights in the foreign jurisdiction.
- They are not permitted to practise Indian law or appear in Indian courts unless enrolled.

- Reciprocity remains the lodestar of the new framework.
- Foreign firms can advise on their home-country law, international law, and appear in international arbitrations seated in India.

What lies ahead?

- Far from a bland compromise, this is Aristotle's Golden Mean — neither reckless liberalisation nor defensive insularity.
- As Rabindranath Tagore once said, "everything comes to us that belongs to us if we create the capacity to receive it, India, slowly and deliberately, is creating that capacity.
- As that capacity builds, so will the consequences.
- As Abraham Lincoln put it, "I walk slowly, but I never walk backward."
- That has been India's legal journey: cautious, deliberate, but steadily moving forward.
- The Indian legal profession and domestic law firms are set to become a world players, a testament of which was played out through September.

8. INTERNATIONAL RELATIONS

8.1 UNSC Resolution 1325

Recently, at the United Nations headquarters in New York on October 6, 2025, UN Women Executive Director Sima Bahous urged member states to turn the 25th anniversary of Security Council Resolution 1325 on Women, Peace and Security into a turning point rather than a commemoration.

What is UNSC resolution 1325?

- **Adopted on** – The Security Council adopted the resolution 1325 on *women and peace and security on 31 October 2000*.
- **Purpose –** The resolution reaffirms the important role of women in the prevention and resolution of conflicts, peace negotiations, peace-building, peacekeeping, humanitarian response and in post-conflict reconstruction.
- **Participation and gender perspective** – It stresses the importance of their equal participation and full involvement in all efforts for the maintenance and promotion of peace and security.
- It urges all actors to increase the participation of women and incorporate gender perspectives in all United Nations peace and security efforts.
- **Ending gender-based violence** – It also calls on all parties to conflict to take special measures to protect women and girls from gender-based violence, particularly rape and other forms of sexual abuse, in situations of armed conflict.
- **Functional mandates** – The resolution provides a number of important operational mandates, with implications for Member States and the entities of the United Nations system.
- **25th Anniversary** – The year 2025 marks the 25th anniversary of the adoption of the reolution.
- It is a ground-breaking resolution that was spearheaded by women leaders and organizations.

What were the common issues faced by women?

- **Marginalization** – Women remain predominantly in the periphery of formal peace processes, even in instances where they have been signatories to peace agreements, such as in South Sudan and the Central African Republic.
- **Undermining gender equality** – The world was witnessing rising military spending and renewed pushback against gender equality and multilateralism, undermining the foundations of peace and security.

- Today, 676 million women and girls live within reach of deadly conflict, the highest number since the 1990s.

- **Weak progress** –The progress has been uneven, marked by "bold commitments followed too often by weak implementation and chronic under-investment.
- Referring to ongoing wars and crises, she cited the plight of women in Gaza, Afghanistan, Sudan, and Haiti.
- **Numerous challenges** – There is a stark global trend that are worsening conditions for women and girls
    - Shrinking education opportunities
    - Collapsing health systems
    - Reduced humanitarian funding.
- **For instance**, Short-sighted funding cuts, are already depriving Afghan girls of schooling and limiting life-saving care for survivors of sexual violence in Sudan, Mali, Somalia, Haiti and elsewhere.

What are the impressive role played by women?

- **Peacebuilding** – Despite deepening crises, women continue to lead peacebuilding efforts around the world and at regional, national and community level.
- Under women's leadership local conflicts in Abyei and the Central African Republic are being mediated.
- **Leadership** – Significant political leadership had taken place in in Haiti, Chad and Syria and gender-responsive budgeting is taking place in Ukraine.
- **Conflict resolution** – Women leaders across diverse networks and organizations continue to lead conflict resolution.
- **Political participation** – They conduct political advocacy to realize their full participation in peace and political processes.

What are the things need to be done?

- **Investment** – There is a need for "significant investment" in women-led organisations on the frontlines of conflict.
- **Cultural changes** – The normalisation of misogyny which is currently poisoning our politics and fuelling conflict must be ended.
- **Addressing various challenges** – In the coming years, the women, and peace and security agenda must expand to address emerging threats.
- These threats include online gender-based violence, and must have a clear accountability measures for states and institutions that fail to act.
- **A welcoming move** – Bahous welcomed what she described as "*positive responses"* to United States President Donald Trump's proposal for a ceasefire in Gaza.
- She called for a just and lasting peace for Palestinians and Israelis alike, where all women and girls live with dignity, security and opportunity.
- **5 calls to action** – Bahous highlighted the calls to action
    - *Ensure affirmative action* for women's participation in peace processes and leadership roles.
    - *Measure progress by women's direct involvement in peace* and security decisions and their access to justice and reparations.
    - *End all forms of violence* against women and girls, including technology-facilitated abuse.
    - *End impunity for crimes against women* and uphold international law.
    - *Embed the women, peace and security agenda* among young people to sustain it for the future.

What lies ahead?

- Resolution 1325 was a landmark promise but remains only partially fulfilled.
- When women lead, peace follows and it is high tme to deliver the promise which was made 25 years ago.

8.2 India - UK Carrier Strike Group (CSG) – Exercise Konkan

Recently, U.K. and India launch historic first ever Carrier Strike Group Exercise Konkan, a maritime drill off the Western coast of India.

What needs to be known about Exercise Konkan?

- **First held in –** 2004, Exercise Konkan is a biennial (every 2 years) engagement.
- **Duration & location –** The exercise took place from October 5–12, 2025, off India's western coast.
- **Aim –** To enhance combined maritime and air capabilities between the UK and Indian navies on the high seas.
- **First ever exercise –** The 2025 edition of Exercise Konkan, marks the first-ever exercise involving the ***Carrier Strike Group (CSG)*** of both nations - the U.K.'s HMS Prince of Wales and India's INS Vikrant.
- Exercise Konkan 2025 will serve as a platform to consolidate strategic ties, enhance interoperability and contribute to regional maritime stability.

> ***Carriers*** *in naval context, are warships that can serve as airbases, too. The Indian Navy's* ***1st aircraft carrier*** *was HMS Hercules, acquired from the United Kingdom in 1961 and renamed INS Vikrant. It was decommissioned in 1997.*

- **Post-exercise integration –** After Exercise Konkan concluded, UK CSG 25 participated in a joint exercise with the Indian Air Force on October 14, further integrating naval and air capabilities.

What are the phases of the exercise?

- **2 phases** – The exercise is being conducted in two phases – Sea phase and Harbour phase.
- **Sea phase –** Includes maritime operational drills focusing on anti-air, anti-surface, and anti-submarine exercises, flying operations and other seamanship evolutions.
- Both participating nations deployed frontline assets, including aircraft carriers, destroyers, frigates (a type of warship), submarines, and integral and shore-based air assets.
- **Harbour phase –** Includes professional interactions between naval personnel, cross-deck visits, sports fixtures, and cultural engagements.
- Additionally, Joint Working Group meetings and Subject Matter Expert Exchanges are also scheduled.

What is the significance of Exercise Konkan?

- **Indo-Pacific as focus –** This exercise underlines the growing strategic alignment between the two countries in safeguarding the crucial Indo-Pacific region.
- **Enhances interoperability –** The drills help the navies operate more effectively together and improve combined maritime and air capabilities.
- **Boosts maritime security –** The exercise showcases combined naval strength and contributes to regional maritime stability.
- **Deepening defence ties –** This exercise highlights by deepening defence ties while showcasing British trade and industry and the strong "living bridge" of people and culture between the U.K. and India.

> *The* ***India-UK Vision 2035*** *is a comprehensive strategic roadmap launched in July 2025 to elevate bilateral ties across 5 key pillars - Growth, Technology, Defence, Climate, and Education.*

- **Strengthens ties –** It reaffirms the two nations' commitment to a free, open, and free sea, in line with the "India-UK Vision 2035" comprehensive strategic partnership.
- **Focal role of CSG –** This CSG operation play a focal role in projecting power, ensuring sea control, and addressing evolving blue-water (open sea) security challenges such as maritime domain awareness, deterrence, and freedom of navigation.

> ***Operation Highmast*** *– An 8-month multinational deployment led by the UK CSG to the Indo-Pacific region in 2025; to strengthen alliances, promote maritime security in the region.*

- The two navies operating together point to not just operational synergy, but also commitment to a rules-based maritime order amid rising geopolitical tensions in the region.
- **Global deployment –** The UK CSG's participation was part of its wider, eight-month-long "Operation Highmast" deployment.

Quick Fact

Other Joint Exercises Between India and the UK	
Ajeya Warrior	• It is the joint army-level training with an emphasis on counter-terrorism operations and sharing expertise in various military operations.

Indradhanush	• It is the joint Air force exercise to build interoperability.
Cobra Warrior	• A multinational air exercise in which the Indian Air Force has participated

8.3 Reducing Global Oil Prices – Causes and Impacts on India

Recently there has been a declining trend in the demand and price of the global crude oil.

What is crude oil?

- **Crude oil** – It is a naturally occurring, fossil fuel mixture of hydrocarbons found in underground reservoirs that must be refined into usable products like gasoline, diesel, and jet fuel.
- **Formation** – It is formed from the remains of ancient marine organisms, it is transformed over millions of years by intense heat and pressure.
- **Composition** – It is a complex mix of hydrocarbons, with impurities like sulfur, and sometimes metals or other compounds.
- **Appearance** – It appears as a black, brown, or amber liquid, or sometimes as a thick tar-like substance.
- **Physical properties** - Crude oil can be classified by its density (light, heavy, etc.) and its sulfur content (sweet or sour).
- **Usage and importance** – Crude oil itself has limited use.
- It must be refined, where its long molecules are broken down into smaller, more valuable ones to produce products like gasoline, diesel, and jet fuel.
- **Products** – Beyond fuel, crude oil is used to make plastics, lubricants, cosmetics, and asphalt for roads.
- **Economic importance** – Crude oil remains a dominant global energy source, and its price and availability are major factors in the world economy.
- Crude is the world's most valued commodity, with over 100 million barrels per day (mbpd) produced, nearly half of which is traded globally.
- Depending upon the prevailing unit price, the daily global crude trade currently tops $3 billion.
- Thus, crude is not only a vital input for transport and petrochemicals, it is also a financial lubricant.

What are the consumption trends of crude oil?

- **Impacts of new technologies** – From the supply side, new technological disruptions such as shale, horizontal drilling, and ultra-deep continental shelf drilling have greatly enhanced production.
- Over the past two decades, technology and economics have had a profound and largely bearish impact on the oil market.
- On the other hand, global demand seems to be approaching a peak.
- **Changes in global demand** – There is a relatively robust growth in crude consumption continues in the Global South from a low base.
- But the consumption of fossil fuels has been stagnant in the industrialised countries due to factors such as an anaemic post-COVID-19 economic recovery, climatic concerns and the growing popularity of electric vehicles (EVs).
    - **For example**, in 2025, the global crude demand is expected to grow by 1.3 mbpd or 1.2%, with only a tenth of that coming from the 38 countries of the Organisation for Economic Co-operation and Development (OECD) with 46% of the world's GDP.
- **Impact of EVs** – The consumption in China, the world's largest importer, has been curbed largely by an economic slowdown and by the growth of EVs, which now account for half of the vehicles sold.
- **Increased production** – On the other hand, production of crude has surged by 5.6 mbpd last month over last year, with 3.1 mbpd coming from the OPEC+ (as it unwound COVID-19-era production cuts) and the rest mainly from higher production from (in order of their growth) the U.S., Canada, Brazil, Guyana and Argentina.

> ***Brent crude*** *is a major global benchmark for oil prices, referring to a type of sweet, light crude oil extracted from the North Sea.*

- **Decline in prices** – The Brent oil prices, currently at $61 a barrel, have declined by 16% since the beginning of the year, with nearly half of that fall coming over the last month.
- The drop would have been even steeper but for the consumers leveraging the low prices to replenish their strategic petroleum reserves, and the producers hoarding over 100 million barrels of unsold crude on tankers on high seas.

What are the Global events that disrupts the supply?

- **Geopolitical tensions** – The decline is despite geopolitical disruptions such as the China-U.S. tariff war and concerted Ukrainian drone attacks on Russian hydrocarbon infrastructure.
- **Increased surplus** – The looming supply surplus has affected the inner dynamics of the OPEC+ group of producers.
- Saudi Arabia, the leading exporter, wants to quickly unwind the remaining production cuts to regain its market share and reverse the revenue shortfall.
- Russia, under severe crude exports sanctions, favours a more gradual course.
- **Opposing views of OPEC and IEA** – OPEC and the International Energy Agency (IEA), in their respective monthly reports in mid-October, reached diametrically opposite conclusions.
    - OPEC sees the global supplies in 2026 being some 50,000-bpd short of the demand.
    - IEA projects an unprecedented projection of 4 mbpd.
- The majority of other think-tanks largely agree with the IEA projection and predict an oversupplied market next year, with Brent prices declining to the low fifties per barrel, a further 10% to 20% fall from their current level.
- **Geopolitical developments** – Technicals apart, the proverbially slippery oil market can also be affected by several geopolitical developments, including the end of sanctions on Russia, Iran and Venezuela, resumed West Asian tensions and the de-escalation of the Trumpian tariff wars.

The International Monetary Fund's World Economic Outlook (WEO) *released on October 16, describes the global economy as "in Flux, Prospects Remain Dim", predicting a marginal slowdown of the global economic growth rates to 3.2% in 2025 and 3.1% in 2026, with risks to the downside.*

- Further, it sees world trade growth come down to 2.9% in 2025-26, significantly slower than the 3.5% in 2024.
- Most of these factors tilt towards downside risk to the oil prices.

What are the outlook for India?

- **A net positive impact** – The simultaneous decline in both oil price and the U.S. dollar it is priced in is likely to have a net positive impact on India.
- India's oil imports in 2024-25 were $137 billion, and a dollar's decline in oil prices improves its current account deficit by $1.6 billion.
- **Reduces subsidy burden** – It also reduces the subsidy burden and inflation. With the government keeping most of the gains from lower prices, the fiscal balance improves, boosting capital expenditure and giving a tailwind to growth.
- **Lessens the dependence** – The oil glut may also reduce the reliance on discounted Russian crude, thus removing the underlying cause for the tariff frictions with the U.S.

What lies ahead?

- On the flip side, the remittances, exports and investments may stagnate as the West Asian economies attenuate.
- However, given the highly cyclical nature of the global oil market, any relief may be short-lived. India would be well advised to keep its consumption mitigation strategies on course.

8.4 China and India – Leaders of Better Global Governance

The year 2025 marks the 75th anniversary of diplomatic ties between China and India.

What are the more recent achievements and the interactions between the two leaders?

- **A decade of interaction** – China's President Xi Jinping and India's Prime Minister Narendra Modi, have met 18 times, from 2014 to 2024.
- **2014** – When the year 2014 was declared as the Year of China-India Friendly Exchanges, Mr. Xi paid a state visit to India in September and made a trip to Ahmedabad, the home town of Mr. Modi.
- China and India issued a Joint Statement on Building an Even Closer Partnership for Development.
- **2015** – In May 2015, Mr. Modi made his first visit to China, and Mr. Xi received him in Xi'an, Mr. Xi's home town.
- **From 2016 to 2019** - The two leaders met multiple times each year on the occasions of the BRICS summit, the G-20 summit, and the Shanghai Cooperation Organization (SCO) summit.
- **Post covid** – Affected by the COVID-19 pandemic, the next few years saw the two leaders exchange greetings and messages through letters and in telephone conversations.
- With the resumption of face-to-face meetings, Mr. Xi held talks with Mr. Modi on the sidelines of the BRICS summit in Johannesburg in August 2023.
- **2024** – The two leaders held a bilateral meeting on the sidelines of the 16th BRICS summit in Kazan, reaching important understandings on improving and growing China-India relations.

How would India-China relations impact the world?

- **A milestone for UN –** This year marks the 80th anniversary of the founding of the United Nations, following the victory of the world anti-fascist war.
- India-China relations could serve as an example for other nations in in UN.
- **Strengthen multilateralism** – Todays world is faced with harmful "isms" such as unilateralism, protectionism, isolationism, separatism, terrorism, extremism and hegemonism.
- There is a need to build the kind of multilateralism, to reform and improve our global governance.
- **Anticipated SCO summit** – The 25th SCO Summit in Tianjin and the 19th in-person Xi-Modi meeting during the summit have been highly anticipated.
- It expected to shed some light on subjects such as bilateral relations, global governance and the future of humanity.
- **Partners, not rivals –** Mr. Xi and Mr. Modi are two leaders who have shown vision and wisdom in their friendly interactions.
- With the West rapidly losing its dominance in global affairs in the irreversible trend of multipolarity and multilateralism more significantly, due to the growing importance of Asia and Eurasia.
- **Emphasis by Mr. Xi** – He has emphasised that China and India shoulder the crucial responsibility of improving the well-being of the two peoples, promoting solidarity and rejuvenation of developing countries, and advancing the progress of human society.
- China and India should be good neighbours and partners who help each other succeed.
- **4 points of suggestion made by Mr.Xi** — China and India should
    - Strengthen strategic communication and deepen mutual trust;
    - Expand exchanges and cooperation to achieve mutual benefit and win-win;
    - Accommodate each other's concerns and get along in peace and harmony,
    - Strengthen multilateral coordination to safeguard our shared interests.
- **Reverberation by Mr. Modi** – He echoed Mr. Xi in this by saying that the India-China relationship is back on a positive trajectory.
- He said that peace and stability in the border regions have been maintained, and that direct flights were to resume.
- Such progress benefits not only the peoples of India and China but also the whole world.
- Their consensus far outweighs their disagreement.

What are the five basic principles highlighted at the GCI summit?

- **Stay committed to sovereign equality** – All countries, regardless of size, strength or wealth, shall have their sovereignty and dignity respected.

- Their domestic affairs should be free from external interference, the right to independently choose their social system and development path, and the right to participate in, make decisions in and benefit from the global governance process as equals.
- Greater democracy should be promoted in international relations to make the global governance system better reflect the interests and the aspirations of the majority of countries, especially the developing countries.
- **Stay committed to international rule of law** – The purposes and principles of the UN Charter are universally recognised basic norms of international relations and must be upheld unwaveringly.
- International law and rules must be applied, equally and uniformly, without any double standards or imposition.
- Major countries must take the lead in advocating and defending international rule of law.
- **Stay committed to multilateralism** – Global affairs should be decided by all, the governance system built by all, and the fruits of governance shared by all.
- The UN is the core platform for practising multilateralism and advancing global governance, whose role must be enhanced, not weakened.
- **Stay committed to the people-centered approach** – The people of all nations are the fundamental actors in global governance, and their well-being its ultimate benefit.
- It must seek improvement through reforms in order to inspire
    - A greater sense of fulfilment through accelerated common development.
    - A greater sense of safety through more effective response to humanity's common challenges,
    - A greater sense of well-being through advancing the common interests of different countries and communities.
- **Stay committed to real results** – Effective global governance is essentially one that resolves real problems.
- It must address both the root causes and symptoms to find sustainable solutions.
- Developed countries should earnestly take on their responsibilities and provide more resources and public goods, while developing countries should pull together for strength and do their best for the world.

What lies ahead?

- The GGI is another major initiative and public good offered by China.
- With the aim of addressing the deficit of global governance, the GGI stems from the purposes and principles of the UN Charter, and responds to the shared aspiration of most countries.
- To reform and improve global governance does not mean overturning the existing international order or to create another framework outside the current international system.
- Rather, the goal is to make the existing international system and institutions better in taking action, working effectively, adapting to changes, responding promptly and effectively to various global challenges, and serving the interests of all countries.
- As key members of the SCO and BRICS, China and India should step up to shoulder their responsibility in improving global governance, upholding multilateralism, strengthening communication and coordination on major international and regional issues, and in defending international fairness and justice.
- They should follow the strategic guidance of their two leaders, bearing in mind the importance of the larger picture and long-term view, taking on the responsibility of improving the well-being of their peoples, and in promoting the solidarity and the rejuvenation of developing countries.
- India-China cooperation will make the 21st century a genuine Asian century, and the two sides joining hands will increase the strength of multilateralism in international affairs.

9. ECONOMY

9.1 GST Reforms 2025 – Gains for Manipur's Economy

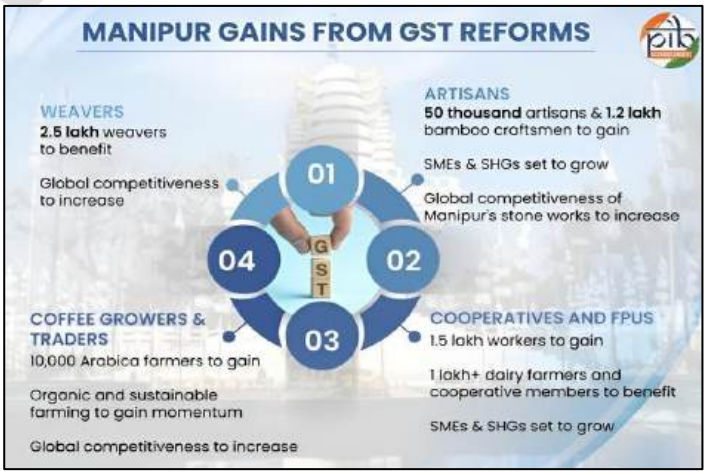
The new GST reforms are expected to drive inclusive growth and improving the ease of doing business for all, including small traders and businessmen and Manipur will get a lot of gains.

What is the status of economy of Manipur?

- **Gross State Domestic Product (GSDP)** – It was estimated at ₹37,761 crore for 2021-22, with an expected rise to ₹60,112 crore in 2025-26.
- **Economic base** – The state's economy is primarily based on agriculture, forest products, tourism, and other industries.
- **Economic Base –** The economy relies heavily on agriculture, with rice as a major crop, along with forest products, mining, industries, and tourism
- It is rooted in small-scale industries, traditional crafts, and agro-based livelihoods, stands to gain significantly from these changes.

What are the sectors benefitted?

- **Arabica Coffee** – The reduction in GST on packaged coffee from 18% to 5% brings substantial relief across Manipur's coffee industry.
- Districts such as Ukhrul, Senapati, and Chandel are important hubs for coffee cultivation, particularly for high-quality Arabica varieties.
- Around 10,000 farmers are engaged in coffee cultivation.
- The sector generates additional employment in processing, packaging, and distribution networks that support the value chain.
- The revised rates will reduce costs for both consumers and producers, improving affordability and stimulating demand.
- It is also expected to boost profitability and strengthen competitiveness across domestic and export markets.
- Moreover, the reforms encourage the adoption of organic and sustainable farming practices.
- **Bamboo and Cane Crafts** – Manipur's bamboo and cane crafts are traditionally made by skilled communities in Churachandpur, Ukhrul, and Tamenglong.
- With approximately 1.2 lakh artisans, the sector provides supplementary income to rural households.
- The reduction of GST from 12% to 5% on furniture, baskets, mats, and other wooden crafts, will directly lower product prices and stimulate demand in both urban and rural markets.
- The reforms also strengthen SMEs and SHGs in the craft sector.
- **Handloom Textiles** – Handloom textiles such as *Phanek, Innaphi,* and *Rani* are primarily crafted by women artisans from regional communities across Imphal, Thoubal, Bishnupur, and Senapati.
- These crafts not only sustain traditional weaving practices but also provide steady income to approximately 2.5 lakh weavers.
- The reduction of GST from 12% to 5% on handloom woven fabrics is expected to directly improve affordability for consumers while increasing market competitiveness for artisans.
- The reforms will enhance the global appeal of Manipur's handloom products and also help preserve Manipur's traditional weaving techniques.
- **Stone Carving and Sculpture** – Imphal, Churachandpur, and Ukhrul are central to communities renowned for their skill in stone carving and sculpture.
- Around 50,000 artisans are engaged in this traditional craft.
- The reduction in GST from 12% to 5% on ceramic tableware significantly lowers the cost of raw materials and finished goods.



- This tax relief improves affordability and global competitiveness of Manipur's stone products.
- The reforms also support the preservation and promotion of traditional carving techniques, ensuring that the state's rich artisanal heritage continues to thrive.
- **Processed Foods** – Concentrated in Imphal, Senapati, and Chandel districts, Manipur's processed food industry is driven by numerous small and medium enterprises (SMEs) and self-help groups (SHGs).
- With around 1.5 lakh workers employed in food processing units, the sector sees significant participation from rural women in production and packaging.
- The reduction of GST from 12% to 5% on processed food items such as pickles, bamboo shoots, fermented foods, vegetable preparations, etc., is a major boost for producers and consumers alike.
- Lower tax rates reduce product prices, increasing affordability and market reach.
- **Dairy Products** – In Imphal, Thoubal, and Bishnupur districts, dairy farming is largely managed by small-scale rural and tribal communities, employing 1 lakh+ dairy farmers and cooperative members.
- The GST reduction to Nil/ 5% on ghee, butter, paneer and cheese offers significant relief to consumers by making essential dairy products more affordable.
- The revised rates are also expected to lower production costs.
- This will improve profit margins for farmers and cooperatives, enhancing their competitiveness in both domestic and export markets.

What are the key takeaways?

- 5% GST boosts Manipur's handloom affordability and global appeal; 2.5 lakh weavers to benefit
- 1.2 lakh artisans gain from cheaper crafts; SHGs & SMEs expected to grow under 5% GST
- 1.5 lakh workers in food processing see higher demand and better incomes with reduced GST
- From 1 lakh+ dairy producers to 10,000 coffee growers, lower GST to improve profits and market reach

What lies ahead?

- The revised GST rates mark a significant step toward economic reforms across India.
- By easing the tax burden on essential and value-added sectors, these changes are set to boost production, affordability, and market competitiveness.
- For smaller yet high-potential states like Manipur, the impact is especially meaningful, empowering local farmers, artisans, and entrepreneurs.
- Together, these reforms support a balanced and inclusive growth, empowering India's Northeastern states to contribute more strongly to the nation's economy.

AGRICULTURE

9.2 Employability of Women in Agriculture

Even though more women are getting involved in the agriculture sector, which is the largest employer of women, about half of them work without pay.

What is the Status of Agriculture sector in India?

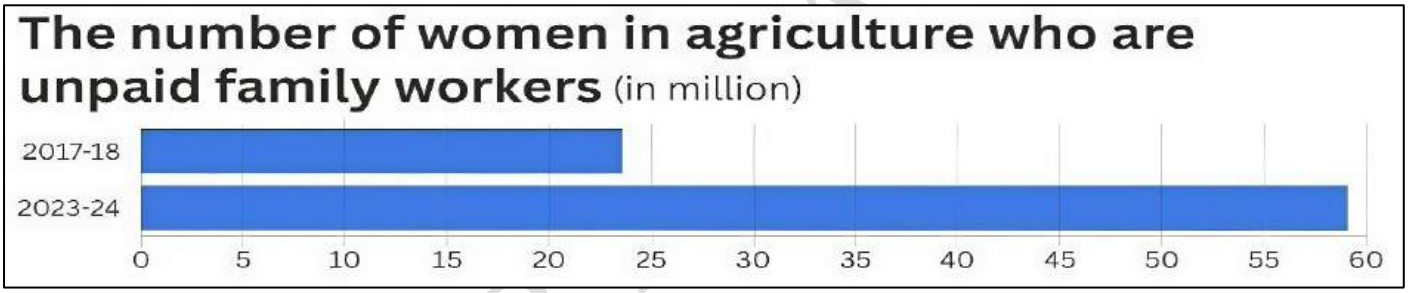
- **Global leadership –** India is a global leader in agriculture, ranking as a top producer of milk, pulses, spices, fruits, vegetables, and sugarcane.
- It also has the world's largest area under wheat, rice, and cotton.
- **Robust growth –** In 2025, India's agricultural sector is showing strong growth, marked by a global-record *3.7% growth* in Q1, robust export performance, and increased foodgrain production.
- **Increased production –** Foodgrain production saw a strong rise, growing to an estimated 347.44 million tonnes in 2024–25.
- **Strong exports –** Agricultural exports continued to surge, with exports in the first quarter of 2025-26 *rising by 5.8%* year-on-year.

> *As per the **2011 Census**, around 80% of rural women are engaged in agriculture, with 3.6 crore women farmers and 6.15 crore women agricultural labourers.*

- **Employment –** Women's employment in agriculture surged by 135%, and they now account for over *42% of the sector's workforce*.
- According to Periodic Labour Force Survey (PLFS) 2024, *2 out of every 3 working women are now in agriculture.*

What challenges do women encounter in the agriculture sector?

- **Lack of recognition –** Women are not officially recognised as farmers as opposed to their male counterpart.
- **Fluctuating role of women –** With growing rural to urban migration by men due to climate stress, shrinking farm returns, and industrial employment, *women are stepping in to manage farms, livestock, and household food systems*.
- **Diverse roles –** There is increasing number of women in multiple roles as cultivators, entrepreneurs, labourers and managers of allied agricultural activities such as dairy, horticulture, and forestry.
- **Feminization of agriculture –** The rise in women's participation in the agricultural labor force is referred to as the feminization of agriculture.
- **Land holdings –** Women own only 13-14% of land holdings, and earn 20-30% less than men for equivalent work.
- **Unpaid family works –** Despite women's growing presence on farms, their contributions remain systematically unremunerative.
- Nearly half of the women in agriculture are unpaid family workers, with their *numbers jumping 2.5 times* from 23.6 million to 59.1 million in just 8 years (Today, 1 in 3 working women in India is unpaid).
- States like Bihar and Uttar Pradesh, more than 80% of women workers are in agriculture, and over half of them receive no wages.



- **Reinforcing inequities –** Feminisation of agriculture reinforced inequities rather than enabling women's economic empowerment.
- Women's greater participation has not translated into higher income for the economy, as agriculture's share of the national GVA fell from 15.3% in 2017-18 to 14.4% in 2024-25.
- **Lack of Resources –** Women often lack equal access to resources, training, technology, and financial support compared to men.
- **Gender wage gap –** Women agricultural laborers are routinely paid less than men for the same work.
- **Structural barriers –** Such as low digital literacy, language gaps, and limited access to affordable devices.

What are some measures to enhance women's employment in agriculture?

- **Collective action –** Tackling these challenges requires collective action by all ecosystem actors — government, private sector, NGOs, self-help groups, and Farmer Producer Organisations (FPOs).
- **Shift in trend –** Global trade trends are opening new windows for women's economic inclusion in agriculture.

*United Nations General Assembly – Declared 2026 as the **International Year of the Woman Farmer**.*

- It will enable women to move from unpaid, low-value tasks into higher-margin segments like processing, packaging, branding, and exporting.
- **Free Trade Agreement (FTA) –** If FTA-embedded provisions for women, such as training, credit access, and market linkages, are catalysed, it could enable women's transition from farm labourers to income-generating entrepreneurs.
- **Export-led opportunities –** With the rising global demand for organic products and superfoods, India's value chains are poised for expansion — sectors where women are already strongly represented.

- **Shift to premium products –** Geographical Indications, branding initiatives, and support for meeting export standards can help women producers shift from subsistence farming toward premium, value-added product markets.
- **Digital innovations –** It can play a decisive role in bridging the gap and helps to formalise women's labour while expanding access to schemes, credit, and fair pricing.
    - **For examples** – e-NAM, mobile-based services, voice-assisted applications, and precision agriculture tools.

*The **India-U.K. Free Trade Agreement (FTA)** will boost Indian agricultural exports by 20% within three years, granting duty-free access to over 95% of agricultural and processed food products.*

- **AI-enabled solutions –** BHASHINI platform and Microsoft–AI4Bharat's Jugalbandi are extending multilingual, voice-first access to government services.
- L&T Finance's Digital Sakhi programme has trained rural women in digital and financial literacy across seven States.
- **State level initiatives –** Odisha's Swayam Sampurna FPOs, Jhalawari Mahila Kisan Producer Company in Rajasthan, training programs for women farmers in Assam's tea sector, etc are help in leverage the position women farmers at the forefront of export competitiveness.

What lies ahead?

- To transform women's role in agriculture, land and labour reforms are equally vital.
- Policies must recognise women as independent farmers by promoting joint or individual land ownership, which in turn strengthens their eligibility for credit, insurance, and institutional support.

9.3 The employability Crisis – Need for Academia and Industry Collaboration

Recently India is seeing a large number of jobless graduates and there is an urgent need for collaboration between academia and industry to enhance graduate employability and bridge the skills gap.

What is the issue of employability in India?

- **Jobless graduates** – A joint ILO and IHD report indicated a *29.1% jobless rate for graduates.*
- Many well-qualified students struggle to find roles that match both their expectations and their training.
    - **For instance,** in India, only about *42.6% of graduates are considered employable.*
- **Issue** – The academia and the industries in India work in Silos which leads to large skill and employability gaps.
- If academia and industry continue to run on separate tracks, the young professionals often end up stalled at the starting line.
- **Employability** – It is the set of skills, qualities, and achievements that make an individual more likely to get a job and be successful in their career.
- It means graduates have the knowledge, skills, and mindset to succeed in a challenging and evolving world.

What are the several elements that contribute to this gap?

- **Outdated curriculum** – Many higher education institutions still teach as though the workplace has stood still in the pre-covid era.
- The pace at which mindsets, technology, business models have transformed, education curriculum and methodologies have not.
- **Theory based learning** – Our institutions are still focusing on theories, longer lectures, same old standardised assessments, with limited industry exposure leaving students unprepared for practical challenges.
- **Insufficient soft-skill training** – Technical skill set is there in the books and class rooms but the real challenge is to prepare young professionals with soft skills as they often struggle with communication, stakeholder management, teamwork, and adaptability.
- **Faculty and infrastructure limitations** – We have progressed a lot in terms of AI, automation, so to cope up with today's market place, faculty may lack new age industry experience; labs and practical environments are often inadequate.
- **Challenges from the industrial side** – Employers expect "job-ready" graduates but often find new hires require extensive hand holding, mentoring and guidance.

- The rapid pace of technological and organisational change means that yesterday's knowledge isn't enough for today's workplace.
- Industry frequently views academia as detached, while simultaneously underinvesting in bridging that gap.

What academia can learn from industry?

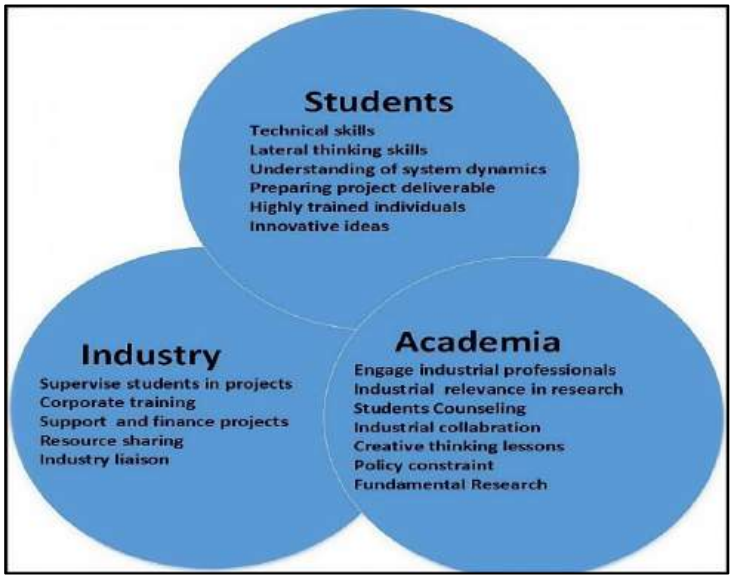
- **Bring real-world relevance into classrooms** – When students work on actual business problems, they learn to think critically, communicate effectively, and apply theory with context.
- **Focus on adaptability, not just academic achievement –** Being able to pick up new tools, collaborate across functions, and handle ambiguity defines success today.
- Classrooms should mirror the unpredictability of workplaces. Interdisciplinary group projects, simulations, and reflective exercises can build this agility.
- **Build continuous feedback loops** – Professors need to spend time in business environments in the form of short sabbaticals, internships, or as consultants. This immersion allows teachers to refresh content and return to campus with new industry knowledge.
- **Provide substantive internships and experiential learning** – An internship isn't a check-off formality.
- When designed carefully with mentors, project objectives, and reflection periods, it boosts students' job preparedness.
- **Enable placement cells as bridges to careers** – Placement centers need to transition from employment boards to career bridges monitoring student performance after placement, continually monitoring industry trends, and adjusting training programs in response.

What industries can learn from academia?

- **Space for development** – Firms usually seek "ready-made" employees, but each new candidate needs the room to develop.
- **Substantial investment** – Investing in early-career mentoring, systematic onboarding, and rotational assignments builds loyalty and resilience.
- Industry has the pulse of the type of skills that matter today and what will matter tomorrow.
- **Support** – By co-designing courses, leading projects, and supporting faculty development, businesses can shape graduates who are prepared and relevant.
- **Partnership** – Organisations can partner with institutions to establish learning ecosystems with sponsored laboratories, innovation competitions, and workshops can initiate early interaction and mutual trust.
- When business, recruitment, and training teams operate in silos, organisations lose actionable information.
- **Feedback** – The feedback loop among them ensures continuous learning for the company and for the colleges that provide it.

What are the ways that academia and industry can collaborate meaningfully?

- **Joint curriculum reviews** – Organize biannual workshops where universities and employers examine current content and gaps.
- **Apprenticeship models** – Blend classroom study with hands-on projects.
- Undergraduate work-integrated programs provide students with valuable, paid experience.
- **Track outcomes, not just placements** – Universities should measure success beyond job offers by tracking how their alumni perform six or twelve months into work.
- **Regional collaborations** – Employability gaps are not uniform. Local partnerships between smaller colleges and nearby businesses can create context-specific training modules.



- **Modular and micro-learning opportunities** – Allow students to earn micro-credentials on specific job skills co-created by industry experts.

- **Soft-skill and mindset labs** – Jointly run communication, ethics, and problem-solving labs that focus on how to work with others, not just what to work on.

What lies ahead?

- If even half are not ready for work, the human, social, and economic cost is immense.
- When fresh graduates walk into organisations unprepared, it chips away at their confidence and wastes potential.
- When academia and industry work as partners, we don't just create employees, we create a force that will propel the economy into the next orbit, a set of professionals who understand purpose, culture, and contribution. That's the foundation of a sustainable workforce.
- A strong partnership also builds inclusivity.
- Academia brings depth, research, and rigour and Industry brings speed, relevance, and accountability.
- When these strengths intersect, learning becomes dynamic and employability stops being a checkbox and starts becoming a continuum.
- We don't need perfection today. We need progress.
- Let's start with one classroom, one internship, and one collaborative workshop at a time.

INDUSTRIES, INFRASTRUCTURE & INVESTMENTS

9.4 National Mission for Urban Roads – A Vital Need

Recently, India's urban roads have deteriorated rapidly over the last two decades, despite being critical infrastructure.

What is the status of road networks in India?

- **Total road network** – Over 6.6 million km as of December 2024, making it the second largest in the world.
- **National Highways –** Increased by 60% in the last decade, from 91,287 km in 2014 to over *146,000 km in 2024*.
- **Government initiatives** – The Pradhan Mantri Gram Sadak Yojana (PMGSY), launched in 2000 has connected 1.78 lakh settlements through more than 7 lakh km of new rural roads.
- Bharatmala Pariyojana have been central to the expansion of the highway network.
- **Urban roads –** They represent far more than mobility infrastructure.
- They could be a potentially systemic solution for public safety, women's participation in the workforce, public transport, clean air, walkability, public health, and flooding.
- **Elements for this achievement** – This success stems from the coming together of vision and leadership, dedicated funds from the union government, and specialist institutions which are the elements typical of national missions.
- **Need for National mission** – National missions could be a pathway for similar transformation in urban roads as well, as they deliver unified standards, coordinated funding, and institutional frameworks.
- States can adapt these to local contexts, mandate reforms, allocate funding, and strengthen the capacity of city governments in the design, implementation, and maintenance of urban roads.

What are the systematic gaps in urban road management in India?

- **Absence of mandatory standards** – India lacks mandatory standards for road design, execution and maintenance.
    - **For example**, there are no legally mandated guidelines on the width of footpaths, placement of signage, construction materials used, etc.
- Without these standards, the quality of urban roads depends on individual municipal engineers and contractors.
- Citizens experience the consequences of undefined standards every day as they navigate life on city roads
    - Disorganized underground utilities beneath roads rather than under footpaths
    - Substandard materials, non-uniform travel lanes
    - Unsafe pedestrian crossings

- Unscientific storm water drains
- Haphazard parking and street vending.

- **No mandate for designs** – The current practice does not mandate design drawings for roads.
- Urban roads today can be constructed without detailed design drawings, including Good for Construction (GFC) drawings that specify every aspect of on-site execution.
- Such drawings are not required as part of tenders either.
- Municipalities are also under no obligation to employ urban designers.
- It is unimaginable to construct a building without detailed architectural drawings, yet this is exactly how most of our urban roads are built.
- **Inefficient policies** – Procurement laws and policies undermine quality.
- The *prevalent least-cost (L1) tendering system* prioritises price over performance.
- Contracts are typically issued for short stretches of road, attracting small-scale contractors with limited skills.
- **Weak coordination** – Poor coordination between civic agencies results in roads being dug up repeatedly.
- **Lack of information system** – There is no information system for urban roads.
- No mechanism tracks and manages the lifecycle from design and contracting to execution and maintenance, including mapping of underground utilities.
- The result is poor coordination and accountability.

What is The Tender S.U.R.E. model of Bengaluru?

- **Tender S.U.R.E** – Bengaluru's Tender SURE (Specifications for Urban Roads Execution) offers a compelling model for urban road design.
- The important components includes
  - Uniform travel lanes
  - Continuous and even footpaths
  - Tactile pavers and ramps for improved accessibility
  - Organized underground utilities
  - Pipe-and-chamber stormwater drains.
- **Interagency coordination** – In addition to detailed design drawings for roads, Tender SURE also recommends interagency coordination through its integrated tender model.
- **Implementation** – Tender SURE has already been implemented across more than 500 km in 34 cities and 7 states, including 174 km in Bengaluru.
- 285 km in 17 cities under *Uttar Pradesh's CM GRIDS programme*, with an allocation of Rs 3,000 crores.
- **Results of the model** – A study of Tender SURE roads in Bengaluru revealed promising results as
  - 228% more pedestrians and 117%more women using urban roads
  - 55% rise in land value
  - Improved safety, driveability, and maintenance.

What are the measures to systemically fix urban roads in India?

- **Recognising the design gap** – municipalities must recognise the urban design gap, introduce positions for urban designers, and empower them to enforce road design standards.
- **Mandating the road design standards** — Standards such as Tender SURE, IRC 86 and 103, or Complete Streets must be legally mandated as the default for road building.
- **Updating of tender documents** – Model tender documents must include design specifications, bills of quantities, material standards, and digital GFC drawings.
- These should be adapted to different categories of cities and typologies of roads, while remaining flexible and responsive to local contexts.
- **Adopting a quality tendering system** – States must adopt a quality and cost-based system of tendering.

- The L1 system is irreparably damaging the quality of urban roads.
- **Improving mapping abilities** – Cities should emulate the *Gati Shakti model* of mapping subterranean utilities and ensuring inter-agency coordination.
- They should also explore the relevance and feasibility of Digital Public Goods for urban roads.
- **Imparting skills** – India must undertake large-scale, certification-based skilling programmes for municipal engineers and contractors.
- Skills on road design, execution, and maintenance, should be inculcated.

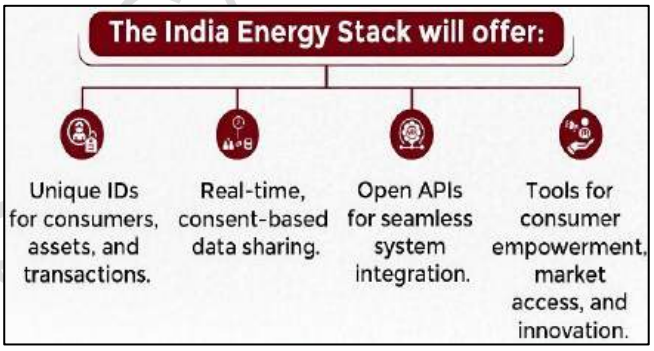
What lies ahead?

- A Pradhan Mantri Shahari Sadak Yojana that enables states and cities to adopt the six measures outlined above could transform India's 6 lakh km of urban roads (as per MoRTH 2020 estimates) in the next 10 years.
- Models such as Tender SURE. and CM GRIDS demonstrate that when clear standards and model tenders are in place, high-quality urban roads are not only possible, but replicable at scale.

9.5 India Energy Stack – Transforming the Power Sector

The power ministry is working with discoms, regulators, and technology companies to roll out the IES blueprint, which will ultimately be implemented nationwide.

What is the IES blueprint?



- **India Energy Stack (IES)** – It is a digital infrastructure blueprint for India's power sector, envisioned as a Digital Public Infrastructure (DPI).
- The ambitious initiative aims to integrate producers, distributors, and consumers into a connected data ecosystem for smarter energy management and consumer participation.
- **Goals** – It include integrating renewable energy, improving utility efficiency, and empowering consumers with better access to energy services.
- **Technologies used** – The IES will use features like unique digital IDs, *open APIs, and a Utility Intelligence Platform* to connect the entire electricity value chain and enable data-driven innovation.
- This is similar to Unified Payments Interface (UPI).
- **Developed by** – The IES initiative is being driven by a high-level task force mentored by Infosys co-founder Nandan Nilekani.
- **Chaired by** – RS Sharma, former Mission Director of Unique Identification Authority of India (UIDAI).

***An API, or Application Programming Interface**, is a set of rules and protocols that allows different software applications to communicate with each other.*
***A utility intelligence platform** is a data-driven application that collects, synthesizes, and analyzes data from a utility's various systems to provide real-time insights for smarter management.*

***Nandan Nilekani** helped to create foundational digital platforms like India Stack, which includes Aadhaar and UPI, and the Open Network for Digital Commerce (ONDC).*

- The, Utility Intelligence Platform (UIP), which is currently in the works, will cover the technology platforms of power utilities across states and is likely to be completed by 2026.

What are the benefits of this ambitious programme?

- **For Consumers** – It will also offer consumers unprecedented *access to a much wider market.*
- It also allows consumers at the retail level to get access to the market in new ways like
    - Ease of selling power through solar rooftops to other users in the grid
    - Trading excess power in the open market through aggregators

- Using real-time intelligence from their smart meters to manage time-of-day usage
- Access to modern billing applications.

- **Benefits for DISCOMS** – The national Utility Intelligence Platform (UIP) which is set to be commissioned within a year as a pilot under IES will offer following benefits
  - Allow development of data analytics tools for critical interventions
  - Revenue protection in high loss areas
  - Peer-to-peer energy trading
  - Outage management, among others.
  - Digital reform for a complex sector
- **Increases participants** – Given the overhaul of fundamental operations, the numbers are also set to increase exponentially.
  - **For instance**, the total number of participants at power exchanges, which is currently between 7,000 and 8,000, is projected to rise to millions once consumers start buying and selling power actively.
- **Market creation** – Creation of a larger market for generated electricity will be among the key application areas for IES.
- Whether through P2P trading or allowing consumers to bid on exchanges.

What is the need for India energy stack?

- **Changes in power system** – The Indian power system is going through a fundamental and drastic shift in terms of the flow of data and information.
  - **Conventional systems** - Power used to flow from power plants to consumers through transmission lines and distribution transformers.
  - **Current scenario** – Consumers are also producing their own solar power on rooftops.
- **Decentralization of production** – Power generation has been decentralised through schemes like PM-KUSUM, and smart devices like smart meters, SCADA systems, and electric vehicles have also been plugged into the system.
- **Management of changing landscape** – Managing this new and complex power system efficiently will necessitate efficient use of huge amounts of data that will come from multiple devices belonging to legacy systems.
- The IES, once it is ready, will add a data layer connecting these systems.

What are preconditions for the success of the IES?

- **Data requirements** – IES will require authentic and real-time data on location of devices and the direction of electricity flow, among other parameters, to ensure transactions are not disputed.
- **Addressing the demand patterns** – Major area of change is how the system reacts to demand patterns.
- Under IES, the intelligent grid will decode consumer behaviour to detect load changes.
- **Communication** – This will also require communicating electricity prices to the consumers in real-time.
- So that they can change their load patterns and benefit from low tariffs, while discoms get the information they need for load monitoring.
- **Responsibility on discoms** – Similarly, given the increasing complexity of power generation and supply sources, discoms will need to focus on demand forecasting, power procurement, and network expansion planning well in advance.
- **Grid operations** – They are another key area for IES, since transmission utilities and system operators will require modern systems to manage energy storage and battery devices on the grid, which will impact dispatch and scheduling.

What lies ahead?

- We need to prepare the Indian power system for the modern and complex applications that are currently already happening in the global power markets.
- For the power sector, this technological revamp under IES follows a spate of regulatory reforms implemented over the past few years which have already unclogged many of its traditional bottlenecks.

- The implementation of the Late Payment Surcharge (LPSC) Rules since 2022 has helped bring down discoms' losses, while the Electricity (Right of Consumers) Rules, 2020, provides for consumers to demand quality service from discoms.
- If successful, the IES pilot, the Utility Intelligence Platform, will pave the way for a major overhaul of the power sector, with the possibility of replicating key interventions across the entire energy spectrum.

9.6 India's Aviation Vision 2047

Recently there has been a steady increase in the air traffic in India.

What is the status of India's aviation sector?

- **3rd largest** – India has emerged as the world's third-largest domestic aviation market.
- In the last decade, India's skies have grown busier than ever
- **Airports** – The number of airports increased *from 74 in 2014 to 163 in 2025.*
- Meanwhile, as India celebrates hundred years of independence in 2047, the government's vision is to increase airports to *350-400* by then.
- **Contribution to growth** – The aviation sector is also one of the fastest-growing sectors in India's economy, *contributing through air transport services and indirectly through tourism, trade, logistics, and manufacturing.*
- According to the International Civil Aviation Organization (ICAO), investments in aviation have a strong ripple effect on the economy.
- For every rupee spent, the sector generates more than 3 times that value in economic activity and supports over six times as many jobs in connected industries.
- **Employment** – The sector supports *over 7.7 million jobs indirectly, including 369,000 jobs directly***.**
- The demand for skilled personnel—pilots, engineers, ground staff, and logistics professionals—is expected to rise sharply.
- Increased global connectivity – With over 116 bilateral Air Service Agreements, India is deepening global connectivity as Indian carriers expand internationally, reinforcing the country's position as an aviation hub in Asia.
- **Other benefits** – Civil aviation is also driving FDI inflows, technology transfer, and Make in India initiatives in aircraft manufacturing, ground handling, and Maintenance, Repair, and Operations (MRO) services.
- **Future prospects** – Over the past decade, domestic air passenger *traffic has grown 10-12% annually.*
- By 2040, the passenger traffic is expected to *grow six-fold to around 1.1 billion.*
- India's commercial airline fleet is predicted to grow from *400 in 2014 to around 2359 in March 2040.*
- The total employment due to aviation sector in 2040 is expected to be around 25 million - emerging as a core engine of India's journey towards becoming a developed economy.
- **Vision For 2047 –** As India moves toward its centenary of independence, the aviation sector is charting an ambitious growth path from 163 airports in 2025 to over 350 by 2047, and passenger traffic expected to cross one billion.
- These numbers represent a shift toward cleaner fuels, digital airways, and inclusive mobility.
- With *25 million jobs projected by 2047* and expanding opportunities in MRO, drone manufacturing, and pilot training, aviation will become a vital pillar of India's *$10 trillion economy.*

What is UDAN scheme and its achievements?

- **UDAN (Ude Desh ka Aam Nagrik) –** It is a regional connectivity scheme launched on 21 October 2016 scheme under Ministry of Civil Aviation (MoCA).
- **Outcomes** – It has democratised air travel and reshaped India's regional connectivity landscape.
- According to NITI Aayog, domestic travellers accounted for over *83% of total tourism spending* in 2019, a figure expected to rise to *nearly 89% by 2028.*
- UDAN have bridged the infrastructure gap and made air travel accessible for millions, connecting remote regions and making air travel affordable and accessible.

- This reflects the government's efforts to make air travel affordable and inclusive, supported by initiatives like UDAN.
- **Empowering remote areas** – Once remote destinations— Kullu, Darbhanga, Hubballi and Shillong ,are now directly connected by air, boosting local economies and regional tourism.
- UDAN has operationalised *649 routes and connected 93 aerodromes* (including 2 water aerodromes and 15 heliports) across the country, among which 12 airports/heliports in the *North-East region.*
- **Island development** – It has also integrated the *Andaman, Nicobar, and Lakshadweep Islands* into the national aviation network.
- **Milestone Achieved –** Over *1.56+ crore passengers* have travelled on *RCS–UDAN flights.*
- A total of *3.23 lakh RCS flights* have been operated across regional routes nationwide.
- **Expanded UDAN –** The scheme aims to increase regional connectivity to 120 new destinations across the country, catering to 4 crore passengers in the next 10 years.
- The scheme will also support helipads and smaller airports in hilly, aspirational and North East region districts.
- **Affordable Food at Airports with UDAN Yatri Café –** The UDAN Yatri Café initiative, launched at Kolkata and Chennai airports, provides affordable, quality meals (tea at ₹10, samosa at ₹20) making air travel more inclusive and accessible to all.

What are the key schemes in aviation sector?

- **Krishi UDAN** – It enables faster transport of agricultural produce and perishables, especially to benefit the tribal and northeastern states.
- In convergence with the Operation Greens Scheme, it offers 50% freight subsidy, multimodal transport options, and coverage of horticulture and allied produce.
- **Lifeline UDAN –** This special initiative was launched in March 2020, during the COVID-19 lockdown, to ensure uninterrupted medical and essential supply deliveries.
- Over 588 flights carried 1,000 tons of cargo across 5.45 lakh km, focusing particularly on the North Eastern region, the Islands, and hilly terrains.
- Lifeline UDAN also supported setting up COVID labs, transporting medical teams, and responding to emergencies like the Vishakhapatnam gas leak.
- **Greenfield Airports Policy –** The Greenfield Airports Policy provides a framework for building new airports on unused land through public–private partnerships to expand India's aviation infrastructure and decongest metro hubs.
- **Enhancing Travel Experience –** To enhance the travel experience, reduce redundancy, and save time, the government has launched various initiative including *Digi Yatra.*
- Implemented from 2022 onwards, Digi Yatra enabled paperless, contactless processing of passengers using facial recognition technology.
- Digi Yatra App is available on Android as well as iOS platforms and has been downloaded by over 12.1 million users so far.
- **Flight Training and Pilot Development –** To meet the projected demand of 30,000–34,000 pilots in the next 10–15 years, government is expanding Flight Training Organizations (FTOs) and commercial pilot licensing.
- Promoting *gender inclusion, with 13–18% women pilots,* DGCA targets *25% female representation* in all aviation roles by 2025.
- **Drone Rules 2021, Production-Linked Incentive (PLI) –** The Drone Rules, 2021, liberalized India's drone sector by simplifying regulations and enabling wider commercial use.
- **Production-Linked Incentive (PLI) scheme –** *With Rs 34.79 crore disbursed in FY 24–25,* PLI has encouraged domestic manufacturing and reduced reliance on imports, boosting India's self-reliant drone ecosystem.
- **Bharatiya Vayuyan Adhiniyam, 2024 –** Legislative reform aimed at modernizing India's aviation sector by re-enacting the Aircraft Act, 1934, in alignment with contemporary needs and global standards.
- The new legislation fosters indigenous manufacturing under Make in India and Atmanirbhar Bharat initiatives, aligning with international conventions like the Chicago Convention and ICAO, and streamlining regulatory processes, such as simplification of the issuance of licenses.

- The Act removes redundancies and provides provisions for appeals.

What lies ahead?

- India's civil aviation sector has emerged as one of the fastest-growing sectors, making the country the third-largest domestic aviation market in the world.
- As country continues to record unprecedented rise in passenger traffic, expand regional connectivity, and modernise aviation frameworks, the efforts by the ministry enhance travel experiences for millions and bolster economic prosperity, strengthen national integration, and empower India to confidently soar towards its vision of becoming a developed nation—Viksit Bharat @2047.

9.7 Navigating India's Maritime Path

India's maritime sector is undergoing a transformative journey under the Maritime India Vision 2030 (MIV 2030) and the ambitious Maritime Amrit Kaal Vision 2047.

What is Maritime India Vision 2030?

- **Comprehensive roadmap** – It is a *comprehensive roadmap* to develop India's maritime sector, encompassing ports, shipping, and waterways.

> ***Nearly 95% of the country's trade*** *by volume & around 70% by value moves through maritime routes.*

- **Launched in** – 2021.
- It outlines over 150 initiatives to make India a global maritime leader by modernizing infrastructure, improving logistics efficiency, and promoting sustainability.
- **Promoter of growth** – More than a blueprint for cargo movement, MIV 2030 is a catalyst for trade, investment, and employment, charting India's course toward economic growth and global competitiveness.

How has India's ports sector evolved between 2014 and 2025?

- **Capacity expansion –** Total port capacity nearly doubled from 1,400 million metric tonnes per annum (MMTPA) to 2,762 MMTPA due to significant infrastructure investments.
- **Cargo growth –** Cargo volumes rose from 972 MMT to 1,594 MMT, with major ports handling 855 million tonnes in FY 2024–25, up from 819 million tonnes in FY 2023–24.
- **Efficiency gains –** Average vessel turnaround time improved dramatically from **93 hours to 48 hours**, enhancing overall productivity and global competitiveness.
- **Net surplus growth –** Annual surplus jumped from Rs. 1,026 crore to Rs. 9,352 crore, reflecting stronger revenue and better cost control.
- **Efficiency boost –** Operating ratio improved from 73% to 43%, indicating more sustainable and profitable operations.

How has India's shipping sector evolved between 2014 and 2025?

- **Fleet expansion –** Indian-flagged vessels has charted steady growth from 1,205 to 1,549, expanding India's maritime presence.
- **Capacity growth –** Gross tonnage of Indian fleet rose from 10 million gross tonnes (MGT) to 13.52 MGT, enhancing shipping strength.
- **Coastal shipping surge –** Cargo movement nearly doubled from 87 MMT to 165 MMT, promoting cost-effective and eco-friendly transport modes.

How has India's Inland Waterways evolved between 2014 and 2025?

- **Cargo surge –** As per the reports of Inland Waterways Authority of India (IWAI), the cargo movement rose from 18 MMT in 2014 to 146 MMT in 2025 — a **710% increase**.
- **Network expansion –** No of operational waterways expanded from **3 to 29**, enhancing India's inland transport network.
- **Infrastructure boost – Haldia Multi-Modal Terminal** built with World Bank support, was handed over to IRC Natural Resources under the PPP model, enhancing inland waterway infrastructure and promoting multimodal logistics.
- **Passenger growth –** *Ferry and Ro-Pax services* (a ship that carries both vehicles and passengers) carried over 7.5 crore passengers in 2024–25, showing rising public preference for water-based travel.

How has India's seafaring workforce evolved between 2014 and 2025?

- **Workforce expansion –** Increased from 1.25 lakh to over 3 lakh in 10 years, now represents 12% of the global seafaring workforce.
- **Top supplier –** Ranked among the *world's top three* providers of trained seafarers.
- **Career opportunities –** Boosts prospects in navigation, ship operations, logistics, and maritime industries both domestically and internationally.

How the major investments made between 2014 and 2025 contributed to the transformation of India's maritime sector?

- **MIV 2030 Vision –** Rs. 3–3.5 lakh crore projected across ports, shipping, and inland waterways.
- **Shipbuilding boost –** Rs. 69,725 crore package to revitalize the maritime ecosystem.
- **Maritime Development Fund (MDF) –** Rs. 25,000 crore for long-term financing of shipping and shipbuilding.
- **Shipbuilding Financial Assistance Scheme (SBFAS) –** Rs. 24,736 crore to offset domestic cost disadvantages and promote ship-breaking.
- **Shipbuilding Development Scheme (SbDS) –** Rs. 19,989 crore for greenfield clusters, yard expansion, and risk coverage.
- **Indian Ship Technology Centre (ISTC), Visakhapatnam** – Rs. 305 crore hub for ship design, R&D, engineering, and skill development.
- **Northeast infrastructure –** Rs. 1,000+ crore has been invested in the development of Inland Waterway Infrastructure.
- **River Tourism upgrade –** 2 luxury cruise ships currently being built at the Hooghly Cochin Shipyard in Howrah, Kolkata.
- To launch in 2027, on Brahmaputra River to transform Assam's River tourism landscape, under *Cruise Bharat Mission*.
- **Sagarmala Programme –** 840 projects are being implemented by 2035, which focuses on cutting logistics costs, enhancing trade efficiency, and creating employment through smarter, greener transport networks.

> ***Sagarmala Programme** is a flagship initiative to transform India into a global maritime hub - core pillar of the MIV 2030 & Maritime Amrit Kaal Vision 2047.*

What are the future prospects?

- **Strategic Vision –** India's maritime sector is entering a decisive decade, with new laws, mega projects, and global investment ambitions shaping the Maritime India Vision 2030.
- MIV 2030 & Amrit Kaal Vision 2047 outline a Rs. 80 lakh crore roadmap for ports, coastal shipping, inland waterways, shipbuilding, and green initiatives.

- Focus on green corridors, green hydrogen bunkering at major ports, and methanol-fueled vessels to drive sustainable maritime operations.
- Over 300 actionable initiatives aim to position India among the top global maritime and shipbuilding powers by 2047.

***India** is preparing to not only meet its trade demands but also emerge as a maritime leader.*

- **Major milestones & MoUs –** At the *Samudra Se Samriddhi event* (Sept 2025), 27 MoUs worth Rs. 66,000 crore were signed.
- It aims at creating more than 1.5 lakh jobs across port infrastructure, shipping, shipbuilding, sustainable mobility, finance, and heritage.

What are the some of the notable projects that further reinforce India's vision?

- **Bahuda Greenfield Port, Odisha –** 150 MTPA capacity, with an expected investment of Rs. 21,500 crore.
- **Patna Water Metro –** Using electric ferry system, valued at around Rs. 908 crore.
- A strategic Vessel Owning Joint Venture Company between Shipping Corporation of India (SCI) & Oil Public Sector Undertakings (PSUs) to reduce foreign fleet dependence and boost Indian-built ships.
- **Shipbuilding MoUs** – Across five states with major yard investments and financing tie-ups.
- **Lothal Lighthouse Museum –** Rs. 266 crore investment at the National Maritime Heritage Complex to preserve maritime heritage.
- **Initiatives of New Mangalore Port Authority (NMPA) –** 8 new projects including cruise gate for international tourists, 150-bed multi-speciality hospital under PPP mode, etc, to enhance user experience and operational capacity.

What lies ahead?

- With Maritime India Vision 2030, the nation is not just building ports, it's building futures, empowering millions with jobs, skills, and sustainable growth.
- This is India's moment to rise as a global maritime leader, proving that vision, strategy, and determination can turn waves into pathways of prosperity.

Quick Facts

India Maritime Week (IMW) 2025
• **Hosted by –** Ministry of Ports, Shipping and Waterways in partnership with the Indian Ports Association (IPA), from October 27–31, 2025 • **Aim –** To showcase India's maritime potential and establish the country as a global maritime hub. • The event also incorporates the 4th Global Maritime India Summit (GMIS). • **Theme -** "Uniting Oceans, One Maritime Vision". • It will serve as a strategic platform for dialogue, collaboration, and business development.

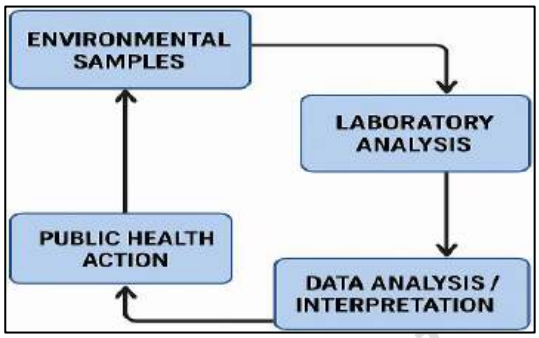
10. ENVIRONMENT

10.1 Importance of Environmental Surveillance

Recently the Indian Council of Medical Research (ICMR) has recently said that it will initiate wastewater surveillance as a part of environment surveillance measure for 10 viruses across 50 cities.

What is environmental surveillance?

- **Environmental surveillance** – It is the systematic monitoring and collection of samples from the environment—such as air, water, and soil—to detect and track pathogens, pollutants, or radioisotopes.
- **Process**
  - **Planning & Selection of Sites** – Identify sources (air, water, soil, sewage, food, vectors) to monitor.
  - **Sample Collection** – Gather environmental samples like air filters, water, wastewater, soil, or swabs.

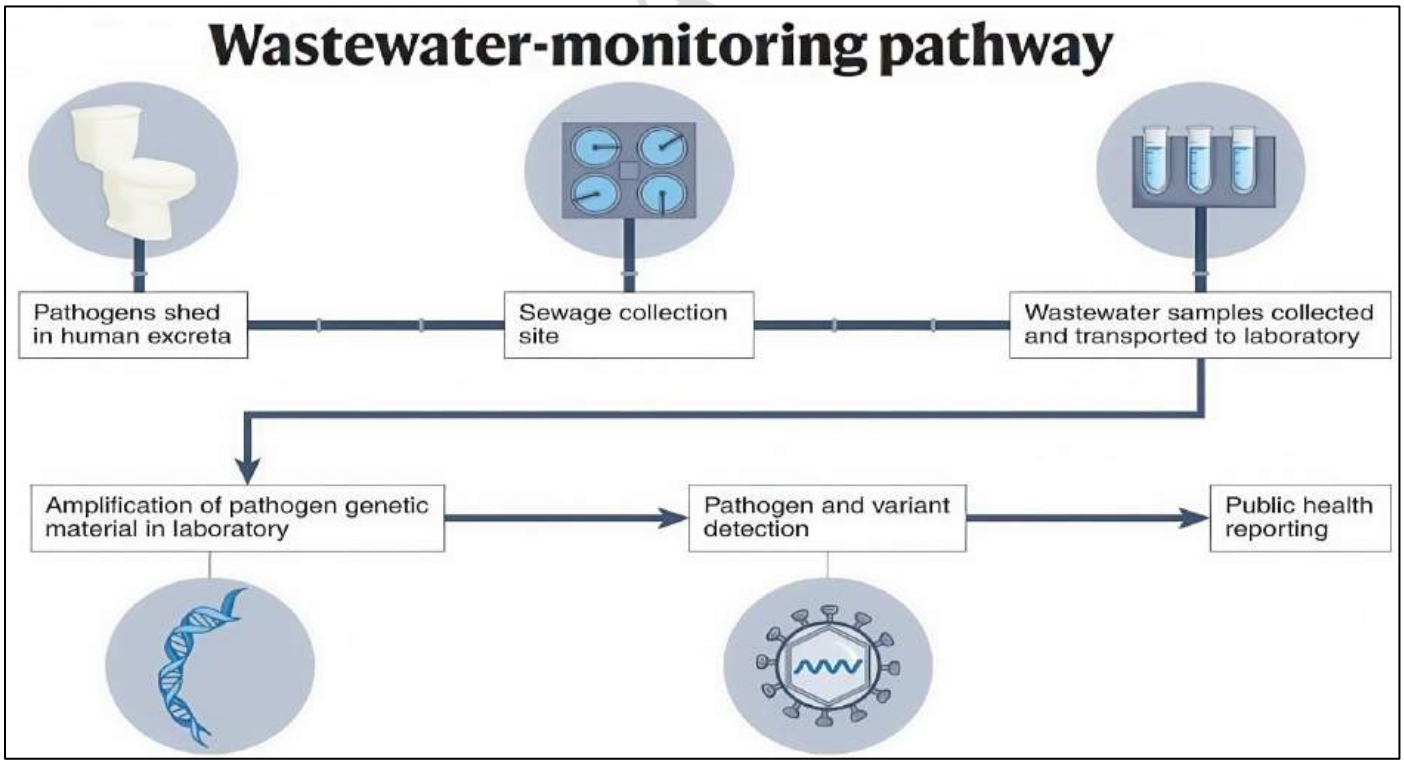


- **Laboratory Analysis** – Test samples for pollutants, chemicals, pathogens, or toxins.
- **Data Recording and Interpretation** – Document results and analyze trends or unusual findings.
- **Early Warning and Risk Assessment** – Detect potential threats to public health or environment.
- **Response and Control Measures** – Implement preventive actions like pollution control, vaccination, or sanitation.
- **Reporting and Feedback** – Share findings with public health agencies, government, and communities.
- **Continuous Monitoring** – Repeat at regular intervals for trend analysis and early outbreak detection.

- **Components of Environmental Surveillance**
  - **Air Surveillance** – Monitors air pollutants, greenhouse gases, and airborne pathogens.
  - **Water Surveillance** – Tests drinking water, wastewater, and sewage for chemicals and pathogens.
  - **Soil Surveillance** – Detects contamination from industrial effluents, pesticides, and heavy metals.
  - **Food Chain Surveillance** – Tracks pesticide residues, toxins, and pathogens in food products.
  - **Vector & Animal Surveillance** – Observes disease-carrying vectors and zoonotic pathogens.
  - **Waste Surveillance** – Monitors biomedical, industrial, and solid waste for pollutants.
  - **Radiological & Chemical Surveillance** – Measures hazardous chemicals and radiation levels.
  - **Climate & Meteorological Surveillance** – Records weather patterns and long-term climate changes.

What are the purposes of environmental surveillance?

- **Disease monitoring –** This is a primary function, as seen during the COVID-19 pandemic, where wastewater was tested for viral loads.



- It can also detect pathogens like poliovirus, influenza, and bacteria in a community, including from asymptomatic individuals who don't show up in clinical data.
- **Early warning system –** Environmental monitoring can detect the presence of pathogens in a community days to weeks before individuals show symptoms and are clinically tested.
- This provides public health officials with valuable lead time to prepare for and mitigate potential outbreaks.

- **Environmental hazard tracking –** The process is used to monitor for chemical spills, radiation, and pollution.
    - **For instance**, air and water quality can be continuously checked for hazardous pollutants.
- **Assessing public health interventions –** By monitoring pathogen levels over time, public health officials can evaluate the effectiveness of interventions like vaccination campaigns or pollution control measures.
- **Resource allocation –** Data from environmental surveillance helps local governments and public health providers make evidence-based decisions on how to allocate resources, such as testing and vaccines.
- **Traditional monitoring method** – For long time the only way to figure out levels of infection in a community was to detect infections in patients, called clinical case detection.
- **Issue with traditional method** – Not all infected people might show symptoms, or might not choose to be tested if symptoms are mild.
- The number of people who are tested might not reflect the true numbers of those infected.
- **Potential of Environmental surveillance** – Environmental surveillance can thus provide important early warning signals of an impending outbreak.
- It is now known that the levels of pathogen in wastewater can precede, often by more than a week, a rise in infections.

How Environmental surveillance of waste water work?

- **Collection of samples** – Samples taken from sewage treatment plants, effluents from hospitals and from public spaces such as railway stations and toilets in airplanes, can be studied to see how the pathogens they contain change from day-to-day.
- It works because pathogens of interest are shed in the stools or urine of infected individuals.
- **Monitoring of pathogens** – Diseases transmitted by parasitic worms such as roundworms and hookworms can be monitored through wastewater and soil samples.
- **Diseases information** – Information about the burden of the disease and the effectiveness of control measures will be gathered.
- **Rigorous protocol development** – These protocols detail how samples must be collected and processed, and how pathogens are detected and analysed.
- **Comparison of pathogens** – By following these protocols, comparisons of pathogen load become possible, and whole-genome sequencing enables the identification of variants of the same pathogen.

Why do early-warning signals matter?

- **Public health planning** – Understanding how many infected people there are is important for public health planning.
- The more the amounts of pathogen that circulate, the more likely it is that people will be infected.
- **Mitigation of diseases** – Preparing for a disease outbreak becomes much easier if there's more notice.
- **Tracking of diseases** – Wastewater-based epidemiology has been used for over 40 years to track several diseases such as measles, cholera and polio.
- Such disease surveillance in India, through wastewater, was first initiated in Mumbai for polio in 2001.
- During the COVID-19 pandemic, similar surveillance programs for COVID-19 were started in five cities, and they continue to this day.
- **Initiative of ICMR** – The Indian Council of Medical Research (ICMR) has recently said that it will initiate wastewater surveillance for 10 viruses across 50 cities.
- This will enable public health surveillance to pick up any increase in viral load within community settings.
- This extends ICMR's involvement in establishing environmental surveillance for viruses, including avian influenza virus, particularly in areas with outbreaks.

How the surveillance could be improved further?

- **Data sharing** – The sharing of data and protocols across institutions and reaching common agreements on templates for surveillance frameworks that are disease specific is important.

- **Change in approach** – Programmatic approaches, rather than project-driven approaches, must be developed that integrate waste-water and other environmental surveillance with routine disease surveillance.
- **National system for surveillance** – Developing a national wastewater surveillance system for India is important.
- **Emerging methodologies** – Audio samples of people coughing in public places can be used to examine the prevalence of respiratory conditions, through refined machine learning methods.

10.2 Asia's Carbon Capture Push and Issues

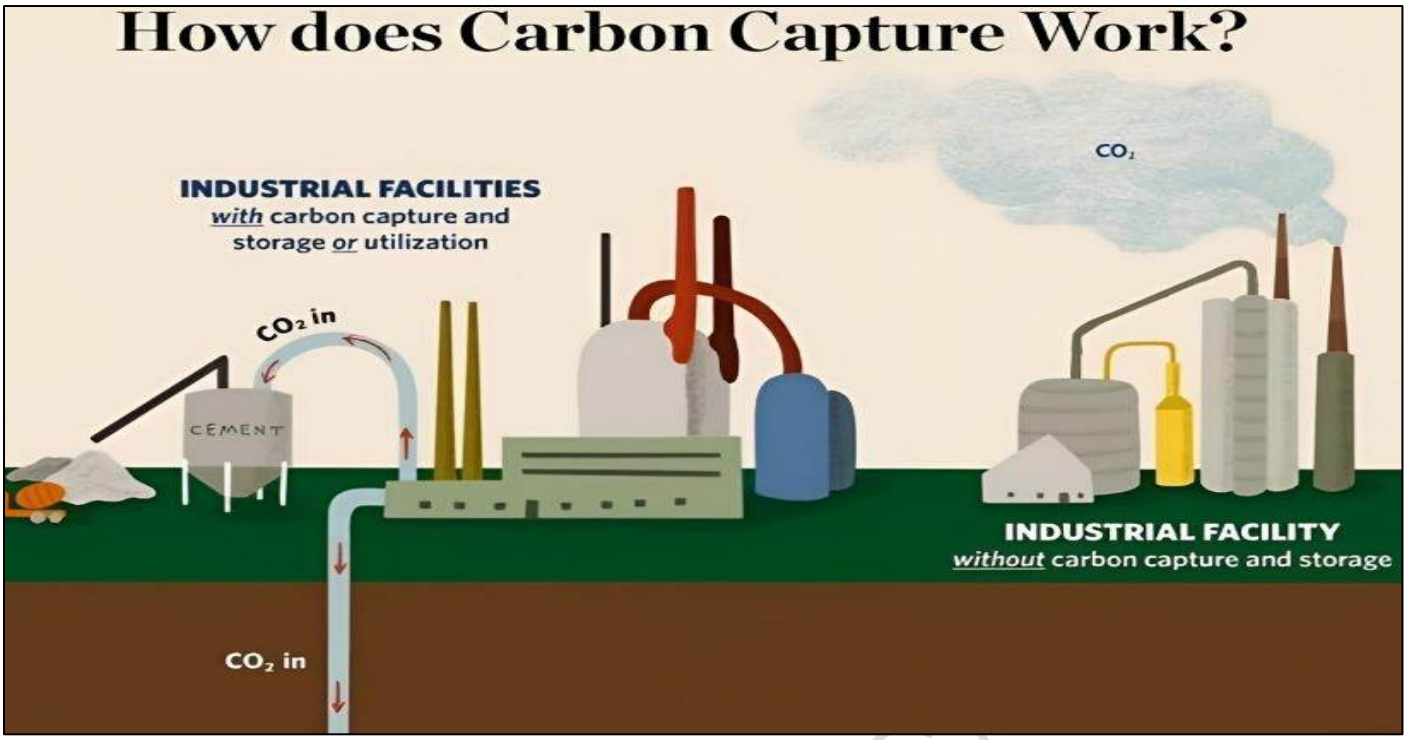
Recently a new report has warned that reliance on Carbon capture and storage (CCS) could add 25 billion tonnes of emissions and lock the region into fossil fuel pathways.

What is the report?

- **Title** – The global climate risks of Asia's expansive carbon capture and storage plans
- **Published by** – Global science and policy institute Climate Analytics.
- **Released on** – October 6, 2025, ahead of the Japan CCS Summit on October 15-16.
- **Countries analysed** – The evaluated CCS strategies across 9 major economies.
- They include China, India, Japan, South Korea, Indonesia, Thailand, Malaysia, Singapore, and Australia.
- These countries together account for over half of global fossil fuel use and greenhouse gas emissions.
- **Revelation of the report** – It has warned that Asia's expansive plans for Carbon Capture and Storage (CCS) could lead to nearly 25 billion tonnes of additional greenhouse gas emissions by 2050.
- It is threatening the Paris Agreement's 1.5°C climate target and locking the region into costly and uncompetitive fossil fuel pathways.
- **Major findings –** Asia is at a crossroads, while countries haven't yet gone fully down the CCS path, many are tailoring policies to protect fossil fuels.
- This is a very risky strategy, not only for the Paris Agreement, but for these economies themselves.
- **2 major risks** – The report identifies two major risks
    - **An "underperforming high-CCS" pathway** – Where CCS is deployed but fails to meet expected capture rates
    - **An "unachieved high-CCS" pathway** – Where CCS is promoted but not realised, diverting resources from proven zero-emission technologies.
- In either scenario, the region could emit an additional 24.9 gigatonnes of CO_2-equivalent by 2050, more than the cumulative fossil fuel emissions of South Korea and Australia combined.

What is India's emerging role in the CCS debate?

- **Development of national CCS mission** – India, one of Asia's largest emitters alongside China and Japan, is developing a national CCS mission aimed at scaling up deployment.
- **Minimal presence** – India's CCS presence remains minimal, with no significant operational projects or transport and storage infrastructure. **Detached from other nations** – India is largely disconnected from the Japan–South Korea–Southeast Asia–Australia CCS nexus.
- Despite this, India's industrial growth trajectory makes it a critical player in the CCS debate.
- **Steel consumption**– The country is already the second-largest steel consumer globally, with demand projected to grow 6.3% annually between 2025 and 2030.
- **Cement consumption** – India and South Asia could rise by over 40% during 2025–2035.
- These sectors are considered "hard-to-abate" and potential candidates for CCS, though the report cautions that emerging zero-emission technologies may offer more cost-effective solutions.
- India's largely domestic fossil fuel use gives it flexibility to shift toward renewables without external market pressures.
- **Progress of India** – The report highlights India's progress in deploying renewables, electric vehicles, and green hydrogen.



- The country could avoid CCS dependence if it prioritises clean energy and industrial innovation.
- **Economic risks** – The report estimates that India would require approximately $4.3 billion in government support to enable CCS adoption.
- This raises questions about whether such investment would be better directed toward scalable, low-cost alternatives.

What are the issues with the CCS?

- **Underperformance** – Despite being marketed as a climate solution, CCS has consistently underperformed.
- Capture rates often hover around 50%, far below the 95% needed for meaningful abatement.
- **Promotes fossil fuels** – 80% of current CCS projects use captured CO_2 for enhanced oil recovery (EOR), extending fossil fuel extraction.
- **Increase in electricity cost** – The report finds that CCS in the power sector could result in electricity costs up to twice that of renewables backed by storage, making it economically unviable in most Asian markets.
- **Project misalignment** – Most CCS projects in Asia target sectors with viable zero-emission alternatives, such as natural gas, LNG processing, and hydrogen production.
- Hard-to-abate sectors like cement and steel have received minimal CCS investment.
- **Nations sustaining fossil fuels** – Governments in *Japan, South Korea, and Australia* are among the most active CCS proponents, offering financial and regulatory support to sustain fossil fuel production.
    - **Southeast Asian nations**, including Indonesia, Malaysia, and Thailand, are positioning themselves as CO_2 storage hubs, often in partnership with oil and gas companies.
    - **Singapore** is developing a regional CCS hub with ExxonMobil and Shell, reinforcing its role as a fossil fuel transit centre.

What are the cheaper alternatives?

- **Prioritising renewables** – The report urges Asian governments to pursue a "deliberate low-CCS pathway," prioritising renewables, electrification, and energy efficiency.
- These technologies are already more cost-effective than fossil fuels even without CCS.
- In 2023, the global average cost of solar and wind power was significantly lower than fossil fuel-based electricity.
- **Countries with less renewable energy cost** – China, India, and Vietnam have already seen renewables outcompete fossil fuels in cost.
- A high-CCS pathway could cost $30 trillion more globally than a low-CCS pathway by 2050.

- **Emerging changes** – Even in traditionally hard-to-decarbonise sectors such as steel, cement, and fertilisers, zero-emission alternatives are emerging.
- Green hydrogen-based steelmaking, low-carbon cement technologies, and renewable ammonia production offer viable pathways without reliance on CCS.

What lies ahead?

- The report emphasises that CCS should be treated as a last resort, not a frontline climate solution
- It calls on Asian governments, including India, to prioritise fossil fuel phaseout and invest in clean technologies.

10.3 India's Expanding Green Footprint

Recently, India has achieved a significant milestone in global forest statistics by advancing to the 9th position worldwide in terms of total forest area, according to the Food and Agriculture Organization (FAO)'s Global Forest Resources Assessment (GFRA) 2025, released on 22 October 2025.

What is the status of India's green cover?

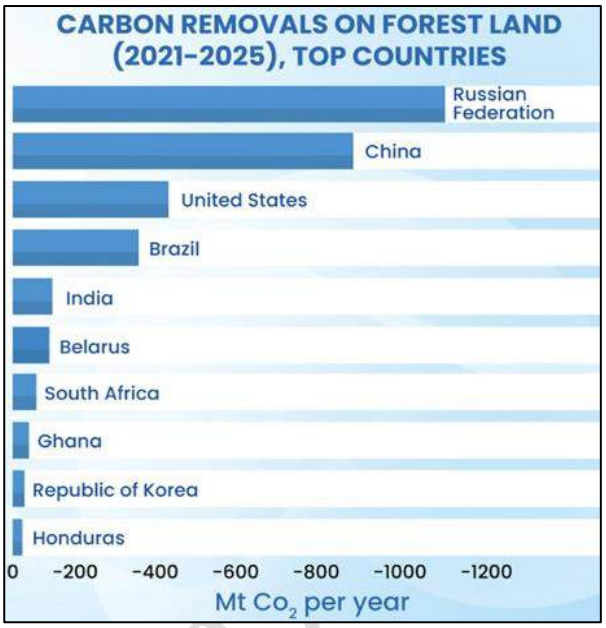
- **Total forest area** – India has moved up to 9th position globally in terms of total forest area as per GFRA 2025.
- In the previous assessment, India was ranked 10th
- **Net annual forest gain** – India continues to maintain 3rd position worldwide in terms of net annual forest area gain.
- **Global carbon sink** – India ranked 5th among the top global carbon sinks, with its forests removing 150 Mt of CO_2 per year during 2021-2025.
- **Net forest loss** – The annual rate of net forest loss fell from 10.7 million ha (1990–2000) to 4.12 million ha (2015–2025).
- What is GFRA 2025 and state of India in global context?
- **Global Forest Cover** – According to the latest GFRA 2025 released by the Food and Agriculture Organization (FAO), the world's total forest area stands at approximately 4.14 billion hectares, accounting for about 32% of the total land area, which is roughly 0.5 hectares of forest per person.
- **India's forest cover** – Globally India accounts for approximately 72,739 thousand hectares of forest area which is roughly 2 % of the world total.
- **Europe** – It has the largest forest area, accounting for 25% of the world's total.
- **South America** – It has the highest proportion of forest, at 49% of the total land area.
- More than half (54%) of the world's forests is in only five countries – the Russian Federation,Brazil, Canada, the United States of America and China

What are the forest emissions and removals trends 1990–2025?

- **Global Scenario –** As per 2025 Forest Resources Assessment, the world's forests acted as a net carbon sink during the 2021–2025 period, sequestering 3.6 billion tonnes of carbon dioxide (Gt CO_2) annually on forest land.
- During the 2021–2025 period, *global emissions due to net forest conversion (a proxy of deforestation) amounted to 2.8 Gt CO_2,* partially counterbalancing the forest sink effect.
- **Increase in forest carbon stock** – As a result, forest carbon stocks increased overall, removing 0.8 Gt CO_2 annually from the atmosphere during the 2021–2025 period.
- Such net removals were nearly twice as large (1.4 Gt CO_2) a decade earlier.
- Between 2021 and 2025, forest carbon sinks were strongest in Europe and Asia (removing 1.4 Gt CO_2 and 0.9 Gt CO_2 per year, respectively).
- **India's achievement –** India ranked 5th among the top global carbon sinks, with its forests removing 150 Mt of CO_2 per year during 2021–2025.
- Asia, including India, saw forest carbon removals increase to 0.9 Gt CO_2 per year in 2021–2025, with deforestation emissions dropping significantly.

What is India's Forest Status & Changes?

- **Total Forest Cover –** As per the India State of Forest Report (ISFR) 2023, India's total forest cover is 7,15,343sq km, which is 21.76% of the country's geographical area.



- **Top States with largest forest cover –** Area wise top three states having largest forest cover are
  - Madhya Pradesh (77,073 sq.km)
  - Arunachal Pradesh (65,882 sq.km)
  - Chhattisgarh (55,812 sq.km).
- **Mangrove Cover –** India's mangrove cover stands at approximately 4,992 sq. km, concentrated mostly in Andaman & Nicobar Islands, Gujarat, Maharashtra, and West Bengal.
- **Biodiversity & Protected Areas –** India has 106 national parks, 573 wildlife sanctuaries, 115 conservation reserves, and 220 community reserves, protecting a diverse range of flora and fauna.
- **Bamboo Plantations** – The total bamboo resource globally is estimated at 30.1 million ha, of which 21.2 million ha (70%) is in Asia, with India accounting for 11.8 million hectares.
- The global area of bamboo forest increased by 8.05 million ha between 1990 and 2025, largely because of increases in China and India.
- **Rubber Plantations** – India ranks 5th globally with 831 thousand hectares of rubber plantations, contributing to a global total of 10.9 million ha.
- **Agroforestry Area** – India, along with Indonesia, accounts for nearly 100% of Asia's agroforestry area, which totals approximately 39.3 million hectares.
- **Contribution to Global forests** – India and Indonesia together contribute around 70% of the global agroforestry area, which is about 55.4 million hectares.
- **A net forest gain**– With expansion outweighing losses due to afforestation efforts, over 1990–2025
- This was the result of reduced deforestation in some countries and the expansion of forest area in some others.
- **Deforestation –** India contributes 9% of global wood removals, ranking 2nd globally as of 2023.
- Removals can be for roundwood or fuelwood production.

> ***Wood removals****" are the amount of wood felled and removed from the forest.*

What are the Key Initiatives by Government of India to Enhance Forest Cover?

- **Budgetary Allocations - 2025–26 Budget:** MoEFCC allocated ₹3,412.82 crore, a 9% increase from the revised estimate of ₹3,125.96 crore in 2024–25.
- **Revenue Expenditure –** ₹3,276.82 crore (96% of the total allocation), marking an 8% increase.
- **National Mission for a Green India (GIM) –** Launched in February 2014 under the National Action Plan on Climate Change (NAPCC).
- GIM seeks to expand forest and tree cover, restore ecosystems, and enhance biodiversity and carbon sinks.
- **Coverage Targets –** Aims to expand forest and tree cover by 5 million ha and improve the quality of cover on another 5 million ha of forest/non-forest lands.
- **Ecosystem and Livelihood Enhancement –** Focuses on enhancing ecosystem services such as biodiversity, water, and carbon storage, while also boosting the livelihood incomes of around 3 million forest-dependent families.
- **National Afforestation Programme –** The main objective is regeneration of degraded forest and adjoining areas in the country.
- It is implemented through three-tier institutional setup of State Forest Development Agency (SFDA) at State level, Forest Development agency (FDA) at Forest Division level and Joint Forest Management Committees (JFMCs) at Village level
- **Mission LiFE (Lifestyle for Environment) –** The United Nations Environment Assembly adopted a resolution on Sustainable Lifestyles, based on the precepts of Mission LiFE, (Lifestyle for Environment)

- **MeriLiFE Portal –** Launched to promote individual and collective action for sustainable living.
- **Ek Ped Ma Ke Naam Initiative** – An emotional call to encourage tree plantation by linking it to the love for one's mother or motherland.

What lies ahead?

- The forest cover data shows that the world is making measurable progress through reduced deforestation in some countries and the expansion of forest area in some others.
- India's rise to 9th globally in total forest area, and its maintenance of 3rd place in net annual gain, shows what strong national commitment can achieve.
- India's consistent efforts in expanding forest cover, promoting sustainable forestry, and implementing missions like GIM underscores its commitment to environmental conservation and global climate action.

Quick facts

The Global Forest Resources Assessment (GFRA)

- **GFRA** – It is FAO's periodic assessment of the state of the world's forests, providing comprehensive data on forest area, change, management, and use.
- The Global Forest Resources Assessment is the only worldwide assessment based on official national data.
- **2 categories** – FRA identifies two broad categories of forest
  - Naturally regenerating
  - Planted.
- **Subcategory** – Within these broad categories, it identifies primary forests – those with only native species – as a subcategory of naturally regenerating forests.
- Under the subcategories of planted forests, it identifies plantation forests (for example, rubber) and other planted forests (forests that are planted but do not satisfy the criteria of a plantation).

11. SCIENCE & TECHNOLOGY

11.1 Macroscopic Quantum Tunnelling

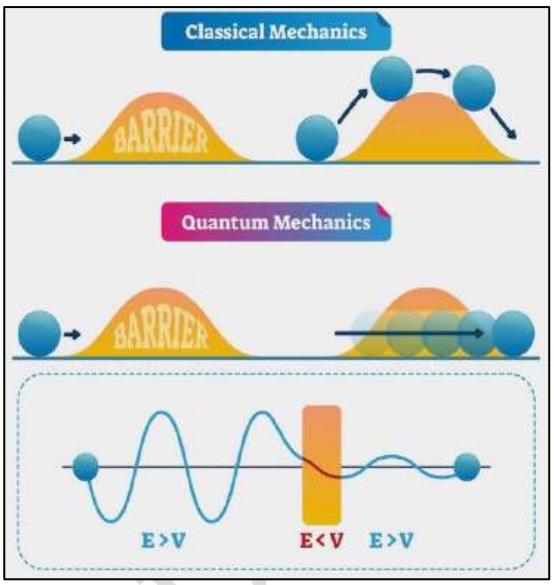
Recently, The Nobel Prize in Physics 2025 is out, and the winners are John Clarke, Michel H Devoret, and John M. Martinis, for the discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit.

What is quantum tunnelling?

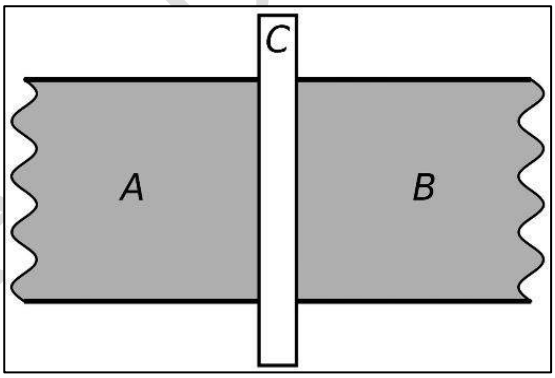
- **Quantum tunnelling** – It says that particles can sometimes cross barriers they don't have the energy to climb, like boring through a mountain instead of scaling it first.
- This process, called tunnelling, is common in nuclear and atomic physics.
- **Occurrence –** Such behaviour can occur not only in subatomic particles but also in an electrical circuit made of superconductors.
- **Prospects of the research** – The finding opens the door to new technologies set to transform the way we collect, study, understand, and use information from our surroundings.
- The scientists trio conducted the using a device called *Josephson junction*.

The 2025 physics Nobel Prize laureates *– John Clarke, Michel Devoret, and John Martinis.*

What is a Josephson junction?



- **Components** – Here, two superconductors A and B are separated by a very thin insulator C.
- **Objective of the experiment** – The trio wanted to know if a parameter of the circuit as a whole, in this case the junction's phase difference, could behave like a single quantum particle.
- **Observations** – They came away from their experiments with a resounding 'yes', by observing both macroscopic quantum mechanical tunnelling and discrete energy levels in the circuit.
    - **Superconductors** – Here, many electrons pair up and move without resistance.
    - **Josephson junction** – Here, the relevant variable is the phase difference of the superconducting order parameter.
- Put differently, the superconducting order parameter is a macroscopic variable that trillions of electron pairs in the material share and which describes the state the system is in.
- **Prediction of the theory** – Theory predicts that the current through the junction depends on the value of the parameter, and that it evolves in time according to the voltage across the junction.



- When the scientists sent a current through the Josephson junction, they found that if it was small enough, the flow of paired electrons was stalled and the circuit produced no voltage.
    - **In classical physics** – This state would never change, where the electrons' flow would remain blocked.
    - **But in the quantum world** – The current has a small chance of suddenly tunnelling out of the trap and flowing freely on the other side, creating a measurable voltage.

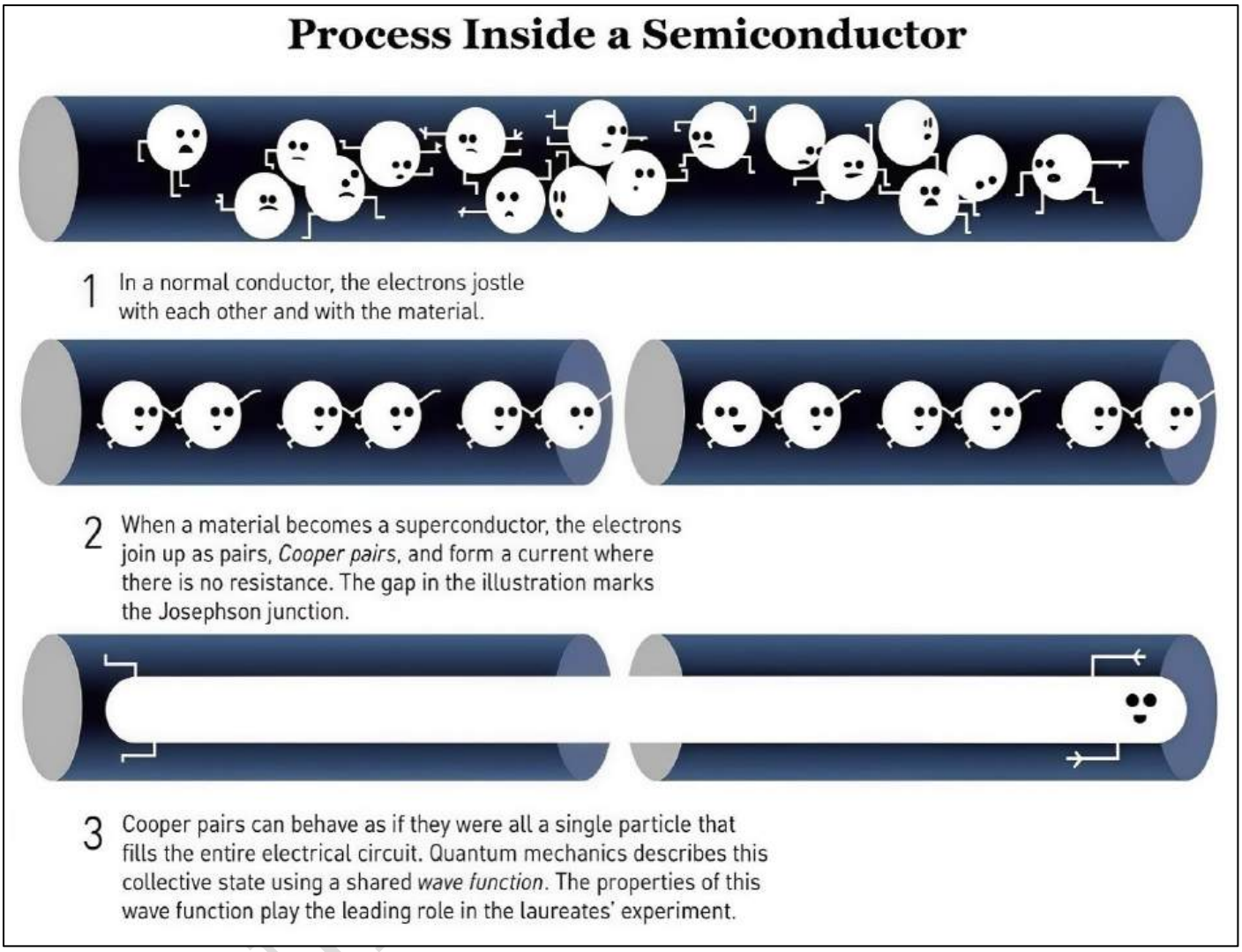
Why was the circuit fragile?

- **Investigation for tunneling** – In the early 1980s, several groups searched for this tunnelling by varying the current and recording the value at which the junction produced a voltage.
- If the electron pairs were simply escaping to the other side due to thermal fluctuations — akin to being heated enough to jump across the mountain — cooling the device ought to steadily increase the amount of current required to produce a voltage.
- On the other hand, if the electron pairs were tunnelling through, the rate of crossing over would eventually stop changing with temperature.
- **The challenge** – It was in keeping stray microwave radiation from affecting the circuit and producing data consistent with the temperature-independent behaviour.
- So the experimenters needed to reduce and characterise environmental noise with great care.
- The Berkeley team led by Clarke, working with Devoret and Martinis, solved this problem by redesigning their setup so stray signals couldn't interfere.
- **Blocking of microwaves** – They used special filters and shielding to block unwanted microwaves and kept every part of the experiment extremely cold and stable.
- **Directing the microwave pulses** – Then they sent in faint yet precisely tuned microwave pulses to gently test how the circuit responded, allowing them to measure its electrical properties accurately.
- **Matching of behavior** – When they finally cooled the system to very low temperatures, they saw that its behaviour matched the exact patterns predicted by quantum tunnelling theory.

How did the circuit show quantum effects?

- **Behaviour of a circuit** – The researchers also wanted to find out if the circuit's trapped state behaved like a quantum system with distinct energy steps which is a hallmark of a quantum state instead of a smooth range.

- They shone microwaves of different frequencies onto the junction while adjusting the current.
- **Escape of the circuit** – When the frequency exactly matched the gap between two allowed energy levels, the circuit suddenly escaped more easily from its trapped state.
- The higher the level, the faster this escape happened.
- **Conclusion** – These patterns showed that the circuit's overall state could only receive or emit fixed packets of energy, which is also how a single particle following the rules of quantum mechanics would behave.



- In short, *the circuit as a whole behaved like an atom.*
- **Facts revealed by the results** – Put together, the results revealed 2 facts.
    - A macroscopic electrical circuit — one that you could see with the naked eye, that could display quantum behaviour when sufficiently isolated from its environment.
    - The relevant macroscopic coordinate in that circuit could be understood using the standard tools of quantum mechanics.

What are the applications of the research?

- **Applications in Quantum computing** – Quantum computers is something the scientific world is very excited about.
- **Prospects for India** – India, too, in 2023 set up a Rs 6,000 crore National Mission on Quantum Technologies and Applications.
- When fully operational, these computers will be able to solve problems conventional computers struggle with.
- The Nobel laureates' work is a big step in taking quantum computers from a great idea to actually helpful devices.
- **Quantum computers** - These are not just faster than normal computers, they are useful for a whole different kind of complex problems.

- **For example**, quantum computers can model molecules at a quantum level, helping scientists design new drugs or materials faster, predict reactions, or optimise molecules for better performance.

- Encryption works on using a huge amount of numbers, which conventional computers struggle to get through.
- Quantum computers can break encryption faster, and thus also create more-difficult-to-break encryption.

11.2 Transforming India with AI

Recently the artificial intelligence (AI) landscape is expanding in India and projected to grow faster in the future.

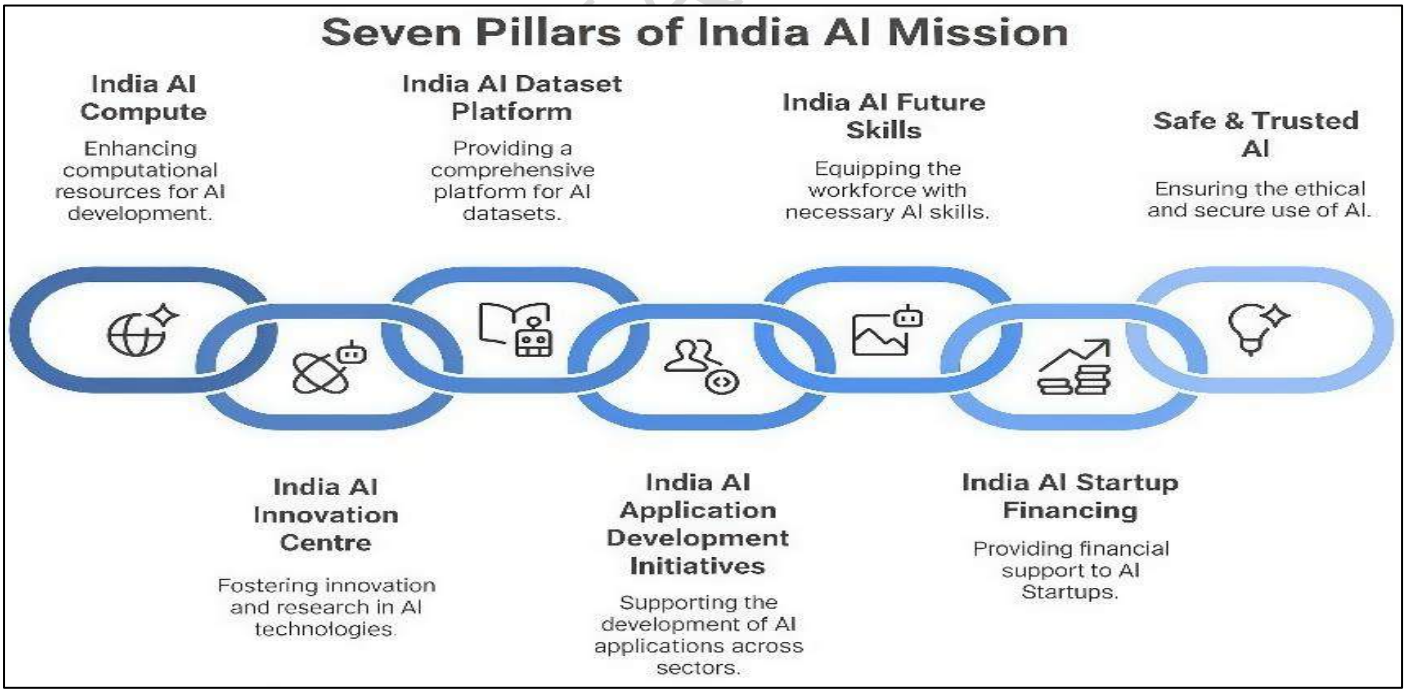
What is the status AI Ecosystem in India at Present?

- **Rapid expansion** – India's technology sector is expanding rapidly, with annual revenues projected to cross USD 280 billion this year.
- **Employment** – Over. 6 million people are employed in the tech and AI ecosystem.
- The country hosts 1,800+ Global Capability Centres, including more than 500 focused on AI.
- **Startups with AI** – India has around 1.8 lakh startups, and nearly 89% of new startups launched last year used AI in their products or services.
- On the NASSCOM AI Adoption Index, India scores 2.45 out of 4, showing that 87% of enterprises are actively using AI solutions.
- **Leading sectors –** The sectors with AI adoption include industrial and automotive, consumer goods and retail, banking, financial services and insurance, and healthcare.

***Stanford AI Index** place India among the top 4 countries in AI skills, capabilities, and policies.*

What are the seven pillars of the IndiaAI mission?

- **IndiaAI Compute Pillar** – This pillar provides high-end GPUs at affordable costs.
- Over 38,000 GPUs have been on boarded and these GPUs are available at a subsidized rate of just ₹65 per hour.
- **IndiaAI Application Development Initiative** – This pillar develops AI applications for India-specific challenges.



- Sectors include healthcare, agriculture, climate change, governance, and assistive learning technologies.
- Sector-specific hackathons are organized with ministries and institutions.
  - **For example**, the CyberGuard AI Hackathon helps develop AI solutions for cybersecurity.

***A GPU or Graphics Processing Unit** is a powerful computer chip that helps machines think faster, process images, run AI programs, and handle complex tasks more efficiently than a regular processor.*

- **AIKosh (Dataset Platform)** – AIKosh develops large datasets for training AI models.
- It integrates data from government and non-government sources.
- The platform has over 3,000 datasets and 243 AI models across 20 sectors.
- These resources help developers focus on AI solutions instead of building basic modules.
- **IndiaAI Foundation Models** – This pillar develops India's own Large Multimodal Models using Indian data and languages.
- It ensures sovereign capability and global competitiveness in generative AI.
- **IndiaAI FutureSkills** – This pillar builds AI-skilled professionals.
- Support is provided to 500 PhD fellows, 5,000 postgraduates, and 8,000 undergraduates.
- **IndiaAI Startup Financing** – This pillar provides financial support to AI startups.
- The IndiaAI Startups Global program launched in March 2025.
- It helps 10 Indian startups expand into the European market in collaboration with Station F and HEC Paris.
- **Safe and Trusted AI** – This pillar ensures responsible AI adoption with strong governance.
- They focus on machine unlearning, bias mitigation, privacy-preserving ML, explainability, auditing, and governance testing.

What are the other Key Government Initiatives and Policy Push?

- **Centres of Excellence for AI** – To encourage research-driven innovation, the government has set up three Centres of Excellence (CoEs) in key sectors such as Healthcare, Agriculture, and Sustainable Cities.
- These centres are designed to serve as collaborative spaces where academia, industry, and government institutions come together to develop scalable AI solutions.
- Alongside, five National Centres of Excellence for Skilling have been established to prepare the youth with industry-relevant AI skills, building a future-ready workforce.
- **AI Competency Framework** – This framework provides structured training for government officials, helping them acquire essential AI skills and apply them in policymaking and governance.
- Designed in line with global benchmarks, it ensures that India's public sector remains informed, agile, and prepared for the AI-driven future.
- **IndiaAI Startups Global Acceleration Programme** – Launched in partnership with Station F in Paris and HEC Paris, this programme supports ten promising Indian AI startups by giving them access to global expertise, networks, and resources.
- It aims to help Indian innovators compete at an international level and expand their global footprint.
- **Sarvam AI** – It is a Bengaluru-based company, translating advanced AI research into practical governance solutions.
- In partnership with the Unique Identification Authority of India (UIDAI), it is using generative AI to make Aadhaar services smarter and more secure.
- **Bhashini** – It is an AI-powered platform that breaks language barriers by offering translation and speech tools in multiple Indian languages.
- It helps citizens access digital services easily, even if they are not comfortable reading or writing.
- **BharatGen AI** – Launched on 2 June 2025 at the BharatGen Summit, BharatGen AI is the first government-funded, homegrown multimodal large language model.
- It supports 22 Indian languages and integrates text, speech, and image understanding.
- Built using domestic datasets, BharatGen captures India's cultural diversity and provides a common platform for startups and researchers to create AI solutions tailored to Indian needs.

What is India AI Impact Summit 2026?

- **Summit** – India will host the AI Impact Summit in February 2026.
- The summit will showcase India's AI capabilities and encourage innovation across sectors.
- **Initiatives** – The key flagship initiatives are

- **AI Pitch Fest (UDAAN)** – It is a platform for AI startups from around the world with a focus on women leaders and differently-abled changemakers.
- **Innovation challenges** – Global innovation challenges for youth, women, and other participants is an initiative to promote AI-driven solutions that address real world public challenges across sectors.
- **Research symposium –** A gathering to showcase latest AI research and bring together leading researchers from India, the Global South, and the wider international community to present their work, exchange methods, and evidence and encourage collaborations.
- **AI Expo** – This Expo will focus on Responsible Intelligence and will feature 300+ exhibitors from India and 30+ countries.
- **AI data labs** – Another major focus was the AI Data Labs, with thirty labs launched pan-India, forming a 570-lab network.
- The first 27 labs were set up in partnership with the National Institute of Electronics and Information Technology (NIELIT).
- These labs provide foundational AI and data training under the FutureSkills initiative of the IndiaAI Mission.
- **Fellowships** – The IndiaAI Fellowship Program and Portal was also expanded during the event to support 13,500 scholars.
- This includes 8,000 undergraduates, 5,000 postgraduates, and 500 PhD researchers across all disciplines.
- Fellowships are now open to students from fields such as engineering, medicine, law, commerce, business, and liberal arts.

What are some key areas where AI is improving everyday life?

- **Healthcare** – It helps doctors detect diseases early, analyse medical scans, and recommend personalised treatments.
- Telemedicine platforms powered by AI connect patients in rural areas with specialists in top hospitals, saving time and cost while improving care quality.
- **Agriculture** – It predicts weather, detects pest attacks, and suggests optimal times for irrigation and sowing.
- The Ministry of Agriculture and Farmers Welfare is using AI through initiatives like Kisan e-Mitra, a virtual assistant that helps farmers access government schemes such as PM Kisan Samman Nidhi.
- The National Pest Surveillance System and Crop Health Monitoring combine satellite data, weather inputs, and soil analysis to provide real-time advice that improves yields and income security.
- **Education and Skilling** – AI is being integrated into India's education system to make learning more inclusive, engaging, and future-ready.
- Under the National Education Policy (NEP) 2020, the Central Board of Secondary Education (CBSE) offers a 15-hour AI skill module from Class VI and an optional AI subject from Class IX to XII.
- The DIKSHA digital learning platform by NCERT uses AI tools such as keyword search in videos and read-aloud features to enhance accessibility, especially for visually impaired learners.
- In addition, the National e-Governance Division (NeGD) under MeitY, in collaboration with its partners, has implemented YUVAi- Youth for Unnati and Vikas with AI, a national programme aimed at enabling students from Classes 8 to 12 with AI and social skills in an inclusive manner.
- The programme provides a platform for students to learn and apply AI skills across eight thematic areas:
    - Krishi
    - Aarogya
    - Shiksha
    - Paryavaran
    - Parivahan
    - Grameen Vikas
    - Smart Cities
    - Vidhi aur Nyaay
- Empowering them to develop AI-driven solutions for real-world challenges.

- **Governance and Justice Delivery –** AI is reshaping governance and public service delivery.
- As per the Supreme Court of India, under e-Courts Project Phase III, modern technologies are being integrated to make the justice system more efficient and accessible.
- Artificial Intelligence and its subsets such as Machine Learning, Optical Character Recognition, and Natural Language Processing are being used in translation, prediction, administrative efficiency, automated filing, intelligent scheduling, and communication through chatbots.
- AI Translation Committees in High Courts are overseeing the translation of Supreme Court and High Court judgments into vernacular languages.
- Digital legal platforms such as e-HCR and e-ILR now provide citizens online access to judgments in multiple regional languages, making justice delivery more transparent and inclusive.
- **Weather Forecasting and Climate Services** – AI is strengthening India's ability to predict and respond to natural events.
- The India Meteorological Department uses AI-based models to forecast rainfall, fog, lightning, and fire.
- The Advanced Dvorak Technique helps estimate cyclone intensity, while MausamGPT, an upcoming AI chatbot, will offer real-time weather and climate advice to farmers and disaster management agencies.

AI and Employment

- **NASSCOM's report** – "Advancing India's AI Skills" (August 2024),
- India's AI talent base is expected to grow from about 6 to 6.5 lakh professionals to more than 12.5 lakh by 2027, at a compound annual growth rate of 15%.
- AI is driving demand in areas such as data science, data curation, AI engineering, and analytics.
- **Skill development** – As of August 2025, around 8.65 lakh candidates have enrolled or trained in various emerging technology courses, including 3.20 lakh in AI and Big Data Analytics.
- **Preparing the workforce for the future** – The Ministry of Electronics and Information Technology, MeitY, has launched FutureSkills PRIME, a national programme focused on reskilling and upskilling IT professionals in 10 new and emerging technologies, including AI
- As of August 2025, more than 18.56 lakh candidates had signed up on the FutureSkills PRIME portal, and over 3.37 lakh had successfully completed their courses.

What are the recently Proposed Implementation Roadmap?

- **Phase 1 (2025–2026)** – Drafting of the mission charter with clear goals, timelines and measurable outcomes.
- Stakeholders from government, industry, academia and civil society will be engaged to set priorities and define objectives.
- **Phase 2 (2026–2027)** – Establishment of cross-sectoral governance structures, leadership roles and an implementation blueprint.
- This phase will also focus on legal, regulatory and digital infrastructure readiness, while promoting domestic innovation and public–private partnerships.
- **Phase 3 (2027–2029)** – Pilot projects will be rolled out in high-readiness sectors to test solutions in real-world conditions.
- Accessibility and last-mile adoption will be prioritised, supported by strong monitoring and evaluation frameworks.
- **Phase 4 (2029 onwards)** – Proven solutions will be scaled across states and cities.
- Local adaptation will ensure regional relevance and worker mobility across sectors.
- The phase will aim to institutionalise the mission and sustain its benefits at scale.

What lies ahead?

- India's journey in Artificial Intelligence reflects a clear vision and decisive action.
- From expanding computing infrastructure to fostering homegrown models and supporting startups, the country is creating a robust AI ecosystem that benefits citizens and drives innovation.
- These efforts lay a strong foundation for India to emerge as a global AI leader while advancing the vision of Viksit Bharat 2047.

11.3 Post-Polio Syndrome

Recently, it is found that survivors of polio may develop an insidious condition known as Post-Polio Syndrome (PPS).

What is post-polio syndrome?

- **Post-polio syndrome (PPS)** – It is a condition that affects people who have had polio, causing new or worsening muscle weakness, fatigue, and muscle/joint pain many years after the initial infection.
- It develops *10 to 40 years after the initial illness* and is a progressive disorder caused by the deterioration of motor neurons.
- **Symptoms –** The symptoms include
    - **Muscle weakness and atrophy –** New or increasing weakness and a decrease in muscle size.
    - **Fatigue –** Extreme tiredness that can be either general or muscular.
    - **Pain –** Aching pain in muscles and joints, often in areas affected by the original polio.
    - **Other symptoms –** Sleep disturbances, breathing difficulties (in more severe cases), joint and skeletal deformities.
- **Causes**
    - The exact cause is not fully understood, but a leading theory suggests that the nerve cells that survived the initial polio infection become overworked over time.
    - These surviving nerve cells may have to "compensate" for the ones that were destroyed by the polio virus.
    - After many years of this extra work, these nerve cells may begin to fail, leading to the new symptoms.
- **Global concern** – PPS is a growing concern around the world.
- Since the severe polio epidemics of the 1940-60s led to millions of people surviving polio, many of these people are now older adults experiencing PPS.
- From a functional perspective, the decline in function can impact mobility, independence, work ability and quality of life.

What are the long-term consequences?

- **Progressive muscle weakness** – Muscles continue to weaken, leading to a gradual loss of muscle mass over time.
- **Chronic pain** – This can be both muscular and joint-related, often caused by the increased stress on muscles and joints from a lifetime of compensating for weakness.
- **Increased risk of falls** – Leg muscle weakness can make it difficult to maintain balance, increasing the risk of falls and subsequent injuries.
- **Skeletal deformities** – The long-term stress on the body can contribute to skeletal issues like scoliosis (a curvature of the spine).
- **Osteoporosis** – This is a potential complication where bones become weak and brittle.
- **Sleep disorders** – Frequent waking and difficulty returning to sleep are common, which can worsen fatigue.
- **Difficulty with daily activities** – Weakness can make it challenging to perform activities like walking, climbing stairs, and lifting objects.
- **Breathing problems** – In more severe cases, the muscles that control breathing can weaken, leading to chronic respiratory issues.
- **Swallowing difficulties** – Weakening of the muscles used for swallowing can also occur.

- **Malnutrition and dehydration** – Difficulty swallowing can lead to problems with eating and drinking, potentially causing malnutrition and dehydration.
- **Sensitivity to cold** – Many individuals with PPS experience increased sensitivity to cold temperatures.
- **Impact on mental health** – The chronic nature of the condition can significantly impact a person's quality of life and mental well-being.
- **Paralysis** – The poliovirus attacks motor neurons in the spinal cord, leading to muscle weakness or paralysis in some victims.
- Many survivors recover significantly, thanks to the nervous system's capacity to "sprout" compensatory connections.
- However, decades later that very compensation may start to fail.
- Estimates suggest *PPS may affect anywhere from 25% to 40% of polio survivors,* although depending on the criteria used it could range more widely (some reports say up to 80 %).

What are treatments to PP syndrome?

- **No specific treatment** – There's currently no specific treatment for post-polio syndrome (PPS).
- Instead, healthcare providers focus on managing symptoms and improving quality of life.
- It's important to see a healthcare provider who specializes in treating neuromuscular conditions if you have PPS.
- **Non-fatiguing exercises** – Exercises that don't cause pain or fatigue may improve muscle strength and reduce overall fatigue.
- **Cardiorespiratory endurance training** – Cardiorespiratory endurance is the level at which your heart, lungs and muscles work together when exercising for a prolonged time.
- You should talk to your provider before trying this type of training.
- **Mobility aids** – Devices such as canes, walkers and scooters can help with mobility and help avoid rapid muscle tiring and exhaustion.
- **Occupational therapy** – An occupational therapist can help you make adjustments in your home so you can perform daily tasks more easily.
- **Speech therapy**– If PPS has made swallowing difficult, a speech therapist can help.
- **Lifestyle changes** – Your provider will likely recommend eating a healthy diet, managing your weight, getting quality sleep and not smoking to help manage your symptoms and stay healthy.
- Counseling (psychotherapy) may help you and your family adjust to life with PPS.
- Support groups that encourage self-help and sharing experiences can be beneficial as well.

What lies ahead?

- As the polio survivor population ages, clinicians and health systems need to be aware of PPS — it is frequently under-diagnosed or mislabelled as "just ageing" or "arthritis."
- Vigilance involves asking about a past history of polio in older patients with new weakness/fatigue; evaluating for other causes, and then implementing a multidisciplinary care plan.
- From a public health perspective, it is also a reminder of just how powerful—and long-lasting—the benefits of vaccination are.
- Preventing polio in the first place means you avoid not just the acute illness, but the decades-later burden of PPS.
- Surviving polio doesn't always mean you are done with it. Many people come through the acute phase, recover well and then decades later hit a second curve of new problems.
- As doctors, we must bring PPS into our radar, treat it with respect, and help our patients adapt their lives rather than suffer passively.
- For survivors, the message is, if you had polio, and you're noticing new fatigue, weakness or pain don't just shrug it off as "ageing" , ask your doctor about PPS, get the right rehabilitation and support, and make sure mobility and quality of life remain in your hands.

12. SECURITY

12.1 Cross-border Infiltration – The Next Big Challenge

Cross-border infiltration has emerged as India's most pressing internal security threat, with demographic shifts, political exploitation and economic strains turning a regional concern into a national crisis demanding urgent action.

What were the important internal security threats to India?

- **Fundamental threats** – In the early 2000s, India's primary internal security threats were
  - Terrorism and separatism in Kashmir
  - Left-Wing Extremism (LWE)
  - North-East insurgency
- **Decline in insurgency** – Though these issues persist, their intensity has declined considerably.
- **Naxalism** – Once active in 182 districts in 2009, has now shrunk to just 18 in 2025.
- Former PM Manmohan Singh had called it the *"single biggest internal security threat"* in 2006.
- According to the Home Ministry, it could be eliminated by March 2026.
- **North-East insurgency** – It has *declined by nearly 90%.*
- This progress is largely due to improved infrastructure, integration of alienated communities, and peace accords with insurgent groups.
- **Terrorism in Kashmir** – It has experienced a relative calm following the 2019 abrogation of Article 370.
- However, a complete resolution remains elusive, as Pakistan and its intelligence agency ISI continue to fuel unrest in the region.
- Keeping the Kashmir issue alive is essential to their strategic interests and political survival.
- With these longstanding challenges somewhat under control, illegal infiltration has now surfaced as the most pressing internal security threat.

What the consequences are of cross border infiltration?

- **Emerging national crisis** – Infiltration is no longer a border-specific problem.
- Its effects are now deeply felt across the Indian heartland, creating far-reaching social, political, and economic consequences.
- What was once framed as a humanitarian issue has transformed into a national crisis.
- **Social consequences** – The influx from Bangladesh and Myanmar has altered the demographic makeup of states like Assam, West Bengal, Tripura, and other North-Eastern areas.
- Ethnic balances have been disrupted, causing friction over land, language, and identity.
- The Assam Movement's legacy looms large, while debates on the Citizenship Amendment Act (CAA) and the National Register of Citizens (NRC) remain active and politically sensitive.
- There is a growing perception among locals that infiltrators benefit from welfare schemes and political appeasement.
- This belief has sparked ethnic nationalism and communal tensions. Radical groups are quick to exploit such sentiments, posing further threats to social cohesion.
- This issue is no longer limited to border regions.
- Migrants have reached deep into the mainland from Bihar to Punjab and Uttarakhand to Karnataka.
- Major cities like Delhi, Hyderabad, Gurugram, and Pune are witnessing increasing numbers, putting pressure on urban services and housing.
- **Political consequences** – Most political parties have embraced vote-bank strategies, facilitating fake documents.
- They help infiltrators settle on government lands, especially along river beds and forest areas, and turning a blind eye to the consequences.
- Such actions compromise national security for short-term electoral gains and alienate local populations.
- This deepens mistrust between citizens and the state.

- If unaddressed, it could lead to unrest, especially in vulnerable regions where demographic pressures are mounting.
- **Economic consequences** – Illegal infiltration strains both employment and public services.
- Most undocumented migrants work in agriculture, construction, and domestic labour, flooding the market with cheap labour.
- This depresses wages and displaces local workers.
- Moreover, many infiltrators are involved in the informal or grey economy, engaging in cattle smuggling, narcotics trafficking, fake currency, and illicit trade.
- These activities not only weaken the formal economy but also empower organised crime syndicates, some with terrorist links.
- Public resources such as healthcare, education, and welfare are stretched further by the undocumented population.
- These burdens threaten to derail India's vision of becoming a developed nation, "Vikshit Bharat" by 2047.

What are the impediments in monitoring?

- **Vulnerable borders** – India's borders are increasingly vulnerable due to evolving tactics by hostile actors.
- Along the India–Myanmar border, difficult terrain enables insurgent movement and illegal entry.
- Despite the best efforts of border forces, the vast and varied geography presents major enforcement challenges.
- **Increased narco terrorism** – In Punjab, narco-terrorism has gained ground, with drugs and arms being dropped by drones.
- Cyber radicalisation and sleeper agents disguised as labourers further complicate detection.
- **Change in approach of terrorists** – Recent arrests of Pakistani militants along the Bangladesh–Meghalaya border suggest a strategic shift by Pakistan's ISI, which is now exploiting weaker points along the eastern frontier.

Kautilya wrote in the Arthashastra *Centuries ago: "In the territories lying on the borders, the conqueror should establish fortified towns populated with trustworthy people and soldiers. Foreigners should not be allowed to settle in border territories."*

- In 2011, in Malda district, a head constable was killed by cattle traffickers.
- **Large Illegal settlements** – A local survey revealed that a 500-meter stretch was fully occupied by illegal Bangladeshi settlers, making security operations difficult and compromising local intelligence networks.
- Such realities prove that infiltration isn't just about border violations; it can weaken internal coordination, disrupt intelligence, and enable collusion with enemy states during crises.

What lies ahead?

- The newly announced Demographic Security Mission is a timely and necessary move.
- But for real impact, it must adopt a zero-tolerance approach.
- Those involved in facilitating fake IDs and documents must face strict legal consequences.
- Enhanced border fencing, surveillance technologies, and citizen verification systems are vital.
- Illegal infiltration is not just a regional challenge; it is a fundamental test of India's political will, policy resolve, and social cohesion.
- It calls for a unified national response that rises above short-term politics.
- If this issue remains unresolved, it could destabilise communities, threaten India's internal peace, and obstruct its development trajectory.
- A day may come when unchecked infiltration poses a serious threat to the country's democratic fabric and sovereignty.
- By then, any electoral advantages gained today will seem trivial.
- As Kautilya warned, a kingdom that neglects its borders invites disorder. It is time for India to act decisively to protect its future.

DISASTER MANAGEMENT

12.2 Scientific Crowd Management

Recently, a political rally by actor and Tamilaga Vettri Kazhagam (TVK) founder Vijay in Tamil Nadu's Karur district ended in a fatal crowd crush in which 41 people were killed.

What were the recent major stampedes in India?

- **M Chinnaswamy Stadium, Bengaluru (June 4, 2025)** – 11 fans were killed in a stampede while celebrating the Royal Challengers Bengaluru's IPL victory.
- **Puri Gundicha Temple, Odisha (June 29, 2025)** – A crowd crush at the Gundicha temple during the annual Rath Yatra festival killed at least three people.
- **Shree Lairai Devi Temple, Goa (May 3, 2025)** – At least seven people died during the annual Lairai Jatra festival when a crowd fell on a slope.
- **New Delhi Railway Station (February 15, 2025)** – 18 people were killed and more than a dozen injured after a headload fell in an overcrowded section of the station.
- **Prayag Maha Kumbh Mela, Uttar Pradesh (January 29, 2025)** – A crowd crush during a holy dip on Mauni Amavasya killed at least 30 people.
- **Lord Venkateswara Swamy Temple, Andhra Pradesh (January 8, 2025)** – At least six devotees were killed while jostling for free ticket passes.

What has India done to manage crowds?

- **BPR&D guidelines** – At the national level, the Bureau of Police Research and Development (BPR&D) published its most recent Comprehensive Guidelines on Crowd Control and Mass Gathering Management in June 2025.
- These guidelines, intended for police and other law enforcement agencies, emphasise scientific crowd management practices.
- **NDMA Recommendations** – The National Disaster Management Authority has maintained its *"Managing crowd at events and venues of mass gathering"* guide since 2020 alongside "*suggestive frameworks*" for crowd management plans.
- These documents recommend advance risk assessment, detailed site layout plans, predetermined ingress and egress routes, real-time monitoring, and communication protocols.
- **NIDM training modules** – The National Institute of Disaster Management (NIDM) has run training modules to handle large congregations as part of its capacity-building programmes.
- **Indian railways manual** – The Indian Railways updated its manuals for around 60 stations with high footfall by introducing holding areas, better dispersal zones and crowd monitoring, among others.
- These measures are mostly advisory, however, and not statutory.

What measures have been introduced by states?

- **Bengaluru** – The Karnataka government tabled the Crowd Control (Managing Crowd at Events and Venues of Mass Gathering) Bill, 2025.
- This instrument covers political rallies, conferences, cultural programmes, and other events, and fixes responsibility on organisers.
- It also empowers district magistrates to cancel or redirect events, regulate the use of loudspeakers, and impose fines and imprisonment for violations.
- **Uttar Pradesh** – The Uttar Pradesh State Disaster Management Authority issued the Guidelines for Managing Crowd at Events of Mass Gathering, 2023 , a document that formalises measures for religious and cultural events.
- **Gujarat** – The Gujarat Institute of Disaster Management prepared training materials that include technical instructions on calculating site capacity, planning exits, training volunteers, and ensuring first aid and fire safety.
- **Uttrakhand** – The Uttarakhand government ordered safety arrangements at major temples to be updated and directed authorities to remove encroachments around shrines.

- **Maharastra** – The Maharashtra government introduced a Bill in 2025 empowering the Nasik-Trimbakeshwar Kumbh Mela Authority to authorise temporary townships and bypass certain urban planning norms so that facilities can be created for large gatherings.
- **Role of local enforcement agencies** – They have supplemented these steps with operating protocols.
    - **For instance**, the Karnataka police circulated a new Standard Operating Procedure to control crowds at public functions and detailed responsibilities for coordination between departments, medical preparedness, and fire safety.
- **Directions from police** – In many districts across States, the police have also directed organisers of large religious or political gatherings to
    - Prepare crowd management plans
    - Limit crowd size
    - Deploy medical teams
    - Set up temporary barricades
    - Divert routes.
- These orders are still only administrative and aren't backed by a law.

What is scientific crowd control?

- **Controlling crowd density** – According to prevailing scientific wisdom, safely navigating a crowd depends on controlling its density and sidestepping hazardous flow patterns.
- Modelling studies have shown that the risk of a deadly crush escalates when crowd density approaches 5 persons per sq. m.
- **Increased use of drones** – Since cameras on drones linked to computers on the ground can continuously monitor crowd density, not using such technologies to manage crowds is seen as a shortcoming.
- **Avoiding narrow areas** – Crowds should never be channelled into bottlenecks, slopes or counter-flows because they magnify pressure and destabilise movement.
- **Managing the movement** – In a moving crowd, individuals are advised to move diagonally, towards the less dense edges, and to avoid resisting the flow.
- **Compressive asphyxia** – It is the main cause of fatalities rather than trampling.
- Individuals should keep their forearms across the chest to protect their breathing space and maintain balance with staggered footing.

Compressive asphyxia *is a type of mechanical asphyxiation where external force presses on the chest or abdomen. This prevents the lungs and diaphragm from functioning normally, leading to lack of oxygen supply.*

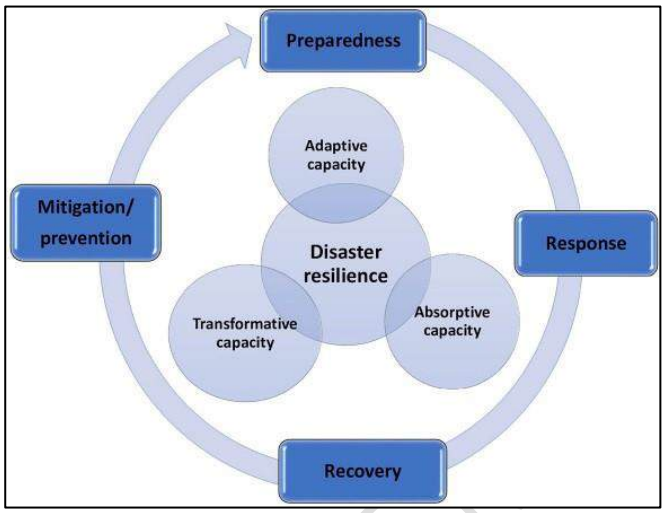
- If one is knocked down, rolling to the side and shielding the head and neck while attempting to rise quickly is recommended.
- **Avoiding rigid barriers** – People should avoid rigid barriers such as fences, walls or stages where pressures against the body can rise dangerously.
- Stopping to retrieve dropped items or to film in dense flows must be avoided since even brief obstructions can create waves of turbulence.
- **Best practices for organisers** – It requires
    - Real-time monitoring by trained crowd managers,
    - Routing the passenger traffic in only one direction,
    - Arranging for multiple exits,
    - Using unambiguous signage,
    - Public address messaging, and on-site medical facilities.

12.3 India's Direction for Disaster Resilience

Recently there are series of natural and manmade disasters that stand as a test for the disaster resilience of India.

What is disaster resilience?

- **Disaster resilience** – It is the ability of communities, individuals, and systems to effectively resist, absorb, adapt to, and recover from the negative impacts of hazards and disasters, while minimizing losses and preserving essential functions.



- It is a dynamic process involving preparedness, response, and recovery efforts that builds capacity to withstand and learn from adverse events
- International coordination is crucial in shaping how much India will learn from and teach the world.
- **Need –** India, is a vast, multi-hazard country, and a multi-faceted approach is essential to deal with heat-related issues and extreme rainfall events.
- The Home Ministry (MHA) and the National Disaster Management Authority (NDMA) oversee the post-disaster.
- **10-point agenda** – They also monitor the pre-disaster phases, using the Prime Minister's ten Point Agenda on Disaster Risk Reduction of 2016 as guiding principles.

Prime Minister's Ten-Point Agenda for Disaster Risk Reduction

All development sectors must imbibe the principles of disaster risk management
Risk coverage must include all, starting from poor households to SMEs to multi-national corporations to nation states
Women's leadership and greater involvement should be central to disaster risk management
Invest in risk mapping globally to improve global understanding of Nature and disaster risks
Leverage technology to enhance the efficiency of disaster risk management efforts
Develop a network of universities to work on disaster-related issues
Utilize the opportunities provided by social media and mobile technologies for disaster risk reduction
Build on local capacity and initiative to enhance disaster risk reduction
Make use of every opportunity to learn from disasters and, to achieve that, there must be studies on the lessons after every disaster
Bring about greater cohesion in international response to disasters

What is the strategy of 15th FC for disaster risk reduction?

- **Approach** – In 2021, the 15th Finance Commission adopted a nuanced approach to disaster risk reduction (DRR).
- **Fund allocation** – It aligned public finances with technological and practical advances, and allocated ₹2.28 lakh crore ($30 billion) over its five-year term.
- **Widened focus** – It broadened the focus from just post-disaster relief to include *prevention, mitigation, preparedness, capacity building, and post-disaster reconstruction*.
- Previously, the financial gap for reconstruction was filled through multilateral debt instruments.
- **Break up of allocation** – The Commission allocated
    - 30% for the first segment, divided between
        - Preparedness and capacity building (10%)
        - Mitigation (20%).
    - 70% was assigned to the post-disaster phase, split into
        - Response (40%)

    - Reconstruction (30%).

- **5 priority areas** – In establishing the process chain from budget-to-project for nature-based DRR, five priority areas were identified
    - Evaluating the scale of and prioritising India's multi-hazard challenges
    - Integrating scientific concepts of mitigation and reconstruction into public finance
    - Avoiding duplication with existing programmes
    - Synergizing inter-ministerial, institutional, and Centre-State relationships in developing such programmes
    - Establishing processes for light-touch regulation.
- Last year, the procedures and standards for design and the manner of expense for such programmes have been established.
- **Coordination** – Inter-ministerial, cross-institutional and Centre-State appraisal committees are in place for all hazard- or region-specific projects.
- **Reconstruction** – Over the past two years, the MHA has approved the first five reconstruction project packages worth about ₹5,000 crore for Uttarakhand, Himachal Pradesh, Sikkim, Assam and Kerala.
- Work is underway to conduct scientific assessments of damage and loss caused by extreme precipitation in the current monsoon.
- **Pre-disaster phase** – For this much of the preparedness and capacity-building funds were allocated to modernising fire safety (₹5,000 crore).
- **Specialised group** – Additionally, two specialised groups of 2.5 lakh volunteers, *Apda Mitra* and *Yuva Apda Mitra*, were created.
- **Capacity building** – Some of the capacity-building funds will now be directed towards establishing geo-spatial training labs and expanding faculty-led, action-based research at the National Institute of Disaster Management (NIDM).
- Strengthening NIDM's three core objectives of training, research, and documentation, a standard course covering 36 streams of disaster management has been initiated.
- The aim of capacity building is to mainstream the subject and its practical application to each panchayat.
- **Mitigation** – For the 20% window allocated for mitigation, the best scientists, academicians, and numerous public servants were consulted to develop innovative projects.
- In the past year, projects worth ₹10,000 crore ($1.2 billion) have been approved and are being implemented across States.
- They aim to prioritise neglected nature-based solutions as long-term responses to climate change and extreme weather events.
- **Cyclone mitigation** – As precursor to these forward-looking mitigation programmes, the National Cyclone Mitigation Programme (2011-22) worth ₹5,000 crore had already succeeded in *reducing vulnerability of coastal communities to cyclones across eight States.*
- **Key infrastructure built** – It included seven-day early warning systems, cyclone shelters, and embankments.
- **Plans of NDMA** – Under these mitigation programmes, the NDMA urges States and urban authorities to
    - Revitalise water bodies and green spaces to mitigate urban floods.
    - Use remote sensing and site-specific automated weather stations to assess the size of at-risk glacial lakes continually.
    - Stress bio-engineering solutions for slope-stabilisation in landslide prevention in high-risk zones.
    - Rejuvenate water bodies called beels along the Brahmaputra.
    - Focus on break lines, water body rejuvenation and fuel evacuation to prevent forest fires.
- **Early warning systems** – Over the years, the government has also developed advanced early warning systems for various hazards, which have significantly reduced casualties.
- The multi-media Common Alerting Protocol ensures timely alerts in regional languages.

- **Support from universities and institutions** – To enhance community capacities, initiatives such as a 327-member network of universities and institutional support from the NIDM are crucial.
- The NDRF Academy, the National Fire Service College, and NIDM train hundreds of public servants annually, in the science of hazards and policy.
- **Mock exercises** – These are carried out to promote hazard- and region-specific awareness, while school safety programmes educate children and distribute resources.

What lies ahead?

- International coordination is crucial in shaping how much India will learn from and teach the world.
- In the face of unrelenting climate change, India created the Coalition for Disaster Resilient Infrastructure and leads DRR-related initiatives at the G-20, SCO, BIMSTEC, and IORA.
- On advice from public and private entities, and academic and scientific institutions, India is successfully preparing to de-risk its complex hazard profile through innovative and sustainable nature-based solutions.

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